

# RISC OS 3

## User Guide



Acorn

# RISC OS 3

## User Guide



Acorn

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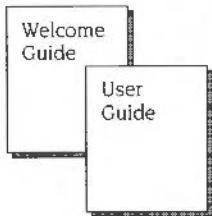
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Error messages 547

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# About this guide



This guide, in conjunction with your *Welcome Guide*, describes the RISC OS 3 (version 3.5) operating system.

If you are new to your computer, you should first read the *Welcome Guide*. This tells you how to set the computer up and start using the RISC OS desktop, how to use the mouse to manipulate windows and files, and how to open menus and choose commands from them.

## What's in this guide

If you have read the *Welcome Guide*, you should already have a working knowledge of the desktop. This guide builds on that knowledge.

Part 1: *The desktop* tells you more about manipulating files, directories and applications. It shows you how to use the Filer menu options, the Apps directory and the Pinboard. It also tells you a little about the operating system and disc filing system. You'll also find out how to print files and how to select the colours and resolutions used on the desktop.

Part 2: *Desktop configuration* tells you how to change the way the desktop behaves and shows you how to automate the start-up procedure so that your favourite applications are started automatically. It also shows you how to set up your printer correctly.

Part 3: *RISC OS applications* introduces you to the applications that have been supplied with your computer and goes on to describe how to use the painting, drawing and editing applications.

Part 4: *More applications* describes how to use the other applications that are supplied with your computer.

Part 5: *Outside the desktop* tells you about the Command Line Interface. This provides you with an additional way of communicating with the computer, one which programmers and experienced users will find especially useful.

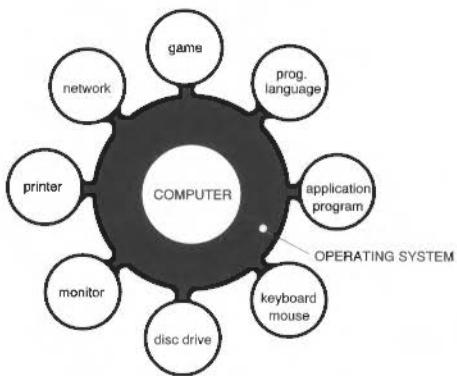
Finally, the *Appendices* contain reference material on subjects such as fonts, configuration, file-types, character sets and error messages.

At the end of the guide you will find the *End-user licence conditions*, *Index* and *Reader's Comment Form*, which you can return to us with comments or suggestions about this guide.

## What is an operating system?

If you look in a computing textbook, it will probably describe an operating system in terms such as “*controls the operation, coordinating the use of input and output sources, the processing of data etc*”.

In practical terms, the operating system of a computer is the software interface between the computer's hardware on the one hand, and the programs it runs plus the other pieces of equipment it uses on the other. It could be represented graphically like this:



The operating system is, as it were, the glue between the computer and its programs and peripheral equipment. It allows you to load an application program from a disc, for example, and then determines how the program is run. It takes input to the program from the mouse and keyboard, and arranges to display the results on the monitor. When you have finished your session, it enables you to save your work back to the disc in a file.

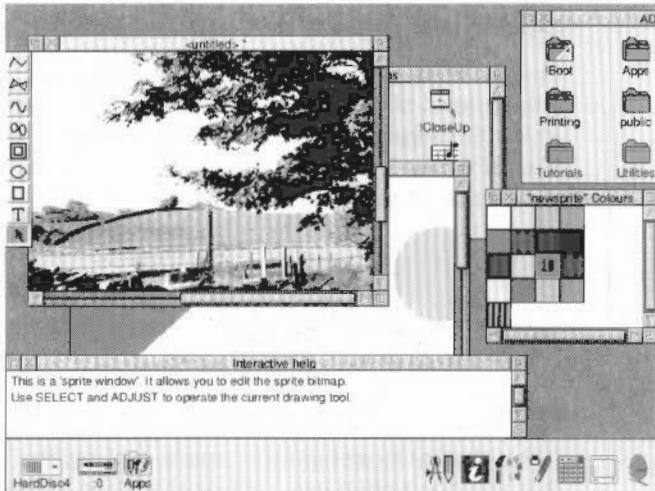
## How RISC OS operates

The RISC OS operating system consists of three layers:

The innermost layer, or the **core**, contains the programs that actually make the computer work and which we don't need to understand here.

The next layer is the **command line interface**. This is a traditional text-based interface which programmers use to write programs and scripts. Unless you are a programmer, you probably won't ever use the command line. Part 5 of this manual, *Outside the desktop*, gives an overview of all the commands used, together with an introduction to using them. If you plan to use the command line you should buy the *RISC OS 3 Programmer's Reference Manual* and the *RISC OS 3 Programmer's Reference Manual Volume 5 – Version 3.5 additions*.

The outermost layer is the **desktop**. This is the layer that this manual is mostly about. The desktop shows us files, directories and applications represented as icons. Applications display information in windows and, unlike some operating systems, you can have many different applications and windows on the screen at the same time. You should already have a good idea of how the desktop operates from reading the *Welcome Guide*.



## Running programs on your computer

Sophisticated as it is, RISC OS just provides an infrastructure of facilities for your computer, making it easier for you to do things with it. Once you have grasped the basic principles of the RISC OS desktop, you will want to start using it seriously to run programs. You can keep coming back to this guide to learn more about the operating system and how to tailor it to suit your way of working.

## Applications and games

Application programs, or applications, are designed to help you with your work or leisure activities. The best-known application is the word processor. Other applications include desktop publishing, drawing and painting. These and other software and hardware products are published both by Acorn and by many independent companies. Details of these may be obtained from your Acorn supplier.

A number of applications and games are supplied with RISC OS, including a text editor, draw and paint programs, a music editor and a calculator. These are described in Part 3: RISC OS *applications* on page 167.

## Programming languages

The BBC BASIC programming language is provided with RISC OS and if you plan to write BASIC programs on your Acorn computer you will find the *BBC BASIC Reference Manual* invaluable. This manual is available from your local supplier.

If you are developing desktop applications, Acorn provide the *Desktop Development Environment*. The Desktop Development Environment contains Desktop Development software, the Desktop C and Desktop Assembler languages.

Programmers and other users who want to find out about their machine at a greater level of detail than is covered in this guide will also be interested in the *RISC OS 3 Programmer's Reference Manual* and the *RISC OS 3 Programmer's Reference Manual Volume 5 – Version 3.5 additions* which covers the RISC OS operating system and the desktop environment in more depth.

## Important tips

Before using your computer, you should read the *Guidelines for safe operation* printed near the front of your *Welcome Guide*.

### **Freeing up more disc space**

If you require more hard disc space, you can free up space by deleting directories that you don't often use; such as the Video, Images and Sound directories. Before deleting them, you should always take a backup of any files, directories or applications that you may wish to keep (see *Backing up hard discs* on page 51). The *Welcome Guide* shows you how to delete files and directories.

### **Unexpected behaviour**

If your computer starts behaving unexpectedly, or doesn't do anything at all, see the Chapter *If things go wrong* in the *Welcome Guide*, which has solutions to most common problems.

### **Why has the screen gone blank?**

If your screen goes blank while you are not using it, you can usually restore it by moving the mouse or pressing any key on the keyboard. This facility is designed to save wear on the screen.

### **Getting out of a mess (resetting the computer)**

You may run a program which causes your computer to 'hang up' – where pressing a key has no effect. You can normally cure this by resetting the computer. To reset the computer, press the Reset button at the back of the computer. Your *Welcome Guide* shows you where this is. Alternatively, turn the computer off, wait a short while (30 seconds) and turn on again. When you reset the computer, any unsaved data is lost. For more information about resetting your computer refer to the chapter *Power on and Reset options* on page 111.

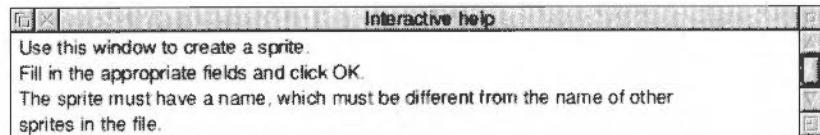
## Getting help

### The !Help application



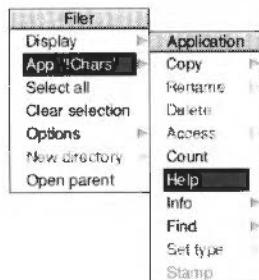
The !Help application provides on-screen information as you use your computer. The desktop itself and most of the applications can give you help in this way. For information refer to the chapter **Help** on page 359.

This is what a typical Interactive Help message looks like; in this case here is what you see when you position the pointer over part of the Create new sprite window in the !Paint application.

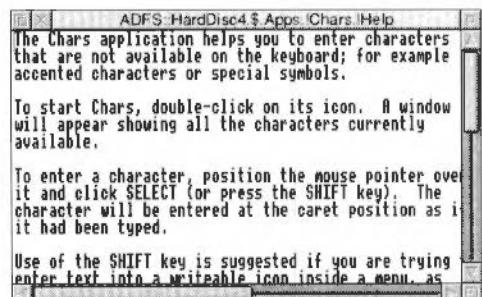


### The Help option on the Filer menu

On the main Filer/Application submenu there is a Help option. Choose **Help** to display useful information about an application. For example, here is the help text you see if you click on the !Chars application (for more information, see page 26).



click on Help...



... Help window for this application is displayed

### **Help on the command line**

You can even get help when you use the command line. If you want to find out about a particular \*command, press the F12 function key to go into command line mode and then type \*Help, followed by the command you want help on, and then press Return. If you want to list all keyword commands type \*Help commands.

To return to the desktop, press Return again. For more information, see the section *Getting Help* on page 416.

## **Additional products and documentation**

Acorn issues two product directories that together list most of the Acorn and third party hardware and software available for your computer.

- The Acorn Product directory lists most of the general purpose software and hardware available.
- The Acorn Education directory lists most of the software and hardware specifically produced for schools and colleges.

Your supplier should have copies of both these publications.

### **The following additional Acorn manuals can also be purchased from your supplier:**

- *BBC BASIC Reference Manual* – A reference manual for BBC BASIC V and VI. These are the BASIC languages supplied with every computer.
- *RISC OS 3 Programmer's Reference Manual* – A complete four volume reference manual for the RISC OS 3 operating system. Essential reading for all serious RISC OS programmers. This set also includes the *RISC OS Style Guide*. This sets out the programming guidelines you should follow.
- *RISC OS 3 Programmer's Reference Manual Volume 5 – Version 3.5 additions* – A special programmer's supplement for the RISC OS 3, Version 3.5 operating system that is used in this computer.
- *Technical Reference Manuals* are also available for most RISC OS computers. They give the technical specifications of all interfaces used in the computer. These manuals are essential if you are developing hardware add-ons and enhancements for the computer.

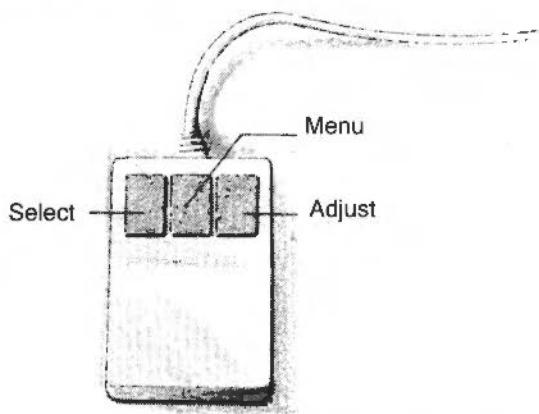
## Conventions used in this manual

The following conventions are used in this guide:

- Menu names and options are shown in bold type; for example:  
Choose the **Actual size** option from the **View** menu.
- Sometimes you will need to press one key while holding down another. This is shown like this:  
Ctrl-F9 (means hold down the Control key and press the function key F9.)

## The mouse

The mouse has three buttons. From left to right their names are Select, Menu and Adjust. The functions they perform depend on the application you are using. For some general principles refer to the *Welcome Guide*.



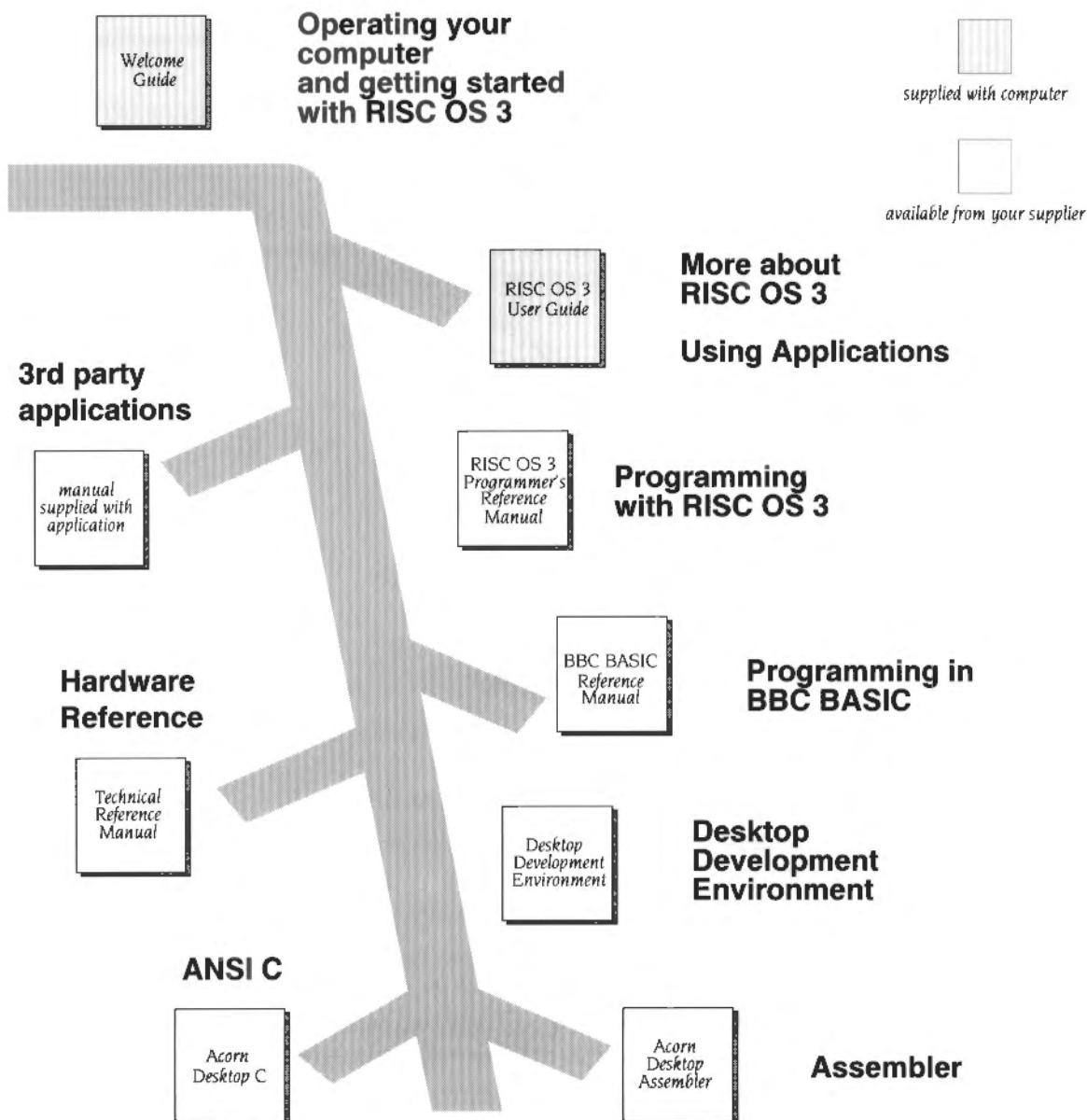
- You use the **Select** button to select and move icons displayed on the screen, or to choose from menus.
- You use the **Menu** button to make a menu appear.
- The **Adjust** button does a variety of things, mostly useful variants of what the Select button does.

Each mouse button can be used in the following ways:

- **clicking** – pressing the mouse button just once and then releasing it immediately. This is used to choose an icon or action.
- **double-clicking** – pressing and releasing twice in quick succession. This is used to initiate an action, or to load an application, for example.
- **dragging** – holding down the Select (or Adjust) mouse button whilst moving the mouse. This moves an object from one place to another on the desktop.

## Documentation roadmap

This roadmap will help you decide which tools and manuals you will need, as you learn about RISC OS.



# Part 1: The desktop

.....



The chapter *Files and directories* in the *Welcome Guide* provides an introduction to the concept of the desktop, and to the basic filing tasks of loading, saving, copying, moving and deleting files, and creating new directories.

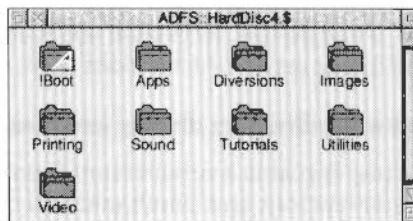
This chapter expands on the *Welcome Guide*, covering in more detail how the desktop works, and how you can use these file-handling features to make the best use of your computer, whatever you are using it for.

You use the desktop whenever you use the computer. It allows you to display and manipulate your files, directories and applications in an easy and efficient way.

## Directory displays



Information stored in the computer is shown on the screen in directory displays. Clicking on the icon for a particular information storage device (such as a disc drive) opens a directory display. This is a directory display that you might see when you click on the hard disc icon:



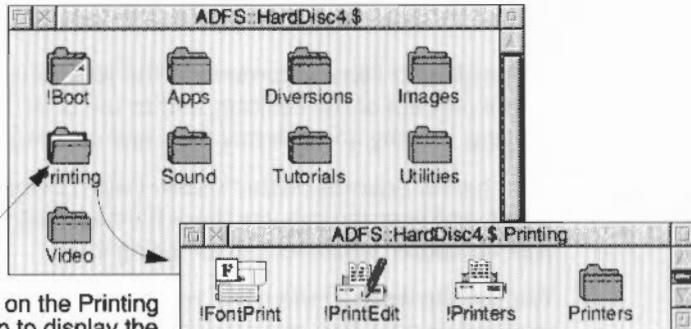
## Moving through the directory structure

The basic techniques used to move around the files and directories have already been introduced in the *Welcome Guide* in the chapter *Files and directories*. This section introduces you to some more advanced desktop operations.

### To open a subdirectory display



Double-click Select on the subdirectory's icon (a folder). The subdirectory display will then appear on the screen in a new window.



Double-click on the Printing directory icon to display the subdirectory.



If you double-click on the icon for a directory that is already open somewhere on the screen, its directory display is moved in front of the other windows on the screen, rather than a new window being opened.



Advanced users may wish to know that pressing Ctrl while double-clicking on a directory opens the directory without running the internal files of applications within that directory. This speeds up the opening of large directories, and saves memory. If you do this, individual application icons are not displayed; they are replaced by the generic Archimedes application icon.

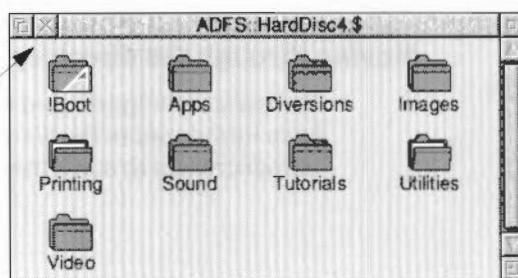
### To open a subdirectory display and close its parent

If a directory contains a subdirectory, then it is the 'parent' of that subdirectory. To open a subdirectory, and simultaneously close its parent, double-click Adjust on the subdirectory's icon.

### To close a directory display

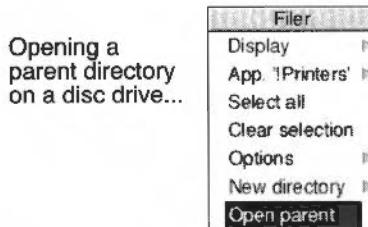
Click Select on the Close icon of the window.

Click on the close icon to remove the directory display from the screen.



### To open the parent directory

To open the parent of a subdirectory, hold down Shift and click Adjust on the Close icon. You can also choose **Open parent** from the Filer menu (see page 19).



### To close a subdirectory display and open its parent directory

Click Adjust on the Close icon of the window.

### To load any file into the Edit application

Any file, not just text files, can be viewed using the Edit application. Just hold down Shift and double-click on the file icon. Alternatively you can drag the file icon onto the Edit icon on the icon bar.

## Pathnames

The full pathname of a file or directory appears in the title bar at the top of the file window or directory display:



The pathname of a file or directory is a complete description of where the file or directory is located in a particular storage device. You won't normally have to remember the pathname, usually just the filename is sufficient. You can refer to a file or directory by selecting it (clicking on its icon), by giving its filename (in an icon, for example) or by dragging its icon to the destination window.

### How a pathname is defined

Occasionally, however, you need to specify all or part of the sequence of directories that leads to a filename. The route down the directory tree is called a path, so the whole sequence, including the filename at the end, is called a pathname. At its most general, a pathname has the following form:

*filing-system::disc-name.directory-names.filename*

For example:

```
adfs::HardDisc4.$.letters.replies.ToBill
```

So in this example:

- `adfs` is the filing system name. Note that it is followed by a double-colon. If the filing system name is omitted from a pathname, the current filing system is used (see below). On a network the syntax is slightly different; the filing system name is followed by the network name.
- `HardDisc4` is the name given to the physical storage area. It may be a hard disc, a floppy disc or some other device.
- `$` is the name given to the 'root' directory. This is usually the directory you first open when you click on a storage device icon – the structure of directories and files on a particular storage device grows out of that first directory.

The exceptions to this are network file servers, where the directory display you first open is normally your user directory (denoted by a &), which is one or more directories removed from the root.

If this, and the filing system name and disc name are omitted, the path is taken relative to the current directory.

- `letters` is the name of a directory contained within the root directory.
- `replies` is the name of a directory contained within the `letters` directory.
- `ToBill` is the name of a file within the `replies` directory.

Each of the directory names in the path from the root onwards is separated from the next element of the path by a full stop. There is no full stop after the filename.

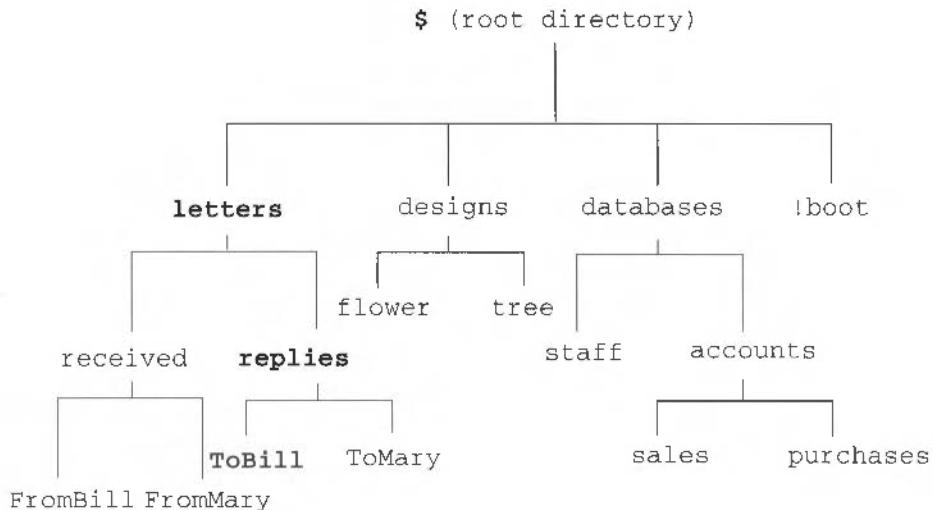
### Current filing system concept

The concepts of current filing system, current disc and current directory are more applicable to command line mode than to the desktop; however, they do still apply when using the desktop. See the chapter *The command line* on page 411 for information about the command line interface.

The current filing system is usually that used by your hard disc drive, usually ADFS. The current disc is also usually your hard disc drive.

### Filing system structure

A graphical way of representing the filing system structure containing the file ToBill would be:



## Using applications



A special sort of directory is used to contain application programs and the resources they use; logically enough, these are called application directories. Application directories are signified by having a name starting with an exclamation mark. For example the editor application is called !Edit.

### Double-clicking on an application icon

To start an application, move the pointer over the application icon and double-click; this loads the application onto the icon bar.



An alternative way to start an application is to double-click on the file icon (for example, an Edit file). This starts the application and then loads the file. A text file, for example, will be loaded into Edit, and an application will run. See the chapter *Loading and saving files* in the *Welcome Guide* for more details.

Clicking or double-clicking on the name next to an icon in a directory display has the same effect as clicking or double-clicking on the icon itself.

### Opening an application directory

Unlike normal directories, double-clicking on an Application directory starts the application program. If you want to **open** an application directory to view its contents, rather than start it, hold down the Shift key and double-click on the application icon.

Unless stated otherwise, references to directories in the rest of this chapter also apply to applications.

### Inside applications

In general, you won't need to know about the internals of application directories. One point that you may notice, however, is that directory displays for discs and directories that contain many applications sometimes take longer to appear on the screen than other directory displays. This is because the individual icons that are used to represent applications are loaded from special files in the application directories. Once the icons have been loaded, the computer does not load them again.

## The Filer desktop interface

The Filer provides the desktop interface between you and the computer. It is used to carry out the desktop operations (such as copying files) mentioned in this guide and the *Welcome Guide*. You can, for example

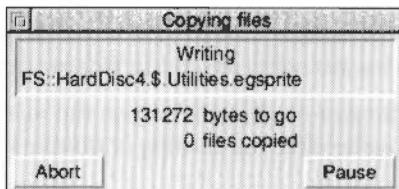
- copy files between your floppy disc drive and a network (if you are connected to one)
- delete a file on your RAM disc
- move files from your RAM disc to your floppy disc.

All these actions are controlled by the Filer.

### Filer operations

Filer operations normally run 'in the background', so that you can carry out other desktop activities while copying, searching, deleting and so on.

A typical background  
Filer copy operation



**Note:** If your computer is running out of memory (you have several applications running, for instance), the Filer may not be able to continue in the background. In these cases it suspends other activities while it completes its tasks. You can tell that this has happened by the fact that the normal message boxes are replaced by larger, simpler, windows.

### Operations on directories



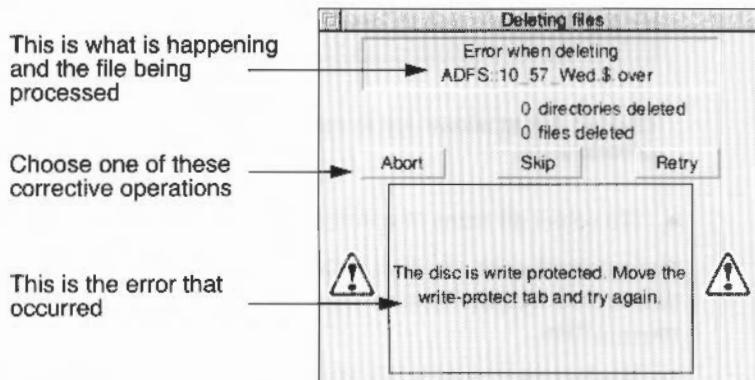
Some operations, such as copying and deleting, when applied to a directory, can normally also apply to all objects within a directory. If any of those objects are themselves directories, the operation applies to their contents as well (and so on). Moving an application, for example, will move all of it: its directory and all its contents.

### Multiple desktop operations

Although you can run several Filer operations simultaneously, you should not run more than one operation on the same source or destination file or directory at the same time. For example, do not copy or move files into a directory while at the same time deleting existing files from the same directory. Doing so may result in lost files or data.

### Correcting problems

If a problem arises during Filer operations, you will see an error box displayed with the following options:



- **Abort** lets you cancel the file operation completely.
- **Skip** skips the current file operation and starts afresh on the next file.
- **Restart** starts the file operation again from the beginning.
- **Retry** tries to start the file operation again from the place at which the error occurred.

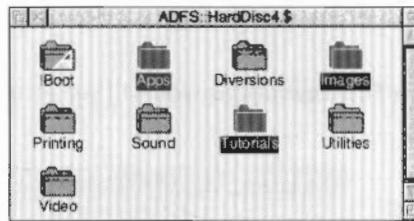
In this case an error occurred because you tried to write to a protected floppy disc. To clear this error, remove the floppy disc, move the write-protect button on the disc to close the hole and replace the disc in the floppy drive.

Once the problem that caused the error has been cleared, you will find that clicking on **Retry** normally allows you to continue with the Filer operation.

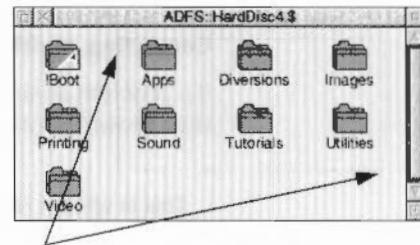
## Selecting files and directories

To carry out a filing system operation, you must select which icon or icons you wish to apply it to. There are several ways of doing this:

- To choose a single icon, click **Select** on it. This highlights the icon.
- To choose a group of icons, click **Select** or **Adjust** on the first one, and **Adjust** on each of the others in turn.
- If the icons are conveniently placed, you can select them by using the mouse and pointer to drag a box round them. To do this, move the pointer to one corner of the group of icons (not over an icon) and drag to the opposite corner; then release the mouse button. You can then use **Adjust** to deselect unwanted icons you don't need or to select additional icons.



Clicking **Adjust** allows you to select several icons.



Use the mouse to drag a box around a group of icons to be selected

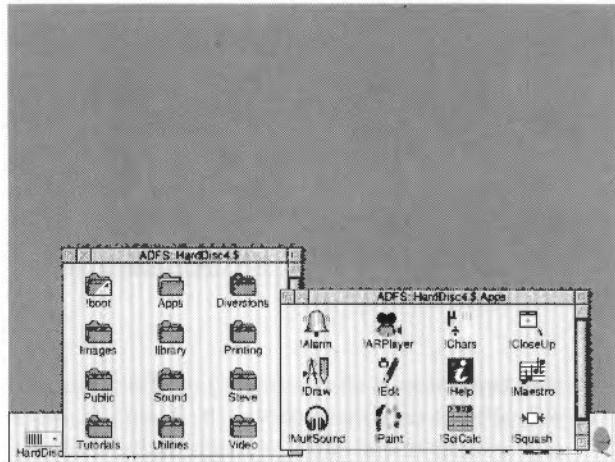
- To select all icons in a directory display choose **Select all** from the Filer menu.

The selected icons are always shown highlighted. After the operation, the icons are deselected. See the *Welcome Guide* for basic details about selecting, copying and moving files.

To deselect an icon by hand, click **Adjust** on it. The entire group of selected icons in a directory display may be deselected by choosing **Clear selection** from the Filer menu, or by clicking when the pointer is not over any icons.

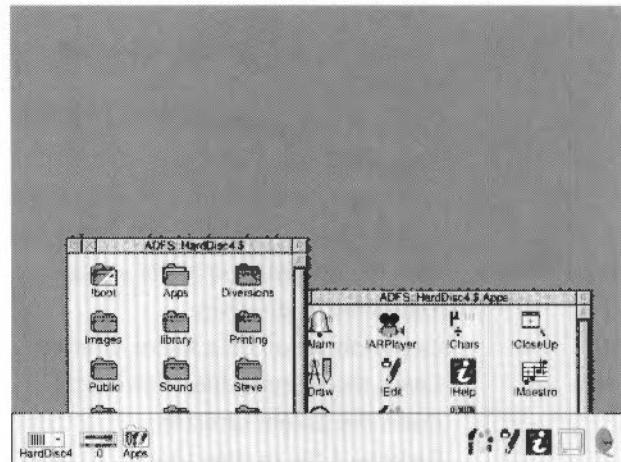
## The icon bar

If you find that the icon bar gets covered by windows, you can move it in front again by holding down Shift and pressing the F12 key. If you want to move the icon bar back again press Shift-F12.

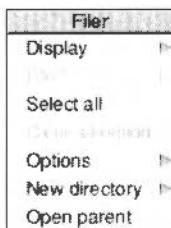


If the icon bar becomes covered by windows...

... press Shift-F12 to move it to the front

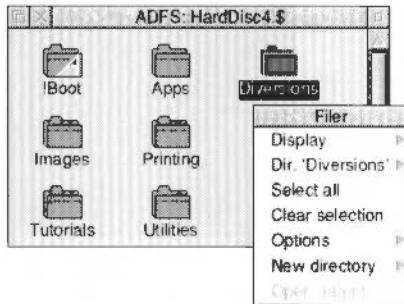


## The Filer menu options



You can select, copy and move files between directory displays just by dragging file icons from one window to another, as described in the *Welcome Guide*. This section describes how the options displayed in the Filer menu are used.

Click **Menu** anywhere over a directory display to show the Filer menu:



If an operation is shown in grey on the menu, it is not available at that point, and you will not be able to choose it. If you are unsure how to choose options from menus refer to the chapter *Menus* in the *Welcome Guide*.

The table below shows which main menu options to choose to carry out different tasks with the Filer. The main menu options are then described in turn:

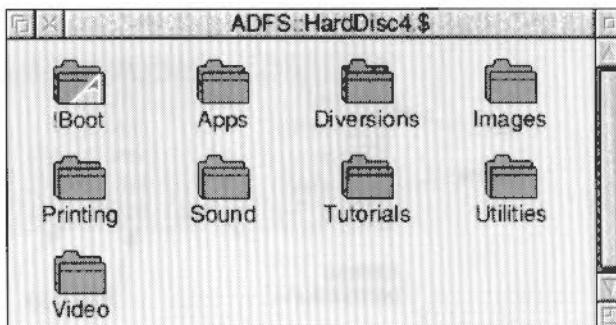
Task	Choose	See page
Change the access on a file or directory	File/Access	22
Change the default options on Filer actions	Options	15
Copy	File/Copy	20
Create a new directory	New directory	18
Delete a file or directory	File/Delete	22
Deselect all icons which have been selected	Clear selection	15
Display files & directories in different ways	Display	13
Ensure confirmation of file actions	Options/Confirm	16
Find a file or directory	File/Find	27
Get information on a file or directory	File/Info	26
Learn the size of a file or directory	File/Info	26
Open the parent directory	Open parent	19
Rename a file or directory	File/Rename	21
Select all icons in a directory display	Select all	15
Set a file type	File/Set type	28
Change the time stamp on a file	File/Stamp	29

## Display

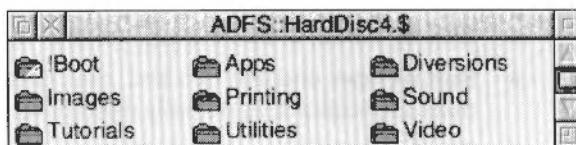
- | Display   |  |
|---|--|
| Large icons                                     |  |
| <input checked="" type="checkbox"/> Small icons |  |
| Full info                                       |  |
| <hr/>   |  |
| Sort by name                                    |  |
| Sort by type                                    |  |
| Sort by size                                    |  |
| Sort by date                                    |  |

You can change the way file and directory information is shown in directory displays using the **Display** menu. The objects in the directory can be displayed as:

### Large icons



### Small icons



### Full info

ADFS:HardDisc4.\$			
IBoot	/	Application	17:46:29 31 Aug 1993
Apps	/	Directory	17:24:19 30 Jun 1993
Diversions	/	Directory	17:24:26 30 Jun 1993
Images	/	Directory	17:24:33 30 Jun 1993
Printing	/	Directory	17:24:43 30 Jun 1993
Sound	/	Directory	17:25:02 30 Jun 1993
Tutorials	/	Directory	17:25:13 30 Jun 1993
Utilities	/	Directory	17:25:22 30 Jun 1993
Video	/wr	Directory	17:25:34 30 Jun 1993

**Full info** consists of a small icon, followed by some additional information. The letters following the file or directory name show which users are allowed access to

the files and the type of access that they have. Access permissions are normally only used on files stored on file servers, where they can be accessed by many different users. The letters before the / indicate owner access information; those after the / indicate public access information. To interpret the access information, refer to *Access* on page 22. File sizes are shown in bytes, kilobytes or megabytes. For more information on displaying the sizes of files and directories, see the *Count* and *Info* options on page 25.

Icon	Name	Access permissions	File size	Type of file	Time and date the file was created
File	Horse	LR/r	110K	Sprite	13:21:45 24 Feb 1993
File	LakeNew	WR/r	106K	Sprite	14:06:18 24 Feb 1993
Image	Map	WR/	269K	DrawFile	16:45:46 25 Feb 1993
Text	MapText	LR/	936	Text	16:51:05 24 Feb 1993
Image	Sign	WR/wr	472	DrawFile	14:53:14 26 Feb 1993

### Changing the directory sort order

You can also change the **order** in which the objects are shown in the directory display. The options are:

- **Sort by name:** ascending alphabetical order. This is the default option.
- **Sort by type:** undated files first, then dated files in numerical order of file type, then applications, and finally directories.
- **Sort by size:** files in descending order of size first, then applications and finally directories.
- **Sort by date:** most recent first.

When you change the format for a directory display, the same format will be applied to any directory displays you open afterwards. This same format is also kept even when you reboot or restart your computer.

When copying files to a Full info directory display you will see blank icons appear with the code word 'DEADDEAD' displayed on the line. When the file copying is completed, these words and the blank icon are replaced by the copied file and file icon.



The time and date used is that provided by the computer's real-time clock, which can be set using the Alarm application described in the chapter *Alarm* on page 317.

## File or Dir or App or Selection

The **File** main menu enables you to carry out many different operations on files and directories. These File options are only available if you first select (click on) the icon you want to use:

- If you select a directory icon, the name of this option changes from **File** to **Dir**.
- If you select an application icon, the name of this option changes from **File** to **App**.
- If you select more than one directory application or file icon, this option changes from **File** to **Selection**.

The options in this submenu are described starting on page 19.

### Select all

Choose **Select all** to select all the files and directories in a directory display, so that you can copy or move them into another directory display (by dragging) if you want to, or to perform one of the operations listed in the **Selection** menu.

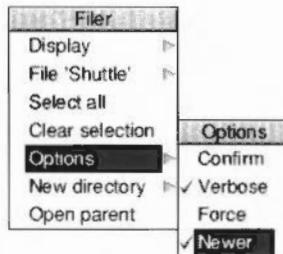
Use the **Adjust** mouse button to deselect individual objects. See also *Selecting files and directories* on page 10.

### Clear selection

Choose **Clear selection** to deselect all the icons already selected in a directory display.

### Options

You can set four options to provide finer control over most of the filing system operations invoked from the **File** menu described above. These are set using the **Options** menu. When an option has been chosen, its menu entry is ticked.



Like **Display**, the options apply to all subsequent directory displays, rather than just the one from which they were set. Options that are ticked are currently being used during Filer operations.

The table below shows which option to choose to carry out a particular task. The options are then described in turn:

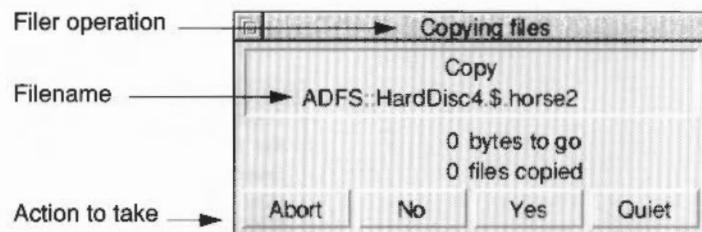
Task	Choose
Request confirmation before carrying out an action	Confirm
Be advised about the progress of an action	Verbose
Override file locks	Force
Make sure you don't overwrite a newer file version	Newer

### Confirm

The Confirm option causes the operation to ask you whether you really want to apply the operation before applying it to each object. This helps safeguard against the accidental deletion of files, for example.

The Confirm option is off by default, but to switch it on, choose **Confirm**. With the **Confirm** option chosen, each time you use a Filer operation you are asked to confirm that you want to apply the Filer operation. In reply, you can click one of the following:

- **Abort** to abandon the entire operation.
- **No** to skip the present object and go to the next one.
- **Yes** to carry out the operation on the present object and go to the next one.
- **Quiet** to continue with the operation without asking for further confirmation (in cases where the operation affects more than one object).



### Verbose

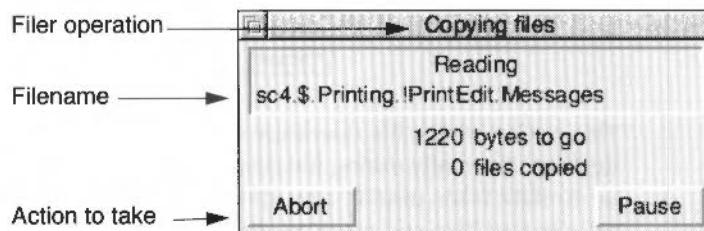
The Verbose option tells you about the progress of an operation. By default, it is switched on.

The information about the operation will be displayed in a dialogue box. Click on

- **Abort** to abandon the entire operation
- **Pause** to interrupt it temporarily. The box will change to **Continue**.

Click on **Continue** to proceed with the operation, or on **Abort** to stop.

**Verbose** often gives you useful information about Filer actions, so it is worthwhile leaving it switched on.



### Force

The Force option, when selected, enables you to delete files and directories even if they are locked; a locked file cannot normally be deleted. This is particularly useful if you want to delete a directory containing a lot of files, some of which may be locked. However, this option should be used with great care, as it overrides all file protection (see *Access* on page 22). It is off by default.

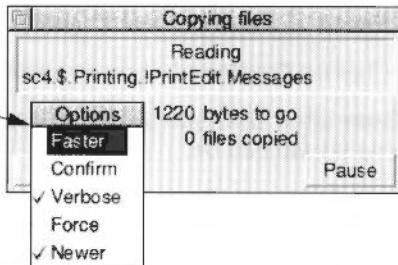
### Newer

The Newer option applies only to copying, and is designed to ensure that you don't overwrite a file by an older version of the same file. If you set out to copy a file to a directory where there is already a file of that name, the file will only be copied if it is newer than the file in the destination directory. The option is off by default.

### Faster

If you have chosen the Verbose option, you can click Menu on any of the standard Filer dialogue boxes, such as those you get with copying, finding, deleting and moving. You will then be able to choose the **Faster** option.

Click on this option  
to speed up the  
Filer operation



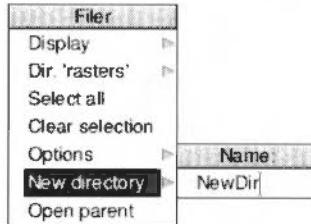
This option makes file operations faster, at the expense of the appearance of the desktop. Normally during file operations, keeping the look of the desktop up-to-date takes priority over speed. If you choose the Faster option, speed takes priority and files and windows are not updated.

The Faster option only lasts for the current filing option; as soon as it is finished the desktop is updated to show any changes that have taken place.

### New directory

To create a new directory:

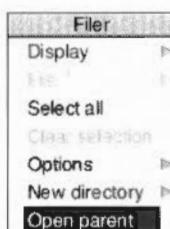
- 1 Open a directory display for the directory in which you want the new directory to reside.
- 2 Go to the **New directory** writable icon. Type in the name you want for the new directory and click on the name or press Return.



A name must contain at least one, and at most ten, printing characters. The name must not contain a space or any of the following characters:

\$ & % @ \^ : , # \* " |

## Open parent



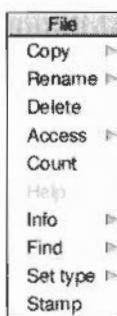
If a directory contains a subdirectory, then it is the 'parent' of that subdirectory. Opening the parent therefore takes you up one 'level' in the filing system tree.

To open the parent of a directory, choose **Open parent**.

Another way is to hold down Shift and click Adjust on the Close icon of the directory display.

This option is not available from the root directory, nor is it, less obviously, from the user directory of a file server. In the latter case, you should use **Open \$** from the icon bar menu of the file server icon.

## File or Dir or App or Selection



**File** is the main Filer menu, enabling you to carry out many different operations on files and directories.

The table below shows the submenus to choose to carry out specific tasks:

Task	Choose	See page
Change the access on a file or directory	Access	22
Copy a file or directory	Copy	20
Copy a file or directory and change the name	Copy	20
Delete a file or directory	Delete	22
Find a file or directory	Find	27
Get information on a file or directory	Info	26
Find out how large is a file or directory	Count	25
Rename a file or directory	Rename	21
Set a file type	Set type	28
Change the time stamp on a file	Stamp	29

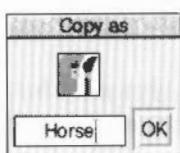
The **File** menu item applies to specific files and directories, and so is only available if you first select the file or directory you want to apply it to. The name of the file or directory will then be incorporated in the menu item – if you select a file called 'Tornado', for example, the menu item will change to **File 'Tornado'**.

You can also put the name of the file or directory in the menu if you move the pointer over an icon and press Menu:

- If you select a directory icon, the name of this option changes from **File** to **Dir**.
- If you select an application icon, the name of this option changes from **File** to **App**.

- If you select more than one directory application or file icon, this option changes from **File** to **Selection**, (not all the submenu options are available when a number of files have been selected).

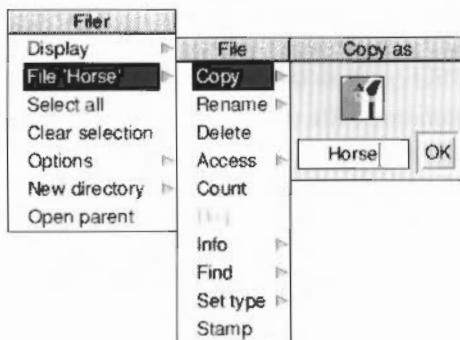
### Copy



The *Welcome Guide* explains the easiest and simplest way of copying – by dragging icons from one directory display to another (from the source directory to the destination directory). This **Copy** option additionally allows you to change the name of the file or directory as you make the copy, so that you can also copy it under a different name to the destination directory, or back into the source directory, so that you can have two copies of the same file, with different names.

#### To copy a file or directory under a different name:

- 1 Select the file or directory, and display the **File/Copy** menu option. The **Copy as** box is displayed.
- 2 Type in the new name of the file or directory. See over for information on valid filenames.
- 3 Click on **OK** (or press Return) for a copy of the file or directory to be made in the source directory, under the new name you have just supplied. To move the copy into a different directory, drag the icon (above the filename) into the destination directory. A copy of the file or directory will appear there, under its new name.



Files and directories can also be **moved** by holding down Shift while dragging their icons from one directory display to another. This is explained fully in the *Welcome Guide*.

### Moving multiple files



The normal way to move multiple files is to select all of the files involved and then drag one of the file's icons while holding down the Shift key. This lets you drag the files as a package – you'll see the package icon.

However, moving multiple files between two floppy discs results in you having to swap floppy discs continually. We recommend that you first Copy the files, and then go back and delete the original files. This substantially reduces the number of floppy disc swaps you have to make.

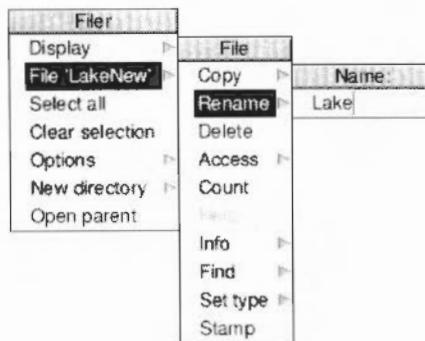
See the section *Copying between floppy discs using a single drive* on page 61 for more information.

### Rename

Name
NewDir

To change the name of a file or directory:

- 1 Select the file or directory, and from the **File** menu go to the **Rename** menu option and display the **Name** box.



- 2 Use the Delete key to erase the existing name and then type in the new name of the file or directory.

A filename must contain at least one, and at most ten, printing characters. The name must not contain a space or any of the following characters:

\$ & % @ \ ^ : , # \* " |

If you are using a DOS formatted disc there are additional filename restrictions; see page 58 for more information.

Upper- and lower-case letters are normally treated as equivalents in filenames. Thus, although a file may be stored under the name Fruit, you can refer to it as (for example) Fruit, fruit, FRUIT, FruiT, and so on.

- 3 Click on the new name, or press Return. The new name will appear in the directory display.

Take care if you are using the NFS Filer (supplied with the TCP/IP Protocol Suite). This filing system **is** case-sensitive since it displays files stored on other types of computer.

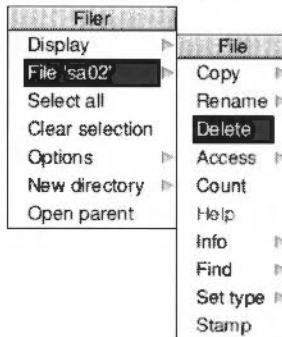
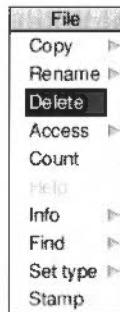
## Delete

**Warning:** Before you use this option, make sure you really want to delete the file. After deletion the file cannot be recovered.

To delete a file or directory:

- 1 Select the file, directory or selection of files that are to be deleted.
- 2 Click Menu in the same filer window. This displays the Filer menu.
- 3 Move to the File, App or Selection sub-menu.
- 4 Choose Delete. The file or directory is then deleted from the directory.

In this example one of the files from the Images directory is being deleted.

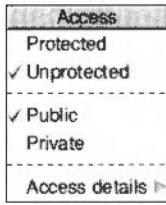


You may not be able to delete a file or directory if it has been locked. To unlock a file you should choose the **Unprotected** option from the **Access** submenu.

You can override all file locks permanently by choosing **Force** from the **Options** menu. This should be used with caution! Always remember to turn the Force option off after you have finished using it; see page 17.

You can select more than one object in a directory display for deletion at the same time by using **Select all**, clicking on several objects with Adjust, or highlighting a block of them. You can only choose files from the same directory display. See page 10 for more information.

## Access



Access to files means **who** is permitted to do **what** to them. The **who** is either you or anyone else; the **what** is read, write to or delete the files. This is of particular interest when your computer is connected to a network.

You can control access to files in two ways: one relatively simple way, and a second way that requires a slightly greater understanding of how access is set. The simple way is as follows:

- 1 Select the file.
- 2 Go to the **File/Access** submenu. If you have selected only one object, there will be a tick alongside either **Protected** or **Unprotected**, and one alongside either **Private** or **Public**. If you have selected more than one object, none of the options will be ticked. The meaning of these options is as follows:
  - **Protected**: the file cannot be deleted or altered (by anyone). This is a good way of preventing damage to files you have finished working on. However the Force option (see page 17), overrides any protection you may have set (unless the file is stored on a network server with different ownership).
  - **Unprotected**: it can be deleted or altered by anyone.
  - **Public**: it can be read by other users on a network (this is irrelevant if you are not using a network, but it is convenient for when you copy objects to a network, since this property will be preserved).
  - **Private**: it can be read by no-one but yourself.
- 3 Choose which of these access parameters you want to set for the selected file.

If you have selected more than one object, none of these options are ticked. If you change the access details of a directory, it affects the access details of all the files contained in the directory.

### Access details

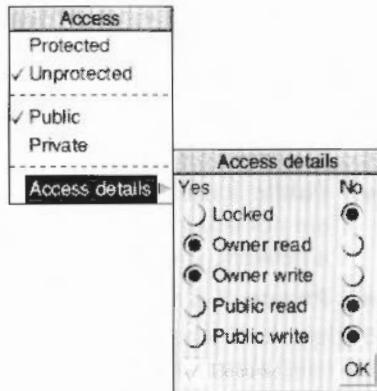
The simple form of access just described is likely to be all that most people need, most of the time. However, you can also set access in a more detailed way that corresponds more closely with the way the computer understands it. To do this, move to the **Access details** option and display its dialogue box

Each of these five options relates directly to one of the five access flags which form part of the properties of a file or directory. The last two come into play only when the object is stored on a network.

When each flag is set:

- **Locked** means that the file cannot be deleted. By default, this flag is not set. You can still delete a locked file if you set your file Options to Force. See page 17 for more information.
- **Owner read** means that the file's owner can read the file (for example, by loading it into an editor). By default, the owner has read access.
- **Owner write** means that the file's owner can write to the file (ie, can change it and save it in the same place with the same name). By default, the owner has write access.

- **Public read** means that other network users can load your files or run an application in your network space. By default, other network users do not have read access.
- **Public write** means that other network users can write to the file. By default, other network users do not have write access.



Click on the appropriate buttons for the object(s) you have selected; click in the **Yes** column to enable an access permission, and in the **No** column to disable it. To apply the change to the contents of directories you have selected (and their contents, if any, and so on), click in the **Recurse** box so that a tick appears. If you change your mind, you can remove an option by clicking on it with Adjust; most directories do not have any access details set. When you are ready, click on **OK**. The Recurse box can only be used with applications and directories.

The ways of setting access relate to each other as follows:

- If a file is **Protected**, it is Locked, Owner write is disabled and Public write is disabled.
- If a file is **Public**, it has public read access enabled.
- The owner read and public write flags can only be set using the **Access details** dialogue box.

If you select a directory, the access details are not set. If you then set any access details they will affect all of the files within that directory.

If you use a Level 4 file server, you should make sure that you do not set directories to **Locked**. This is because the Locked option may make directories invisible to other users on the network.

### How to identify the file access permissions

There are several ways to find out the access permissions for a file. Most obviously you can display the **Access/Access details** dialogue box.

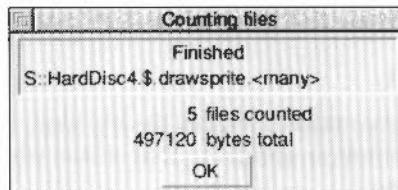
Another way of finding the file access permissions is to display the files using the **Full info** menu option. This option shows the access permissions in cryptic form in the third column. Owner access permissions are indicated by the letters before the /, and public access after the /. L is short for Locked. R (or r) is short for read access. W (or w) is short for write access. Here are some examples:

ADFS : HardDisc4 \$ . drawsprite			
Horse	LR/r	110K Sprite	13:21:45 24 Feb 1993
LakeNew	WR/r	106K Sprite	14:06:18 24 Feb 1993
Map	WR/	269K DrawFile	16:45:46 25 Feb 1993
MapText	LR/	936 Text	16:51:05 24 Feb 1993
Sign	WR/wr	472 DrawFile	14:53:14 26 Feb 1993

One other way is to use the **Info** option; see page 26 for more information.

### Count

Choosing **Count** will display the number of files selected and their total size in bytes.

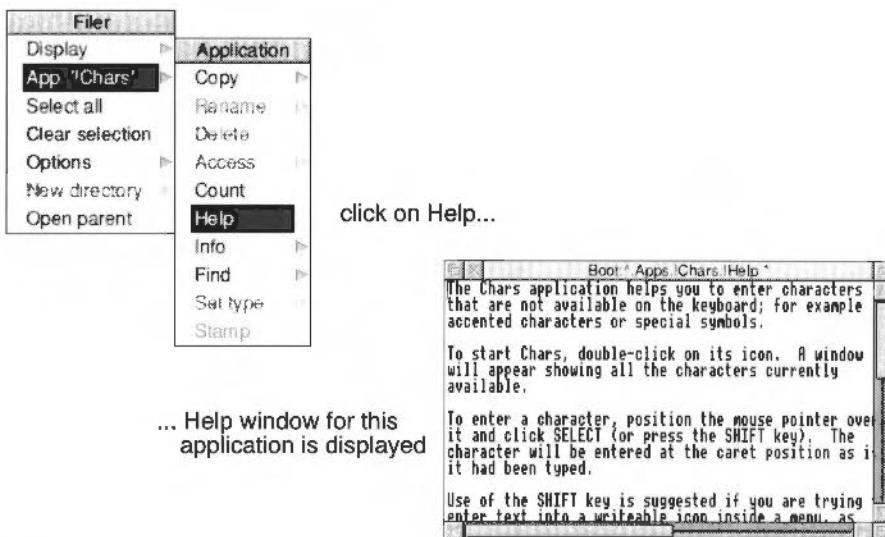


When you calculate file sizes remember that there are 1024 bytes in a kilobyte and 1024 kilobytes in a megabyte.

A 1.6MB format disc actually holds 1600 kilobytes – 1 638 400 bytes.

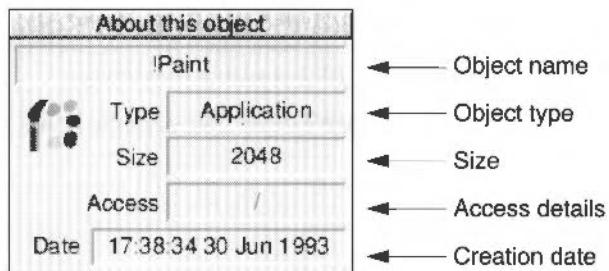
## Help

When an application is highlighted, choosing **Help** will display a help file for the selected application. This option is greyed out if the application does not have a help file, or if the selection is a file or directory. Here is an example of the help screen from the !Chars application.



## Info

Choose **Info** to display the file type, size, access details and date last modified – information similar to that shown when you choose **Full Info** from the **Display** menu.

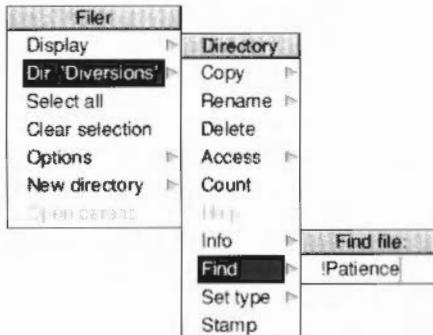


## Find

You may have saved a file or directory somewhere in a directory structure, but are unable to remember where. **Find** enables you to do so.

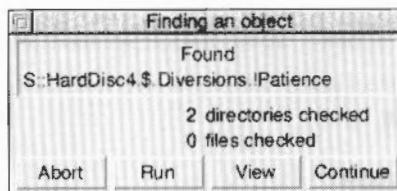
To find an object:

- 1 Select the directory or directories you want to search.
- 2 Display the **Directory** (or **Selection** if you have selected more than one) **Find** writable icon.



- 3 Type in the name of the file you want to find. Click on the name, or press Return.

As the search proceeds, a box is displayed showing its progress through the directory structure you have specified.

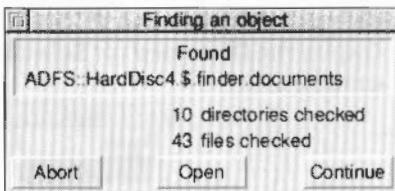


If the object found is a **file**, the dialogue box gives you the following options:

- **Abort** the search.
- **Run** the file. If the file is a program, it will be run; if it is a document, it will be loaded into an appropriate editor (if one can be found).
- **View** the directory containing the file.
- **Continue** to search for another object with the same name.

If the object found is a **directory**, you will see the following options

- **Abort** the search
- **Open** the directory
- **Continue** to search for another object with the same name.



The **Find** option can also use *Wildcards*. These are characters that are used to represent unknown characters in the name you are searching for.

There are two wildcard characters:

- \* which represents zero or more characters of any sort.
- # which represents 1 character of any sort.

For example:

- aeo\* would match aeo, aeon and aeons. It matches any name that begins aeo.
- aeo# would match aeon. It matches any four letter name that begins aeo.
- aeo## would match aeons. It matches any five letter name that begins aeo.

All Find parameters are case-insensitive; AEO# is considered to be the same as aeo#.

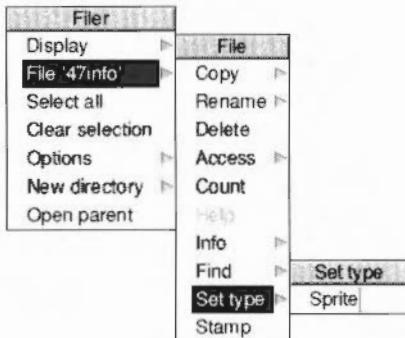
### Set type

Every file has a file type. The file type determines what happens when you double-click on a file icon. For example, files of the type Text are loaded into Edit, files of the type Obey are interpreted as lists of commands to be carried out, and so on.

To change a file's type:

- 1 Select the file whose type you want to change.
- 2 Display the **Set type** name box.

- 3 Type the name of the file type you want, in normal text or as a hexadecimal number. For a list of file types, refer to the appendix RISC OS *file types* on page 517.

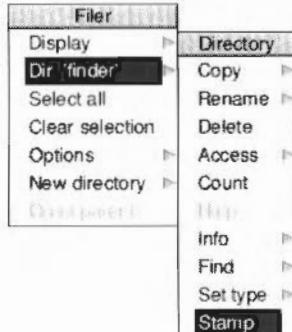


### Stamp

Files record when they were last altered, and directories when they were first created. This information is shown when you display **Full Info**, or when you select a specific file or directory and ask for **Info** about it (see page 26). The time and date used is that provided by the computer's real-time clock, which can be set using the Alarm application.

**Stamp** enables you to update the date and time stamping on files and directories to the current date and time. To do this:

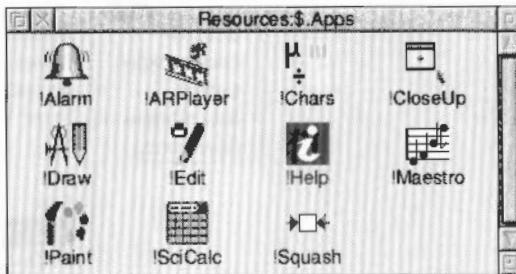
- 1 Select the object(s) you wish to stamp.
- 2 Choose **Stamp** from the **File (Directory or Application)** submenu. The date stamp will be updated. You can check this using the **Info** menu option.



## The Apps directory



When you click on the Apps icon on the icon bar (next to the floppy disc icon) you see a directory display containing some of the most often used Acorn applications. The three most generally used RISC OS applications – Edit, Draw, Paint are among those shown in the Apps directory display.



Resources  
Open '\$'

The Apps directory has its own icon bar menu with an option specific to the internal filing system. Click on menu over the Apps icon on the icon bar and choose the option **Open '\$'**. The directory display shows the internal resources used by the operating system. This directory is only used by the operating system and the desktop.

Information about using these applications starts on page 169.

### Changing the contents of the Apps directory

The Apps directory is used in exactly the same way as any other directory. However the contents of the Apps directory can be changed to suit your personal preferences. The configuration application **!Boot** is used to configure which applications are displayed in the Apps directory. For more information about configuring your computer turn to the chapter *Setting the desktop configuration* on page 117

## The Pinboard

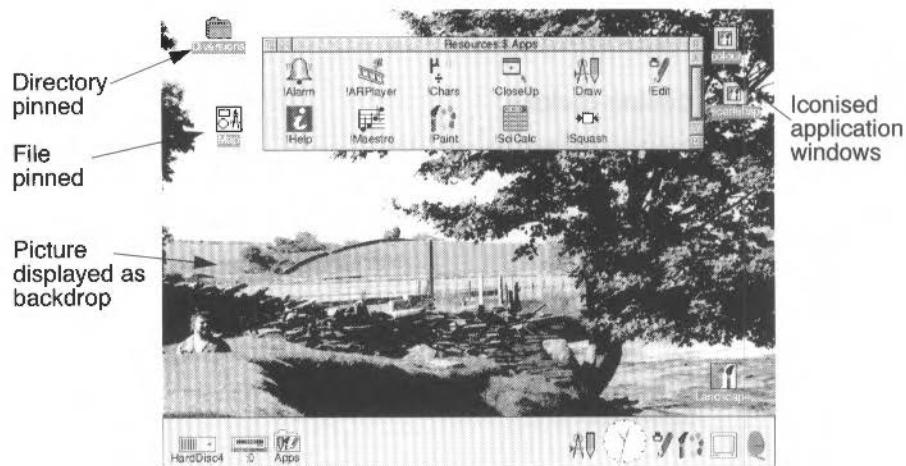
So far this chapter has shown you how to use the Filer to manipulate your files, directories and applications. This section shows you how you can add another layer to the Filer by using **Pinboard**. You might have found out about Pinboard already, if you accidentally dragged and dropped an icon onto the screen background. In the rest of this section we'll call the desktop background the Pinboard.

### Pinboard

Without using Pinboard, the computer screen just shows the icon bar, one or two directory windows and maybe an application such as Edit. These windows sit on the screen background, which is normally a grey tint.

With Pinboard, the screen background is transformed into just that, a pinboard on which you can pin icons. You can

- pin files, directories and applications to the Pinboard
- double-click on these pinned items to activate them just as you would do if they were in a directory display
- move files around on the Pinboard
- display a picture on the background (a backdrop)
- make application windows into application icons to save space on the desktop.



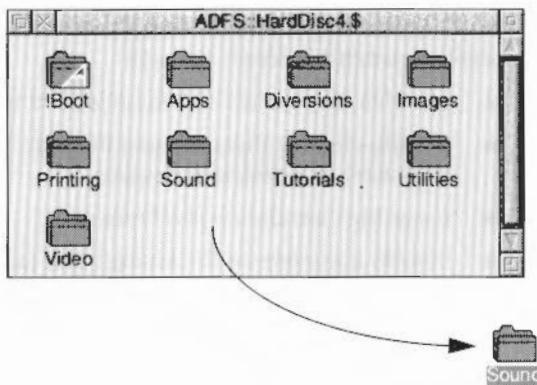
A sprite is a picture that has been saved in the format used by the Paint application. You'll find details of sprites and how to create and edit them, in the chapter *Paint* on page 271.

## Using Pinboard

This section shows you how to use the Pinboard. The techniques used are much the same as those used in normal file manipulations.

### Putting an icon on the Pinboard

To put an icon on the Pinboard, simply drag it from a directory and drop it anywhere on the background. Icons can be moved around the Pinboard in a similar way.



### Double-clicking

Double clicking on any of the icons on the Pinboard has the standard effect. Files are loaded into their respective applications and displayed. Directories are opened and displayed. Applications are started; applications can also be started by dragging them to the icon bar.

### Copying

Icons dragged from the Pinboard to a directory display are copied to the new directory. However files cannot be **moved** from the Pinboard to an alternative directory.

## Iconising active application windows

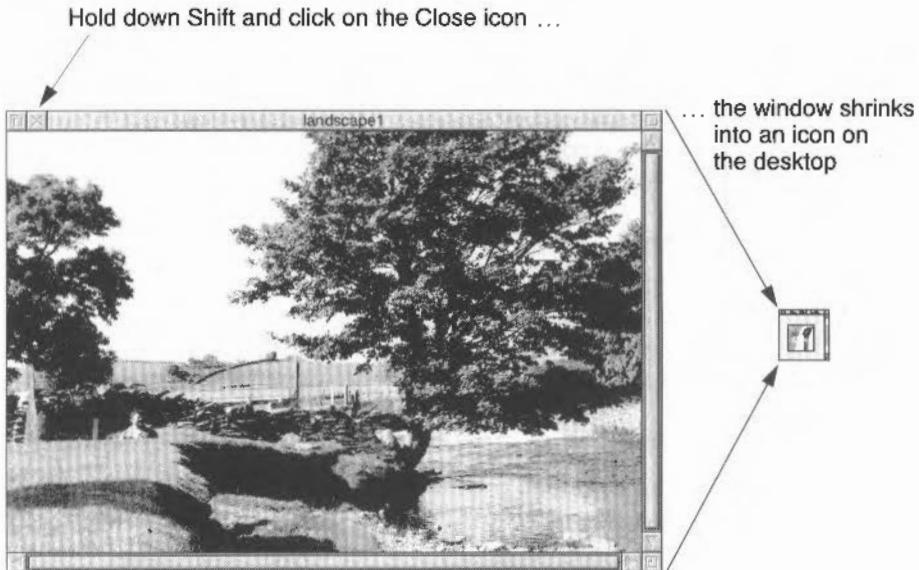


Pinboard allows you to iconise an application's windows, that is to say, shrink a currently open window into an icon. For instance, you may have a file that you are editing that you want to set aside for a while; you can choose to iconise this Edit window. Iconised application windows are distinguished by having an icon enclosed by scroll bars.

By iconising application windows, you can keep windows active on your desktop, without the problem of filling up your desktop with unused windows.

### How to iconise a running window

Any window that has a Close icon can be iconised by holding down Shift and clicking on the Close icon. Iconised windows can be redisplayed simply by double-clicking on them.



## Displaying the Pinboard menu options

Pinboard	
Info	▶
Tidy	▶
Grid lock	▶
Remove icon	▶
Select all	▶
Clear selection	▶
Make backdrop	▶
Remove backdrop	▶
Save	▶

Like the Filer, Pinboard is controlled by a menu. To display the menu options, press Menu anywhere over the desktop background. To see the options available for a particular icon on the background, click on the icon and press Menu; or press Menu over the icon when there is no other selection.

Use the following table to decide which menu option you need to carry out a particular task:

Task	Option
Tidy all icons into rows	Tidy
Do not allow icons to overlap	Grid lock
Remove a selected icon from the Pinboard	Remove icon
Remove several selected icons	Remove selection
Select all the icons on the Pinboard	Select all
Deselect icons	Clear selection
Use a sprite as a backdrop	Make backdrop
Remove a backdrop	Remove backdrop
Save the Pinboard configuration	Save

The Remove option does not delete your files. It simply removes the icon from the Pinboard display.

### Tidy

Click on **Tidy** and all of the Pinboard icons line up neatly from left to right along the top of your screen. This option does not tidy iconised application windows. If you change the screen display resolution your icons may disappear off the edge of the screen; choosing the Tidy option brings them back again.

### Grid lock

The **Grid lock** option ensures that icons do not overlap each other. Icons line up on an invisible grid on the screen. If you want to be able to place your icons anywhere, make sure that this option is not ticked. This option does not Grid lock iconised applications.

### Remove icon and Remove selection

If you press Menu over an icon, you can remove it by clicking on **Remove icon**. You can also use this with the **Select all** and **Remove selection** options to remove all the icons. Removing an icon from the Pinboard does not delete it from your disc.

You can also use the Adjust button to select several icons and then use the **Remove selection** option.

You cannot remove iconised application windows in this way since these iconised windows may contain data that you are currently changing. Iconised windows must be double-clicked on and then closed using the Close icon.

#### Select all

**Select all** selects all icons on the Pinboard (apart from iconised application windows).

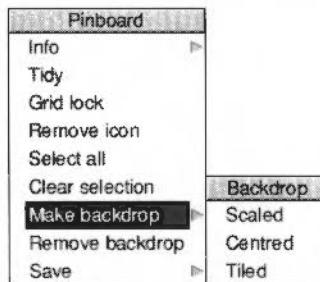
#### Clear selection

**Clear selection** deselects all icons on the Pinboard.

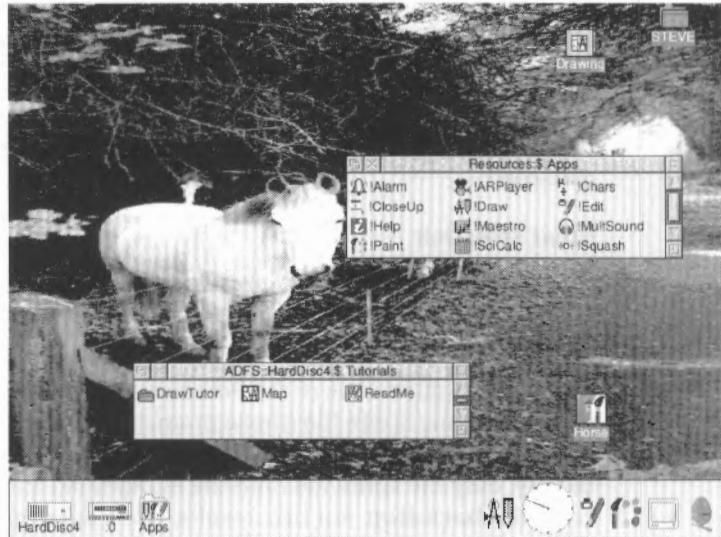
#### Make backdrop

One of the prettier uses of the Pinboard is to display a picture as a backdrop. You can display any Sprite file (those produced by Paint for example). The sprite is automatically resized so that it occupies the whole of the background. To display a picture, drag the sprite file onto the background and click menu over it; then click on **Make backdrop**. For best results, use a desktop that can display the same number of colours as there are in the backdrop picture. For more information refer to the chapter *Desktop colour and resolution* on page 79.

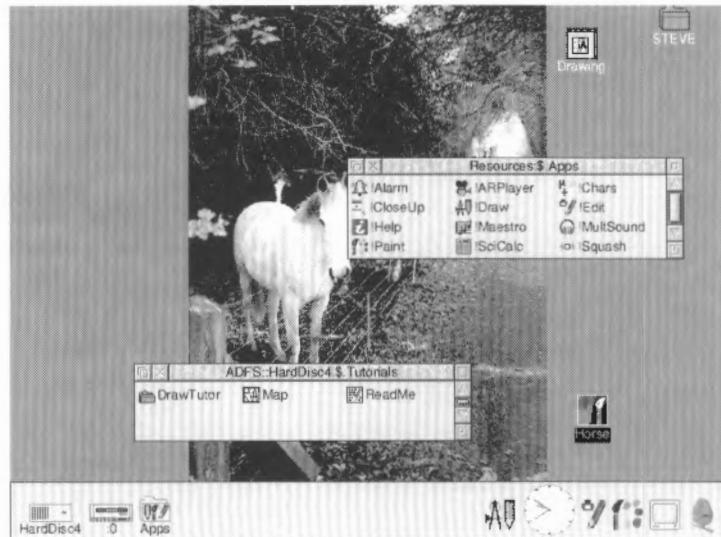
**Make backdrop** also has a submenu for finer control of backdrop pictures:



The **Scaled** option has the same effect as clicking on **Make backdrop**. The sprite is scaled to fill the whole screen. However, this option may result in a distorted backdrop as the proportions of the original picture are not maintained.



The **Centred** option has the effect of centring a sprite on the background. The desktop retains the correct proportions of the sprite.

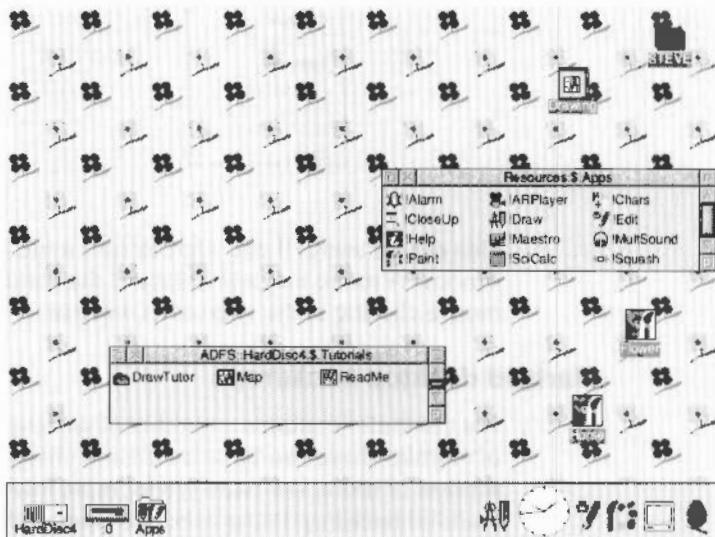


The **Tiled** option makes multiple copies of the sprite and tiles them so that the backdrop fills your screen. This is useful if you have a small sprite design that you want to use; try it and see (the sprite example shown below is taken from the Paint tutorial on page 272).



This sprite when tiled...

...gives this backdrop.

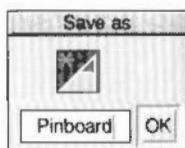


**Note:** Each time you use the Display Manager to change the Resolution or Colours used by the desktop, the original sprite is required to be read again. This may take some time if the sprite is stored on floppy disc.

### Remove backdrop

You can remove a backdrop picture by clicking on **Remove backdrop**. This option does not delete any files.

### Save



**Save** allows you to save your Pinboard configuration to a file. Double-clicking on this file restores Pinboard to its saved state. The Pinboard configuration is also saved with a Desktop boot save. You cannot save information about iconised application windows.

More information about the commands used to record Pinboard configuration information can be found in the appendix *Configuration information* on page 497.

## Iconised application menu options

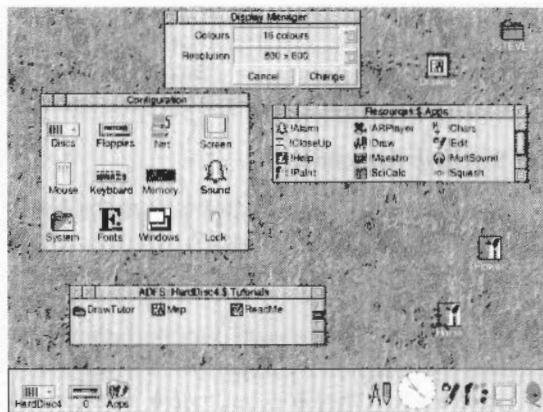
If you press Menu when the pointer is over an iconised application window, you see the standard Pinboard options. However if you hold down Shift and press Menu you display the menu options associated with the running application's windows.



This can be useful if you want to save a file without actually opening the file window. A menu may not appear if the window that was iconised did not allow mouse clicking at the edge of its window, or if the window did not use menus at all.

## Marbled desktop backdrops

The computer contains a number of desktop backdrops that look like various types of marble. These can be selected and changed using the Screen configuration window of !Boot; see page 128 for more information. The following picture shows a marbled backdrop being used with marbled window backgrounds.



## Filing systems and the desktop

This section describes the types of filing systems used by the desktop to manipulate files on the desktop and the control storage devices that are used by the desktop to store information.

Fortunately most users need to know very little about these different filing systems, as most of their functions are controlled using the desktop by one 'master' filing system, called the Filer.

This section is provided to give the interested user some additional information. It does not contain essential information; most users can skip this section and go on to the next chapter.

### Types of filing systems

The RISC OS operating system provides and supports a number of different filing systems, which have been designed to suit the type of storage device on which they are found. The main filing systems are

- ADFS, used with floppy discs and some types of hard disc
- SCSI, used with some types of hard discs, tape drives and removable drives
- CDFS, used with CD-ROM compact discs
- NetFS, used with file servers connected via an electronic network
- RAMFS, used with RAM discs.

The RISC OS Filer and desktop give a uniform user interface to all these filing systems, but with each system there are a few special features provided; these are accessed from each device's icon bar menu.

#### ADFS and SCSI

Most hard discs use ADFS although some use SCSI. SCSI can be fitted as an option along with a SCSI expansion card.

The Filer and desktop treat these discs in exactly the same way.

#### CDFS

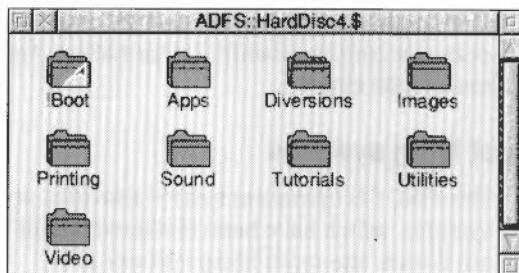
CDFS is a filing system used to control CD-ROM players. You need a CD-ROM drive and the CDFS software.

#### Networking

The NetFS filing system is used to connect electronically to other computers. Some systems may also use NFS, a high-speed networked filing system (for computers running the TCP/IP Protocol Suite).

## Finding out the filing system type

If you want to find out which filing system you are using, look at the name in the title bar of the window. This name always starts with the filing system, for example, ADFS. Filing systems are usually associated with physical storage devices. The icons for the storage device(s) connected to your computer appear on the lefthand side of the icon bar. These are identified by different names or numbers.



## Disc drive numbering system

The drive numbers assigned to hard and floppy discs are not normally used. The numbers are not used by the desktop (earlier computer systems used them), so you should always name your discs.

To find out the drive number of a disc, click Menu over the hard disc icon on the icon bar, and the menu title bar tells you the filing system name followed by the disc number. Historically :0 is the number of the floppy disc drive and :4 is the number of the first hard disc drive. A second hard disc drive would be numbered :5.



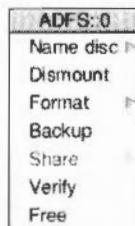
In the last chapter we showed you how the desktop, in conjunction with the Filer, is used to control the computer. In this chapter we show you some more desktop options that give you further control of the hard disc and floppy disc. You'll also find out more about using RAM discs – an area of computer memory used as a disc.

## Floppy and hard discs



Your computer is fitted with a floppy disc and a hard disc. These enable it to store large amounts of information for long periods of time; then, when needed, it can retrieve the information quickly so that it can be used again. You'll find some more general information about discs and disc drives in the *Welcome Guide* supplied with your computer. Hard discs work in a similar way to floppy discs but are much faster and can store many times more information.

### Menu options



Click Menu over the floppy disc icon on the icon bar, and the disc menu is displayed. The disc menu gives you access to the special tasks you may need to carry out using discs and disc drives.

Clicking menu over the hard disc drive icon displays a similar menu for the hard disc although the **Format** and **Backup** options are greyed out as they are handled by separate applications.

Use the following table to decide which menu option you need to carry out a particular task:

Task	Choose	See page
Backup a floppy disc	Backup	50
Check a disc for defects	Verify	54
Check how much space is left on a disc	Free	55
Clear a disc's directory displays off the screen	Dismount	43
Close all the files on a disc	Dismount	43
Format a floppy disc *	Format	45
Park the heads of a hard disc	Dismount	43
Rename a disc	Name disc	42

\*See the chapter *HForm* on page 363 for information about formatting hard discs.

## Disc names

All floppy discs and hard discs can be given names. Names that you recognise and understand are helpful since they remind you of the files stored on the disc.



The name of a hard disc is shown underneath the hard disc icon on the icon bar and in the title bar of directory displays. Names of floppy discs are only shown in the title bar of directory displays. The floppy disc drive icon on the icon bar always has the number :0 beneath it. If a hard disc is not given a name it is given the number :4 and (if a second hard disc drive is fitted) :5.



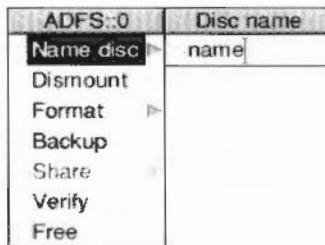
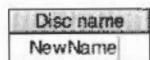
Each disc may be referred to either by a name, or by the number of the drive on which it is mounted. You should use names, since the filing system can prompt you to insert a floppy disc by name if it is needed.

It is advisable to keep disc names unique, so that the filing system can tell them apart. When you format a floppy disc, unless you give it a name, it is automatically given a name based on the current date and time.

### Setting and changing disc names

To set or change the name of a disc:

- 1 In the case of a floppy disc, ensure that the disc is formatted and is not write-protected, then insert it into the disc drive.
- 2 Click Menu over the floppy disc icon on the icon bar.
- 3 Move to **Name disc** on the icon bar menu for the disc drive.
- 4 Move in the direction of the right arrow to display the **Disc name** box.
- 5 Type in the name (it must be at least two characters long).
- 6 Press Return or click a mouse button.



If you have any directory displays open for the disc, they will be closed when you rename the disc.

## Naming restrictions

A disc name must contain at least one, and at most ten, printing characters. The name must not contain a space or any of the following characters:

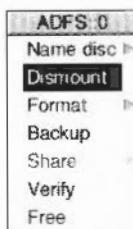
\$ & % @ \ ^ : , # \* " |

## Changing the name of a hard disc

If you change the name of a hard disc you may find that certain start-up files no longer operate correctly. This is probably because they refer to the old hard disc name rather than the new one. The files that may need changing are discussed in the chapter *Modifying the system start-up configuration* on page 139.

## Dismount

### Dismounting discs



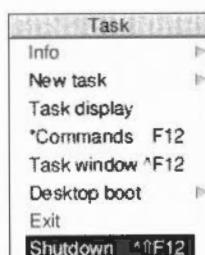
When a floppy disc has been inserted into the computer, and its directory is displayed, it is said to be 'mounted'. When you have finished with a disc, it is useful to 'dismount' it. This closes all the files on the disc, removes its directory displays from the screen, and tells the computer to forget about it.

To dismount a disc:

- 1 Insert the floppy disc into the disc drive (if it's not still in there).
- 2 Click Menu over the floppy disc icon on the icon bar.
- 3 Choose **Dismount** from the icon bar menu for the disc drive.

**Warning:** Do not dismount a disc during a Filer operation on that disc.

### Dismounting hard discs

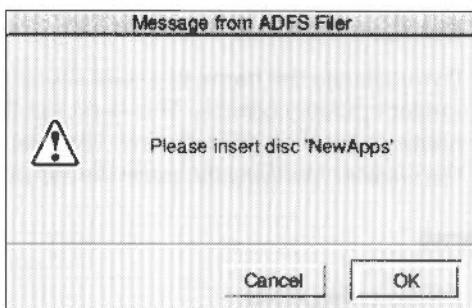


Dismounting a hard disc also parks its heads so that once the computer has been turned off the computer can be moved safely. The disc remains dismounted until the next time it is accessed, or until the machine is next switched on. It is good practice to dismount the disc before switching the computer off; you can do this automatically by using the **Shutdown** command from the Task Manager menu. This command logs you off networks, dismounts the disc and prompts you to save any unsaved files.

## Using several floppy discs



If the file, directory or application you want is on a floppy disc that is not currently in the disc drive, the desktop asks you to insert the floppy disc. Insert the disc into the drive and the computer finds the required files automatically.



If you decide not to go through with the operation (for example, if the requested disc is not available), click on **Cancel**.

The desktop remembers the names of the last eight floppy discs that have been inserted into the disc drive. If you insert and use a disc that has exactly the same disc name as one already in use, the 'earlier' disc will be forgotten about. You should always try to use unique disc names.

## Copying between floppy discs

When you are copying from one floppy disc to another using a single floppy drive (by dragging a group of objects), you may be asked to swap the discs occasionally, which becomes tedious when copying many files and directories. It is probably faster to copy the files from floppy disc to hard disc and then from the hard disc to the new floppy disc.

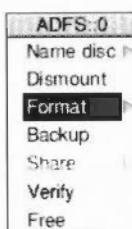
## Format

### Formatting discs

Formatting a disc means setting up a structure on the disc within which data can be stored. You will need to format a disc in the following circumstances:

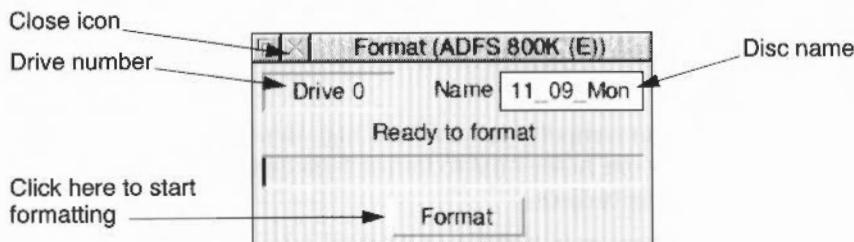
- To prepare a new, blank disc for use. (If you try to use a disc that has not been formatted, you'll see an error message.)
- To erase the entire contents of a disc and bring it to a known, clean state.

**Warning: When a disc is formatted, any data that was previously stored on it is permanently lost.**



### To format a floppy disc:

- 1 If the disc is not already in the drive, insert it.
- 2 If the disc is not a new one, and a directory display for it is on the screen, dismount the disc by choosing **Dismount** from the icon bar menu.
- 3 Move to the **Format** submenu of the icon bar menu for the disc drive.
- 4 Choose the disc format. You should choose the ADFS 1.6M format if you have a high density floppy disc and the ADFS 800K (E) format if you have a standard double density floppy disc. This displays the Format dialogue box.



- 5 Give the floppy disc a unique name by deleting the contents of the Name box and typing in the new disc name. See page 42 for details of file and disc naming conventions.  
If you don't give a floppy disc a name, the default name given to the disc is based on the date and time: for example 11\_27\_Mon.
- 6 Click on **Format** to go ahead with the operation or click on the close icon to abandon the operation. During formatting and verifying, an indication of the progress of the operation is displayed. You can interrupt the formatting process by clicking on **Pause**.
- 7 When formatting is complete you will see the message **Disc formatted OK**. Finish formatting by clicking on **OK**.

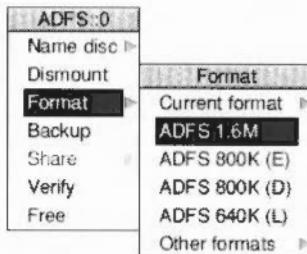
If the disc formatting process finds errors on the disc, you should turn to page 48 for instructions on how to remove the defect.

The following pages describe the available disc formats in more detail.

### RISC OS disc formats



Formats are chosen from the **Format** menu on the Floppy disc icon bar menu.

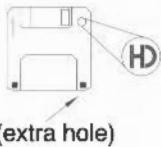


Your computer can use both high-density and low-density discs. Usually you would choose ADFS 1.6M to format high density discs and ADFS 800K (E) to format low density discs.

There are four different RISC OS formats available:

- **ADFS 1.6M.** This format can store 1.6MB of data.  
High density floppy discs (1.44MB IBM type) must be used (they are normally marked HD). High density discs **must** be formatted using this format.
- **ADFS 800K (E).** This format can store approximately 800K of data.  
This format uses standard floppy discs (720K IBM type). These discs are also compatible with RISC OS computers that are **not** fitted with high density disc drives.
- **ADFS 800K (D).** The format can store approximately 800K of data.  
This format is now obsolete and is included for backward compatibility only.  
It is compatible with the Arthur 1.20 operating system.
- **ADFS 640K (L).** The format can store approximately 640K of data.  
This format is now obsolete and is included for backward compatibility only.  
It is compatible with Arthur 1.20, ADFS on the Master, Master Compact, BBC Model B and BBC Model B+ computers fitted with 3.5" disc drives. Each directory can contain up to 47 files and subdirectories.

High density

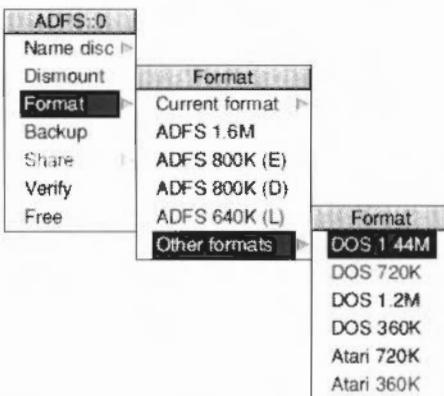


Double density



### Other disc formats

-  Additional formats are chosen from the **Format/Other formats** sub-menu.



There are two different PC-compatible formats for floppy discs. These formats are compatible with computers that use the MS-DOS or DR DOS operating systems:

- **DOS 1.44M.** This IBM format stores up to 1.44MB of data.  
Discs using this format can be read from and written to by any DOS computer with a high density 3.5" disc drive. High density floppy discs (1.44MB IBM type discs) **must** be used (they are normally marked HD).
- **DOS 720K.** This IBM format stores up to 720K of data.  
The disc can be read from and written to by any DOS computer with a 3.5" disc drive. Standard density floppy discs (720K IBM type) must be used.
- **DOS 360K and DOS 1.2M.** These IBM formats are used with 5.25" disc drives.  
These formats require that you purchase third party hardware and software.\*  
The 360K format requires 5.25" double-density discs and disc-drives while the 1.2M format requires 5.25" high-density discs and disc-drives.

There are two different Atari compatible formats for floppy discs:

- **Atari 720K.** This Atari format stores up to 720K of data.  
The disc can be read from and written to by any Atari ST computer with a double-sided 3.5" disc drive. Standard density floppy discs (720K IBM type) must be used.
- **Atari 360K.** This Atari format stores up to 360K of data.  
The disc can be read from and written to by any Atari ST computer with a 3.5" disc drive. Standard density floppy discs (720K IBM type) must be used.

### DOS-formatted discs

DOS-formatted discs should **only** be used if you are transferring files to or from a DOS computer or storing DOS files on the disc. Files stored on DOS discs are stored according to DOS file naming conventions and not RISC OS conventions.

For more information about DOS files and discs, read the section *Using MS-DOS and DR DOS discs* on page 58.

### UNIX and Apple computers

Many UNIX computers incorporate software that allows the computer to read and write to DOS-formatted discs in much the same way that RISC OS does. Most Apple computers also have software that allows the computer to read and write to DOS-formatted discs.

### 5.25" discs

You can buy third-party interface boards that allow you to add 5.25" discs to your computer.

These can allow you to read BBC Master ADFS and DFS discs (with suitable software) as well as DOS 360K and 1.2M discs.

### Atari-formatted discs

Atari-formatted discs should **only** be used if you are transferring files to or from an Atari computer or storing Atari files on the disc. Files stored on Atari discs are stored according to Atari file naming conventions and not RISC OS conventions.

### ADFS 800K (D) and ADFS 640K (L) formats

These formats are for backwards compatibility with earlier Acorn systems only.

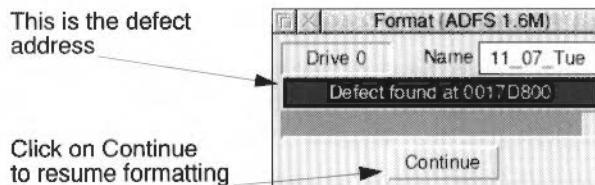
When you are using ADFS 800K (D) and ADFS 640K (L) formats, you may occasionally need to 'compact' the disc; a message appears on the screen when compaction is necessary. To compact your disc use the \*Compact command from the command line. For more information read the chapter *Star command summaries* on page 443.

### Disc errors during formatting

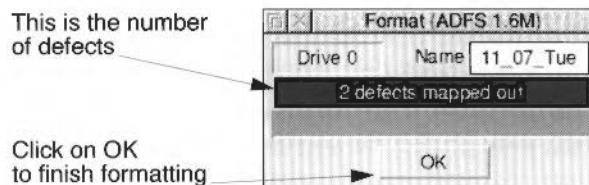
Faults that prevent data from being read from or written to a part of the disc are known as defects.

The formatting process is designed to deal with any defects found on the floppy disc. Any defects found are displayed during the formatting and verifying process.

If a defect occurs, click on **Continue**: this marks the area of the disc as defective and ensures that it is not used. If you don't want to continue with the format/verify process, click on the window's Close icon.

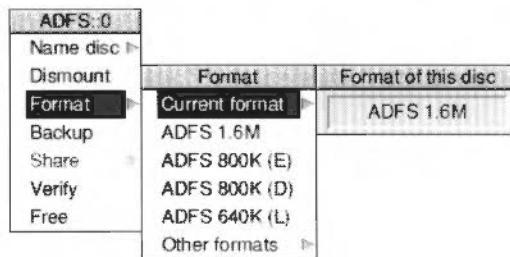


If you get continual disc errors with a floppy disc, the disc may be defective and you should throw it away. When formatting has finished the window shows you how many defects were mapped out (marked as not to be used).



### Current format

If you want to find out what type of format a floppy disc has, put the floppy disc in the disc drive and, from the **Format** menu, display the **Current format** box. This will tell you the format type and storage capacity of the floppy disc.

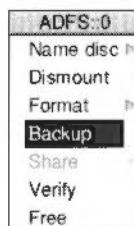


### Formatting a hard disc



Hard discs are supplied ready-formatted, and you should not need to reformat them. In the unlikely event that a hard disc does have to be reformatted, use the application **HForm**, described on page 363.

## Backing up floppy discs



It is a good idea to make backup copies of floppy discs from time to time, in case a disc is damaged or a file is accidentally deleted. In addition, it is recommended that you make backup copies of applications supplied on discs, and use the backups as your working discs.

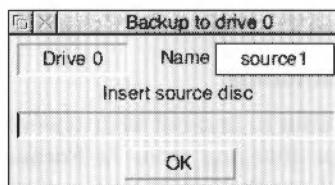
You should format the discs that you are using for the backup process and discard any that contain defects – even if they have been mapped out by the process. Do not use discs that have defects.

The backup process copies an entire floppy disc (from the 'source' disc to the 'destination' disc) as a single operation. You can only back up onto discs with the same format as the source disc.

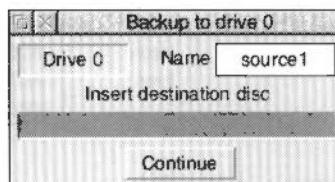
**Warning: Backing up a disc deletes the entire previous contents of the destination disc.**

### To back up using a single disc drive:

- 1 Choose **Backup** from the icon bar menu for the disc drive. If the destination disc is a new, blank disc, it must be formatted first (see **Format** on page 44).
- 2 When prompted, insert the source disc into the disc drive and click on **OK**. For safety, write-protect the source disc.



- 3 Similarly, when prompted, insert the destination disc, and click on **OK**. Repeat steps 2 and 3 as prompted until all of the data has been copied. The destination disc will be given the same name as the source disc.



4 When the Backup has finished, click on the OK to conclude the operation.

If you are using your computer a lot, it is good practice to back up the files you have been working on at least once a day, and to back up all your files once a week, or once a month. Naming discs with the date of the backup will help you find out when the backup was made, without having to check the date of the files on the disc.

## Backing up hard discs



Hard discs can be backed up by copying valuable data and applications to floppy discs. The backup procedure used for hard disc differs from that used for floppy discs.

You should keep backup copies of the directories

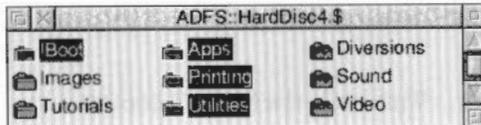
- !Boot
- Apps
- Printing
- Utilities.

You should also back up any data you may have produced and applications that you have installed.

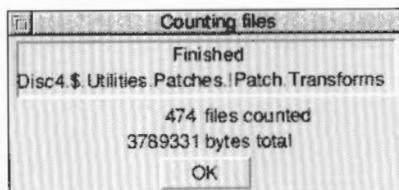
**Warning:** This backup procedure does not back up files that are bigger than the size of a single floppy disc (approximately 1.6M).

You should back up your hard disc using the following procedure:

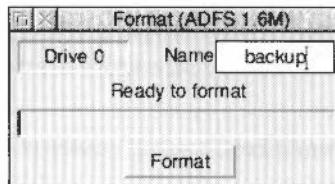
- 1 Click on your hard disc icon to see the directory display.
- 2 Select all of the main directories that you wish to backup. You can only choose directories from a single directory display.



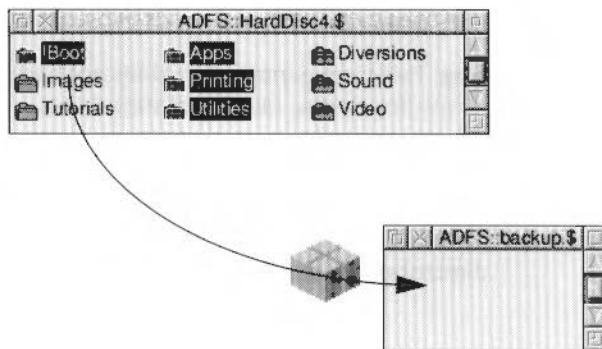
- 3 Choose the **Count** option from the **Selection** menu.



- 4 Take the figure given by the Count option and divide it by 1,000,000. This will give the approximate number of high-density floppy discs needed to store the information on. Use SciCalc, the calculator application, to perform the calculation. See page 393 for more information about SciCalc.
- 5 Format this number of high-density floppy discs using the 1.6M format.
- 6 Give all of the discs exactly the same disc name – call them Backup for example.

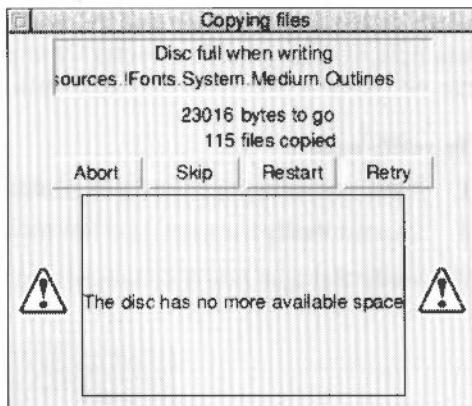


- 7 Put the first of the backup discs in the disc drive and click on the floppy drive icon view the directory display
- 8 Select all of the directories you are to backup and drag them to the floppy directory display.

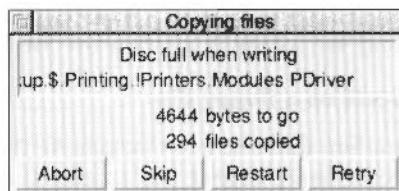


- 9 Wait while the files are copied.

- 10** When the Disc full when writing error message is displayed remove the floppy disc and replace it with the second backup floppy disc. Be sure to label the order in which the floppy discs are used.



- 11** Click on the floppy disc icon to view the directory display.  
**12** Click on **Retry**.  
**13** Repeat this procedure each time you see the Disc full error message.



- 14** When the copying process is finished the backup is complete.  
If you need more floppy discs you can format them, given them the correct disc name and then continue on with the backup.

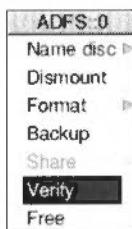
### Restoring the data

You can restore the data by inserting the first floppy disc in the disc drive, clicking on the floppy disc icon and dragging its contents to the root directory. When the first floppy disc has been copied over, insert the second disc, click on the floppy disc icon and repeat the procedure; carry on until all the discs have been copied.

### Other ways to back-up files

To fit more information onto floppy discs, you can use the file compression application !Squash; you'll find more information about this in the chapter *Squash* on page 401.

## Verify

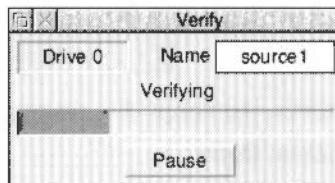


You can check whether the disc is free from defects by verifying the disc. Verifying checks that all the data on the disc is readable (it does not check that the data is correct). This is not something you need to do very often, but is a good idea if, for example, you have made a backup of important data and want to check that it is stored safely. A disc is verified automatically when you format it.

### To verify a disc:

- 1 If you are verifying a floppy disc, insert it in the disc drive.
- 2 Choose **Verify** from the icon bar menu for the disc drive.

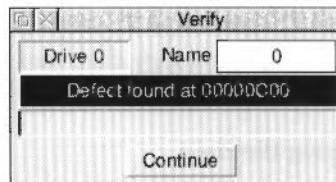
The Verify dialogue box is displayed and the verify starts.



If there are no faults on the disc, the message **Disc verified OK** appears.

### Defects on a floppy disc

If you find that there are defects on the floppy disc, click on **Continue** to carry on with the verify; repeat this process if any further defects are found.



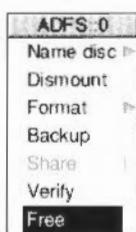
The easiest way to remove the defects is to format the disc again. This allows you to mark the faulty areas of the disc as bad so that they are not used again.

### Defects on a hard disc

If there is a fault on the disc, the position of the error on the disc is displayed.

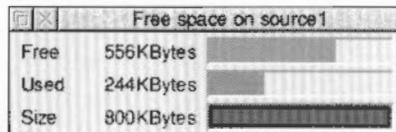
- 1 Write down the number displayed.
- 2 Click on **Continue** to carry on with the verify, repeat this process if any further defects are found. When the verify ends you should have a list of the defects found.
- 3 Turn to the appendix *Removing a disc defect* on page 529 and follow the instructions given there.

### Free



To check how much free space is available on a disc, choose **Free** from the icon bar menu for the disc drive.

This shows the amount of unused space on the disc, together with the amount of space that has already been used. The total disc size is shown as well. This window is updated whenever the space available on the disc changes.



### Adding more applications to the hard disc

Adding applications to the hard disc is quite easy. Most applications should simply be copied into a directory on the hard disc. Some applications require you to add system modules or fonts to the computer. These are normally supplied as !System and !Fonts files. To add these to the computer they should be merged using the !Boot application:

- To add a !System to the computer refer to *System* on page 130.
- To add a !Fonts to the computer refer to *Fonts* on page 130.

Do not copy a !System or !Fonts directly onto your hard disc.

You must not double-click on a !Fonts or !System icon. This will confuse the computer resulting in erratic operation. If you have double-clicked on a !Fonts or !System icon you should reset the computer.

Note: You won't need to copy or use any !Scrap applications you find as one already exists inside the !Boot application.

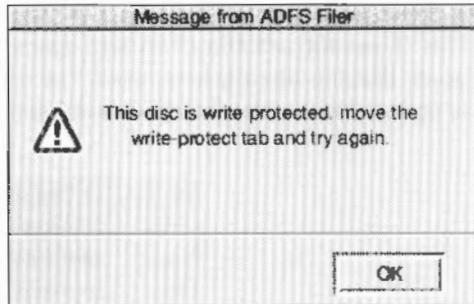
## What to do if something goes wrong

Most errors and problems connected with discs are accompanied by self-explanatory messages. Often all you need to do is acknowledge that you have read the error message by clicking in the appropriate box. There are a few cases that are more serious or need a little extra explanation.

### Protected disc

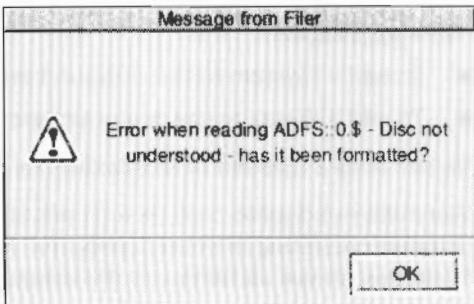


This message indicates that a floppy disc is write-protected. This prevents you from accidentally writing to the disc. You can remove the write protection by sliding the small tab at one corner of the disc so that the hole is blocked off. For more information, consult your *Welcome Guide*.



### Unreadable disc

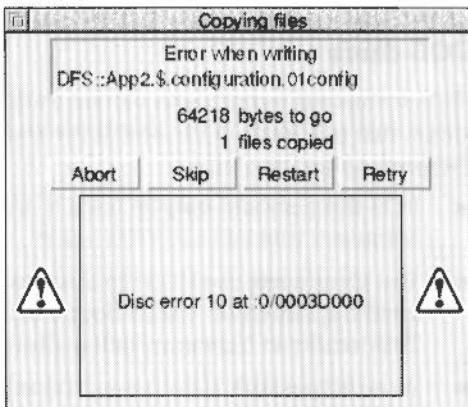
This message indicates that the floppy disc cannot be read properly by the computer. The floppy disc may not be formatted at all or it may be formatted in a way that cannot be read on the computer. The computer cannot read discs formatted with Apple Macintosh or Commodore Amiga disc formats.



## Disc errors

### On a floppy disc

If a disc defect error occurs with a floppy disc while you are using it (a rare occurrence) you will see a disc error message such as.



To correct the error you should copy any files you want to save from the affected disc onto another disc, and then reformat the affected disc. Formatting the disc 'maps out' the defect and the disc can then be used again. If the disc contains many disc errors or if the disc errors persist after reformatting, throw the disc away.

A similar error can occur if you try to use a disc that has not been formatted.

### On a hard disc

If a disc defect error occurs on a hard disc, the position of the error on the disc is displayed.

- 1 Write down the number displayed.
- 2 Turn to the appendix *Removing a disc defect* on page 529 and follow the instructions given there.

## Using MS-DOS and DR DOS discs



RISC OS can read and write to MS-DOS and DR DOS floppy discs that use standard DOS formats. This makes it easy for you to transfer information between your computer and any computer that can use these formats. RISC OS can also format discs in the standard 720K and 1.44M DOS formats.

### Using DOS discs

DOS-formatted floppy discs can be used in the same way as RISC OS-formatted discs; just put them in the disc drive and click on the floppy disc icon. There are however some limitations:

- DOS discs should **only** be used to transfer files between your computer and a computer that can use DOS discs.
- You should **not** use DOS discs to store RISC OS applications and programs, as anything stored on a DOS floppy disc is subject to DOS naming conventions. This results in filenames being altered and shortened.
- To avoid possible data corruption DOS discs **must be dismounted** before they are removed from the floppy disc drive.

The menu options available for DOS files and directories are exactly the same as those for RISC OS files and directories. Files can be copied and moved between RISC OS and DOS formatted floppy discs. To **run** DOS applications, you will need the PC emulator application PC Soft or a PC hardware expansion card.

### Transferring files between RISC OS and DOS computers

If you save files to a DOS-formatted floppy disc you can transfer the files to a DOS computer by taking the floppy disc and reading it with a DOS computer. Similarly, you can transfer files from a DOS computer to RISC OS by taking the files stored on a DOS-formatted floppy disc and reading it on a RISC OS computer.

### Character conversion

You should be able to read RISC OS text files on a DOS computer. However DOS and RISC OS use different top-bit set characters which are not interchangeable. In practice this means that all the letters you can type on the keyboard, except the £ sign, will be readable. Most characters generated using the !Chars application will not be readable and may be translated into different characters when read on a DOS computer.

When moving files created on a DOS computer to RISC OS the same restrictions on 'top-bit set' characters apply. Some DOS word processors end each line with a carriage return and a line feed; this makes text appear with a |0d| on the end of each line. This can be cured easily by using Edit to replace the carriage returns with

nothing. Carriage returns should be searched for with a Hex [0d] (choose the Hex option in the Find text box).

Some other word processors only use carriage returns at the end of each line. When these files are imported into Edit the text is shown as continuous characters. Use the CR $\leftrightarrow$ LF option in the Edit menu to convert it into lines again. Binary and other non-text files are transferable between computer systems.

### **Filename limitations**

This section shows you how filenames generated on DOS computers and RISC OS computers translate between systems.

On RISC OS computers, filenames are limited to 10 characters. On a DOS computer names are limited to eight characters with a three letter extension. For example TESTFILE.TXT is a valid DOS filename.

- When copying files from a RISC OS disc to a DOS disc, names are truncated to eight characters and the names are translated into all uppercase. For example Configure becomes CONFIGUR. The RISC OS file type of an object is preserved. DOS filenames are not case sensitive.
- If you are copying a file from RISC OS to a DOS disc, the filename must not start with a /, or contain more than one /, or contain more than three characters after a /.
- When copying files from a DOS disc to a RISC OS disc, the filename, including the extension is truncated to 10 characters. One of the characters will be a '/' which is added to separate the filename from the extension. For example, AUTOEXEC.BAT becomes AUTOEXEC/B.
- Filenames are only truncated if the command \*Configure Truncate is set to **on**, which it is by default. If \*Configure Truncate is set to **off**, an error is generated. For more information on this command turn to page 456.

### **Copying DOS files between DOS discs on the RISC OS system**

When copying from one DOS floppy disc to another DOS floppy disc (or a DOS hard disc partition), filenames are not truncated. All eight characters, the dot separator and the three character extension are copied. However, when looking at the files in a directory display the 'dot' separator is displayed as a '/'.

### **File access**

Since there is not a complete mapping between RISC OS file attributes and those provided by DOS, access rights are set as follows:

- A RISC OS file which is locked will be **read only** under DOS.
- A DOS file which is **read only** will be locked under RISC OS.

## DOS file icons



If you display a disc that contains DOS files, the RISC OS Filer displays file icons using the DOS file icon.

If you wish, you can assign RISC OS file types to DOS file extensions using the \*DosMap command. This, for example, lets you assign DOS files with the extension TXT the RISC OS file type Text. For more information refer to the DosMap command on page 461.

## Using DOS hard disc files



If you have a DOS hard disc file (created using the PC Soft emulator application or with a PC hardware expansion card), the Filer displays it with the DOS hard disc file icon. Double-click on this icon to display the files on your DOS hard disc. The Filer treats the DOS hard disc file as a normal directory and allows you access to the DOS files in a RISC OS directory display.

### Copying and moving DOS hard disc files

If you wish to copy or move your hard disc file, it will be copied or moved as a single file, not as a series of files and directories.

If you wish to copy it as files and directories, double-click on the DOS directory icon, and then copy the files from within it.

### Deleting DOS hard disc files

If you wish to delete your hard disc file, the Delete option on the Filer will delete it as a single file (not as a directory).

You should be very careful not to delete your hard disc file by accident.

## Using RAM discs



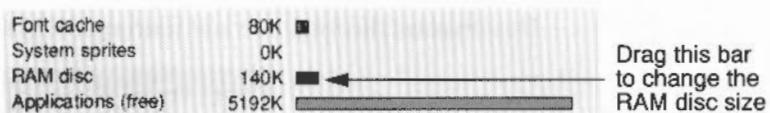
A RAM disc is an area of computer memory that is being used just like a disc drive. It is called a RAM disc, because you use it in a way very similar to a hard or floppy disc. However, the important thing to remember is that objects on the RAM disc are not 'safe' in the way that objects on real discs are safe: they will be lost when the computer is switched off or reset.

The main reason for using a RAM disc is that saving and loading files and applications to or from the RAM disc is much faster than to a floppy or hard disc.

## Creating a RAM disc

You can create a RAM disc for the current session using the Task Manager.

- 1 Click on the Task manager icon. This displays the **Tasks** window.
- 2 Scroll the window to display the **System memory allocation** area.
- 3 Move the pointer to the area marked **RAM disc**. Press Select to the right of the **OK** label – at the point where the bar will start – and drag the bar that appears to the size you want.



You can change the size of the RAM disc after you have created it, but only if it is empty. When you have created a RAM disc, an 'microchip' icon appears on the icon bar. Click on this icon to display the directory.

If you want to set up a RAM disc each time you use the computer, use the !Boot configuration application described in the chapter *Setting the desktop configuration* on page 117.

## Using a RAM disc

A RAM disc is a convenient way of speeding up some operations, at the cost of using some of the computer's memory. Two examples are given here:

### Copying between floppy discs using a single drive

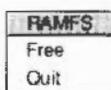
As mentioned in the section *Dismount*, earlier in this chapter, when you are copying a group of objects from one floppy disc to another using a single drive, you have to change the disc after each file or directory. This can become tedious. An alternative is to allocate as much space as you can to a RAM disc, copy all the files (or as many as will fit) into the RAM disc from the source disc, and then copy them from RAM disc to the destination disc. When you have finished, delete the files from the RAM disc, and quit the RAM disc by choosing **Quit** from the icon bar menu.

### Keeping frequently-used files in a RAM disc

Another common use of the RAM disc is to hold programs and data files that you use frequently. Keeping them in the RAM disc reduces the time they take to load, and may help you avoid having to change discs to find them.

Do not keep files that you are **changing** in the RAM disc: it is too easy to switch off the computer without transferring them to a permanent medium such as a hard or floppy disc or a network file server. If you use the **Shutdown** option from the Task Manager, it will warn you if there are still files in the RAM disc.

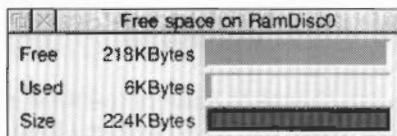
## Displaying the RAM disc icon bar menu



As with most storage devices, the RAM disc has its own icon bar menu with options specific to the filing system. Click on Menu over the RAM disc icon on the icon bar and the RAMFS menu is displayed. This gives you access to two commands – **Free** and **Quit**.

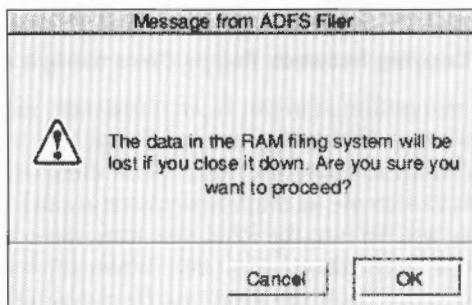
### Free

To see how much space is available, click Menu on the RAM icon, and choose **Free**. This displays the total free and used space, in KBytes.



### Quit

When you have finished using the RAM disc, you can remove it from the icon bar by pressing Menu over the RAM disc icon on the icon bar and clicking on **Quit**. If the RAM disc is not empty you will be warned that you will lose its contents if you go ahead. Click on **OK** to close the RAM disc if you don't mind losing it, or on **Cancel** if you want to keep it.



# Communicating with other computers



If your computer is connected to a network – maybe it is part of your school or office network – you'll see the network icon on your icon bar. The main part of this chapter shows you how to use the network to communicate with other computers.

**If your computer is not connected to a network you don't need to read this chapter.**

Networking can be a very difficult area to understand; it uses many jargon words – Eonet, Ethernet, AUN, Level 4 and file server – to name a few. However you can forget most of them; using a network is actually quite easy and is explained in this chapter. There is an overview of the different types of Acorn network on page 71.

## Networking

If you have the network icon on your icon bar you can probably communicate with other computers on the network. Acorn uses two types of networking:



- **Disc sharing on a network.** With this type of network users can allow their discs to be shared with other users. It is also possible to share a printer with other users.



- **File server sharing on a network.** With this type of network users can access a special computer known as a file server. The file server has a specific area in which the user can store files and access applications. Users can also share a common printer.

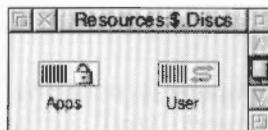
It is possible to use both these types of network at the same time.

## **Disc sharing on the network**



If you have an icon like this on your icon bar you can share discs on your network. The icon tells you that there are other discs on the network that you can access.

To access one of these discs click on the discs icon. This displays a window showing the discs that can be used.



Click on the disc that you want to use. The disc name is displayed under the discs icon on your icon bar. You can now use the network disc. It is also possible to share your own disc with other users and to print using a shared printer. More information about Disc sharing is available from your supplier.

## **File server sharing on a network**



A file server network is a number of computers that have been connected together so that they can communicate with a dedicated computer called a file server. The file server may also have a printer that can be accessed by all users; the printer server.

This type of network is usually administered by a network manager (a person, rather than a piece of software). The network manager allocates each person a user name. This name is used to identify them to the file server.



### **The file server**

A file server is a computer that holds a central store of computer programs and data; all network users can read data from the file server. If your network manager allocates you storage space on the file server you can store data on the file server in your own special user area.



### **The printer server**

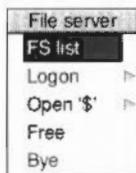
A network usually also includes a printer server. A printer server is a networked computer that is directly connected to a printer. All users of the network can use the printer.



### **Other services**

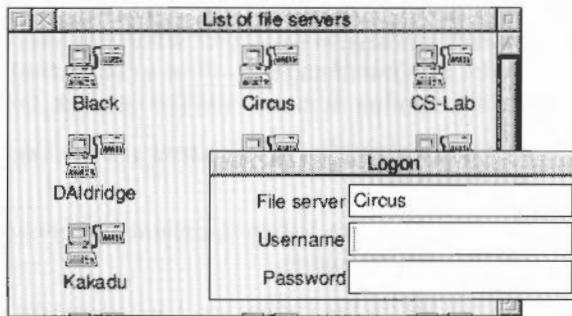
You may also be able to use Electronic mail, a way of sending electronic messages between network users. Ask your network manager for more information.

## Logging on



Before you can use the file server you need to log on to it using the Net **Logon** dialogue box. If there is more than one file server on your network, you will need to choose which one to log on to. Use **FS List** in the network icon bar menu to open a display showing the file servers available; there is an icon for each file server. If a file server has more than one storage device available for you to use (for example, an extra hard disc), there is an icon for each device in the FS List window.

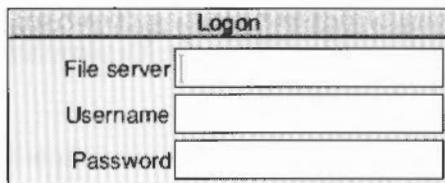
If you click on one of the file server icons, the Logon dialogue box appears, with the file server name already in the first writable icon. For example:



You can also display this dialogue box by clicking on the Net icon on the icon bar.

To log on to a network file server:

- 1 Click on the Net icon. This displays the **Logon** window.



- 2 Type in the name of the file server (this may already be set up), the user name, and (if needed) the password. Press Return to move to a new line.

Your user name is set by the network manager. Your password does not appear on the screen: this is to prevent other users seeing your password.

File server	Business1
Username	Steve
Password	[REDACTED]



If the user name and password are valid, a directory display for the user directory (the top-level directory in the user's own network directory) is opened; otherwise an error message is displayed. When you have successfully logged on, the Net icon on the icon bar changes to show a connection (the text under the icon is the file server's number or name) and the network directory is shown on the desktop.

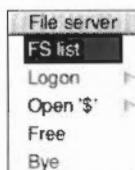
If you do not have a user directory, you are logged onto the root directory of the file server instead.

You can, of course, log on to several file servers; a Net icon is displayed on the icon bar for each file server.

You can set up the computer to automatically fill in the file server entry, see the section **Net** on page 121.

## File server network menu options

### FS list



To check which file servers are available, choose **FS list** from the File server menu. A list of file servers is shown in a window. **Full info**, reached via the Display menu in this window, shows the file server net address (a number) as well as its name.

### Logon

To log on to a network file server from the File server menu move to the **Logon** submenu.

The screenshot shows the 'File server' menu with the 'Logon' option highlighted. An 'Logon' dialog box is overlaid on the menu. The dialog box contains three input fields: 'File server' with the value 'World', 'Username' (empty), and 'Password' (empty).

### Logging on without displaying a directory

To log on **without** displaying the user directory, hold down Shift and press Return for the last time when logging on; do not release Shift until the file server name or number appears under the Net icon, indicating that you are logged on.

### Updating the file server directory display

If a file shown in a file server directory display on your screen is deleted by another user, your display is not updated automatically. If you try to open the deleted file, you will get a 'File not found' error message. You can update the display by closing the directory display and opening it again.

### Open \$

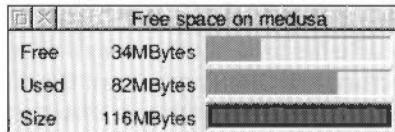
On a file server you log on to your user directory. This is one or more levels down from the top level (root) directory. The user directory is sometimes referred to as the user root directory (URD). Pathnames to the user root directory begin with &.

In some cases, you may be prevented from looking at any directories other than your own. If you are not sure about your privileges, ask your network manager.

You can open the root directory of the file server by choosing **Open \$** from the File server menu. If the file server has more than one disc, the disc names are displayed as a submenu; click on the disc whose root you want to display.

### Free

To check how much space is available on a file server, choose **Free** from the File server menu. This displays the free space on the file server. **Free** is the amount of space you have left in your user area. **Used** is the amount of space that has been used (by all users) on the file server. **Size** is the total size of the file server disc.



If you find that you are running out of space, ask your network manager for more.

### Bye

When you have finished using a file server, log off by choosing **Bye** from the File server menu. Any directory displays for the file server will be closed. Choosing **Shutdown** from the Task Manager icon bar menu does this automatically.

## **Your network directory**

Normally users have their own directories on the file server in which they can work and save files. Your own network directory usually has the same name as your user name. It is represented on screen by the character &, so if you logged on to a file server on a hard disc called History, the directory display for your directory would have the title Net : :History . &.

If the file server can't find your user directory, the directory display shows the files and directories in the root directory of the file server; however, you won't 'own' this directory (unless you are the network manager), and so your access to many of the files and directories it contains may be restricted.

## **Using files and programs**

You can use files and programs on the file server in the same way as you would use them directly from your own computer. They load from the hard disc on the file server into your own machine. If you wish to load applications automatically when you start-up, let the network manager know, because you may need a special Desktop boot file which the network manager can create.

When you want to save a file to your file server directory, just drag its icon into your network user directory. If you try to save a file in someone else's directory, and you do not have the privilege to do so, you will get the error message Insufficient access.

## **Using files from other users' directories**

You may sometimes need to use a file that is stored in another user's directory. If the file has Public read access you can look at, but not save, any changes to a file in someone else's directory. However, you can change the file and then save it in your own directory by dragging the Save file icon to your own directory display.

To load a file from another user's directory, you need to display the file server's root directory, and then move down the directory structure into the other person's directory. To display the root directory, choose the menu option **Open \$** (see page 67).

The root directory display shows all the user root directories. Double-click on the directory for the user whose files you want to use. There may be some icons missing from the directory display: these are for files that the owner has locked against all public access. If you try to load an application from someone else's directory, it will generate an error message if the owner has not given public read access to it. There are other reasons why you may get an error message doing this; ask your network manager for advice.

## Setting the access rights to your own files

### File ownership

You can look at, change and delete any files in your own user directory, but cannot change or delete files owned by someone else, though you may be able to look at them. Some files and directories may be hidden from you completely, so that you do not even see their icons in the directory display. By default, other users will have no access to your files. This section gives you a quick overview of Access permissions on networks, for a full explanation of Access options turn to Access on page 22.

You can set the access you want other people to have to your files using the **Access** command from the file's directory display menu.

The Owner rights set what you can do with the file; the Public rights control what other users can do with the file. You can lock the file against deletion to prevent you accidentally deleting it yourself, but you don't need to set this to prevent other users deleting your file as it is locked to them anyway.

If you allow public write access to your file, other users are able to alter it without your knowledge. If you allow public read access only, they can look at the file but not alter it. Never completely remove the access rights to your files by denying read and write access to yourself as well as to others.

You cannot specify the access rights to a directory, only to the files within it, but you can lock a directory against deletion using **Access**.

### Hidden objects

If you lock a directory or allow no public access to a file, and the network manager has enabled the hidden objects option (at the fileserver), the directory or file becomes a hidden object and is not visible to other users.

## Setting your password

The password is a security procedure to prevent other users logging on with your identity and consequently gaining the same access to your files as you have.

You should change your password occasionally to help preserve the security of your files. To change your password, you need to use the \*Pass command.

- 1 Press F12 to move to the command line.
- 2 Type:  
Net (press Return)

**3** Type:

Pass *oldpassword newpassword* (press Return)

**4** Type:

ADFS (press Return)

**5** Press the Return key to go back to the desktop.

The first time you set a password you may not have an old password, so use the null string "" in place of *oldpassword*. For example, to set your password for the first time to Hebrides, type: Pass "" Hebrides

If you later wanted to change this to Shetland, you would type:

Pass Hebrides Shetland

Your password must be at least six and not more than 22 characters long.

### **Choosing a password**

When you are choosing a password, do not select something very obvious that could be guessed by someone else. Do not, for example, use the date of your birthday, the name of a member of your family or a pet, your telephone number, or the registration number of your car.

In some cases, the network manager may prevent you resetting your password, or looking at any directories other than your own. If you are not sure about your privileges, ask your network manager.

## **Using the Printer server**

If your file server also has a Printer attached to it, this printer can be accessed by other users on the network. This Printer server is chosen using the Printer manager application, !Printers.

Ask your network manager for details about which printer driver to use and the name of the network printer, then set up the printer according to the instructions given in the chapter *Setting up for printing* on page 149.

## Networking with non-Acorn computers

If you want to communicate with other types of computer on the network such as DOS and UNIX computers, you may be able to use the TCP/IP protocol suite software. The TCP/IP protocol suite is available from your Acorn dealer.



**NFSFiler**

The TCP/IP protocol suite lets you communicate with non-Acorn computers in two ways. If the host computer is running the Network File System then you can use the NFS Filer software to display files resident on the host computer in a RISC OS type directory display. You can then manipulate these files in the same way as you would files on your own computer.



**VT220**

The other item of TCP/IP software is the VT220 terminal emulator. This software lets your computer emulate a VT220 terminal in a RISC OS window. With this application you can log in to and use a remote computer.

Contact your network manager for more information about TCP/IP network communications.

## Types of network available

Acorn uses several types of networking systems. These are based on Econet and Ethernet cabling. They use either the established Econet network software or the newer shared disc and AUN networking software.

Here are brief descriptions of the types of network Acorn currently support. Further networking protocols are likely to be added in the future. If you want to know more ask your network manager.

### Econet networking

The standard networking in schools until relatively recently. Data transmission rates are fairly slow. Original networks used Acorn BBC Master computers as file servers. It is now possible to have an AUN network running with Econet.

### Acorn Access networking

An easy to install Ethernet network for small to medium-sized installations. Allows simple disc sharing and printer sharing between all Acorn RISC OS computers on the network.

### Acorn AUN networking with file servers

An Ethernet network that goes one stage further than Acorn Access in that you can also have a dedicated computer that is used solely as a file server and a printer server. It is also possible to use AUN on a Econet network or mixed Ethernet/Econet network.

### **Acorn AUN networking with Acorn TCP/IP protocols**

Large Ethernet networks can be set up to use TCP/IP protocols as well as AUN protocols. This enables your computer to connect to non-Acorn computers as well as Acorn computers.

## **Network errors**

### **'Network not plugged in (no clock signal)' error message**

Probably the most frequent error encountered when attempting to log on to a network is 'Network not plugged in'. This means that your machine is physically disconnected from the network, either at the back of the computer or at the socket box at the other end of the cable.

### **Newly-connected file servers**

If a new file server has been connected to your network, it will not automatically appear on the FS list. To make it do so, log on to the new file server explicitly using the file server number (ask your network manager), and the next time you display the FS list, the new file server will be included.

### **Applications copied from a network**

If you copy an application from the network, log off the network (click on **Bye**), and then (without first loading the application itself) double-click on a file for that application, you will see the message 'Not logged on'. This is because the computer, having 'seen' that the application came from the network, is still trying to find it there. When you have copied the application, you should therefore run it from your own disc (by double-clicking on it) before attempting to load a file into it.

### **Network failures**

If there are any serious errors, such as damage to the disc of a file server, these should be handled by the network manager. The only error you are, in general, likely to meet when using the network is failure of the network itself, rather than the filing system. This can happen for a variety of reasons: both 'hard errors', such as the network becoming disconnected, and 'soft errors', such as the network becoming jammed as a result of too many people using it at the same time. Most problems tend to be soft and can be cured by trying the operation again, or by logging on to the file server again.



A font is a set of characters that share a similar style. RISC OS uses fonts in all its windows and directories. This chapter shows you how to choose, use, control and print with fonts.

When you look at the Desktop, the text underneath the icons and that used in windows for utilities and applications can be displayed using a font you choose. For example, the desktop uses the font Homerton (unless you've changed it already!); all the text used in the desktop windows is displayed in the Homerton font.

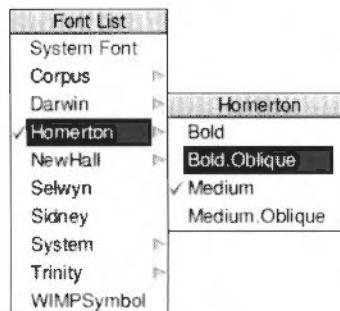
## Choosing a font

RISC OS groups fonts into three categories. The typeface, weight and style:

- The **typeface** name (for example, Homerton) is common to a whole font family and describes all fonts with the same general appearance.
- The **weight** indicates the thickness of the characters. For example, a font of normal density is often called Medium, while heavily printed fonts are often called Bold.
- The **style** indicates other basic variations in the characters, for example, Italic, Oblique or Shadow.

For example the font Homerton.Bold.Oblique consists of the following: Homerton is the typeface. Bold is the weight. Oblique is the style.

Here is how you would choose Homerton.Bold.Oblique from a fonts menu:



## Types of font

RISC OS comes with a set of fonts permanently built into the computer. These fonts are available for use by all applications that can use fonts. The fonts are called **Corpus**, **Homerton**, **NewHall** and **Trinity**:

This font is called Corpus  
This font is called Homerton  
This font is called NewHall  
This font is called Trinity

**Corpus** is a version of the fixed pitch font Courier, **Homerton** is a version of the font Helvetica, **NewHall** is a version of the font New Century SchoolBook and **Trinity** is a version of the font Times Roman. Each of these fonts also comes in Bold, Italic and Bold Italic (or Oblique) styles:

*This is Corpus Medium Oblique*  
*This is Corpus Bold*  
*This is Corpus Bold Oblique*

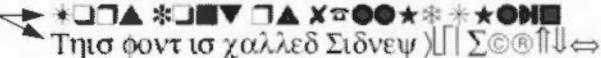
*This is Homerton Medium Oblique*  
*This is Homerton Bold*  
*This is Homerton Bold Oblique*

## Additional fonts

There are also some additional fonts used for special purposes:

**System Fixed**  
**System Medium**

Sidney and Selwyn fonts



There are two 'old style' **System** fonts, a fixed pitch font and a proportional font.

**Selwyn** is a symbol font. This has a character set that gives special symbols such as arrows, stars, ticks and crosses. It is a version of the font ZapfDingbats.

**Sidney** is another symbol font. This includes Greek characters and mathematical symbols. It is a version of the Symbol font set.

WimpSymbol is used by the desktop and should not normally be used in applications.

You can expand the range of fonts that you can use by adding more fonts to your computer. Fonts are added to the computer using the configuration section of the !Boot application; this is described in the chapter *Setting the desktop configuration* on page 117.

## Proportionally spaced fonts

The fonts supplied with your computer fall into two categories:

- Fixed-pitch fonts.
- Proportionally-spaced fonts.

Fixed-pitch fonts (such as System font and Corpus) allow the same amounts of space for each character. An 'i' will take up the same amount of space as an 'm'. Fixed pitch characters are found on typewriters.

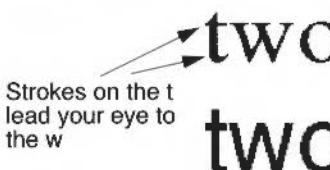
Proportionally-spaced fonts (such as Homerton and Trinity) allocate different amounts of space to different characters. Thin characters take up less space than fat ones. This allows more text to be fitted on the page and give the text a more professional look.

This is a fixed pitch font

This is a proportionally spaced font

## Serif and Sans serif fonts

A serif font has strokes at the edges of the letters; these allow your eye to follow on from one letter to another – rather like joined-up writing. San serif fonts don't have these. Sans serif fonts can make the page look tidier and they are often used for headings and other places where large font sizes are used.



A Serif font – Trinity

A Sans serif font – Homerton

## Font size

Most applications let you select the size of the font you wish to use. The font size is measured in points, a point being 1/72 of an inch. Some applications also allow you to set the font height separately. If you want characters with different height and width values, set the size first and then the height. Acorn fonts can be sized to any height or width allowed by the application:

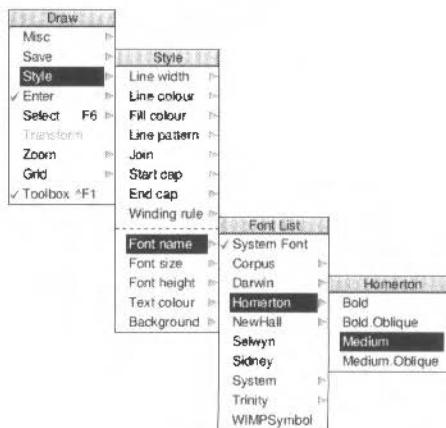
This is Homerton 8 point  
This is Homerton 10 point  
This is Homerton 12 point  
This is Homerton 14 point  
**This is Homerton 24 point**

## Using fonts

There are two applications included in the applications suite that use fonts – Edit and Draw. These two applications use them in slightly different ways. Edit can display text in any type of font; however it can only print out in the font that is standard on your printer. On the other hand, Draw can both display and print fonts of varying size and typeface.

### Using fonts in the !Draw application

You can put text using fonts into a drawing created with Draw. Select the Text tool, then click Menu over the Draw window and choose the Style menu. Go to the Font name menu and click on the font you wish to use. See the section *Changing the way an object looks – its style* on page 221 for more details.



## Controlling fonts

These are the techniques used to display high quality fonts on the desktop. For more information you can also turn to the section *Fonts* on page 130.

### Anti-aliasing

All fonts (apart from the System font) can be anti-aliased. Anti-aliasing uses shaded pixels at the edge of each character to blur the edges of a character, so making it lose its jaggedness. This makes the character look better on screen. You can change the type and extent of anti-aliasing applied to the font (see page 130).

# Outline

### Font caching

When the fonts are requested for display they are processed and stored in a font cache (a part of memory) for future use. If you use that font again it does not require any processing and the characters are displayed much faster. If you are using a lot of different fonts you may want to increase the font cache.

### Adding more outline fonts

You can purchase additional Acorn outline fonts for your system from third party suppliers. These are added using the Fonts screen of the !Boot configuration window. See page 130 for more information.

## Printing with fonts



If you have used fonts in your application, you can (if the application permits it) print out using those fonts also. Exactly the same outline fonts are used for both the screen and the printer.

The RISC OS printer manager program sits between the application and the printer. Printers, printing and printer drivers are explained fully in *Printing your files* on page 95 and *Setting up for printing* on page 149.

### PostScript printers

PostScript printers have their own set of fonts stored inside the printer. When you print to a PostScript printer the Acorn fonts are mapped to the PostScript fonts already stored inside the printer. Acorn fonts that cannot be mapped to PostScript fonts are sent to the printer by the Printer manager as they are needed.

Most Acorn fonts can be mapped to PostScript fonts. For more information about using Acorn fonts with PostScript printers, refer to the chapter *FontPrint* on page 351.

### **Converting PostScript fonts to outline fonts**

It is possible to convert standard PostScript Type 1 fonts to Acorn Outline fonts using the *T1ToFont* application supplied in the Application suite. For more information, look in the chapter *T1ToFont* on page 405.

# Desktop colour and resolution



The number of colours displayed and the size of the desktop can be changed using the Display manager. The Display manager icon is always on the righthand side of the icon bar, next to the Task manager.

## Colours

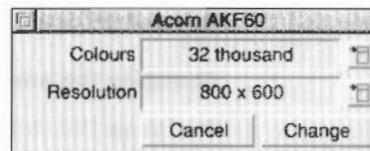
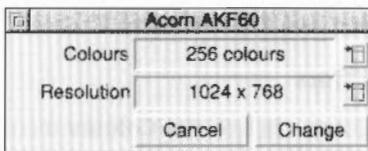
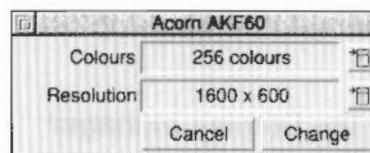
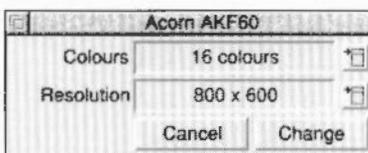
The desktop is designed to work well in all colours, so you won't notice an immediate difference in appearance if you change to a 256 or greater colour display. However you'll see a difference if you display a sprite picture that uses many colours or use an application such as !Draw that allows you to use many colours.

## Resolution

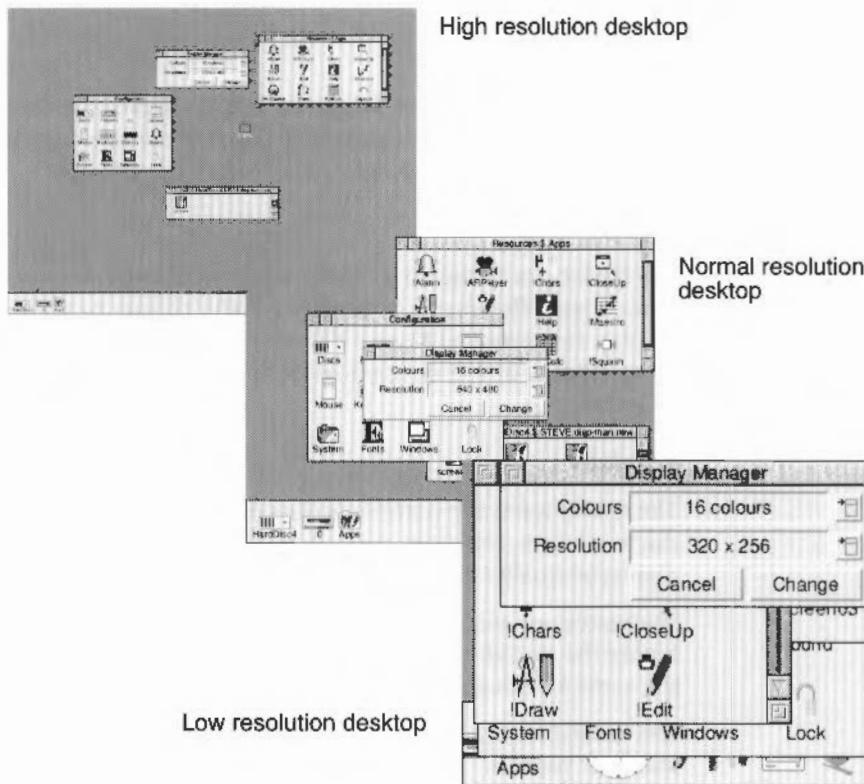
The resolution is the number of dots displayed on the computer screen. The higher the resolution, the more dots are displayed on the screen so the better the displayed quality of the desktop, applications and pictures on your computer.

The resolution also determines the area of desktop displayed on your screen. The higher the resolution, the more of an application or picture that can be viewed in the same screen space.

The easiest way to find out how this works in practice is to try using the Display manager yourself.



The following pictures show the same desktop: the first at a high resolution, the second at a medium resolution and the third at a low resolution. As you can see, the higher the resolution the larger the size of the desktop.



## Using the Display manager

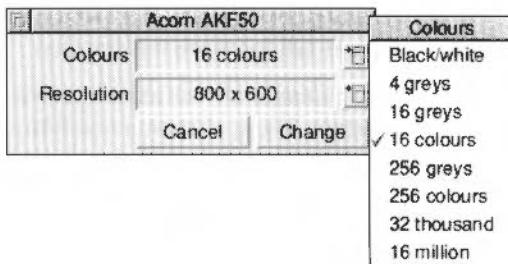


Clicking on the Display manager icon shows the Screen display window in which you can change the Resolution and the number of Colours. The information shown in the window gives the current settings of the desktop.

### Changing the number of colours

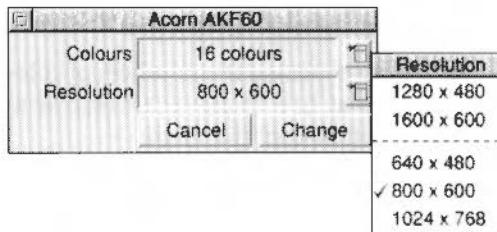
To change the number of colours, click on the **Colours** menu icon and choose the colour number you want.

For example, choose 32 thousand colours then click on **Change**. Your desktop and applications are now displayed in 32 thousand colours; of course you must have an application running or display a picture that takes advantage of the increased number of colours before you see any difference.



### Changing the resolution

To change the resolution, click on the **Resolution** menu icon and choose the resolution you want. The menu starts with low resolutions at the top and progresses to higher resolutions at the bottom.



The resolutions you can select depend on the type of monitor you are using. The monitor type is defined in the Screen configuration menu (see page 128).

For example, choose a resolution such as 800 x 600 and then click on **Change**. Your desktop is then displayed using 800 dots horizontally and 600 dots vertically. You'll notice that the sizes of your windows and the icon bar have changed, while the information they contain is still the same.

## How colours and resolutions interact

As you experiment with the Display manager you will find that you can only display certain combinations of colours and resolutions. These combinations are limited by the computer, the amount of video memory (called VRAM) it contains and the capabilities of your monitor. Your monitor is defined using !Boot; see the section *Screen* on page 128 for more information.

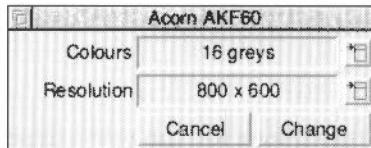
The Display manager always assumes that the most recent change you make is the most important. If you choose a resolution for the desktop to display, the Display manager may have to reduce the number of colours that are available. If this happens, it will try to pick the maximum number of colours possible at that resolution.

If you choose a display with a large number of colours, the Display manager may have to reduce the resolution at which it can display. If this happens, it finds the best resolution at which this number of colours is possible and uses this when it displays the desktop. The Display manager does not always pick the optimum resolution and you may have to change to a more appropriate resolution for the desktop.

**Note:** The Display manager does not automatically increase the resolution or colours available.

### Choosing between grey scale and colour

As well as choosing the numbers of colours, you can also choose to use a 256 grey scale display or a 16 grey scale display instead. To use colour again, choose a colour option from the menu.



## Performance trade-offs

This section only applies if your computer does **not** have Video memory (VRAM) installed.

For each Display choice, there is a compromise between the Resolution selection, the Colours selection, the processing speed and the memory usage.

Generally, the greater the resolution and number of colours, the slower the screen displays and more memory used. Additionally the overall performance of the computer is slower. With VRAM installed, all display options have equal video performance and processor performance is not affected.

## Advanced options

*Normally you won't need to use the information given in this section.*

### The Mode string

Click Menu over the Display manager icon on the icon bar and display the **Mode** box. The mode box contains the mode string. This is the technical definition of the screen display mode the desktop is currently using. The mode string is made up of

- the X (horizontal) resolution
- the Y (vertical) resolution
- the number of colours
- the X (horizontal) EIG value
- the Y (vertical) EIG value
- the frame rate (optional).

You shouldn't use this to change the desktop directly. However you can change the EIG values to change the size of the desktop and you can replace the whole string by an old type mode number. These options are described below.

### Changing the desktop size without changing the resolution

You can change the apparent size of the desktop by making everything displayed on the desktop smaller or larger than it should be.

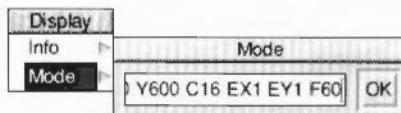
Making everything larger can be useful if you want over-large text on the desktop. Making everything smaller allows you to fit more on the desktop, however the definition of the desktop is reduced since only half the usual number of pixels are being used to display the same information. The desktop size is changed using the EIG factor.

#### The EIG factor

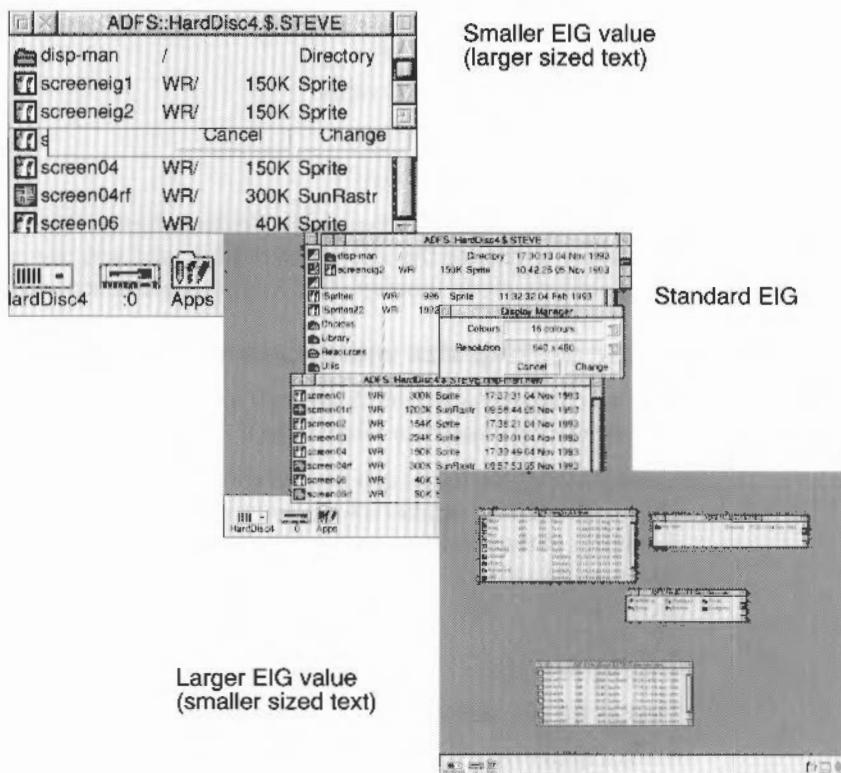
The EIG factor controls the size of the desktop as follows:

- 0 = larger than normal
- 1 = normal size
- 2 = smaller than normal size
- 3 = even smaller

- 1 Click Menu over the Display manager icon.
- 2 Choose the **Mode** dialogue box. This displays the *mode string* being used by the current display.
- 3 To change the EIG factor, display the mode string from the icon bar menu. The mode string is the textual equivalent of the options chosen by the Display manager window.



- 4 Move the cursor to the mode string and change the **EX** and **EY** EIG values.
- 5 Click on OK for the new EIG values to take effect.



For example, a typical screen display may have the following mode string:

X640 Y480 C16 EX1 EY1 F73

To make the size of the desktop smaller change the EX and EY EIG values to a larger number. For example:

X640 Y480 C16 EX2 EY2 F73

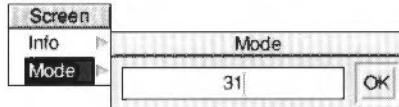
The EIG values are changed back to their default values whenever the Display manager is used to change display modes.

EIG stands for External-to-Internal Graphics.

## Using old type mode numbers

The mode numbers used with Acorn systems using RISC OS 3 version 3.1 and earlier can still be obtained by typing an old type mode number directly into the mode box on the icon bar. To do this:

- 1 Press Menu over the Display manager icon and display the mode box.
- 2 Delete all the information in the box (type Ctrl-u).
- 3 Type in the old type mode number and then click on **OK**.



A list of old type RISC OS 3 version 3.1 screen modes is given in the appendix *Old-type screen modes* on page 523. Not all of these modes may be available on your monitor.

## Display characteristics

### Square pixel modes

Square pixel modes are the most useful for everyday use; they maintain the correct proportions of drawings on the desktop. The main square pixel modes are

- 640 x 480
- 800 x 600
- 1024 x 768
- 1280 x 1024.

(Your system may not be able to display all of these).

### **Rectangular pixel modes**

Rectangular modes do not maintain the correct proportions of the desktop but they do allow you to have more space on the desktop. Some example of these are

- 640 x 352
- 1056 x 256.

## **Altering the amount of Video RAM**

When you change the amount of Video RAM (VRAM) in your computer, the defaults you have set with the **!Boot/Screen** configuration window may be need changing and a new set of defaults should be selected.

Video RAM upgrade kits together with full instructions on how to perform the upgrade are available from your supplier.

# Using colour in applications

Many of the applications you use with your computer can use colour. Within the application suite the Draw and Paint applications can use colour. To make using colour easy the computer uses the same way of choosing colours whatever application you are using. So once you've learnt how to use colour with Draw, you can use the same procedures in Paint and with other applications as well.

## Choosing a colour model

You can give practically any object a colour. In this chapter we shall use !Draw as an example application that uses colours.

There are three ways of specifying colour; these are called the colour models:

- RGB (Red, Green, Blue): screen colours, used mainly to create documents and pictures that are to be viewed on-screen.
- CMYK (Cyan, Magenta, Yellow, Key-black): used mainly by commercial print shops.
- HSV (Hue, Saturation, Value): very similar to mixing paints, used mainly by graphic artists.

Once you've chosen the colour model you are going to use, it's a good idea to keep using this colour model for the whole of the picture you are working on.

### RGB

This colour model is used for files that are to be viewed on a monitor. RGB colours are created by mixing Red, Green and Blue light. You would use this colour model if you were making a graphic presentation that would be viewed on the computer screen.

### CMYK

This model is used when you want to create colour separations for four-colour process printing. The print shop can print colours from a combination of cyan, magenta, yellow and black (key). The black colour is used to reinforce dark colours and grey shades that may otherwise appear muddy when printed.

## HSV

This colour model is often used by artists. Hue is the basic look of the colour. The Saturation is the amount of white added to the colour; the smaller the saturation the greater the amount of added white. The Value is the brightness of the colour (the amount of added black in it).

## Colour and the desktop

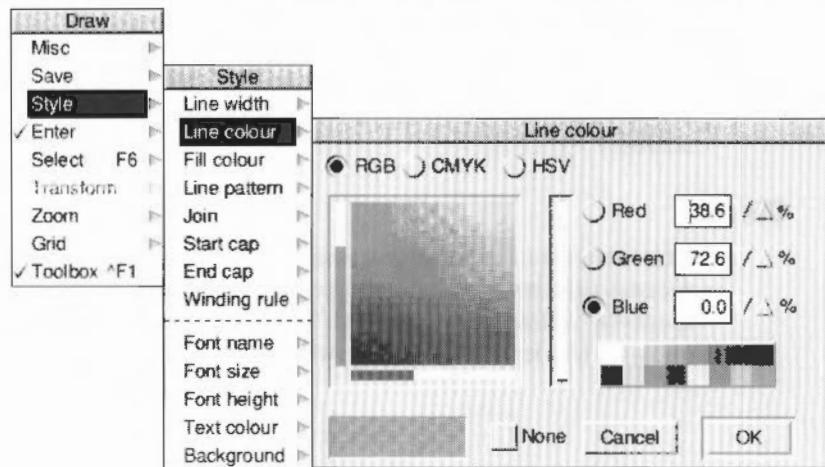
The colours you can choose to use with your applications are not limited by the colours you are currently using with the desktop. You can always choose from 16 million colours and the application stores this exact colour information. The screen and colour slice only shows an approximation of what you've chosen; in a 16 colour display mode the representation will not be very accurate. If you want to choose a colour exactly you should type in its value in the numeric fields.

The colour representation is restricted by the number of colours in the screen display mode. All colours are translated as faithfully as possible when you change colour. Colour information is stored within the application and is not lost when you change modes.

You can also choose colours in grey modes. If you particularly want to only use greys in your application you should make sure that when using the RGB colour model all of the colour values are the same; this will ensure a grey shade is chosen.

## Colour in !Draw

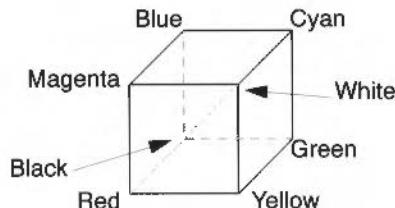
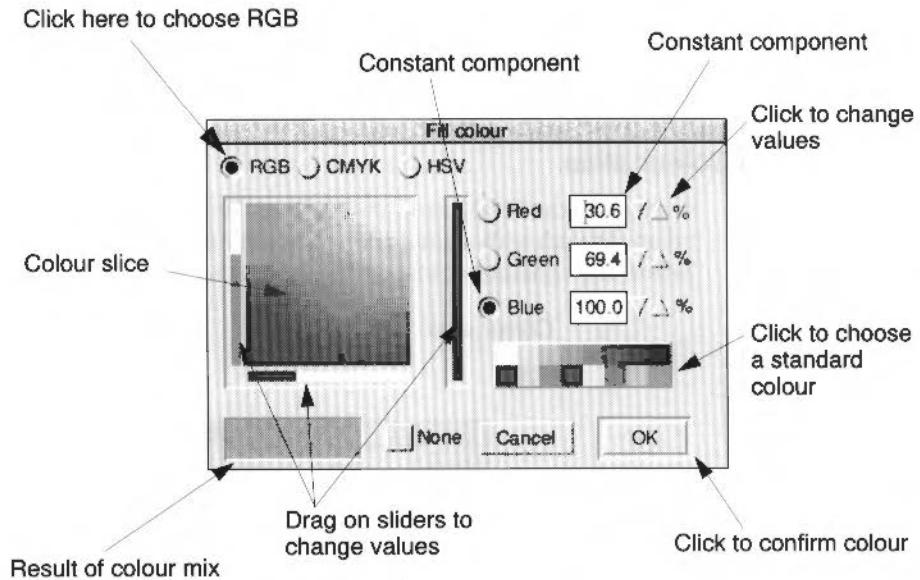
The Draw application uses colour extensively and you can choose colour for the graphic objects and for text. All the colour options are in the **Style** menu. Graphics can be given a **Line colour** and a **Fill colour**. Text can be given a Foreground **Text colour** and a **Background** text colour. Here is the menu for line colour.



## Choosing a colour

### Using the RGB colour model

The intensities in the RGB model are added together. Think of RGB as beams of red, green and blue light mixing together.



The RGB colour cube

There are six ways of choosing a colour in the RGB model:

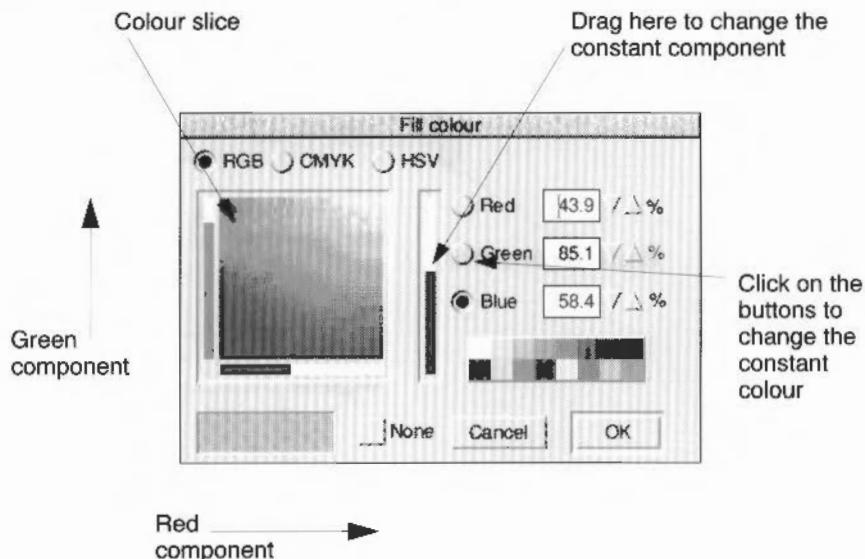
- Drag the bars in the sliders. As you move the slider the colour you have chosen is shown in the box at the bottom left of the window. At the same time the numeric values change to show you the percentages of the colours chosen.
- Click anywhere in the colour slice. You can also drag continuously around it.
- Type in numbers directly. If you know the percentages of the colour you want then it is easiest to type it in directly. Use the Tab keys to move between fields.

- Click on the up/down arrows. This allows fine tuning of an already selected colour. Clicking on the arrows changes the value by 1%. Clicking with the shift key held down changes the value by 0.1%.
- Clicking on a standard colour. This gives you access to the standard desktop colours directly.
- Clicking on **None** chooses no-colour. The selected text or graphic will be transparent. This button may be greyed out if not applicable.

**Cancel** does not apply the colours chosen. **OK** applies the chosen colour to the selected text or graphic object.

### The Colour slice

In the RGB model the colour slice is a plane through a colour cube. The slice is taken through with a single constant colour. In the example shown in the diagram below, the constant colour is blue at 58.4%.



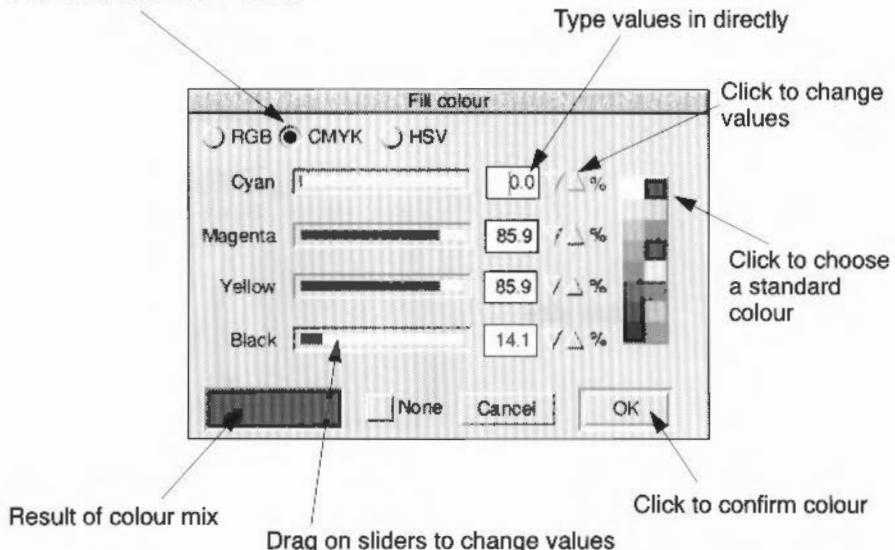
The colour slice shows all the colours available by varying the red and blue components and keeping the blue component constant.

You can change the constant component by dragging the slider up and down. You can change the constant colour by clicking on the colour buttons.

## Using the CMYK colour model

The colours in CMYK are added together. The amount of each colour can range from 0% (no colour) to 100% (full colour).

[Click here to choose CMYK](#)



There are five ways of choosing a colour in the CMYK model:

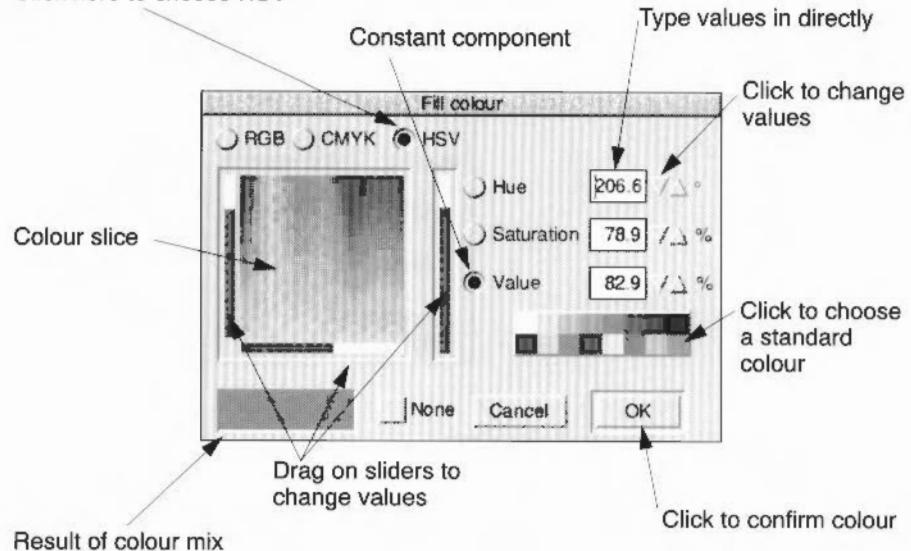
- Drag the bars in the sliders. As you move the slider the colour you have chosen is shown in the box at the bottom left of the window. At the same time the numeric values change to show you the percentages of the colours chosen.
- Type in numbers directly. If you know the percentages of the colour you want then it is easiest to type it in directly. Use the Tab keys to move between fields.
- Click on the up/down arrows. This allows fine tuning of an already selected colour. Clicking on the arrows changes the value by 1%. Clicking with the shift key held down changes the value by 0.1%.
- Clicking on a standard colour. This gives you access to the standard desktop colours directly.
- Clicking on **None** chooses no-colour. The selected text or graphic will be transparent. This button may be greyed out if not applicable.

**Cancel** does not apply the colours chosen. **OK** applies the chosen colour to the selected text or graphic object.

## Using the HSV colour model

The colours in the HSV model are organised in a colour cone with colours represented by degrees on the hexagon. This model is rather like mixing together paints on an artists palette; You begin with the colour and add elements of white and black paint to it to get the exact tone you want.

Click here to choose HSV



There are six ways of choosing a colour in the HSV model:

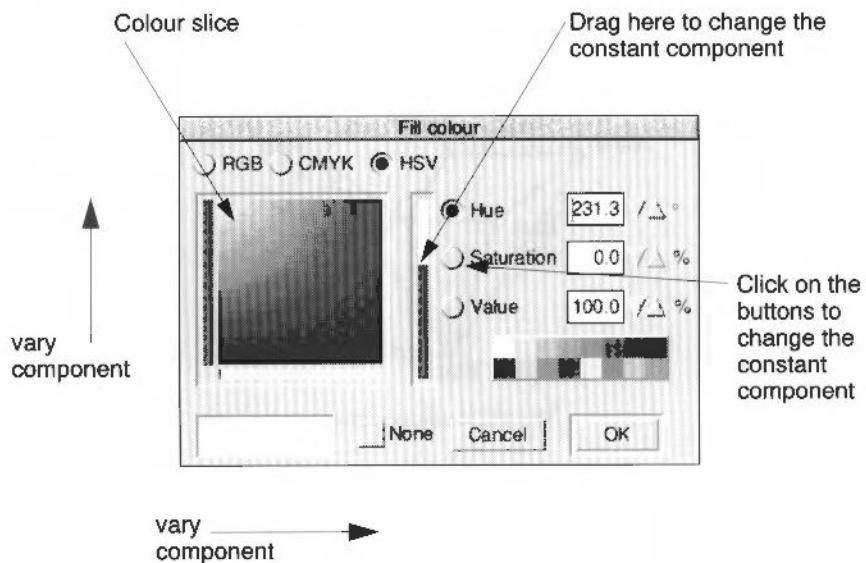
- Drag the bars in the sliders. As you move the slider the colour you have chosen is shown in the box at the bottom left of the window. At the same time the numeric values change to show you the values of the colours chosen.
- Click anywhere in the colour slice. You can also drag continuously around it.
- Type in numbers directly. If you know the percentages of the colour you want then it is easiest to type it in directly. Use the Tab keys to move between fields.
- Click on the up/down arrows. This allows fine tuning of an already selected colour. Clicking on the arrows changes the value by 1%. Clicking with the shift key held down changes the value by 0.1%.
- Clicking on a standard colour. This gives you access to the standard desktop colours directly.
- Clicking on **None** chooses no-colour. The selected text or graphic will be transparent. This button may be greyed out if not applicable.

**Cancel** does not apply the colours chosen. **OK** applies the chosen colour to the selected text or graphic object.

### The Colour slice

In the HSV model the colour slice is a surface through the colour cone. The slice is taken through with one of the components constant. If you make the Hue the constant component the colour slice shows the true colour at the top right of the slice. The colours then fade into white at the top left and into black at the bottom.

In the example shown in the diagram below, the constant component is the Hue at 231.3 degrees (a dark blue).



The colour slice shows all the colours available by varying the Saturation and Value components and keeping the Hue component constant.

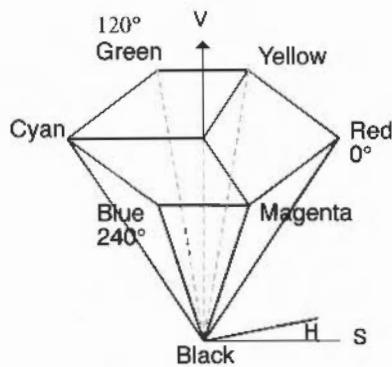
You can change the value of the constant component by dragging the slider up and down.

**Saturation** is the amount of white in the colour: 100% gives the brightest colours (least white); 0% give the most washed out colours (most white).

**Value** is how bright the white is: 0% gives no white (resulting in black); 100% gives maximum white (resulting in a bright colour).

The **Hue** is a number between 0 and 360. This refers to the angle of colour used in the colour hexagon. In the hexagon the main angles are:

- 0° a Red hue
- 60° a Yellow hue
- 120° a Green hue
- 180° a Cyan hue
- 240° a Blue hue
- 300° a Magenta hue
- 360° a Red hue (round full circle).



The HSV colour cone



All printing is handled by the printer manager, **!Printers**. The printer manager looks after the job of sending the file you want printed to the printer and making sure that it is printed correctly.

**This chapter assumes that you have already set up the printer driver configuration (or it has been set up for you) and that your computer is connected to the printer, either directly or via a network.**

If you want to set up **!Printers** yourself, you should find that the *Printing* chapter in the *Welcome Guide* will give you enough information, especially if you are connecting an Acorn printer. If you need more information, or you wish to configure some of the more advanced features of the printer manager, turn to the chapter *Setting up for printing* on page 149.

## Starting **!Printers**



Load the printer manager by double-clicking on the **!Printers** icon (which is in the *Printing* directory). After a few seconds the printer manager icon appears on the icon bar.



If you see more than one printer icon on the icon bar you will be able to print on more than one printer (or print in different ways on the same printer).

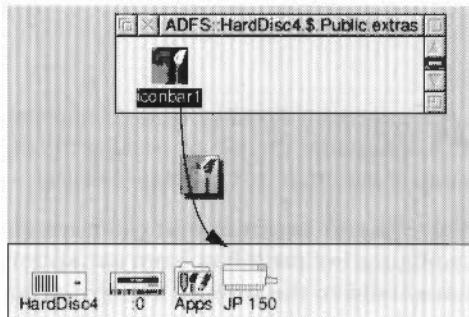
## Printing a file

There are three ways you can print a file.

### Drag the file you want printed to the printer icon

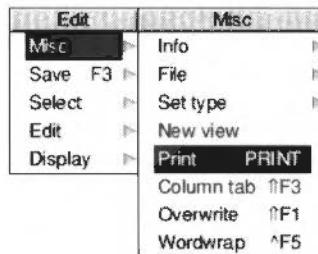
To print a Draw file, Paint file or other application file, drag the file (from a directory display or Save as box) onto the printer driver icon. If the application is not already running, it will be loaded before the file is printed (as long as the Filer has 'seen'

the application). For example, if you want to print a Draw file, Draw will be loaded onto the icon bar. However Text files are printed directly (!Edit is not loaded). While a file is being printed, **Printing** appears beneath the icon.

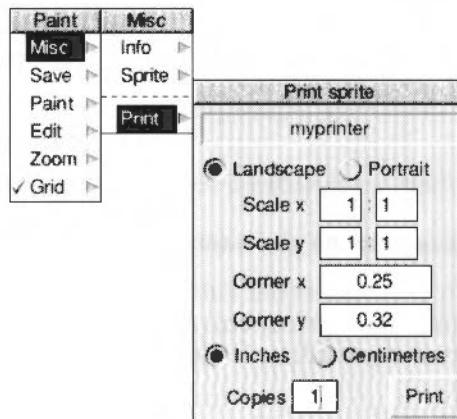


### Choose the Print option from the application's menu

Paint and Draw files and those of many other applications can also be printed by selecting **Print** from the appropriate menu in each application:



The **Print** option sometimes offers additional size or layout options; for example in the **Paint** application:



### Press the Print Scrn key on the keyboard



Alternatively you can press Print Scrn. This will often lead to the Print dialogue box.

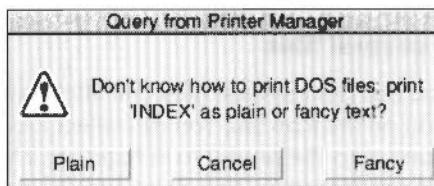
### Stopping a print job

You can stop a print job at any time by pressing Escape. After pressing Escape you should reset your printer (see your printer manual for details on how to do this); this allows the printer to be ready for printing again. This may not work with text print jobs.

## Things you can't print

You cannot print directories and applications; if you try to do so you will see an error message.

If you try and print a file and RISC OS cannot find the application associated with the file, a dialogue box asks if the file should be printed as plain or fancy text.



If you see this message you should click on **Cancel** and try to find the application that the file requires to print properly. For an application to be known to RISC OS it must have been displayed in a directory display.

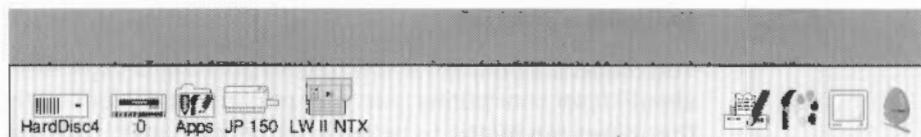
If you don't have the application, try printing it using the **Plain** option. The **Fancy** option is most often used to print files created using the 1st Word Plus application. The fancy text file format is described in detail in the appendix *The fancy text file format* on page 521.

## Using more than one printer

If you see more than one printer icon on the icon bar you will be able to print on more than one printer (or print in different ways on the same printer). For example, you might have a printer connected directly to your computer and another printer connected via a network.

Although you can have many printers on the icon bar, only one of these can be selected at a time; all of the others are greyed out. When you click on the **Print** option in an application or press the **Print** key, the file to be printed is sent to the selected printer.

To print using a different printer, click on that printer's icon on the icon bar. This selects the chosen printer and greys out all others. You can also print using any of the printers (selected or not) by dragging files onto the desired printer's icon.



### Using the same printer with different options

You can also set up several printer icons that print to the same printer but use different print options. You can, for instance set up different print resolutions and quality. If you need more information, turn to the chapter *Setting up for printing* on page 149.

## Print queue control

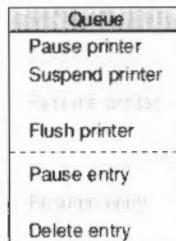
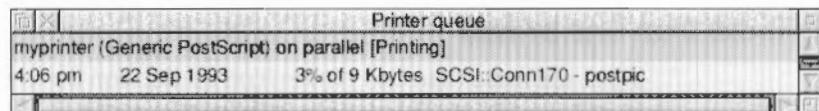
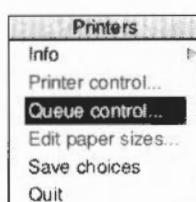
### Printing several files

You can print several files one after another by dragging their icons to the printer icon on the icon bar. You can select multiple files to be printed and then drag their icons onto the printer icon together. The files waiting to be printed are placed in the printer queue. You don't have to wait until one has finished printing before sending the next.

### The print queue

Files to be printed wait in a print queue until the printer is ready for them. This way you can carry on with your work at the same time as the printer is printing.

To control the print queue, choose **Queue control** from the !Printers icon bar menu. This displays a list of files to be printed in the **Printer queue** window. You can also display this window by clicking **Adjust** on the printer icon on the icon bar.



### The Queue menu

Clicking **Menu** over the first entry in the Printer queue window displays the **Queue** menu from which you control the printer.

**Pause printer** stops sending your file to the printer. The rest of the unprinted part of the currently printing file is not printed until you click on **Resume printer**.

**Suspend printer** prints the file currently being printed and then stops the printer. No further files are printed until you click on **Resume printer**. The printer queue is frozen in its current state.

**Flush printer** deletes the entire print queue so that no more files are printed or queued.

**Pause entry** stops the currently printing entry from continuing to print until you click on **Resume entry**.

**Delete entry** removes an entry from the queue completely.

If you click Menu over one of the other entries in the printer queue (an entry not currently printing) you can choose the additional **Suspend entry** option. **Suspend entry** stops the printer from printing a file in the print queue. The print queue 'jumps over' the suspended file. The file can be put back in the queue to be printed by clicking on **Resume entry**.

These controls only effect your personal printer queue, they have no effect on other users using a shared network printer.

## Text printing and graphics printing

Your computer uses two modes of printing: text printing and graphics printing.

### Text printing

Text printing uses the standard font built into the printer. This makes printing very fast. Text printing is used by the application Edit.

There are two types of text printing – *Plain* and *Fancy*. The way in which a file is printed depends upon its type:

- Command and Obey files are always printed as plain text.
- Text files are always printed as fancy text (you can use 1st Word plus codes in the text).

### Printing other file types

- PostScript files (with the file type PoScript) are sent to the PostScript printer for interpretation.
- Other files check with their application (eg Draw files check with !Draw) to see how they are printed.

### Graphics printing

Graphics printing sends a complete image to the printer effectively making the printed output the same as that seen on the screen. The applications Paint and Draw use graphics printing.

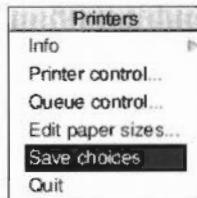
This section refers only to dot-matrix, inkjet and HP LaserJet type printers; PostScript printers handle graphics printing in a different way.

Graphics printing can be slow. However you can speed it up in the following ways:

- Print in monochrome instead of grey scale. You only need grey scale if you are printing fonts, or printing sprites in shades of grey or in colour.
- Maximise the free memory in your computer by quitting all the applications you are not currently using and any RAM disc you may have.
- Configure a fairly large font cache – at least 128KB. The font cache can be temporarily changed using the Task manager. See page 105 for information.

### Saving your choices

You should save any changes you make to the settings for your printer, otherwise you will have to go through the setting-up procedure again, next time you start the printer manager. To do this, click on the **Save choices** option on the printer icon bar menu.



## Using PostScript printers

**You don't need to read this section unless you are printing to a PostScript printer.**

Dot-matrix, LaserJet and inkjet printers use RISC OS fonts for both displaying text on screen and for graphics printing. PostScript printers, however, use RISC OS fonts for displaying text on screen and use PostScript fonts for printing. These PostScript fonts can be both built into the printer and downloaded by (sent from) the computer.

Whenever you send a file to the printer, the printer manager

- converts any Acorn fonts needed to their equivalent in PostScript (if they are not already resident in the printer)
- sends these fonts to the printer
- sends the file to be printed
- erases the fonts it has sent.

The printer manager uses the printer's built-in PostScript fonts when they are available, speeding up printing text files considerably.

## Speeding up printing

There are other (more advanced) ways of speeding up printing. These options are handled by the *FontPrint* application. They are Downloading and Mapping:

### Downloading

If you constantly use fonts that are not resident inside the PostScript printer, you may find that your files print faster if you pre-send (download permanently) the fonts when you first start using the printer manager. Permanently downloaded fonts stay inside the printer, ready for use, until the printer is reset or switched off.

### Mapping

Instead of Acorn fonts being downloaded to the printer they can instead be mapped to a corresponding PostScript font. Mapping is the technique by which an Acorn font is used by the computer, but the equivalent PostScript font is used by the printer. For example, the Acorn font Homerton Medium is always mapped to the PostScript font Helvetica. This way the built-in PostScript fonts are used whenever possible.

For information on how to download and map fonts, refer to the chapter *FontPrint* on page 351.

## Hints and tips

### Attempting to print to non-existent printers

If you attempt to print to a printer which is not connected to your computer, the computer can freeze, waiting for the printer to be connected. You may need to restart your computer.

### **Blank pages on dot-matrix printers**

If you find that a dot-matrix printer with fan-fold paper is printing alternate blank pages, try turning off the printer's form feed if it is switchable, or reduce the number of lines printed per page on the **Edit paper sizes** dialogue box.

### **Printing BASIC listings**

To print a listing of a BASIC program, drag the program file from a directory display to your printer icon. When a BASIC program is loaded into Edit, it does not print as text from Edit.

### **Printing Music files**

To print a music file, you have first to load it into Maestro and choose **Print**, rather than just drag it from a directory display to your printer icon.



This chapter shows you how to change various advanced parameters that control the desktop environment. The menu option you will use most often is **Shutdown**; used before you switch off the computer. You probably won't often use the other options unless you are setting up the desktop for some special use.

These parameters are set using the **Task manager**, each use of the computer being known as a Task. The Task manager is the control panel for the computer. Through it you can monitor and control the computer system. With the Task manager you can change settings for as long or as short a time as you want. All changes to the Task manager are 'forgotten' when the computer is reset.



'Tasks' include anything the computer is doing: running an application, controlling what appears on the screen, managing areas of memory, and running the Task manager itself.

If you need to change system settings often, you may find it more convenient to change them permanently using the !Boot configuration application. Settings made with !Boot are 'remembered', even when the computer is reset. For more information on !Boot turn to chapter *Setting the desktop configuration* on page 117.

## Shutting down the computer

The most common task that you use the Task manager for is to shut down the computer. Shutdown is the process of closing down the computer and all associated tasks. You should always shut down your computer immediately before switching it off with the On/Off switch.

Task	
Info	▶
New task	▶
Task display	▶
*Commands F12	
Task window ^F12	
Desktop boot	▶
Exit	
Shutdown ^F12	

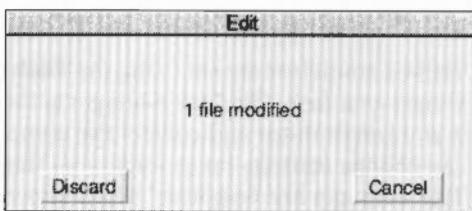
### Choosing the Shutdown option

- 1 Move the pointer over the Task manager icon on the Icon bar and click Menu.
- 2 Choose the Shutdown option on the menu.

**Shutdown** quits all your applications and makes sure all your work is saved. You are logged off any network and file servers you were logged into and your disc drive(s) are parked so that it is safe for you to switch your computer off.

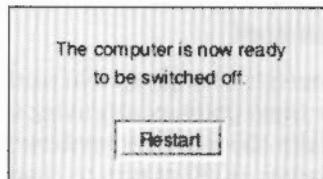
### **Shutdown messages**

As you shut down the computer, RISC OS checks your computer to see if you have saved all of your currently open files. If it finds a file that has not been saved, you will see a message much like this one from Edit.



If you don't want to save the file, click on **Discard**. The file's contents are lost and the shutdown procedure carries on. If you want to save the file, click on **Cancel**. This stops the shutdown procedure so that you can save the file. After saving the file, start the shutdown again by clicking on **Shutdown**.

After your computer has been shut down you will see the following message.



You can now switch off the computer.

## **Other Task manager functions**

The Task manager is also used

- to control and monitor tasks and the use of the computer's memory
- as a means of access to the RISC OS Command Line
- to enable you to start up your computer exactly the way you want, with specific applications running
- to leave the desktop.

The Task display is updated dynamically as applications are running. This allows you to monitor the state of the system.

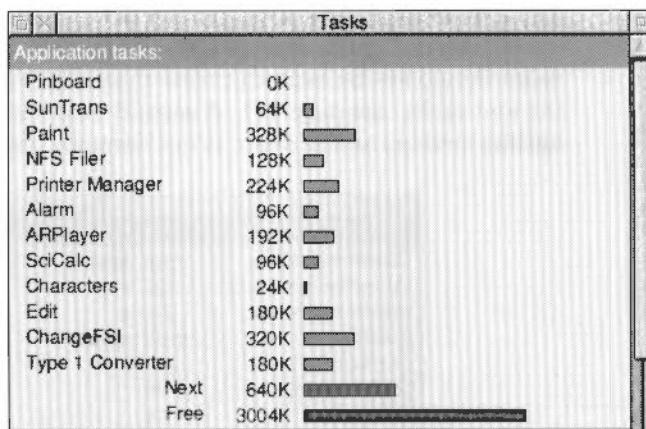
## Controlling tasks and memory

Clicking on the Task manager icon produces a window containing details of the current tasks and the use of the computer's memory. You need to scroll or resize the window to see all of this display. Memory usage is presented in the form of a number and a bar graph. When the bar is displayed in red, you can alter its value by dragging the end of the bar. The display's parameters are shown in four distinct sections

- Application tasks
- Module tasks
- System memory allocation
- Dynamic areas.

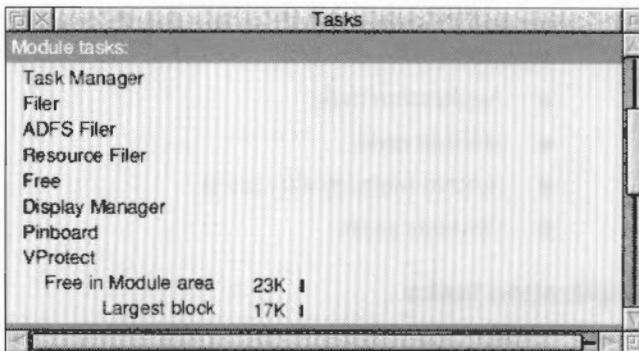
### Application tasks

**Application tasks** lists the applications which are currently running, and how much memory they are using. The bars marked **Next** and **Free** show how much memory is allocated by default to an application when it starts up, and how much free memory is remaining in the system; these two values can be changed. However, most applications override the values allocated to **Next** and **Free**, and take as much memory as they need (assuming it is available).



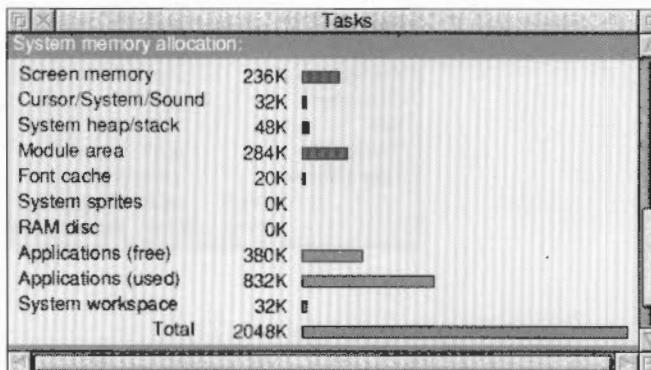
## Module tasks

The next section, **Module tasks**, lists all tasks which are running as relocatable modules (modules are extensions to the operating system), together with the amount of free memory in the module area.



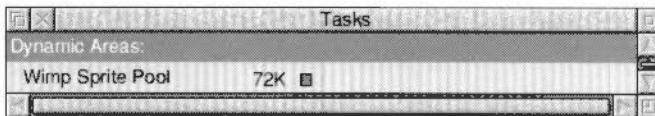
## System memory allocation

The third section of the display, **System memory allocation**, shows how the computer's memory is used. Some of the values in this section can be changed. For example, when using a large number of fonts, the system may begin to run rather slowly; increasing the area allocated to the font cache will speed things up. This value should not be reduced to less than 32K. (For more information on fonts and the font cache, see page 125.) A second candidate for reduction is the **System sprites** memory as this space is not normally used by the desktop.



## Dynamic areas

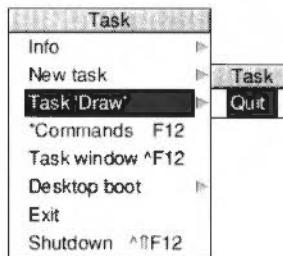
The fourth section, **Dynamic areas**, contains the entry **Wimp Sprite Pool**. This is a special memory area reserved for the sprites used by the Window manager. This value is only alterable by applications that use the Wimp Sprite Pool. This area may also contain other entries.



## Forcing tasks to quit

The Task manager can be used to force any of the tasks from the first two sections of the display to quit:

- 1 Position the pointer over the entry for the task you wish to quit and click Menu.
- 2 Move to the submenu entry for the task, and click on **Quit**.



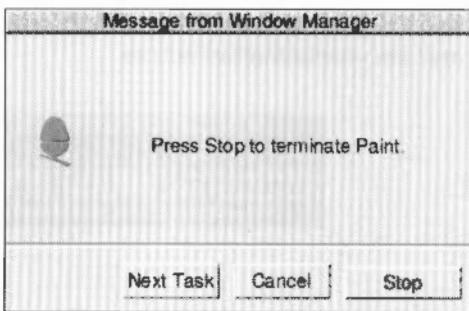
The task will quit, and the memory it was using freed. Although some programs (including Edit, Draw and Paint) warn you if there is some work you have not saved, not all programs do so; this command should therefore be used with caution, as a last resort to force a program to quit.

## Quitting tasks using the system monitor

The system monitor allows you to remove selected tasks from the memory of your computer. It is generally used when you want to remove a task that is misbehaving but you do not want to restart the whole computer system again.

The system monitor is activated by pressing the **Alt-Break** key combination. This displays a dialogue box from which you can selectively quit any of the tasks currently running in the computer.

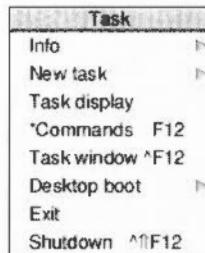
When you press Alt-Break the system monitor window displays the current task. It then asks you if you want to **Stop** the task (quit it), go onto the **Next Task** running or **Cancel** the system monitor window.



The system monitor also allows you to stop the internal desktop tasks. If you stop these tasks you cannot start them again (except by using the command line). The internal desktop tasks are: Task manager, Filer, ADFS Filer, Resource Filer, Free and Mode Chooser.

You can also stop some tasks, for example printing a file, in a less permanent way by pressing the **Esc** key.

## Command line options



The following options are used to access the command line. Most users will not normally need to use the command line. For more information on the following options, see the chapter *The command line* on page 411.

### New task

To start a new task, move to the **New task** submenu of the Task menu. This produces a box into which you can type any Command Line command. If the command causes a task that is not a desktop application to run, any output from the task will be displayed in a new window; other tasks will be suspended until this task has completed. If the task is a desktop application, starting it from the **New task** submenu is equivalent to double-clicking on the application.



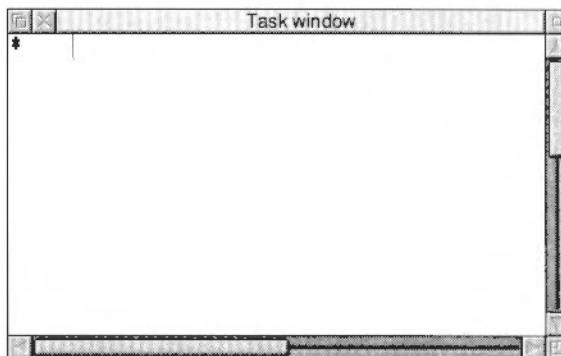
### \* Commands

By selecting **\* Commands** from the Task menu, you can enter Command Line Mode. A \* prompt appears at the bottom of the screen, and you can enter operating system commands. To return to the desktop, press Return at a \* prompt without entering any other characters on the line. Pressing F12 is equivalent to selecting **\* Commands** from the Task Manager menu.

To get back to the desktop, press the Return key on an empty line.

### Task window

This option allows you to use Command Line mode in a window. If you ever have to use the command line for more than a single command, this is the best way to do it. To open the window, choose **Task window** from the icon bar menu. You can have more than one task window open. When you open a task window, you will see the \* prompt. You can now enter operating system commands in the window. Using the Task window is explained fully in the chapter *The command line* on page 411.



### Exit

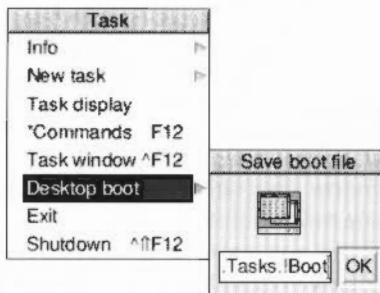
Clicking on **Exit** causes the desktop and all tasks to be closed down and replaced by the command line. The desktop may be restarted by typing `desktop` at the \* prompt, and then pressing Return.

## Saving your desktop layout



Once you have a desktop layout on your screen that you would like to use each time you start your computer, you can save the layout using the **Desktop boot** option. From the Desktop boot option select the **Save boot file** box. Click on **OK**.

There is no need to change the pathname given in the Save boot file box.



Then when you next switch on your computer, the boot file is used to recreate the same desktop that you saved.

The Desktop boot option is explained in the chapter *Modifying the system start-up configuration* on page 139.

### Tips for making a good desktop boot file

Once you have decided on the layout you wish to save, make a note of it and then restart your computer and create the layout again. When you've done this you can save the Desktop boot file. Creating the layout in this way stops you storing extraneous information in your desktop boot file.

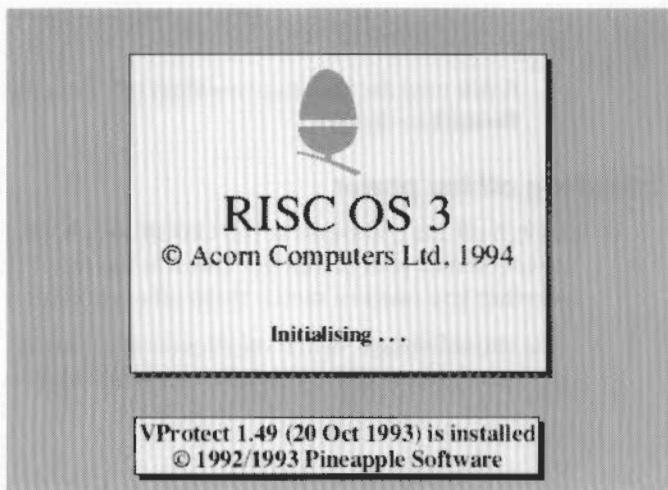
Don't use the Task manager Task display window to change any configuration options before you save your Desktop boot file. If you want to change some of the configuration options it may be better to change them permanently using !Boot before you save your desktop boot file (see the chapter *Setting the desktop configuration* on page 117).

# Power on and Reset options

The procedure for switching on and switching off your computer has already been described in the chapters *Switching on* and *Switching off the computer*, both in the *Welcome guide*. This chapter briefly recaps on this and goes on to describe some of the more advanced ways of resetting your computer.

## Switching on your computer

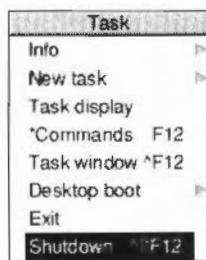
- 1 Switch on the mains supply for the computer (at the mains outlet on the wall), and that for the monitor (if its power cable is not plugged into the back of the computer) and printer (if you have one).
- 2 Switch on the mains supply for any external peripherals you may have.
- 3 Switch on the monitor and printer.
- 4 Switch on any external devices you have.
- 5 Switch the computer on, by pressing the On/Off switch. The green light on the righthand side of the computer will light up and the orange hard disc light will flash.
- 6 Once the monitor has warmed up you will see the initialisation screen and when initialisation has finished you will see the desktop. You can now start working with the computer.



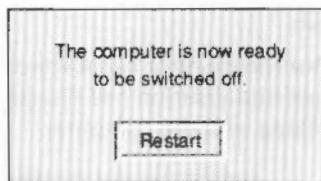
## **Switching off your computer**

When you've been doing some work on the computer and want to switch it off, you **can** simply switch off using the On/Off switch on the front of the computer. **However**, you'll lose any unsaved work this way.

### **Using the Shutdown option**



- 1 Make sure that you save any work you have been doing.
- 2 Move the pointer over the **Task manager** icon (the Acorn) and click Menu.
- 3 Choose **Shutdown** from the menu.  
The computer checks to see whether you have left any work unsaved. If you have, a window appears, asking you if you really want to quit the file and application.  
If you're sure you want to quit, click on **Discard** (to discard any changes). If you want to save your work before you switch off, click on **Cancel**, save the work, then choose **Shutdown** again.
- 4 The computer performs any 'tidying-up' operations necessary, such as quitting any applications, logging off any networks to which you may be connected, and parking the hard disc drive heads. A window appears when this has happened, telling you that the computer is ready to be switched off.



If you now decided not to switch off, you could restart the computer. Click on **Restart** to do this.

### **Switching off the power**

Switch off the computer at the On/Off switch. If you have any other peripherals connected to your computer, check in the manuals supplied with them to see whether you need to switch them off every time you switch off the computer.

You should always switch off all your equipment if you are not using for long periods; for example, overnight, weekends and holidays.

## Resetting your computer

In certain circumstances you may find it necessary to 'reset' (switch off – then on again) your computer. It's easier (and quicker) to reset the computer than to switch it off and on again using the On/Off switch.

### Shutdown first

You should always try to shut down your computer down using the **Shutdown** option on the **Task manager** menu before resetting your computer. If you have a problem with your computer that does not allow you to select the Shutdown option you can still reset your computer, however **you will lose any currently unsaved data**.

### Reset procedure

There are two ways (other than using Shutdown) to reset the computer:

- Holding down the **Ctrl** key and pressing the **Break** key – the best way to reset the computer.
- Pressing the **Reset** button at the back of the computer – the only way to reset your computer if your keyboard no longer functions correctly; this also resets your keyboard.

You should use these methods in preference to switching your computer off by the power switch and then on again.

## Computer fails to start correctly

If your computer gives unexpected error messages while it is starting up or fails to start up correctly or at all, try the following actions:

Reset the computer by holding down the Shift key and then pressing the Break key. This displays the Desktop without running any of the !Boot files.

If the desktop is displayed correctly, the cause of the problem may be within the !Boot application. You should now try to find out why your start-up files caused a problem. If you can't see anything on the screen turn to the next section *If you can't see anything on the screen*.

Your computer will not behave properly without !Boot being run during start up. Once you have cured the problem, you should reset your computer again.

### Restoring the initial !Boot settings

It is possible to restore the !Boot settings to those that were delivered with your computer. Double-click on the **!ResetBoot** application in the **Diversions** directory and follow the instructions displayed on the screen.

## If you can't see anything on the screen

There are several problems that could have occurred:

- You may have chosen the wrong monitor type configuration or a screen mode that your monitor cannot display.
- Some part of the configuration memory in the computer has been altered wrongly.

To correct these problems you must use **Delete power on** to reset the computer configuration. This also changes the Monitor type, Colours and Resolution to Auto. Monitor type **Auto** should be usable on all VGA types of monitor. Once you have a usable desktop you should select a Monitor type more suitable for your monitor.

If, after performing a Delete power on the computer still does not display anything on the screen, check to if the monitor and computer passes the Self-test routine.

### Self-test routine

When you first switch on the computer it goes through a power-on self test routine. While the test is in progress the screen changes colour and the floppy drive's LED flashes once. If the LED flashes more than once, or the screen display continuously shows the same colour, a hardware fault has been detected and start-up is halted. Contact your supplier for advice.

Normally the start-up proceeds to the desktop display.

If you cannot see anything on the monitor screen, check that it is connected properly. Connection instructions are given in the *Welcome Guide*.

## Advanced reset options

This section tells you how to use various advanced reset options such as resetting the machine configuration and configuring the specific type of monitor. Most users will never need to use the options described here.

### Returning the computer to its initial configuration

Switch-on the computer while holding down **R** or **Delete**. This resets the CMOS RAM configuration to its default state.

**R power on** preserves the Econet station number, the country code, the number of floppy and hard discs and all bytes relating to expansion cards. All other bytes are set to the default state.

**Delete power on** only preserves the Econet station number. All other bytes are set to the default state.

However if the configuration protection connector inside the computer is set to the 'protected' position, CMOS cannot be altered and these options have no effect.

# Part 2: Desktop configuration





Your computer will function well with the default settings that were set up when it was manufactured. However you can change most of the settings that affect the computer to suit more closely your own particular way of working, by using the configuration application !Boot. Changes to the configuration mostly take effect as soon as you make them, and are maintained even when you switch the computer off.

With !Boot you can change the configuration of the

- hard discs and floppy discs
- networks and fonts
- sound and screen
- windows and memory
- mouse and keyboard
- lock and system.

**Warning:** You should always keep a saved copy of the configuration of your computer so that you can restore the configuration to its original state. See the section *Saving the system configuration* overleaf.

The table below shows which icons to choose to carry out configuration tasks:

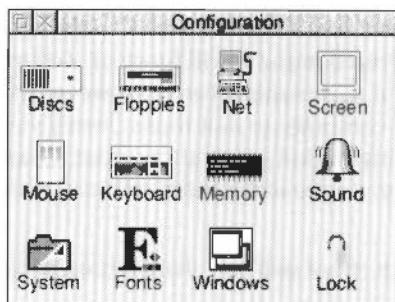
To set the:	Choose	Page
Hard disc drive configuration	Discs	120
Floppy disc drive configuration	Floppies	121
Network configuration	Net	121
Sound configuration	Sound	127
Monitor configuration	Screen	128
Window behaviour	Windows	132
Memory allocation	Memory	125
Mouse gearing	Mouse	123
Keyboard rate	Keyboard	124
Font configuration	Fonts	130
System configuration	System	130
Password locking	Lock	134

## Changing the configuration

To start the configuration application !Boot:

- 1 Click on the hard disc icon.
- 2 Double-click on the !Boot icon in the directory display.

This displays the Configuration window:



- 3 To open any of the Configure option dialogue boxes, click on the relevant icon. For example, to change the sound system configuration, click on the sound icon.

## Saving the system configuration



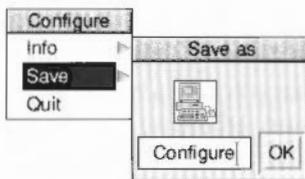
You should always keep a copy of your own configuration file so that if you lose your configuration you can easily and simply restore it. The configuration can be lost (or partly lost) by

- the computer's internal battery failing
- using special power-on reset combinations
- using an unwise \*Configure command
- changing the configuration without remembering your initial settings.

### To save a configuration:

- 1 Press Menu over the Configure display.
- 2 From the **Save** option display the **Save as** dialogue box, showing the special Configure icon.
- 3 Save it by dragging the icon to a directory display. Keep a copy on floppy disc in a safe place.

You may also find it convenient to save more than one configuration; perhaps your computer is used by someone else who prefers a different setup from you.



You should keep your configurations on a floppy disc and keep them in a safe place. If the configuration in your computer is lost for any reason you will need to restore your configuration settings from disc.

### Restoring a configuration

You can restore a configuration by double-clicking on the configuration file.

### What is in a configuration file?

Configuration files record only those features that you can set using the Configure application, but not the aspects of your computer's configuration that can be changed using the Command line. You should keep a separate note of changes you make to the configuration via the command line. For more information about commands available from the command line, read the chapter *The command line* on page 411.

The configuration file may prove particularly useful if you are running an application that uses a large proportion of the computer's memory. Such an application's documentation should contain advice about how to change configuration details so as to release as much memory as possible, but this may produce a configuration that, while it is useful for a particular application, may not suit your usual requirements.

You could therefore save several configuration files, each optimised for a particular application or way of working that you could use whenever necessary.

### Making sure configuration changes take effect

Some of the configuration options do not take effect instantly, they require the computer to be shutdown and restarted before the options take effect. For example the **Use ArthurLib** option in the Net window and all the **Memory** options only take effect after a shutdown and restart.

To exit from the configuration screen, click on its Close icon or choose **Quit** from the menu.

## The configuration windows

The configuration windows use some special conventions:

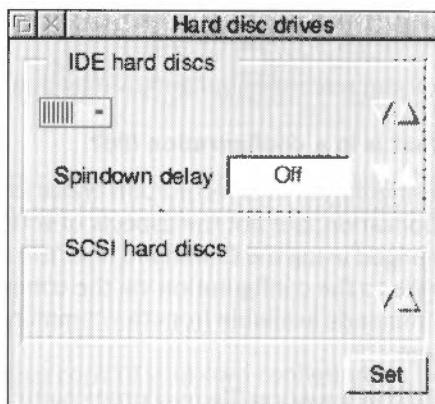


- When you click on the menu icon a menu is displayed. You can also click Menu to display the menu.
- When you type a number or word into a box, make sure you always press Return, otherwise your typing will not be remembered by the computer.

## Discs



Click on the up and down arrows to change the number of hard disc drives you have in your computer.



You can have

- up to two IDE hard discs
- up to four SCSI hard discs.

Usually your computer will only support one type of hard disc (IDE or SCSI). Look in your *Welcome Guide* to find out which type of disc your computer has. Consult your supplier if you are in any doubt.

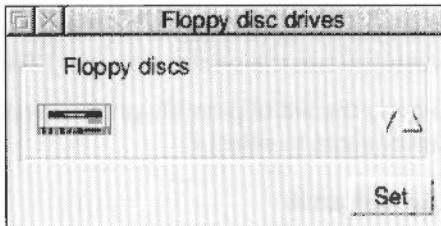
When you have selected the number of hard discs, click on **OK** to make the changes. Do not select a different number of hard discs from those actually in your computer as this may cause problems.

IDE drives support **Spindown delay**. This is the interval between the last disc access and the disc drive motor being turned off. Once the motor is turned off, the drive is reactivated (the motor is turned on again) as soon as you access the hard disc. For most disc drives Spindown delay is not activated and cannot be used.

## Floppies



Click on the up and down arrows to change the number of floppy drives you have so that they reflect the number in your computer.

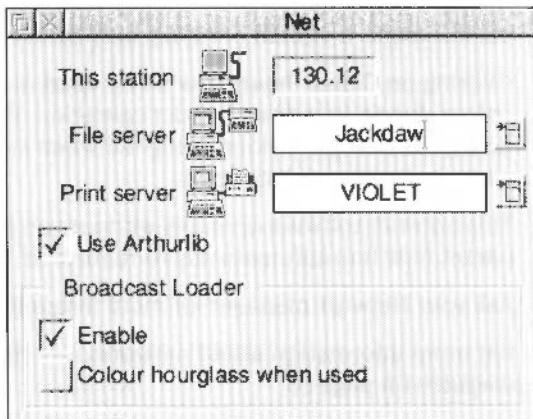


When you have selected the number of floppies, click on **OK** to make the changes. Do not select a number of floppies different from that actually in your computer.

## Net



This option is only available if you are connected to an AUN or Econet network.



### This station

This gives the Net station number of your computer. The number before the dot is the net number, common to all computers on your net. The number after the dot is the station number of your computer; it is set by your network manager.

### Fileserver

This sets the file server (by number or name) that will be selected by default when you click on the Net icon bar icon, in order to log on to a network.

Display the list of possible file servers by clicking on the menu icon. Click on a server name to select it.

#### **Print server**

This sets the printer server (by number or name) that will be selected by default when you use the printer manager (!Printers) to print to a remote network printer.

Display the list of possible printer servers by clicking on the menu icon. Click on a server name to select it.

#### **Use ArthurLib**

If this box is ticked, the library directory \$ArthurLib is selected after log on. If this box is not ticked, then the library directory \$Library is used. Your network manager will tell you which option to use. This option is not set immediately; the computer has to be reset before this option takes effect.

#### **Broadcast Loader**

Click on **Enable** to activate the Broadcast Loader. The Broadcast Loader is used to increase performance when loading application software from file servers in a busy environment. It should normally **only** be used with Econet networks.

Clicking on **Colour hourglass when used** displays the hourglass in a different colour during Broadcast Loader operation. If you have this option set, the hourglass changes colour, going red when re-broadcasting a request and green when receiving a rebroadcast.

This network software operates without you having to take any action. If a message packet fails it is automatically re-requested.

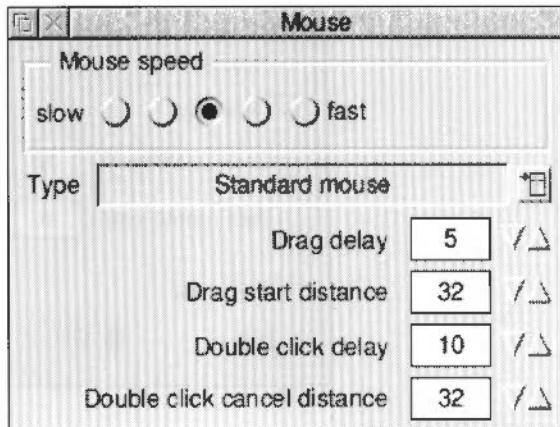
Ask your Network manager for more information about using Broadcast Loader.

For more information about networks, see the chapter *Communicating with other computers* on page 63.

## Mouse

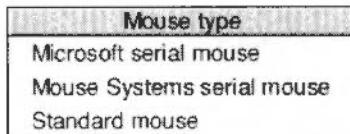


This dialogue box sets up the mouse configuration options.



**Mouse speed** can be set from slow to fast. The faster the speed set, the quicker the pointer moves around on the screen.

**Type** is the type of mouse used with the computer. The Acorn mouse is defined as the Standard mouse. You can use a Microsoft or Mouse Systems type serial mouse connected to the serial port. If you do, change the mouse type accordingly.



Don't choose the wrong mouse type, otherwise your computer may not operate correctly.

**Drag delay** is the amount of time you need to hold down the mouse button before the computer decides you are starting a drag. The default is 5 tenths of a second.

**Drag start distance** is the distance you can move a mouse before the computer decides a drag has occurred. The default is 32 OS (operating system) units.

**Double click delay** is the time interval in which two successive clicks are interpreted as a double-click. The default for this option is 10 tenths of a second.

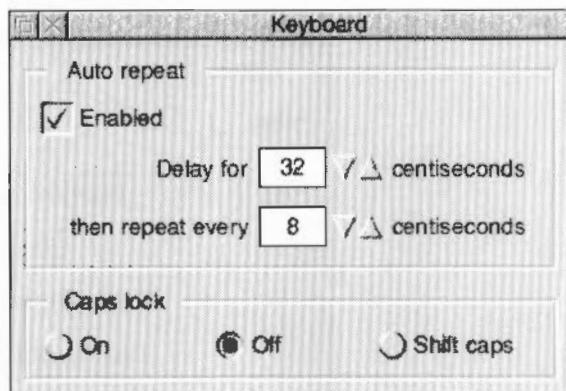
**Double click cancel distance** is the distance you can move the mouse during a double click operation before the double-click is cancelled. The default for this option is 32 OS units.

Values that differ greatly from those above may give rise to very strange effects with some applications.

## Keyboard



This dialogue box sets up the Auto repeat and Caps Lock options for the keyboard.



### Auto repeat

This option controls how quickly characters are repeated when you hold down a key on the keyboard.

To turn on auto repeat, click on the **Enabled** box.

The **Delay for** rate is the time interval before a key starts to autorepeat. Use the arrow keys to adjust this rate. The default value is 32 centiseconds.

The **repeat every** rate is the time interval between the generation of auto repeat characters. Use the up and down arrows to adjust this rate. The default value is 8 centiseconds.

### Caps Lock

This option configures the state of the Caps Lock key when the computer is turned on. Choose one of the following options by clicking on its radio icon (button):

**On** configures Caps Lock to be on – when you type you will see uppercase letters.

**Off** configures Caps Lock to be off – when you type you will see lowercase letters.

**Shift caps** configures Caps Lock to be on – when you type you will see uppercase letters. However holding down the Shift key will produce lower case letters, which does not happen when **On** is chosen.

In normal use Caps Lock should normally be configured Off.

## Memory



You can change the allocated memory by clicking on the up arrow to increase memory and on the down arrow to decrease memory. Alternatively you can click over the numbers and type in your alternatives. Remember to press Return when you have finished typing a number. If you change any of these options you must reboot the computer, otherwise the changes will not take effect.

Memory allocation		
Screen memory	0	/ \ KBytes
System heap/stack	0	/ \ KBytes
Module area	0	/ \ KBytes
Font cache	32	/ \ KBytes
Font cache limit	0	/ \ KBytes
System sprites	0	/ \ KBytes
RAM disc	0	/ \ KBytes

### Screen memory

This reserves an area of memory for use by the screen. Normally you will not need to reserve any screen memory, since the memory required for the screen is taken automatically if it is available. However if you are low on memory and wish to reserve some for the screen, use this option.

### System heap/stack

This reserves extra memory for the System heap over and above that needed initially by the system. We recommend that you leave this value at zero (0) unless you have a specific application that requires a different setting.

### Module area

This reserves memory for modules that will be loaded from disc. This is extra on top of the area used by the ROM modules. We recommend that you leave this value at zero (0), unless you know that an application you will be using has a large number of RAM modules. Even then this will not be a problem unless you are running short of memory.

### **Font cache**

This reserves an area of memory for fonts. If you seldom use fonts you should set this to a small value, about 32Kbytes. If you are making extensive use of fonts, using a publishing or drawing application for example, then a larger font cache may help – about 256Kbytes. The size of the font cache depends on the font characteristics and the screen mode you are using. However the font cache can grow to the size defined by the font cache limit option if the free memory is available. See the appendix *The Font manager* on page 491 for more information about fonts.

Note: Do not set the font cache below 32Kbytes. If you choose to use sub-pixel anti-aliasing (see page 130) with your font you should allow more font cache as this technique takes up more font cache space. For example if you use Homerton.Medium as your desktop font, you need a font cache of 32Kbytes. However if you use the same font and size with sub-pixel anti-aliasing turned on, you need 128Kbytes. If you see an hourglass on the screen as the desktop is redrawn you may need to increase the font cache size.

### **Font cache limit**

This value specifies the maximum size to which the cache may grow. When the cache reaches this setting, old fonts are deleted from the cache as new ones are added. If this value is zero or smaller than the Default font cache then the cache will not expand. If you are using several fonts then you may want to set this to a high value such as 256Kbytes. If your computer contains more than 4MBytes of memory you can set this to a higher values such as 512Kbytes.

### **System sprites**

This is an area for use by system sprites. This option can normally be set to zero. Some games may require a small sprite area (approximately 32Kbytes).

### **RAM disc**

This creates a RAM disc of the size you have specified. The RAM disc icon appears on the icon bar. Unless you always use the RAM disc it is probably less wasteful of memory to start the RAM disc from the Task manager when you want it.

These memory allocation options are not set immediately. The computer has to be reset before these options take effect.

## **Your Desktop boot file overrides these settings**

When you save a Desktop boot file, the values of the Font cache, System sprites and RAM disc are saved in the Desktop boot file; these values are taken from those in the Task Manager configuration window.

These values may be different from those set up in the !Boot/Configuration window (for example, altering the Task manager will result in different values).

Once you have saved a Desktop boot file, altering these values in the **Memory** window of !Boot/Configuration has no effect, since the values in the Desktop boot file override those in the configuration files.

The only way to allow these settings to take effect is to save a new Desktop boot file or edit the existing Desktop boot file.

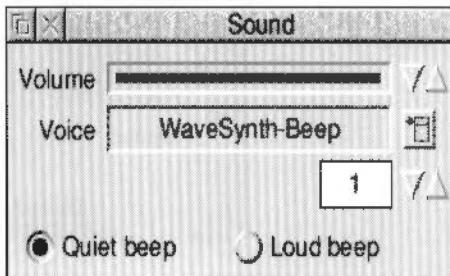
For more information refer to the chapter *Modifying the system start-up configuration* on page 139.

## Sound



This dialogue box sets the Sound configuration.

Sound



### Volume

Sound volume sets the volume of the computer's speaker. This controls the overall level of sound output from any sound-generating activity.

### Voice

Voices
WaveSynth-Beep
StringLib-Soft
StringLib-Pluck
StringLib-Steel
StringLib-Hard
Percussion-Soft
Percussion-Medium
Percussion-Snare
Percussion-Noise

This sets the voice which will be output by the first of the computer's eight sound channels. Since this is the channel used by the beep, you can use this setting to change the type of beep to any of the installed voices.

Click over the menu icon to display a list of installed voices; choose a voice by clicking on it. You can also cycle through the voices using the up/down arrows.

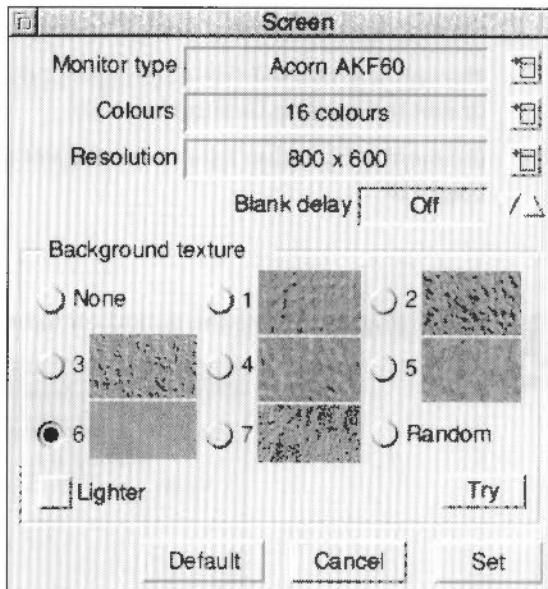
### Beep

This sets the level of the computer's standard beep, used for giving warnings, drawing your attention to error messages, and the like. The 'meaning' of **Quiet** and **Loud** is determined by the value you have set for Sound volume: a Loud beep is not quite as loud as the highest value you have set the volume.

## Screen



This window sets up the Screen configuration parameters.



When you have finished setting up the parameters click on the **OK** button. If you have made changes in the window but don't want to save them, click on **Cancel**. If you want to bring the screen into a known state click on the **Default** option.

### Monitor type

Monitor type
Acorn AKF 50
Acorn AKF 60
Acorn AKF 80
Auto

Click on the Menu icon to display a list of monitors that are supported. Find the monitor that you are using and choose it by clicking on the monitor name.

If your monitor is not listed, the **Auto** option should enable the use of your monitor, but it probably won't make full use of all of its facilities.

Note: When you change the amount of Video RAM (VRAM) in your computer, the computer only recognises the change if you reselect your monitor type. You will then have access to a new range of options in the Display manager.

If you want to use an alternative monitor type with the computer you should contact your supplier for more information.

### Changing the monitor type configuration

If you have chosen the wrong monitor type configuration and screen mode combination for your monitor, you may not be able to view or use the desktop.

To return to a screen combination that is usable, you must use Delete power on to reset all the CMOS bytes. This also has the effect of changing the Monitor type, Colours and Resolution to Auto.

Monitor type **Auto** should be usable on all VGA types of monitor. Once you have a usable desktop, you should select a Monitor type more suitable for your monitor.

### Colours

Click on the Menu icon to display the colour selections that are supported. Initially we recommend that you choose either a 16-colour selection or a 256-colour selection. If you find you always work with more colours you can change this selection.

### Resolution

Click on the Menu icon to display the desktop resolutions that are supported by your monitor. We recommend that you use a square pixel mode such as 640x480, 800x600 or 1024x768. Square pixel modes keep the proportions of objects constant. If you find you always work with other resolutions, change this selection.

### Blank delay

This controls how long the interval is between the last key press or mouse movement and the screen blanking (turning black). Moving the mouse or pressing a key switches the monitor screen on again.

Note: There may be interference on the blanked screen if a sound is played while the screen is blanked out. This is nothing to worry about.

### Background texture

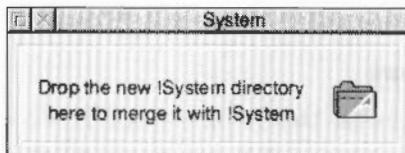
This allows you to choose one of seven different background textures for the desktop, or, if you prefer, no texture at all. You can also click on the **Lighter** button to get a lighter version of each texture. You can try out the background before choosing it by clicking on the **Try** button. If you would like a different background each time you start the computer, click on the **Random** button. The **None** option gives the standard grey background.

## System



This window is used to update your computer system with replacement parts of the operating system or additional extensions required by applications. These parts are called modules and are supplied in an application called !System.

To add a !System to your computer drag the !System icon you wish to add over the !System icon in this screen. Updating the !System may take a little while, as the modules are read from the disc and then stored in the computer.



## Fonts



This dialogue box allows you to change the font configuration.



The Font manager uses a technique called *anti-aliasing* to improve the quality of fonts. This technique blurs the jagged edges of characters making them look much smoother. All character sizes are given in points. A point is equivalent to 1/72 of an inch.

### **Anti-alias up to**

Click on the arrows to place an upper limit on the size of anti-aliased fonts. Fonts in larger sizes are usually printed without anti-aliasing. Larger fonts benefit less from anti-aliasing, and since an anti-aliased font occupies a lot more memory than a non-anti-aliased font, it is not worth displaying large fonts with anti-aliasing.

The value given here should never be set to less than 12 points as this is the size of the text used by the desktop.

### **Cache bitmaps up to**

Click on the arrows to specify the largest bitmap font size which is to be kept in the font cache. This value should normally be set to the size of the bulk of the text in any particular document.

Fonts in the font cache are stored as bitmap fonts. Bitmaps allow speedy text drawing to the screen. Fonts larger than this size will be drawn from outlines directly to the screen without caching and without anti-aliasing.

If the cached bitmaps value is set high, and you are using a few large fonts – for headlines, perhaps – they may take up all the font cache, flushing out smaller fonts. The smaller characters will then have to be cached again when needed. This effect can slow down printing and the display.

This parameter is relevant for the printer, especially if you are printing documents with a lot of text. Its ideal value depends on the screen mode, printer type and the printer resolution.

If you have are printing at a high resolution, you may wish to increase the value of this parameter.

### **Sub-pixel anti-aliasing**

This controls a refinement of anti-aliasing in which four separate versions of each character are retained. This can have a beneficial effect on the quality of characters (on the screen) at small point sizes. However it is heavy on computing power and may result in unacceptably slow screen updates. Therefore this parameter should not normally be changed from its default value of **off**.

If you use this option you will need to increase your font cache; see page 125 for more information.

### Desktop font

Homerton
Bold
Bold Oblique
Medium
Medium Oblique

The menus and directory displays on the desktop can be displayed using any of the text fonts available on your computer. To choose a font, click on the Menu icon and choose the font that you want to use. All fonts are displayed at 12pt size. The standard desktop font is Homerton.Medium. We recommend that you only choose between Homerton.Medium and System font as the standard desktop font.

### Merging !Fonts



This part of the window is used to add fonts to the computer. Fonts normally come supplied in a !Fonts application. To add the fonts to the computer's internal !Fonts application (hidden within !Boot) you drag the !Fonts icon that contains the new fonts to the !Fonts icon in this window. Updating the fonts will take a little while as the fonts are read from floppy disc and stored in the computer.

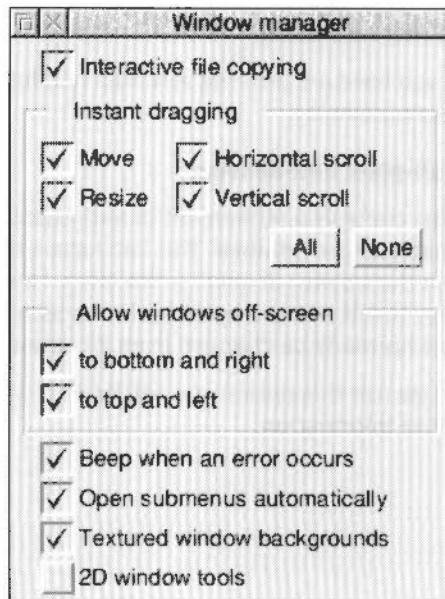
Clicking on the **OK** box redraws the screen using the values you have set up with this window.

If you want to understand more about how the Font manager operates, you should read the appendix *The Font manager* on page 491.

## Windows



This window is used to configure the way the desktop windows behave.



### Interactive file copying

This option allows background Filer operations; it allows you to do something else while you are carrying out a Filer action such as copying. This option is normally enabled, allowing Interactive file copying.

If you Interactive file copying is disabled, the desktop cannot be used while the Filer copying operations are in progress. Not using Interactive file copying can sometimes result in quicker Filer operations.

### Instant dragging

When set, these options update the screen as a window is dragged, resized or scrolled. There are four possible states, any of which can be on or off. When these options are ticked, the screen is updated instantly, when off, only a dotted outline moves until you have finished the drag. Using outline moves is sometimes quicker than instant moves:

- **Move** gives instant effects when you move a window around the screen.
- **Resize** gives instant effects when you resize a window.
- **Horizontal scroll** gives instant updating of the windows' contents when using the horizontal scroll bars.
- **Vertical scroll** gives instant updating of the windows' contents when using the vertical scroll bars.

Click on **All** to select all of these options and **None** to deselect them all.

### Allow windows off-screen

Windows can be dragged off screen so that part of the window is not on the desktop. You cannot lose a window, since part of the Title bar is visible on screen:

- **to bottom and right** means that you can drag windows off the righthand and bottom edges of the screen.
- **to top and left** means that you can drag windows off the lefthand and top edges of the screen.

### Beep when an error occurs

This causes a beep to sound whenever an error box is displayed on screen.

### Open submenus automatically

This option allows submenus and dialogue boxes to display automatically after a short delay. Submenus are indicated by a righthand arrow on the menu.

### **Textured window backgrounds**

This option allows you to have textured backgrounds on your desktop windows.

### **2D Window tools**

This option changes the look of the main window icons so that they no longer have the three-dimensional look.

## **Lock**



The Lock screen can be used to give the computer password protection; this enables you to protect your hard disc and computer configuration against unwanted changes.

Once the computer has been given a password you can choose whether the computer is locked or unlocked.

The computer can be in one of three states:

- No password set
- Password set - computer unlocked
- Password set - computer locked

#### **No password set**

This is how the computer is delivered. The computer is fully unlocked:

- All of the hard disc can be read from and written to.
- All of the computer's software configuration can also be modified.

#### **Password set - computer locked**

You have set a password using the Lock window.

- On the hard disc only the **Public** directory can be written to. All parts of the hard disc can be read from.
- None of the computer's software configuration can be modified.

The computer must be unlocked (using the Lock window) before other parts of the disc or the configuration can be altered.

Each time the computer is switched on (or reset) it starts up locked.

#### **Password set - computer unlocked**

You have set a password using the Lock window and you have explicitly unlocked the computer using the Lock window.

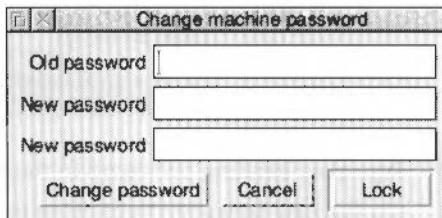
- All of the hard disc can be read from and written to.

- All of the computer's software configuration can be modified.

Each time the computer is switched on (or reset) it reverts to being locked.

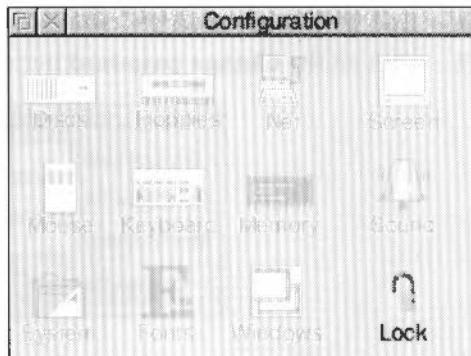
## Setting the password

- 1 Click on the Lock icon; this displays the **Lock** window:



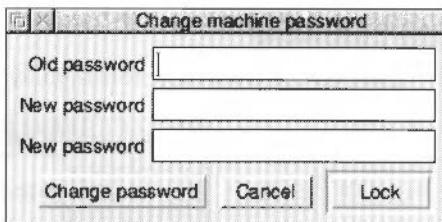
- 2 Set the password by clicking in the **New password** box and typing in your password. It must be five characters or longer.
- 3 Use the down arrow to move to the next **New password** box and type the password in again.
- 4 Click on the **Lock** button.

You'll see that the configuration window has changed. Now only the Lock screen can be used. Your computer is locked.



## Changing the password

- 1 Click on the Lock icon; this displays the **Lock** window:

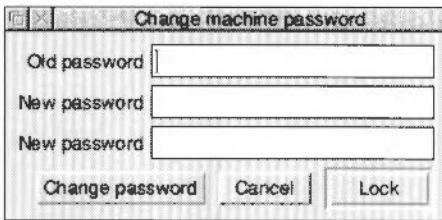


- 2 Type your existing password in the **Old password** box.
- 3 Set the new password by clicking in the **New password** box and typing in your password. It must be five characters or longer.
- 4 Use the down arrow to move to the next **New password** box and type the password in again.
- 5 Click on the **Change password** button.

## Removing the password

If you have a password and want to remove it so that there is no password on the computer:

- 1 Type the password into the **Old password** box.
- 2 Click on the **Change password** button.



This restores the computer the way it was delivered with no password at all.

## Locking the computer

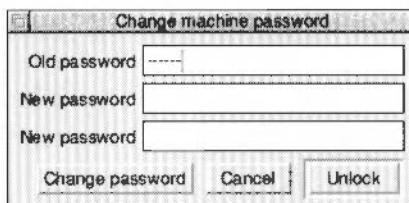
If you have set the password and unlocked the computer you can lock the computer again:

- 1 Click on the Lock icon this displays the **Lock** window.
- 2 Click on the **Lock** button.

Your computer is now locked.

## Unlocking the computer

- 1 Click on the Lock icon; this displays the **Lock** window:



- 2 Click in the **Old password** box and type in your password.
- 3 Click on the **Lock** button.

Your computer is now unlocked.

## Using the hard disc with a locked computer

With a locked computer you can still read files and load and run applications on the hard disc. You can also write files, directories and applications to the **Public** directory in the root directory of the hard disc.

However you must already have created the Public directory. Floppy discs are never locked.

## Using applications with a locked computer

Some applications automatically write information to the hard disc as they are started or during use. If your computer is locked then this cannot occur.

!Alarm usually saves its alarm files onto the disc. You can't do this with a locked disc so you'll see an error message. However you can explicitly save your alarm file to the Public directory; see *Alarm* on page 317 for details on how to do this.

!Printers cannot be modified while the disc is locked.

Applications that save configuration details using a **Save choices** option cannot be changed; !ARPlayer for example.

You cannot use the **Desktop boot** option in the Task manager to save a new boot file.

## Protecting the computer against tampering

Even with a computer that has been password locked, the computer can still be tampered with if a user performs a command to reset the computer configuration – a Power-on Delete. To overcome this problem a special *configuration protection connector* inside the computer case can be changed so that a configuration reset cannot be performed.

When the *configuration protection connector* is in place the configuration cannot be affected by a configuration reset. The procedure for setting this connector is given in the *Welcome Guide*. To protect against tampering with the connector you should also lock the computer case with a padlock.



This chapter explains how the computer operates when you switch it on. It covers the processes involved between switch-on and the time when you can start working. These processes are started and controlled by the !Boot application.

The !Boot application is always stored on the hard disc in the root directory. Click on the hard disc icon and you will see it.

### **Never move or delete !Boot; your computer may not work if you do!**

If you want to alter the way in which the computer starts up you need to change some of the files within !Boot. If you've used the Save Desktop boot file option from the Task manager you already know of one way to make changes to !Boot. This chapter shows you how change !Boot by hand. This chapter will tell you how

- to save a Desktop boot file
- to change the contents of a Desktop boot file
- to use the !Boot application
- to modify some of the files in !Boot
- to update the resource applications !System and !Fonts directly
- to modify the contents of the icon bar Apps directory.

### **Saving all of !Boot**

!Boot is one of the most important applications on your computer. Without it your computer will not operate correctly. You should make sure that you save a copy of !Boot on a floppy disc before you start changing any configuration parameters within !Boot. You should follow the directions given in *Backing up hard discs* on page 51. Follow the procedure given there, but only drag !Boot to the floppy disc directory display.

You could also make a copy of !Boot on the hard disc so that you can quickly copy back a working !Boot if you have problems. When you copy !Boot, give it a different name (for example, Bootcopy) that does not begin with an exclamation mark. This ensures that the computer does not think it is an application. You can also restore the !Boot file to its factory default values using the **!ResetBoot** application in the **Diversions** directory.

## Desktop boot files



The Desktop boot file allows you to save the current working environment – the Desktop – so that when you next switch on the computer you will see the same environment again. The Task manager chapter (page 103) gives basic information about how to create and save a Desktop boot file.

### What a Desktop boot file saves

The Desktop boot file can save

- applications running on the icon bar
- changes made to running application defaults
- the Pinboard and backdrop
- network connections
- system configuration changes.

The **Desktop boot** files tell the computer to start up certain programs and to set certain options each time you start up the computer. For instance you could start up Edit and Alarm, and then log onto your file server.

The following section shows you how to make a Desktop boot file and how to modify it to include your own commands and scripts.

### Making a Desktop boot file

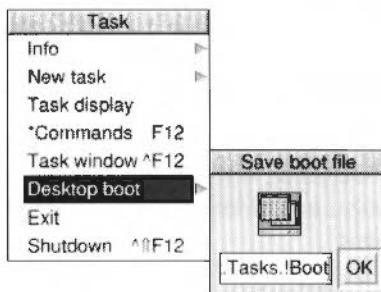


To create a Desktop boot file, follow these steps:

- 1 Make a list of exactly what you want your Desktop boot file to do.
- 2 Save any files you are working on.
- 3 If your computer already has a Desktop boot file you should delete it (see page 145).
- 4 Shutdown and then restart your computer.
- 5 Set up your desktop just as you want it to look when you switch on. This might include
  - starting one or more applications
  - opening one or more directory displays
  - loading a printer driver
  - logging on to a network.

It is important that you do not do anything that you don't want to have in your Desktop boot file, as otherwise your Desktop boot file stores unwanted instructions.

- 6 When you are ready, press Menu over the Task manager icon and move to the **Desktop boot** option and display its dialogue box, which looks like this:



- 7 Save the file by clicking on **OK**.

**Don't change the path name given in the Save box.**

Now, each time you switch on or reset your computer, the Desktop boot file is used to start up and display the desktop in exactly the way it looked when you saved the Desktop boot file.

### Inside the Desktop boot file



It is fairly easy to inspect and edit your Desktop boot file.

#### Finding the Desktop boot file

The Desktop boot file is stored in the following file.

ADFS: :HardDisc4 . \$. !Boot . Choices . Boot . Tasks . !Boot

Remember to view the contents of an application directory such as !Boot, hold down the Shift key when you double click on the application.

To view the Desktop boot file, start !Edit and then drag the Desktop boot icon onto the Edit application icon on the icon bar.

#### Inside the Desktop boot file

This section looks at the typical lines found in a Desktop boot file. You don't need to know these details to **use** a Desktop boot file, but an understanding may be useful if you decide to **edit** your Desktop boot file. To look at a Desktop boot file, drag the boot file icon from the **Save boot file** box to the Edit icon. You'll find out how to change this file on page 143.

The following example uses typical entries and values; however these may be different or not present on your computer.

**WimpSlot -next 640K**

This gives the amount of memory allocated to the next application, usually 640KB.

**ChangeDynamicArea -FontSize 32K**

**ChangeDynamicArea -SpriteSize 0K**

**ChangeDynamicArea -RamFsSize 0K**

These give the amount of extra memory reserved for Fonts, the Sprite cache and the RAM disc. If you have used the Task manager to change these values, those changes are saved here and will override any set by the !Boot configuration window.

If you have not purposely changed these three settings it is a good idea to delete them from the Boot file. You can then change these settings using the !Boot configuration window.

**ColourTransLoadings &2 &4 &1**

This gives the colour balance used by the desktop. This should not normally be changed.

**Desktop SetPalette**

This tells the desktop which set of colours to use. This reflects the settings chosen using the Palette.

**net:logon :Business Steve**

This line logs Steve onto the file server 'Business'.

**Filer\_OpenDir adfs::HardDisc4.\$ 2 712 712 188 -sn -si**

This line causes the root directory of the disc HardDisc4 to be displayed when the desktop starts up. The numbers define the position of the display on the desktop and the parameters -si and -sn define the format: small icons and sorted by name. The position of directory displays on the screen is given in OS (operating system) units and, the display type given with one or more of the following parameters

- -li, large icons
- -si, small icons
- -fi, full information
- -sn, sort by name
- -st, sort by type
- -ss, sort by size
- -sd, sort by date.

**Filer\_Boot adfs::HardDisc4.\$Apps.!Alarm**

This line defines a file stored in a directory, in this case the Alarm application. It causes the application's location and sprite to be stored in memory so that when the application is looked for, the computer know where to find it.

You can edit the Desktop boot file to add Filer\_Boot lines. Adding lines for files in frequently-used directories will speed up opening these directories (the first time) but will make starting up or resetting the computer take longer.

**RMEensure VProtect 0 RMRun System:Modules.VProtect**

This runs the virus protection module VProtect. It protects your system against viruses.

**Pinboard****Backdrop -T ADFS::HardDisc4.\$.!Boot.Resources.Configure.Textures.T6**

This starts Pinboard and displays the desktop backdrop you have chosen from the !Boot Screen configuration window.

**Run adfs::HardDisc4.\$Apps.!Edit**

This starts the Edit application so that its icon appears on the icon bar. You can edit the Desktop boot file to run any applications by using the Run command followed by the pathname of the application.

**Set Edit\$Options F13 B1 W8 H12 NTrinity.Medium**

This sets up some configuration options for the Edit application. These options are saved automatically when you save your Desktop boot file.

You can set up the configuration options for many different types of application. Details of configuration options for each of the applications in the application suite can be found in the appendix *Configuration information* on page 497.

It is possible to store configuration options for applications that are not loaded immediately. These configuration options are kept in memory and used when the relevant application is loaded.

## Editing the Desktop boot file

### Changing application parameters

Most of the applications in the application suite have a set of parameters that tell the application how to behave. These parameters can be saved then edited.

For example, if you use run Edit and then perform a desktop save, the following lines could appear in the Desktop boot file:

```
Set Edit$Options F8 D NCorpus.Medium  
Run ADFS::HardDisc4.$.Apps.!Edit
```

The line beginning Set tells Edit to display the text colour in dark blue (F8), leaving the background white, switches word wrap on (D), and sets the font to Corpus.Medium (NCorpus.Medium).

Occasionally you might want to edit out the Run line so that the application is not started. This will leave the Set line which contains the parameters you use with your application. Now, whenever you start your application, it will use the parameters that are in the appropriate Set line. Editing your file in this way lets you set up parameters for your applications without actually starting them.

You should be careful when experimenting with Desktop boot files. It is very easy accidentally to save a Desktop boot file and in doing so wipe out your current Desktop boot file. Make a copy of your current Desktop boot file before you start experimenting, or save the resultant Desktop boot files with a name other than !Boot. You can then use Edit to copy the relevant parts of the files into a new !Boot file.

Any file can be made a Desktop boot file simply by giving it the file type Desktop (Use the Set type option in the File menu), and saving it as:

```
ADFS::HardDisc4.$.!Boot.Choices.Boot.Tasks.!Boot
```

### **Desktop boot file overriding the CMOS RAM settings**

When you run a Desktop boot file, it may be set to override some CMOS RAM settings that are set by the !Boot configuration application. This can cause confusion. If you have saved a Desktop boot file and then change these parameters using !Boot configuration, the changes don't have any effect. This is due to the boot file overriding the configuration settings. The following settings are affected:

- Font cache size
- Sprite cache size
- RAM disc size.

If you are not changing these settings you may want to delete them from your desktop boot file so that changes you make using !Boot configuration are used correctly.

### **Pre RISC OS 3 applications**

Applications written before RISC OS 3 was released cannot automatically be saved using the Desktop boot option in this way. However, you can still add lines to your Desktop boot file by hand.

The following line runs the application !OldApp.

```
Run adfs::HardDisc4.$.!OldApp
```

### Changing the name of your hard disc

When you create a Desktop boot file, the file includes the name of the hard disc. If you rename your disc, or move your auto-loaded applications, the Desktop boot file may cease to work unless you edit or reconstruct it.

### Moving applications

If you use the Desktop boot file to load applications you must not move those applications to a different directory unless you also change the Desktop boot file to reflect the changes. If the Desktop boot file cannot find an application or file it simply ignores the instruction and continues.

### Deleting a desktop boot file

If you've created a Desktop boot file that you no longer wish to use, go to the directory

```
ADFS::HardDisc4.$.!Boot.Choices.Boot.Tasks
```

and delete the !Boot file that is in that directory.

## Inside the !Boot application



This section is not essential reading, if you don't feel you need to know about the !Boot application you can skip this section.

The !Boot application is a collection of files and applications that are used to control the desktop. You won't need to know about all of them, just the few essential ones of which the most important is the **Desktop boot** file we have just described in the previous section.

When you switch on your computer the first action the computer takes after completing its hardware tests is to read a file called **PreDesktop**. This sets up essential operating system and desktop parameters. It then reads the **Desktop boot** file (also called **!Boot**); this controls the way the desktop starts up and is described in detail at the start of this chapter. After this the computer is ready to use.

The !Boot application also contains the essential resource applications that most applications use; **!System**, **!Scrap** and **!Fonts**. It also contains the configuration application **!Configure** (described in the chapter *Setting the desktop configuration* on page 117).

## The PreDesktop file



The PreDesktop file is used to configure the computer for particular purposes. You won't normally need to change any of the parameters in this file. But if you do need to change the way your computer works, put any changes in this file. Examples of how to use this file are given in the file itself.

The PreDesktop file has the following pathname:

ADFS::HardDisc4.\$.!Boot.Choices.Boot.PreDesktop

The PreDesktop file can be edited with !Edit. Load the file by dragging the PreDesktop file over the !Edit icon on the icon bar.

### Aliases

This section is used for setting system aliases. This part of the file is only of use if you use the command line interface.

### Paths

This section of the file is used for defining standard paths and directories. It is only of use if you are programming.

### Options

A section for placing other options that may need to be set up.

### ResApps

This section registers applications with ResourceFS for display in Resources:\$ Apps: the Apps directory on the icon bar. Clicking on the Apps directory on the icon bar displays all the applications that have been registered in this section.

The line in the file registers all the applications currently in the Apps directory on the hard disc. You can also add other your own choices of application here using the AddApp command.

For example:

AddApp Boot:^.Apps.!\*

This command adds all the applications (!\* means 'all files starting with a !') in the directory Apps.

You can add other directories or just single applications using the command

### AddApp

For example:

```
AddApp ADFS::HardDisc4.$.Utilities.!ChangeFSI
```

### Misc

A section for placing additional instructions such as

- modules and sprite files to be loaded
- obey files to be run
- directories whose !Run files are to be run.

## Resource applications

Inside !Boot, there are three resource applications; these resources are used by the computer and by other applications to store essential information. However, you won't often use them directly in your everyday computing tasks.

### !System



!System is used to keep system modules issued to replace or to supplement existing parts of the operating system.

#### Adding applications

When you buy additional applications for your computer you may find that additional modules are supplied in the form of a !System application. The !System supplied with the application must be merged with the !System in the computer using the !Boot configuration application. See page 130 for more details. The modules kept in !System are loaded as required by applications.

### !Scrap



!Scrap is used to store temporary files. Applications often use temporary files during copying and saving; these files are erased when they are no longer needed.

### !Fonts



!Fonts is used to store the fonts needed by the desktop and applications. If you have many fonts, !Boot may create additional !Fonts to store them in.

#### Adding fonts

When you buy additional fonts or applications that contain new fonts you will find that the fonts are supplied in a !Fonts application. This !Fonts must be merged with the !Fonts in the computer. This is done using the !Boot configuration option; see page 130 for more details.

## Finding the resource applications

### **!System**

You may need to add modules by hand because they are not supplied as part of a !System. The !System application can be found in !Boot.Resources. The modules should be copied to the modules directory within !System.

### **!Fonts**

Similarly, you may need to add fonts by hand because they are not supplied as part of a !Fonts. The !Fonts application can be found in !Boot.Resources. The font directory should be copied into !Fonts.

## Other files in the !Boot application



### **Resources directory**

This contains the resource applications !System, !Scrap and !Fonts and the configuration resource !Configure and its associated Configure directory. If you want to make sure that no one changes the computer configuration, it is possible to remove the !Configure application from this directory. If you do this, double-clicking on !Boot give a message that you cannot configure the computer.

### **Utils directory**

Contains utilities used by the !Boot application.

### **Library directory**

Contains utilities used by the !Boot application that can also be used by other applications.

### **Choices directory**

This contains:

- The PreDesktop file already described.
- The Desktop file (used as a supplemental file for commands not put in the PreDesktop file).
- The PreDesk directory which contains desktop configuration information. This is executed before the Desktop starts
- The Tasks directory which contains the Desktop boot file (also called !Boot) which is described earlier in this chapter. It also contains other files to be executed after the Desktop starts.



All printing is handled by the printer manager, !Printers. This provides an interface between your printer and the file that is being printed.

Before you start printing, the printer manager must be set up so that it is using the correct printer driver for your printer and so that it communicates correctly with your printer.

This chapter tells you how to set up !Printers. If your printer is already set up correctly you can find out how to print files by referring to the chapter *Printing your files* on page 95.

This chapter tells you how to

- set up and connect your printer
- choose which printer driver to use
- configure the printer driver.

## Setting up the printer

Before you can print from your computer, you need three things

- a suitable printer
- a printer cable, with connectors for the computer and the printer
- an appropriate printer driver.

If you are connecting to a network printer, you'll need to make sure that you have the appropriate network connection for your computer. Contact your Network manager for more information.

## Types of printer

Your supplier will advise you on suitable printers for your computer. RISC OS supports most types of popular dot matrix printer, such as the Epson LX range and the IBM X24, as well as colour printers such as the Integrex, HP Deskjet and Cannon Bubblejet. It also supports laser printers compatible with the HP LaserJet as well as PostScript printers such as the Apple LaserWriter.

The following printers are among those supported:

Acorn JP150	IBM PostScript printers
Apple PostScript printers	Integrex Colourjet
Apple ImageWriter	NEC P series
Canon Bubblejet series	QMS ColourScript
Citizen Swift series	Qume ScripTEN
Epson EX, FX, IX & LX series	Star DP, LC & XB series
Epson MX & LQ series	Star Laser Printers
HP LaserJet & DeskJet series	TI OmniLaser printer
IBM Proprinter series	Most PostScript laser printers

### **Other printers**

If your printer is not on this list, check the ReadMe files in the Printers directory to see if your printer is supported. You can also often run your printer in emulation mode. Most dot-matrix printers can emulate the Epson FX or LQ printer. Most non-PostScript laser printers can emulate the HP LaserJet or DeskJet printers. Read your printer's user manual for more information.

!Printers also supports direct-drive printers. These are high performance printers that connect directly to the computer using an expansion card.

## **Connecting the printer**

### **Serial and parallel**



If you are connecting the printer directly to your computer you have two choices: connection via the serial port or the parallel port. If your printer can use either type of connection, use the parallel port as it usually speeds up printing. Your supplier will be able to advise you on which port to use.



Your supplier will also be able to advise on a printer cable. If you are making one yourself, details of the pin connections from the computer's output ports can be found in the *Welcome Guide*. You will also need to consult your printer documentation for information on how to wire the connector to the printer. A standard PC (personal computer) printer cable will usually work.

## Network and NFS



If you are connected to a network of computers, you may have access to a network printer. Consult your network manager for more information.

## Direct drive

Direct drive printers connect to their own expansion card inside the computer. Instructions on how to fit an expansion card are given in the *Welcome Guide*.

## The Printer manager

In this section we assume that you have connected your printer to one of the communication ports on your computer or that you are using a computer on a network.

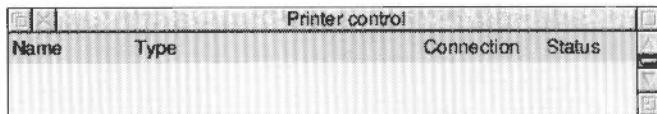
The printer manager application (called !Printers) provides an interface between the printer and your application software (an editor or word processor, for example). It is used for printing files, and to provide printer support for applications.



The printer manager uses printer definition files (often called printer drivers) to tell the computer what type of printer you are using. These files are contained in the **Printers** directory.

## Loading !Printers

- 1 Click on the hard disc icon.
  - 2 Double-click on the **Printing** directory.
  - 3 Double-click on the Printers icon.
- After a few seconds the printer manager icon appears on the icon bar.
- 4 Click Menu over the Printers icon on the icon bar and then choose the **Printer control** menu option.



This displays the Printer control panel. The next step is to load a printer driver.

## Loading printer drivers



Printers

To load a printer driver:

- 1 Double click on the **Printers** directory.

This contains the printer definition file directories. There is a directory for each printer manufacturer.

- 2 Double-click on the directory that corresponds with the manufacturer of your printer.
- 3 Drag the appropriate printer definition file icon onto the Printer control window.

The definition file will have a similar name to that of your printer. See *Choosing a printer type* below.

The printer name appears in the control window.

- 4 If you want to have more than one printer loaded, drag additional printer definition files to the Printer control window.



JP-150

Printer control				
Name	Type	Connection	Status	
JP 150	Acorn JP 150	Parallel	Active	 

## Choosing a printer type

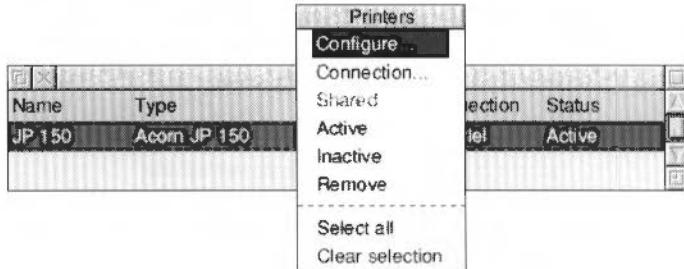
You should choose the printer type that is closest to the printer you have. If your printer is not listed, it may have a compatibility mode that can be selected. 9-pin dot matrix printers can usually emulate the Epson FX printer, while 24-pin dot matrix printers can usually emulate the Epson LQ printer; your printer manual should give details.

Non-PostScript laser printers can often emulate the HP LaserJet or have a compatibility mode that emulates the HP LaserJet (or DeskJet); again, your printer manual should give details.

## Configuring the printer type

After you have loaded your printer driver, you must choose the correct printer configuration to give the results you want.

To display the configuration window, either double-click on the printer driver in the printer control window, or highlight the printer entry and choose the **Configure** option from the Printer control window menu.



If you want to change the configuration of a printer that is already on the icon bar, click on the printer icon on the bar while holding down Shift.

### Classes of printers

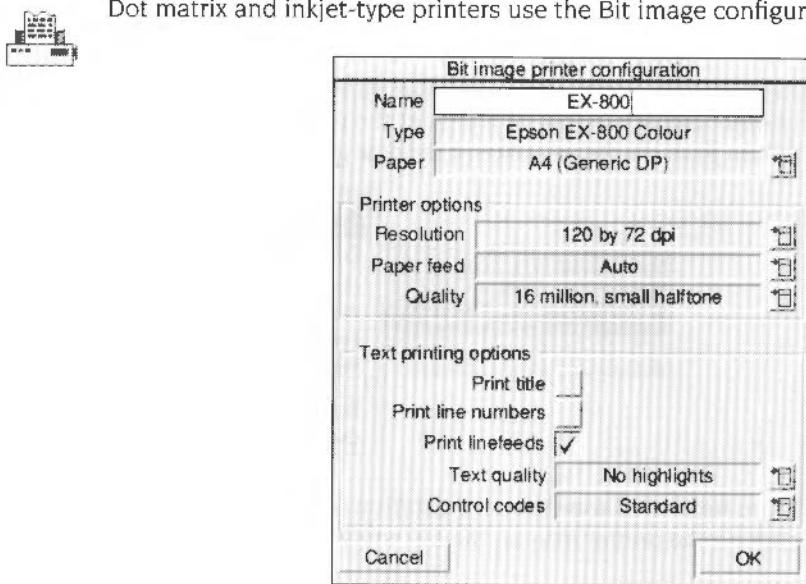
There are three classes of printers; each has a slightly different configuration menu. These are:

- PostScript compatible printers (type PS).
- LaserJet and DeskJet compatible printers (type LJ).
- Dot matrix and Inkjet printers (type DP).

In the following sections, each configuration type is explained separately. If you have a dot matrix or Inkjet printer, read the information starting with the next section. If you have a LaserJet or DeskJet printer, read the information starting on page 156. If you have a PostScript printer, read the information starting on page 158.

## Configuring dot matrix and inkjet printers

Dot matrix and inkjet-type printers use the Bit image configuration window:



### Choosing the printer name and paper type

The **Name** box gives the name that will appear beneath the printer icon on the icon bar. You can, if you wish, change this or leave this blank.

The **Paper** box gives the paper size to be used by the printer. This is usually **A4 (Generic DP)** in Europe. If you want to change the paper size, click on the menu icon; this displays the **Paper sizes** menu. Choose the alternative paper size you wish to use. The correct paper sizes are marked **Generic DP**. It is also possible to generate other page sizes using the **Edit paper sizes option** from the icon bar menu; see page 164 for more details.

### Printer options

The printer **Resolution** menu can be displayed by clicking on the menu icon. Increasing the resolution usually gives a better quality image, but printing usually takes longer.

The **Paper feed** menu can be displayed by clicking on the menu icon. This menu lets you choose between Auto, Manual and Roll paper feed. Choose **Auto** if your printer has a sheet feeder or uses fanfold paper. Choose **Manual** if you have to insert each page by hand while printing is under way; you are prompted to insert paper at the end of each page. Choose **Roll** if your printer is using a paper roll.

Resolution
60 by 72 dpi
✓ 120 by 72 dpi
120 by 144 dpi
120 by 216 dpi
240 by 72 dpi
240 by 144 dpi
240 by 216 dpi

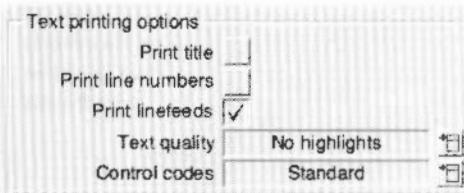
Quality	
Mono, small halftone	
Mono, large halftone	
Grey, small halftone	
Grey, large halftone	
Grey, error diffused	
256 colours, small halftone	
256 colours, large halftone	
256 colours, error diffused	
32 thousand, small halftone	
32 thousand, large halftone	
32 thousand, error diffused	
✓ 16 million, small halftone	
16 million, large halftone	
16 million, error diffused	

The **Quality** menu lets you choose the type of printout quality. Click on the menu icon to display the menu.

- **Mono** prints black and white output only. It does not halftone fonts or sprites; it only halftones Draw files. This is the fastest print mode.
- **Grey** prints pictures in shades of grey. It halftones all types of files. You should always choose this option, unless speed of printing is more important than print quality, in which case choose **Mono** instead.
- **Colour** prints in colour on colour printers. You may need to experiment to find which number of colours gives the best printout. A large number of colours may take a long time to print.
- **Small halftone** prints in 4x4 pixel halftones for grey scales and colour.
- **Large halftone** prints in 8x8 pixel halftones. Large halftones give better quality than small halftones.
- **Error diffused** give the best quality results, especially for grey scale pictures. However it takes longer to print than the halftone options.

### Text printing options

The text printing options allow you to control the way text is printed from an editor (such as Edit).



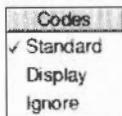
**Print title** puts the filename, time, date, and page number at the top of each page.

**Print line numbers** puts line numbers at the beginning of each line.

**Print linefeeds** sends a linefeed to the printer (as well as a carriage return) at the end of each line. If you find that your printer is producing a blank line after each line of text, you should turn this option **off**. If your printer is printing everything on one line, then you should turn this option **on**.

Quality	
✓ No highlights	
Draft	
NLQ	

The **Text quality** menu lets you choose the quality of the output print. Text quality can be either **No highlights**, **Draft** or **NLQ** (near letter quality). NLQ looks better but takes longer to print. (NLQ also uses more ink and wears the printer ribbon out quicker).



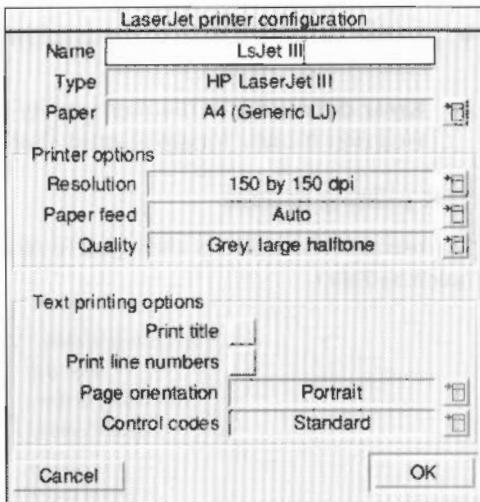
The **Control codes** menu alters the way in which text files are printed. This should normally be set to **Standard**. **Display** causes all control codes and top-bit-set characters to be printed in hexadecimal notation. **Ignore** causes all control codes and top-bit-set characters to be ignored.

When you have finished configuring your printer, click on **OK**. If you want to exit without saving your changes, click on **Cancel**.

## Configuring LaserJet and DeskJet printers



LaserJet is the collective name given to all laser printers that can emulate the HP LaserJet printer.

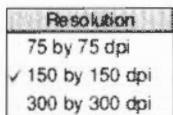


### Choosing the printer name and paper type

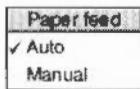
The **Name** box gives the name that will appear beneath the printer icon on the icon bar. You can, if you wish, change this or leave this blank.

The **Paper** box gives the paper size to be used by the printer. This is usually A4 (Generic LJ) in Europe; if you are using a DeskJet explicitly change this to A4 (Generic DeskJet). If you want to change the paper size, click on the menu icon; this displays the **Paper sizes** menu. Choose the alternative paper size you wish to use. The paper sizes marked **Generic LJ** are usually best for LaserJet type printers; paper sizes marked **Generic DeskJet** are usually best for DeskJet type printers (including the Acorn JP150). It is also possible to generate other page sizes using the **Edit paper sizes option** from the icon bar menu; see page 164 for more details.

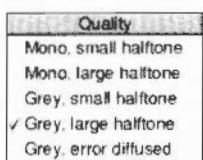
## Printer options



The printer **Resolution** menu can be displayed by clicking in the menu icon. Increasing the resolution usually gives a better quality image, but printing usually takes longer. Most modern LaserJets (and LaserJet copies and clones) can use 300x300 dpi. Some early models (LaserJet and LaserJet II) did not contain enough memory to print full page graphics at full resolution; in this case use 150x150 dpi or purchase more memory.



**Paper feed** menu can be displayed by clicking on the menu icon. The menu lets you choose between Auto and Manual paper feed. Choose **Auto** if your printer has a sheet feeder or uses fanfold paper. Choose **Manual** if you have to insert each page by hand while printing is under way.

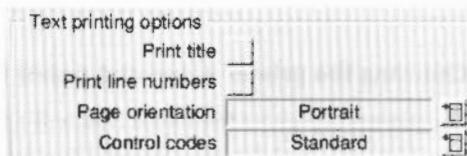


The **Quality** menu lets you choose the type of printout quality. Click on the menu icon to display the menu.

- **Mono** prints black and white output only. It does not halftone fonts or sprites; it only halftones Draw files.
- **Grey** prints pictures in shades of grey. It halftones all types of files. You should always choose this option, unless speed of printing is more important than print quality, in which case choose **Mono** instead.
- **Colour** prints in colour on colour printers.
- **Small halftone** prints in 4x4 halftones for grey scales and colour.
- **Large halftone** prints in 8x8 pixel halftones. Large halftones give better quality than small halftones.
- **Error diffused** give the best quality results, especially for grey scale pictures. However it takes longer to print than the halftone options.

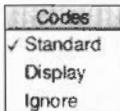
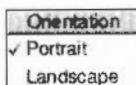
## Text printing options

The text printing options allow you to control the way text is printed from an editor (such as !Edit).



**Print title** puts the filename, time, date, and page number on each page.

**Print line numbers** gives each page line numbers.



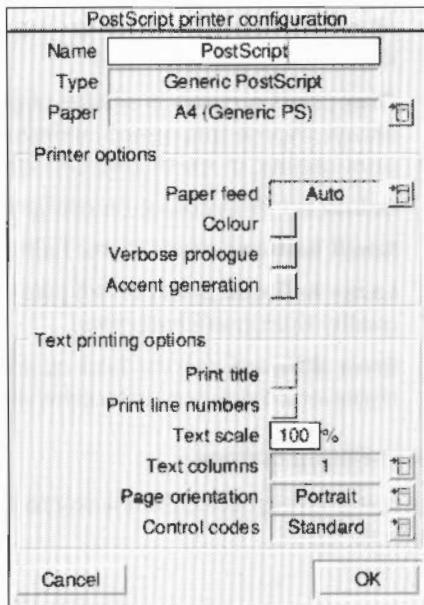
The **Page orientation** menu allows choice of portrait or landscape orientation text. Portrait prints along the shorter side of the paper while landscape prints along the longer side.

The **Control codes** menu alters the way in which text files are printed. This should normally be set to **Standard**. **Display** causes all control codes and top-bit-set characters to be printed in hexadecimal notation. **Ignore** causes all control codes and top-bit-set characters to be ignored.

When you have finished configuring your printer, click on **OK**. If you want to exit without saving your changes, click on **Cancel**.

## Configuring PostScript printers

PostScript is the name given to all laser printers that are PostScript-compatible.



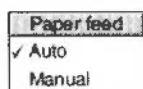
### Choosing the printer name and paper type

The **Name** box gives the name that will appear beneath the printer icon on the icon bar. You can, if you wish, change this or leave it blank.

The **Paper** box gives the paper size to be used by the printer. This is usually A4 (Generic PS). If you want to change the paper size, click on the menu icon; this displays the **Paper sizes** menu. Choose the alternative paper size you wish to use.

The paper sizes marked **Generic PS** are usually best for PostScript type printers. It is also possible to generate other page sizes using the **Edit paper sizes option** from the icon bar menu; see page 164 for more details.

### Printer options



**Paper feed** menu can be displayed by clicking on the menu icon. Normally the **Paper feed** option should be set to **Auto**. If you are feeding paper or envelopes through the manual feed choose **Manual**.

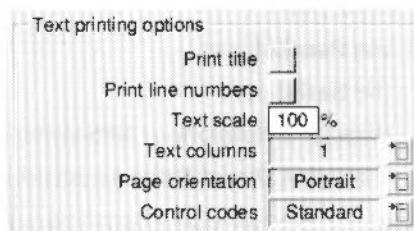
Choose **Colour** if you are printing in colour on a colour PostScript device.

Choose **Verbose prologue** if you wish to declare all of the PostScript printer fonts. This option gives you the same prologue as that used by the RISC OS 2.00 printer drivers; it is included for backward compatibility only. Do not choose this option unless your application requires it.

The **Accent generation** option will automatically generate accented characters even if they are not supported by your printer. Unless you need to print unusual accented characters such as w or y circumflex (used in Welsh) leave Accent generation off, as it slows printing and does not work with printers with small internal memory.

### Text printing options

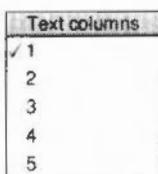
The text printing options allow you to control the way text is printed from an editor (such as Edit).



**Print title** puts the filename, time, date, and page number on each page.

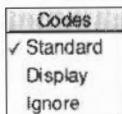
**Print line numbers** gives each page line numbers.

You can adjust the size of the printed type by giving a **Text scale** factor. PostScript printers have a wide range of available sizes, so you can scale the text from 20% to 200%. 100% gives standard sizes, 200% uses twice the size, and 50% gives half the size (twice as many characters per inch).



To display the **Text columns** menu, click on the menu icon. Text columns specifies the number of columns of text to be printed on each sheet of paper. The printer manager defaults to one column for portrait printing and two for landscape printing.

To display the **Page orientation** menu, click on the menu icon. Page orientation allows choice of portrait or landscape orientation text. Portrait prints along the shorter side of the paper while landscape prints along the longer side.

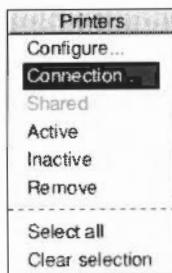


The **Control codes** menu alters the way in which text files are printed. This should normally be set to **Standard**. **Display** causes all control codes and top-bit-set characters to be printed in hexadecimal notation. **Ignore** causes all control codes and top-bit-set characters to be ignored.

When you have finished configuring your printer, click on **OK**. If you want to exit without saving your changes, click on **Cancel**.

## Configuring the printer connection

This section applies to both PostScript and non-PostScript printers



Once you have loaded the printer driver, you must set it up so that it can communicate with the printer.

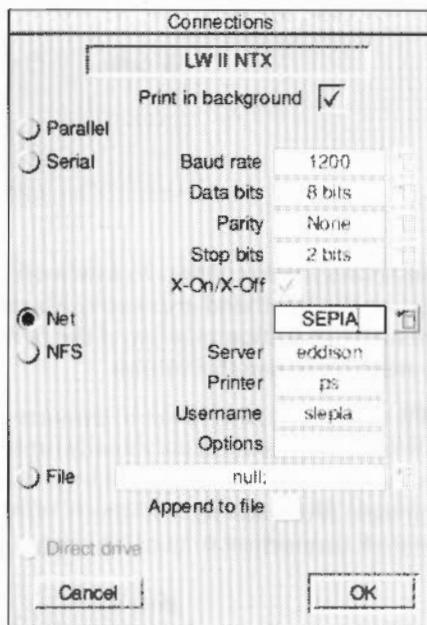
Click **Menu** over the Printer control window and choose the **Connection** option. This displays the Connections window.

The printer driver can send printed output to the printer using one or more of the following ports

- the **Parallel** port
- the **Serial** port
- through a **Network** or **NFS** connection
- through a **Direct Drive** expansion card.

Additionally it can save printer output in a **File** for printing later.

The communications port you choose will depend upon your printer and printer cable. Check with your supplier for more details, or read your printer manual.



### Printer connection options

Some of the network options may be 'greyed out' so that you cannot choose them.

**Print in background** allows you to choose whether you want to define the printer and printing speed as a high or low priority task. If the box is ticked printing can be slower, although you can continue to use the computer while the printing takes place. If this option is not chosen, printing can be quicker, although you will usually have to wait for printing to finish before you can use the computer again. This option only works with applications that send their files to the print queue; some applications bypass the queue.

**Parallel** allows you to connect a printer to the parallel port.

**Serial** allows you to connect a printer to the serial port. You can set the Baud rate, Data bits, Parity, Stop bits and XON/XOFF. To alter the values, click on the righthand arrows and choose a new value.

<input checked="" type="radio"/> Serial	Baud rate	57600	
	Data bits	8 bits	
	Parity	None	
	Stop bits	1 bit	
	X-On/X-Off		

**Net** allows you to connect to a network printer. To change the name of your printer, click on the righthand arrow and choose a new printer. Alternatively you can type in the name or station number of the printer to use. You must have a network connection to use this option.

**NFS** allows you to connect to printers available on NFS networks. You cannot use this option unless you are already running Acorn's TCP/IP communication protocol product. For an explanation of how to fill in the NFS fields, ask your network manager. Alternatively read the *TCP/IP Protocol Suite User Guide*. You must have a network connection to use this option.

<input checked="" type="radio"/> NFS	Server:	edison	
	Printer:	ps	
	Username:	slepla	
	Options:		

**File** allows you to send printer output to a file. Type the name of the file into the File field (using the complete pathname). Alternatively click on the righthand arrow and drag the **Save as** box to the desired directory display; your output will now be directed to this file.

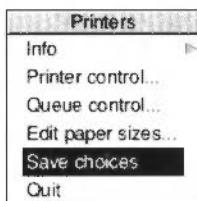
**Append to file** works in connection with the **File** option. It adds printer output to the end of the file. Using this you can print several small files and produce a single file of the printed result.

**Direct drive** allows you to connect a direct drive printer to the computer.

#### A short cut

If you want to change the printer connection of a printer that is already set up on the icon bar, click Adjust on the printer icon while holding down Shift.

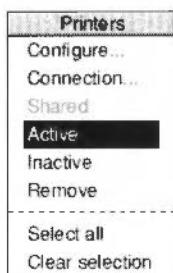
## Saving your choices



You should save any changes you make to the settings for your printer, otherwise you will have to go through the setting-up procedure again, next time you start the printer manager. To do this, click on the **Save choices** option on the printer icon bar menu.

Once you have saved your settings, the printer manager automatically loads your printer driver onto the icon bar using those settings each time you start the printer manager.

## Activating the printer



The Printer control menu allows you to make a printer **Inactive**, so that it can't be used and is not displayed on the icon bar. However its settings are saved and it can be used again by choosing **Active**.

You can remove a printer from the Printer control window permanently by choosing the **Remove** option.

### Using more than one printer

If you have dragged more than one printer to the Printer control window you can activate them all. A printer icon is displayed on the icon bar for each active printer. This facility can be useful if you have a printer connected directly to your computer, and you also have access to another printer connected via a network.

Although you can have many printers activated on the icon bar, only one of these printers is highlighted; all of the others are greyed out. When you click on the Print option in an application, the file to be printed is sent to the highlighted printer.

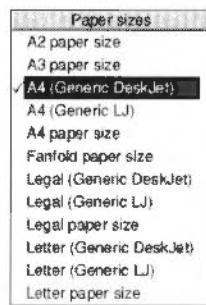
You can choose to print using a different printer by clicking on that printer's icon on the icon bar. This highlights the new printer driver and greys out the old one.

You can also print using any of the printer drivers (highlighted or not) by dragging files onto the desired printer's icon.



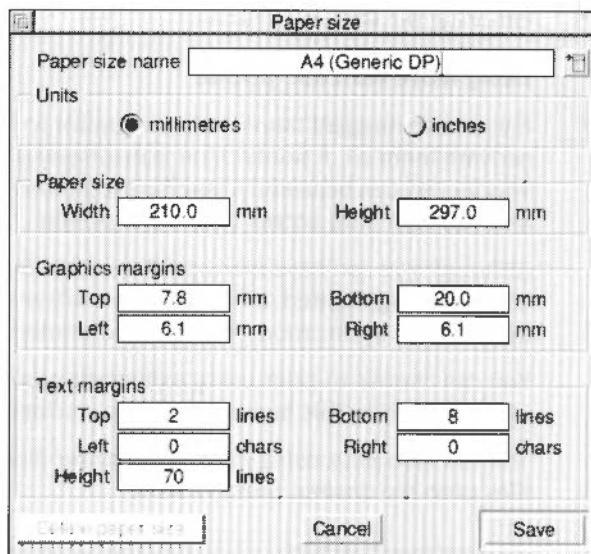
## **Editing paper sizes**

You can, if you wish, set up new page sizes for your printer. From the icon bar menu, display the **Edit paper sizes** dialogue box. If you use one of the standard paper sizes you need not read this section.



From this dialogue box you can select your paper size by clicking on the righthand arrow and choosing a paper size. These are:

- A2 – 549.8 mm by 420 mm
- A3 – 420 mm by 297 mm
- A4 – 297 mm by 210 mm (the default option)
- Fanfold – 279 mm by 203mm
- Letter – 279.4 mm by 215.9 mm
- Legal – 355.6 mm by 215.9 mm



These are the generic types of page size. Additional sizes that fine tune these dimensions are also given for the various printer types: DP for dot-matrix printers, PS for PostScript printers and LJ for LaserJet and DeskJet for DeskJet printers. These additional sizes define the Graphics and Text margins for the printers.

## Defining your own paper dimensions

Once you have selected your basic paper size you can fine tune it to your own requirements. You can change the name in **Paper size name** and change the **Paper height** and **width** if you are using a special sized paper. Finally you can change the margins within which text and graphics will be printed. Click on the **Save** box to save the new paper dimensions for future use.

PostScript printers, and some other printers, need to know which tray to take paper from. This information is derived from the Paper size name. The name should therefore be in the form *paper size (name)*, where the paper size is the size of the paper in the paper tray. For example, Letter (memo-letter) will use paper in the Letter tray.

Note: The plain paper sizes (A3 paper size for example) should not be used directly; they are only given to define the basic paper size. Always use a paper size defined for a particular printer (A4 (Generic DeskJet), for example).

## Graphics margins

The graphics margins must reflect the true printable area of the page (look this up in your printer manual). The margins ensure that graphics are printed properly and they are also used by applications (such as Draw). The margins correspond to those of a portrait page; landscape page values are worked out automatically. The graphics margins exist to tell the printer where to print on a piece of paper. The margins cannot be used to move the printed result around on the page.

## Text margins

Text margins are measured as relative to the printable area of the page (defined by the graphics margins). The **Left** and **Right** margins are measured in characters and the **Top** and **Bottom** margins measured in lines. The **Height** is the total number of lines on a page, including the text margins. If you want to move the position of the text output on the page, alter the text margin settings.

### PostScript and HP LaserJet compatible printers

For these printers, the total number of lines per page and characters per line are determined automatically.

The printer is configured to use 10 characters per inch and 6 lines per inch in portrait orientation and 14 characters per inch and 8.5 lines per inch in landscape orientation.

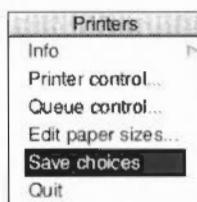
A LaserJet II cannot match these defaults exactly and uses its internal font at 10 characters per inch and 6 lines per inch in portrait orientation and 16.66 characters per inch and 8 lines per inch in landscape orientation instead.

PostScript printers determine the font size from the **Text scale** and **Text columns** values in the **Configure** dialogue box.

### **Changing the page length on Dot-matrix printers**

If you require an unusual page length you should set it by altering the Text margins Height box, as well as the Graphics margins. For example, if you are printing labels, you may have six rows of labels on a sheet of A4 paper. Set the Text height to be something like 11 lines so that the printer will form feed to the start of the next label correctly. This is because the Text height is used to tell the printer how long the paper is for both text and graphics printing.

### **Saving your choices**



To save any changes you make in the Page size dialogue box, click on **Save**; this saves them for the current session. If you wish to save the changes permanently, you should click on the **Save choices** option in the icon bar menu.

If you wish you can delete a paper size by selecting it and then clicking on **Delete paper size**. You can only delete sizes that you have created or altered. When you have finished, close the window by clicking on the close icon.

## **Creating your own Printer definition file**

You can create a Printer definition file that is specifically tailored for your printer. The *PrintEdit* application, described on page 379, allows you to create a new printer driver.

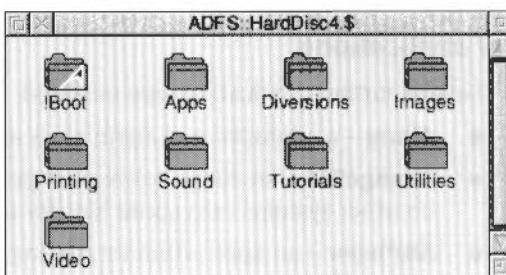
# Part 3: RISC OS applications



This chapter and the rest of this part of the manual describes the suite of applications provided with RISC OS 3. These are designed to give you an idea of the wide range of powerful applications you can run on your RISC OS computer.

## Finding the applications

All the Applications are supplied on your hard disc, in application directories.



Each of the applications supplied is covered by a separate chapter in the Guide. At the top of each chapter or section in the manuals you will see a directory icon. This tells you the directory in which you will find the application or file.

- General purpose applications in the **Apps** directory.
- Demonstration image files in the **Images** directory.
- Printing applications and support files in the **Printing** directory.
- Maestro and MultiSound sound samples in the **Sound** directory.
- Tutorial files for use with this guide in the **Tutorials** directory.
- Utility applications in the **Utilities** directory.
- Games and other applications in the **Divisions** directory.
- Sample moving video clips in the **Video** directory.

This Guide assumes that you are familiar with the mouse and with the general features of the desktop, such as windows, icons and menus. These are described in the *Welcome Guide* supplied with your computer.

## The Applications

### Major applications

Three main applications are provided; these are comprehensive programs that show off the power and versatility of RISC OS as well as being useful applications in their own right.

- **Draw** – a sophisticated drawing program capable of producing full colour drawings.
- **Edit** – a fully featured text editor that is also suitable for editing program listings.
- **Paint** – a painting and sprite editing program.

### Further applications

Several further applications are included:

- **Alarm** – a sophisticated alarm clock and reminder system.
- **ChangeFSI** – an image conversion program that converts image files created on other systems into sprite files for use with the Paint application.
- **ARPlayer** – an application for playing back video movies.
- **Chars** – enables you to use special characters that are normally not available on the keyboard.
- **HForm** – a utility that lets you format your hard disc.
- **CloseUp** – a magnifier, for enlarging a portion of the screen.
- **Help** – a context-sensitive system providing help information for the desktop.
- **Maestro** – a music composition program, which enables you to transcribe and play music in up to eight voices.
- **SciCalc** – a calculator incorporating scientific functions.
- **Squash** – a file compressor, enabling you to fit more files on your discs.
- **T1ToFont** – a utility to convert Adobe Type 1 fonts into Acorn Outline fonts.

### Printing applications

These applications are concerned with printing:

- **FontPrint** – used to map and download fonts to a PostScript printer.
- **PrintEdit** – allows you to set up your own particular printer configuration for use with the Printer Manager.
- **Printers** – a Printer manager allowing you to print your work on a number of different types of printer.

## Diversions

Finally, if some of these seem a bit too serious, two programs are provided for your entertainment:

- **Patience** – the familiar one-player card game.
- **Puzzle** – another test of skill and patience.

Additional games are also be provided in the **Diversions** directory. You'll find instructions for these applications by choosing the **Help** option on the **Filer/App** submenu. Many of these applications can also display context-sensitive help information using **!Help**.

Applications supplied in the Diversions directory are not supported or guaranteed by Acorn.

## Starting up and using an application

### Loading an application

This section shows you how to start up and use an application. You can use this method to start up all the applications on the computer.

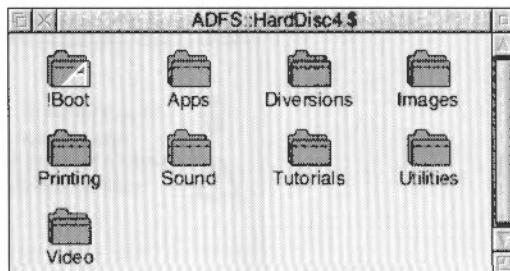
### Displaying the directory containing the application

Before you can start an application, you first need to view the directory that contains the application.

If the application is in a sub-directory:

- 1 Display the directory.
- 2 Double-click on the directory icon to open the sub-directory display.

For example, here is the directory display you see after you click on the hard disc icon on the icon bar.



- 3 Double-click on a directory, the **Printing** directory for example. This displays the contents of this directory.



- 4 Load the application by double-clicking on one of the application icons. For example double-click on the !Edit icon. The application may either immediately create any windows it needs, or it may set itself up on the icon bar.

### **Loading applications using Apps icon on the icon bar**



The Apps icon on the icon bar gives you a quick way to reach the applications stored in the Apps directory on the hard disc. To view the Apps directory simply click on the Apps icon. You can now start any of the applications by double-clicking on their icons in the usual way.

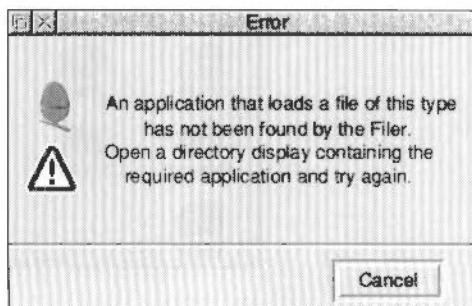
### **Loading existing files into applications**

You load a file into an application by double-clicking on it or by dragging it onto the appropriate icon on the icon bar.

#### **By double-clicking**

When you double-click on a file which is not an application you'll usually find that the application that created the file is started and the file you double-clicked on is then loaded and displayed.

If you double-click on a file that cannot find its corresponding application, you'll see the following error message:

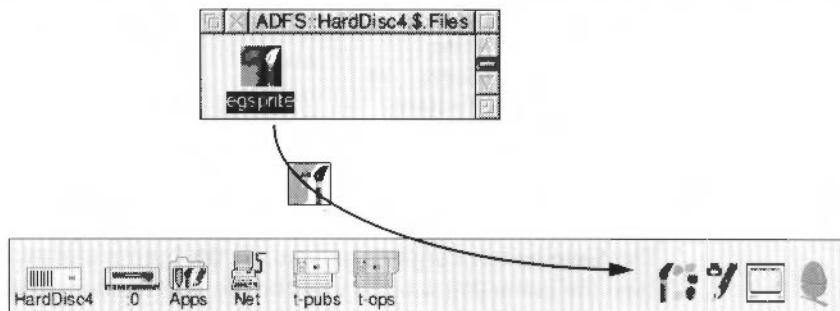


Close the error message by clicking on the **Cancel** button.

The problem is that the computer does not know where the original application is stored. Cure this by finding and displaying the directory containing the application – then try double-clicking on the file again. Once found, the computer continues to remember where the application is stored, until you reset or switch off the computer.

### **By dragging onto an application on the icon bar**

A second way of loading a file is by dragging a file until it is over an application icon on the icon bar. The file is loaded into the application you have dragged it to (as long as the application accepts that type of file), normally in a new window.



### **By dragging onto an open window**

You can also drag a file into the open window of an application. For example, you can drag an Edit file into an existing Edit document that is open on the screen. Depending on the application, this will either

- open a new window for the file
- insert the file into the existing contents of the window (replacing the old contents of the window).
- insert the contents of the file at the insertion point.

When you load a file by dragging, it is up to the application whether to accept it. For example, the text editor Edit will allow you to load almost any type of file (though you will not be able to do much with some of them!), whereas Draw only permits a narrow range of file types. The application to which you drag a file can be different from the standard one for the type of file. An example of this is the sprite file type, which is created using the Paint application (and therefore is loaded into it when you double-click), but which may also be dragged into Draw.

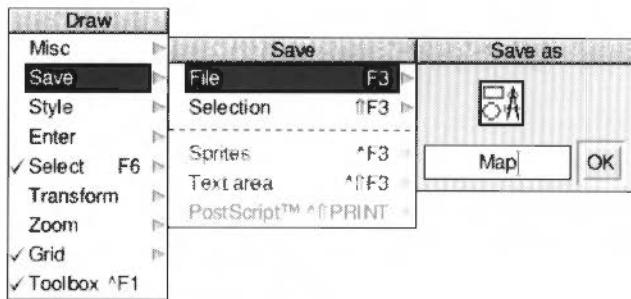
## Saving files

Many applications use a standard method for saving files. You can

- save by dragging to a directory display
- save by specifying a pathname.

You normally save from a dialogue box at the end of a series of menus. Often, the function key F3 is a short-cut for displaying the **Save as** box.

Here is the menu sequence used by Draw.



The **Save as** box contains an icon, an **OK** button and an area into which you can type the name you want to give the file. The filename that appears is shown is the name of the file that was originally loaded (if one was), or a standard name for new files, such as `DrawFile`. You can change these names if you want to by using the Delete key to remove the existing name.

You can use either of the following methods for saving new files that have not been previously saved.

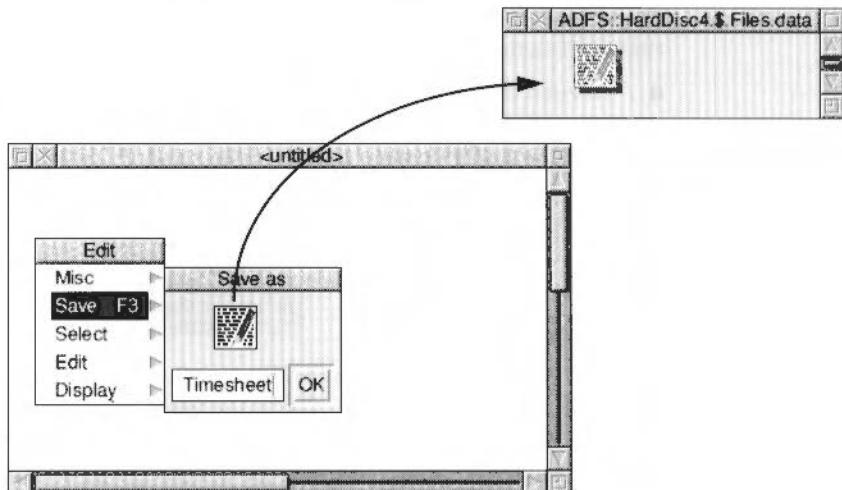
### Saving by dragging

This is the easiest way to save a file – usually one which has not been saved before.

To save a file by dragging:

- 1 Open a directory display for the destination of the file (**where** you want to save it to).
- 2 Display the application's **Save as** dialogue box.
- 3 Check the name under which the file will be saved. Change it if you need to.

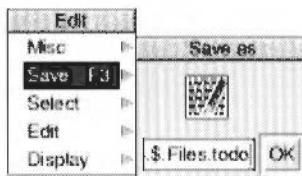
- 4 Press Select on the file icon and drag it to the destination directory display.



### Saving by pathname

To save a file by pathname:

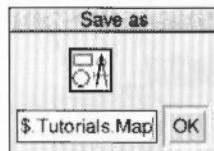
- 1 Call up the application's **Save as** dialogue box.
- 2 Check the name and the pathname of the file, and change it if you need to. The pathname should contain the full path including the filing system and disc name and at least one directory name.
- 3 Press Return or click on the **OK** button. The file will be saved in the location indicated by the pathname.



### Saving files which have been saved before

If you have saved a file before, you can still use either of the above methods, but there are easier ways:

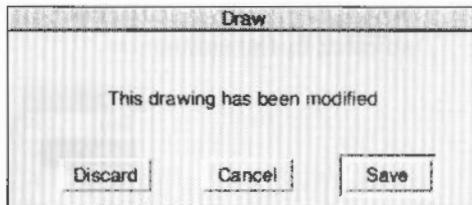
- You can save a file under its existing name by opening the **Save as** dialogue box and just pressing Return or clicking **OK**. The existing file name and pathname will be used again.



- You can also just click on the **Save** option in the main menu; this will have the same effect as clicking on **OK** in the **Save as** dialogue box. However, in applications such as Edit and Draw where you can mark part of your document as a selection, clicking on **Save** in this way will save the whole file, not just the selection. Additionally, you can usually press the function key F3, then Return, to save a file.

### Saving on closing and quitting

When you close a window or quit an application, you may be asked if you want to **Save** any changes you have made. If you do, a **Save as** dialogue box will be displayed. Use it exactly as described above. If you don't want to save the changed file, click on **Discard**; this closes the file and your changes are lost.



## Transferring data between applications

The techniques used for loading and saving are also used to transfer data between applications. When you want to do this, call up the first application's **Save as** dialogue box, and instead of dragging the file's icon to a directory display, drag it to an open window of the second application (or onto the application's icon on the icon bar). You can use this, for example, to

- load a Paint file into Draw
- load a text file into Draw
- load most types of file into Edit.

If the direct transfer fails (perhaps through lack of memory), some applications will attempt to use a temporary disc file for the transfer.

Not all applications can transfer data by this method, as data types are not always compatible. You can't, for example, drag a Draw file into Paint.

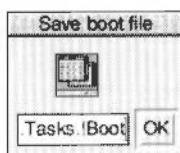
## Quitting applications

If you want to stop using an application for a short while, but want to start using it again later, simply close any application windows that may be open. This leaves your screen uncluttered by unused windows. In most, but not all, applications, you will have to save the files you have been working on first. Another way is to 'iconise' the application's window using Pinboard. With both these methods the application is still in your computer's memory – signified by the application's icon still being on the icon bar. To start using the application again, just click on the application's icon. Double-click on an iconised application's icon to start using it again.



If you want to finish using an application permanently, click Menu over the application's icon on the icon bar and choose **Quit**. This removes the icon and clears the application from the memory. To restart the application you must double-click on its icon in the appropriate directory display.

## Setting application options in Boot files



Most of the programs in the Applications Suite can have their current state saved in a Desktop boot file. This state includes any options that may have been set and the size and position of the application windows on screen.

Subsequently, clicking on the Desktop boot file will automatically restore your screen to its previously saved state. You can also configure the Desktop boot file to be run automatically each time the computer is turned on. You can easily overwrite your Desktop boot file accidentally. Always keep a backup. For more information about using Boot files read *Modifying the system start-up configuration* on page 139.





**D**raw is a powerful and sophisticated drawing package; you can use it to draw and edit diagrams and pictures made up from various kinds of graphical objects.

### Learning to use Draw

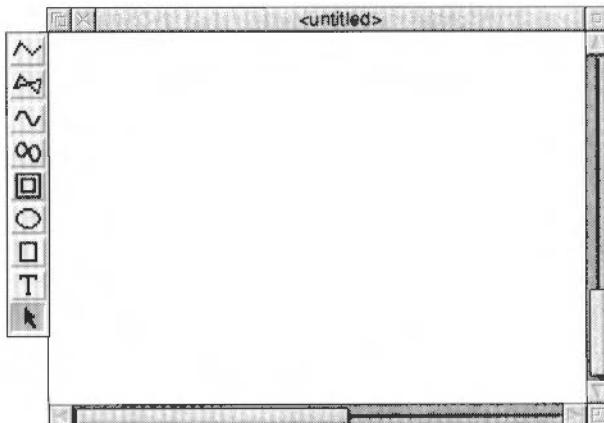
You will probably find that the easiest way of learning Draw is to read through *Basic ideas* (on the next page), where you will find an introduction to how to create and edit the different kinds of object which Draw uses. Then work through the *Draw tutorial* which follows, before reading the more detailed sections.

### Starting Draw

To start Draw:

- 1 Click on the Apps icon on the icon bar to display the Apps directory.
- 2 Double-click on the !Draw icon, to install it on the icon bar.
- 3 Start a new drawing by clicking on the Draw icon bar icon.

Alternatively, edit an existing drawing by dragging its file icon to the Draw icon on the icon bar, or by double-clicking on it.



## Basic ideas

### The Draw window

The Draw window looks similar to other application windows when you first load it, except that down its lefthand side there is a strip of icons called the Toolbox. The Toolbox allows you to choose what sort of object you wish to draw, or to select objects in order to alter them without having to use the menus.

### Objects

A Draw diagram is built up from **objects** of a number of different types. Draw stores information about each object used to construct the diagram. This means you can subsequently change individual objects – for example, by moving them, scaling them to a different size, or changing their colour – without affecting the other objects.

The basic object types are:

- **Paths**, consisting of a sequence of line segments. Each of the line segments may be straight or curved. A path may be closed to form a polygon or curved object, or left open. The path is the basic element of a drawing.
- **Rectangles and ellipses**: these are, in fact, also paths, which means that they may be edited in a very flexible way.
- **Sprites**: graphic shapes made up of an array of coloured pixels. You can create sprites using Paint (see next chapter) and then load them into Draw.
- **Text lines**, in a range of fonts and sizes.
- **Text areas**, consisting of several lines of text. Text areas can be used for simple desktop publishing, and for annotating drawings.

Objects may be combined together as a **group**. For most purposes, a group can be manipulated like any other object. Draw records the objects that were used to build the group, so that it may subsequently be 'ungrouped' into its constituents. Groups can also be used as components of other groups.

Each object has a **style** consisting of a number of attributes. Attributes are used to define the colours of the object, line widths, text fonts and sizes, and so on. The exact range of attributes depends on the type of object.

## Draw ‘modes’

You can use Draw in three operating modes:

- **Enter mode** is used to create new objects. It is chosen from the main Draw menu or from the toolbox (described below).
- **Select mode** is used to change object attributes, and to move and alter objects on the screen. It is chosen from the main Draw menu or from the toolbox (described below).
- **Path edit mode** is a special mode used to change parts of paths. It is entered via Enter mode or from the Select menu.

The mouse pointer changes according to which mode you are using: in Enter mode it is shown as a star, and in Select and Path edit mode as an arrow.

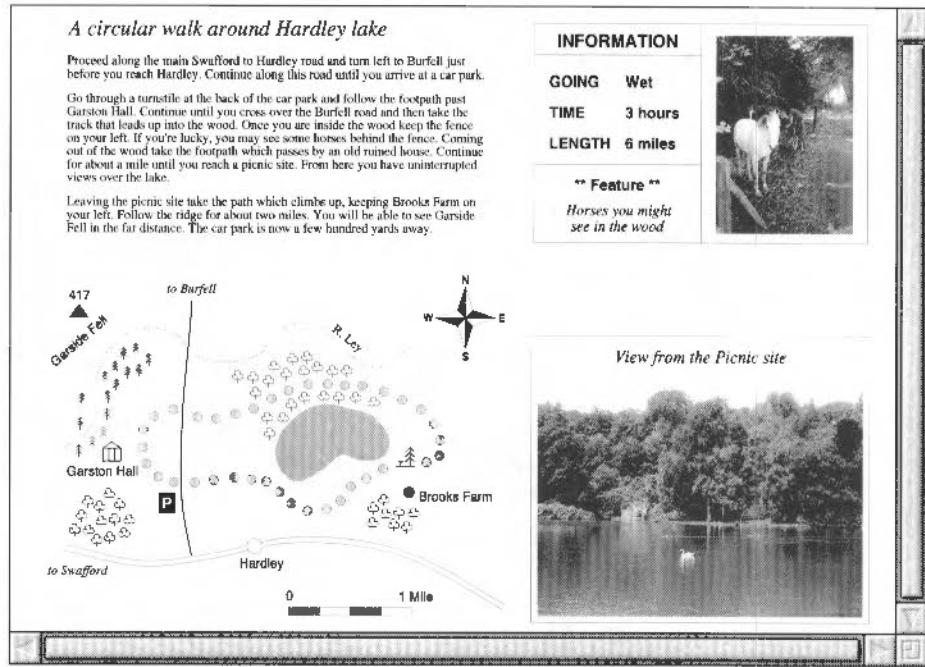
## Tools and shortcuts

To make it easier to construct a diagram, Draw has a number of tools and shortcuts:

- **Toolbox**: a Toolbox is attached to the lefthand edge of each Draw window. You can use this to indicate the sort of action you want to carry out, without having to use the menus.
- **Grid**: you can display a grid to help you align objects in a diagram. Various different sizes and shapes of grid are available.
- **Keyboard shortcuts**: when you are familiar with Draw through its menus, you may find that you prefer to use the keystrokes that duplicate the effect of the more frequent Draw actions. These are listed at the end of this chapter on page 245, and also appear alongside the corresponding menu entries on the screen.
- **Viewing**: you can display more than one view of a diagram; these can have different grid and zoom factor settings. Changes made to the drawing in one view affect the other view as well.

## Draw tutorial

This tutorial section provides you with an introduction to Draw through the creation of the picture below. If necessary, remind yourself of general RISC OS ideas and terms before you start, by going back to your *Welcome Guide*.



The drawing above shows a 6 mile walk through the countryside, and is divided into four parts:

- A map showing the route of the walk and how to get to the starting point.
- A written description of the walk.
- A photographic view of part of the walk.
- An Information box describing how many miles long the walk is, how long it takes to complete, the terrain (wet, hilly etc), and any points of interest.

The following pages will take you step-by-step through the process of creating the above drawing, and will show you how you can use Draw to construct a map compass, lake, roads, road scale, woods and rivers. You'll also learn how to drag text files (created by Edit) and sprites (created by Paint) into your Draw window.

## Selecting Draw objects

Before you start on the map, you should spend a short time practising how to **select objects**. This is important because before you can do anything to a Draw object – move it, for instance, or change its colour – you must select it. A Draw picture will typically contain lots of objects overlapping each other, and often one object will be completely behind another. As you work on a drawing you will inevitably find quite often that the object you want to change is not selected, if only because you had to interrupt your work and reload the file.

Go to the **Tutorials/DrawTutor** directory on the hard disc and double-click on the file called Sign. Once this file is loaded it looks like this:



This drawing consists of three objects: the outside circle, the triangle and the exclamation mark. They are stacked from front to back, in that order. (Incidentally, as you create a series of objects, a newer one will always be in front of an older one, though you can change their order later if you wish.)



To select an object, you first need to choose the Select tool from the toolbox (the toolbox is the strip of icons down the lefthand side of the Draw window). Click on the arrow at the bottom of the toolbox and it will be highlighted.

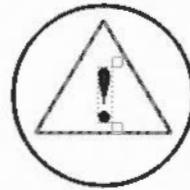
To select an object, you click on it. When part of an object sticks out beyond others, you have no problem: as long as you choose that part of the object to click on, it will be selected. When an object is in front of others, again, you have no problem: click anywhere within it to select it. You can do this with the circle; click on it and a dotted box will appear around it, indicating that it is selected:



However, suppose you actually want to select the triangle, perhaps in order to delete it. No parts of the triangle extend beyond the edges of the circle. A click within the triangle will just leave the circle selected, because the circle is in front of the triangle. To select an object that is completely behind another object, you must double-click on it. So now double-click within the triangle.

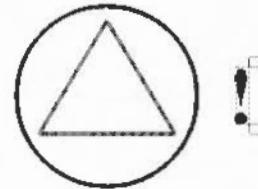


The exclamation mark is behind the triangle, so you can probably guess by now that to select the exclamation mark, you should double-click on it. You can think of this as a series of double-clicks ‘tunnelling down’ through a stack of objects.



### Dragging selected objects

Once you have selected an object you can drag it anywhere within the Draw window. For example, select the exclamation mark and move the pointer inside the dotted box. Now hold down Select and drag the exclamation mark outside the circle (don't click on the dotted ‘handles’, these stretch and rotate the object):

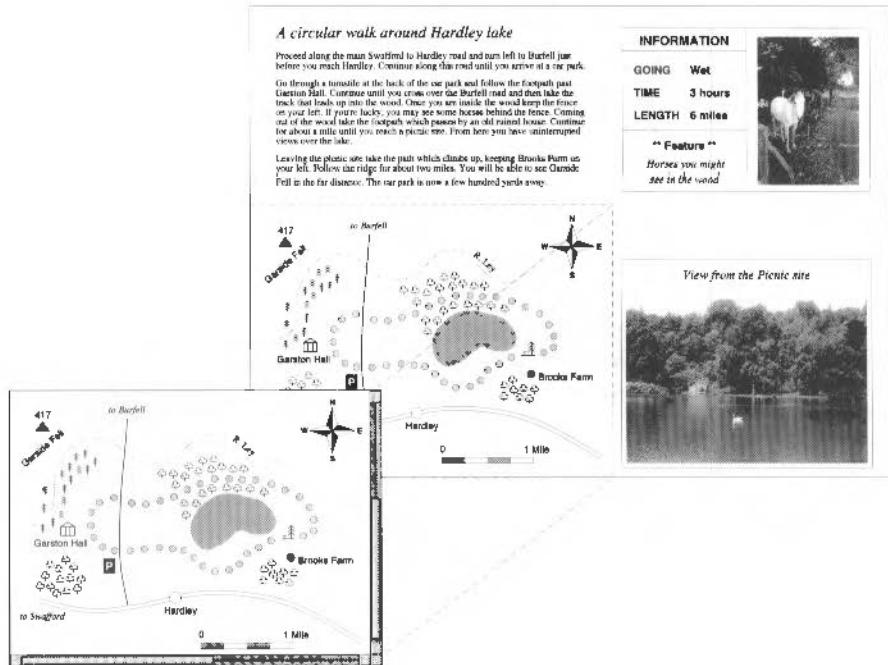


Having practised selecting objects, there is nothing else you need to do with this file, so you can close it by clicking on its Close icon. If during your experimenting, you have changed the file at all, you will see a message warning you of this; click on **Discard** to tell the computer you don't want to save your changes.

## The drawing area

When you start a drawing, the Draw window displayed on your screen only shows you part of your actual **drawing area**. The drawing area is usually the size of an A4 sheet of paper, but you can make it as small as A5 or as large as A0, depending on the size of the drawing you want to create. You can also decide whether the drawing area is a landscape rectangle (where the horizontal side is longer), or a portrait rectangle (where the vertical side is longer). You can use the scroll bars on the Draw window to move around the drawing area.

This drawing area is Landscape A4



The Draw window is literally a window onto a larger drawing area

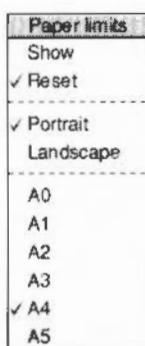
## Creating the map symbols

Six different symbols are used on the map, two types of tree, a picnic site, a mountain, an historic building and a parking site symbol:



The first part of this tutorial takes you through creating these symbols.

### Specifying the size of the drawing area



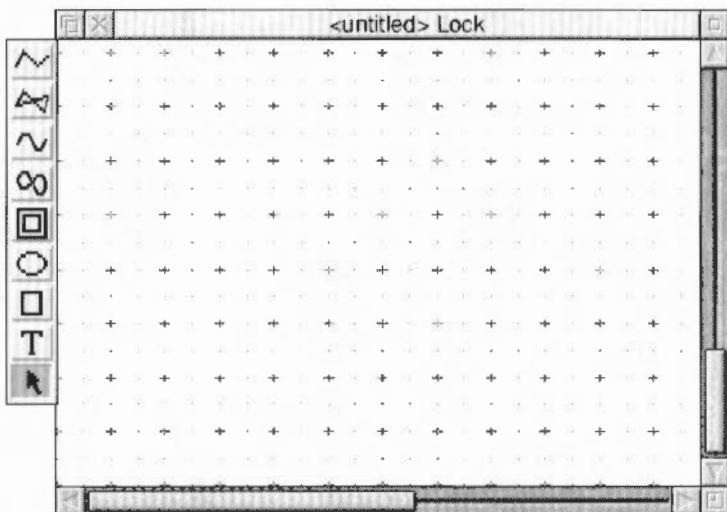
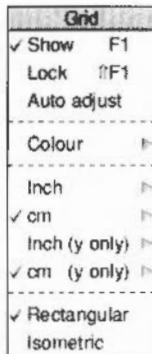
The first step in creating the map is to click on the Draw icon on the icon bar (if you don't have Draw loaded on the icon bar follow the instructions chapter *Using RISC OS applications* on page 169). This displays an empty Draw window. You should now check that your drawing area size is A4, and your view of that area is landscape. To do this, move your pointer into the Draw window and click Menu (the middle mouse button). Now move the pointer into the **Misc** menu, and then into the **Paper limits** menu. The two items on this menu that should be ticked are **Landscape** and **A4**. If only one is ticked click on the one that is not ticked, if neither is ticked, click **Adjust** on one and then click **Select** on the other.

### Changing the size of the Draw window

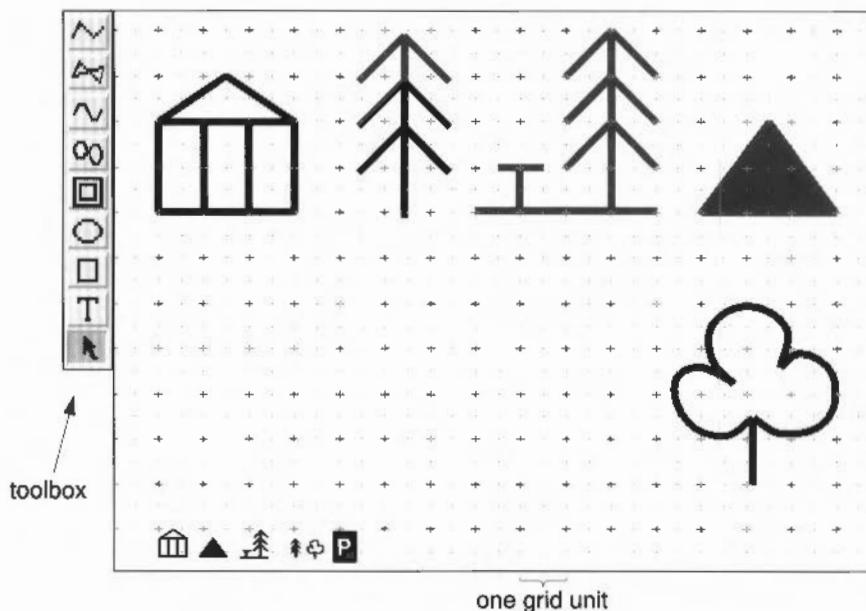
The Draw window that is displayed is usually quite small. To increase the size of this window drag it to the top left of your screen, then drag the Adjust size icon (at the bottom righthand of the window) down and to the right.

### Superimposing a grid

Having enlarged the size of the window you should now superimpose a grid on the display area within the window. To do this, press Menu on the Draw window, move the pointer to **Grid**, and then slide the pointer to the right to display the Grid submenu. Click **Adjust** on the **Show** option, and then click on the **Lock** option. The menus will disappear and a grid will be drawn in the display area:

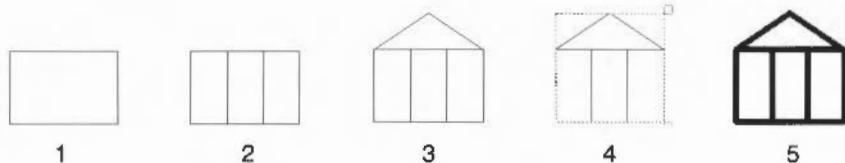


The easiest way to create most of the map symbols is to draw them very large (so you can see what you're doing more clearly) and then shrink them down to the size you want. When you have finished creating all the map symbols your Draw window will look something like this:



### Creating the hall symbol

There are five steps involved in creating the hall symbol:



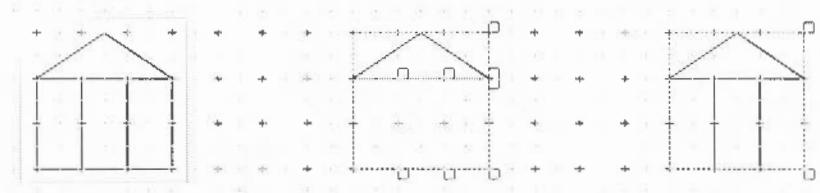
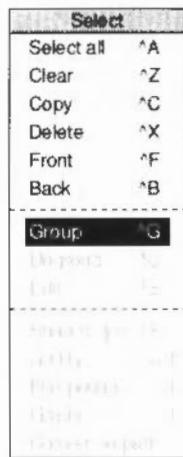
-  1 Choose the Rectangle tool in the toolbox (by clicking Select on it), then move the pointer over one of the grid markers near the top lefthand corner and click. This marks one corner of the rectangle. Now move the mouse down two grid units and right three grid units and click again. The rectangle will be displayed locked to the grid.
-  2 Now choose the Straight line tool at the top of the toolbox. Then move back and create two vertical lines within the rectangle.  
(To draw a single line, click once at the start point of the line, move the pointer, then double-click at the end point of the line.)

- 3 Now move to the top left of the rectangle and click. Move right one and a half grid units and up one grid unit and click again. Finally move to the top right of the rectangle and double-click.
- 4 To make the rectangle and all the lines in the symbol into one object you have to select them all and then group them.



Click on the arrow tool at the bottom of the toolbox to enter Select mode. You can now **select** one or more objects. The easiest way to select every object in the hall symbol is to construct a **select box** around them.

Move the pointer to the top left corner of the symbol (make sure the pointer is outside any of the lines in the symbol) and press and hold down Select. Now drag the pointer to the bottom right corner of the symbol. When you release the button all the lines in the symbol will be selected (selected objects are shown enclosed in a dotted box). Now press Menu, and choose **Select/Group**.



move the pointer to the top left of the symbol and then drag it down and to the right to create a select box

all the objects inside the select box will be highlighted

go into the Select submenu and click on Group

If you now click outside the dotted box, the dotted box around the symbol will disappear. To select the symbol again just click on it. The symbol will be highlighted.

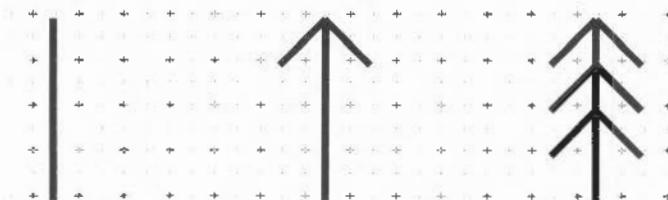
- 5 The final task is to thicken the lines in the symbol to make it stand out more. This is very straightforward. Select the symbol, then press Menu and go into the **Style/Line width** menu and click on **4**. All the lines in the symbol will be redisplayed 4 points wide (a point is 1/72 inch).



### Creating the conifer tree symbol



Return to the toolbox and click on the Straight line tool. Then move to the right of the hall symbol and draw a vertical line four grid units high (notice that the lines you draw now are very thick). Move to the left of the line and create a two line segment to act as the top two branches of the tree (do this in the same way you created the roof of the hall symbol). Now move down and create two more sets of branches.



draw a vertical line 4 grid units high

draw a two line segment at the top of the tree to represent two branches

draw the next two sets of branches in the same way



When you have finished the tree choose the Select tool, draw a select box around the tree, and group it into one object.



### Creating the picnic site symbol

The picnic site symbol is much easier to create than it looks:

- 1 Select the tree symbol you have just created and choose **Select/Copy**. A copy of the tree will appear slightly below and to the right of the original. Drag this copy several grid markers to the right of the original tree.
- 2 Now you have a copy of the tree in place go back into the Straight line tool and draw the three lines that make up the remainder of the picnic site symbol.

Once again make the symbol into a single object by grouping it.



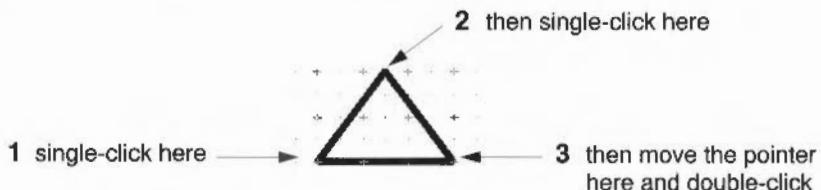
### Creating the mountain symbol



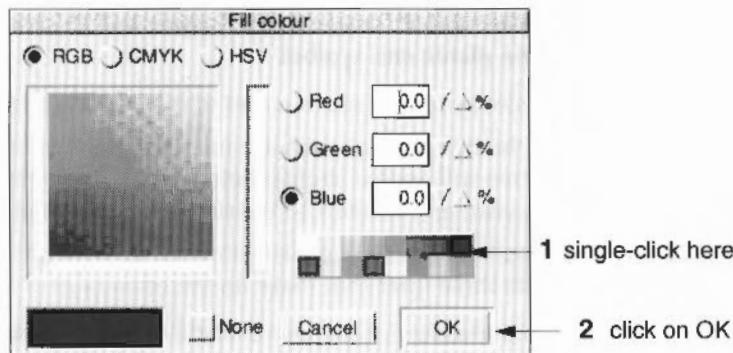
The mountain symbol is just a solid triangle and is very simple to create:

- 1 Choose the Joined line tool. This tool allows you to create straight lines with the added feature that, when you double-click to end your path, an extra line is drawn to join the last point to the first point.

Move to the right of the picnic site symbol and draw the line from the bottom left of the triangle to the peak. Then move the pointer to the bottom right of the triangle and double-click. The third line will be automatically drawn from this point to the first point, creating a triangle.



- 2 To colour the inside of the triangle black you must first select it, then go into the **Style/Fill colour** box. Click on the black patch near the bottom right of the Fill colour box then click on **OK**:



### Style options

Before you draw your next symbol it is important that you understand how the Style menu works. Every time you select a style, e.g. Fill colour, then whatever style you select stays in force until you change it again, **and** it affects other tools. So if you set Fill colour to black, any subsequent rectangles, lines and curves you draw will also be filled in black. To avoid drawing an object in the wrong style, each time you choose a new tool check that you have the correct fill colour, line width etc., **before** you draw the new object.



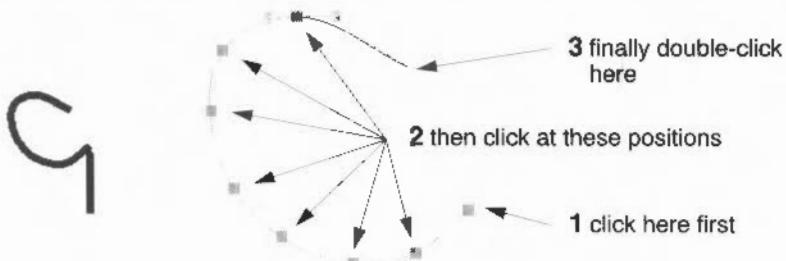
### Creating the deciduous tree symbol



The deciduous tree symbol involves drawing several curves and requires a little more time and 'artistry' to create. Draw this symbol below the other symbols. All the symbols will then be in full view without the need to scroll.



- 1 Choose the Straight line tool. Move to the bottom right of the window and draw a small vertical line.
- 2 Turn off the Grid **Show** and Grid **Lock** options (it's very difficult to draw curves with the grid switched on).
- 3 Choose the Curved line tool. Return to the **Fill colour** box, click on **None** and then **OK**. This will ensure that whatever you draw next will **not** be filled in.
- 4 Move the pointer to the top of the small vertical line and click. Now move very slightly down and to the left. You will notice that there is a small blue square over the point where you first clicked Select, and as you move the pointer a small orange square will also appear. The blue squares are simply to show you where you clicked Select as you build up a curve. The orange squares are **control points**, they help to show you how the curve is being generated. Both types of square will disappear when you finish your curve. For the time being, just build up your curve clicking Select at roughly the points shown below:



When you come to the end of the curve double-click (and leave your pointer where it is). Don't worry if your curve isn't exactly the same as the one above.

- 5 Now you can create the other two curves in the same way. By starting the next curve where you finished the previous one you will create a smoother, more continuous effect to the outline of the tree.

If you are dissatisfied with your curves you can either delete them and start again, or edit them. You can delete a curve (or any object) by selecting it and clicking on **Delete** in the Select menu. If you want to learn how to edit curves see the section *Editing curves* on page 217.

Finally, make the symbol into a single object by grouping it.

# P

## Creating the parking symbol



There are five steps involved in creating the car parking symbol:

- 1 Turn on the Grid **Show** option (but leave the Grid **Lock** option off). Then choose the Rectangle tool and set the **Style/Line width** to **Thin**. Now move to the left of the deciduous tree symbol. Click and drag the pointer to make a small rectangle, about half a grid unit wide, and almost one grid unit tall.
- 2 Go into the Select tool and select the rectangle. Set the **Line width** to **Thin**. Then go into the **Style/Fill colour** box. Click on the black patch near the bottom right of the box and then click on **OK**.



draw the rectangle ...

... then fill it in black

# T

- 3 Choose the Text tool from the toolbox. Now position the pointer near the rectangle you have just drawn and click. A red vertical bar (known as a 'caret') will appear. Type the letter P.
- 4 Go back into the Select tool and select the P. Now go into the **Style/Font size** box and click Adjust on 14pt. The size of the P will increase to 14 points. Now move to the **Font name** submenu, go into the **Homerton** box and click on **Bold**. The P will be changed into the new font.
- 5 While the P is still selected go into the **Style/Text colour** box and change the colour of the P to a light grey. Then drag the P so that it is centred inside the rectangle. Now go back into the **Text colour** box and change the colour of the P to white.



drag the P into the centre of the rectangle ...

... then change the text colour of the P to white

# T

**Note:** Never leave text colour set to white (you wouldn't see anything next time you typed in any text), always change it to black again. To do this go back into the Text tool, return to the **Text colour** box and change the colour to black.

Finally group the rectangle and the P to make a parking symbol.

### Reducing the map symbols

You must now reduce the size of the first five symbols to the correct size for the map:

- 1 Begin by selecting the hall and mountain symbols (by clicking Adjust on each symbol). Go into the **Select** submenu and copy them.
- 2 Now drag the two highlighted copies down towards the bottom lefthand corner. Go into the **Transform** submenu and then into the **Magnify** box. Use the Delete key to delete any value already in the box, then type in 0.2 and press Return. The two symbols will be reduced in size.
- 3 Highlight and copy the picnic site symbol, reduce the copy of the symbol to 0.15, and move it near the two already reduced.
- 4 Highlight and copy the two tree symbols, reduce the copies of these symbols to 0.1, and move them near the three already reduced.

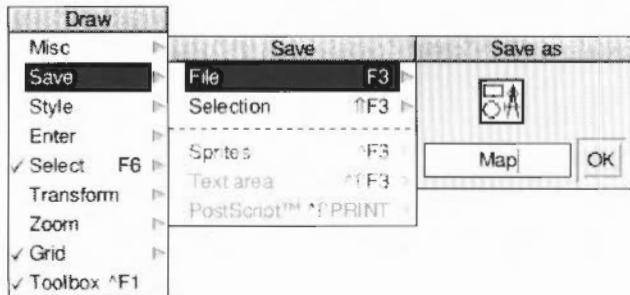
Now move the parking sign symbol to the right of the five reduced symbols.

Finally, highlight all five original, large symbols and delete them. All that you should now see are the six symbols at the bottom lefthand of the window:



### Saving your work for the first time

Now is a good time to save the work you've done so far. To do this first make sure that you have a directory display visible, then go into the **File/Save as** box in the Save menu, delete the word 'DrawFile', and then type in a new filename, for example Map. Then drag the Save icon to your directory display.





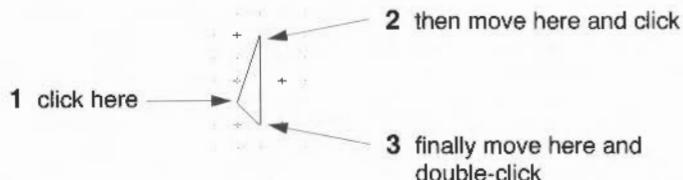
## Drawing the map compass

The next task before actually drawing the map is to construct the map compass.

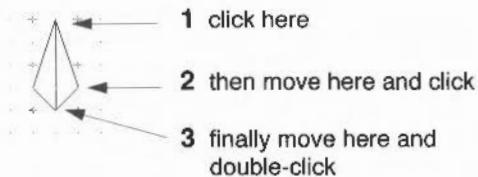
### Constructing the basic quadrant

The compass is made up of four quadrants, but you only need to create one quadrant.

- 1 Turn on Grid **Show** and Grid **Lock** (if they are not already on).
- 2 Go to the toolbox and choose the Joined line tool. Change the **Fill colour** to **None**. Then move to the middle of the Draw window and click on one of the small grid markers. Now move up and to the right and click again. Finally move down two grid units and double-click. A final line will be drawn to your starting position to create a closed triangle:



- 3 Now move to the top of the triangle you have just created and click. Now draw the 2nd half of the quadrant:



- 4 Select the first triangle (the left one) and fill it in black using the **Fill colour** box. Then select the second triangle (the right one) and change the fill colour to **None**:

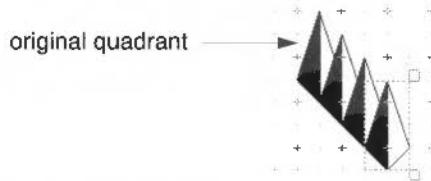


- 5 Finally make the two triangles into a single object by grouping them.

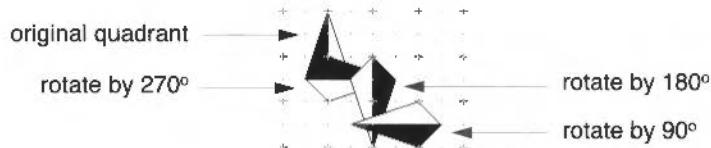
## Forming the other quadrants

The next step is to make three copies of this quadrant and rotate them to form the four quadrants of the compass.

- 1 Select the quadrant and copy it three times (instead of going into a menu to copy the quadrant just select it and then press Ctrl-C three times). As each quadrant is copied it will be drawn in front of the previous one:

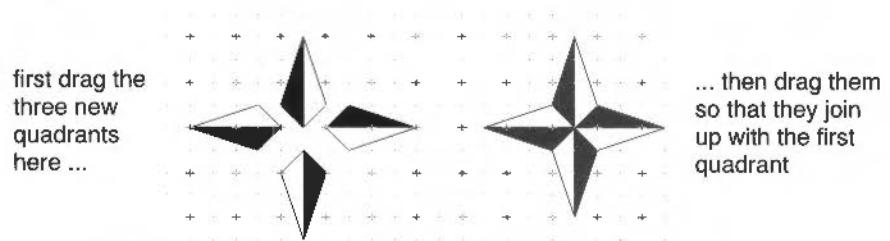


- 2 The last quadrant copied will still be highlighted. Go into the **Transform** submenu, then into the **Rotate** box and type in an angle of 90° followed by Return. The quadrant will be rotated anticlockwise around its centre by 90°. Then highlight the quadrant above this one and rotate it by 180°. Finally rotate the next quadrant by 270°:



## Fitting the quadrants together

The four quadrants overlap each other at the moment and will be difficult to join accurately, so first drag the three copied quadrants so that they form a fragmented star shape. Then drag them so that their tips all meet the bottom tip of the original quadrant:



Finally, make the four quadrants into a single object by grouping them.

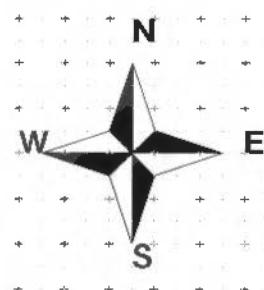
### Adding the text

The next step is to add the text indicating north, south, east and west.

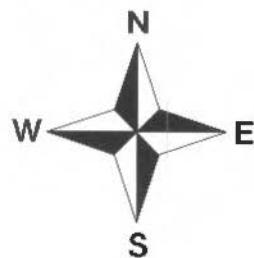
**T**

- 1 Choose the Text tool from the toolbox. Then go into the **Style/Font size** box and click Adjust on 20. From now on the size of any text you type into the drawing area will be drawn at 20 points.
- 2 Now move to the **Font name/Homerton** submenu and choose **Bold**. From now on any text you type in will be drawn in this font.
- 3 Position the pointer just above the top of the first quadrant and click. A caret will appear. Type N and then move the pointer and click where you want to put the E. Type in the E then move the pointer again and add the S and W.
- 4 Finally, go into the **Grid** box and click Adjust on **Show** and click on **Lock** (to turn off the grid). Now drag the letters into the correct positions:

1 add N, E, S and W

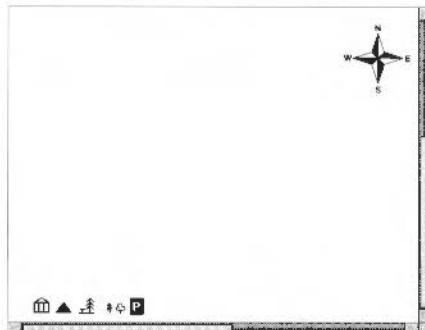


2 turn the Grid off and position letters accurately



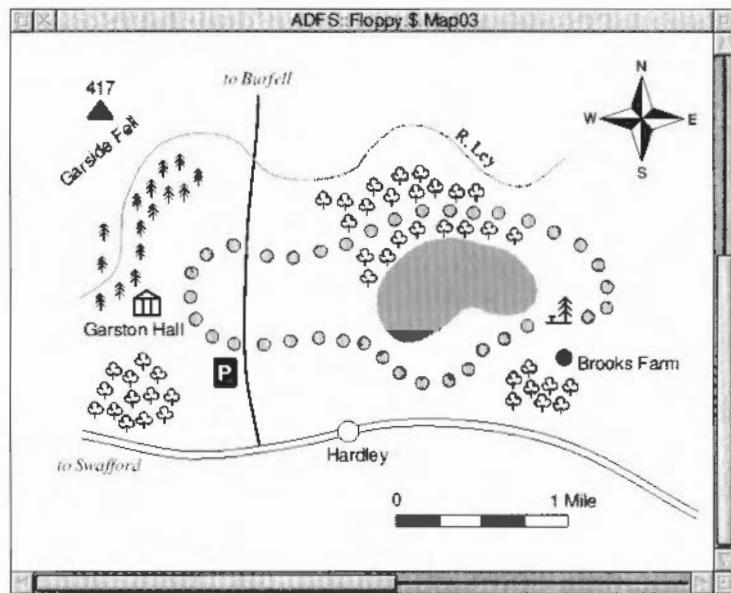
### Final tidying

When you finish drawing the compass drag a select box around it and group it. Then go into the **Magnify** box, type in 0.5 and press Return. Finally drag it to the top right corner of the Draw window:



## Drawing the map

The next stage is to draw the map itself. When you have finished the map your Draw window will look something like this:



The sequence in which you will build up the various parts of the map are:

- 1 Main road to Swafford
- 2 Road to Burfell and river
- 3 Hardley Lake, Garston Hall and picnic site
- 4 Path and Brooks Farm
- 5 Mountain and parking area
- 6 Conifers and deciduous trees
- 7 Map scale
- 8 Map text.

### Saving your work as you go along

Now is a good time to save the work you've done on the map compass. The easiest way to do this is to use a shortcut – press the F3 button at the top left of the keyboard. Pressing this button displays the **Save as** box. You've already saved your work in a file called Map, so all you have to do is click on **OK** and the work you've done since you last saved your file will be saved.

**Note:** It's a good idea to save your work every 10 minutes or so.

### Main road to Swafford



Choose the Curved line tool. Move the pointer above the Hall symbol and create the following curve:

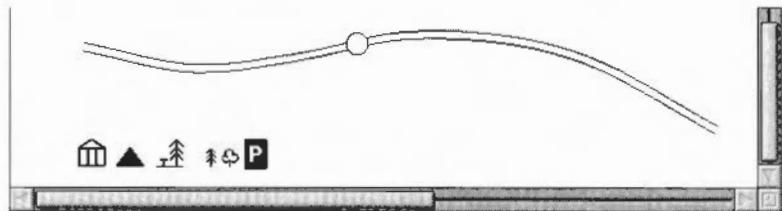


Once you have created the curve, copy it and drag the copy so that it is just below the original curve. The second curve should be parallel to the first curve to give the appearance of a road. Group the two lines by clicking Adjust on each one.

**Note:** If you accidentally select one of the symbols immediately beneath the two lines, you can deselect it (or any highlighted object) by clicking Adjust on it.



To add the circle to the road first click on the Ellipse tool in the toolbox. Then turn the grid on, click on any grid marker, and drag the pointer in any direction until a small circle is displayed. Click again to finish the circle. Then turn the grid off again. Highlight the circle and magnify it by 0.5. Then go into the **Fill colour** box and fill the circle with white. Now drag the circle so that it sits on the road as shown below:



### Road to Burfell and river

Click on the Curved line tool in the toolbox and then return to the **Fill colour** box, click on **None** and then click on **OK**. The road to Burfell can be drawn as one thick line. To increase the thickness of lines you draw go into the **Line width** box in the **Style** submenu and click on **1**. Move the pointer to the upper line in the main road and draw a road going upwards almost to the top of the window.

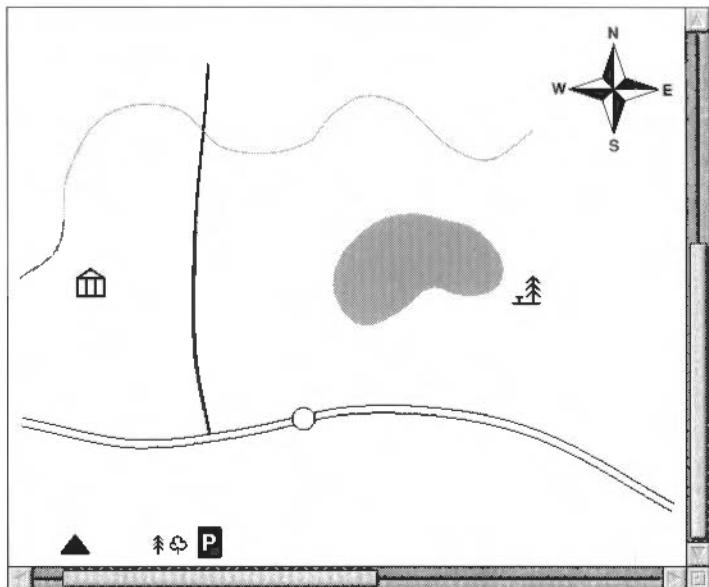
The river can be drawn using a thinner line. Return to the **Line width** box and click on **0.5**, then go into the **Line colour** box and choose light blue (the patch at the bottom right of the box). Now move to the left of the window and draw the river.

### Hardley Lake, Garston Hall and picnic site



Choose the Joined curve tool from the toolbox. Now draw the outline of the lake (remember that in the Joined curve tool, a curve will be drawn joining your last point and starting point). Notice also that the line is drawn in blue (because you selected a blue line colour to draw the river). Then fill the lake with light blue.

Drag the Hall symbol near the bottom left of the river, and then drag the picnic site symbol to the right of the lake. Your Draw window should now look like this:



### Path and Brooks Farm

The path is made up of a number of filled circles. The easiest way to create the first circle is as follows:

- 1 Copy the circle on the main road, then magnify the copied circle by 0 . 5.
- 2 Go into **Fill colour** and change the colour of the new circle to light grey. Click on the light grey patch.

Now drag the new circle to the right of the Hall symbol. Then repeatedly copy the circle and drag the copied circle to the next position until you have drawn circles along the entire path. When you have inserted the final circle, make one more copy and drag it below the picnic site symbol (this will become the symbol for Brooks farm), then click Adjust on each circle in the path and group them all. (If you accidentally click Adjust on an object you don't want to group (e.g. the picnic site symbol), click Adjust on the same symbol to deselect it and continue).

Finally, magnify the circle you inserted below the picnic site by 1.2 and change its fill colour to dark grey.

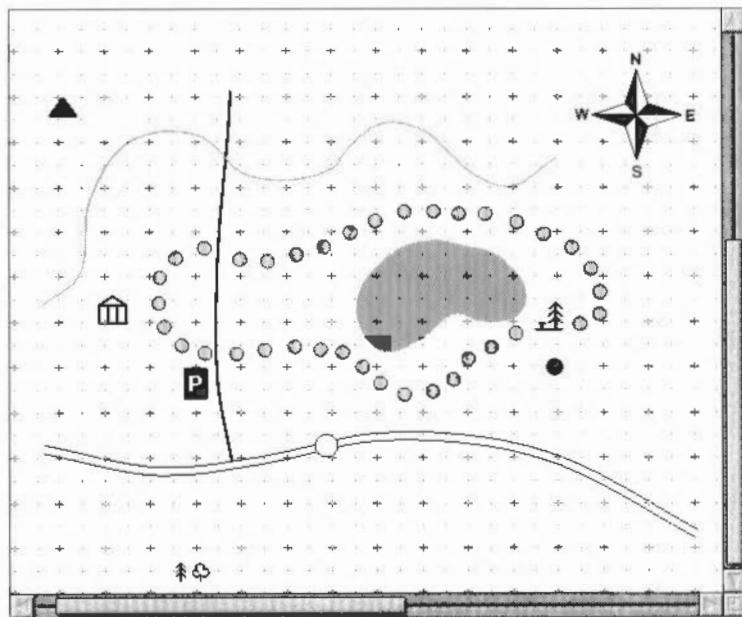
Now is a good time to save your work again.

### Mountain and parking area

Drag the mountain symbol near the top left corner of the Draw window.

Drag the parking symbol below and to the left of where the road to Burfell first passes through the path.

Your map should now be looking something like this:



### Conifers and deciduous trees

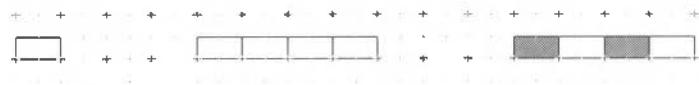
Creating the conifer wooded area is very simple. Drag the conifer symbol near to the Hall symbol and copy and drag it until you have created a wooded area similar to the one on page 202.

Creating the deciduous wooded areas is just the same. Drag and copy the symbol to each of the three deciduous woods shown on page 202.

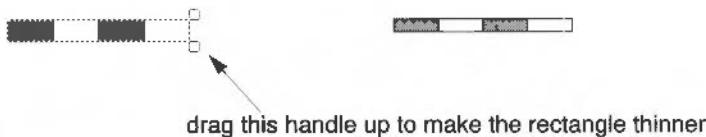
## Map scale

Begin by switching the grid and the grid lock on.

- 1** Go into the **Style/Line width** box and change the line width to 0.25.
- 2** Click on the Rectangle tool in the toolbox. Move below the circle in the main road and draw a rectangle one grid unit long and half a grid unit high.
- 3** Draw three more rectangles so that they form one continuous rectangle.
- 4** Highlight the first and third rectangle and fill them in black:



- 5** Next turn off the grid, highlight the four rectangles and group them. While the grouped rectangle is still highlighted, click on the handle at the bottom right and drag it up so that the rectangle becomes thinner:



- T**
- 6** Choose the Text tool (make sure that the Text colour is black), and then type in 0 at one end of the scale, and 1 mile at the other.
  - 7** Highlight both pieces of text and change the font to Homerton Medium, and the font size to 12 pt.



Finally group the scale and text.

## The map text

- 1** Type in the following text at the positions shown on the map below:

Garston Hall	to Burfell	R. Ley	Garside Fell
Hardley	to Swafford	417	Brooks Farm

- 2** The text you have just typed in should still be in Homerton Medium 12 pt. To highlight text used for directions, change to Swafford and to Burfell to Trinity Medium Italic. Then change R. Ley to Trinity Medium.

- 3 Like any other object, text can be rotated by using the **Rotate** box in the Transform menu, or by using the rotation handle. To rotate R. Ley so that it is parallel to the direction of the river, it is best to use the rotation handle:



highlight the text and drag the rotation handle downwards

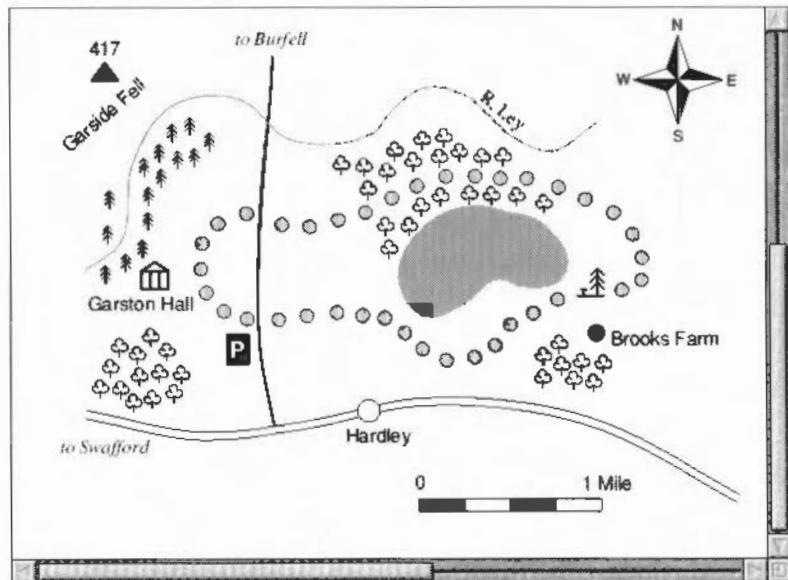


the handles remain stationary but a light grey rectangle appears rotated about the centre of the text



release Select and the text is rotated to fit inside the light grey rectangle

- 4 Rotate the text Garside Fell in the same way. Your map should now look like this:



Now is a good time to save your work again.

## Adding a written description of the walk

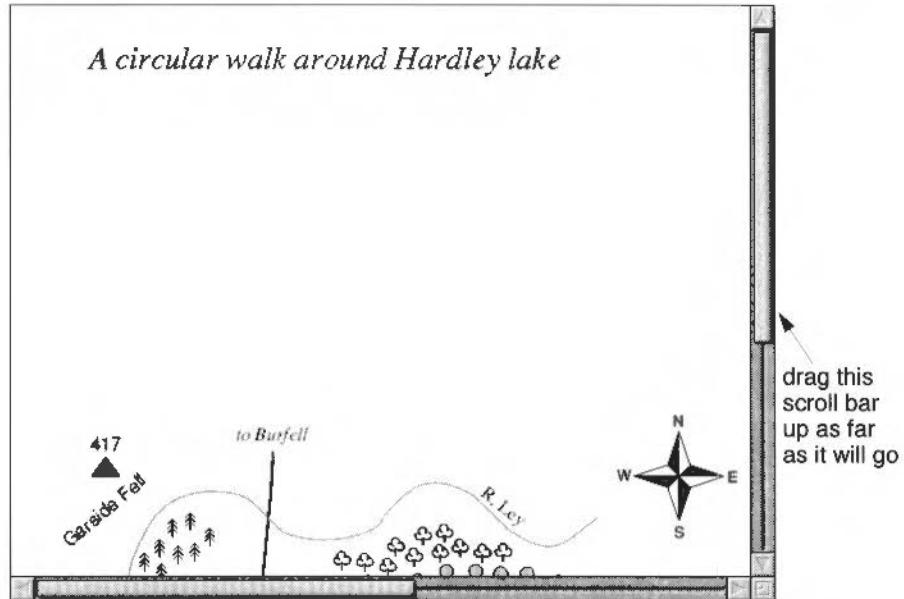
You are now going to add a written description of the walk immediately above the map you have just created.

### Inserting the title

Drag the scroll bar on the righthand side of the Draw window up as far as you can, then select the Text tool, move to the top left of the window, and type in:

A circular walk around Hardley lake

Then highlight the text and change the font to Trinity Medium.Italic and the Text size to 20 pt:

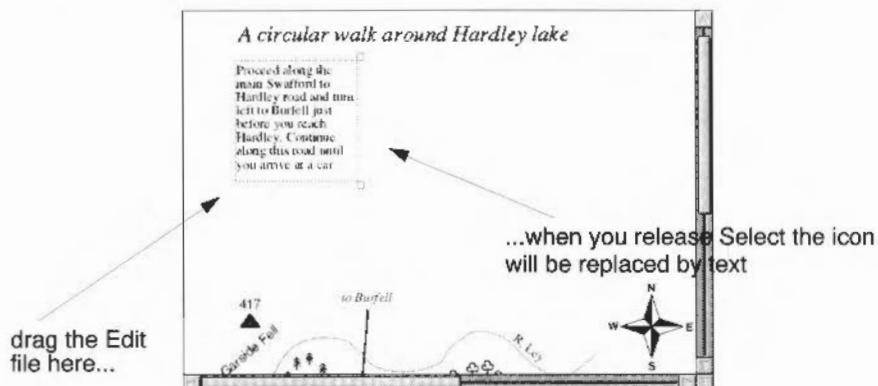


### Importing some text into your drawing

Draw allows you to insert the contents of a text file into a **text area**. A text area is a special object which accepts text from a file. An Edit file called MapText has been included in the **Tutorials/DrawTutor** directory which contains a description of the walk around Hardley lake. The first few lines of this file contain special commands which specify what font the text should be displayed in, how much space to leave between paragraphs etc.

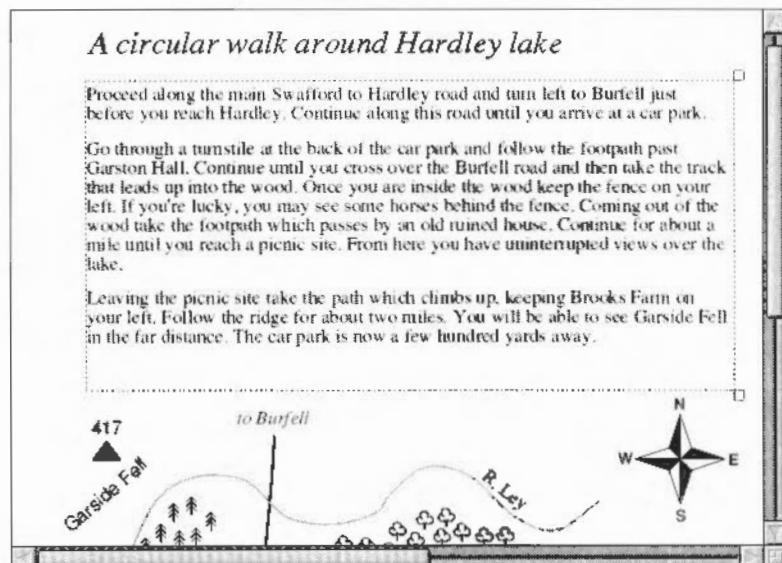
For a full description of text areas, and the special commands that you can include in a text editor to describe how to format the text, see *Text area objects* on page 236.

Look in the **Tutorials/DrawTutor** directory. Open it and you will find an Edit file called MapText. Drag this file onto your Draw window (the file will be represented as a dotted rectangle). When you release Select the dotted line will disappear and some text will be displayed:



The text that is displayed is only part of the text contained in the Edit file. To display the entire contents of the file:

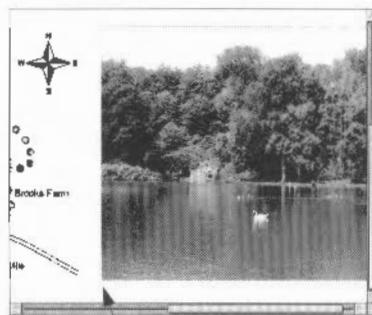
- 1 Select the text area and drag it so that it is just beneath the title.
- 2 Drag the bottom handle down and to the right so that all the text in the file is displayed:



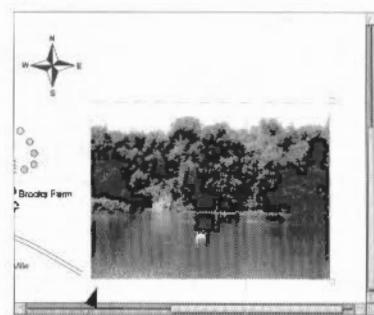
## Importing a picture

A photograph of the lake has been scanned into a sprite file. You can drag this sprite file into your Draw window quite easily.

- 1 Begin by dragging the scroll bar on the bottom of the Draw window as far right as you can, then go into the **Tutorials/DrawTutor** directory and drag a sprite file called LakeView onto the Draw window.
- 2 Select the sprite and magnify it by 0.7. The sprite will now be re-drawn slightly smaller and moved upwards. Drag it back to the position shown below:

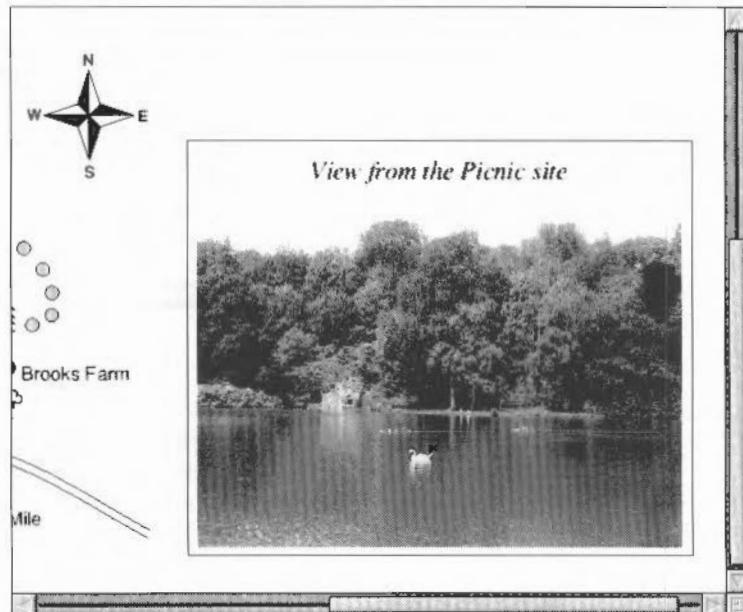


drag sprite file here



magnify sprite by 0.7 and drag here

- 3 Now select the Rectangle tool, and draw a rectangle around the sprite.
- 4 Select the Text tool and type in *View from the Picnic site*

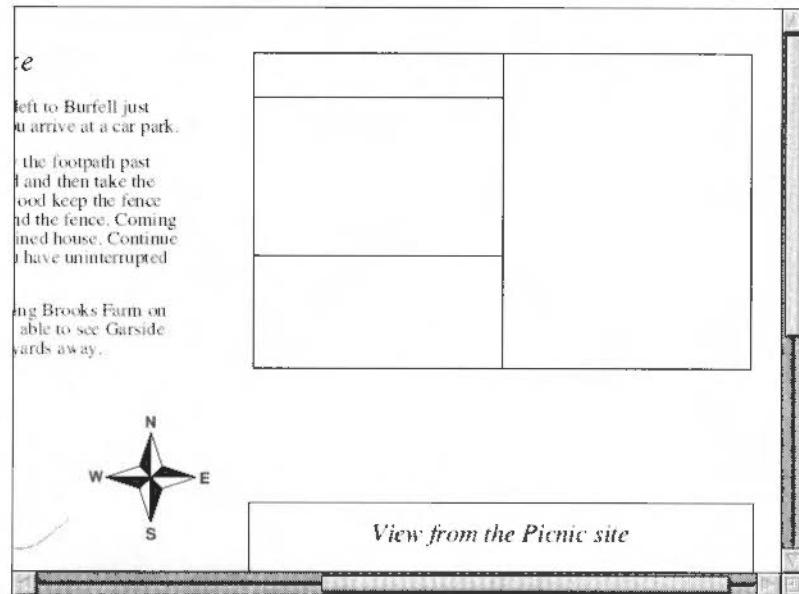


## The Information box

The final part of the map is the Information box.

### Drawing the box itself

- 1 Begin by dragging the scroll bar on the bottom of the Draw window as far right as you can, and the scroll bar on the right of the window as far up as you can. Then switch the grid to show and the grid lock to on.
- 2 Select the Rectangle tool and draw a rectangle near the top righthand of the window 11 grid units wide and 7 grid units deep.
- 3 Select the Straight line tool and draw a line bisecting the box from the top to the bottom. Now draw a horizontal line one grid unit down from the top of the box, and a second horizontal line four and a half grid units down. The left side of the box is now divided into three smaller boxes:



### Entering text into the box

- I Select the Text tool and change the Font name to Homerton Bold and the Font size to 14 pt. Then move to the grid marker two grid units down from the top of the box and half a grid unit in from the left of the box. Type in the word GOING. Move down one grid unit and type in TIME, then move another grid unit down and type in LENGTH. Now move to the right of GOING and type in Wet, and then type in 3 hours and 6 miles one grid unit down and two grid units down from Wet.

- 2 Turn the grid and grid lock off. Then type \*\* Feature \*\* in the centre of the bottom box. Then change the Font size to 16 pt, by going to the bottom of the Font size box, deleting any existing entry and typing in 16. Then move to the centre of the top box, and type INFORMATION.
  - 3 Finally move below the word 'Feature', change the Font name to Trinity Medium.Italic and the Text size to 14 pt, and type in Horses you might Then press Return and type see in the wood. You can now drag the two lines you have just typed in to centre them inside the box:

GOING	Wet	+	+	+	+
TIME	3 hours	+	+	+	+
LENGTH	6 miles	+	+	+	+

type this text in using the grid  
to line up the two columns of text ...

INFORMATION	
GOING	Wet
TIME	3 hours
LENGTH	6 miles
" Feature "	
<i>Horses you might see in the wood</i>	

... then remove the grid and type in the remaining text

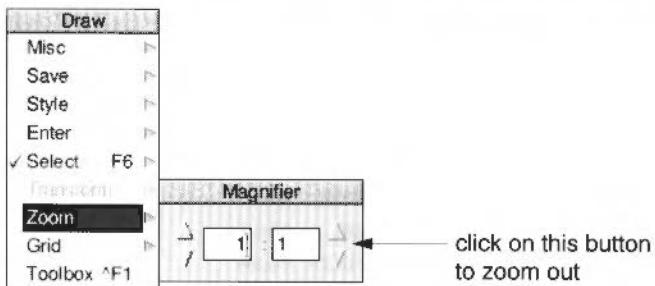
### **Adding the picture of horses**

Scroll the Draw window down and then go into the **Tutorials/DrawTutor** directory and drag a sprite file called Horse to a spot just above the word 'Farm' in 'Brooks Farm'. When the horse is displayed you will see it is far too large, so select and then magnify it by 0.4. Now scroll back up and you will see the reduced version of the horse picture has been redrawn slightly to the left of the information box. Drag it so that it is centred inside the righthand side of the box:

<b>INFORMATION</b>	
<b>GOING</b>	Wet
<b>TIME</b>	3 hours
<b>LENGTH</b>	6 miles
<b>** Feature **</b>	
<i>Horses you might see in the wood</i>	

## The final map

Your map is now finished. If you want to display the entire map in your Draw window, you can change the size at which the map is displayed. Go into the **Zoom/Magnifier box** and click on the up arrow on the righthand side of the box:



The entire map will then be displayed (at half its original size) in the Draw window:

### *A circular walk around Hardley lake*

Proceed along the main Swafford to Hardley road and turn left to Burfell just before you reach Hardley. Continue along this road until you arrive at a car park.

Go through a turnstile at the back of the car park and follow the footpath past Garston Hall. Continue until you cross over the Burfell road and then take the track that leads up into the wood. Once you are inside the wood keep the fence on your left. If you're lucky, you may see some horses behind the fence. Coming out of the wood take the footpath which passes by an old ruined house. Continue for about a mile until you reach a picnic site. From here you have uninterrupted views over the lake.

Leaving the picnic site take the path which climbs up, keeping Brooks Farm on your left. Follow the ridge for about two miles. You will be able to see Garside Fell in the far distance. The car park is now a few hundred yards away.

#### INFORMATION

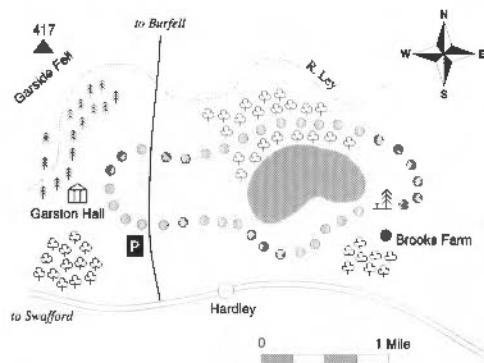
GOING Wet

TIME 3 hours

LENGTH 6 miles

#### \*\* Feature \*\*

Horses you might see in the wood



View from the Picnic site



If you have a printer connected you can print your finished map by pressing the Print button on your keyboard; it may take a while to print due to the size of the pictures. For more details about printing Draw files see the section *Printing Draw files* on page 235.

# Draw reference section

In this section each of the Draw functions, including those you used in the tutorial, are explained in depth. Don't worry if you do not understand every last word; the real way to learn Draw is by using it.

## Using the Toolbox

This gives an overview of how you can create and edit objects, and describes each object type on the Toolbox. When you are in the process of creating any object except text, you will see a 'skeleton' version of it on the screen.

Note that most operations can be cancelled by pressing Escape part way through.

The items in the Toolbox can also be chosen from the Enter submenu. This is outlined at the end of this section.

## Paths

### Line segment tools

The top five icons in the toolbox are used for path objects. To construct line segments in a path:

- 1 Choose one of the first four icons (their meanings are given below).
- 2 Click at the place in the Draw window where you want the path to start.
- 3 Move to the end point of the line segment and click again. You can keep on adding line segments to the path by moving to the end point of each new line segment in turn and clicking.
- 4 Finish creating the path by double-clicking or pressing Return.



Using this tool you can create straight line segments.



Using this tool you can also create straight line segments; when you complete the path by double-clicking, an extra line segment is inserted to join the last point to the first one.



Using this tool you can create curved line segments. A curve is defined by the two end points and two control points. You will find a fuller explanation of control points later in this chapter. When curves are created, they are arranged so that the segments of the path join smoothly.



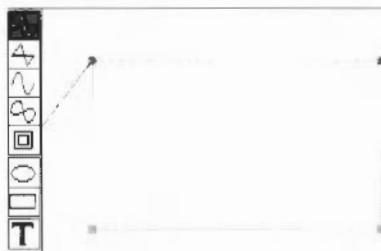
Using this tool you can also create curved line segments; when the path is completed, an extra curve is inserted to join the last point to the first one.



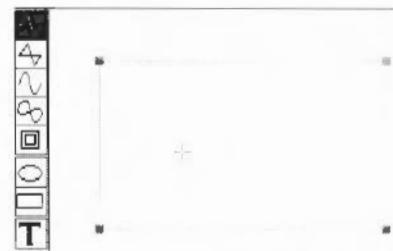
This tool allows you to move from one point in an object to another without inserting a line. This means that you can create an object built up of several unconnected subparts (although all the subparts will be one path).

- 1 Choose one of the four line segment tools.
- 2 Draw a segment (e.g. a rectangle).
- 3 Click on the move tool – the move icon will **not** be highlighted.
- 4 Return to the object and draw another segment.

Keep alternating between drawing and selecting move to create as many segments as you want. When you've finished all the segments you want the object to contain, double-click. For example, to draw four rectangles as one object:



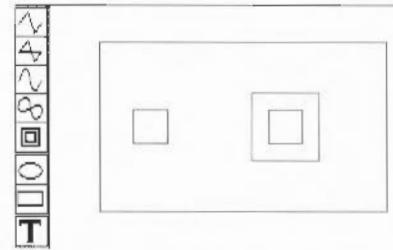
choose the line segment tool, draw a rectangle and then click on Move ...



...now move back inside the rectangle



draw a second rectangle and then click on Move again ...



...move back inside the rectangle and draw the third rectangle. Click on Move again and then draw the fourth rectangle.

Double-click to complete the object.

During the construction of a path, you can switch between the four types of line segment; e.g. you can construct a path which begins with a straight line, then has a curved line, then moves to another point, and finally closes with a straight line.

**Note:** A path cannot start or end with a Move, and Move may only be selected when a path is already in progress.

## Ellipses and rectangles

The next two icons are used to create ellipses and rectangles. Initially these are aligned with the horizontal and vertical axes. However you can subsequently rotate them to any other angle. Ellipses and rectangles are in fact just a type of path: once you have created them, you can alter them in the same way as any other path.



You can use this tool to create an ellipse. Ellipses are arranged to fit within a rectangular area. Click to mark the centre of this area, then move the mouse to a corner of it and click again.

To create a circle, use the ellipse tool with the grid switched on.



Use this tool to create a rectangle. Click to mark one corner of the rectangle, then move the mouse to the other corner of it and click again.

## Text



You can create text objects with this tool. Click to place a caret where you want the text to start. While you are entering text, keys such as Delete have their normal effect. Press Return, or double-click to complete the text object.

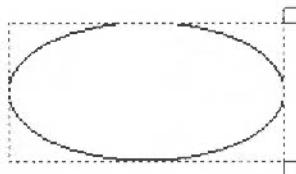
When you are using anti-aliased fonts, you may find the Draw window takes a long time to scroll. To improve this, use the Task manager to increase the size of the font cache.

## Select mode



Click on the arrow tool at the bottom of the Toolbox to enter Select mode. With Select mode, you can make changes to existing objects in the diagram. To return to Enter mode, click on one of the other toolbox icons.

To **select** an object, position the mouse over or within the object and click. When an object is selected, a dotted box is drawn round it, with handles at two of its corners.



You can select more than one object by clicking Adjust on each additional object. Clicking Adjust on an object that is already selected causes it to be deselected.

To **deselect** an object, click Adjust on it or click elsewhere on the screen.

Another way of selecting all the objects in an area of the diagram is to construct a **select box** round the area by pressing Select at one corner of the area to be selected and dragging the box out over the area. The position at which you press Select to start the box must be outside any objects. Release Select when all the objects to be selected are wholly or partly within the select box; the objects will then be selected. If you wish to select only objects that lie wholly within the selected box, use Shift-Select in the same way.

You may find that the object you want to select is obscured by another object. In this case, double-click over the object. Keep on doing this to 'tunnel' down to progressively deeper objects.

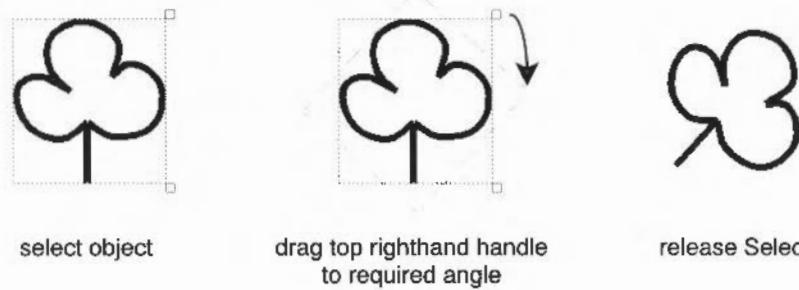
There are many operations that you can carry out in Select mode. Only the simplest ones are described here; for the others, see *Editing existing objects using the Select menu* on page 227.

### Moving an object

To move an object, press Select over any of the selected objects and drag them to their destination; then release Select.

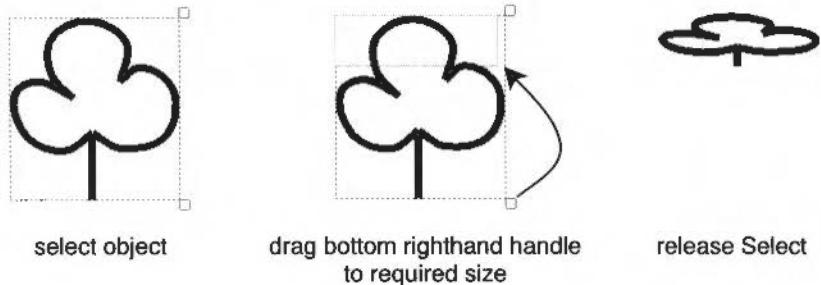
### Rotating an object

To rotate an object, press Select over the handle at the top righthand corner of a select box, and drag the mouse until the object is at the angle you want; then release Select. The object rotates about its own centre. Note that text in System font cannot be rotated. See the section *Rotating and enlarging objects accurately* on page 226 if you want to rotate objects by a specific angle.



### Scaling an object

To scale (or stretch) selected objects, press Select over the handle at the bottom righthand corner of a select box and drag the mouse until the objects are the size you want; then release Select.



When you have more than one object selected, move, rotate and scale apply to all selected objects.

### The enter submenu

Enter	
Text	^F7
Line	^F9
Curve	^F8
<hr/>	
Move	
Complete	RETURN
<hr/>	
Auto-close	
Abandon	ESC
<hr/>	
Rectangle	
Ellipse	

You can also use the **Enter** submenu to choose the same tools as those that can be chosen in the toolbox.

**Text**, **Rectangle** or **Ellipse** creates objects of the given type in exactly the same way as the Toolbox.

**Line**, **Curve** or **Move** construct paths, also using the same method as the Toolbox.

**Complete** finishes creating a path. This has the same effect as pressing Return at the end of a path.

**Auto-close** sets whether the path will be automatically closed when you complete it. If the line or curved line tool is selected, the Toolbox will change the selection to the corresponding closed path tool.

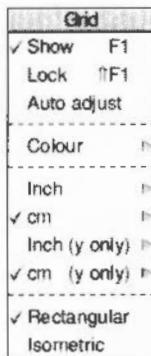
**Abandon** abandons the path that you are constructing. It has the same effect as pressing Escape.

## Using the Grid to place objects accurately

Draw can superimpose a rectangular or isometric grid on a drawing. This is often useful for lining up objects and for checking their relative size. The grid is made up of 'major points', which are marked by a cross, and 'minor points', which are marked by a dot.

You can use the grid either just as a general guide for drawing, or you can lock objects to it, so that they always align with points in the grid (the exception is if you rotate an object). When you are creating objects with grid lock turned on, you will see them attach to the nearest grid point to the mouse position.

The grid is controlled from the grid submenu:



**Show** displays the grid: click on it again to remove the display.

**Lock** switches grid lock on or off. The grid need not be shown in order to use grid lock. Grid lock causes new objects to align with the grid as you create them. If you move an object when the grid lock is on, its bounding box will move in jumps of the grid spacing. You can make existing objects lock to the grid by choosing **Snap to grid** from the Select menu.

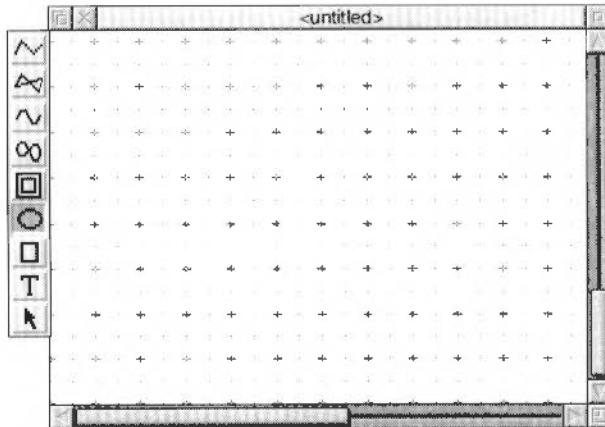
**Auto adjust** indicates whether Draw may change the grid if it is too dense or too sparse. When Auto adjust is turned on, Draw will insert extra minor points if the grid is very widely spaced, and remove points if they are very close together. Objects will lock only to the points that are currently displayed. If you turn Auto adjust off and specify a very close spacing, the grid may take some time to draw.

**Colour** sets the colour of the grid, from a range of values.

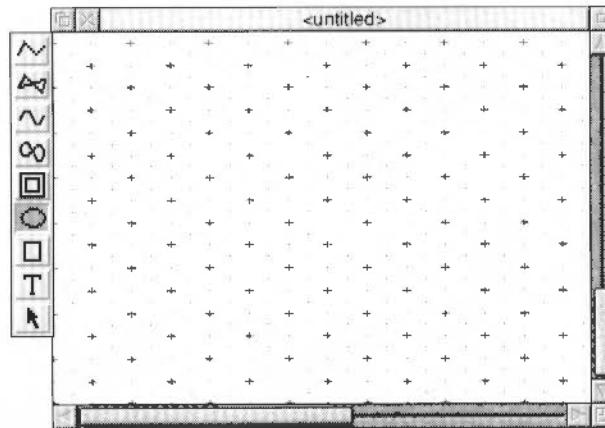
**Inch** and **cm** are used to set the spacing of the grid. Each menu item leads to a submenu, from which you can select one of a range of standard spacings. The standard spacings are expressed in the form M x S: major points are M units (inches or centimetres) apart and divided into S subdivisions; for example, 1 x 4 on the inches menu gives major points one inch apart, and minor points 1/4 inch apart. You can define your own spacing by typing values to the Spacing and Subdivision submenus. Choosing **Inch** or **cm** from the Grid submenu (without moving to Inch or cm submenus) uses the last setting you specified in that unit. For rectangular grids, changing the grid settings in this way changes both the X (horizontal) and Y (vertical) settings.

**Inch (y only)** and **cm (y only)** allow you to set a different grid setting in the Y direction from that in the X direction.

**Rectangular** sets the grid to a rectangular pattern.



**Isometric** sets the grid to an isometric pattern. In this case, the Y spacing of the grid is not used. For reasons of clarity, only those minor points lying on lines joining major points are shown; however, when grid lock is in use, the drawing still locks to intermediate minor points between them.



## Advanced details

### Moving a selection with grid lock on

If you move a selection when the grid lock is on, it moves in jumps of the grid spacing.

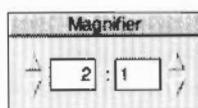
### Lining up an existing selection to the grid

From the **Select** sub-menu, **Snap to grid** snaps the object's starting position to the nearest grid point. If the object is a text line, it snaps the bottom left point of the text line to the nearest grid point. If the object is a group of objects it snaps the top left of the bounding box to the nearest grid point.

### Lining up object points to the grid

The Path edit menu entry **Snap to grid** snaps each point individually to the nearest grid point.

## Zooming in and out of your drawing



**Zoom**, on the main menu, leads to a magnifier dialogue box. This can be used to change the size at which objects are displayed relative to their actual size. You cannot set either part of the zoom ratio to a value greater than 8; if you try to do so, 8 is used instead. There are three other ways of zooming:

- If you want to enlarge a particular area of your work, hold Shift and use Adjust to drag a box around the area you want. The window will expand if necessary and the zoom factors will be set appropriately. To return to your previous scaling, press Ctrl-R, or to go to full size (1:1), press Ctrl-D.
- To zoom out, press Ctrl-Q: this will change the zoom factor from, for example, 1:1 to 1:2, or from 3:1 to 2:1. (Double clicking Shift-Adjust has a similar effect).
- To zoom in, press Ctrl-W: this will change the zoom factor from, for example, 1:2 to 1:1, or from 2:1 to 3:1.

From the Misc submenu, you can set **Zoom lock**. When you then zoom using one of the these methods, the zoom ratio is forced to 1:1, 1:2, 1:4, or 1:8, and so on (and the same when zooming out). This means, for example, that each time you press Ctrl-Q, you halve the size of the drawing on the screen. When you press Ctrl-W, you double its size.

## Displaying an alternative part of the same file

Choose **New view**, from the Misc sub-menu, to create a new view of the diagram you are editing, in a separate window. Changes made in any view of a diagram affect the other views as well. You can change the zoom on each view independently, use different grids in the separate views, scroll each one independently, and so on. To get rid of a view, close the window containing it.

## Editing objects

When you draw an object, you construct it out of paths; you can edit these paths to fine-tune your object's shape using Path edit mode and the Path edit menu.

### Path edit mode

To start editing your object, enter Path edit mode in one of the following ways:

- From Enter mode (when one of the top eight icons is highlighted), click Adjust on the object you wish to edit.
- From Select mode (when the arrow icon is highlighted), first select an object, then choose **Edit** from the Select submenu.

The end points and control points of the path are shown on the screen. To move any of the points, position the pointer over the point and press Adjust. Drag the point to where you want it and release Adjust.

When you have finished editing your object, leave Path edit mode by clicking Select or Adjust when the mouse position is not over a path.

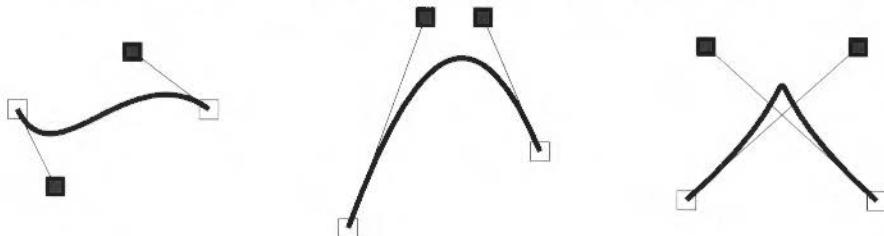
### Editing curves

Curves in a path object are defined by two end points and two control points. When you are drawing or editing a path, the control points are shown connected to the end points by straight lines. The shape of a curve is determined as follows:

- The direction of the curve at the end point lies along the line connecting the end point to the control point (i.e. this line is a tangent to the curve).
- The degree to which the curve moves away from this straight line depends on the distance of the control point from the end point: the nearer together they are, the sooner the curve turns away.

By moving the control points, you can produce many different shapes of curve. Some examples are shown below. In each case the thick line shows the path itself, and the control points (shown as black squares) are joined to the corresponding end points (shown as open squares) by thin lines.

If you hold down Shift while you drag a control point, the corresponding control point in the next curve is also moved to keep the angle of join constant.



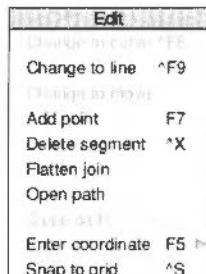
### Editing text lines

When typing in text, you can only delete text and type new text in if you are still on the same line. As soon as you press Return the line is frozen. To edit a text line once it is frozen use the following procedure:

- 1 From Select mode (when the arrow icon is highlighted) select the Text line tool by clicking over it.
- 2 Use the **Select** menu to move to the **Edit** option and display the **Text** box.
- 3 Change the text in the text box and press Return.

Text areas and Paint images (sprites) cannot be edited within Draw. Text areas should be exported to Edit and edited. Paint images (sprites) should be exported to Paint and edited.

### The Path edit submenu



To view the Path edit menu, first enter Path edit mode; see page 217. If the path you want to edit is under another object's path, double-clicking Adjust over that path will find the next deeper path in the diagram if there is one. This is similar to tunnelling through objects in a selection.

Select part of a path by clicking Adjust on an end point or a control point of the path. The selected line segment is highlighted. (Note that if you select the first point of the path, there is no highlighting). You can now click Menu to show the list of Path edit actions:

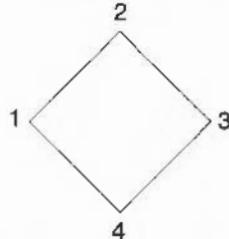
**Change to curve** turns the selected part of the path into a curved line segment. You can use it when the selected segment is a line, or when you have selected a point inserted using the Move icon (or **Move** from the Enter menu).

**Change to line** similarly changes a curved line segment or a Move into a straight line segment.

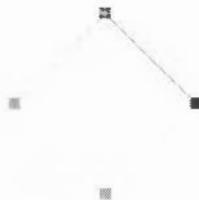
**Change to move** replaces the selected straight or curved line segment with a move, effectively splitting the path into two sections. However, you cannot change a line segment to a move if it appears at an end of the path, or if it is already preceded or followed by a move.

If the path containing the line was closed, extra lines will be inserted to close each of the two sections of the path. The following example illustrates this.

- 1 Draw a star, starting at the middle left and working clockwise.



- 2 Enter Path edit mode and click Adjust at corner 3: this selects side 2-3 for editing.



- 3 Click Menu and choose **Change to move**. Side 2-3 is now replaced by a Move, and corners 1 and 3 are joined.



- 4 The final shape now looks like this:



**Add point** inserts a new point (and hence a new line segment) into the path, of the same type as the selected segment.

**Delete segment** deletes the selected line segment from the path.

**Flatten join** straightens the join between two lines (unless they are both straight lines). The curve is adjusted so that the tangent is continuous at that point.

**Open path** and **Close path** turn open paths into closed ones, and vice versa. In making a path open, the line segment joining the last point to the first one is not deleted; it is just 'disconnected'. On closing a path, the end point of the last line segment is moved to join up to the first segment.

**Enter coordinate** leads to a dialogue box which shows the current coordinates of the point. You can select the unit the coordinates are shown in by clicking on the Inches and Centimetres buttons. To change the coordinate, type in the new value and click **OK**. To leave the coordinate unchanged, click **Cancel** or press Escape.

**Snap to grid** causes the selected object to align with the grid.

To leave Path edit mode, click elsewhere in the diagram.

## Cancelling your last operation

**Undo** cancels the last operation you carried out, restoring your work to its previous state.

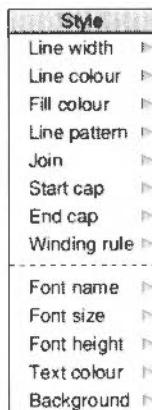
**Redo** cancels Undo, if you decide you were right after all.

## Changing the way an object looks – its style

Each object has a style consisting of a set of attributes. You can set the style to be applied to each new object you create (the default style), and alter the style of existing objects. In both cases, the style is chosen from the Style submenu of the Draw menu.

- When you set attributes, such as colour, from the Style menu; all new objects created will be given this style.
- To change the style of existing objects, first select the objects you want to change and then change the default style settings.

### The style menu



The Style menu contains the following entries. Each entry has a submenu giving the range of values available.

**Line width.** You can set the line width to any of a range of predefined values, measured in points (a point is 1/72 inch), or to 'Thin', which means that the line will always appear in the narrowest width possible. You can use the last position in the menu to type in a value for the thickness if the one you want is not in the menu.

Line width applies to paths. Note that the line width 'Thin' means 'as thin as the output device can manage'. This results in different line thicknesses on different output devices. It is more sensible to use 0.25 points as the default line thickness for a thin line, especially if you will be printing on a typesetter. A 'Thin' line on a 1200dpi imagesetter will be too thin to reproduce subsequently on a litho printer.

**Line colour** and **Fill colour** are both set using a Colour Picker dialogue box.

At any time, there is a range of sixteen standard colours. In addition, you can mix new colours. In screen modes which have fewer than 16 colours, some of the colours may be replaced by dithered patterns.

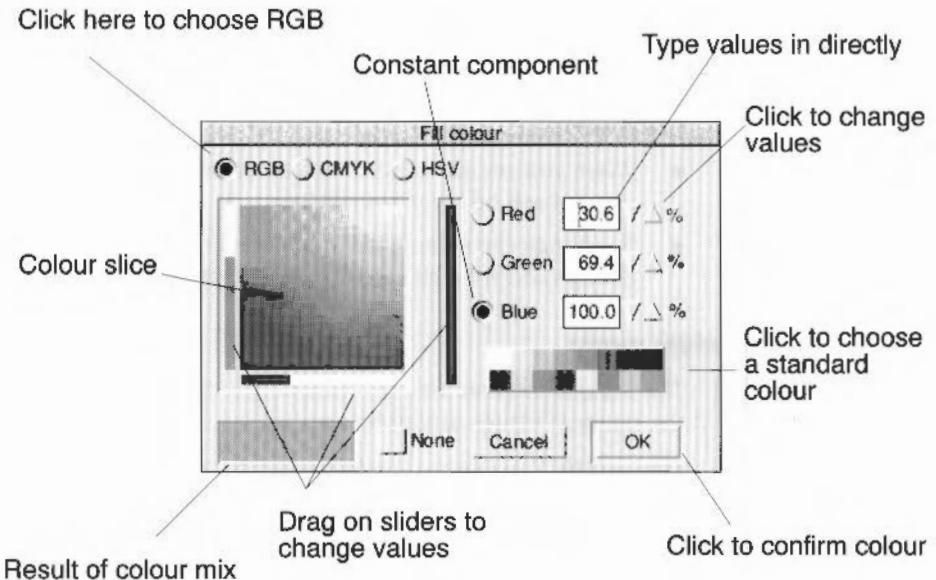
For detailed information on choosing colours, refer to the chapter *Using colour in applications* on page 87.

The standard colours are shown in the patches at the bottom of the dialogue box. To choose a standard colour, click on the patch, and then click on **OK**.

When specifying colours for a line or object you should note the following:

- The fill colour applies to the regions within the object.
- For a simple line drawing, with no interior, use **None** as the fill colour.
- Line and fill colours apply to paths.
- Open paths may be filled.

For examples of filling objects see the description of the winding rule on page 224.



To mix your own colour:

- Drag a slider to the level you want.
- Click on the number, and type in the new value.
- Click on the up and down arrows.

You can start off by clicking on a standard colour, then fine-tuning it to get the colour you want. As you mix a colour, it is shown in the colour mix box. When you have selected the shade you want, click **OK**.

The colour displayed on the screen is the best approximation available in the current screen mode to the shade you select. The exact colour is recorded by Draw, so that it is displayed more accurately if you change to a screen mode which has more colours.

If you don't want an object to have a colour, click on **None**, then on **OK**.

**Line pattern** is used for dashed and dotted lines. You can set the line pattern to any of a range of patterns, including solid. The pattern applies to paths, rectangles and ellipses.

Dashed and dotted lines can be modified using the Start cap and End cap options; the cap settings apply to each segment in the line.

**Join** sets how lines are joined together:

A mitred join brings the outer edges of lines together at a point:



A round join rounds off the point where the lines join:



A bevelled join cuts off the corner where the lines join:



The join style only has a significant effect for thick lines.

**Start cap** and **End cap** determine what the ends of lines look like (and segments of dashed lines). Caps apply only to open paths, and their effect is only significant for thick lines. You cannot add Caps of any sort to lines of Line width 'Thin'.

The following are the cap styles:

Butt caps square off the line at the end point.



Round caps add a semicircular arc to the end of the line. The diameter of the arc is the same as the width of the line.



Square caps add a square to the end of the line. The square has half the width of the line.



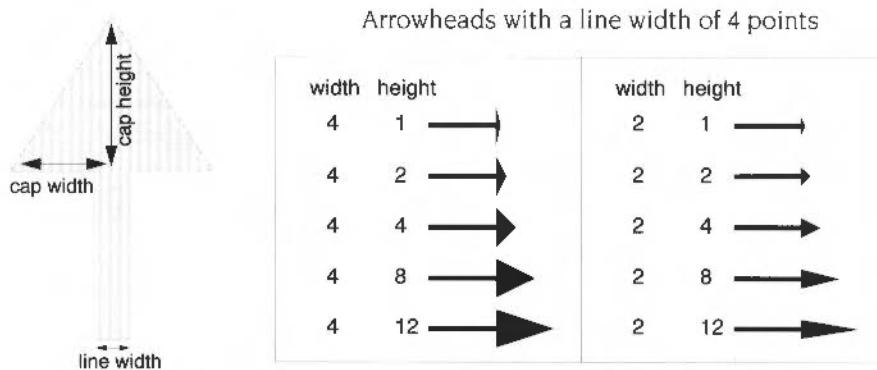
Triangle caps add a triangle to the end of the line. They are used to create arrows. The triangle option has a submenu allowing you to set the width and height of the triangle independently.

The height of the triangle equals the cap height multiplied by the line width.

For example, if the line width were 0.5, and you specified a cap height of 4, the height of the triangle would be 2 ( $0.5 * 4$ ).

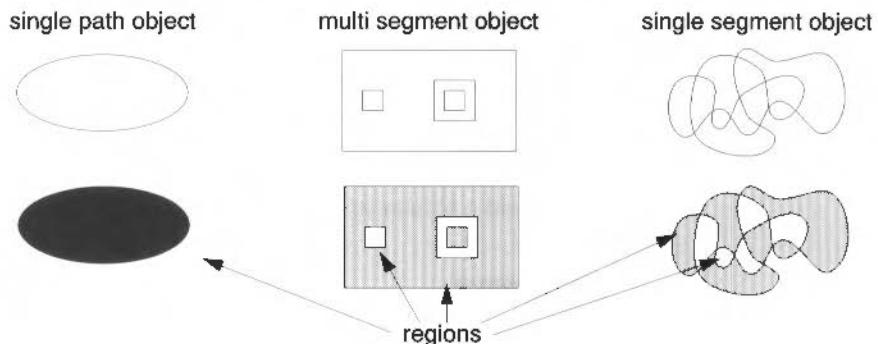
The width of the triangle is slightly different because the cap width only refers to the distance from the centre of a line to the outside of the triangle. So the entire width of the triangle equals twice the cap width multiplied by the line width.

For example, if the line width were 0.5, and you specified a cap width of 4, the entire width of the triangle would be 4 ( $0.5 * 2 * 4$ ).



**Winding rule** allows you to specify which of two methods are used to fill an object with colour (it is only used for objects for which a fill colour has been set). It is not an attribute that is commonly used.

An object can be a single path (e.g. an ellipse), a collection of line segments, or a single line segment that crosses over itself any number of times:

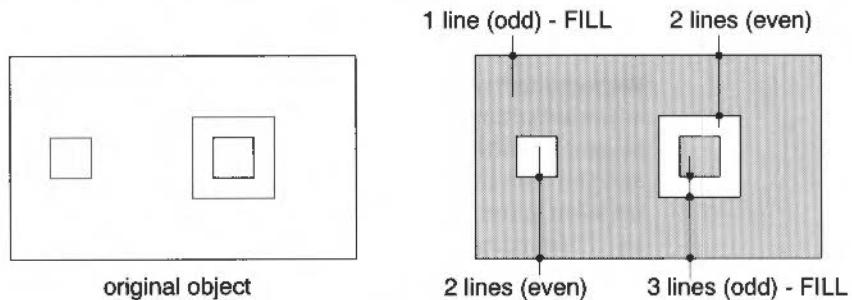


For the purposes of filling, an object is made up of one or more regions. A region is any enclosed area within an object. When an object is filled each of these regions is filled, or not filled, according to the winding rule. There are two winding rules you can apply when filling an object – Non-zero and Even-odd:

- Non-zero fills regions on the basis of whether they were drawn in a clockwise or anti-clockwise direction.

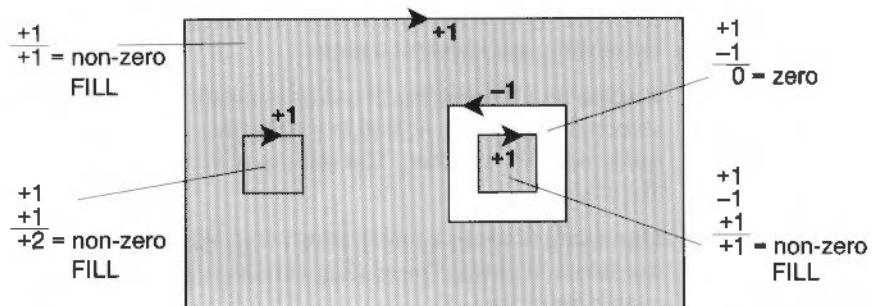
- Even-odd fills regions if they are enclosed by an even number of other regions.

**Even-odd:** to determine whether a region inside an object is to be filled, imagine a line passing from inside the region to outside the object. Count the number of lines it crosses. If the number is odd, fill the area. The following example shows this rule applied to an object made up of four regions (the move tool, on page 210, shows how this particular object was created):



**Non-zero:** first note each region's direction as you draw it, clockwise or anti-clockwise, and express this direction as a number: +1 for one direction and -1 for the other. Then, to see if a region is to be filled, construct an imaginary line from inside the region to outside the object. Keep a total of the direction values for each line it crosses. If the total is non-zero, fill the region.

In the following example, three rectangles were drawn clockwise and one rectangle was drawn anti-clockwise. The clockwise rectangles were assigned a value of +1, and the anti-clockwise rectangle was assigned a value of -1. In the diagram the arrows show the direction in which each rectangle was drawn:



**Font name** applies to text objects. You can set the font either to the system font, or to an outline font. The list of fonts shows all those that Draw could find when it was loaded. See the chapter *Typefaces and fonts* on page 73 for more details about how fonts work.

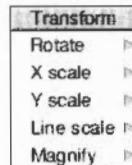
**Font size** and **Font height** also apply to text objects. Both values are measured in points (1/72 inch units). You can use the last position in the menu to type in a value if the size or height you want is not already there. Changing the size causes the height to be set to the same value; you can subsequently change the height, leaving the font width set to the size value. System font is 6.4 point wide and 12.8 point high by default.

**Text colour** is used to set the colour of the text, and the initial text colour of text areas. It is set using a colour dialogue box.

**Background** is used for setting the intermediate colours used in displaying anti-aliased fonts. You should set this to the same colour as the part of the diagram that the text appears in. For example, if you set the text colour to green and the background to blue, the anti-aliasing pixels will be in a range of shades between green and blue. The background applies to text objects and text areas, and is set using a colour dialogue box.

To find out the colour the text is displayed over, select **Style/Fill** colour; note down the colour values and use them as the text **Background** values.

## Rotating and enlarging objects accurately



To rotate or enlarge objects by specific amounts, first select the object(s), then use the **Transform** submenu, reached from the main menu. This provides the following options:

**Rotate** leads to a submenu into which you can type a rotation angle, measured in degrees. All selected objects are rotated anticlockwise by this angle. Alternatively, you can group the objects and drag on the top righthand handle. You cannot rotate text areas or text lines in System font. See page 228 for information about converting text objects to paths.

**X scale** and **Y scale** lead to submenus into which you can type scale factors. All selected objects are scaled in size by this amount, in the given direction (X = horizontal, Y = vertical). The scaling is relative to the current size. Line widths are not scaled.

**Line scale** leads to a box in which you can enter a scale factor for the line widths of the selected paths. The scaling is relative to the current size. Lines of width 'Thin' cannot be scaled.

**Magnify** applies all three scalings – X, Y and Line – to the selected objects (though lines are left unchanged if their width is set to Thin).

## Editing existing objects using the Select menu



Select mode is used to alter existing objects. You can enter Select mode from the Toolbox (click on the arrow icon), or choose Select from the Draw menu. The Select submenu contains a number of operations that you can apply to the currently selected objects:

**Select all** selects all objects in the diagram.

<b>Select</b>	
Select all	<b>^A</b>
Clear	<b>^Z</b>
Copy	<b>^C</b>
Delete	<b>^X</b>
Front	<b>^F</b>
Back	<b>^B</b>
Group	<b>^G</b>
Ungroup	<b>^U</b>
Edit	<b>^E</b>
Snap to grid	<b>^S</b>
Lock	<b>^L</b>
Intersection	<b>^I</b>
Create	<b>^C</b>
Compound path	<b>^P</b>

**Clear** deselects all selected objects.

**Copy** makes a copy of the selected objects, offset from the originals.

**Delete** deletes all the selected objects.

**Front** moves the selected objects so that they are at the front of the diagram, obscuring any other objects in the same physical position.

**Back** moves the selected objects so that they are at the back of the diagram, obscured by any other objects in the same physical position.

**Group** turns the selected objects into a group object.

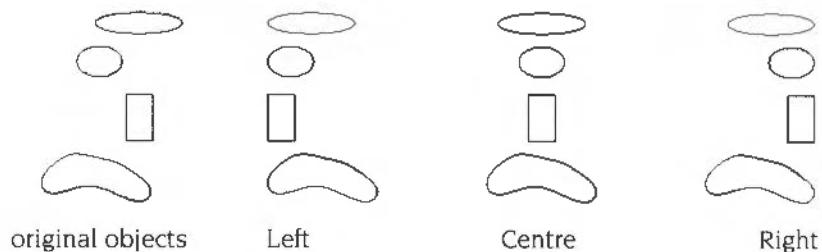
**Ungroup** breaks down a group into the objects that make it up. Ungroup only has an effect when there are groups in the selection.

**Edit** has two functions. When there is a single path object selected, it provides a means of entering Path Edit mode. The effect is the same as clicking Adjust on the path object when in Enter mode. When there is a single text line selected, it leads to an edit box in which the text line can be edited.

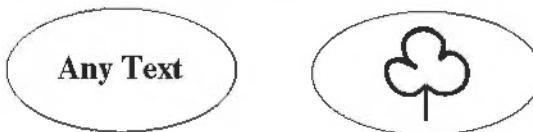
When a piece of text is selected, an arrow will appear, signalling the presence of the submenu **Text**. The selected text will appear in the **Text** box off the submenu. Make your edits to the text, then press Return for the changes to take effect. Text cannot be edited directly in a Draw file.

**Snap to grid** causes the selected objects to move to the nearest grid point. In the case of text objects, it is the base line of the characters that will align with the grid.

**Justify** applies to groups. It leads to a submenu from which you can select how the objects forming the group are arranged within the bounding box of the group object: at the left, centred or at the right horizontally, and at the top, positioned in the middle, or at the bottom vertically. In the following example four objects have been grouped and are then shown justified left, centre and right:



In the following examples the text and the tree symbol have been justified **Centre** and **Middle** so that they are located directly in the centre of the ellipse:



**Convert to path** can be applied to a text object to convert it into a normal path. Each letter in the text line is an object, though when you first make the conversion they will be grouped together. Once you have converted a text line to a path, it can be treated like any other path object, and you can also use the options in the Style menu that apply to objects other than text.

For example, the following text was converted into a path, then ungrouped into individual letters, and each letter given a black line colour and a different fill colour (the second row of text was also given a much thicker line width):

Shaded text  
Shaded text

Note, you can only convert outline fonts to a path.

## Interpolation and grading

Interpolation and grading enable you to group two objects and then

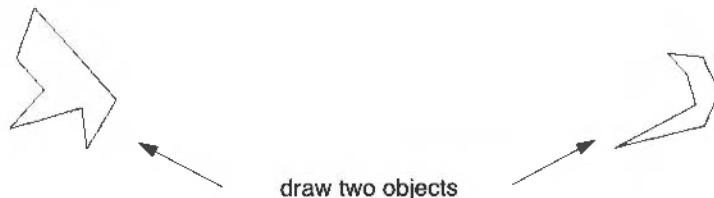
- change one object into the other object by inserting similar objects between them (cartoon animators call this 'in-betweening')
- create intricate patterns using the two objects.

### Changing one object into another object

To change one object into a different object:

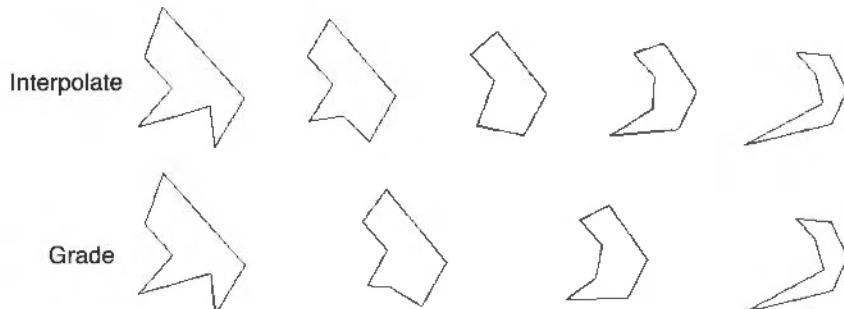


- 1 Draw two objects using the closed line tool, making sure they are far apart from each other and have the same number of lines. Draw each object starting from roughly the same position and in the same direction.



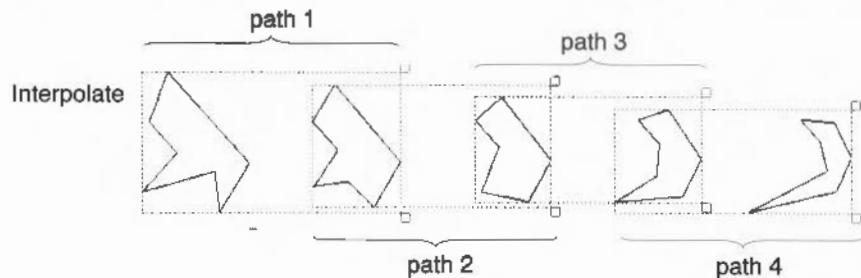
<b>Gradations</b>	8
-------------------	---

- 2 Group the two objects together.
- 3 Choose **Interpolate** or **Grade** from the Select menu. Both options lead to a dialogue box into which you can type the number of gradations to insert between the two objects. Type 4 into this box.
- 4 A new set of objects are now drawn. Each new object is a partial transformation between the first object and the second object:

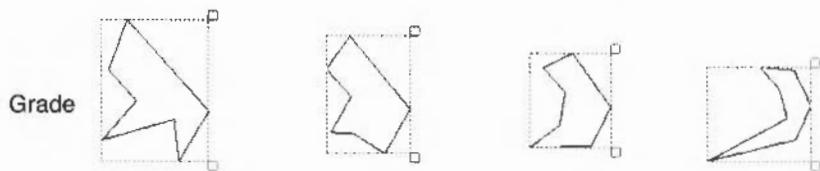


**Note:** If you draw two objects and group them, and then try to interpolate or grade them but find those options greyed out in the Select menu, then the two objects probably do not have the same number of lines. For a full list of the restrictions placed on the two objects see the section *Restrictions* on page 233.

Interpolating two objects produces a number of new paths, with each path consisting of two objects. These paths **cannot** be ungrouped. For example, ungrouping the two objects interpolated above will result in four paths which cannot be further ungrouped. This means that when you interpolate two objects you will always lose the original objects. If you don't want to lose your original objects copy them elsewhere in the Draw window **before** you interpolate them.

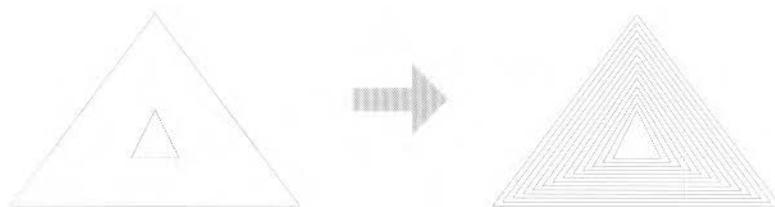
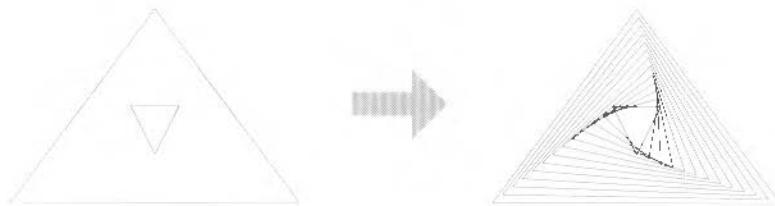


Grading two objects produces new objects which are not grouped as paths. For example, ungrouping the two objects graded above will result in four individual objects:



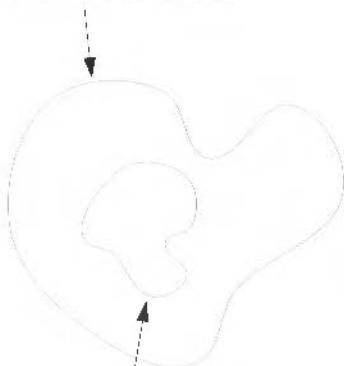
### Creating patterns

Patterns are created in exactly the same way as transformations – two objects are gradually transformed into each other. The trick is that the two objects should be inside of, or over the top of, each other. In the following examples, a small triangle is drawn inside a larger one. Then 12 gradations are chosen. Notice the difference in the resulting pattern if the interior triangle is reversed:

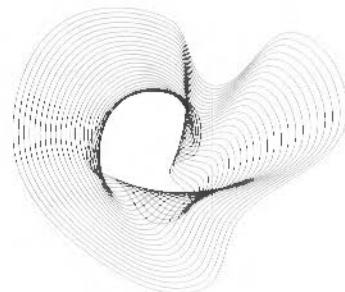


You can interpolate between curved shapes to produce very intricate patterns:

create a closed curve ...



... copy the curve,  
rotate it and shrink it

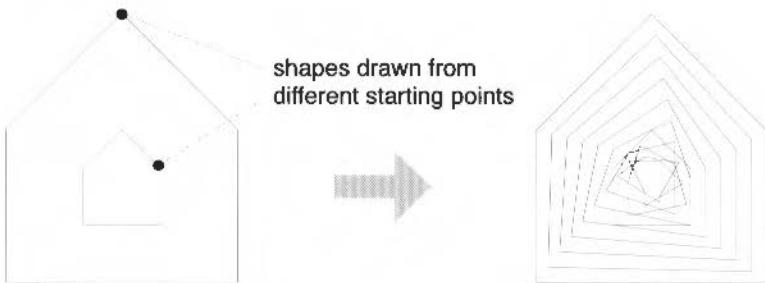
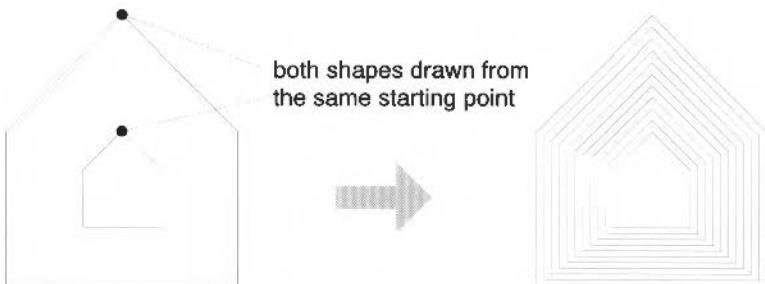


group the two curves and  
interpolate the object

### Drawing the shapes

The order in which you draw the objects is significant, usually you should create them in the same way (for example, start at the top lefthand corner of each shape and move round clockwise). This will produce a very ordered interpolation.

However, creating the objects in a different order will result in a jumbled interpolation:

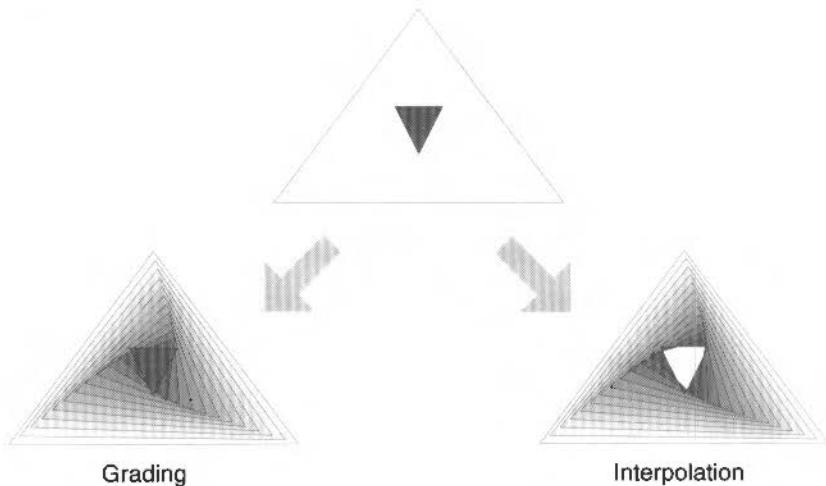


The properties used by interpolation and grading are

- line colour
- fill colour
- line width
- triangle start/end cap height
- triangle start/end cap width.

### The difference between interpolation and grading

The difference between interpolation and grading is most evident when the shapes are closed and filled. In the example below, the same pair of triangles as in the previous example have been filled in (using Fill colour) before being grouped, the outer one in white and the inner one in dark grey. The result of interpolating and grading this object is shown below:



In both cases not only is the outer triangle transformed into the inner triangle, but the colour used to fill each successive triangle is a blend of the two colours used to fill the two original triangles.

In the case of interpolation, the innermost path (the inner triangle) is unfilled.

In the case of grading, the innermost path is left filled with the colour you gave it (dark grey in the example above).

### Restrictions

A pair of path objects for interpolation or grading must have certain properties in common. For most practical purposes, this means they should be more or less the same shape (though they need not be the same size): two V-shapes, two rectangles, and so on. Specifically, the requirements are that

- for each line or curve in one, there must be a line or curve in the other
- for each move in one, there must be a move in the other
- for each close in one, there must be a close in the other
- both objects must be drawn in the same direction, clockwise or anticlockwise.

The path objects must be single path objects; they cannot be grouped objects.

## Loading and saving Draw files

Draw can load four types of file:

- Existing Draw files and other files that use Draw's own file format.
- Sprite files, containing one or more sprite objects (from Paint, for example).
- Text files, used to create text area objects (from Edit, for example).
- DXF files.

All the file types can be loaded by dragging the file to the Draw icon on the icon bar, or by dragging it into a Draw window. Draw files can also be loaded by double-clicking on them in a directory display.

If a Draw file is opened and another draw file dragged to it the draw file changes its defaults to those of the dragged file.

Text area objects are discussed in the section *Text area objects* on page 236.

DXF files are discussed in the section *DXF files* on page 243.

### Loading a sprite

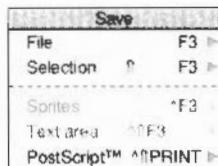


Loading a sprite file into Draw will in fact load only the first sprite. A more convenient method of loading a single sprite is to:

- 1 Load the sprite file into Paint (following the instructions in the chapter on Paint).
- 2 Open a sprite window for the sprite you wish to transfer.
- 3 Click Menu and move to the **Edit** submenu. If Palette is not switched on (ie there is no tick beside it), click on Palette to give the sprite its own palette.
- 4 Choose **Save**, then **Sprite**.
- 5 Drag the icon in the **Save as** box into a Draw window.

This method also ensures that Draw displays the sprite in the correct colours.

When a file is loaded by dragging it into a window, it is added to the diagram which is already in the window. The file is loaded so that its bottom lefthand corner lies at the mouse position at the instant the mouse button is released. When a file is loaded by dragging it to the icon bar, a new diagram is created in a new window, with the file aligned on the bottom lefthand corner of the diagram.



### Saving files from Draw

To save files from Draw, use the **Save** option in the Draw menu. This leads to a submenu with the following entries:

**File** saves the entire diagram in Draw file format.

**Selection** saves the currently selected objects as a Draw file.

**Sprites** saves all selected sprites as a sprite file.

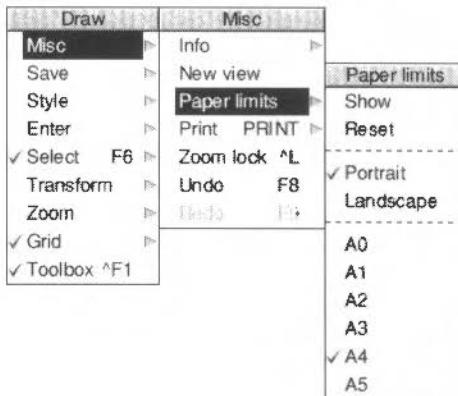
**Text area** saves the text in a selected text object as a text file. There must be a single text area selected. For more information about text areas, see the section *Text area objects* on page 236.

**PostScript** saves the whole drawing as an Encapsulated PostScript file. You can use this file to import the drawing into another application that accepts Encapsulated PostScript. There must be a PostScript printer driver active for this option to be available.

You should not use Encapsulated PostScript files for printing as they do not contain page size information.

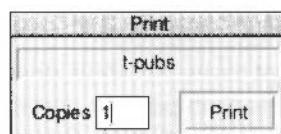
## Printing Draw files

First you must make sure that your drawing will fit on the paper on which you are going to print. The option **Paper limits**, from the **Misc** menu, helps you with this.



**Paper limits** leads to a submenu which you can use to set the size and orientation of the 'paper' you are constructing the drawing on. The orientation is either portrait (longer side vertical) or landscape (shorter side vertical). The size may be any of a range of standard 'A' paper sizes. Choosing **Show** causes a grey border to appear surrounding the part of the diagram which will be printed. Those areas within the grey border are considered to be part of the margin of the page, and are not printed. The limits of the grey border correspond to the limits of the page. If no printer driver is loaded, the limits default to A4. When you load a file into Draw, the paper size is set to the value which most closely matches the area defined by the file. **Reset** sets the paper limits to the printer driver defaults.

**Print** leads to a dialogue box which you can use to print the diagram. The printer dialogue box contains the name of the printer driver in use, a box into which you can enter the number of copies to be printed, and a button to start the printing process.



### Printing part of a diagram

You can also select **part** of the diagram to be printed at a time. This option enables you to print a drawing on more than one sheet, so that you can make up a poster, for example, from several standard-size sheets 'tiled' together.

First click on **Show** in the Paper limits submenu. Then hold Ctrl and click to mark the bottom lefthand corner of the printed area, or hold Ctrl and click **Adjust** to mark the top righthand corner. Hold Ctrl and drag with Select to drag a box around the area you want to print; it will be scaled to fill the page when it is printed.

## Text area objects

A **text area** is a special sort of object that allows you to do simple 'desktop publishing'. A text area consists of a piece of text divided into one or more rectangular regions called **text columns**. Draw breaks up the text into lines which are just wide enough to fit into the columns, splitting it (principally) at spaces. A text area may have more than one column. Draw again works out how to divide the text between the columns, filling up each one before moving to the next.

Create a text area by using a text editor (such as Edit) to prepare a file containing the text, annotated with special commands (described below). When the text file is loaded into a Draw diagram, the text is formatted into columns. The number of columns is given by an annotation. By using Select mode, you can move the text columns and change their size. As you do this, Draw will reformat the text between the columns.

Text areas only use anti-aliased fonts: you cannot create a text area in the system font. If you try to use the system font you will find that it is automatically converted into the Trinity font. See the sub-section **Default text area header** on page 242.

If you wish to create a text area in system font, use the outline font version of the system font instead of the normal system font. You can choose the outline version, called **System Fixed**, from the **Font name** sub-menu off the **Style** menu.

## Creating and editing text areas



To create a text area object from a text file, drag the file into a Draw window. The columns in the text area are initially set up to standard sizes. If you drag the text file over the top of a selected text area, the old text in the area is replaced with the contents of the new file. Use this method for altering the text in a text area.

Text area selection works in two slightly different ways, depending on how many text columns there are in the text area:

- When there is a single text column in the text area, selection works in the same way as any other object. You can move the text area, scale it, change its style, and so on, as described above.
- When there is more than one text column, selection is a two-stage process. When you first click (or click-Adjust, in multiple object selection) over the text area, the entire area is selected. You can move the area, but it cannot be scaled. Double-click (or Double-click Adjust) to select a column of the text area. The individual columns can be moved and scaled. Their new position and size need not lie within the original text area. When the size of a text column changes, the text is reformatted to fit the new size of the column. At the end of the operation, the bounding box of the text area is changed to reflect any changes made to the column; it is arranged to contain all of the text columns, with a small additional border. To select more than one column of a text area, select the first as described above, and select further ones by first clicking Adjust and then double-clicking Select over the column.

Text areas and text columns cannot be rotated.

Some select mode actions cannot be applied to text columns. If there are any text columns selected when you do the action, they are deselected first. An example of this is object deletion: you can delete a text area as a whole, but not a text column from within it.

## An example

Try using the following text as an example. The text shown below, should be typed into Edit and loaded into Draw as an Edit file:

```
\! 1
\AD
\D2
\F0 Trinity.Medium 24
\L24
\P24
\OA sample text area
```

This is an example of a text area containing two columns. The text was prepared in Edit, and then saved directly into Draw. The columns were then stretched to the right size, using select mode, and the rectangles added.

creates the following text area:

### A sample text area

This is an example of a text area containing two columns. The text was prepared in Edit, and then saved directly into

Draw. The columns were then stretched to the right size, using select mode, and the rectangles added.

The appearance of a text area is determined from commands which are included in the text used to create it. Each command starts with a backslash (\) character. The full list of sequences is given below, but the following is a brief description of the commands used in the example.

- \I tells Draw that this is a text area.
- \AD causes the text to be justified to left and right in its columns.
- \D2 indicates the number of columns to be displayed.
- \F0 Trinity.Medium 24 specifies font 0 as Trinity.Medium, 24 point.
- \L24 sets the line spacing to 24 points.
- \P24 sets the spacing between paragraphs to 24 point. In this example, this just affects the space after the title.
- \O selects font 0 for the following text.

## Text area commands

The following is a complete list of text area commands. Some commands must be terminated with either a newline or a slash (/) character. Others do not need a terminator (for example, where the command has a fixed number of characters), but may optionally end with a slash character. For clarity, it is often useful to include it. Note especially that **all commands are case sensitive**: this is unusual in RISC OS and applications written for it.

In the following descriptions

- Items in italics (for example *code*) indicate a parameter you must supply.
- Items in square brackets are optional (for example [ / ] indicates an optional slash character).
- Commands and parameters must normally be separated by spaces (though there does not have to be a space between the command and the first parameter).
- n1 means a single newline character, and n1 / means newline or /.

The full list of annotations is as follows:

Command	Effect
\! <i>version</i> n1/	This is a special line which must appear at the start of any file which is to be used for a text area. <i>version</i> must be 1. However, it forms part of a default header which is inserted at the start of the text; this is described below.
\A <i>code</i>   /	Set alignment. <i>code</i> may be L (left aligned), R (right aligned), C (centred) or D (double, ie justified to both margins). An alignment setting forces a line break. The default setting is left aligned.
\B <i>red green blue</i> n1/	Set the background colour to the given red/green/blue intensity, or the best available approximation. Each intensity is in the range 0 to 255; values outside this range will be limited to it (ie a value set higher than 255 will be realised as 255; a value set to less than 0 will be realised as 0). Background colour is used in the same way as for text objects; you should set it to be the same as the area of the drawing that the text area is to appear in front of (the text area itself is effectively transparent). The default is the background style attribute of the text area object, normally white (equivalent to \B 255 255 255).

Command	Effect
<code>\C red green blue nl/</code>	Set the text colour to the given red/green/blue intensity, or the best available approximation. Each intensity is in the range 0 to 255; values outside this range will be limited to it. The default is the text colour style attribute of the text area object, normally black (equivalent to <code>\C 0 0 0</code> ).
<code>\D columns nl/</code>	Indicates that the text area is to contain the indicated number of columns. This must appear before any printing text. The default is 1.
<code>\F font-number name size [width] nl/</code>	Defines a font reference. <i>font-number</i> is either one or two digits. The font number is used subsequently to set the font. <i>name</i> is a font name such as <i>Trinity.Medium</i> . <i>size</i> and <i>width</i> are the height and width of the font in points. If <i>width</i> is omitted, the <i>size</i> is used for both height and width. There are no defaults.
<code>\font-number ()</code>	Indicates that the text from the point at which the command appears is to appear in the specified font. If the font is not available when the text is being drawn, the effect is undefined. Draw will attempt to check that the font number and the corresponding definition are reasonable. There is no default.
<code>\L line-spacing nl/</code>	Sets the line spacing (the distance from the base of the characters in one line to the base of the characters in the next) to the given value, measured in points. Line spacing changes take effect from the end of the output line in which the command appears. The default is 10 points.
<code>\M left-margin right-margin nl</code>	Sets the left and right margins to the given values, measured in points. If the total size of the margins is greater than the width of the column, no text is displayed. Margin settings apply from the end of the output line in which the command appears. The default is 1 point at each side.
<code>\P paragraph-spacing nl</code>	Sets the extra space inserted between paragraphs to the given value, measured in points. Paragraph spacing changes take effect from the end of the output paragraph in which they appear. The default is 10 points.

Command	Effect
<code>\U position thickness nl</code>	Switches on underlining, at the given position relative to the base of the characters. <i>position</i> is limited to the range -128 to 127, and <i>thickness</i> to the range 0 to 255. Both values are measured in units of 1/256 of the current font size. Underlining may be turned off by specifying a thickness of 0.
<code>\U. [/]</code>	An alternative way of turning underlining off.
<code>\V[-] vertical-move [/]</code>	Moves the following text by the given amount, measured in points, relative to the current character position. This is intended for superscripts and subscripts; use positive values for superscripts, negative values for subscripts.
<code>\-</code>	Inserts a soft hyphen. This tells Draw that it may split the word at this point if necessary, inserting a hyphen character in the output. If the word is not split at the soft hyphen, it has no printing effect.
<code>\nl</code>	Forces a line break.
<code>\W</code>	Inserts a backslash character.
<code>\;text nl</code>	Treated as a comment. Characters up to and including the next newline are ignored.

## Rules for displaying text

### Line splitting

Draw displays text in text areas by splitting it into lines and columns. When deciding where to split the text, Draw tries to split it at the space or soft hyphen that gives the most characters that will fit in the column. If this is not possible, the text is split at the character that gives the longest line that just fits in the column.

### Special characters and paragraph formatting

Certain characters have special interpretations:

- All control characters are ignored, except tabs, which are treated as spaces.
- Newline characters appearing before any printing text insert a paragraph spacing.
- A single newline character in the body of the text is treated as being equivalent to a space, unless it is preceded or followed by a space, in which case it is ignored.

- A sequence of n newline characters in the body of the text inserts n-1 paragraph spacings.

For columns other than the first, paragraph spacings at the head of the column are ignored. Lines which protrude vertically beyond the limits of the column are not displayed; however, all commands occurring in them are interpreted. This can occur if the line spacing is significantly smaller than the font height. You should take care (by using the \M command) to ensure that lines do not protrude beyond the limits of the column horizontally, since the text may not be displayed correctly in this case. The only circumstances in which this is likely to happen are when an italic font is used and the margin setting does not allow for it.

### **Font usage**

When a text area is being constructed from a text file, or being loaded as part of a Draw file, checks are made on the fonts contained in it. If a font is not available, a warning message is displayed. Text that should be in this font will appear in the most recently used font. If no valid font has ever been seen, the text is not displayed.

### **Exporting text from a text area**

Text used to construct a text area may be re-exported into a text file, by choosing **Text area** from the Save menu. This can be useful for altering text areas in a Draw file, when the original text file used to create them is no longer available.

### **Default text area header**

If the text does not start with a version number line (! 1), Draw will insert the following standard header:

```
\! 1
\F 0 Trinity.Medium 12
\F 1 Corpus.Medium 12
\O
\AD
\L12
```

This defines two font references, sets the text to be displayed in font 0 (Trinity Medium), justified to both left and right margins, with a line spacing of 12 points.

If you subsequently export the text, the standard header will be exported as well.

## DXF files

Draw can read files in DXF (data interchange) format. This is a file format used by other graphics programs such as AutoSketch. Draw cannot save files in DXF format.

When you load a DXF file into Draw by dragging it into a window or onto the Draw icon, a dialogue box appears, in which you can specify:

- whether coordinates and sizes in the file are to be interpreted as being in inches or centimetres;
- a scaling unit to be applied to all coordinates and sizes;
- the name of the font in which text is to be plotted. If the name you give is blank, or is not the name of an outline font known to Draw, the text will be plotted in the system font.

To load the file, click on **OK**. If you click on **Abandon**, the file is not loaded.

The following restrictions apply to DXF files loaded into Draw:

- The following DXF object types are not implemented: SHAPE, ATTDEF, ATTRIB, 3DLINE, 3DFACE, DIMENSION.
- Line types are ignored: all lines are created as solid.
- Layers are not implemented.
- Text justification may be approximate in outline fonts.
- Straight line objects are drawn in a single width and colour.
- Colours are guessed from a set of standard values. Unknown colours are converted to black.
- Text may not be rotated or oblique. The text style table is not used. There is no backwards or upside-down plotting.
- A single font is used for all the text in the file.
- There is no curve fitting.
- Block INSERTs do not use column and row values, attribute entries, rotation, or z scaling.

## Working with multiple Draw files

You can be working on several Draw files at the same time; simply click on the Draw icon on the icon bar to start up another Draw window.

It is easy to copy objects between Draw windows. Select the object you wish to copy, move the pointer to the destination Draw window and choose **Copy** from the **Select** menu. The selected object is copied into the new window. Alternatively you can use the **Save** and **Save Selection** menu options to drag Draw icons into new Draw windows.

If you are working with multiple Draw windows, only one window can be selected at a time. So, if you select an object in one window and then select an object in another window, you will nullify the selection in the first window. Additionally clicking on the Draw icon to create another Draw window also nullifies any current selection.

## Saving Draw features in a Desktop boot file



You may wish to change some aspects of the way new Draw windows appear. For example, a new window normally opens with the closed line tool selected, but you may prefer to have the Select tool ready to use each time you start Draw.

You can set features of this type by setting up Draw as you wish to use it, then save these features by creating a Desktop boot file. Instructions on how to create a Desktop boot file are given in the appendix *Configuration information* on page 497.

There are several features of Draw that you can set before saving a Desktop boot file, so that they are set up the way you want them each time you switch on. The Draw features that will be recorded when you go through this process are known as **Draw\$Options**.

## Keystroke equivalents

Many Draw operations can be carried out from the keyboard instead of the menus and mouse; when you are familiar with the application, you may find this more convenient.

### In Enter mode

Keystroke	Effect
F3	Save file (calls up the normal <b>Save as</b> dialogue box)
Shift-F3	Save selection
Ctrl-F3	Save sprites
Shift-Ctrl-F3	Save text area
F2	Load named file (calls up a dialogue box into which you can type the name of the file you want to load)
Shift-F2	Insert named file (calls up a dialogue box into which you can type the name of the file to insert into the Draw file you are working on)
Ctrl-F2	Close window
Print	Print file
F1	Toggles between show and hide grid
Shift-F1	Toggles <b>Lock to grid</b> on and off
Ctrl-F1	Switch Toolbox on or off
Ctrl-Q	Zoom out
Ctrl-W	Zoom in
Ctrl-D	Zoom to 1:1
Ctrl-R	Previous zoom
Ctrl-L	Zoom lock 2
F8	Undo
F9	Redo
F6	Enter Select mode
←, ↓, →, ↑	Move pointer one pixel

### **In Select mode**

<b>Keystroke</b>	<b>Effect</b>
F7, Copy, or Ctrl-C	Copy selection
Shift-F8, Delete, or Ctrl-X	Delete selection
Shift-F6 or Ctrl-Z	Clear selection
F5 or Ctrl-A	Select all
Ctrl-F4 or Ctrl-F	Bring to front
Ctrl-Shift-F4 or Ctrl-B	Send to back
F4 or Ctrl-G	Group objects
Shift-F4 or Ctrl-U	Ungroup objects
Shift-F5 or Ctrl-S	Snap to grid
Ctrl-F6 or Ctrl-E	Enter Path edit mode
Ctrl-F5 or Ctrl-J	Justify

### **In Path edit mode**

<b>Keystroke</b>	<b>Effect</b>
Ctrl-F8	Change to curve
Ctrl-F9	Change to line
F7, Copy or Ctrl-C	Add point
Shift-F8, Delete or Ctrl-X	Delete segment
F5	Enter coordinate
Return	Finish path edit
Shift-F5 or Ctrl-S	Snap to grid

### **For tool selection**

<b>Keystroke</b>	<b>Effect</b>
Ctrl-F7 or Tab	Enter text
Ctrl-F9	Enter closed line
Ctrl-F8	Enter closed curve
Return	Complete path
Escape	Abandon



**E**dit is an application for editing text; you can use it to create and edit text, and to generate simple textual documents and scripts.

Edit is also a BASIC program editor. It converts BASIC programs into text format for editing, and then converts them back again when they are saved.

Edit is not a word processor, although it has many sophisticated features for handling text. Word processors offer additional facilities such as pagination and page layout control as well as style changes such as italic and underlined text.

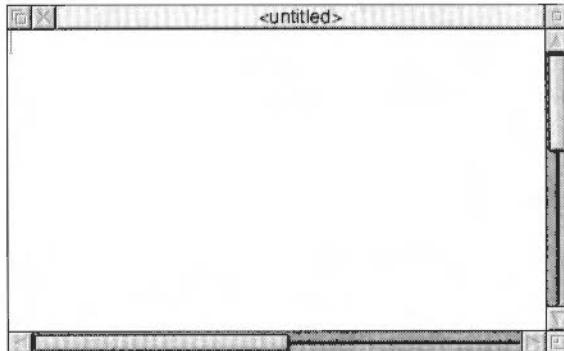
Edit is controlled from a set of menus. However, many menu choices can also be selected using the keyboard, and once you are familiar with Edit, you may find that you prefer this method. These keystroke equivalents are listed at the end of the chapter.

## Starting Edit

To start the application:



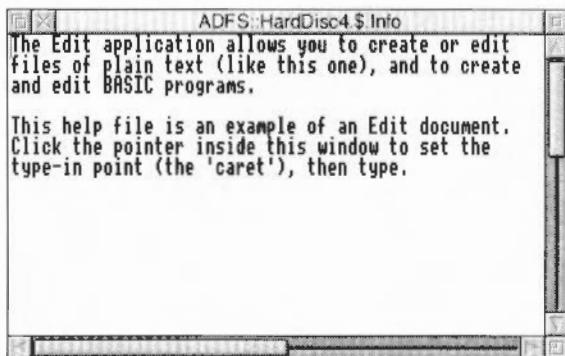
- 1 Click on the Apps directory icon on the icon bar.
- 2 Double-click on the !Edit application icon. The application icon appears on the icon bar.
- 3 Click on the Edit icon on the icon bar icon to start a new document.



## Editing an existing file

Edit is a universal editor, which can edit and display most types of file:

- To edit an existing text file document, drag the file icon to the Edit icon on the bar, or double-click on it.
- To edit any other file type, drag the file icon to the Edit icon on the bar, or hold down the Shift key and double-click on it. BASIC files are displayed as text.



## Typing in text

When you first open a new Edit window, a red I-shaped bar – the **caret** – appears at the top left of the window. This is where text appears when you start typing. You can open more than one Edit window, but only one, the **current window**, has the caret in it. This window is also identified by the fact that its title bar is displayed in cream rather than grey. You can only type in the current window.

You can easily move from one window to another, simply by moving the pointer over the window you wish to use and then clicking Select.

If you type in some text without pressing Return at all, the window scrolls sideways (if your Edit window is smaller than your screen). You can break your text into lines by pressing Return. Alternatively, click on the Toggle Size icon to extend the window to the full size and avoid having to scroll sideways. There is another way of getting all your text into the window, using the **Edit/Format text** option; this is described on page 261.

As you type, notice that Edit fills the current line and then carries on to the next line, often breaking words in the middle. Ignore this for the moment, as there is a menu option, **Misc/Wordwrap**, that takes care of it, and this is described later.

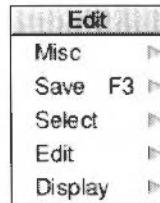
## Inserting and deleting text

To insert or delete text, position the caret where you want to make the alteration by moving the pointer there and Clicking Select. You can now insert text by typing. If you want to delete a character, position the caret immediately after it and press either Backspace or Delete; hold the key down and auto-repeat comes into effect, deleting more characters. If you want to delete characters to the right of the caret, press the Copy/End key.

There are quicker ways of deleting a lot of text – see *Manipulating blocks of text – the Select menu* on page 251.

## Edit menus

The top level menu contains the following options:



### The Misc menu

Misc	
Info	▶
File	▶
Set type	▶
New view	
Print PRINT	
✓ Column tab ↑F3	
Overwrite ↑F1	
Wordwrap ^F5	

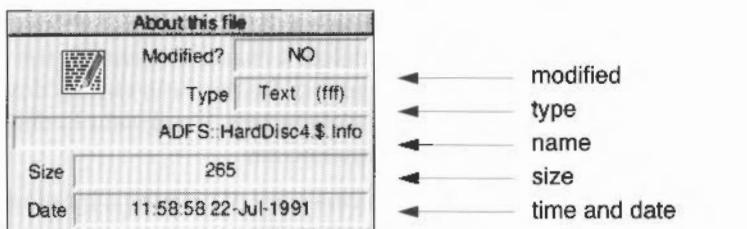
This menu offers eight options:

**Info** tells you about Edit, including the version number of your copy of the program.

**File** gives information about the file you are working on, in particular

- whether it has been modified since you last saved it
- what type of file it is; a text file or a command file, for example (its icon, if it has one, is also shown)
- its name, including the full directory pathname
- its size, in number of characters

- the time and date it was last saved (or if you have not saved it yet, the time and date when it was first created).



**Set type** allows you to set the file type of the file you are currently editing. For example, a text file will have the file type **Text**, and a BASIC file the file type **BASIC**.

**New view** opens a second window on the same text (you can in fact open several views, not just two; the number of views open appears in the Title bar, after the filename). This choice enables you to look at two parts of the same document, and makes actions such as copying from one part of a document to another much easier. This feature is particularly useful with large documents. Remember that you are looking at one document, not at two separate copies of it: to illustrate this, try looking at the **same** part of a document in two views; enter some changes in the first view and you will see the **same** changes appearing in the second view.

**Print** sends the document to the currently activated printer driver. See the section *Printing an Edit file* on page 263 for more information about printing. The Printer manager application must be running to enable you to print.

**Column tabs** switches on a different type of tab insertion: this is explained in the section *Laying out tables: the Tab key* on page 263. When this option is on (it is ticked), the words 'ColTab' appears in the Title bar.

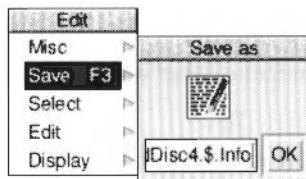
**Overwrite**, when switched on, means that each character you type replaces the character at the cursor, instead of pushing the character aside and inserting the new character. When this option is on (it is ticked), the word 'Overwrite' appears in the Title bar.

**Wordwrap** prevents words being split over line-ends as you type; whole words are wrapped onto the next line. When this option is on (it is ticked in the Misc menu) the word 'Wordwrap' appears in the Title bar. Words are wrapped when they exceed the number of characters given in the **Edit/Format text** box.

Do not confuse this option with **Display/Window wrap**: Wordwrap, unlike Window wrap, inserts a newline character (which is there although you cannot see it on the screen) when the cursor moves to a new line.

## Saving text: the Save menu

The Save menu allows you to save a complete file; you can also save part of a file using the Select menu. The procedure for saving is common to many applications.



including Draw and Paint, and is described in full in the chapter *Using RISC OS applications* on page 169.

In order to save a file in the easiest way, you need to have on the screen the directory display for the directory where you want to save the file.

- 1 Click Menu over the Edit window, and move to the **Save** submenu. A dialogue box appears, containing an icon, the current filename, and an **OK** button (as a shortcut you can also display this dialogue box by pressing F3).
- 2 If the file has not been saved before, Edit offers you a default filename of 'TextFile'. If you want a different name, use Backspace or Delete (or press Ctrl-U) to delete TextFile, then type in the name you want.
- 3 Place the pointer on the icon in the box and drag the icon into the directory display where you want to keep the new file. An icon for the file then appears in the directory window.

This action assigns a full pathname to the file, as you will see from the Title bar of the Edit window. When you have made some changes to the text and want to save the file a second time, use the Save option again, but this time, provided you want to use the same filename, you can save the file by clicking the **OK** box. Saving the file with the same name overwrites your old file with the new information.

You can also save **part** of the text, typically for printing or transferring to another application, using the **Select/Save** option, described in the next section.

## Manipulating blocks of text – the Select menu

You can select blocks of text, then manipulate them in various different ways.

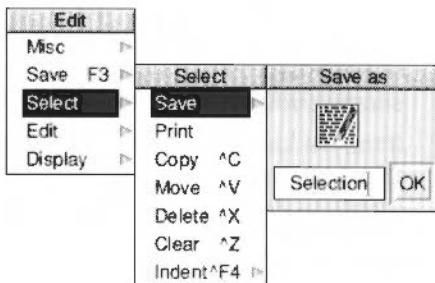
The simplest way to select a block is to position the pointer where you want the block to start, click and hold down the Select button, then drag the pointer to the end of the block and release the button. The selected block of text is highlighted.

If necessary, you can then use Adjust to 'adjust' the ends of the block. Position the pointer exactly where you want the block to start or finish, click Adjust and the block lengthens or shrinks accordingly. This is particularly useful when you want to select a block that extends beyond the part of the text you can see in the window. Select a few words or lines at the start of the block, scroll until you can see the point where you want the block to end, place the cursor there and click Adjust.

Here are some other ways of selecting blocks of text:

To	Do this
select a single word	double-click Select
select a single line	triple-click Select
extend block to whole word	double-click Adjust
extend block to include current line	triple-click Adjust

Once selected, text can then be saved, copied, moved, deleted, de-selected (cleared) or indented by choosing options from the Select menu:



To **Save** a selected block, move to **Save** from the Select menu, and follow the standard saving procedure. Use this option to copy a selection into another Edit window; open a new window and drag the icon into it. The copied block will appear after the current caret position in the destination window. The caret is also moved to the end of the copied text.

To **Print** a selected block of text, click on the **Print** option. The chapter *Printing your files* on page 95 gives more information about printing your files.

To make a **Copy** of a selected block of text, select (highlight) your block of text and then position the caret where you want the copy inserted, then call up the **Select** submenu and click on **Copy**. The original block remains selected. Keep clicking on **Copy** to make as many copies as you want.

If the caret is already at the position where you want the copied block to appear, press and hold Ctrl while making the selection in the usual way. Copy the block by pressing Ctrl-C. This way you can make a selection without moving the caret.

If you copy to a position inside a selected block, both the original and the new copy remain selected. If you then make multiple copies you will get double the number you indicate. This may happen accidentally if you position the caret immediately to the right of a selected block ending in a newline character: because the newline character does not appear on the screen it is not highlighted, but is still part of the selected block. To undo an action, choose **Undo** from the Edit menu.

To **Move** a selected block of text, select your block of text and place the caret where you want the text moved to, then click on **Move**.

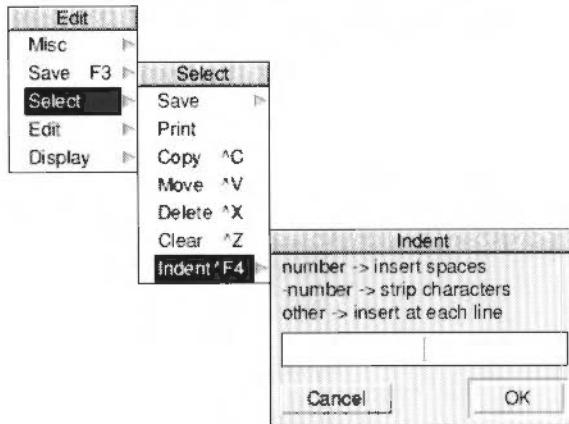
If the caret is already where you want the block to end up, press and hold Ctrl while making the selection in the usual way. Then still holding Ctrl, press V, and the block will be moved to the caret position. This way you can make a selection without moving the caret.

To **Delete** a selected block of text, click on **Delete**. The marked block then disappears. (**Undo** – in the Edit menu – allows you to reverse any changes or deletions made in the Select menu).

To **Clear** or 'deselect' a block of text you have previously selected, click on **Clear**. The highlighted block reverts to normal and the block is no longer selected.

**Indent** allows you to indent a selected block of text. The indent is defined in character spaces. You can also use Indent to add a text prefix to the beginning of each line of a block.

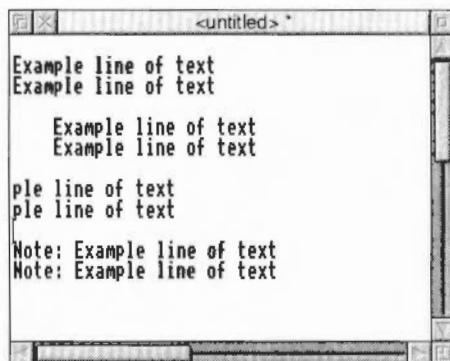
To indent a selected block of text, call up the Indent submenu:



You can then type in three different types of indent:

- A positive number gives you an indent of the specified width.
- A negative number, -5, for example, deletes the specified number of spaces or characters from the beginning of the block line; use this to cancel an indent.

- You can also type in text: IGNORE, or Note, for example. This will then appear at the beginning of every line in the selected block. You can remove this text by indenting with a suitable negative number.



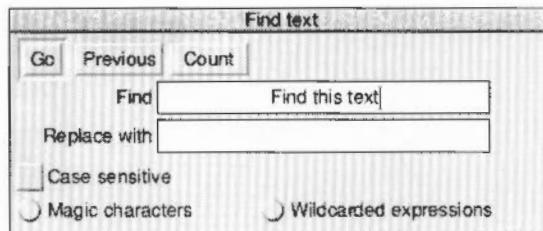
## The Edit menu

Edit	
Find	F4 ↵
Goto	F5 ↵
Undo	F8
Redo	F9
CR<->LF	^F8
Expand tabs	
Format text	^F6 ↵

The first option in the Edit menu is **Find**. At its simplest, this allows you to locate any character(s) in your file. You can also use it to replace text with other text. To make sure that the search is complete, always position the caret at the start of the file before giving the Find command. In the following description, the text being searched for is referred to as a 'string'; it may consist of any sequence of letters, numbers, spaces or other characters.

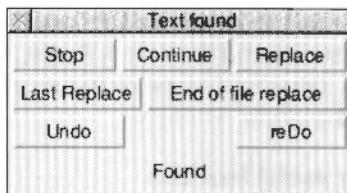
### Searching for a string of characters

To use Find without doing anything with the found string, choose **Find** in the Edit submenu: the **Find text** dialogue box appears, with the caret in the **Find** box. Type in the string you want to locate and press Return. The caret then moves to the **Replace with** box.



Since on this occasion you do not want to replace the found strings, either click on **Go**, press Return or press **F1**.

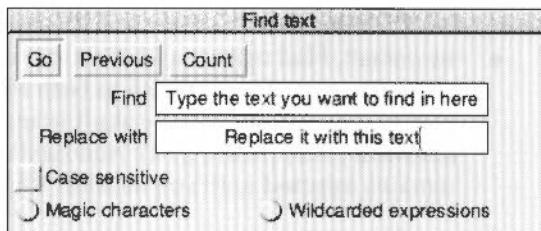
Edit finds the first occurrence after the caret of the word in your file, then displays the **Text found** dialogue box, indicating the operations available.



To look for the next occurrence of your string, click on **Continue**. To abandon the search, click on **Stop**, or press Return or Escape.

### Replacing a string of characters with a new string

To use Find for replacing a string with a new string, go to the **Find text** dialogue box as before, but this time, insert the new string into the **Replace with** box. Then press Return, and the **Text found** dialogue box appears.



Click on **Replace** to substitute the new string for the old string; if you do not want to change this particular occurrence of the old string, click on **Continue** and Edit moves on to the next one.

If you click **Last Replace**, Edit replaces the currently found instance of the string, but does not search for further occurrences.

If you click on **End of file Replace**, Edit finds and replaces all occurrences of the string from the present one forward to the end of the file, without stopping at each one for instructions.

Clicking on **Undo** takes you back to the last string replaced and returns it to the original version; click **reDo** to change it back again.

The display at the top of the dialogue box keeps you informed of the state of the search; if Edit cannot find the word you have specified, it displays the message **Not Found**.

## Using keyboard shortcuts

Besides using the Select button, you can control all these options from the keyboard; the particular keys are indicated by the capital letters in the dialogue box. Press S and the search **Stops**, press C and it **Continues**, D and it will **reDo**, and so on. Pressing Escape or Return also stops the search and removes the **Text found** window.

## Other useful facilities

Note that you can use Find to delete strings in a text, by entering nothing in the **Replace with** box, and clicking on **Replace** in the **Text found** dialogue box, thus replacing the found string with nothing: deleting it, in effect.

There are several other useful facilities in the **Find text** dialogue box:

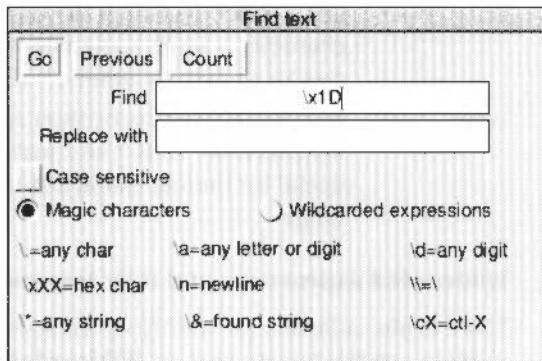
- You can carry out the last Find and Replace operation again, by clicking **Previous** (or by pressing F2).
- You can specify a string and ask Edit to count the number of times it occurs in your file (from the caret position to the end of the file) by clicking on **Count** (or by pressing F3).
- By default, Find makes no distinction between upper and lower case characters – Hello will match to both HELLO and hello, or for that matter, hElLo – you can specifically ask it to match case by clicking next to **Case sensitive** (or by pressing F4). Hello will then match only Hello. Case sensitivity remains selected until you deselect it by clicking again.

## Magic characters and their meanings

You can also use the Find facility to search for classes of characters. To activate this feature, click on **Magic characters** (or press F5) in the **Find** dialogue box.

Magic characters are indicated by a \ character, as shown in the lower half of the dialogue box, which shows you the available characters.

Type these characters in directly as shown in the window.



The magic characters operate as follows:

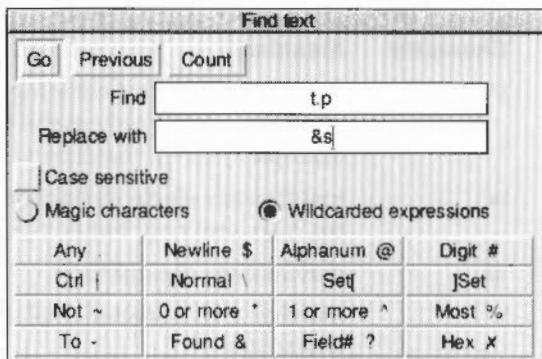
#### Character      Meaning

- \\*      matches any string (including a string consisting of no characters at all). This is really only useful in the middle of a search string. For example, jo\\*n matches jon, john, and johaan.
- \a      matches any single alphabetic or digit character. So t\ap matches tip, tap, and top, but not trap.
- \d      matches any digit (0 to 9)
- \.      matches any character at all, including spaces and non-alphabetic characters.
- \n      matches the newline character (remember that to the computer, this is a character just like any other).
- \cX      matches Ctrl-X, where X is any character.
- \&      is used in the **Replace with** box to represent the **found string**: the string matched in the search. This is particularly useful when you have used magic characters in the Find string. For example, if you have searched for t\ap, and you want to add an s to the end of all the strings found, \&s in the **Replace with** box will replace tip, tap and top by tips, taps and tops.

Character	Meaning
\	enables you to search for a string actually containing the backslash character \ while using magic characters. To search for the strings cat\ a or cot\ a, enter c\at\\ a.
\XXX	matches characters by their ASCII number, expressed in hexadecimal. Thus \x61 matches lower-case a. This is principally useful for finding characters that are not in the normal printable range.

### Wildcarded expressions and their meanings

There is also a facility for specifying wildcarded expressions in search strings. In order to use this facility, click on **Wildcarded Expressions** (or press F6) in the **Find** dialogue box.



Click on the wildcard character you wish to enter and it is copied into the text box.

The wildcard characters operate as follows:

Character	Icon name	Meaning
.	Any	matches any single character
\$	Newline	matches linefeeds
@	Alphanum	matches any alphanumeric character. A to Z, a to z, 0 to 9, and _
#	Digit	matches 0 to 9
	Ctrl	matches any control character. For example, to search for Ctrl-z, type in  z
\	Normal	matches any character following it even if it is a special character. # would be searched for as \#.

Character	Icon name	Meaning
[ ]	Set	matches any one of the characters between the brackets. This is always case sensitive.
-	To	[a-z] would match any character (in the ASCII character set) between a and z.
~	Not	does not match character. ~C matches any character apart from C. This can also be applied to sets.
*	0 or more	matches zero or more occurrences of a character or a set of characters. T*O matches T, TO, TOO, Tooo etc.
^	1 or more	matches one or more occurrences of a character or a set of characters. T^O matches TO, TOO, Tooo etc.
%	Most	%c is the same as ^c, except when used as the final element of a search string. In this case the longest sequence of matching characters is found.
&	Found	refers to the whole of the 'Find' text. It is used in the <b>Replace with</b> box to represent the 'found string': the string matched in the search. This is particularly useful when you have used wildcard characters in the Find string. For example, if you have searched for t.p, and you want to add an s to the end of all the strings found, &s in the <b>Replace with</b> box will replace tip, tap and top by tips, taps and tops.
?	Field	If a string was found that matched the search pattern, then ?n refers to the part of the found string which matched the nth ambiguous part of the search pattern, where n is a digit from 0 to 9. Ambiguous parts are those which could not be exactly specified in the search string; e.g. in the search string %#fred*\$ there are two ambiguous parts, %# and *\$ – which are ?0 and ?1 respectively. Ambiguous parts are numbered from left to right. (Only to be used in the <b>Replace with</b> string).
Hex	Hex	Hex matches the character whose ASCII number is nn, where nn is a two-digit hex number. X61 matches lower-case a. This is principally useful for finding characters that are not in the normal printable range.

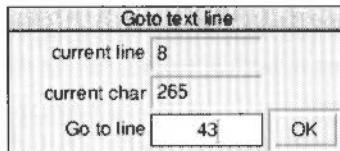
The full power of the wildcard facility can be illustrated by a few examples.

- To count how many lower case letters appear in a piece of text:  
Find: **[a-z]**  
and click on **Count**.
- To count how many words are in a piece of text:  
Find: **%@**  
and Click on **Count**.
- To surround all words in a piece of text by brackets:  
Find: **%@**  
Replace with: **(&)**  
and click on **GO**, then on **End of File Replace** in the Found dialogue box
- To change all occurrences of strings like #include "h.foo" into  
#include "foo.h":  
Find: **\#include "h\.%@"**  
Replace with: **#include "?0.h"**  
and click on **GO**, then on **End of File Replace** in the Found dialogue box
- To remove all ASCII characters, other than those between space and ~, and the  
newline character, from a file:  
Find: **~[ -\~\$]**  
Replace with:  
and click on **GO**, then on **End of File Replace** in the Found dialogue box (ie  
find all characters outside the set from the space character to the ~ character,  
and newline, and replace them with nothing). In fact this could be written  
without the \, since ~ would not make sense in this context if it had its special  
meaning of **Not**, ie:  
Find: **~| ~~\$|**

### Other options on the Edit menu:

Edit	
Find	F4 ►
Goto	F5 ►
Undo	F8
Redo	F9
CR<->LF	^F8
Expand tabs	
Format text	^F6 ►

To send the caret to a specific line of text, use the **Goto** option. Call up the **Goto** submenu and Edit displays a dialogue box:



Type in the line number you want to move to, then click on **OK**. The dialogue box disappears, and the screen displays the caret, positioned at the beginning of the line you have just specified. Note that this option understands 'line' to mean the string of characters between two presses of Return. If you have not formatted your text, a line in this sense may run over more than one display line.

**Undo** allows you to step backwards through the most recent changes you have made to the text. The number of changes you can reverse in this way varies according to the operations involved.

**Redo** allows you to remake the changes you reversed with **Undo**.

**CR↔LF** allows you to convert the linefeeds in your text to carriage returns (and carriage returns to linefeeds). Carriage returns appear as the characters [0d] in your text.

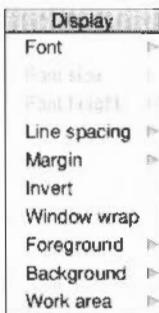
If you convert from linefeeds to carriage returns, the file will be converted to one continuous line, with carriage return characters inserted where linefeeds have been removed. Though it is possible to edit a file in this state, you may find that updating the screen takes a long time. This facility is useful when importing text from other text editors, which may use carriage returns where Edit uses line feeds.

**Expand Tabs** converts each tab character into eight spaces, since some printers can interpret spaces more easily than the tab character. If you have imported a file that was produced on a word processor, you may find it uses tab characters. These appear in the Edit file as the characters [09] in your text.

**Format text** allows you to reformat a paragraph of text – from the caret to the next blank line or line starting with a space – so that the lines fill the screen and break correctly at the ends of words. It is useful for tidying up text after editing. Position the caret at the beginning of the paragraph, choose **Format text** in the Edit menu and enter the number of characters per line you want your text to have in the **Format width** dialogue box. Then move the pointer back over the Edit menu and click on **Format text** to format the paragraph.

The setting in the **Format width** dialogue box also controls the length of lines when you are entering text with **Wordwrap** switched on.

## The Display menu



The **Display** menu allows you to change the way your text looks on the screen: you can experiment with fonts, colours, line spacing and margins. However, the features you select do not form part of the text when you save it. If you choose **New view** in the Misc menu to display two windows on the same file, the Display features in both windows can be different.

**Font** offers you a choice of fonts (typefaces). **System font** is the default font, and has a fixed character width. For further information on fonts, see the chapter *Typefaces and fonts* on page 73.

You can use **Font size** to set the point size (height and width) of the characters displayed on the screen. Either select one of the sizes indicated, or position the pointer on the bottom (blank) line of the menu; you can then type in another size.

**Font height** allows you to set the height of the characters displayed on the screen, leaving their width unchanged.

**Line spacing** increases or decreases the space between lines. It is measured in pixels, the smallest unit the screen uses in the current mode. The selected font size assigns a suitable line spacing; this option is therefore used only to increase (or if you type a negative number, to decrease) the given spacing.

**Margin** sets a left margin, again in pixels.

**Invert** swaps foreground and background colours, so that black text on white becomes white text on black, and so on.

Clicking **Window wrap** makes your text fit the size of the window. When Window wrap is on, you can change the window to any size, and the width of the text will change accordingly. You can revert to the default sizing by clicking on **Window wrap** again.

By default, Edit assumes a text width of 76 characters, but the default window is not as wide as the full screen. You can of course change the number of characters per line (by choosing **Format text** in the Edit menu) or enlarge the window to the full size by clicking on the Toggle Size icon.

**Foreground** allows you to display the text in any one of the sixteen colours, by clicking on the selected colour from the palette displayed.

**Background** allows you to set the window's background colour, as above.

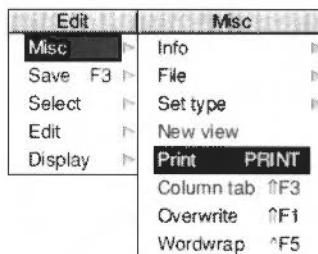
**Work area** allows you to set the extent of your Edit windows so that you can have windows which are wider than the current screen mode. Normally Edit restricts the maximum horizontal extent of a window to the size of the screen in the current mode, but you can specify a longer line length in terms of System font characters.

The size of System font characters is used even you are using a different font. This is particularly useful if you have a text file which, for example, is 80 or 132 characters wide and you are viewing it in mode 12. The maximum size of window width which can be specified in this manner is 192 System Font characters. This option is not available when the **Window wrap** option is on.

## Printing an Edit file

There are several ways of printing an Edit file; however, to use them, you first need to load the Printers application. For how to do this, refer to the chapter *Printing your files* on page 95.

If the file you want to print is already loaded into Edit you can simply click on the **Print** option on the **Misc** menu. Another way is to call up the **Save as** dialogue box and drag the icon onto the printer driver icon on the icon bar. This will print the current version of the file, whether or not it has been saved.



If the file is not loaded into Edit, you can simply drag the file's icon from its directory display onto the printer driver icon. You can also do this if the file is loaded, but if you have made any changes to it since you last saved it, they will not appear in the printed copy; only what has been saved will be printed by this method. Finally, you can also print by pressing the Print key on the keyboard.

## Laying out tables: the Tab key

Tables can be set out in two ways using tabs – as irregular columns or regular columns.

### Irregular columns

To set out a table, type in the first line – the column headings, for example – as you want it to appear, using spaces to separate the text in the columns. Then press Return. On the next line, pressing Tab will make the cursor jump to the position underneath the start of the next word in the line above. So, in the following

example of a simple diary, the column headings (Time, Place, Person and Reason) were typed in using spaces, then the following lines were typed in using tabs (including the dashes used as underlines for the column headings):

column headings

Time	Place	Person	Reason
09.20	Meeting room 1	Doug	Sort out todays itenary
10.10	Boardroom	Senior managers	De-briefing
12.40	City hall	Karen Walsh	Planning discussions
13.30	Panos	Bob and James	Working lunch
15.40	Meeting room 1	Group meeting	Progress reports & sales targets

### Regular columns

If you want your table to have columns regularly spaced eight characters apart, click on **Column tabs** in the Misc submenu. The word ColTab will appear in the window's Title bar to remind you that you have done this. Pressing Tab will then cause the cursor to jump to the next tab position. This is very useful for creating simple tables that will not display much text:

	eggs	leeks	celery	peas	beans
Jan	160	450	28	690	75
Feb	439	23	526	778	45
Mar	867	234	97	713	56
Apr	674	848	67	298	75
May	958	654	60	476	43
Jun	970	697	45	587	85
Jly	149	867	64	549	85
Aug	747	645	87	985	75

**Note:** Both the table layout methods described above will only work with a fixed width font (e.g. the System font). If you create a table and subsequently display the screen in another font, the text in the table will not line up correctly with the column headings.

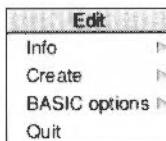
## Reading in text from another file



If you want to add all the text from another file into the file you are currently editing, position the caret at the point where the inserted text is to appear. Call up the directory display for the incoming file, and drag its icon into the text window. The entire contents of the source file is then copied into the destination file, starting at the caret position. The caret then appears at the end of the text you have inserted.

You can also read in part of a file by highlighting the part of the file you wish to read in, then using the Save Selection option, drag and drop the Selection into the destination file.

## The Edit icon bar menu



Pressing Menu on the Edit icon on the icon bar produces a menu with the following options:

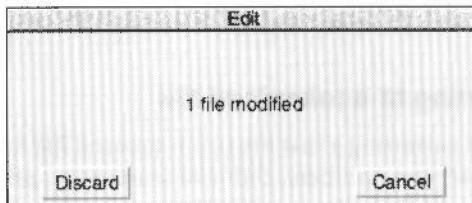
**Info** gives you some information about the version of Edit you are using.

**Create** leads to a submenu which enables you to open windows for specific types of file: Text, BASIC, Obey and Command files. Alternatively you can type in a file type of your own choice at the bottom of the menu.

Create also allows you to start a Task window. Task windows can also be started from the Task manager icon bar menu. How to use Task windows is described in the chapter *The command line* on page 411.

**BASIC options** leads to a submenu with which you can choose how to display BASIC programs. How to do this is described in the next section.

**Quit** stops Edit and removes it from the computer's memory, first presenting you with a dialogue box for confirmation if there are any current files you have not saved.



## Writing and editing BASIC

Edit also allows you to write BASIC programs. It converts the Text files produced in Edit to tokenised BASIC files.

### Writing a new program

To write a new program, click Menu over the Edit icon on the icon bar and from the **Create** menu choose **BASIC**. You can now type your program directly into an Edit window. There is no need to include line numbers, as Edit will insert them for you when you save the file. Press Return at the end of the last line of the program.

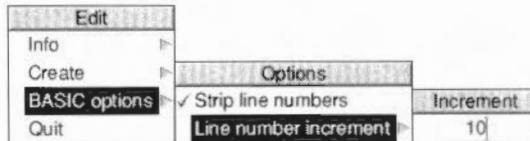
### Editing an existing program

To use Edit for working on an existing BASIC program, simply drag the program's icon from its directory onto the Edit icon on the icon bar.

### Icon bar menu

Pressing Menu on the Edit icon bar icon displays a menu containing the Edit options. Move to the **BASIC options** submenu:

- **Strip line numbers** produces a text file with no line numbers. If a reference to a line is found, an error box will appear asking whether you want to leave the number in. This option is on by default.
- **Line number increment** sets the number increment between successive lines in the program.



### Converting to a tokenised file

Converting a text file to a tokenised file is usually quite straightforward. If there are no line numbers, Edit will start at 10 and increment by 10. If line numbers are supplied, these are used as a basis for any lines without line numbers.

### Warnings

If there are line numbers, Edit will **not** sort them into ascending sequence and the resulting BASIC program may behave very strangely.

If your code is incomplete, Edit will warn you about the following problems:

- Line number reference too large.
- Mismatched quotes.
- Mismatched brackets.

In all cases Edit will also quote the offending line number. After you have clicked on **OK**, the tokenising continues.

Attempts to tokenise a crunched program (e.g. one with the spaces removed) will generally result in a non-functioning program.

### Printing a BASIC program

If you have Edit running, you can print a BASIC program on paper by dragging its icon onto a printer driver icon. Edit will perform the conversion to allow the program to be printed.

### Saving Edit features in a Desktop boot file



You may wish to change some aspects of the way new Edit windows appear. For example, a new window normally opens using black text on a white background, but you may prefer to have blue text on a red background ready to use each time you start Edit.

You can set features of this type by setting up Edit just as you wish to use it, then save these features by creating a Desktop boot file. Instructions on how to create a Desktop boot file are given in the appendix *Configuration information* on page 497.

## Keystroke equivalents

On occasions, it can be quicker when you are working in Edit to use the keyboard instead of the mouse, especially once you are familiar with the program.

### When editing

Keystroke	Effect
←, →, ↑, ↓	Move caret one character left, right, up or down
Shift-←, Shift-→	Move caret one word left or right
Shift-↑, Shift-↓	Move caret one page up or down
Ctrl-↑	Move caret to start of file
Ctrl-↓	Move caret to end of file
Ctrl-←, Ctrl-→	Move caret to start or end of line
Shift Ctrl-↑, Shift Ctrl-↓	Scroll file without moving caret
Ctrl Shift - →	Scroll document up by one line
Ctrl Shift - ←	Scroll document down by one line
End	Delete character to right of caret
Shift-End	Delete word at current caret position
Ctrl-End	Delete line at caret
Home	Place caret at top of document
Insert	Insert space to right of caret
Page Up/Page Down	Scroll up or down one window
Shift-Page Up/Page Dn	Move caret up or down one line without scrolling
Ctrl-Page Up/Page Dn	Move caret and scroll up or down one line
Shift-F3	Toggle column tabs on or off
Shift-F1	Toggle overwrite mode on or off
Ctrl-F5	Toggle word wrap on or off
Ctrl-F7	Make where the caret is the current selection and move the caret to where the selection was (i.e. toggle caret and selection)

**In the Select menu**

<b>Keystroke</b>	<b>Effect</b>
Ctrl-Z	Clear selection
Ctrl-X	Delete selection
Ctrl-C	Copy selection to caret
Ctrl-V	Move selection to caret

**In the Edit menu**

<b>Keystroke</b>	<b>Effect</b>
F4	Display <b>Find</b> dialogue box
Ctrl-F4	Indent selected block
F5	Display <b>Goto</b> dialogue box
F6	If no block is selected, select the single character after the caret. If a block is selected, and the caret is outside it, extend the selection up to the caret. If a block is selected and the caret is inside it, cut the block from the caret position to the nearest end of the block.
Shift-F6	Clear the current selection
F7	Copy the selected block to the current caret position
Shift-F7	Move the current selection to the caret position
F8	Undo last action
F9	Redo last action
Ctrl-F6	Format text block
Ctrl-F8	Toggle between CR and LF versions of the file
Ctrl-Shift-F1	Expand tabs
Ctrl-F2	Close the Edit window

### In the Find menu

Note: these keystroke definitions only come into play once the **Find** dialogue box has been displayed (e.g. by typing F4).

Keystroke	Effect
↑, ↓	Move caret between the find and replace text in the Find box
F1	This starts the search and displays the <b>Text found</b> dialogue box if the text string is found
F2	Use previous find and replace strings
F3	Count occurrences of find string
F4	Toggle case sensitive switch
F5	Toggle magic characters switch
F6	Toggle wildcard expressions switch

### File options

Keystroke	Effect
F2	Open a dialogue box enabling you to load an existing Edit file into a new window
Shift-F2	Open a dialogue box enabling you to insert an existing Edit file at the caret position
F3	Save the file in the current window. This is a shortcut to the normal Save as dialogue box.
Shift-drag	If Shift is held down and a file icon is dragged onto an existing Edit window, the name of the file is inserted at the caret position
Shift-double-click	Shift double-clicking on a file icon loads any text or non-text file into Edit



**P**aint is a pixel-based picture editor; you can use it to 'paint' coloured images by applying colours to an area with a variety of brushes and painting tools.



The pictures produced by Paint are kept in the form of **sprites**. A sprite is a graphic shape made up of an arrangement of pixels (the smallest unit the screen uses in its current mode). Sprites are stored in **sprite files**, which may contain more than one sprite. Sprites and sprite files use a standard format, so you can freely export images produced by Paint to other programs that use sprites (such as Draw). You can also use Paint to edit sprites produced by other RISC OS applications.

The important difference between Paint and Draw is that unlike Draw, Paint knows nothing about 'objects' such as rectangles and circles; all it knows is the colour of each pixel. Although you can paint regular shapes, you cannot then select them in order to delete, move or resize them.

When you export (save) a sprite from Paint into Draw, this remains true: regular shapes forming part of the sprite cannot be edited like Draw objects. The whole sprite becomes a single object in your Draw diagram, and can be moved or resized, but not otherwise edited.

The first part of this chapter is a tutorial section that introduces some of the more common features of Paint, and shows how they can be used to create a simple sprite that you can use as a backdrop on your screen.

Later sections contain more detailed descriptions of all the features of Paint, backed up with examples demonstrating each feature.

### Using Paint with 32 thousand colours and 16 million colours

Paint can only create and edit sprite pictures in 256 colours, 16 colours, 4 colours and back and white. It can create sprites in 32 thousand colours or 16 million colours but it **cannot** edit them.

At 32 thousand colours and 16 million colours, Paint can be used as a picture viewer only. At these display modes most of the information given in this chapter is not relevant.

### Creating sprite files that are compatible with earlier versions of RISC OS

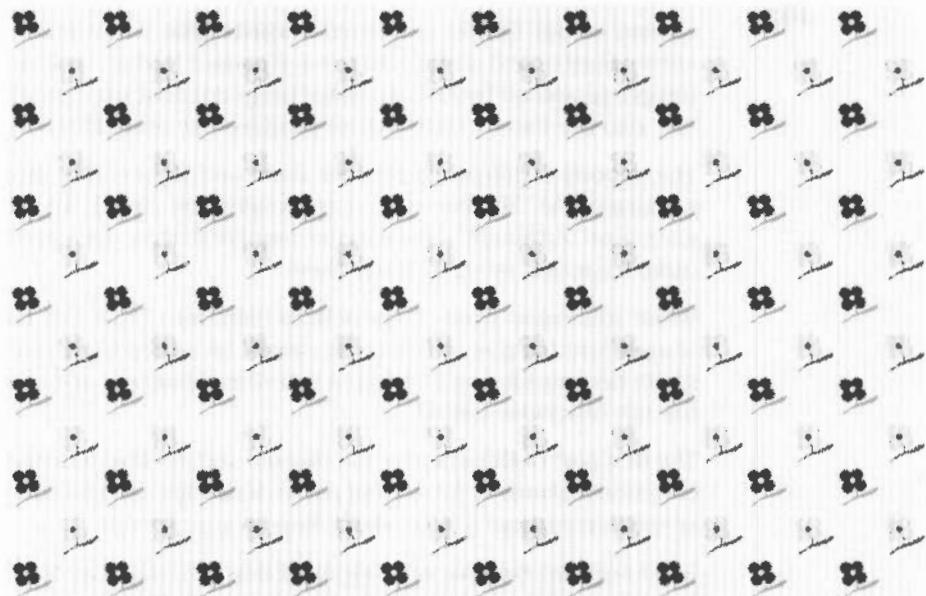
If you want to Creating sprite files that are compatible with earlier versions of RISC OS, make sure you choose a sprite type that has an equivalent old-type mode number. See page 314 for more information.

## Paint tutorial



This is a tutorial section that shows you how to use Paint to produce a small, simple picture (shown on the left). You can then use the Pinboard application to repeat this picture all over your screen producing a 'wallpaper' type background (shown below).

The tutorial is not designed to show you how to use all the Paint tools – in fact it only uses a few – but to give you a general idea of how the application works.



## Starting Paint



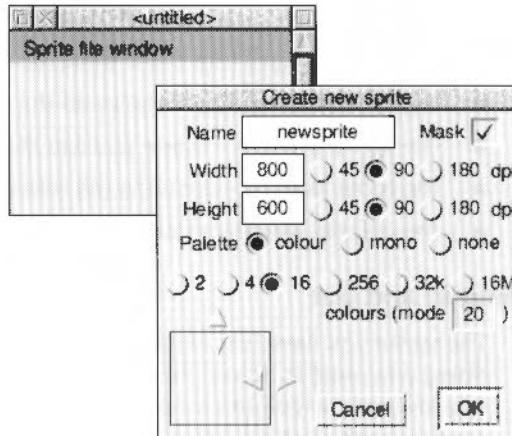
Open the Apps directory by clicking on the Apps icon on the icon bar. Start Paint by double-clicking on the Paint icon. As with other RISC OS applications, Paint indicates it has been loaded by displaying its icon on the icon bar.

### Selecting the correct screen display

Before you start the tutorial change the screen mode to a 16-colour square-pixel screen mode such as 640x480 or 800x600 (if you don't know how to do this see the chapter *Desktop colour and resolution* on page 79).

## Creating a new sprite

The first step in creating a new sprite is to click on the Paint icon on the icon bar. This displays the **Create new sprite** window with a **Sprite file window** behind it.

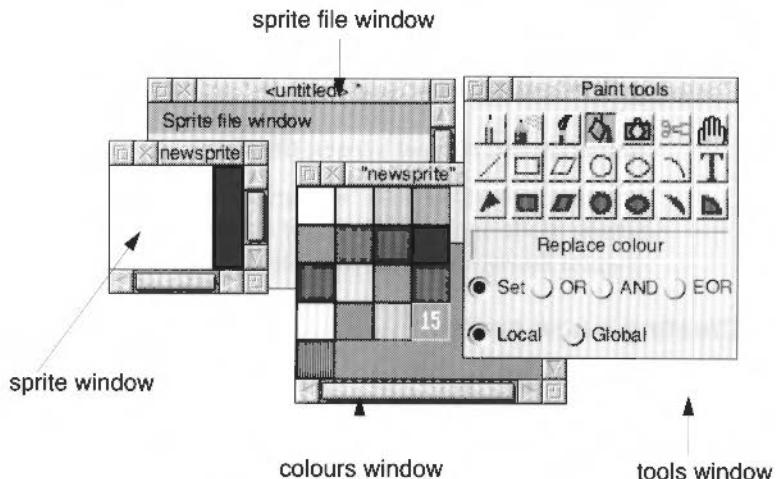


The Create new sprite window lets you type in the name you wish to give to your new sprite, its size and the mode used.

For this tutorial:

- Delete the existing name **newsprite** (using the Delete key) and type in the name for your sprite, **Flowers**.
- Change the size of the sprite by clicking on the **Width** box and the **Height** box and changing both values to be 80.

Click on the **OK** box and your new (blank) sprite is created.

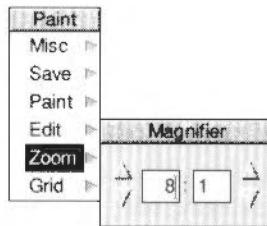


You should now have four Paint windows on your screen:

- the sprite file window – shows all the sprites in that sprite file
- the sprite window – where you can make changes to the sprite using Paint
- the tools window – contains the tools you can use for painting
- the colours window – contains the colours you can paint with.

### Zooming in and out

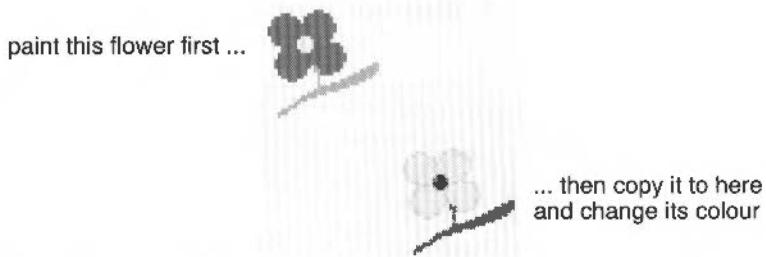
The sprite you have just created is very small, so to help you see what you are doing you must increase the size of the sprite. Before you do this, drag the tools window and the colours window to the right of your screen, and drag the sprite file window to the bottom left of your screen. Now press Menu on the sprite window, and move to the **Zoom** dialogue box (described on page 309). Click on the up arrow on the left to create a magnification of 8:1.



The blank sprite will now fill most of your screen, and at this magnification a grid is superimposed over the painting area. Each square in the grid represents one pixel.

## The picture

The picture you are going to create is made up of two flowers in diagonal corners. In fact you only need to paint one flower, you can then copy this to the opposite corner and re-colour it:



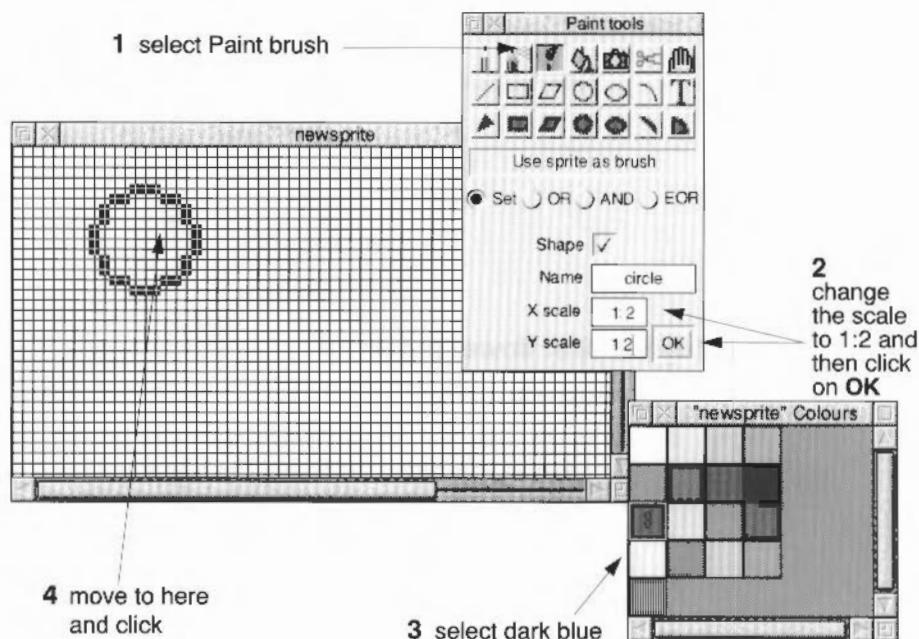
## Creating the first flower petal

To create the first petal:



- 1 Go to the tools window and select the paint brush tool by clicking on it. (As soon as you click on this tool the bottom of the tools window will expand to display an area where you can define the type of paint brush you want to use and its size. By default you will be given a circle as your brush type.)
- 2 The size of the default paint brush is too large to paint a flower petal. To reduce it to the right size, move to the **X scale** and **Y scale** boxes and change the scale in both boxes from 1:1 to 1:2, and then click on **OK** to confirm this.
- 3 The first flower will be dark blue. To select this colour move to the colours window and click on dark blue. That colour will then be highlighted and be overlaid with the number 8 (to signify that this is colour 8 out of a palette of 16 colours).

- 4 Move the pointer into the Paint window. You will notice that the pointer is now attached to the centre of a circle. Move the pointer to the approximate position shown below and click. A solid, dark blue circle will appear:



**Note:** If you accidentally remove either the colours window or the tools window from your screen you can restore them by pressing Menu over the sprite window, and then choosing **Paint>Show colours** or **Paint>Show tools**.

### Saving your sprite for the first time

Now is a good time to save your sprite:

- 1 Press Menu over the sprite file window (**not** the Sprite window).
- 2 Move to the **Save** submenu and display the **Save as** dialogue box. As with any other application, you should delete the default name that appears and drag the icon to the directory where you want to save the file. For this tutorial, use the name **Landscape**. The name of the sprite file now appears in the Title bar of the sprite file window.

## Saving your work as you build up a sprite

You should save your work frequently as you proceed. You can then return to the last step if you go wrong. This is an especially good idea with Paint, since with some of the tools you can easily make mistakes. Unlike with Draw, you cannot undo your work or move single objects, since Paint does not create objects as such.

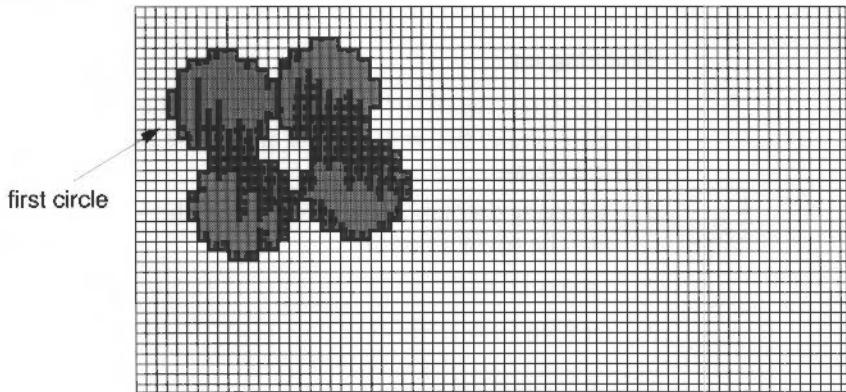
To save the sprite:

- 1 Press Menu over the sprite file window (**not** the Sprite window).
- 2 Move to the **Save** submenu and display the **Save as** dialogue box. Now click on **OK**.

## Painting the next three petals



To paint the next three petals move to the centre of the three other circles shown below and click. Don't worry if your circles do not appear in exactly the same positions as in the example:



**Tip:** If you have put a circle in the wrong position don't despair, change the colour to white then paint over the incorrect circle. You can then change the colour back to blue and redo the circle.

Once you are satisfied with your four petals, save your work again before you go on.

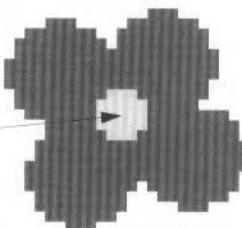
## The middle of the flower



There are three steps involved in painting the centre of the flower:

- 1 The size of the paint brush is too large to paint the middle of the flower so move to the **X scale** and **Y scale** boxes and change the scale in both boxes from 1:2 to 1:4.
- 2 Select yellow (colour 9) from the colours window.
- 3 Move to the centre of the four petals and paint in a small circle:

paint a small circle in  
the centre of the four petals



## Touching up

After adding a small circle to the centre of the flower you will probably find that there are one or two white pixels still in the centre. You can turn these into dark blue pixels by:



- 1 selecting the Set/Clear pixels tool in the tools window (the icon for this looks like the tip of a pencil)
- 2 selecting dark blue as your current colour
- 3 clicking Select over the white pixels inside your flower.

Save your work again at this point.

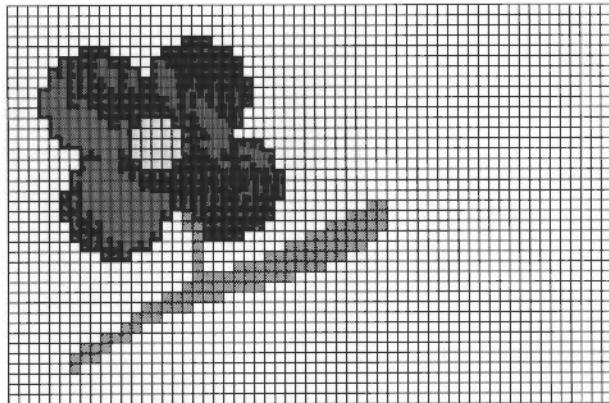
## Painting the stem



The final step in creating the flower is to paint in a green stem. You can do this by:

- 1 selecting green (colour 10)
- 2 selecting the **Set/Clear pixels** tool in the tools window (you may already be using this tool if you did any touching up)
- 3 moving back to the flower and painting the pixels beneath the flower to look like a stem.

If you click over one pixel, only that pixel will be coloured, if you move the mouse slowly (holding down the Select button), each pixel you move over will be coloured:



**Tip:** If you make any mistakes, select white (colour 0) and change the incorrect green pixels back into white ones.

This is another good point to save your work before going on.

### Creating the second flower

The second flower goes in the bottom right corner of the sprite. However, you don't have to paint a new flower, you can copy the one you've just made:

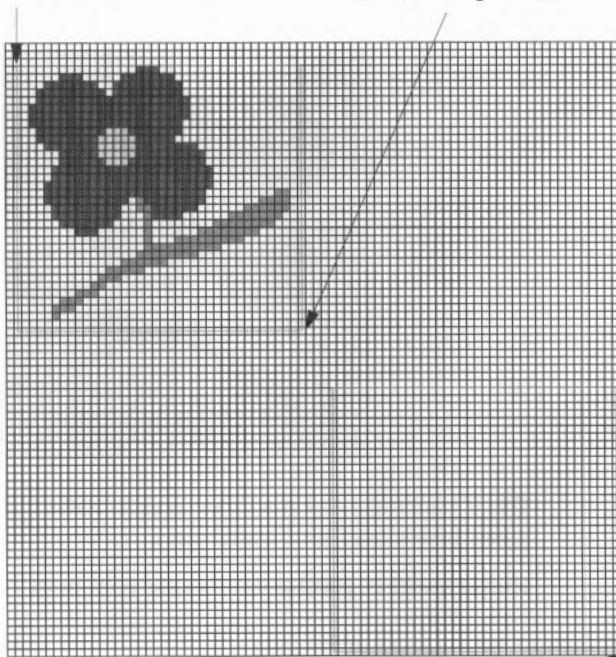


- 1 Go into the Zoom dialogue box and slightly reduce the magnification factor, then click on the Toggle size icon (in the top right corner of the sprite window) to display the entire sprite.
- 2 Select **Copy** from the Tools window (the icon for this looks like a camera), and check that **Local** is highlighted in the new panel that appears at the foot of the Tools window.
- 3 Position the pointer at the top left corner of the flower (see following picture).
- 4 Hold down Select, drag the mouse to the bottom right corner of the flower and release Select. A light blue rectangle will show the block of pixels that you have copied.

- 5 Move the pointer to the bottom right corner of the sprite window and click.

position pointer here ..

... then drag to here



... finally move the pointer here and click

The light blue rectangle will be replaced by a copy of the flower.

## Editing the second flower



There are two changes you can make to the second flower to make it clearly different from the first one; change the colour of its petals and centre, and trace around the petals.

### Changing the colour of the flower



- 1 Select **Replace colour** from the Tools window (the icon for this looks like a paint can).
- 2 Select red (colour 11) from the colours window.
- 3 Move over any part of the yellow centre of the flower and click. The centre will become red.
- 4 Select yellow (colour 9) from the colours window.

- 5 Move over any part of the blue petals and click. All the blue pixels that touch each other will be instantly changed to yellow pixels.

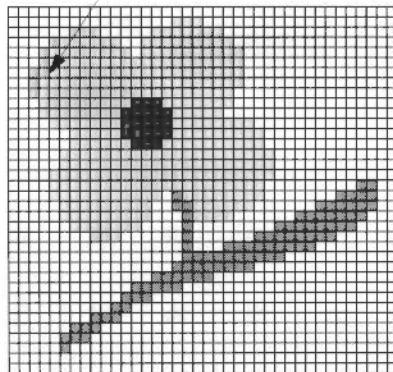
### Tracing around the petals

The final change to make to the second flower is to trace around the edge of the petals to give it more impact:

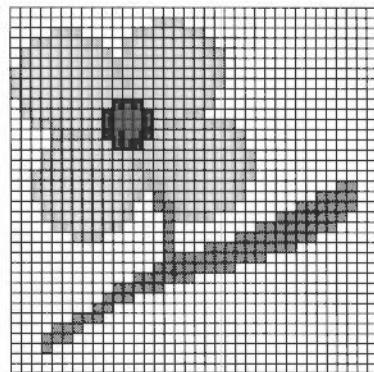


- 1 Select orange (colour 14) from the colours window.
- 2 Select **Set/Clear pixels** from the tools window.
- 3 Carefully trace around the outermost yellow pixels of the flower replacing them with orange:

start tracing here ...



... and continue around the entire flower



### Changing the background colour

The white background will be too stark when you use the flowers to cover your entire screen, so:



- 1 select **Replace colour**
- 2 select cream (colour 12) from the colours window
- 3 move to any white pixel in the sprite and click. The entire background of the sprite will be changed to cream.

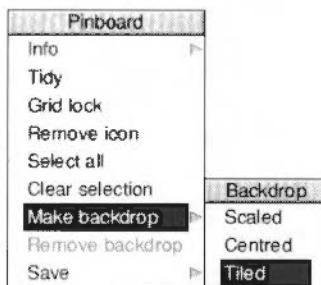
Your sprite is now finished, so save it and then close the file.

## Using Pinboard

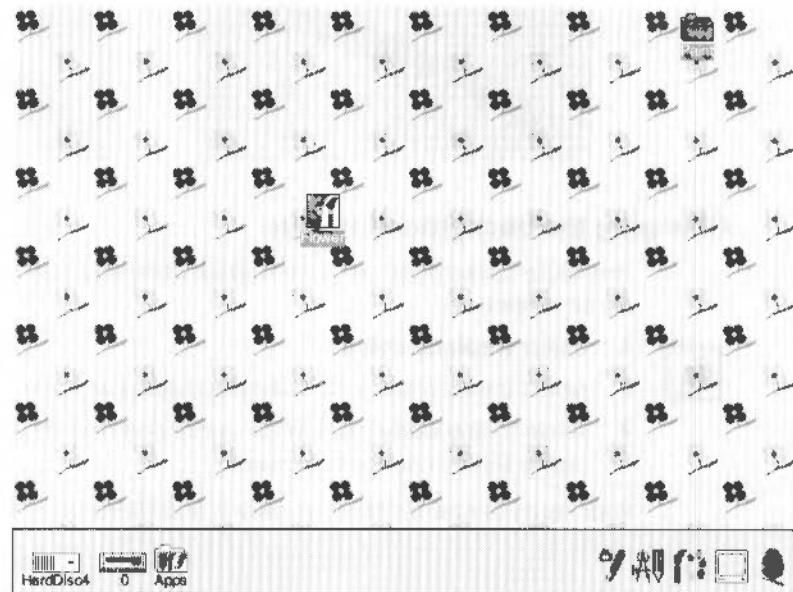
You are now ready to wallpaper your screen with your flower sprite.



- 1 Drag your sprite file (called Landscape) from its directory and drop it anywhere on the desktop background. It will now be represented as a Paint file with its name displayed underneath.
- 2 Press Menu over this icon. The Pinboard menu will appear. Choose **Make backdrop/Tiled** from this menu:



- 3 Your whole screen will now be tiled with your sprite:



You have now completed the Paint tutorial. The rest of the chapter is a reference section describing the basic elements of Paint, the tools in detail, and how to customise Paint so that it always starts up the way you prefer it.

# Paint reference section

This section outlines some of the terms, concepts and basic techniques for creating and editing sprites in Paint.

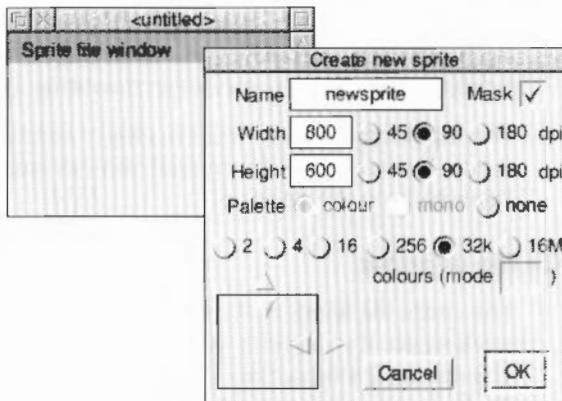
## Sprites

Sprites have the following attributes:

- A name used to identify the sprite (sprite names are 1 to 12 characters long).
- A definition mode indicating the screen mode that was set when the sprite was defined (if using an old type screen mode).
- A height and a width (these are given in pixels); the default is the size of the current screen mode.
- A palette defining the colours used in the sprite (optional).
- A mask – sometimes called a transparency mask (optional).

Within the sprite, each pixel has a colour, chosen either from the sprite's palette, if it has one, or the palette for the screen mode it was defined in. If the sprite has a mask, you can use a special colour, which indicates the pixel is transparent. When a sprite is painted, the existing screen display shows through the transparent pixels. By setting transparent pixels on the border of a sprite, you can construct sprites which are effectively non-rectangular.

All of these attributes are defined in the **Create new sprite** window, which is displayed each time you want to create a new sprite (just click on the Paint icon).



## Paint windows

Paint has several windows with specialised functions:

### Create new sprite window

This is the window you see when you click on the Paint icon on the icon bar. It lets you define the sprite you are going to create in the following ways:

The **Width** and **Height** of the sprite is defined in pixels and is by default the size of the screen display you are using. You can also define the **dots per inch** (dpi) used on your paint canvas; a bigger than default dpi setting gives you a smaller canvas. A smaller dpi setting gives you a larger canvas.

You can choose a **Colour Palette** giving colours. This option gives backward compatibility with earlier versions of RISC OS. The **Mono Palette** gives shades of grey. The **None** option gives the default palette. In 32 thousand colours and 16 million colours settings you cannot have a palette. The sprite colours change with the selected screen mode.

In 256 colours, a sprite created with a Colour palette has white as colour 0, a sprite created with a mono palette has black as colour 0.

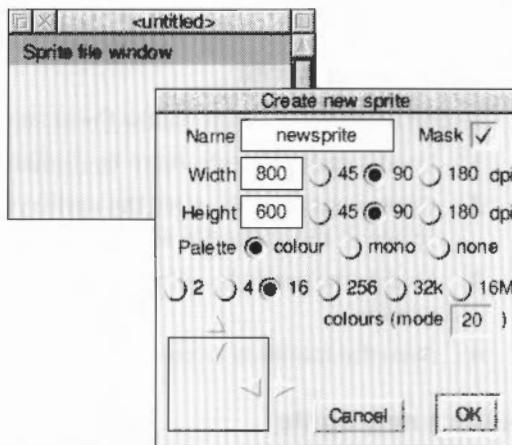
You can choose the **Number of colours** that you want to draw your sprite in. Normally you'll want to draw in the same number of colours as you are using in your screen display mode.

The **Colour mode** option can normally be ignored. It gives an old type screen mode equivalent for some display resolutions. If there is a number shown here then the sprite is created as an old format sprite. If this is blank then the sprite created is a new format sprite. For more information about sprites that can be used with earlier versions of the operating system see page 314. Sprites with Mono palettes may not be displayed correctly on earlier operating systems.

The **Mask** option gives you the choice of having a transparency colour in your sprite. If you choose it as colour you can see through the sprite onto objects beneath it on the desktop.

### Sprite file window

The sprite file window shows all the sprites which are defined in the file you are working on. If you prefer, you can keep just one sprite in each sprite file, though if you are designing sprites for an application you will need to keep them together. Try looking at the sprite file for the Paint application itself: hold down Shift while double-clicking on the Paint icon in the Apps directory; this will open the application directory. Double-click on the Sprites file to load it into Paint. Scroll through the sprite file window to see the range of sprites used by Paint.



The sprite file window shows the sprites at actual size if possible, or in a scaled-down form if they are large. You can edit more than one sprite file at a time; each has its own sprite file window.

## Sprite window

Sprite windows are used for creating and editing the sprites themselves. You can have any number of sprite windows on the screen, or none. Each window contains one sprite. Open a sprite window for a sprite by double-clicking on its name in the sprite file window.

## Sprite colours window

Sprite colours windows are used for choosing the colour that you are painting with. There is a separate sprite colours window for each sprite, because different sprites may have a different range of colours available.

To open the colours window for a sprite, press Menu on the sprite window, go to the **Paint** submenu and select **Show colours**.

## Paint tools window

This menu is used to select and alter the tools you use for painting the picture; display a Tools window by pressing Menu on the sprite window, moving to the **Paint** submenu and selecting **Show tools**. The top section of the window shows the tools. The currently selected one is highlighted and the name of the tool is shown. Below this are buttons used to select how colour will be applied to the image. When certain tools are selected, an extension may appear at the bottom of the tools window for setting extra parameters.

## Basic techniques

### To edit an existing sprite



To edit an existing sprite, follow these steps:

- 1 Load a sprite file into Paint by double-clicking on its icon.
- 2 Open a sprite window for the sprite you want to edit by double-clicking on its image in the sprite file window.
- 3 Modify the sprite by selecting tools and colours and using them in the sprite window.
- 4 Save the modified sprite file.

### To create a new sprite

Open a Create new sprite window by clicking on the Paint icon on the icon bar.

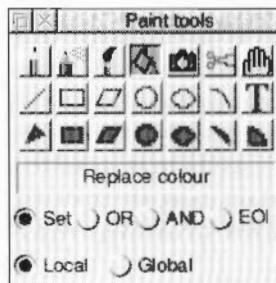
- 1 Enter a name for the sprite, and values for its other characteristics (full details of these are given later).
- 2 Click on **OK**. The new sprite window and its associated sprite file window will open.

## The tools in detail

### Using tools

To use a tool to edit a sprite:

- 1 Click on the tool in the Paint tools window.
- 2 If you wish, set or change any parameters such as the size of the spray or brush to be used.
- 3 If necessary, change the colour of the 'paint' to be used by clicking on the new colour in the Sprite colours window.
- 4 Move the mouse to the sprite window, and apply the tool as described below.



There are four different ways in which a tool can apply colour to a sprite, chosen with the **Set**, **OR**, **AND** and **EOR** buttons. The descriptions that follow are given in terms of 'Set'. In this case, the colour applied by a tool replaces the colour which is already present. The four ways of using colours are described in *Using colours in Paint* on page 299. The section *Sprite windows and menus* on page 299 shows you how to choose an Extended Colour Fill for your colour pattern.

For operations such as drawing lines and rectangles, you can click Adjust instead of Select. This moves the nearest previously set point to the current position. For example, in the parallelogram operation described on page 295, clicking Adjust instead of Select at step 3 returns you to step 2, with the first corner taken from the location at which you clicked Adjust.

While some operations are in progress, a skeleton line or area is shown.

You can cancel any of the sequences of operations described below by clicking again on the current tool in the Paint tools window.

### Set/clear pixels



To set a single pixel to the current colour, click over the pixel. To set several pixels, press Select and drag the mouse over the pixels. If you move the mouse slowly, a line will be created, but if you move it faster, the line will be broken. You can use this for shading areas of the picture. If you want to draw lines use one of the other tools instead.

If you use Adjust instead of Select, the pixels are cleared to the first colour in the palette.

### Spray can



To 'spray' pixels in an area around the mouse position to the current colour, press Select over the centre of the area. As with Set/Clear pixels, you can drag the mouse as you spray onto the sprite.

If you use Adjust instead of Select, the pixels are cleared to the first colour in the palette.

#### Parameters:

The spray can has two parameters displayed at the foot of the Paint tools window, which you set by typing in the value you want:

- **Density** controls how many pixels are set or cleared in each spray operation. The higher the density, the more pixels are affected.
- **Radius** controls how far the spray extends from the mouse position.

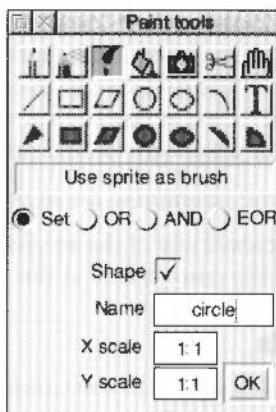
## Use sprite as a brush



This tool takes a sprite (not the one you are working on) and makes it into a 'brush'.

### Parameters:

When you click on this tool the toolbox displays the following box:



- **Shape** determines whether just the outline shape of the sprite is used, or its colours as well. To change the parameter, click on the button. When **Shape** is set, brush fills the pixels in the brush sprite which are not transparent with the current colour. When **Shape** is not set, the brush paints with the coloured sprite image. By default Shape is set.  
Note: You must click on **OK** after changing the **Shape** option.
- **Name** of the sprite to be used for the brush. Enter the name of any sprite within an open sprite file window.
- **X scale, Y scale**: multipliers defining the actual size of the area painted by the brush relative to the size of the sprite. For example, a scale factor of 2:1 means the brush is twice the size of the sprite defining it, and 2:3 means two-thirds the size. Each scale factor consists of two numbers which may be set independently. This can be particularly useful when you want to use the same shape several times in a picture, but not always at the same size.

When you have entered the values you want, click on **OK**.

Four simple brush shapes are provided:

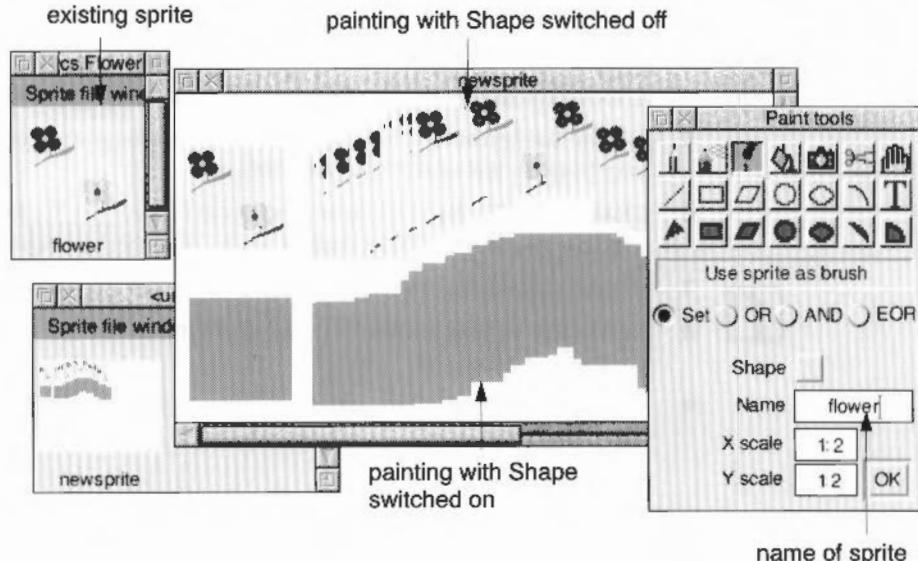
- a square
- a triangle
- a circle
- a brush.

Type in one of these options in the box and click on **OK** to select this simple brush shape. However, you are more likely to want to use a sprite of your own to paint with. These could be single objects placed with a single click, like the flowers used in the tutorial, or patterns that you can drag over an area. Normally, you will want to give the brush sprite a transparent mask so that the shape does not appear with an unwanted surround.

### **Painting with a sprite**

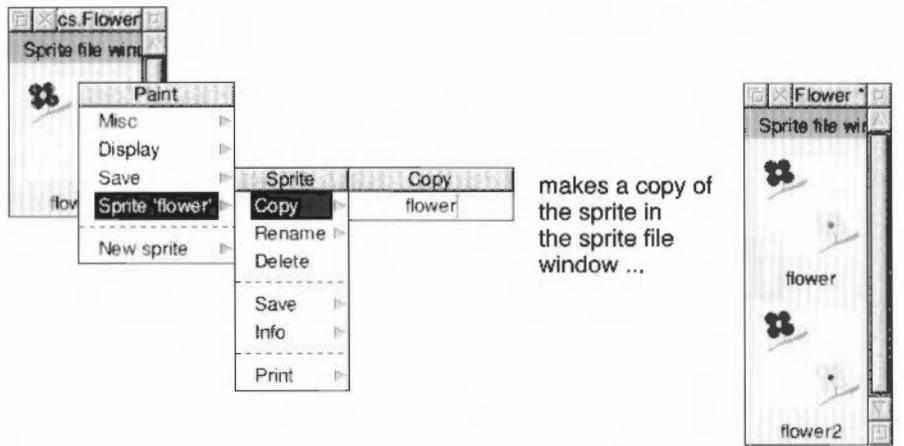


- 1 Open a sprite file you have already created (for example, the sprite file called Landscape you created in the Paint tutorial).
- 2 Now open a new sprite file and create a sprite, 400 pixels wide by 300 high.
- 3 In the tools window, select the **Use sprite as brush** tool.
- 4 Delete the default name **circle**, and type in the name of a sprite in the sprite file you opened (e.g. if you opened the sprite file Landscape, then type in the name of the sprite you saved in that file – flower).
- 5 If **Shape** is switched on, switch it off.
- 6 Click on **OK**.
- 7 You can now paint using the sprite as a paintbrush. Clicking once deposits a single sprite, and dragging the brush produces a snakelike effect of sprites:



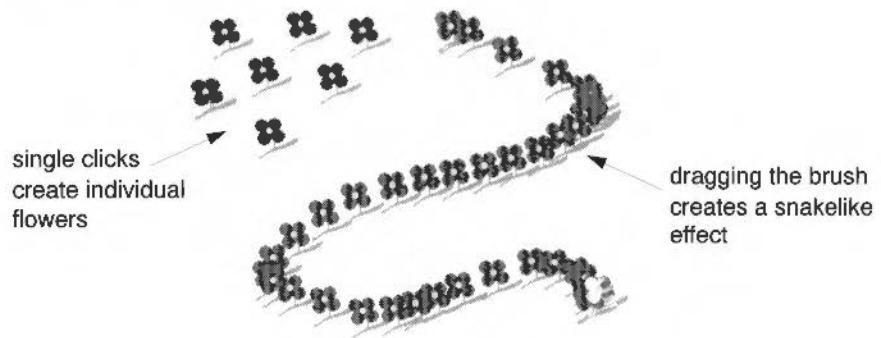
### Painting with the mask of a sprite

- 1 Open the sprite file you created when you drew the flowers in the tutorial. Menu over the sprite file window and make a copy of the sprite in the sprite file window (it doesn't create a new file) – call the copied sprite flower2:

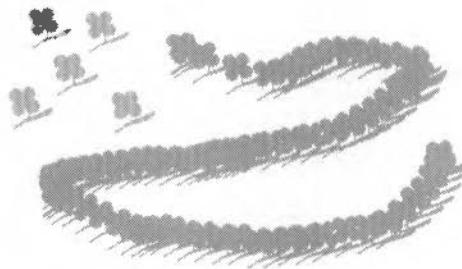


- 2 Open flower2, choose **Edit/Adjust size** from the main menu, and change the width of the sprite to 40 pixels. This will chop off the right half of the sprite leaving only the flower in the top left half of the sprite.
- 3 Now choose **Edit/Mask** from the main menu to create a mask colour.
- 4 Choose the **Replace colour** tool and click on the **Global** button.
- 5 Fill the background of the sprite with the transparent colour (colour T at the very bottom left of the colours window).
- 6 Close the sprite by clicking on the close icon. If you widen the sprite file window you will see your copied sprite next to the original one.
- 7 Open a new sprite. In the tools window, select the **Use sprite as brush** tool.
- 8 Delete the default name **circle**, and type in the name of the sprite you just created – flower2).
- 9 If **Shape** is switched on, switch it off and click on **OK**.

- 10 You can now paint individual flowers, which will have a transparent background colour:



- 11 If you switch **Shape** on, and use the same sprite as a brush, you will paint only with the solid shape of the sprite, not with the sprite itself:



## Copy block



To copy a rectangular block of pixels from one part of a sprite to another:

- 1 Select **Local** from the new panel that appears at the foot of the Tools window when you select **Copy**.
- 2 Position the pointer on one corner of the block to be copied.
- 3 Hold down Select, drag the mouse to the other corner of the block and release Select.
- 4 Move the pointer to the destination for the block and click.

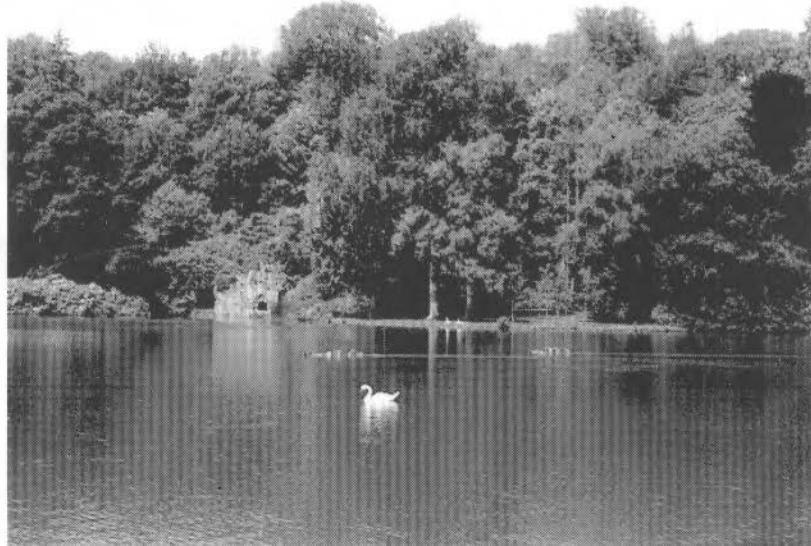
Step 4 may be repeated to make multiple copies of the selected block. To finish copying, click the **Copy block** icon in the tools window again. Note that the box you mark is actually rounded outwards to the nearest block of pixels that encloses the box.

Copy block can be used to:

- save time and effort when editing a new sprite, e.g. copying the flower in the tutorial to create a second flower
- edit existing sprites (including scanned in photographs) to create new images.

In the example on the following page, a photograph of a lake scene has been scanned into a sprite and copy block is used to edit this sprite. There is only one swan on the lake, but by using copy block it is possible to make a copy of the swan and then paste it into a similar patch of water to create a second swan.

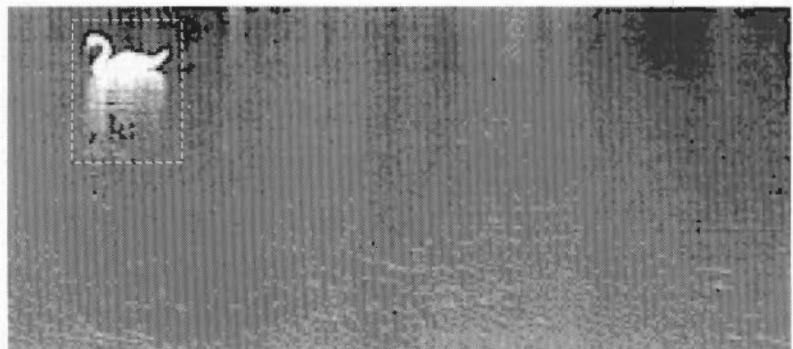
Scanned photograph of a lake scene:



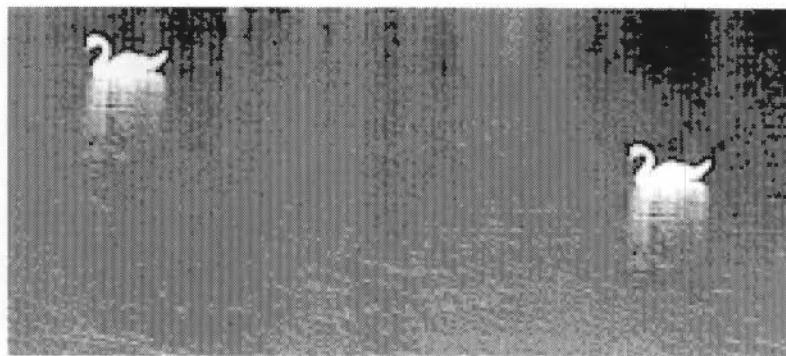
Same sprite with the swan copied and pasted to a new position:



- 1 Select **Copy block** then select **Local** from the new panel that appears at the foot of the Tools window.
- 2 Position the pointer just above and to the left of the swan.
- 3 Press Select and drag the mouse just below and to the right of the swan:



- 4 Move the pointer to a similar patch of water on the lake and click:



**Copy block** can also be used to create a new sprite from a block of an existing sprite. The new sprite can be set up in one of the sprite files you are already editing in Paint, or it can be saved in an entirely new sprite file, either to disc or for importing into another file or application.

To perform either of these operations, first click on the **Export** box in the Tools window. Then follow steps 2 and 3 as above to mark the block. When you release the mouse, a Save dialogue box for the block appears. To save the block as a new sprite in a sprite file, enter a name for the sprite, and drag the icon to a Paint sprite file window or directory display.

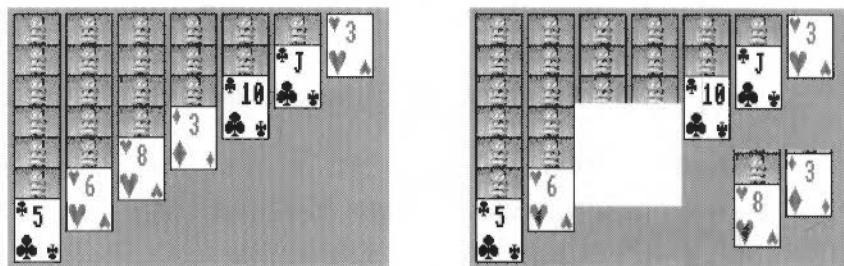
### Move block



To move a rectangular block of pixels from one part of a sprite to another:

- 1 Position the pointer on one corner of the block to be moved.
- 2 Press Select, drag the mouse to the other corner of the block to be moved, and release Select.
- 3 Move the pointer to the destination for the block and click.

The area occupied by the source of the move is set to the first colour defined in the palette, so in a 16-colour mode, it will be left as a white rectangle, as in the following example, where a block from the middle of the Patience window has been moved to the right:



If your sprite has a mask, the area left by the move is set to T, the transparency mask.

As for **Copy block**, the box you mark is actually rounded outwards to the nearest block of pixels that encloses the box.

**Move block** can be used to export a block of pixels using **Export**. This is identical in use to **Copy block**.

### Move whole sprite



To move the entire sprite, hold down Select within the sprite window, drag the mouse to the new position and release Select. The parts of the sprite image that move outside the limits of the sprite are permanently lost.

### Lines



To create a solid line of pixels in the current colour:

- 1 Click at the start point of the line.
- 2 Move the mouse to the end point of the line.
- 3 Click again.

### Rectangle outlines



To create a rectangular outline in the current colour:

- 1 Click at one corner of the rectangle.
- 2 Move the mouse to the other corner and click again.

### Parallelogram outlines



To create a parallelogram outline in the current colour:

- 1 Click at one corner of the parallelogram.
- 2 Move the mouse to the next corner.
- 3 Click Select.

- 4 Move the mouse to the third corner.
- 5 Click Select.

The position of the fourth corner is derived from the other three.

### Filled triangles



To create a filled triangle in the current colour:

- 1 Click at one corner of the triangle.
- 2 Move the mouse to the second corner.
- 3 Click Select.
- 4 Move the mouse to the third corner of the triangle.
- 5 Click Select.

### Filled rectangles



Filled rectangles are created in the same way as outline rectangles.

### Filled parallelograms



Filled parallelograms are created in the same way as outline parallelograms.

### Replace colour



To replace one colour by another in a sprite (also called **flood fill**):

- 1 Select the new colour from the sprite colours window (see below for how to display this if it is not already on the screen).
- 2 Click in the area of the sprite to be changed.

Colours can be changed locally or globally. In a local change, the pixels that are changed are the ones you click on, and any others which are connected to it by pixels of the same colour. In a global change, all pixels in the sprite which have the same colour as the one you click on are changed.

To select local or global changes, click on the corresponding button in the tools window. The current option is highlighted.

Note that replacing transparent pixels with a colour or a colour with transparent pixels can only be done globally. Global Replace colour can take a long time.

## Circle outlines



To create a circle outline:

- 1 Click where you wish to place the centre of the circle.
- 2 Move the mouse until the circle has the required radius.
- 3 Click Select.

## Ellipse outlines



To create an ellipse outline:

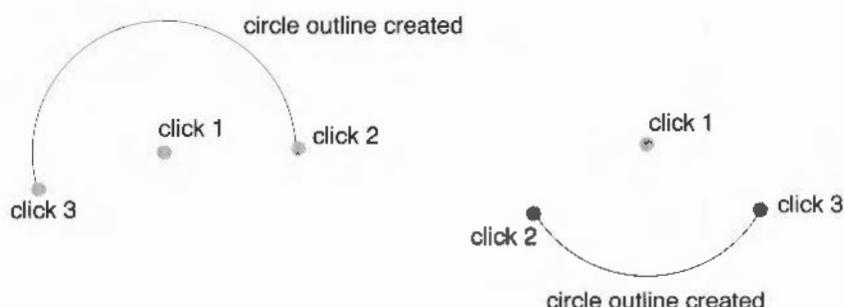
- 1 Click where you wish to place the centre of the ellipse.
- 2 Move the mouse to indicate the width of the ellipse.
- 3 Click Select.
- 4 Move the mouse until the ellipse has the required size and orientation.
- 5 Click Select.

## Circle section outlines



To create a circular arc:

- 1 Click where you wish to place the centre of the arc.
- 2 Move the mouse to one end point of the arc.
- 3 Click Select.
- 4 Move the mouse to where you wish the arc to finish.
- 5 Click Select.



Example 1

Example 2

## Insert text



To insert text into the sprite, first select the text tool. The tools window extends to include boxes where you should type in the following:

- The text, in the box containing the caret. The text will scroll in the box if it is too wide to be displayed all at once.
- X and Y character sizes.
- Character spacing.

After you have typed in your text, click in the sprite window at the position where the centre of the text is to be positioned.

The sizes and spacing are measured in pixels and the text is drawn in the current colour. Only the System font is available in Paint, but if you want to use another font, save the sprite into Draw, superimpose text in the font required, and then take a 'snapshot'.

## Filled circles



Create filled circles in the same way as outline circles.

## Filled ellipses



Create filled ellipses in the same way as outline ellipses.

## Filled circle segments



Create filled circle segments by indicating the end points of an arc, using the same technique as circle outline sections. The area filled is bounded by the arc and by a straight line between the end points of the arc.

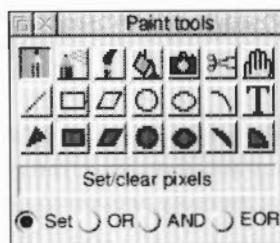
## Filled circle sectors



Create filled circle sectors by indicating the end points of an arc, using the same technique as circle outline segments. The area filled is bounded by the arc and by lines running from the end points of the arc to the centre of the circle.

## Using colours in Paint

As noted previously, there are four different ways in which you can apply colour to a sprite, chosen using the Set, OR, AND and EOR buttons in the tools window. Set causes the colour itself to be painted into the sprite. The remaining three styles cause the indicated logical operation to be applied between the colour number of the pixel on the screen and the colour number selected from the sprite colours window. (The colour number appears in the colours window when the colour is selected.)



For example, if EOR is selected, spraying with colour 11 (binary 1011) onto an area that is currently colour 12 (binary 1100) will produce pixels in colour 7 (binary 0111). For a description of the logical operations, see the *BBC BASIC Reference Manual*.

You should notice that applying colour to a sprite using OR will tend to set more pixels towards the higher numbered colours in the palette. If AND is used then more pixels will be set to the lower numbered colours in the palette. Painting with EOR tends to maintain a wider variety of colours than either of the previous two styles.

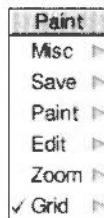
A sprite's palette can be set by dropping a palette file onto the sprite window.

The most interesting effects are achieved when spraying over a range of existing colours, or drawing overlapping filled shapes. Experiment for yourself!

## Sprite windows and menus

Each sprite window contains a single sprite. All individual sprite editing actions are carried out in the sprite window. You can have more than one window open for a particular sprite. This enables you to set different magnifications, display a grid in one window but not others, scroll to different parts of the sprite, and so on. Changes made in one window are reflected in the others.

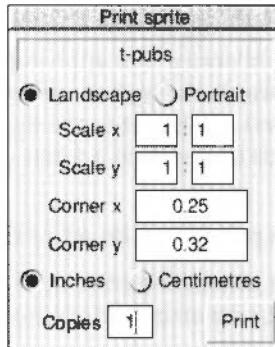
There is a menu associated with sprite windows. Click Menu over a window to obtain it. The menu entries are as follows:



## Misc

**Misc** leads to **Info**, **Sprite** and **Print** options. **Info** and **Sprite** tell you about the application and the sprite. The attributes of the sprite are shown, together with the amount of memory needed to store it.

**Print**, chosen from the **Misc** submenu, leads to a dialogue box which you can use to print the sprite. The exact contents of the dialogue box depends on the printer driver in use, but it typically allows you to choose the orientation (**Portrait** or **Landscape**), scaling, and position on the paper.

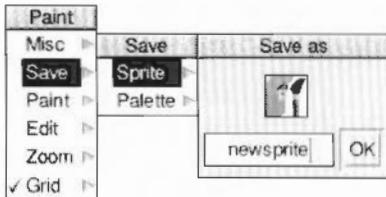


The **Scale** option allows you to change the proportions of the printed image. Setting both x and y to 1:2 will produce a half-sized image.

The **Corner** option defines where on the printed page the image will be printed. The default settings define the edge of the printable page for your printer. Changing these settings will move the printing position of the image.

## Save

**Save** leads to a submenu from which you can save the sprite and the sprite palette.

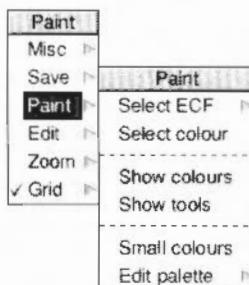


Saving the sprite palette saves the colour selection used in the picture. If you want to use the same palette in another picture, drag this palette file onto the new sprite window. This modifies the palette used by the sprite.

## Paint



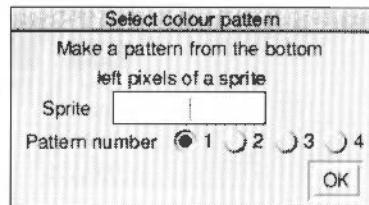
**Paint** leads to a submenu used for controlling the available editing facilities:



**Select ECF** leads to a dialogue box which you can use to extract the bottom lefthand pixels of a named sprite as an Extended Colour Fill (ECF) pattern. Up to four such patterns may be defined. ECFs consist of patterns that may be used in place of a colour, and will be added to the sprite palette, below the plain colours.

The ECF is taken from a rectangle 8 pixels tall, in the bottom left of the named sprite. The width of the rectangle depends on the number of colours in the sprite the pointer was over when you clicked Menu: 8 pixels wide for 2-colour modes, 4 wide for 4-colour modes, 2 wide for 16-colour modes and 1 wide for 256-colour modes. Extended colour fills are useful for painting large areas in striped, chequerboard or stippled patterns. However, one consequence of the differences

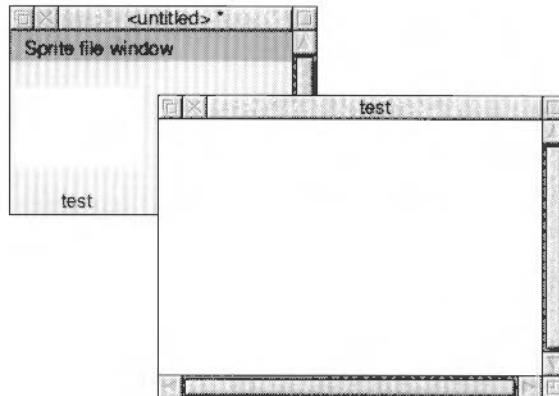
in ECF between modes is that you can obtain stippled or chequered patterns for modes with up to 16 colours, but for 256-colour modes, only stripes are possible. You can define up to four ECFs for each sprite.



To set the ECF, type in the name of the sprite it is to be taken from, click on the number of the ECF to be defined, and click on **OK**. To use the ECF in editing, select it in the colours window.

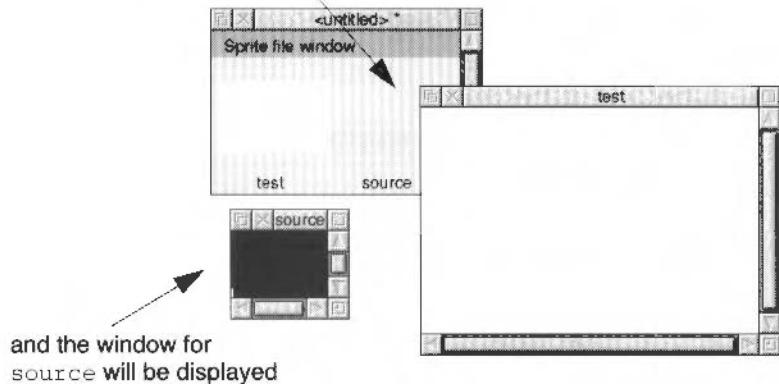
Create and use an example ECF following these steps:

- 1 Choose a 16-colour mode such as 12 or 20.
- 2 Open a sprite file window (click on the Paint icon).
- 3 Create the first sprite; call it test and give it the size 300 pixels wide by 200 high.

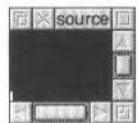


- 4 Move the pointer over the sprite file window and create a second sprite using the **New sprite** menu option; call it source and make it 2 pixels wide by 8 high:

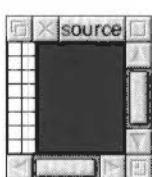
the new sprite source will be added  
to the sprite file window



- 5 Move the pointer over the source sprite window and zoom to a large magnification: about 10:1.



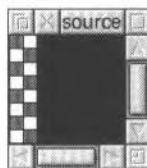
move to the source window ...



... and zoom the magnification

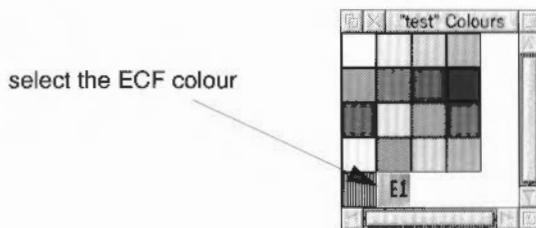


- 6 Select the **Set/clear pixels** tool and a colour of your choice (not white!).  
7 Click on alternate pixels in the sprite window to create a chequered pattern:

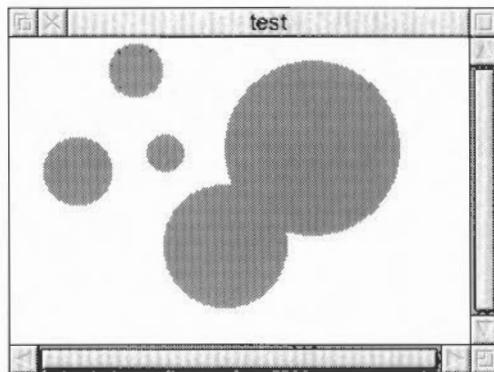


- 8 Close the source sprite window.

- 9 Move to the test sprite window, and zoom down again to 1:1. Use the Toggle size icon to enlarge the window to its full size.
- 10 Press Menu and move to the **Paint** menu, then to the **Select ECF** box.
- 11 Type `source` in the box, and click on **OK**.
- 12 Select a filled shape tool such as **Filled circles**.
- 13 Enlarge the colours window for the sprite: the ECF colour will be at the bottom. Select it.



- 14 Paint circle shapes in the normal way: they will be filled with the chequerboard pattern you designed in `source`, and the result will look something like this:



**Select colour** sets the colour for future tool window operations to the colour of the pixel the pointer was over when Menu was pressed. It can be used to find out exactly which colour has been used at a point in a sprite.

For example, with the colours window open, position the pointer over the area of the sprite you are interested in and choose **Select colour** from the menu. The entry in the colours window will show the colour.

**Show colours** displays the sprite colours window, if it is not already on the screen. If the colours window is already open, but is hidden, it is brought to the front of the screen.

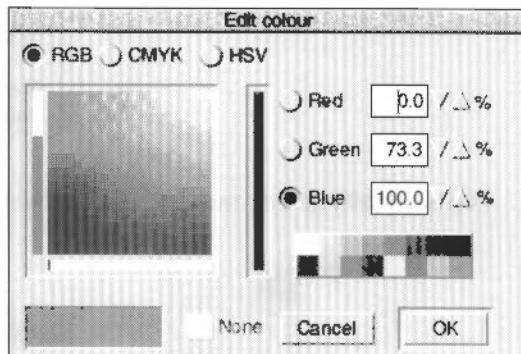
**Show tools** displays the tools window if it is not already on the screen. If the tools window is already open, it is brought to the front of the screen.

**Small colours** toggles the size of the sprite colours window; the colours window must be open. The small colours window takes less screen space than the large one. This is particularly valuable in 256-colour modes. The menu option is ticked when the small colours window is in use.

**Edit palette** leads to a colour dialogue box which you can use to change the sprite palette. The colour you choose is transferred to the currently selected entry in the palette. To give a sprite its own palette, click on **Palette** in the Edit menu (described overleaf).

This option is available for use with all true-colour sprites that have a palette. Sprites that are not true-colour – 256 colour sprites with a colour palette – can't use this option.

Here is a typical colour dialogue box. At any time, there is a range of sixteen standard colours. In addition, you can mix new colours.



The standard colours are shown in the patches at the right of the dialogue box. To choose a standard colour, click on the patch, and then click on **OK**.

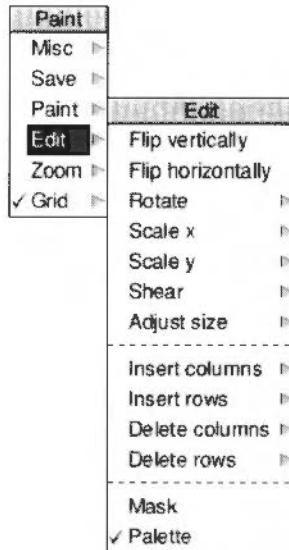
To mix your own colour, you must set the colour intensities. How to do this is explained in the chapter *Using colour in applications* on page 87.

You can start off by clicking on a standard colour, then fine-tuning it to get the colour you want. As you mix a colour, it is shown in the colour mixing box next to the **OK** button. When you have selected the shade you want, click **OK**.

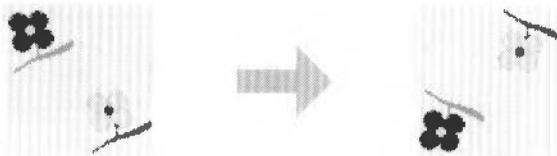
The colour displayed on the screen is the best approximation available in the current screen mode to the shade you select. The exact colour is recorded by the application, so that it is displayed more accurately if you change to a screen mode which has more colours. 256-colour modes can often provide a good approximation.

## Edit

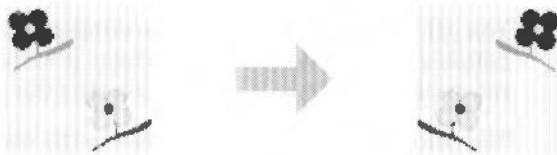
**Edit** leads to a submenu used for miscellaneous editing actions on the sprite. It has the following entries:



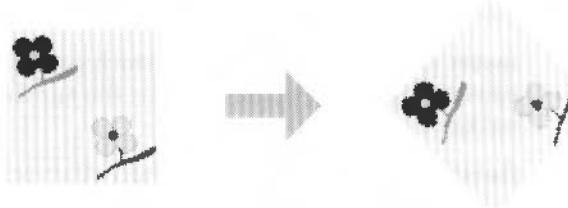
**Flip vertically** inverts the sprite vertically about its centre:



**Flip horizontally** inverts the sprite horizontally about its centre:

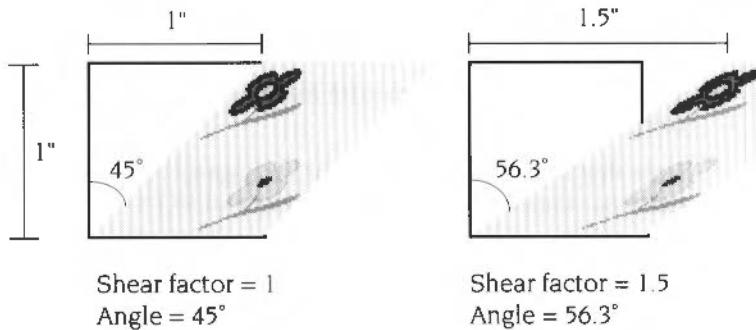


**Rotate** leads to a box into which you type the rotation angle (expressed in degrees anticlockwise). The sprite size changes if you rotate for angles other than multiples of 90 degrees. For example, a rotation angle of 45 degrees would give the following:



**Scale x** and **Scale y** lead to boxes into which you type a multiplication factor to enlarge or reduce the sprite on its horizontal or vertical dimension. Negative scale factors are not allowed. A scale of 0.5 halves the sprite size. A scale of two doubles the sprite size.

**Shear** enables you to slant the sprite. The option leads to a dialogue box into which you type a shear factor. The top row of pixels is moved rightwards by an amount defined by multiplying the height of the sprite by the factor given. The rows in between are moved proportionally. The factor is, in fact, the tangent of the angle you wish to shear by. A factor of 1 slants the sprite 45°.



**Adjust size** leads to a dialogue box which you can use to alter the height and width of the sprite. The values are changed either by typing in new values, or by using the boxes marked with arrows to alter the values. When you have set the size you want, click on **OK**. The arrows allow you to add and delete rows and columns from the top and right sides of the sprite.

**Insert columns** leads to a box into which you type the number of columns to insert. This extends the width of a sprite by the number of columns specified, filled with the background colour.

This operation and the next three apply at the position the pointer was over when you pressed Menu. This will be shown as a box on the sprite. By moving the pointer into the sprite window (without passing over a menu) you can change the size of the box. The menu option shows the current size of the box; click to use the current size.

**Insert rows** leads to a box into which you type the number of rows to insert. This extends the height of the sprite by the number of rows specified, filled with the background colour.

**Delete columns** leads to a box into which you type the number of columns to delete. Columns are deleted to the right of the point that you clicked Menu over. Deleting the outside column of pixels on the righthand edge of a sprite can be difficult. Increasing the zoom scale can help, or you can delete the last column separately using the **Edit, Delete columns** menu options then using the keyboard to request 1 column to be deleted. You can either type a number of columns directly into the **How many?** box, or move the pointer onto the window and highlight the columns to be deleted; clicking deletes the columns.

**Delete rows** leads to a box into which you type the number of rows to delete. If you type a number into the **How many?** box the rows are deleted upwards from the point that you clicked Menu over.

**Mask** allows you to choose whether the sprite has a mask or not. The menu option is ticked if the sprite has a mask. See *Sprite colours window* on page 309 for more about masks.

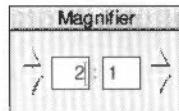
When Mask is enabled, an extra mask colour is added to those selected in the colours window.

Note that if you assign a mask for your sprite you can only define three ECF patterns, since the mask takes the place of ECF3.

**Palette** allows you to choose whether the sprite has its own palette or not. The menu option is ticked if the sprite has its own palette. If you intend to export a sprite to Draw, you should give it a palette, since otherwise it will not retain the colours you gave it. A sprite with no palette of its own uses the current desktop palette. A sprite's palette can be changed by dropping a palette file icon onto the window displaying the sprite.

## Zoom

**Zoom** leads to a magnifier dialogue box which you can use to change the size at which the sprite is displayed. The magnification only changes the size at which the sprite is displayed in the window; the actual definition, height and width are not affected. An example magnifier box is shown below.



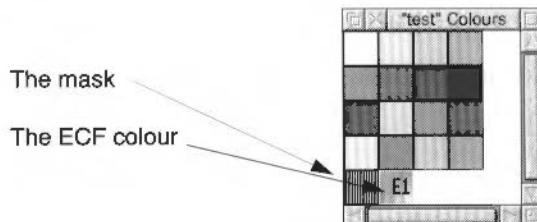
The magnification is expressed as a ratio; for example 2:1 means twice normal size, 3:4 means three-quarters of normal size, and so on. You can change the magnification ratio either by clicking on the up and down arrows, or by typing in a new value at the caret.

## Grid

**Grid** leads to a submenu of colours. Choose one to display a grid in that colour in the sprite window. The grid shows where the pixel boundaries are; it can be useful for lining up parts of the sprite. If you choose **Grid** directly from the menu (i.e. without moving to the colour submenu), the grid is turned on or off. The grid is not shown if the displayed size of the sprite is less than a magnification of 4:1.

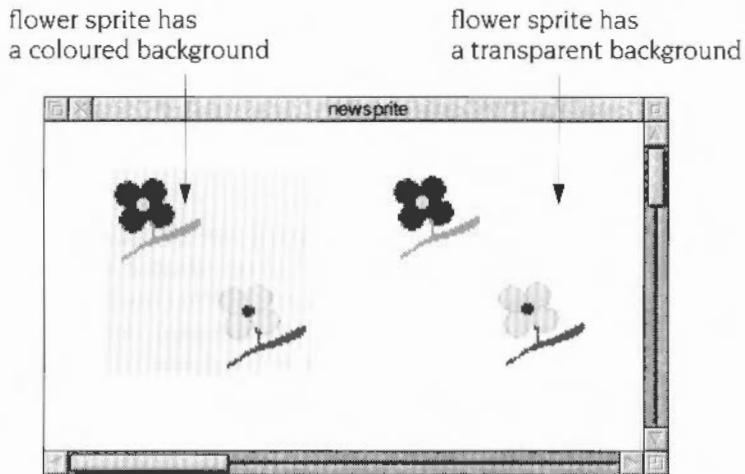
## Sprite colours window

The sprite colours window is used to select the current colour for the editing you are doing. The current colour is highlighted, and shows the colour number. The colours shown are the shades that can be displayed in the current screen mode. These may be an approximation to the actual palette of the sprite.



If you have defined any Extended Colour Fill (ECF) patterns for the sprite, they are also shown in the sprite colours window, below the other colours. You may need to enlarge the colours window in order to see them.

If the sprite has a mask, an extra, special colour is shown in the bottom lefthand corner of the sprite colours window as a shaded square. You can use this colour – in the same way as any other colour – for making pixels transparent; this can be useful if, for example, you wish to design a sprite so that if it is displayed on top of something else, the background can be seen. In the picture below the flower sprite has been painted on top of a rectangle. The flower painted on the left of the rectangle has a coloured background, and so the whole of the flower sprite covers the rectangle. The flower sprite on the right of the rectangle has been given a transparent background, and so only the actual flowers are painted on top of the rectangle.



For more information about how to create and use masks refer to page 290.

If you close the last window open on a sprite, the corresponding sprite colours window closes as well. However, the sprite colours window can be closed without closing the sprite window.

## **Sprite file windows and menus**



The sprite file window shows all the sprites defined in the file. The sprites in this window are updated as you edit them in a sprite window. You can have more than one sprite file window open at a time. If you close a sprite file window, all the sprite windows that are currently open will close.

To open a sprite window for a sprite, double-click on it in the sprite file window.

There is a menu associated with sprite file windows. Click **Menu** over the window to obtain it. The menu entries are as follows:

## Misc

**Misc** displays information about the sprite file and the application.

## Display

**Display** leads to a submenu which allows you to select how sprites are shown:

**Drawing and name**: choose this to display a sprite in the sprite file window as the sprite and its name only. Selecting this switches **Full info** off.

**Full info**: choose this to display a sprite in the sprite file window as the sprite and its name, together with more detailed information about the sprite.

Selecting this switches **Drawing and name** off. Full info displays:

- the sprite size in dots per inch
- the number of colours available (or if the sprite is backward compatible with RISC OS 3.1; the mode number)
- the size of the sprite
- the palette and mask used by the sprite.

**Use desktop colours**: choose this to toggle whether the desktop colours, or the BBC microcomputer-compatible set of standard default colours for the sprite mode are used in displaying sprites. Using the desktop colours will show you how the sprite would appear if used as an icon. This option is ignored if the sprite has its own palette.

## Save

**Save** leads to a Save dialogue box for saving the sprite file.

## Sprite

**Sprite 'spritename'** leads to a submenu of actions applying to an individual sprite. This is only available if the pointer were over a sprite when you clicked Menu. The submenu contains the following options:

- **Copy** leads to a box where you should type in a new name and press Return to make an exact copy of the sprite under the pointer with the given name. The copy will appear in the sprite file window.
- **Rename** leads to a box where you should type in a new name and press Return to change the name of the sprite.
- **Delete** deletes the selected sprite from the sprite file window.
- **Save** leads to a standard Save dialogue box for saving an individual sprite.
- **Info** displays a box containing information about the sprite.
- **Print** leads to the same dialogue box as is reached via the menu from the sprite window.

## New sprite

**New sprite** leads to the **Create new sprite** dialogue box, from which you can create a new sprite. See page 273 for more information.

If you double-click on an unused part of the sprite file window the Create new sprite dialogue box is also displayed.

## The icon bar menu

There is a further Paint menu, obtained by pressing Menu over the Paint icon on the icon bar.

### Info

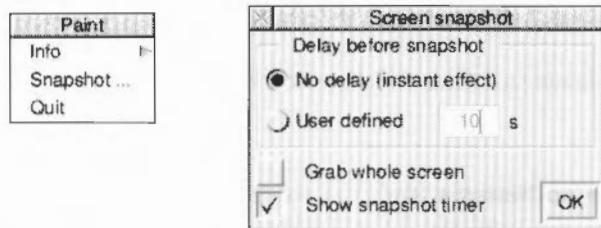
**Info** leads to a dialogue box containing details about the version of Paint.

### Snapshot

Snapshot allows you to save part of the screen as a sprite file.

You start snapshot by choosing **Snapshot** from the icon bar menu; this displays the snapshot dialogue box.

The snapshot dialogue box allows you to alter the parameters involved in saving the screen:



**Delay before snapshot** allows you to select the time interval between clicking on the Snapshot box and the picture being taken. A time delay can be useful because it allows you to display transient items, like menus, on the screen before the picture is taken.

**Grab whole screen** does just that; it takes a picture of the whole of the visible screen.

**Show snapshot timer** shows a timer that gives a countdown of the time left before the picture is taken.

### Using Snapshot

- 1 Open the directory where you want to save the captured sprite. Move this away from the area you want to grab.
- 2 Choose **Snapshot** from the Paint icon bar menu.
- 3 Set the parameters of your snapshot – **Delay**, **Grab whole screen**, **Show snapshot timer** etc.
- 4 Click on the **OK** button.
- 5 You will see a small icon of a camera with an arrow (unless you selected **Grab whole screen**, in which case the **Save as** dialogue box will appear immediately); move the point of the arrow to one corner of the area you want to capture.
- 6 Drag the icon and a bounding-box will appear, showing the area which will be captured as a sprite. When the box covers the required area, let go of Select, and the 'snapshot' process will start. If you left the **No delay** button on, the **Save as** dialogue box will immediately appear. If you requested a delay, the box will appear after the requested time lapse.
- 7 Drag the sprite to the appropriate directory display to save it.

### Quit

**Quit** ends your Paint session; if you have not saved some of your files, Paint will prompt you to save them first.

### Saving Paint features in a Desktop boot file



You may wish to change some aspects of the way new Paint windows appear when you first open them. For example, a new window normally opens with zoom magnification set to 1:1, but you may prefer to have the Zoom option set to 2:1 each time you start Paint.

You can set features of this type by setting up Paint as you wish to use it, then save these features by creating a Desktop boot file. Instructions on how to create a Desktop boot file are given in the appendix *Configuration information* on page 497.

There are several features of Paint that you can set before saving a Desktop boot file, so that they are set up the way you want them each time you switch on.

## Types of sprite that can be created by Paint

This table gives the various types of sprite that can be created by Paint. It shows if

- they are backward compatible with RISC OS 3.1 and earlier versions of the operating system – they have a mode number
- they can be modified by Paint.

You can select these combinations using the **Create new sprite** window. See page 284 for more information.

Number of colours in sprite	Dots per inch (dpi)	Equivalent old mode number	Can be created and modified by Paint
Two	90x90	25	Yes
	45x45	4	Yes
	90x45	0	Yes
	Other combinations	not backward compatible	Yes
Four	90x90	26	Yes
	45x45	1	Yes
	90x45	8	Yes
	Other combinations	not backward compatible	Yes
Sixteen	90x90	27	Yes
	45x45	9	Yes
	90x45	12	Yes
	Other combinations	not backward compatible	Yes
256	90x90	28	Yes
	45x45	13	Yes
	90x45	15	Yes
	Other combinations	not backward compatible	Yes
32 thousand	All combinations	not backward compatible	Can be created but not modified
16 million	All combinations	not backward compatible	Can be created but not modified

# Part 4: More applications





**A**larm, as you might expect, is a sophisticated alarm clock.

It can

14.28



- display an analogue or digital clock on the icon bar
- set the computer's date and time
- set up alarms that can go off at any time in the future
- set up applications so that they are automatically started at a particular time
- set up urgent and repeating alarms.
- store alarms automatically and remember them even when you switch off the computer.

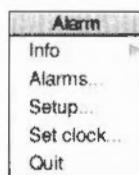
## Starting Alarm

To start the application:



- 1 Click on the Apps directory icon on the icon bar.
- 2 Double-click on the !Alarm application icon to load the application. The clock icon appears on the icon bar showing the time.

## Setting the time

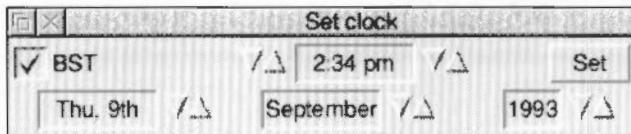


The **Set clock** dialogue box is used to set the clock's time and date. The new time and date applies to the entire RISC OS system, not just to Alarm. You only need to set the time the very first time you use the system. The time should then remain set correctly.

If you are setting the time during the summer months you should check so see if your country is running daylight saving time. If it is you should click on the **BST** option before setting the time.

To display the **Set clock** dialogue box:

- 1 Click Menu over the Alarm icon on the icon bar. This displays the icon bar menu.
- 2 Choose the **Set clock** option.



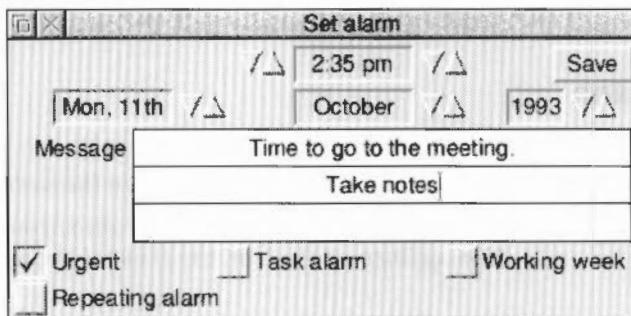
To change the time and date:

- 1 With the Set clock dialogue box, set the time and date by clicking on the appropriate arrows. Click on **BST** if British Summer Time is in operation.
- 2 Click on **Set** to set the clock to the new time.

## Setting an alarm



This section shows you how to set an alarm. All alarms are set from the **Set alarm** dialogue box. To display the Set alarm dialogue box, click on the time display icon on the icon bar.



This is the dialogue box used to set the alarm date and time; you can also type in some text which will be displayed as a message on screen when the alarm goes off.

To set the time and date of the alarm:

- 1 Adjust the time by clicking on the arrow heads either side of the time box. The arrows on the left hand side adjust the hours, those on the right the minutes.
- 2 If you want to change the date, alter the date, month and if necessary year boxes.
- 3 Click on **Save** to save the alarm settings and set the alarm.

When an alarm is set, the box surrounding the time display on the icon bar changes colour.

The following options are also on the Set alarm window.

### **Urgent**

An alarm may be marked as urgent by clicking on the **Urgent** box. It will then sound an audible alarm when it goes off, even if you have selected the **Silent** option from the setup dialogue box menu.

### **Task alarm**

Instead of merely giving you a message when an Alarm goes off, Alarm can carry out a task. A task can be anything you can do on the Desktop or command line: running a program or loading an application, for example. Click on the **Task alarm** box and enter the command you want carried out in the message boxes. You can also set up a Task alarm by dragging a file onto the Set alarm window. If you drag an application onto the window, for example, that application will run at the time set for the alarm. If you drag a text file, the text will be displayed in an Edit application window; you might use this option to display, at the start of the day, a list of things you have to do.

### **Working week**

This limits the alarm settings for any repeating alarms to be within the specified working week; the working week is defined in the Alarm Setup window, and is Monday to Friday by default. This option only takes effect if the Repeating alarm option is also selected.

If you have set an alarm that falls outside the working week it will always go off on the last working day before the appointment. This is to prevent you missing an appointment that is scheduled outside the working week.

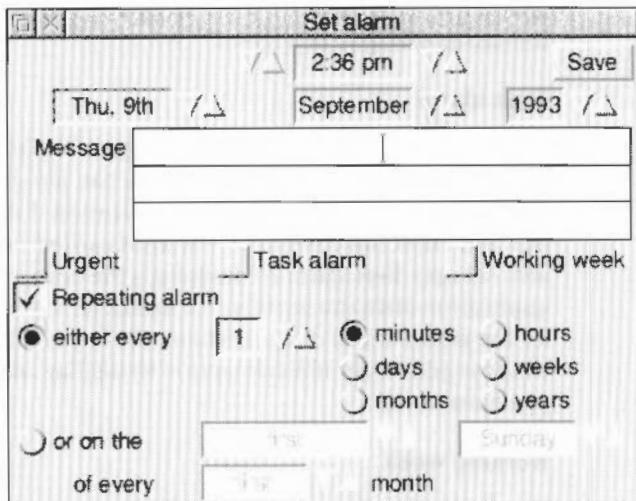
Any changes to the working week effect all Alarms including those already set and saved.

### **Locked computer - write protected disc**

If you are using Alarm on a locked computer you cannot store Alarms without changing the Alarms file. See page 326 for more information.

### Repeating alarm

You can set an alarm to go off more than once by clicking on the box marked Repeating alarm, which displays the repeating alarm options.



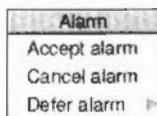
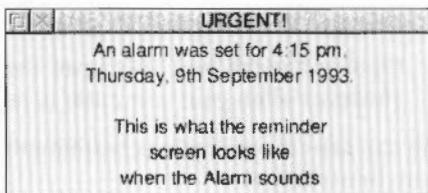
Choose whether you want the alarm to repeat at a set time (for example, every 19 days) or on a set day (for example, every second Monday of every second month).

Alter the repeat interval by clicking on the arrow boxes, and by selecting the unit in which the interval is measured from the buttons shown. To limit just the current alarm to the working week, click on the **Working week** box. To limit **all** your alarms to the working week by default, choose the Repeating alarms option in the setup dialogue box.

You can set more than one alarm by simply repeating the Set alarm procedure.

## When the alarm goes off

When the alarm time is reached, a window similar to the illustration below appears on the screen.



If it is not a repeating alarm, cancel the alarm and remove the window by clicking on the Close icon in the alarm display. Alternatively, click Menu on the window and choose **Accept alarm**. If you wish to defer the alarm (like using a 'Sleep' button on an ordinary bedside alarm clock), choose **Defer alarm**, and select the time interval by which you want to delay the alarm. This then leads to a menu into which you can enter the number of minutes, hours, etc. If your alarm repeats every so many minutes or hours, it will be deferred from the current time. If its repeat unit is longer, it will be deferred from the alarm time.

When a repeating alarm goes off, click Menu on the alarm window. Choose **Accept alarm** to stop the alarm and remove the window, leaving the alarm set for next time, or choose **Cancel alarm** to stop it going off again.

If Alarm is not running when the alarm is due to go off, the alarm will be triggered next time Alarm is started. If the alarm is a repeating alarm, you will receive a message for the first repeat due for the period when Alarm was not running, but not for subsequent ones.

## Configuring the Alarm setup options

The setup dialogue box allows you to configure

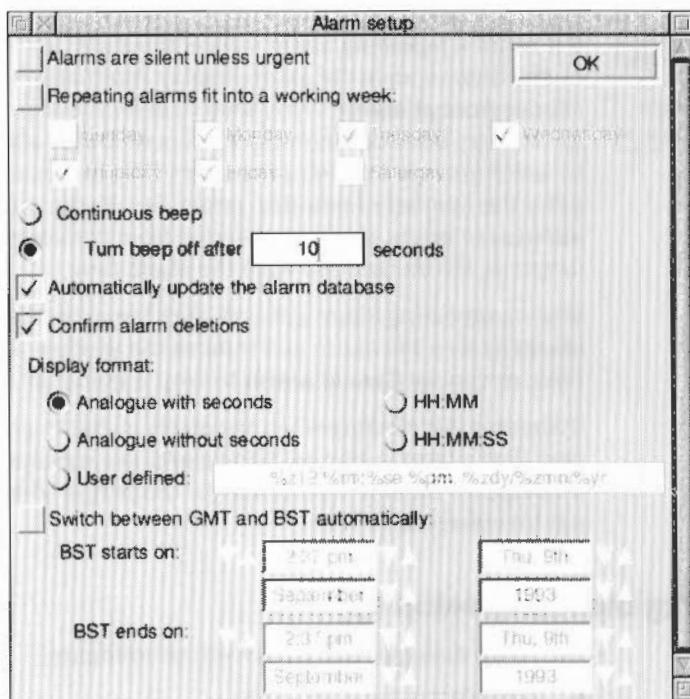
- how alarms are acted upon
- how the alarm database is used
- the alarm display format
- GMT (Greenwich Mean Time) and BST (British Summer Time) timezone switching.

If your computer is locked (password protected) you won't be able to change any Alarm setup options until it is unlocked.

To change the Setup dialogue box options:

- 1 Click Menu over the Alarm icon on the icon bar. This displays the icon bar menu.
- 2 Choose the **Setup** option.
- 3 Change the dialogue box options you wish to.
- 4 Click on the **OK** box. This saves the new options for your current session. However when your computer is reset, these changes will be lost.

You can save these changes permanently in a Desktop boot file. See page 327 for more information.



The following configuration options can be altered with this dialogue box. Select the alarms by clicking in the empty box. A tick in the box denotes that the option is already selected; click on the tick to deselect it.

#### **Alarms are silent unless urgent**

When this is selected, only urgent alarms sound an audible beep at alarm time. When it is not selected all alarms sound an audible beep.

### **Repeating alarms fit into a working week**

When this is selected, any subsequent repeating alarms you set, or alarms that you defer, will skip those days you have not selected. An alarm repeating monthly or annually will go off on the working day before its due date.

### **Continuous beep**

Click on this box if you want an audible alarm to sound continuously until you cancel the alarm.

### **Turn beep off after**

The figure you type into the box is the number of seconds that the computer's beep will sound when there is an alarm.

### **Automatically update the alarm database**



This option lets Alarm automatically update the alarm database file whenever you set or change an alarm. If you choose this option then each time Alarm starts it automatically remembers any alarms that have been stored.

### **Confirm alarm deletions**

When this option is selected, you are prompted for confirmation each time an existing alarm is deleted.

### **Display format**

This section allows you to choose how you wish the alarm clock to be displayed on the icon bar. The formats available are:



14.28

- analogue (with and without a second hand)
- digital (with and without seconds displayed) – called HH:MM and HH:MM:SS
- your own format.

### **Typing in your own formats:**

For example, try typing in these formats in the **User defined** box.

%z12:%mi:%se %pm %zdy/%zmn/%zyr

and

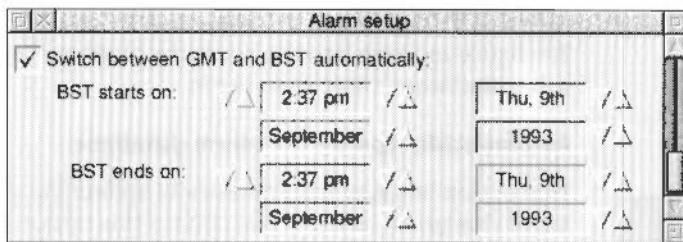
%we %zdy%st %m3 Week %wk

For information on how to set up your own formats, see the section *Time and date display formats* on page 327. The format and other features you select for Alarm will be saved in any Desktop boot file you create (providing Alarm is running when you

save the file). These options are listed at the end of this chapter. For information on how to create a Desktop boot file, refer to the chapter *Desktop boot files* on page 149.

### Switch between GMT and BST automatically

When this option is selected, Alarm will automatically switch between GMT and BST times on the dates you specify. Click on the arrows to change the time, day, month and year.



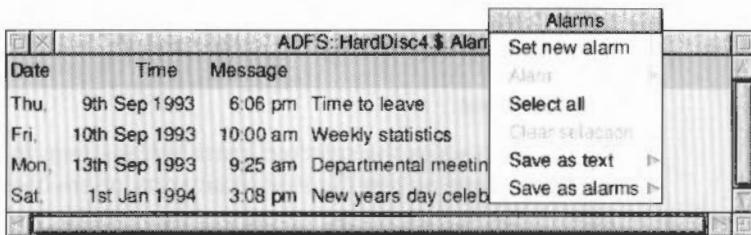
A reminder alarm is automatically set to go off 11 months after the start of BST; this is to remind you to set the GMT/BST time for the following year.

## Browsing through your alarms

Clicking on **Alarms** on the icon bar menu displays the alarm browser. The browser lists the alarms you have set.

Date	Time	Message
Thu, 9th Sep 1993	6:06 pm	Time to leave
Fri, 10th Sep 1993	10:00 am	Weekly statistics
Mon, 13th Sep 1993	9:25 am	Departmental meeting
Sat, 1st Jan 1994	3:08 pm	New years day celebration

Clicking menu over the browser window displays the menu options available for setting, changing, copying, deleting and saving alarms.



## The Alarms browser menu

### **Set new alarm**

Choosing this option displays the Set alarm dialogue box.

### **Alarm**

This option is only available when an alarm is first selected. Select an alarm by clicking on an alarm line in the browser.

This option displays a submenu which allows you to perform the following operations:

- **Change alarm.** This displays the Change alarm dialogue box. Use this in the same way as the Set alarm dialogue box. The change alarm box can also be displayed by double-clicking over the appropriate line in the browser.

To choose a different alarm to change, click Menu in the dialogue box. This displays a submenu from which you can choose **Previous alarm** or **Next alarm** to move to the previous or next alarm in time order. Choose **Find alarm** to locate an alarm by specifying the time and date of the alarm.

- **Delete alarm.** Use this option to delete an alarm.
- **Copy alarm.** Use this option to copy an alarm so that it is duplicated in the alarm browser. You can then use the Change alarm option to modify the copied alarm.
- **Save as text.** This option saves the alarm text (as seen in the browser) as a text file. Drag the Save as text file icon to an appropriate directory.
- **Save as alarm.** This option saves an alarm as an alarm file. Drag the Save as alarm file icon to an appropriate directory. Alarm files can be read back into Alarm at a later date.

### **Select all**

Selects all alarms in the browser.

**Clear selection**

Deselects all selected alarms in the browser.

**Save as text**

This option saves the selected alarm text (as seen in the browser) as a text file. Drag the **Save as** text file icon to an appropriate directory.

You can load this text file into Edit to display a list of all your currently set Alarms, or, if you have a printer driver installed, drag the icon straight onto the printer driver icon to print the list on paper.

**Save as alarms**



This option saves the selected alarms as an alarm file. Drag the **Save as** alarms file icon to an appropriate directory. Alarm files can be read back into Alarm at a later date.

## **Quitting Alarm**

To close down Alarm, select **Quit** from the icon bar menu. Alarm will warn you if you have any alarms that have not been saved.

## **Alarm files**



Alarm files contain information about the currently held alarms. If you double-click on an Alarms file and Alarm is not running, then Alarm is started and the data file is read and treated as the main alarm file. If you double-click on an alarms file and Alarm is currently running, the contents of the alarms file is added to the existing list of alarms, if there are any.

## **Using Alarm on a locked (password protected) computer**

If your computer is locked, you can save alarms by saving an **Alarms** file to the Public directory of the hard disc or to a floppy disc. You can now start Alarm by double-clicking on this Alarms file. This allows Alarm to use any alarms you may have set and stored in the file.

## Time and date display formats

The date and time format can be changed in the **Setup** window by choosing the **User defined** option and using a string made up of time and date variables as listed below.

Name	Value	Example
%se	seconds	59
%mi	minutes	05
%12	hours in 12 hour format	07
%24	hours in 24 hour format	23
%am or %pm	'AM' or 'PM'	pm
%we	weekday, in full	Thursday
%w3	weekday, in three characters	Thu
%wn	weekday, as a number	5
%dy	day of the month	01
%st	'st', 'nd', 'rd' or 'th'	st
%mo	month name, in full	September
%m3	month name, in three characters	Sep
%mn	month as a number	09
%ce	century	19
%yr	year within century	87
%wk	week of the year, Mon to Sun	52
%dn	day of the year	364
%tz	Timezone	BST
%0	insert an ASCII 0 zero byte	
%%	insert a %	

Numbers are generated as a fixed width with leading zeros (e.g. %mi can give a result of 05). To remove leading zeros, prefix the code with a z (e.g. %zmi gives a result of 5). Plain text can also be included in the variable string; for example:

%we the %dy%st %m3 %yr

would display in the form:

Wednesday the 21st Jan 84

## Saving Alarm configuration features



If you create a Desktop boot file while Alarm is running, it will incorporate any changes you have made to its setup and display. You can also manually edit your Desktop boot file to incorporate these changes. See the appendix *Configuration information* on page 497 for more information.





This application is used to control the playback of Acorn Replay video movie and sound clips. The application allows you to control the video and sound using the same basic controls as you would find on a video recorder.

## Starting ARPlayer

To start the application:



- 1 Click on the Apps directory icon.
- 2 Double-click on the !ARPlayer icon to start the application. The application icon appears on the icon bar.
- 3 Click on the icon on the icon bar and the ARPlayer window is displayed:



## Playing Replay movie clips

### Playing a movie or sound file



- 1 Double-click on the **Video** directory and drag one of the video file icons to the Replay window. This loads the movie or sound clip.
- 2 Click on the **Play** button to start the clip.

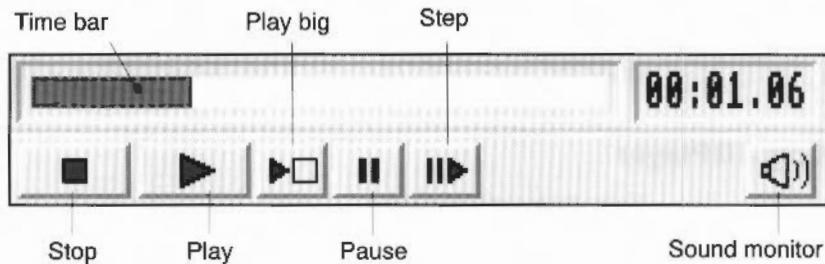


## Controlling the movie or sound clip

### Video buttons

The movie is controlled by the five buttons and a bar at the bottom of the window.

The buttons are much the same as those on a video recorder:



**Stop** – this stops the video clip. With the video stopped you can change the point at which the video is restarted by using the red and white bar, much like fast forward and rewind. Clicking on **Stop** again rewinds the movie to the start.

**Play** – this starts the video clip.

**Play full screen** – this plays the video clip at a larger size outside the desktop.

**Pause** – this pauses the video; clicking the button again starts the video. Use this button in preference to the Stop button as the video starts again more quickly. You can also pause a movie by holding down the Adjust button.

**Advance frame** – this advances the movie one frame each time you click on this button. Click on Play to resume normal speed play.

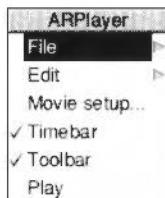
**Sound on/off** – this turns the sound off. Click again to turn it back on.

**Fast forward/Rewind bar** – the bar above the buttons controls the position the movie starts from when you click on Play. Drag the bar to the right to fast forward the movie; drag it to the left to rewind the movie. The bar can only be dragged when the movie has been stopped.

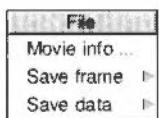
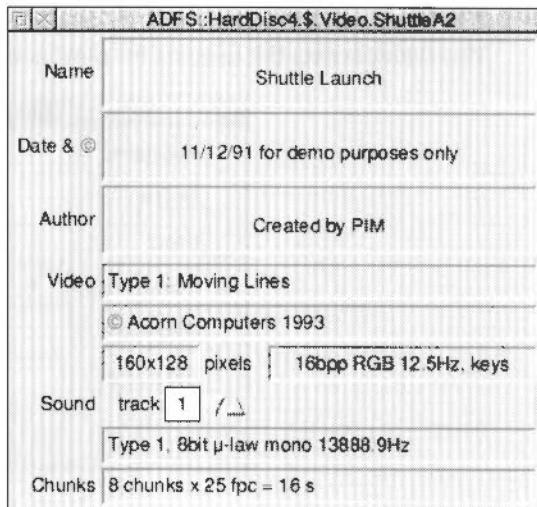
## Configuration options and information

The configuration options are controlled by the main ARPlayer menu which you access by clicking Menu over the ARPlayer window.

### File



The **File/ Movie Info** option gives you a window of information about the video clip you have loaded into ARPlayer.

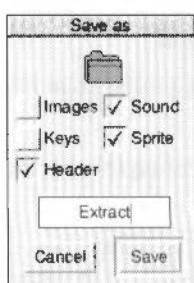


The **Save frame** option saves the currently displayed frame of the movie as a Sprite file.

The **Save data** option saves the various parts of the movie in a directory. You can save the following parts:

- **Images** – compressed chunks of video data.
- **Keys** – uncompressed key frames, stored with the movie to improve access times.
- **Header** – text shown in the movie info window.
- **Sound** – saves all of the movie's sound tracks.
- **Sprite** – picture shown when movie is first loaded.

Drag the directory icon to a directory display to save parts of the movie.



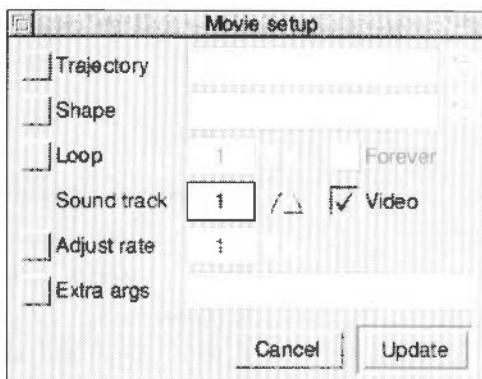
## Edit

**Copy frame** copies the currently displayed movie frame to the clipboard. Any application that supports the clipboard (for example Acorn Advance) can import the movie image.

**Clear clipboard** clears the clipboard if it contains a previously-saved movie clip. This option cannot be selected if the clipboard is empty or if it is being used by another application.

## Movie setup

This window sets the options for playback of Replay movies.



**Trajectory** and **Shape** play a movie file along a path on screen. Either drag a trajectory or shape file to these options or click on the menu list icon and choose one. A Trajectory defines a path for the movie to travel along (on the screen) as it plays. A Shape defines the shape of the movie playback window on the screen.

Try choosing the RollFilm Trajectory; you'll see the movie displayed as a section of film.

**Loop** continuously repeats the movie. You can enter the number of times to repeat or choose **Forever**, in which case it will repeat until Stop is pressed.

**Sound track** selects which sound track to play. Some movies have more than one sound track.

**Video** plays both the video and sound part of the movie. De-selecting this option causes just the sound to play.

**Adjust rate** lets you alter the frame rate of the movie clip. A rate of 2 plays the movie at twice the normal rate. It may not be possible to play the movie at higher rates.

**Extra args** allows you to enter any other arguments to the text passed to the Player. This is to allow use of new features that may be added in the future.

### Timebar

This allows you to hide the display of the timebar and time counter at the bottom of the movie window.

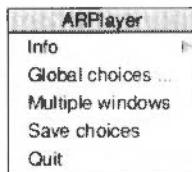
### Toolbar

This allows you to hide the controls at the bottom of the movie window. The movie can be controlled by clicking to start the movie. Click Menu to stop the move. If playing back sound only click Adjust to stop the soundtrack.

### Play

This starts playing the movie or soundtrack.

## Icon bar menu



**Info** leads to the standard program information box.

**Global choices** opens the global choices window. See below for details.

If **Multiple windows** is disabled then only one movie window will ever be displayed and you can click on the icon bar to open and close it. If it is enabled then a new window is opened whenever you click on the icon bar.

**Save choices** will save the current ARPlayer setup information to disc. The following information is used next time you use the application:

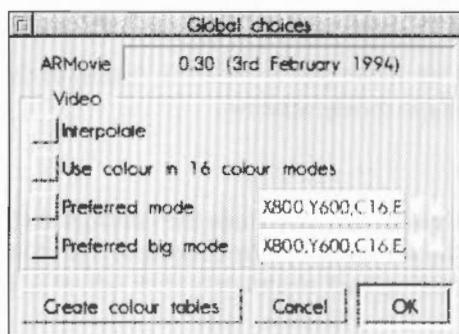
- The contents of the 'Movie setup' window and other options.
- The state of the system variables set by the **Global choices** window.

### Global choices

This dialogue box gives control over various system variables used by the playback software. These variables affect playback at all times, and with all movie supporting applications.

These options are not stored in the ARPlayer choices file but in a separate boot file. For more details see the file !Boot.Resources.!ARMovie.ProgIf.

The **ARMovie** field shows the date and version number of ARMovie. These are the resources used by ARPlayer and other Replay applications.



### Video playback

The first section contains options that affect video playback.

- **Interpolate** improves image quality at the expense of extra processing power used. If your machine is not powerful enough you will notice the frame rate of movies dropping (leading to jerky motion or 'tearing' of frames). In this case you should disable the interpolation feature.
- **Use colour in 16 colour modes.** The standard palette in 16 colour modes is not well suited for displaying real-life colour images, so by default movies are played back in grey scales only. If you enable this option then, assuming there is a suitable colour table for the current palette, playback will be in colour. If you want to use a different colour table click on **Create colour tables**; the process takes several minutes.
- **Preferred mode.** This is used by other Replay applications. You would not normally need this option.
- **Preferred big mode.** This is the screen display mode used when you click on the Play big button on the main window. The default big mode is mode 13 (320x256x256 colours) or mode 28 (640x480x256 colours). Enabling this option allows you to change this for a mode more suited to your monitor (for example, if you using a VGA monitor).

This mode is used when you play the movie using the Play big button or from other applications by use of their Play big buttons. (Note that not all Replay-compliant applications supply a 'Play big' button). The preferred mode defaults to the current mode if it is not set. It accepts mode numbers or mode specification strings.

### Colour tables

**Create Colour Tables** allows you to create a new colour table for the current mode and palette. This is operation and takes quite a long time (up to 10 minutes approximately) during which you cannot use the computer for other purposes.

Click on **OK** for all these options to take effect.

## Playing movies without using ARPlayer

If the ARPlayer application has not been loaded, double-clicking on a movie file plays the movie directly onto the screen at the movie's default screen size (which may be quite small).

While you play a movie, other computer operations are suspended until the movie is finished.

You can control the movie using the mouse buttons:

- **Select** pauses the movie; click Select again to restart the movie.
- **Adjust** pauses the movie only while the mouse button is held down.
- **Menu** stops the movie and removes it from the screen.





**C**hangeFSI is a useful program for converting and displaying image files of various formats. These images can then be converted into sprites for viewing with RISC OS applications such as !Paint and !Draw.

In case you're wondering, ChangeFSI stands for 'Change Floyd Steinberg Integer' (ChangeFSI performs Floyd Steinberg error diffusion dithering).

You should make sure that your conversion and subsequent use of an image does not infringe on any copyright that the image may be under.

ChangeFSI provides the ability to read, scale the data to improve the picture, change the x and/or y size, sharpen the picture and write the result using error diffusion dithering in one step (so it provides the best possible quality). All operations are carried out with 32-bit fixed point numbers (three per pixel in the case of a colour picture).

## Starting ChangeFSI

To start the application:



- 1 Click on the hard disc icon.
- 2 Double-click on the Utilities directory icon to display the Utilities directory.
- 3 Double-click on the !ChangeFSI application to start the application. The application icon appears on the icon bar.

## Using ChangeFSI

- 1 Display the directory that contains the file for the image to be processed.
- 2 Change to a desktop screen display mode that you wish to view and store the image in.

ChangeFSI automatically converts the file to give the best possible image for any screen display mode. For example, if you choose a 16 colour display mode ChangeFSI will produce a 16 colour image; if you choose a 32 thousand colour mode ChangeFSI will produce an image with 32 thousand colours.

- 3 Drag the file icon onto the ChangeFSI application on the icon bar.
- 4 ChangeFSI then attempts to convert the file to give a RISC OS sprite, displaying the result. You can then save the resultant image as a sprite file.

## **Picture formats**

ChangeFSI can convert many types of images to a sprite file. These include the PC graphics formats TIFF, PCX, PIC and IMG, the Amiga format IFF, the Compuserv GIF format and the JPEG format. A full list of image formats supported is given at the end of this chapter.

ChangeFSI can also be used to convert Sprite files that were created in one display resolution into another display resolution.

## **Additional information**

The information in this chapter gives an overview of how ChangeFSI works from the desktop. Additional information in the form of text files is held within the application. If you want to read these files, shift double-click on !ChangeFSI and then double-click on the text files.

The !Help file is the general help file for the application

The file FSIinfo gives information about ChangeFSI and its options in greater detail. This file also gives examples of using ChangeFSI from the command line.

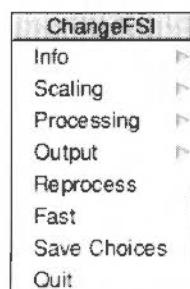
The file 256sprites gives information about converting a 256 entry palette sprite.

The file FSIformats lists the formats that ChangeFSI currently converts into sprite file format.

The file FSIuse give a concise list of the command line options available for use with ChangeFSI.

The file jpeginfo give the standard information about jpeg processing – taken from the Independent JPEG Group's JPEG software.

## **Icon bar menu options**

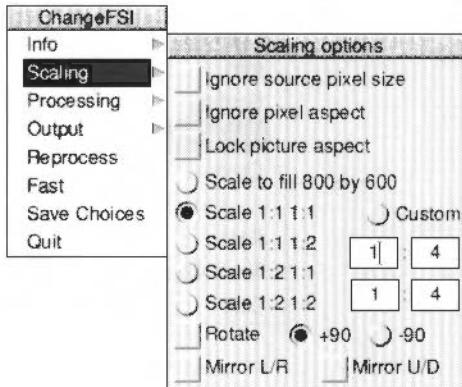


This section shows you how to use the advanced options available. Most users won't need to use these options as ChangeFSI is already set up to give good results with most types of image files.

Once you have loaded ChangeFSI onto the icon bar, click Menu over the icon to display the main options menu.

## Scaling options

The **Scaling** options allow you to choose which scale factor you wish to apply to your image. You can also transform, rotate or mirror the image.



The option **Scale 1:1 1:1** will give you a full-sized image (the same dimensions as the original). Other **Scale** options allow you to display different sized images.

Choosing **Custom** allows you to specify your own scaling options. If you wish the image to 'scale to exact pixel size', fill in the left boxes only and leave the right boxes blank.

The **Scale to fill** option allows you to scale the image so that it covers the entire screen area at the current display resolution; this may distort the aspect ratio of the image.

**Ignore source pixel size** ignores any source information about the pixel size. This can be useful if you have images that use a non-standard pixel size. The pixels are all considered to be square.

**Ignore pixel aspect** ignores all the size information in the source file. Both source and output pixels are considered to be square.

**Lock picture aspect** prevents the Scale to fill and Custom options from changing the aspect ratio of the picture. This results in the image always fitting in the display screen area without it distorting the aspect ratio.

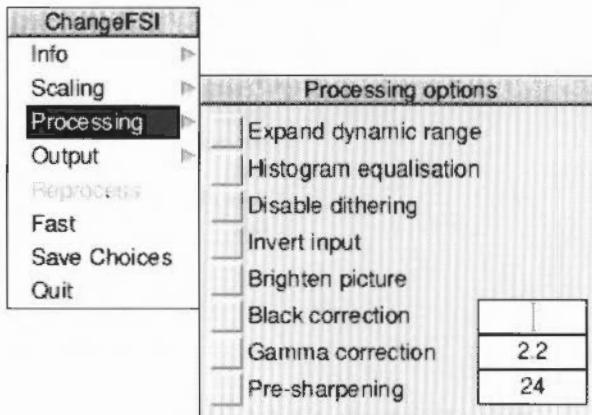
**Rotate** can shift the image through  $90^\circ$ . +90 being anticlockwise and -90 being clockwise.

**Mirror** performs left/right and up/down mirror operations on the image.

If you select Rotate and Mirror together, the rotation is performed before the mirror operation.

## Processing options

The Processing options allow you to control the image processing used in the conversion and display of the image.



You'll notice that all of these options are 'off' by default; you will not normally need to change these settings.

**Expand dynamic range** will expand the range of colours in the image. This normally brightens the image. It expands the dynamic range of a picture to full scale.

**Histogram equalisation** will most often result in a worse picture but it can be used to recover detail from an otherwise useless image. Alternatively you can use it to look at information locked in a small part of the input scale.

**Disable dithering** will disable Floyd-Steinberg dithering. This will usually result in an inferior image.

**Invert input** will result in your colour images having their colours inverted. Black and white images are also inverted.

**Brighten picture** will produce a picture that is slightly brighter than it should be. Useful if you have dark pictures. This option only works with monochrome pictures.

**Black correction** is useful if you want to print the image on a laser printer. You should use a number between zero and 128, though values between 32 and 64 usually give the best result; experiment. Images treated in this way will give a poor result when viewed on screen. This only works for 1bpp (black and white) output.

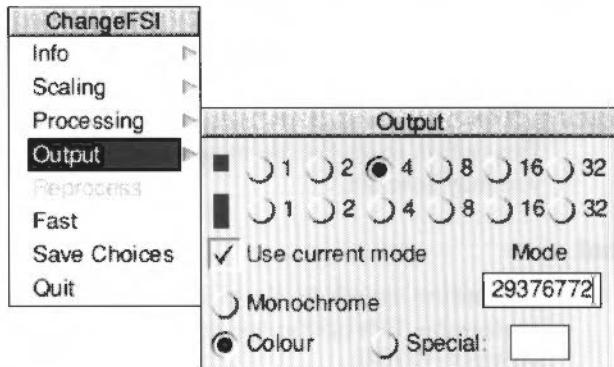
**Gamma correction** is used to correct the image quality as displayed on your monitor. Low values of gamma (0 to 1) make colours darker and high values (above 1) make them lighter. Gamma correction is most often used to correct images that have been scanned in with a scanner. Different monitors may need different Gamma Corrections. A standard value is 2.2 (TV industry standard).

**Pre-sharpening** is used to sharpen the edges of objects in the image. Values between 10 and 20 can be used to sharpen an image. Values between 20 and 30 can be used to compensate for the blurring introduced by the dithering process.

For example, a value of 24 will counteract the general dither blurring. A value of 20 is noticeably sharp. All values down to nine can be selected.

## Output options

The Output options control the screen mode the picture is created for.



The **1, 2, 4, 8, 16, 32** buttons represent the screen colours that you can use. The numbers are bits per pixel and correspond to the following colours:

- 32 bits represent 16 million colours
- 16 bits represent 32 thousand colours
- 8 bits represent 256 colours
- 4 bits represent 16 colours
- 2 bits represent 4 colours
- 1 bit represents 2 colours.

The square box represents the square pixel modes and the oblong box represents the non-square modes.

It is not possible to convert pictures to 16-bit and 24-bit grey scale pictures.

**Mode** number box is only used if you wish to convert the image to an 'old style sprite'. Enter a backward-compatible screen mode number and press return. An old style sprite is one that can be viewed on a computer running an earlier version of the operating system.

The mode number generated with new style screen displays has no significance.

If you want to type in a mode number make sure that the Use current mode option is not ticked.

**Use current mode** outputs the image for display in the current desktop Display manager mode.

**Monochrome** produces 1, 4, 8 or 16 greys for 1, 2, 4, and 8 bits per pixel respectively.

**Colour** gives an image in colour.

**Special** allows the use of special file suffixes. These are explained fully in the on-line documentation file *FSIInfo*.

### **Reprocess**

This option reads the file in again and processes it according to any new options you may have set.

### **Fast**

This option speeds up the processing of the image by blanking the screen during processing. This option has no effect if your computer is equipped with video memory (VRAM).

### **Save Choices**

This option will save any changes you have made to the ChangeFSI options so that you can use these options as your default options next time you run ChangeFSI.

### **Quit**

This quits the application, removing it from the icon bar.

## Image menu options

ChangeFSI	
Sprite Info	▶
Source Info	▶
Range Info	▶
Zoom	▶
Save Sprite	▶
Reprocess	

Once your image has been produced you can click Menu over the image to display a menu of information about the input and output images.

**Sprite Info** gives the information about the Sprite output file.

**Source Info** gives the information about the source file.

**Range Info** gives you information about the dynamic range of the image.

**Zoom** allows you to change the magnification of the image. This is not the same as scaling the source image.

**Save Sprite** allows you to save the image as a Sprite file.

**Reprocess** allows you to process the image again using any options you have changed on the main menu.

## Image file conversion

ChangeFSI will convert any of the following image formats into the RISC OS Sprite format. You can choose the type of RISC OS sprite that is created by choosing your options from the **Output** menu. If no special output mode is chosen, ChangeFSI produces a sprite that is compatible with the current display mode.

Image Type	File type/text contained in file
RISC OS 1, 2, 4 and 8 bit per pixel sprites	file type FF9
RISC OS 15 and 24 (32 bits) sprites	file type FF9
Watford digitiser pictures 512x256y64g and triple red, green, blue separations	file type DFA
ProArtisan compressed pictures 640x256y256c	directory of r,g,b DFA
TimeStep satellite image 800x800y256g	file type DE2
Degas P11, P12, P13 images	file type 7A0
!Translator Clear format	file type 691
CCIR 601 PAL image	file type 690
!RayShade 'RGB' image	file type 601
TimeStep satellite image 128x256y256g and triple red, green, blue separations	file type 371
AIM/Wild Vision Hawk V10 files 256x256y256g	file type 300
Wild Vision Hawk V12 512x512y256g	directory of r,g,b 300
	file type 004
	file type 006

<b>Image Type</b>	<b>File type/text contained in file</b>
Wild Vision Hawk V9 512x256y 12 bit colour	MercSoft
Wild Vision Hawk V9 512x256y 12 bit colour	SnapShot
TIFF pictures	II* or MM* (or file type FF0)
Electronic Art's IFF ILBM pictures	FORM ILBM
Sun 'pixrect' Raster Files	&956AA659
.PIC 8 bit per pixel files	AV_VO
RIX Softworks ColoRIX 8 bit per pixel files	RIX3
MILLIPEDE PRISMA 768x576y 8 bit colour images	MILLIPEDE
Compuserve's GIF files up to 8 bit per pixel	GIF87a
MacPaint files 576x720y 1 bit per pixel	PNTG
MacPICT2 v2 8 and 24/32 bits per pixel	00 11 02 FF 0C 00 FF FE
ZSoft .PCX files	10,1-5,1 or pcx
Windows 3 .BMP files	BM
ArVis 15 bit HIP.+LOP sprites	file type FF9 named HIP
Pineapple 16 bit per pixel image	FSIfile
FITS astronomical format	SIMPLE
GEM IMG. images	0,8,0,1 or named img
UNIX rle format	&CC52
Apollo GPR 16 colour image	0,1,0,1
PC EGA .DSP images 640x350y16c	named dsp. or /DSP
PC TGA images	name ends in TCA or VDA
Irlam Instruments 24 bit files	Irlam
Irlam Instruments YUV 411 files	IRLAM YUV 411
MTV 24 bit pic. images	named pic
QRT 24 bit .raw images	named .raw
RT 24 bit run length coded image. files	named image
JPEG "JFIF" file	JFIF
Portable bit map	P1,P2,P3,P4,P5 or P6 at start of file
ChangeFSI packed portable bitmap	P15 at start of file

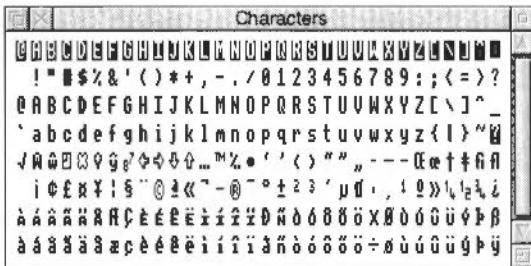


**C**hars is an application that enables you to use text characters that are available on your computer but that cannot be typed in easily using the keyboard.

### Starting Chars

To start the application:

- 1 Click on the Apps directory icon.
- 2 Double-click on the !Chars application icon. The application window appears on the desktop.



The Chars window shows the entire character set of the font. Control characters (outlined in black along the top row), standard characters and special extended characters not available on the keyboard.

You can use Chars to insert a character into any document, window or menu. For example, in an Edit window, in a 'menu item' (such as the **New directory** box or file **Rename** boxes), or in any text application.

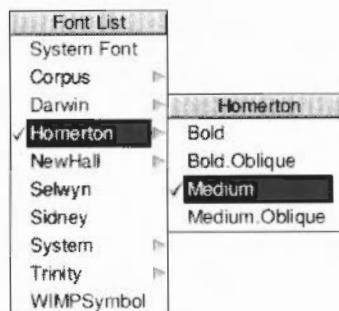
### Inserting a character

To insert a character into a window, click on it. It will appear at the caret position in the window you are currently typing in (the window with the light-coloured Title bar). For example, if you are using a word-processing package and want to put in a special character using !Chars, just click on the character in the !Chars window and it also appears in your word-processing document.

You can also insert a character by positioning the pointer over the Chars character you wish to use, and pressing Shift. Use this method if you want to use a character from Chars as part of a filename (by entering it into a **Save as** dialogue box) or as part of any other menu box. Clicking on the Chars character in the normal way would make the **Save as** box disappear.

## Using fonts with Chars

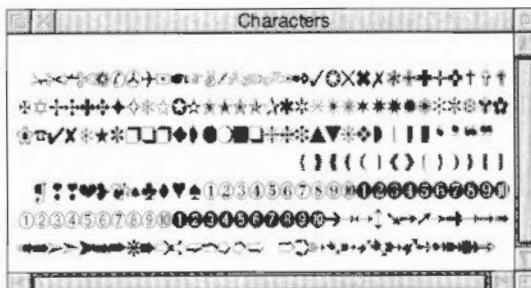
When you first run Chars, the font that appears is the System font. If you want to use a different font, press Menu on the Chars window. This displays a menu list of all the currently-available fonts; choose the one you want to use. The characters for that font will appear in the Chars window.



You will also need to select the corresponding font in the application you are using, otherwise the characters you choose appear in the font in use around the caret. For example, suppose the caret is in the middle of a text line displayed in Trinity Medium. Even if you display the Selwyn font in your Chars window, any characters you select from Chars will appear in the corresponding Trinity Medium form, rather than in Selwyn.

### Symbol fonts

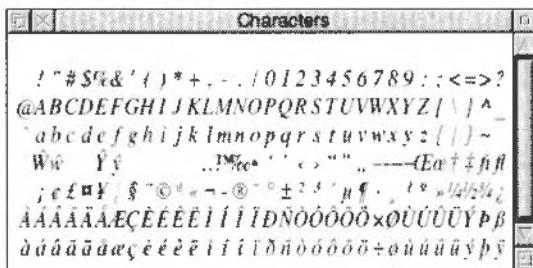
The Chars application is especially useful in allowing you to insert symbol characters into your documents. Here is !Chars displaying the Selwyn font:



## Using an outline desktop font

If you are using the one of the outline fonts as your desktop font you should make sure that when you insert Chars characters that the Chars display also uses the same outline font. If you don't you may find that the character you choose is not the same as the one entered in the menu box. It is recommended that you only use the fonts Homerton Medium or System as desktop fonts.

Here is !Chars displaying the Trinity.Medium.Italic font:



## Entering control codes

With the system font only, characters shown in inverse video correspond to control characters. For example, clicking on inverse L is the same as typing Ctrl-L.

## Alt key-numeric keypad combinations

The characters entered using !Chars can also be entered using Alt+numeric keypad combinations. To enter a character using the numeric keypad, hold down the Alt key, type the number on the numeric keypad, then release Alt. The numbers map to letters in the Latin 1 alphabet (or whatever alphabet is active in the computer). For example, Alt 64 will enter the @ character.

The codes for the Latin 1 alphabet are listed in *Character sets* on page 533.





**C**loseUp is a magnifying glass, it displays a magnifying window on the screen which allows you examine portions of the desktop in greater detail.

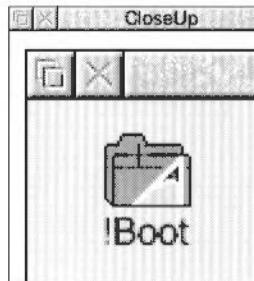
## Starting CloseUp

To start the application:



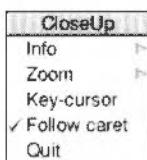
- 1 Click on the Apps directory icon.
- 2 Double-click on the !CloseUp application icon to load the application. The application icon appears on the icon bar.

Click on the CloseUp icon on the icon bar icon to start the magnifier. You will see the magnifier on the screen. The CloseUp window simply shows a magnified portion of the desktop that is currently under the pointer. Move the pointer to see another areas of the screen.



## CloseUp options

Click Menu on the CloseUp icon bar icon to display the following options:



### Info

This gives some information about the software.

### Zoom

This allows the user to choose the enlargement ratio that will be displayed in the magnifier window. For example, a setting of 4:1 will ensure that the picture in the magnifier window is four times the size of the original.

**Key-cursor**

This option lets you move the pointer around the screen using the cursor keys as well as the mouse. Anything under the pointer is shown magnified in the CloseUp window. This only operates if none of the windows on the desktop currently use the cursor; for example, you can't have an active Edit window.

**Follow caret**

If this option is ticked, and there is an application that uses a caret on the screen, for example Edit, the area around the cursor is magnified. The magnified area follows the caret position as you type so that the letters you type in are shown magnified.

If the option is not ticked, the magnifying window will show the area that is around the pointer position.

**Quit**

This will remove the program from the icon bar and the CloseUp box from the desktop if it is being displayed.



This application allows you to download fonts to a PostScript printer or to map Acorn fonts to PostScript fonts on the PostScript printer. Once downloaded the fonts stay in the printer until you reset or switch off the printer.

**If you don't print to a PostScript printer you don't need to use this application.**

Dot-matrix, LaserJet and InkJet printers use RISC OS fonts both for displaying text on screen and for printing. PostScript printers use PostScript fonts that are stored in the printer for printing.

When you print to a PostScript printer, the Printer manager has to make sure that for each RISC OS font used there is an equivalent or suitable PostScript font available in the printer.

FontPrint is a tool for configuring this aspect of PostScript printing. It allows you to tell the Printer manager what PostScript fonts are present in the printer and how your RISC OS fonts correspond to those in the printer.

It is important to understand that even if you don't use this application, RISC OS and the Printer manager will always try to print your documents correctly. Any fonts that are not available in the printer will be downloaded within the print job as required.

Using FontPrint will make the potentially slow printing process as fast as possible.

## Starting the application

Before running FontPrint you must have the Printer manager application Printers loaded onto the icon bar. The Printer manager must also be active and configured with the correct printer driver for your PostScript printer.

To start the application:



- 1 Click on the hard disc icon to view the directory display.
- 2 Double-click on the Printing directory icon to display the contents of the Printing directory.
- 3 Double-click on the !FontPrint application to start the application. The application icon appears on the icon bar.
- 4 To start using the application, click on the FontPrint icon on the icon bar.

## Downloading and mapping

The Printer manager makes RISC OS fonts available to the printer in one of two ways.

### Mapping

The first, preferred, way is to map the RISC OS font to a PostScript font that is already resident in the printer's ROM. The Printer manager instructs the printer to substitute fonts; for example, whenever the print job uses Corpus, the printer substitutes Courier. This technique is particularly useful for the standard RISC OS font families Corpus, NewHall, Selwyn, Sidney, Trinity and Homerton because they are visually close copies of the standard PostScript font families Courier, New Century Schoolbook, ZapfDingbats, Symbol, Times and Helvetica.

### Downloading

The second way is to download the font into the printer. The Printer manager converts the RISC OS font into PostScript and sends this to the printer. The print job may then use the font as if it were stored in the printer. The disadvantage of downloading is that fonts are large; they take a long time to send to the printer and occupy a lot of the printer's memory.

Downloading normally happens automatically during the print job, and fonts downloaded in this way are erased from the printer's memory at the end of the job. When a particular font is needed frequently, you may find it worthwhile to download it permanently into the printer. Permanently means it stays in the printer's memory between print jobs until the printer is switched off; the font downloaded is available to all subsequent print jobs without the overhead of downloading it each time.

The Printer manager re-sends the permanently downloaded fonts each time it is started.

### **FontPrint is in control**

FontPrint gives you control of three aspects of the printing process. It lets you specify which fonts are resident in the printer's ROM, how RISC OS fonts are to be mapped to the resident fonts, and which RISC OS fonts you want to have permanently downloaded.

It is not essential to download fonts permanently in order to print them; any fonts that are neither mapped nor permanently downloaded will be temporarily downloaded whenever a print job asks to use them. However, using a mapped or permanently downloaded font is much faster.

## Mapping fonts

The standard set of RISC OS fonts are mapped to PostScript fonts. You can map additional RISC OS fonts you have purchased to the same, or other PostScript fonts. This gives the most efficient way of printing with your fonts, but may give results that differ slightly from those on-screen due to slight variations in the design of RISC OS and PostScript fonts.

### To map an Acorn font to a PostScript font:

- 1 Load FontPrint and display the FontPrint window.

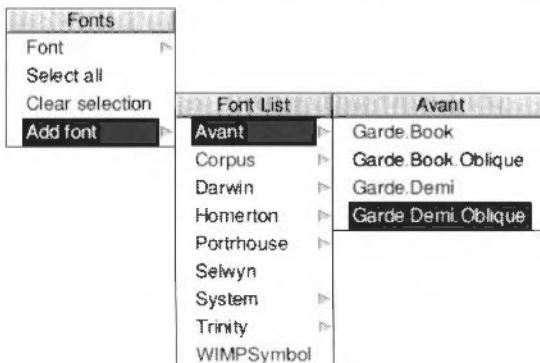
The window displays lines consisting of the RISC OS font name on the left and the equivalent PostScript font name on the right.

The screenshot shows the FontPrint application window titled "Printer: LW II NTX". The window has two columns: "Printer type" on the left and "Apple LaserWriter II NTX" on the right. A vertical scroll bar is on the right side of the window. The mapping table lists 16 pairs of font names:

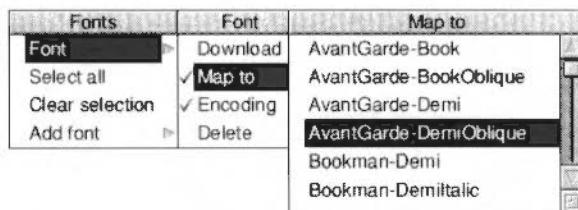
Printer type	Apple LaserWriter II NTX
Clare.Medium	Map to AvantGarde-Book
Clare.Medium.Oblique	Map to AvantGarde-Book.Oblique
Clare.Demi	Map to AvantGarde-Demi
Clare.Demi.Oblique	Map to AvantGarde-Demi.Oblique
Robinson.Demi	Map to Bookman-Demi
Robinson.Demi.Italic	Map to Bookman-Demitalic
Robinson.Light	Map to Bookman-Light
Robinson.Light.Italic	Map to Bookman-LightItalic
Corpus.Medium	Map to Courier
Corpus.Bold	Map to Courier-Bold
Corpus.Bold.Oblique	Map to Courier-BoldOblique
Corpus.Medium.Oblique	Map to Courier-Oblique

At the bottom of the window are "Defaults" and "Save" buttons.

- 2 Click Menu over the window to display the **Fonts** menu.
- 3 If the RISC OS fonts you wish to map are not already shown, select the fonts that you wish to map to PostScript fonts from the **Add font** submenu. They will be added to the FontPrint window at the end of the list.



- 4 Choose each font in turn and map it to the corresponding PostScript font using the **Font/Map to** submenu. The **Map to** menu lists the fonts available on the printer.



- 5 When you have finished mapping the fonts, click on the **Save** box. This saves the font mapping within the Printer manager. The Printer manager will now use this information to map fonts in your documents to those in your printer. Each time !Printers is started this font mapping information is sent to the printer.

#### Mapping to a non-standard PostScript font

If you wish to map to an additional PostScript font which is resident in the printer (you may have an additional font cartridge for the printer), but which is not in the standard list of fonts in the printer driver, you can add this additional PostScript name in the field at the end of the **Map to** sub-menu. Repeat this for each PostScript name you wish to add.

#### Choosing the encoding type

If you are mapping fonts, you can also choose **Encoding** from the **Font** menu. The encoding type determines the character set used by the PostScript printer. Most fonts will use the Adobe standard encoding; this is the default encoding.

## Downloading fonts

PostScript printers use RISC OS fonts for displaying text on screen and use PostScript fonts for printing. These PostScript fonts can be either built into the printer or downloaded by the computer.

Whenever you send a file to the printer, the Printer manager automatically goes through the following procedure:

- 1 Identifies any true PostScript fonts (stored in the computer) that are needed.
- 2 Converts (or maps) any Acorn fonts needed to PostScript fonts.
- 3 Sends the PostScript fonts to the printer.
- 4 Sends the file to be printed.

- 5 After the file is printed, the fonts are erased from the printer's memory.

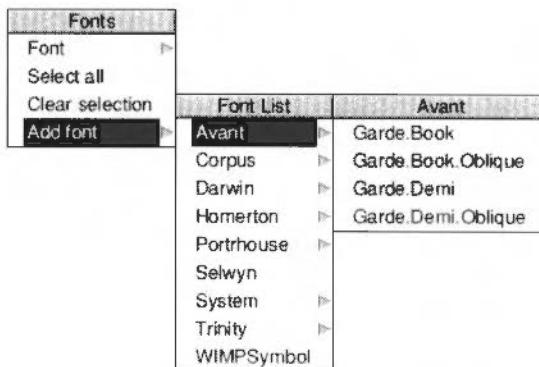
The Printer manager uses the printer's built-in PostScript fonts when they are available, speeding up printing considerably.

If you constantly use fonts that are not resident inside the PostScript printer, you may find that your files print faster if you pre-send (download permanently) the fonts when you first start using the Printer manager. Permanently downloaded fonts stay inside the printer, ready for use, until the printer is reset or switched off.

## Downloading fonts 'permanently'

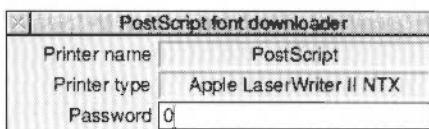
To prepare fonts for downloading:

- 1 Click Select on the FontPrint icon to display the FontPrint window.
- 2 Click Menu over the window to display the **F**onts menu.
- 3 Select the Acorn fonts that you wish to download by choosing the fonts from the **Add font** submenu. They will be added to the FontPrint window at the end of the list.



- 4 When you have selected the fonts you wish to download, click on the **Save** box. This saves the download information within the Printer manager.
- 5 The PostScript font Password box is displayed. You should now type in the password for your printer. Unless the password has been changed, the printer will have the password '0' (the number zero).

The fonts are only be downloaded if you type in the correct password. If you enter the wrong password, FontPrint still attempts to download the fonts but if the download fails and the printer may issue an error message.



When you clicked on the **Save** box you stored the information about which fonts you wanted downloaded. The Printer manager downloads the chosen fonts to the printer whenever the Printer manager is started. The password box will be displayed each time you start using the Printer manager.

Clicking on the **Default** button automatically loads the default PostScript Mappings. Any Mappings or Downloading that you have previously set up are lost.

## **Downloading fonts to a network printer server**

Since a network printer is a shared resource, excessive use of permanent font downloading can inconvenience other users. To avoid this, it is suggested that only one machine on the network should be responsible for permanently downloading fonts.

Other machines may then map to the downloaded fonts as if they were ROM fonts within the printer. This is possible because you can identify the PostScript name under which the downloaded font is stored. The downloaded name is the RISC OS font name prefixed by the letters 'DL\_'. for example, if one machine has downloaded the RISC OS font called "Futura.Bold", it will be stored in the printer as the PostScript font "DL\_Futura.Bold". Other machines wanting to print this font can use FontPrint to map "Futura.Bold" to "DL\_Futura.Bold". Be careful to preserve the capitalisation of the font name. If the printer is switched off and on, the font will be lost. In this case, exit and re-start !Printers on the machine responsible for downloading and the fonts will be downloaded again

### **Bitmap fonts**

Bitmap fonts, such as Portrhous, cannot be downloaded to a PostScript printer; however, they can be mapped to one of the printer's resident fonts.

## **Advanced information**

To avoid the overhead of downloading every font you use, the printer driver uses the fonts built into the PostScript device when possible. To do this, the printer driver has a list describing which PostScript fonts are visually similar to which RISC OS fonts.

This list is set up automatically when you initialise a new printer, and you can subsequently change it using !FontPrint.

Although a PostScript font might look very similar to a particular RISC OS font, the various glyphs can occupy different character codes, with the result that characters are jumbled when the font is printed.

A mechanism called 'remapping' is used to reorder the PostScript font so that the characters occupy the expected positions. The remapping is performed according to a textual description known as an 'encoding'.

### **Mapping symbol fonts**

For symbol fonts, their mapping depends on the availability of an appropriate encoding file. The encoding tells the system which PostScript glyph to render for each ASCII character code.

The encoding file should be given the name Encoding and placed in the same directory as the font's Outlines and IntMetrics files. If you need an encoding file for a third party font, contact your vendor.

An encoding file should contain exactly 256 lines of the form

/glyphname

where a glyph called /glyphname is known to exist in the printer font.  
Non-existent glyphs should be entered as /.notdef.

If a particular glyph name is the Nth entry in the encoding file, then that glyph will be rendered for character code N.

For details about how to construct your own encoding files refer to the RISC OS 3 *Programmer's Reference Manual*.





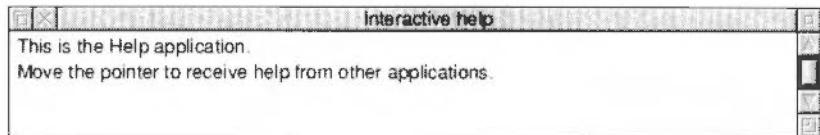
The Help application is a program that displays information about applications whilst they are working, and about the desktop generally. When you first use an application, you may find it useful to have !Help present.

## Starting Help

To start the application:



- 1 Click on the Apps directory icon.
- 2 Double-click on the !Help icon to start the application. The Help icon appears on the icon bar and the help window opens.

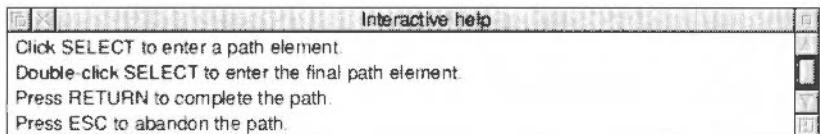


## What's in the Help window

The window contains concise help information about the desktop. Whenever you can't remember what an icon means or what an option does, use Help. Just move the pointer over the part of the desktop that you want help about, and the help text appears in the help window.

As you move the mouse to a different part of the desktop or application, the help information changes. You can get help with windows, icons, menu options and dialogue boxes.

For example here is the help you get when you move the pointer over part of the !Draw window.



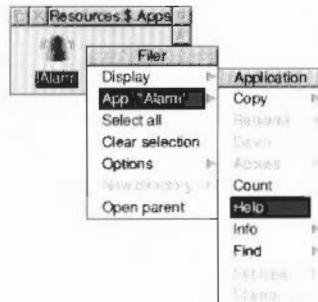
You can close the interactive help window by clicking on the window's Close icon. To display the help window again, just click Select on the Help icon on the icon bar. To close down Help altogether, choose **Quit** from the Help icon bar menu.

## Other help information

There are several other ways to get help information about the desktop and applications:

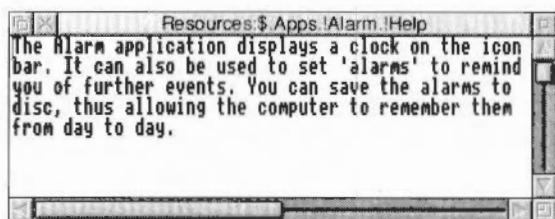
### Help information from applications

On the main **Filer/Application** submenu there is a **Help** option. Click on this to obtain helpful information about an application. This option cannot be chosen if the application does not have a help file.



choose **Help ...**

... Help window for this application is displayed



## Help on command line \*Commands

If you want to find out about a particular \*command, start a Task Window by choosing the **Task Window** option from the Task manager icon bar menu.

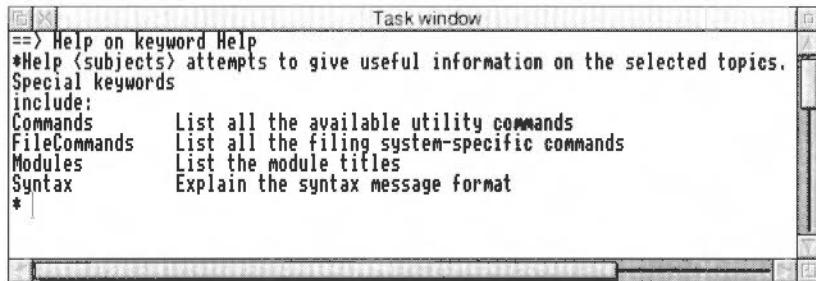
Type Help followed by the command that you need help for; for example:

\*Help Format

You can get help for a series of commands of the same name by using a dot as a wildcard character. Try

\*Help F.

The following example shows help for the keyword Help.



If you want to find help on many aspects of the system, try the following:

*Help Commands	lists all the available utility commands
*Help FileCommands	lists all the commands relating to filing systems
*Help Modules	lists the names of all currently loaded modules, with their version numbers and creation dates
*Help Station	displays the current network and station numbers of your machine
*Help Syntax	explains the format used for syntax messages

For more information about using Help on the command line, see the section *Getting Help* on page 416.





This application is used to format or initialise the hard disc in your computer.  
Most users will not need to use this application.

The hard disc inside your computer is supplied already formatted and loaded with the standard RISC OS applications. You will only need to use this application if you purchase an additional hard disc for your computer that has not already been formatted, or if that disc in your computer has developed a problem that can only be solved by formatting.

HForm is used to format drive that use the IDE interface. If you have a drive that uses the SCSI interface, refer to the guide supplied with your SCSI Expansion Card. This computer does not support ST506 disc drives.

**WARNING:** Formatting your hard disc will permanently remove all data stored on the disc. It is essential that all the data and applications that you wish to keep are copied to floppy discs (or otherwise backed up) before the disc is reformatted.

## Starting the application

To start the application:



- 1 Click on the hard disc icon to display the root directory.
- 2 Double-click on the Utilities directory icon to display the Utilities directory.
- 3 Double-click on the !HForm application to start the application. The application starts immediately.

You should also keep a spare copy of !HForm on floppy disc in case your hard disc becomes unusable.

## Formatting your existing hard disc

**WARNING:** Reformating your hard disc will permanently remove all data stored on the disc. It is essential that data you wish to keep is copied to a floppy disc (or otherwise backed up) before the disc is reformatted.

In the following instructions it is assumed that you have to reformat your existing hard disc because of repeated hard disc errors. In order to carry out the reformatting successfully you should have a record of the disc errors which have occurred and their addresses.

**HForm allows you to leave the program at any time before you start formatting by pressing the Escape key.** Additionally, at the end of the Format options you will be asked if you want to proceed with the formatting; answer NO and HForm will quit without formatting your disc.

## Formatting the hard disc

- 1 Double-click on the HForm application.
- 2 HForm prompts you as follows:

HARD DISC FORMATTER

Format which drive (4 ~ 7)? **4** (press Return)

The internally fitted hard disc drive is numbered 4, while a subsequent hard disc drives would be numbered 5. If you want to accept the default drive number 4, press Return, otherwise type the desired number and press Return.

HForm checks the type of hard disc and displays the following or a similar message:

Drive 4 is an IDE drive

IDE drive ADFS:4 identifies itself as:

Description :

Firmware version :

Configuration :

This disc was last formatted using the standard shape:

You do not need to know the manufacturer of your hard disc or its specifications, since you can just accept all the defaults offered.

- 3 To continue with the formatting, type Y and press Return.

Do you wish to use this shape (Y/N)? **Y**

If you want to use a different drive shape turn to *Changing the hard disc shape* on page 366.

HForm now gives you the following choices:

A: no more changes

B: add defect by cylinder, head, byte/sector

C: add defect by disc address

D: remove defect

A, B, C or D? **A**

If you want to add some defects see *Recording a list of hard disc defects* on page 366.

- 4 If you are simply formatting a disc, type A for the formatting to continue.

Disc will be formatted as:

- 5 You will now be asked if you want to:

Format or just initialise the drive (F/I)? **F**

To continue with the format type F.

If you are reformatting an existing hard disc, just initialising the disc is sufficient. You only need to format the disc if it has never been formatted before, or if it was previously formatted using the wrong parameters.

- 6 At this stage you will be asked if you want to carry out a soak test. Soak testing repeatedly formats and checks the disc. It can be used to check that the state of the defects on the disc is stable.

Soak test the hard disc for defects (Long/Short/None) ? **L**

If you want to carry out a soak test, type in either L or S and press Return.

L is the long test; the disc is continuously tested until you press the Space bar.

S is the short test, which is just one scan of the disc, lasting a few minutes.

If you don't want to soak test, type in N and press Return.

- 7 This is followed by a further prompt:

Are you SURE you want to do this to drive < > (Y/N) ? **Y**

Type Y and press Return to start the format or initialisation.

- 8 If you specified the long soak test, the test continues until you press the Space bar. It is recommended that you carry out the soak test for at least 24 hours.

If you do not perform a soak test, and if the verification process detects any additional defects, HFORM will then repeat the formatting and verification process in order to include the new defects. It will display the messages Formatting and Verifying as it does so.

- 9 The final prompt is

Large file allocation unit? 512

Press Return to accept this default.

If you expect to use the disc for a very large number (several thousand) of small files, type 256 in response to this prompt. Other values can also be used.

The formatting process is now complete.

## Recording a list of hard disc defects

A defect is a fault that has been detected in part of the disc. The following process marks the defective part of the disc, so that the defective part is no longer used.

HFORM lists the current defects (if any) on the hard disc and invites you to change the list by adding any new defects that you may have discovered. You may wish to add a new defect because ADFS has previously returned an error message, such as:

Disc error 10 at :4/0083!E00

You should make a note of any errors of this type that the computer reports.

- 1 To record a single defect on the defect list, select option C. Multiple errors can be added in any order.
- 2 Type in the defect address exactly as it appeared in the disc error message, but omit the colon.
- 3 When you have entered all the defects you wish to, select option A.

## Changing the hard disc shape

HForm prompts you to confirm the name of the disc in your computer. The application gets this information from the previous format type; you do not need to know the manufacturer of your hard disc.

However, it may be necessary to change the specifications of the hard disc format used (known as the shape). For example:

- If you are adding a new hard disc.
- If the hard disc has not yet been formatted.
- If the information on the hard disc has been corrupted or is incorrect.

If you want to change the disc shape you can answer NO to the question:

Do you wish to use this shape (Y/N)? **N**

You will be presented with a list of alternative shapes to choose from. If you don't want to use any of these shapes use OTHER. You will have to enter the formatting specifications you require. Consult the manual accompanying your hard disc for its precise specifications or contact your supplier for details.



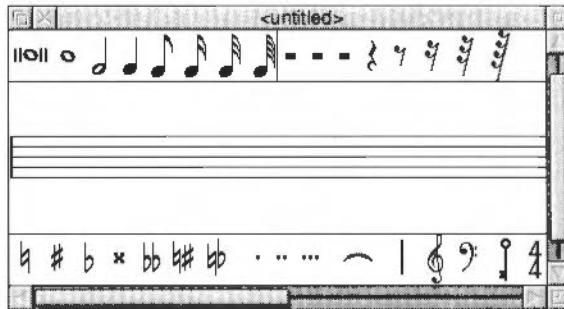
**M**aestro enables you to transcribe music in standard musical notation and play it through the computer's own sound system; it also provides some simple editing facilities. The chapter assumes that you are familiar with the basic ideas of musical notation.

## Starting Maestro

To start the application:



- 1 Click on the Apps directory icon on the icon bar.
- 2 Double-click on the !Maestro application. The application icon appears on the icon bar.
- 3 Click on this icon to display the Maestro window.



## Playing a tune

The best way to get started with Maestro is to load one of the tunes supplied as part of the Applications Suite. To do this, double-click on one of the tune icons in the **Tunes** directory, or drag it onto the Maestro icon on the icon bar.

The window that appears looks like this:



The Maestro window is divided into three horizontal panels, with the stave in the centre. Scrolling affects only the central panel. Above and below the stave are toolboxes containing icons for notes, rests, clefs and other symbols.

To play the tune, click Menu to open the main Maestro menu. Click Select on **Play** to start the music. As the music plays, the score scrolls across the screen. Click **Play** again to stop the tune: another bar or so will play before it actually stops. To return to the beginning of the score, use the horizontal scroll bar.

Before setting up your own score, try out the following editing procedures on one of the tunes supplied on the disc.

## **Editing the score**

### **Adding and deleting notes and rests**

To add a note or rest, select the value you want by clicking on its icon in the pane above or below the score. The selected item will appear with a frame around it, and when you move the pointer onto the score window, a 'trial icon' appears, which moves around as you move the pointer. When the item is in the position you want, click Select. To get rid of the trial icon without adding a note or rest to the score and without selecting an alternative trial icon, press Menu, move the pointer off the Menu and press Select.

Notes may be placed anywhere; above and below each stave they will create their own ledger-lines. In the case of notes with stems, the stem trails behind the trial icon: if the pointer is moved downwards, the stem will be above the note; if upwards, the stem will be below the note.

Rests will appear only in their valid positions, in the centre of the stave.

To delete a note or rest, select the icon for the same value, and position the trial icon exactly over the item you wish to remove (it doesn't matter whether the stem goes the same way or not). When it is in the right place, the trial icon will appear to blot out the original item. Click Select and the item will be deleted.

### Adding dots, accidentals, bars and ties

Select a lengthening dot in exactly the same way as a note or rest. Move the pointer over the note you wish to lengthen and click Select. To delete a dotted note, you do not have to delete the dot separately: delete the note and the dot will disappear too.

Select and place accidentals, bars and ties in the same way: like notes and rests, they will appear only in valid positions. A bar will be inserted across all the staves in the score when you click on one of them.

The tie character is of a fixed length, but when placed between notes of the same pitch, a single note will sound, with a duration equal to the two notes added together.

### Adding clefs and key and time signatures

Clefs may be selected and placed like other items: they will appear only at the beginning of a bar.

Key and time signatures must be selected before they are positioned on the score. This is done using the Maestro menu, and the process is described in the appropriate section below.

## The Maestro menu

Maestro	
Save	▶
File	▶
Print	▶
Clear	▶
Staves	▶
Instruments	▶
Volume	▶
Tempo	▶
Time sig	▶
Key sig.	▶
Goto	▶
Play	▶

As in any application, clicking Menu on the Maestro window will display the top-level menu.

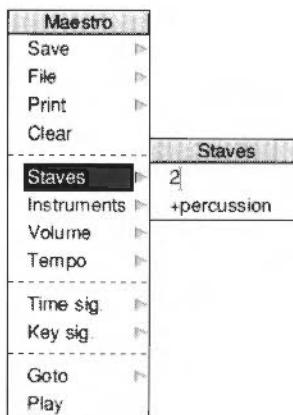
The **Save** procedure is exactly the same as for other applications such as Edit or Draw. Save a score by dragging the Maestro icon into the directory window where you want to save it, or by typing in the full pathname and clicking on **OK**.

**File** gives you some information about the file you are working on.

**Print** allows you to print your score on the printer.

**Clear** removes the current score from the stave but leaves the Maestro window on the screen.

**Staves** displays a box where you can enter the numbers 1, 2, 3 or 4 (others are not accepted), and an option **+percussion**. Clicking on this option will add a single line percussion stave; when it is selected, the menu item is ticked. Click on it again to remove the percussion stave.



**Instruments** presents you with a full window containing a line for each voice on each normal stave you have selected, and a single line for the percussion stave (if selected). If you click on **Instruments**, the window will stay on the screen. There is a maximum of eight voices: if you have selected more than two staves, they will be distributed roughly equally between staves. You can scroll this window vertically in the normal way. The following properties can be set for each voice:

- **Voice** – Repeated clicking of Adjust takes you through the instruments available. Select takes you backwards through the options available.
- **Volume** – The volume of each voice can be set separately. Click Select to reduce the volume by one 'notch' and Adjust to increase it. To set the overall volume, use the **Volume** option on the main Maestro menu.
- **Stereo** – The position of each voice can be changed independently to any one of seven positions, so as to create a spread or stereo image when the music is played through more than one speaker. Click Select to move the voice to the left and Adjust to move it to the right.

If you have installed a MIDI expansion card in your computer, the **Instruments** box will have an extra column headed **MIDI**. The line for each instrument contains a figure 1 by default, indicating that it will play on MIDI channel number 1. Click on this number to change the channel number for each instrument. In addition, when

a MIDI card is installed a **MIDI only** entry is added to the set of voices that appears when you click on the voice entry; choose this entry to prevent any sound being played through the computer's own speaker(s).

The screenshot shows the Maestro software window. On the left is a vertical menu bar with options: Maestro, Save, File, Print, Clear, Staves, Instruments, Volume, Tempo, Time sig., Key sig., Goto, and Play. The 'Instruments' option is highlighted. To the right of the menu is a table titled 'Instruments' with the following data:

Stave	Voice	Volume	Stereo
1st stave	StringLib-Steel	ff	Centre L.
1st stave	StringLib-Hard	ff	Centre
1st stave	StringLib-Hard	ff	Centre
1st stave	StringLib-Hard	ff	Full L.
2nd stave	StringLib-Hard	ff	Right
2nd stave	StringLib-Pluck	ff	Full R.
2nd stave	StringLib-Soft	ff	Right
2nd stave	StringLib-Soft	fff	Centre

**Volume** enables you to set the overall volume on a scale from ppp to fff.

**Tempo** allows you to set the tempo on a scale from largissimo to prestissimo.

**Time signature** presents you with a small box containing a time signature.

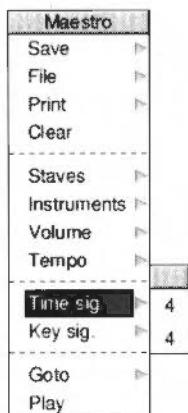
Position the pointer over the upper number; successive clicks cycle the values from 2 to 16. The lower number can take values of 2, 4, 8 and 16 only.

To assign a time signature to a score (or to add a new time signature in the middle of a score):

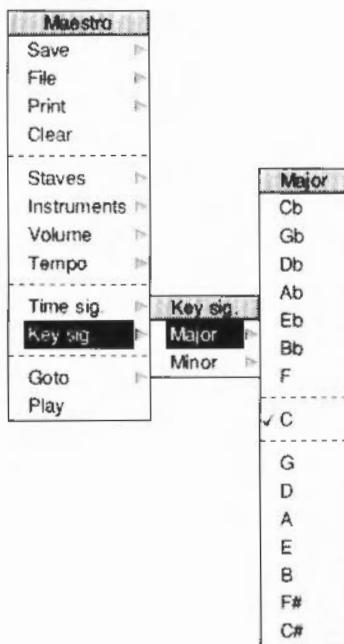
- 1 Make your choice using the Maestro menu.
- 2 Choose the '4/4' icon from the Maestro window.
- 3 Position the pointer where you want the time signature to appear.
- 4 Click Select.

The selected time signature will appear on all staves.

To delete a time signature, select the 4/4 icon, move the pointer onto the time signature and click Select.



The **Key signature** menu tree is displayed by choosing the **Key sig.** option.



The **Key signature** menu tree first asks you to choose between major and minor keys. Taking the major path offers you a set of key signatures with C at the centre. 'flat' key signatures grouped above and 'sharp' signatures below. For minor keys, A is at the centre.

To place a key signature at the beginning of a score, or at the beginning of a bar:

- 1 Make your choice using the Maestro menu.
- 2 Choose the 'key' icon from the Maestro window (the trial icon will appear in the form of the selected key signature).
- 3 Position the pointer where you want the key signature to appear.
- 4 Click Select.

The selected key signature will appear on all staves.

To delete a key signature, select the key icon, move the pointer onto the key signature and click Select.

**Goto** presents you with a box into which you type the number of the bar you wish to move to.

**Play** starts the tune playing from the point displayed on the screen. To stop, click on **Play** again.

## Setting up your own score

The preceding description of the Maestro menu options gives you the information you need to set up your own score. However, for the sake of clarity, the following section sets out the steps to take in their most convenient order (though they can all be changed at any time). The menu options are shown in bold type.

- 1 Choose the **Staves** you want.
- 2 Choose your **Instruments**, and their volume and position.
- 3 Select your **Key signature**, and place it on the score by selecting the key icon and dragging it into place.
- 4 Select your **Time Signature**, and place it on the score by selecting the 4/4 icon and dragging it into place.
- 5 Choose the **Volume** and **Tempo** you want.

You are now ready to start placing notes on the staves.

## Some tips

If you copy a piece of music from a written score it will occasionally need some minor modifications to play correctly.

### Fugues

In fugues scored for the keyboard, several distinct parts may be written on one stave. In the following example from a Shostakovich fugue, bar 20 contains a semibreve G belonging to the top part, and in the second half of the bar, two crotchets belonging to the middle part, which had started bar 20 in the bass stave.



Maestro tries to play these three notes in succession, not understanding that the first crotchet should start half way through the semibreve. Since the semibreve is long enough to complete the bar by itself, the two crotchets are lost. The solution is to write the top line like this:



This indicates to Maestro that the crotchet E starts half way through the bar. Problems of this type can generally be resolved by splitting notes into shorter notes tied together.

Note also that Maestro does not allow two rests in the same time slot on one stave, as is sometimes done in fugues to indicate that two parts are silent.

### **Staccato**

To achieve the effect of staccato, shorten the note value and make up the difference with a rest.

### **Grace notes and trills**

These are not implemented as such, but the effect can be achieved by entering notes of the appropriate small duration, and deducting their value either from the note they would normally be attached to (for an appoggiatura) or from the preceding note (for an acciaccatura). Very effective trills can be produced using an elaborated form of the same method.

## **Maestro's use of memory**

Maestro cannot extend its memory slot once it has started up. It therefore takes at least 256K, to allow for the editing of long transcriptions. However, if the Next slot in the Task manager is set to more than 256K, Maestro will use up all the space in Next. Since this may be more than you need, you can use the Task manager (described in the chapter *Managing the desktop* on page 103) to reduce Next to 256K, before loading Maestro.



This version of Patience is probably the best-known version of the familiar solo card game.

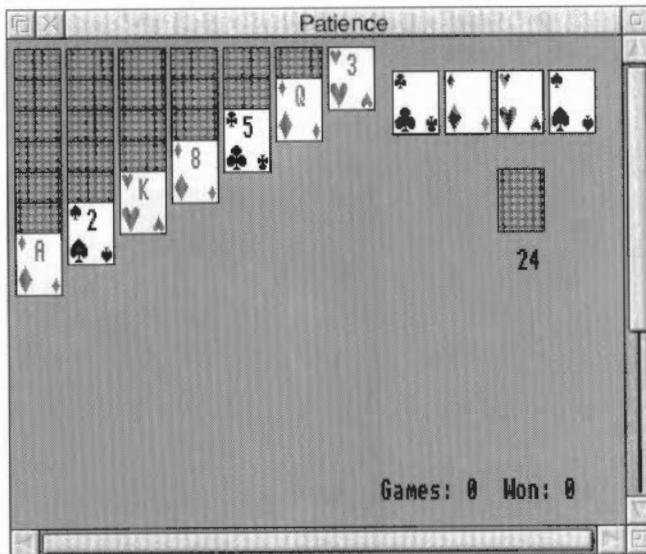
### Starting Patience

To start the application:



- 1 Click on the hard disc icon to display the root directory.
- 2 Double-click on the Diversions directory icon to display the Diversions directory.
- 3 Double-click on the !Patience application to start the application. The application icon appears on the icon bar.

To start the game, click on the Patience icon on the menu bar. The Patience window appears on the screen, displaying a window similar to this:

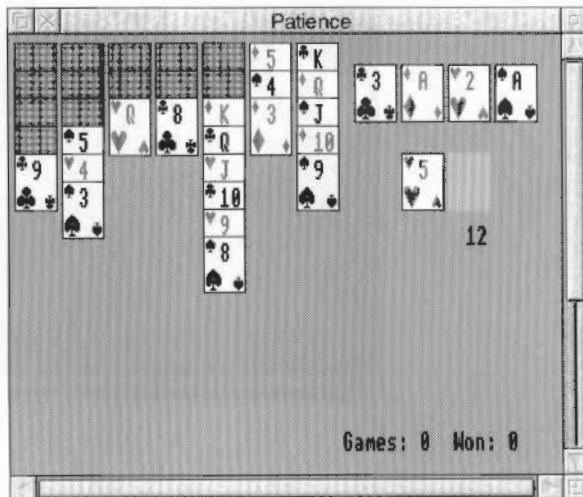


There are seven columns of cards, with the bottom card in each column turned up. The columns range in length from seven cards (on the left) to one (on the right). The rest of the pack is in a face-down 'pile' on the righthand side of the screen. A number below the pile tells you how many cards are face down. At the top righthand corner of the screen are four card outlines, each marked with the symbol for one of the suits.

## The rules

The object of the game is to place all four suits on top of their symbols in ascending order, starting with the ace and finishing with the king. To do this, you must reveal all the hidden cards by going through the pack and building chains of cards. Here are the basic rules:

- The chains you build downwards from each column must be in descending order (king, queen, jack, ten, nine, eight, seven, and so on) and must alternate between red and black suits (ten of hearts, nine of spades, eight of diamonds, seven of spades, for example). If you try to place a card incorrectly, the computer will refuse to move the card.
- When you move the top card from one column to another, the next hidden card is automatically turned up. You can move all or part of a chain to another column.
- There are only seven columns allowed in the game. If you have used up all the cards in one column you can only start a new column with a king.
- Once you have placed a card on one of the suit symbols (in ascending order) at the top righthand corner of the screen it cannot be taken off again.



## Playing Patience

To play the game, proceed as follows:

- 1 Look at the cards which are revealed at the bottom of each column. If a card can be moved, use the mouse pointer to drag it to the correct place. When you release the button, the card will be in its new place and the next card turned up in the column where it came from. Continue this procedure until you have no more cards that can be moved.
- 2 Click on the pile of cards on the right, to reveal the next card (every third card in the pile is turned over). If you can use it, drag the card to the appropriate column. You may now be able to move one or more cards from one column to another. If you can't, click on the pile of cards again. If you can't use a card, continue clicking on the pack until one is revealed that you can use. When you use a card from the pack, the card beneath it is again revealed.
- 3 As soon as an ace is revealed, drag it to its place at the top righthand corner of the screen (alternatively, clicking Adjust on a card that can be added to one of these stacks automatically moves it to the correct stack). You can then start building (in ascending order from ace to king) as the cards that follow come up.
- 4 Continue going through the pack and moving cards. The number of cards left in the pack will continue to be indicated by the number below it. A grey rectangle indicates that you have gone through the pack once; click on it to go round again.
- 5 If you can't go any further and want to see where the hidden cards were, click Menu and choose **Resign**. If there are any cards left in the pack, you can see what they are by clicking on the pack; this will display each card in turn.

If you want to start a new game, choose **Deal hand** from the menu. If you do not wish to continue playing Patience, click on the Close box on the top lefthand corner of the window to finish.

## Varying the rules

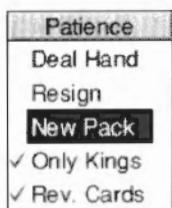
Patience
Deal Hand
Resign
New Pack
✓ Only Kings
✓ Rev. Cards

You can vary the rules in two ways to make the game easier or harder, using two options displayed when Menu is pressed. These options are both on by default.

- **Only Kings** means that no cards other than Kings can be placed in empty columns. Switching this off makes the game very much easier; you can now move any card into an empty column.
- **Rev. Cards** refers to the process by which cards are turned over from the pack. The default is that when a group of three cards is turned over, their order is reversed as they are moved. This means that if you run through the pack twice,

you will see two-thirds of the cards. Switching off **Rev. Cards** means that the cards are not reversed, so you will only see one-third of the cards, making the game much harder.

### Varying the Pack



You can vary the picture on the reverse of the cards by clicking on **New Pack** at any time during the game.



This chapter provides an introduction to PrintEdit, an application which enables experienced users to edit existing printer definition files and experts to create them from scratch. The printer definition files are used by the Printer manager application !Printers. They define how the operating system translates the characters in the document into signals that can be used by the printer to print the document.

### Creating new printer definition files

Creating printer definition files is technically very complex and requires a deep understanding of how printers work. This chapter gives you only a very brief introduction and you should not expect to be able to design your own printer definition files using the information provided here alone. The chapter *Printer definition files* in the RISC OS 3 *Programmer's Reference Manual* contains the detailed information you will need for creating printer definition files.

### Modifying existing printer definition files

Occasionally, step-by-step instructions might be issued, for example, by Acorn or another printer supplier that tell users how to modify an existing printer definition file to change its use slightly.

The instructions list the exact operations needed to be performed in each PrintEdit window. You will not need a full understanding of the features of PrintEdit.

This chapter gives you an overview of the functions of PrintEdit. This chapter should give you enough information to enable you to use PrintEdit to alter one of the existing printer definition files.

Before you can use PrintEdit you should

- have the user guide and technical manual for your printer
- or have some step-by-step instructions from an expert.

Most people use PrintEdit to alter one of the existing printer definition file configurations, rather than make up a completely new one. So we shall use the printer definition file for the Epson FX85 as an example.

## Starting the application

To start the application:



Printing

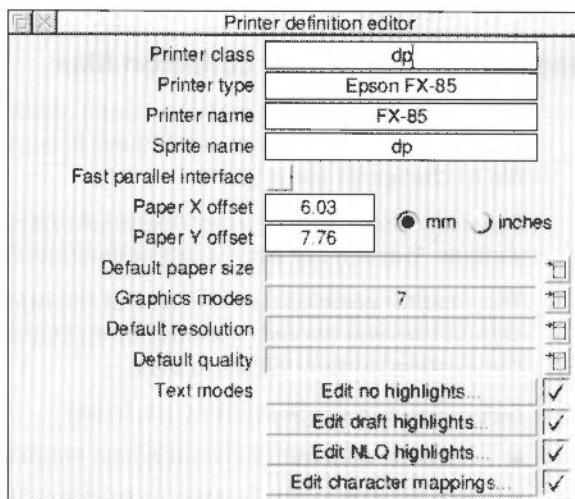
- 1 Click on the hard disc icon to display the root directory.
- 2 Double-click on the **Printing** directory icon to display the Printing directory.
- 3 Double-click on the !PrintEdit icon to display the PrintEdit window. The application icon appears on the icon bar.

To load an existing printer definition file:

- 1 Double-click on the **Printers** directory within the Printing directory.
- 2 Double-click on the printer directory that corresponds to the printer you wish to modify.
- 3 Select the printer definition file you require and drag it over the PrintEdit icon on the icon bar.

## The PrintEdit window

The appearance of the PrintEdit window when the Epson FX85 definition file is loaded is as follows:



The **Printer class** represents a type of printer; it determines which processing type Printers uses for the printer. Use **dp** for dot matrix and other bit-image printers and **lj** for HP LaserJet compatibles. This application cannot be used for defining printer definition files for PostScript printers.

**Printer type** is the full name of the printer. If you are creating an alternative version of a standard printer definition file, alter this name.

**Printer name** is the name you want to appear underneath the printer icon on the icon bar. The name can be up to 10 characters long. If you are creating an alternative version of a standard printer definition file, alter this name.

**Sprite name** is the sprite to be used as the printer icon on the icon bar. These can again be **dp** for dot matrix and other bit-image printers and **lj** for HP LaserJet compatibles. You can also define your own sprites for this icon.

If your printer can use the **Fast Parallel Interface** then choose this option. Check in the printer ReadMe file for information; if you are not sure don't use this option.

The **paper offsets** represent the top (Y) and left (X) sections of the paper on which the printer cannot physically print.

The **Paper Y offset** is the amount of cut sheet paper which has already gone past the print head before it can print anything; this differs for different printer models.

The **Paper X offset** is the small section at the left hand edge on which the head cannot print, although why this is so is not always obvious. Together the paper offsets define the logical (0,0) origin on the physical paper. The Printers.Read\_Me file contains details on using the Printers.Top\_Left file to set the offsets for Epson and IBM compatible dot matrix printers. Offsets only affect graphics printing.

**Default paper size** defines the standard paper type used by the printer.

**Graphics modes** displays how many graphics modes have been defined for this printer.

**Default resolution** defines the resolution that will be picked when you first install the printer.

**Default quality** defines the print quality that will be picked when you first install the printer.

**Text modes** defines the type of text modes your printer can use. Find this information out from your printer manual.

**Edit no highlights** defines the simplest print options of plain text only.

**Edit draft highlights** includes all the standard highlights such as bold, italic, superscript and subscript in draft mode.

**Edit NLQ highlights** is the same as Edit draft highlights but for the NLQ (Near Letter Quality) mode.

**Edit character mappings** allows a character from the Acorn ISO8859 character set to be converted to the same character in the printer's character set.

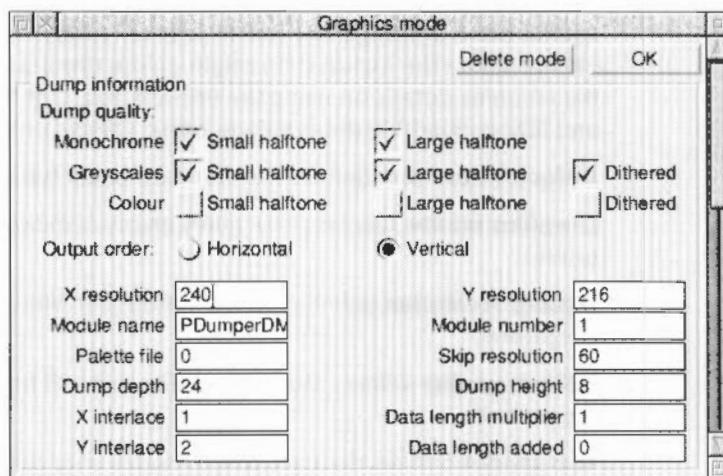
The differing text mode titles (**Edit portrait mode** and **Edit landscape mode** rather than 'Edit no highlights', 'Edit draft highlights' and 'Edit NLO highlights') are set up by PrintEdit when the **Printer class is I**. The information is still stored in exactly the same way as for Epson and IBM-compatibles.

For the rest of this chapter you should have your printer manual ready so that you can look up the information required by PrintEdit. It may also help to have the Help application active, as this will give you quick summaries about the function of each field in the dialogue boxes.

## Graphics mode

Graphics
New resolution
60 by 72 dpi
120 by 72 dpi
120 by 144 dpi
120 by 216 dpi
240 by 72 dpi
240 by 144 dpi
240 by 216 dpi

Display the Graphics modes dialogue box by clicking on the right arrow by the **Graphics modes** entry. Choose an existing resolution to edit or **New resolution** if you want to start afresh. In most cases it is probably easier to edit an existing file and tailor it to your needs. Here is the Graphics mode window for the Epson at a resolution of 240 by 216.



### Dump information

The first part of the window gives the **Dump information** – the information the printer uses to print correctly.

The **Dump quality** boxes should normally all be ticked, as the software supports these features on all printers. However, don't tick the colour options unless you have a colour printer.

**Output order** defines how the image is printed. Most printers, like the Epson, use **Vertical**. Some, like the Integrex, use **Horizontal**. Note that when **Horizontal order** has been selected many of the other **Dump information** and **Dump strings** settings either become irrelevant, or must be set to certain values.

**X** (horizontal) and **Y resolution** (vertical) define the graphics resolution in dots per inch. These should be given in your printer manual, but may be in different units. The printer manual will usually quote resolutions before vertical interlacing has been applied (see later), so in this case the manual would quote 240 by 72 dpi, rather than 240 by 216 dpi (since  $216/3 = 72$ ). The manual is also likely to give dots per line rather than dots per inch for the horizontal resolution; for example, 960 dots per line on 8 inch paper is 120 dpi horizontal resolution. The vertical resolution is often omitted altogether, in which case it is likely to be 72 dpi for 9 pin printers, 180 dpi for 24 pin printers doing 24 pin graphics, 60 dpi for Epson 24 pin printers doing emulated 8 pin graphics, and 72 dpi for IBM 24 pin printers doing emulated 8 pin graphics.

**Module name** and **Module number** define the dumper files used by the printer. These are currently two dumper files, although more can be defined if needed.

PDumperDM has the Module number 1 and is for dot-matrix and other bit-image printers.

PDumperLJ has the Module number 2 and is for HP LaserJet compatible printers.

PDumperIW has the Module number 3 and is for Apple Imagewriter II compatible printers.

**Palette file** defines the Palette file – this is currently always set to zero.

**Skip resolution** defines the leading zero skip resolution of the dump. This is always 60 for Epson printers and 120 for IBM printers.

**Dump depth** is the depth of one group of interlace passes.

**Dump height** is the number of rows of pixels in each vertical pass. This is the same as the number of pins on the print head; a 24 pin printer would print 24 dots.

**X interlace** defines the number of horizontal interlace passes.

**Y interlace** defines the number of vertical interlace passes.

**Data length multiplier** and **Data length added**. For Epson printers, you specify a line of graphics by saying '<27><42><0><number of columns>'. For IBM printers, you need '<27>|g<number of columns times 6 (or 3) plus 1><graphics mode>'. So, for Epson printers, the Data length multiplier is 1 and Data length added is 0. For IBM printers, Data length multiplier is either 6 or 3, and Data length added is 1.

## **Additional Dump information for Printer Class IJ**

**Copies** should be selected if the printer supports this option.

**Compression** should be selected if the printer supports this option.

The Output order choices do not apply for this class of printer.

## **Dump strings**

The second part of the window gives the Dump strings.

Dump strings	
Set lines	27,"C"
Page start	27,"A",0
Form feed	12
Page end	27,"@"
Line return	13
Line skip	27,"J",24,13
Line end 1	27,"J",1,13
Line end 2	27,"J",1,13
Line end 3	27,"J",22,13
Zero skip	27,"\$"
Line start 1	27,"Z"
Line start 2	
Line pass 1	
Line pass 1b	
Line pass 2	
Line pass 2b	
Line pass 3	

These are the codes sent to the printer that tell the printer to perform certain actions.

**Set lines** is the string set to define the number of lines per page.

**Page start** is the string sent at the start of a page.

**Form feed** is the form feed character. The string sent to the printer to tell it to form feed the paper after each page has been printed.

**Page end** is the string sent at the end of each page.

**Line return** moves the print head to the beginning of the line. Usually this will be a carriage return.

**Line skip** moves the print head to the beginning of the next line. It is used for skipping entirely blank lines.

**Line end 1** to **Line end 3** are the strings sent at the end of each vertical interlace pass. There can be up to three passes.

**Zero skip** is issued to skip leading zeros on graphics data lines, hence optimising out the white section at the left hand edge of the paper.

**Line start 1** is the string sent at the beginning of a graphics line. For Epson printers, **Line start 2** is not needed. For IBM printers, **Line start 2** must be '<graphics mode>', while **Line start 1** is '<27>|g'.

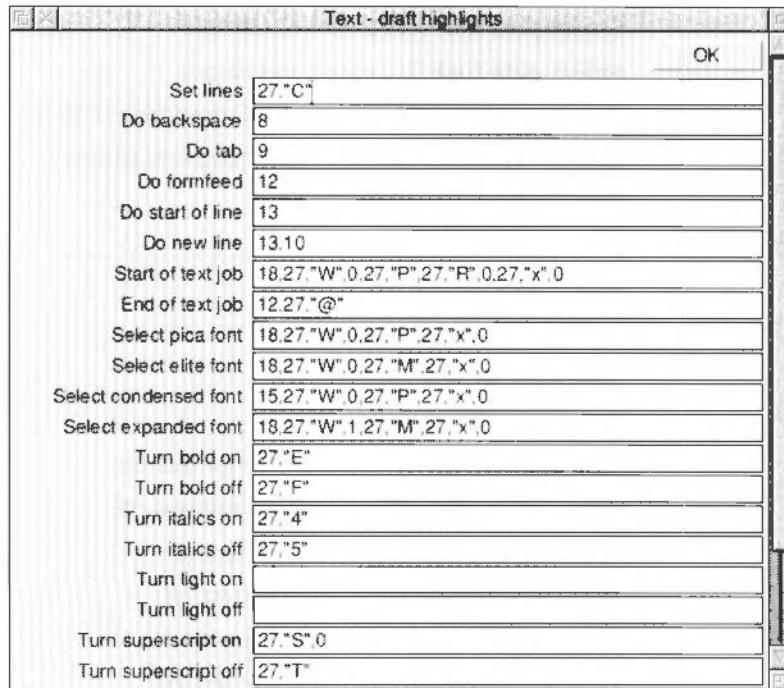
**Line pass** is the string sent for each pass of a colour graphics dump. There can be up to four passes.

## Text modes

Almost all printers can use the first two text modes and many also support an NLO (Near Letter Quality) mode.

Choose which text modes your printer will use by clicking on the cross or tick next to each Text mode button. Changing to a tick allows you to select that mode.

Display the text mode window by clicking on the appropriate text mode button. Here are the Text draft highlights settings for the Epson FX85.



## **Edit no highlights**

The no highlights mode is a very simple mode without any special effects, so most of this window is blank.

**Set lines** sets the number of lines per page.

**Do backspace** moves the print head back one space.

**Do tab** moves the print head to the next tab.

**Do formfeed** starts a new page.

**Do start of line** moves the print head to the start of the line.

**Do new line** moves the print head to the beginning of the next line.

**Start of text job** is the string that denotes the start of a text print.

**End of text job** is the string sent at the end of a text print.

## **Edit draft highlights**

The draft highlights mode uses the same basic definitions as the no highlights mode, but expands this to include pica, elite, condensed, expanded, bold, italics, light, superscript, subscript and underline printing.

**Select pica font** sets pica font (10 cpi).

**Select elite font** sets elite font (12 cpi).

**Select condensed font** sets condensed font (17cpi).

**Select expanded font** sets expanded font (6 cpi).

**Turn bold on** sets bold text on.

**Turn bold off** sets bold text off.

**Turn italics on** sets italic text on.

**Turn italics off** sets italic text off.

**Turn light on** sets light text on.

**Turn light off** sets light text off.

**Turn superscript on** sets superscript text on.

**Turn superscript off** sets superscript text off.

**Turn subscript on** sets subscript text on.

**Turn subscript off** sets subscript text off.

**Turn underline on** sets underline text on.

**Turn underline off** sets underline text off.

## Edit NLQ highlights

The NLQ highlights mode uses the same basic definitions as the draft highlights mode, but alters these to enable the printer's NLQ operation.

## Edit character mappings

**Edit character mappings** allows a character from the Acorn ISO8859 character set to be converted to the same character in the printer's character set. Although all the standard characters normally map directly onto the corresponding printer characters, the top-bit-set characters normally need mapping from Acorn's character set to the printer's character set.

Mapping is done from the Edit character mappings window. Here is part of the Epson FX85's character mappings.

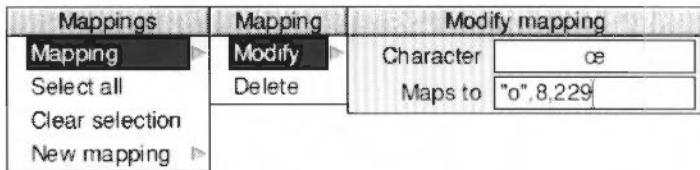
		Character mappings
129	W	⇒ "W"
130	w	⇒ "w",8,""
133	Y	⇒ "Y"
134	y	⇒ "y",8,""
140	...	⇒ "
141	TM	⇒ 27,"S",0,"T",8,27,"S",1,"M",27,"T"
142	%	⇒ "%",8,""
143	*	⇒ 174
144	.	⇒ "
145	,	⇒ "
146	<	⇒ 27,"S",1,<,27,"T"
147	>	⇒ 27,"S",1,>,27,"T"
148	"	⇒ 34
149	'	⇒ 34
150	-	⇒ 34
151	—	⇒ "—"
152	—	⇒ "—"'
153	—	⇒ "—"''
154	Œ	⇒ "O",8,197
155	œ	⇒ "o",8,229
156	†	⇒ "†",8,""
157	‡	⇒ "‡",8,"="
158	fi	⇒ "f",8,233
159	fl	⇒ "f",8,236
160		⇒ 32

The number down the left column represents the Acorn character in decimal, next to it is the Acorn character itself. To the right of the arrow are the commands sent to the printer that reproduce the same character.

## Modifying an existing mapping

To alter an existing mapping:

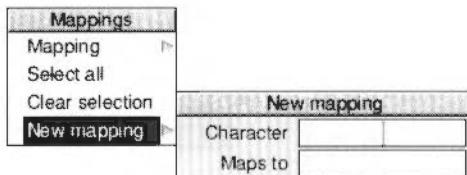
- 1 Press Menu to display the **Mappings** menu.
- 2 Choose **Mappings/Modify** to display the Modify mapping dialogue box.
- 3 If you want to modify the Acorn character, type in the Acorn character to map in the **Character** box. You can type in the Acorn character directly from the keyboard, by using the Chars application or by using its decimal character code.
- 4 If you want to modify the printer commands, type the printer commands that produce the character in the **Maps to** box.
- 5 Press Return to modify the mapping list.



## Entering a new character mapping

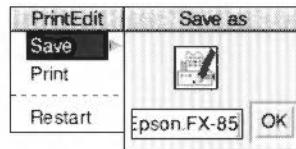
To enter a mapping:

- 1 Press Menu to display the **Mappings** menu.
- 2 Go to the **New mapping** dialogue box and type in the Acorn character to map in the **Character** box. You can type in the Acorn character directly from the keyboard, by using the Chars application or by using its decimal character code.
- 3 Type the printer commands that produce the same character in the **Maps to** box.
- 4 Press Return to add the mapping to the list.



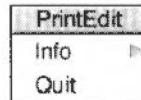
## Saving and quitting

When you have finished making changes to your the printer definition file, save the modified file by clicking Menu over the main Printer Definition editor window and choosing **Save**.



If you want to discard any changes you have made and start again click on **Restart**.

To finish using the application, chose **Quit** from the icon bar.







**P**uzzle is a simple move-the-tiles game. The object of the game is to move the tiles so that they are all in ascending order left-to-right and top-to-bottom.

### Starting the application

To start the application:



- 1 Click on the hard disc icon to display the root directory.
- 2 Double-click on the **Diversions** directory icon to display the **Diversions** directory.
- 3 Double-click on the **!Puzzle** application to start the application. The **Puzzle** window appears on the display.



The puzzle comprises fifteen number tiles and one space in a four-by-four grid. The object of the puzzle is to move the tiles into numerical order in four lines from the top left to the bottom right. Rearrange the tiles by clicking on any of the number tiles next to the space to move it into the gap.

To display a new grid, press **Menu** when you are over the **Puzzle** window and choose **New board**.

If you want to learn how to solve the game you should look at the Help file supplied with the application. Here is what the completed puzzle looks like:







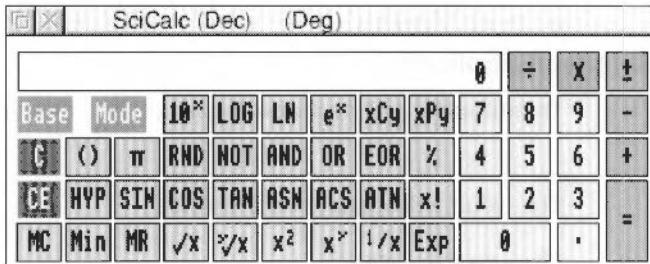
**S**ciCalc is a scientific calculator providing a range of scientific functions in addition to simple arithmetic ones.

## Starting SciCalc

To start the application:



- 1 Double-click on the Apps directory icon to display the Apps directory.
- 2 Double-click on the !SciCalc application to start the application. The application icon appears on the icon bar.
- 3 Click on the icon bar icon to display the calculator window:



## Entering numbers

There are two ways of entering numbers into the calculator. You can use the mouse to move the pointer over the required key and then click, or you can use the keyboard directly. Clicking in the numeric display turns the title bar a cream colour, indicating that numbers and selected operators may be entered from the keyboard. When the title bar is grey, the keyboard does not affect the state of SciCalc.

If you use the numeric keypad, make sure that the Num Lock key is on. The function keys in the numeric keypad are also equivalent to those on the calculator keypad.

## Arithmetic functions

These operate exactly like an ordinary calculator, except that you can enter numbers and operators (+, -, etc) either by clicking on the SciCalc display or by using the numeric keypad on the keyboard. When you enter a number it appears in the calculator's display. When you first load SciCalc it is set for normal **decimal** arithmetic (to base 10). This is denoted by the word (Dec) in the title bar.

### Rules of precedence

SciCalc treats the calculation you enter as a formula and does not perform the calculation until you click on the Equals button. SciCalc performs the calculation according to the precedence of operators. From highest to lowest; Multiply, Divide, Add and Subtract.

Multiplication takes place before addition so:

$$2 + 6 \times 5 = 32 \quad (\text{not } 40)$$

You can change the order of calculation by using brackets:

$$(2 + 6) \times 5 = 40$$

### Simple multiplication

To multiply 2 by 5 and view the result, enter the following in this order:

$$2 \times 5 =$$

The result will appear in the display.

### Changing the sign

The  $\pm$  key switches the sign of x.

### Calculating percentages

The percentage function operates as follows: to increase x by y percent, press:

$$x + y \%$$

To decrease x by y percent, type – instead of +.

### Clearing the last entry

Press CE to clear the current display. For example, pressing the following:

$$2 + 6 \times 3 \text{ CE } 5 =$$

calculates

$$2 + 6 \times 5 =$$

and thus gives the result 32.

### Erase all calculations - Clear

Press C to clear not only the display but also the whole input so far.

## Memory functions

SciCalc has a single memory. To enter the displayed value into the memory, press M<sub>IN</sub>. To display the contents of the memory, press M<sub>R</sub>. To clear the memory, press M<sub>C</sub>.

## Advanced functions

### Calculating roots

To calculate the **square root** of x, press  $\sqrt{x}$ .

To obtain the yth root of x, press  $y\sqrt{x}$ , followed by y. For example, to calculate the fourth root of 52, click on the following keys:

52 y $\sqrt{x}$  4 =

which will display the result 2.685349614.

### Calculating squares and powers

To calculate the **square** of x, click on  $x^2$ .

To raise x to a power other than 2, click on  $x^y$  followed by the power you want to take. For example, to raise 52 to the power 4, click on the following keys:

52 x $y$  4 =

which will display the result 7311616.

To raise 10 to the nth power, press  $10^x$ .

To raise e to the nth power, press  $e^x$ . (e is defined as 2.7182818).

### Calculating reciprocals and factorials

For the **reciprocal** of x, press  $1/x$ .

For x **factorial**, press  $x!$ .

### Calculating logarithms

To obtain the **logarithm** (base 10) of x, press LOG.

For the **natural logarithm** (base e), press LN.

## Using brackets

To obtain a bracket, press  $( )$ . The same key produces a left or right bracket, whichever is appropriate in the context. For example, to calculate  $(2 + 3) \times 5$ , press

$( ) \ 2 \ + \ 3 \ ( ) \ \times \ 5 \ =$

(There is only one level of brackets available.)

## Using $\pi$

To use  $\pi$  in a calculation, press  $\pi$ .

## Calculating exponents

To express  $x$  in exponent form, press Exp followed by  $y$ , the exponent. For example,

$50 \ E \ 4 \ =$

displays the result 500000.

## Trigonometric functions

Among the more advanced functions available in SciCalc are the standard trigonometric functions:

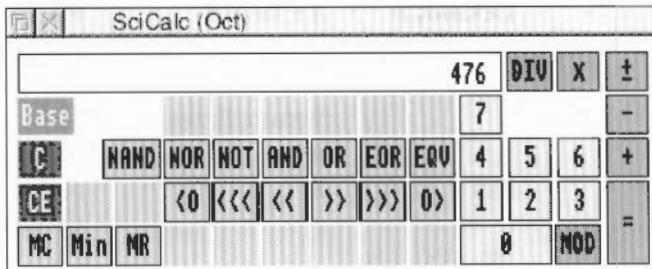
SIN	sine
COS	cosine
TAN	tangent
ASN	arcsine ( $\sin^{-1}$ )
ACS	arccosine ( $\cos^{-1}$ )
ATN	arctangent ( $\tan^{-1}$ )

To obtain hyperbolic trigonometric functions, press Hyp before pressing the function button.

## Changing the number base

As already mentioned, when first loaded SciCalc normally works with decimals. Successive clicks on Base switch it to binary (base 2), octal (base 8) and hexadecimal (base 16) bases. The current base is shown in the Title bar. The calculator layout is modified to provide the input requirements for each base: for bases using fewer than ten characters, some are greyed out, while for hex, some of

the function keys are replaced with the necessary letters. In addition, when a function is not available in a base, it is greyed out. For example, in base 8 SciCalc looks like this:



Base provides a handy way of converting a number between bases. Once you have entered a number into the display, clicking on Base converts it successively to the other bases.

### Logic functions in the non-decimal bases

In the non-decimal bases – binary, octal and hexadecimal – the arithmetic functions are augmented by a MOD function. In addition, the scientific functions are replaced by logic functions: NAND, NOR, NOT, AND, OR, EOR, EQV, rotate, arithmetic shift and logic shift.

### Degrees, radians and gradians

You can switch between degrees, radians and gradians by clicking on the Mode button; the current unit is shown in the Title bar. For example, to express 50 degrees in radians, switch to decimal base and degree mode, enter 50, and click on Mode so that the Title bar shows (Rad). The display changes to show the value 0.87266463.

Changing from decimal to a non-decimal base rounds the currently displayed value to the nearest integer, but has no effect on previous parts of the current calculation. Rounding also occurs on numbers being recalled from memory in non-decimal bases.

## Keyboard short-cuts

### Calculator functions and their keyboard equivalents

Calculator	Keyboard	Function
0..9	0..9	numbers
+, -, $\times$ , $\div$ , =,	+, -, *, /, =	standard operators
	Return, Enter	same as =
$\pm$	#	change sign on number or exponent
Exp	E	allows entry of exponent
.	.	decimal point
10 $x$ , LOG, LN, e $X$		exponential and logarithmic functions
xCy		combination
xPy		permutation
( )	( . )	brackets (one level only)
$\pi$		the number Pi
RND		random number between 0.0 and 1.0
NOT, AND, OR, EOR		logical functions
%	%	percentage
HYP (followed by a trig function)		hyperbolic functions
SIN, COS, TAN		trigonometric functions
ASN, ACS, ATN		inverse trigonometric functions
x!	!	factorial
$\sqrt{x}$		square root
$y\sqrt{x}$		Yth root of X
$x^2$		square
$x^Y$	^	X raised to the power Y
$1/x$		reciprocal
C	Delete	clear calculation
CE		clear current number only
MC		clear memory
Min		memory in
MR		memory recall
Mode		select radians/degrees/gradians
Base		select decimal/binary/octal/hexadecimal base

## Keyboard equivalents in non-decimal bases

Calculator	Keyboard	Function
NAND		NOT AND
NOR		NOT OR
EQV		NOT EOR (equivalence)
<O , O>		rotate left or right
<<< , >>>		logical shift left or right
<< , >>		arithmetic shift left or right
DIV		integer division
MOD		modulus (integer remainder)
A - F	A - F	hexadecimal base digits

## Operator precedence

Operators are evaluated in the following order of precedence (highest shown first).

unary operators

$\sqrt{y}$

$y^x$

$x^y$

$x \times y$ ,  $x \cdot y$

$\cdot$ ,  $/$ , DIV, MOD

$+$ ,  $-$

$<O, O>$ ,  $<<, >>$ ,  $<<<, >>>$

AND, NAND

OR, EOR, NOR, EQV

## Technical notes

Its accuracy is limited to that of BASIC VI – 64 bit floating point.

## Numeric range

Mode		Numeric range
Decimal	Real values	-9.9E99 to 9.9E99 entry -9.9E307 to 9.9E307 displayable
Binary	32bit signed	10000000000000000000000000000000 to 11111111111111111111111111111111
Octal	32bit signed	20000000000 to 17777777777
Hexadecimal	32bit signed	80000000 to 7FFFFFFF

## Accuracy

Mode	Accuracy	Number of digits displayed
Binary	Absolute	32
Octal	Absolute	10 - 11
Hexadecimal	Absolute	8
Decimal	64 bit FP	10 or 10 + 2 digit exponent

Note: real number underflow is not trapped.

## Saving features in a Desktop boot file



You may wish to change some aspects of the way SciCalc operates. For example, the position of the SciCalc window when it is opened, the number base it uses and the angle mode.

These features are stored by setting up SciCalc as you wish to use it, and then saving the features by creating a Desktop boot file; instructions on how to create a Desktop boot file are given in the appendix *Configuration information* on page 497.

**S**quash is a simple application that compresses files and directories. Compression means that they take up less disc space, enabling more files to be fitted onto a floppy or hard disc.

## Starting Squash

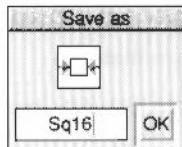
To start the application:



- 1 Click on the Apps icon on the icon bar.
- 2 Double-click on the !Squash application. The Squash icon appears on the icon bar.

## Compressing a file

- 1 Drag the file that you wish to compress onto the Squash icon on the icon bar. This displays the Squash Save as box.



- 2 Drag the icon from the Save as box to the directory display in which you want to save the compressed file. If you want to save it with a different filename, first change the name in the Save box.

If you want to replace the original file with the compressed version of the file, just click on the Save as **OK** box instead.

The compressed file uses the squashed file icon.

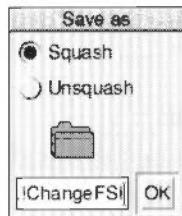
## Decompressing a file

- 1 Drag the Squashed file that you wish to uncompress onto the Squash icon on the icon bar. This displays the Squash Save as box.
- 2 Drag the icon from the Save as box to the directory display in which you want to save the decompressed file. If you want to save it with a different filename, first change the name in the Save box.

If you want to replace the compressed file with the original file, just double-click on the Squashed file and it is replaced by the uncompressed file.

## Compressing a directory or application

- 1 Click Menu over the Squash icon bar icon and chose Squash Apps. This allows applications to be squashed. If you don't want applications to be squashed make sure this option isn't ticked.
- 2 Drag the directory or application onto the Squash icon on the icon bar. This displays the Save as box with two options, **Squash** and **Unsquash**.



- 3 Click on **Squash** to compress the entire contents of the directory or application.
- 4 Drag the icon from the Save as box to the directory display in which you want to save the compressed directory or application.

If you want to replace the original directory or application with the compressed version, just click on the Save as **OK** button instead.

The directory icon and applications icon are not replaced by the squash icon when their contents are squashed.

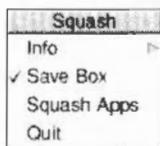
Compressed applications cannot be used until they have been decompressed.

## Decompressing a directory or application

- 1 Drag the Squashed directory or application onto the Squash icon on the icon bar. This displays the Squash Save as box with two options, **Squash** and **Unsquash**.
- 2 Clicking on **Unsquash** will decompress the entire contents of the directory or application.
- 3 Drag the icon from the Save as box to the directory display in which you want to save the decompressed directory or application.

To replace the compressed directory or application with the decompressed version, just click on the Save as **OK** button.

## Icon bar menu



### Info

This gives you information about the application.

### Save box

When the Save box is ticked (normally) each compression (or decompression) prompts you with a Save as box. If you are converting a large number of files, you can use this option to turn off the Save box. Turning off the Save box allows all files and directories to overwrite the original versions during the conversion process.

### Squash Apps

If you choose this option, then when you drag a directory onto the Squash icon, any applications in the directory (or any subdirectories) are also squashed.

This option is not selected by default; Squash does not compress applications it finds in subdirectories.

Applications that are dragged to the Squash icon will always be compressed.

### Quit

Quit ends the Squash application, removing the Squash icon from the icon bar.

## Checking your archive

As with any archival mechanism, the user should check that they can correctly compress and decompress back to the original size any information which is valuable or difficult to replace. Make a copy of the file before you compress it.

## Uncompressed files

Occasionally Squash decides not to compress a file, this is usually because either the file is already compressed in some way that would make squashing it uneconomic or because the file is so small that squashing it would make no difference to the amount of disc space used.





**T**1ToFont is a program that converts fonts from Adobe Type1 format to the RISC OS outline font format. Once the fonts have been converted they can be used in your documents just like any other Acorn outline font.

This application should only be used to convert public domain fonts. While it is possible to convert proprietary fonts, it would, most probably, be a breach of copyright to do so without the consent of the copyright holder.

## Starting the application

To start the application:

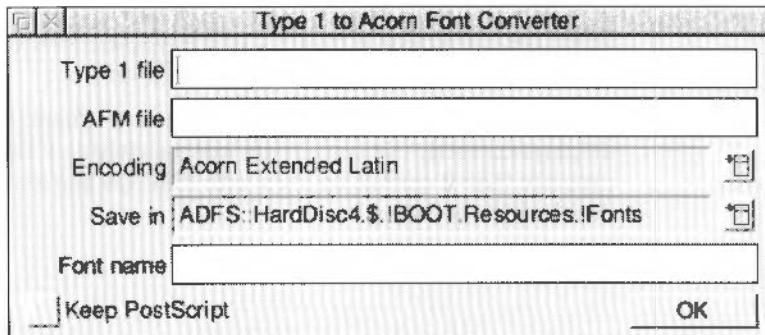


- 1 Click on the hard disc icon to display the root directory.
- 2 Double-click on the Utilities directory icon to display the Utilities directory.
- 3 Double-click on the !T1ToFont application to start the application. The application icon appears on the icon bar.

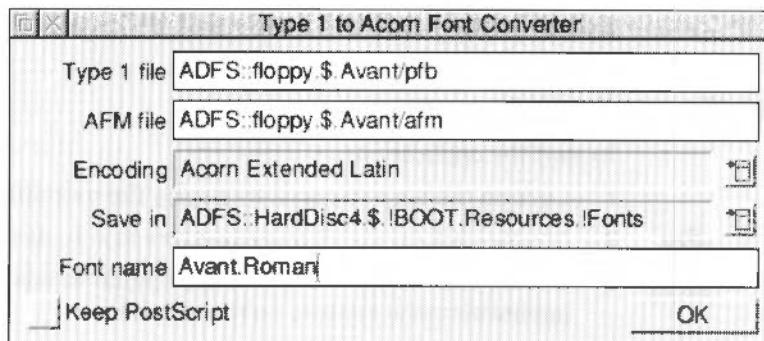
## Converting a font

Before you can use the converter you need to have your source font (the Type 1 file and the AFM file) on a RISC OS format disc. The Type 1 file (often called the PFB file) should be given the filetype **PostScript** and the AFM file given the filetype **Text**.

- 1 Click on the icon to display the Font converter window.



- 2 Drag the Type 1 PFB file icon from its directory display onto the converter window. The file name is displayed in the **Type 1 file** field.
- 3 Drag the AFM file from its directory display onto the converter window. The file name is displayed in the **AFM file** field.
- 4 After a few seconds the name of the RISC OS font to be generated is displayed in the **Font name** field. You can change this name if required.
- 5 Use the **Save in** field to select a font directory to save the resulting font in. However you should not normally change this from the default path - ADFS:HardDisc4.\$.!BOOT.Resources.!Fonts. Click on the menu icon to display the alternatives.



- 6 Select the **Encoding** you need for the font, **Acorn Extended Latin** is nearly always used. Click on the menu icon to display the alternatives.
- 7 Click on the **Keep PostScript** option button if you want to keep the Type1 font and the AFM files with the Outline font. This is useful if you are printing to a PostScript printer as the printer will then use the PostScript font directly.
- 8 Start the conversion by clicking on **OK**.

When the conversion is finished (the hourglass reverts back to a pointer) the font is now stored in the computer as a RISC OS font.

You should now try to display the font using !Chars (see page 345) if the font displays correctly the conversion was successful. If the font does not display properly then it cannot be used with RISC OS and should be deleted from the font directory it was saved in.

## Other information

The **Save in** menu selects a font directory to save the resulting font in. The menu is constructed from the contents of the Font\$Path system variable, so !Font directories can be added to the menu by installing them on Font\$Path (you can do this by double-clicking them). The default path is  
 ADFS : : HardDisc4 . \$ . !BOOT . Resources . !Fonts.

### Encoding

The **Encoding** type for most fonts will almost always be **Acorn Extended Latin**.

Some fonts have their own special encoding information. If you have one of these fonts you should choose the Encoding type, **As specified in type 1 file**.

If you don't have an AFM file you can convert the font by leaving the AFM field blank. The resulting font will lack kerning (font spacing) information, so always use the AFM file if you have one.

Selwyn, Sussex and Sidney are encodings are for special symbol fonts. The encoding file is automatically stored within the font's directory.

### Font types

Fonts must conform strictly to the Type 1 font definitions. Many Public Domain fonts do not obey the structure rules laid down by Adobe and consequently they may not convert properly. Type 3 fonts cannot be converted.

### Printing to a PostScript printer

If you print to a Postscript printer, the printer uses the original PostScript font (for downloading) if it is available. If it is not available, it converts and downloads the RISC OS outline font. To keep the original PostScript font available, select the **Keep PostScript** option before you start converting your font.

## Using Macintosh and MS-DOS type 1 fonts

### Macintosh fonts

Macintosh fonts are generally supplied as a Font/DA Mover document, containing the Macintosh version of the font, and one or more Type 1 files containing the PostScript code for use on the printer. There will be one Type 1 file for each weight and variation of the font.

### **AFM file**

In addition to this you need an AFM (Adobe Font Metrics) file for each weight and variation of the font. The Macintosh does not seem to use this itself, but some fonts are supplied with it anyway. If you do not have the AFM file, contact the font supplier and try to obtain one.

You can convert a font without using an AFM file, however the resultant RISC OS font will lack kerning information.

### **Transfer the files**

You need to copy files from the Macintosh to your computer. Macintosh Type 1 files usually occupy the Macintosh resource fork of the file, so you'll need a way to extract this. The Macintosh version of the file transfer protocol Kermit, is one way of doing this. It may be simpler to use a Macintosh multiformat floppy drive to copy the files to an MS-DOS format floppy disc. This disc can then be read directly by your RISC OS computer.

Transfer the resource fork of the font file to a file on your computer, and set its filetype to PoScript (&FF4). Transfer the AFM file (usually in the data fork) to your computer and give it the filetype Text.

## **MS-DOS Fonts**

Fonts for MS-DOS computers are supplied on MS-DOS floppy discs and can therefore be read directly by the RISC OS Filer. Among the files on the disc will be one or more Type 1 files containing the PostScript code for the printer. There will be one Type 1 file for each weight and variation of the font. The Type 1 files usually have the extension ".PFB".

### **AFM file**

In addition to this you need an AFM (Adobe Font Metrics) file for each weight and variation of the font. If you do not have the AFM file, contact the font supplier and try to obtain one.

You can convert a font without using an AFM file, although the resultant RISC OS font will lack kerning information.

Other files on the disc, including the PFM file, are not needed for the conversion.

### **Setting the filetypes**

Transfer the AFM and PFB files to another floppy disc or to the hard disc. Change the filetype of the PFB file to PoScript (&FF4) and the filetype of the AFM file to Text.

# Part 5: Outside the desktop



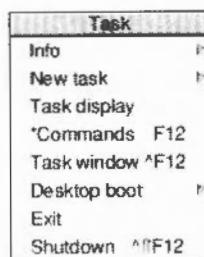
**M**ost of you will use the RISC OS desktop for almost all of your computing tasks. However occasionally you may venture into the world of the command line.

- \* The command line is very different from the desktop. Gone are the windows, icons and menus. These are replaced by a set of single line commands that always start with a star, the Star Commands (known as \* Commands).

One of the main reasons for using the command line is to write scripts. Scripts are small programs that help you control the computer. The command line is also used to issue operating system commands from BASIC.

This chapter gives you an introduction to the command line. The RISC OS 3 *Programmer's Reference Manual* expands on all the information given in this chapter.

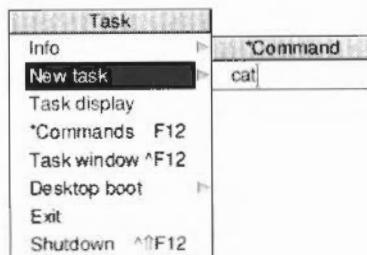
## Accessing the command line



There are four different ways of accessing the command line. Two of these do so within the desktop itself; one suspends the desktop temporarily and one quits the desktop entirely. Alternatively you can set up your computer so that it never starts the desktop.

The command line is accessed from the Task manager icon bar menu. To illustrate this we will use the simple \* Command, \*Cat. \*Cat just displays a list of the files in the current directory.

The option **New Task** gives you a small box into which you can write a single \* Command. Choose **New Task**. Type in the command Cat, then press Return. The result will be displayed in a window on the desktop.



A more useful window into the command line is given by the **Task window** option. This displays an Edit-like window into which you can type commands. At the top of the window is a \* (the command line prompt) and the caret. Choose Task Window and type \*Cat again. The Task window behaves just like any other desktop window. Its menu options are explained in the section *Using the Task window* on page 413.

To halt the desktop temporarily and replace it with the command line interface, click on **\*Commands** (or press F12). A line will appear at the bottom of the screen, containing a \* (the command line prompt) and a flashing line (the cursor). As an example, type a . (a full stop and press Return). The lower part of the screen will display a list of the files in your current directory, with the \* prompt at the foot of the screen again. Now press Return again: the desktop will reappear, looking just as it did when you saw it last.

To leave the desktop more 'permanently', choose the **Exit** option. If you have any work on the desktop that you have not saved, you will be asked if you want to save it first. The screen then goes blank and a \* prompt will appear. To start the desktop again, type **desktop** at the \* prompt.

### Command line mode

The star (\*) prompt indicates that you are in command line mode and that the computer is expecting a command to be typed. Note that command line mode is referred to as 'Supervisor' on all screen displays.

The commands in this guide are always preceded by a star. The star is provided as a prompt in command line mode, so you do not have to type it (though it does not matter if you do: any extra stars are ignored). However, if you type a \* Command following some other prompt (at the BASIC > prompt, for example), you must precede it by a star so that the computer knows how to interpret what follows.

### Pausing on a full screen

If you are using the command line mode and you want to display a large amount of information you can set the system to pause at each full screen. Do this by typing Ctrl-n. Use the Shift key to scroll through the screenfulls. Ctrl-o removes this feature; the display no longer pauses.

### Starting BASIC from the command line

Enter BASIC by typing \*BASIC from the command line. The prompt will change from \* to >. To confirm that you are in BASIC, type in the following one-line program (must be typed using capital letters):

```
FOR N=1 TO 20: PRINT "HELLO": NEXT N (press Return)
```

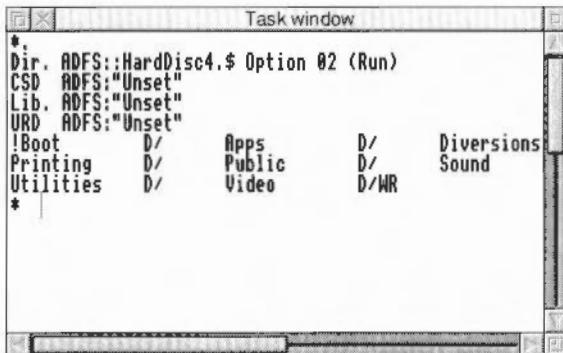
This will cause the word HELLO to be printed twenty times. Leave BASIC by typing QUIT or \*Quit.

For information on using BASIC, turn to the BBC BASIC appendix on page 509.

The BBC BASIC Reference Manual, available from your supplier, is a complete reference guide for the BBC BASIC language.

## Using the Task window

The Task window allows you to use the command line within a window. To open a Task window, choose **Task window** from the Task manager icon bar menu. When you open a Task window, you will see a \* prompt. You can now enter commands in the window just as if you were using the command line itself. Like any other application, you can have more than one Task window at the same time.



The major advantages in entering commands in a task window instead of at the command line prompt are that:

- Other applications continue to run in their own windows while you run the task. (This does mean, though, that the task may run more slowly than it would using other methods of reaching the command line.)
- Commands that you type, plus the output (if any), appear in a conventional Edit type window, and may therefore easily be examined by scrolling up and down in the usual way. When you type into the window, or when a command produces output, the window immediately scrolls to the bottom of the text. Anything you type in is passed to the task, and has the same effect as typing whilst in command line mode.

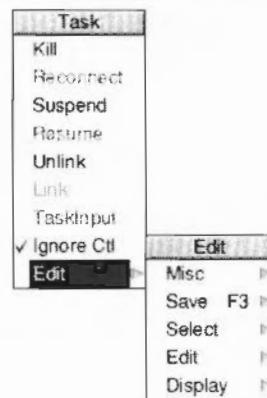
You can change this by **unlinking** the window: in this case, anything you type in alters the contents of the window in the same way as any other Edit window, even while a task is running. Keyboard shortcuts only operate if the window is unlinked.

You can also supply input to a task window by selecting some text from another text file and choosing **TaskInput** from the task window menu.

You cannot use graphics in a task window. If the **Ignore Ctl** option is not chosen, the output of any commands that use graphics will appear as screen control codes.

The task window is controlled by Edit, so don't be surprised if you see the Edit icon on your icon bar.

The menu for a Task window contains the following options:



**Kill** stops and destroys the task running in the window. **Reconnect** starts a new task in the window, allocating memory from the Task manager's **Next** slot.

**Suspend** temporarily halts the task running in the window. **Resume** restarts a suspended task.

**Unlink** prevents the sending of typed-in characters to the task. Instead, they are processed as if the task window were a normal Edit text window. **Link** reverses the effect of Unlink.

**TaskInput** reads task input from the currently selected block.

**Ignore Ctl**, when selected, prevents any control characters generated by the program from being sent to the screen.

**Edit** leads to the normal Edit menu. Although this makes available most of Edit's features, you cannot use facilities such as the cursor keys or keys such as Page Up and Home while you are using a task window. If you want to use Edit's keyboard shortcut features, **Unlink** the window first.

### Memory requirements

The amount of memory that the Task window uses is controlled by the size of the Next slot in the Task manager window. If you need a lot of memory for the Task manager, you can increase the Next slot size.

## Some guidelines and suggestions for using Task windows

To use a Task window, you will need to be familiar with command line mode. However you will also find that nearly all of the commands that affect the configuration of the desktop can also be performed using the application **!Boot** and the Task manager window **Task display**.

Here are a few commands to whet your appetite:

- \*Cat gives a directory listing of the current directory.
- \*Show displays information about your computer. Press Shift to display the next screenful as necessary.
- \*Modules shows you which versions of modules are currently loaded.
- \*ROMModules shows you which modules are stored in the ROM inside the computer.
- \*Status shows you the status of the computer's CMOS memory defaults.
- \*Wimpslot *min* [*max*] can be used to adjust the amount of memory available to the task, which will otherwise start up using the **Next** space allocation. You can examine this using the Task manager window. *min* and *max* indicate how much memory the task is allowed to have. If you want to remove all the memory allocated to a task without closing its window or destroying the task, use the command \*Wimpslot 0 0.
- \*Filer\_opendir *path* opens a new directory display for the directory with the given path. The path starts with a filing system name, but need not be a full pathname. For example, adfs:@ opens a display for the current directory.

The command \*Spool should not be used from a task window. Because its effect is to write everything that appears on the screen to the spool file, using \*Spool from the desktop will produce unusable files full of screen control characters. There is, in any case, no point in using \*Spool, since the output from the task appears in the window, and can be saved using Edit as normal.

When you run a command in a Task window, the computer divides its time between the Task window and other activities running in the desktop. You should note that some time-consuming commands, for example, a \*Copy of a large file, may prevent access to the filing system that they use until the command is complete.

Note: Using command line notions such as 'current directory' become relevant when you are using Task Windows.

Note: Using the \*Copy command in a task window may lead to Filer error. Only use \*Copy from the command line prompt (pressing F12).

All of these commands are described in detail in the chapter *Star command summaries* on page 443.

## Getting Help

The command **\*Help** gives brief information about each command in the operating system. **\*Help keyword** displays a brief explanation of the keyword and, if the keyword is a command name, the syntax of the command.

If you are not sure about the name of a command:

- \*Help Commands** will list all the available utility commands;
- \*Help FileCommands** will list all the commands relating to filing systems;
- \*Help Modules** will list the names of all currently loaded modules, with their version numbers and creation dates;
- \*Help Syntax** explains the format used for help messages.

The usual use of **\*Help** is to confirm that a command is appropriate for the job required, and to check on its syntax (the number, type and ordering of parameters that the command requires).

When you issue the **\*Help** command at the normal command line prompt, 'paged mode' is switched on: the computer displays a screenful of text, then waits until you press Shift before moving on.

The specification of the keyword can include abbreviations to allow groups of commands to be specified. For example,

**\*help con.**

produces information on **\*Configure** and **\*Continue**. You can also use this to establish the current abbreviation for a command. Since RISC OS uses the first command it finds that matches an abbreviation, typing **\*Con.** is equivalent to **\*Configure**. For the **\*Continue** command, the minimum abbreviation must distinguish it from **\*Configure**, and is therefore **\*Cont.** These abbreviations may change as new commands are added.

## Using the command line

Command line users will find many hints and tips in the following sections:

- **Command line syntax**, detailing the syntax you need to use within the command line.
- **System devices**, giving you a summary of useful system devices you can use.
- **System variables**, explaining how variables are used by the operating system.
- **Command and application options**, explaining how to use variable options with commands and applications.

- **Command scripts**, showing you how to write Command and Obey files to control the computer.
- **Using GS formats in scripts**, showing the formats used to handle control characters.

## Command line syntax

The interface to the command line is built into the RISC OS operating system and processes valid commands sent as text strings. The text string is normally terminated by Return.

The syntax of each command in the following chapters is described in a standard way, with examples of its use where these are helpful. The symbols used in syntax descriptions are:

- |         |   |
|---------|---|
| italics | indicate that an actual value must be substituted. For example, <i>filename</i> means that an actual filename must be supplied. |
| [...]   | indicate that the item enclosed in the square brackets is optional.   |
|         | indicates alternatives. For example, 0   1 means that the value 0 or 1 must be supplied.  |

## What are parameters?

RISC OS commands are sometimes followed by one or more *parameters* which tell the computer how you want the command to be modified. Ordinary English is not so very different: in the sentence 'Give a dog a bone' the word *give* is like the command, and a *dog* and a *bone* are the parameters. And because it doesn't make much sense just to say 'Give' – you have to say what to give, and who to give it to – these 'parameters' are not optional.

In the following descriptions, the parameters are in italics. So the English example would be described like this:

*give someone something*

but you would type, for example,

`give a dog a bone`

or

`give everyone a pay rise`

However, whereas in English you can substitute several words separated by spaces for a single parameter, in RISC OS you can leave spaces only **between** parameters, since otherwise the operating system cannot tell where you want one parameter to end and the next to begin.

Command line parameters may be optional: in this case they are shown in the syntax within square brackets. Often, when a parameter is specified as optional, the operating system will supply a default value; the value of this is specified for each command.

## Numeric parameters

Some commands have one or more numeric parameters. These are interpreted as decimal by default (unless the description of the command specifies otherwise), but it is possible to express them in any base by prefacing the parameter itself with the base followed by an underscore, as in the following examples:

\*Eval 2\_1010101 Returns the integer value of the argument, 85.

\*Eval 16\_FFF Similarly, returns the value 4095.

An alternative form for hexadecimal uses the & sign to signify base 16:

\*Eval &FFF

Decimal and hexadecimal are likely to be the most useful bases.

## Wildcards

It is useful in many command line operations to specify objects using 'wildcards'. There are two wildcards:

\*

stands for zero or more characters

#

stands for a single character

### Examples

he*	would stand for <i>he</i> , <i>help</i> , <i>hello</i> , or <i>hencoop</i>
he*p	would stand for <i>help</i> or <i>hencoop</i>
he##	would stand for <i>help</i> , <i>hens</i> or <i>head</i> , but not <i>hen</i> or <i>health</i>

## Checks on the command

Before a command is executed, the command line interface carries out a certain amount of pre-processing on the line:

- Stars and spaces are skipped. The command line prompt includes a star, so there is no need to type one, but it doesn't matter if you do.
- Comment lines are ignored. Comments are introduced by typing ';' as the first non-space character on a line.
- Command length is checked. Command lines must be less than or equal to 256 characters, including the terminating character. Lines which are too long produce an error message.
- Redirection (output to a file, or input from a file) is checked.

- Single-character prefixes are checked, such as '/', equivalent to Run, or '%' which instructs the command line interface to skip alias checking.
- Alias commands are checked. (The section *System variables* on page 421 gives more information on the use of aliases.)
- The command is passed for execution. Commands offered to the command line interface are looked up in the OS table, passed to any other modules, the filing system manager, and finally \*Run as a file of the name given, in an attempt to execute the command.

Full details of this checking are given in the RISC OS *Programmer's Reference Manual*.

## File redirection

A powerful feature of RISC OS is the ability to redirect input or output streams (or both) for the duration of the command. By default, output is directed to the screen, but it may be convenient to redirect the output stream to a file so that it can be later examined in more detail or further processed.

The format of a redirection is:

`command { redirection spec }`

where the `redirection spec` is at least one of:

<code>&gt; filename</code>	Output goes to <code>filename</code> .
<code>&lt; filename</code>	Input read from <code>filename</code> .
<code>&gt;&gt; filename</code>	Output is appended to <code>filename</code> .

Note the following:

- Spaces in the redirection specification are significant.
- The braces are a literal part of the redirection format.
- There must be a single space between each pair of elements for it to be recognised as a redirection.

### Examples

`*Cat { > mycat }`

This sends a list of the contents in the current directory to a file called `mycat`.

`*Help Cat { > AllHelp }`

This sends all the help information on the \* command Cat, (elicited by the command `*Help Cat`) to a file called `AllHelp`.

## **System devices**

The operating system contains a number of useful system devices, which behave like files in some ways. You can use them anywhere you would normally use a file name as a source of input, or as a destination for output. These include:

### **System devices suitable for input**

- `kbd:` the keyboard, reading a line at a time (this allows editing using Delete, Ctrl-U, and other keys)
- `rawkbd:` the keyboard, reading a character at a time
- `serial:` the serial port
- `parallel:` the parallel port
- `null:` the 'null device', which effectively gives no input

### **System devices suitable for output**

- `vdu:` the screen, using GSRead format (see page 433)
- `rawvdu:` the screen, via the VDU drivers
- `serial:` the serial port
- `parallel:` the parallel port
- `printer:` the currently configured printer
- `netprint:` the currently configured network printer
- `null:` the 'null device', which swallows all output

These system devices can be useful with commands such as \*Copy, and the redirection operators (> and <):

- `*Copy myfile printer:` Send `myfile` to the printer
- `*Cat { > printer: }` List the files in the current directory to the printer
- `*Cat netprint:` Display the currently selected network printer and a list of available network printers.

The system device `null:` is useful to suppress unwanted output from a command script or program:

`*myprogram { > null: }` Runs `myprogram` with no output

The most useful system devices for the general user are likely to be `printer:` and `netprint:`

## **!Run and !Boot files within applications**

Inside each application, for example !Draw, you'll see a !Run file (it has the file type Obey). An applications !Run file is obeyed whenever you start the application. This file sets up the applications environment, loads any resources it requires and then starts the application code (often called !Runimage).

The application also contains a !Boot file, this is used when the application is first 'seen'. This occurs when the directory containing the application is displayed on the screen. The !Boot file sets up the application sprite used in the directory display.

### **Using !Draw as an example**

Most !Boot and !Run files have lines containing Set commands. For example, !Draw sets up variables that include a RunType and a PrintType for the normal drawfile file type &AFF.

Draw also sets up a variable called Draw\$Dir which sets up the computer to remember where the Draw application is on the computer. It uses another variable called Obey\$Dir, this contains the path of the directory in which the current obey file is running.

You will find all these variables explained in greater detail later in this chapter.

## **What is a module?**

A module is a piece of software that is loaded into memory. A section of memory is reserved for use by modules and is known as the RMA (relocatable module area).

If you look at the !Run file of !Draw you'll see some RMEnsure commands are used these particular commands make RISC OS check the named module is present in the RMA.

## **System variables**

### **Introducing system variables**

System variables are used by RISC OS to store settings that control the behaviour of the computer. For example, they store how you like the time and date to be printed, how you want the \*Copy command to work, and what prompt you like.

However, unlike configuration features, your settings for system variables are not preserved when you switch the computer off or reset it. When you do this, the computer always goes back to the default values for the standard set of system variables. You can see these default values by typing \*Show just after switching on your computer.

In addition to RISC OS system variables, applications commonly use variables of their own, to control their default behaviour. For example, Edit uses variables to store your choices of display font, background colour and so on. Where there are such variables, they are listed in the appendix *Configuration information* on page 497. Some suggestions for using them are also included later in this chapter.

### **Setting variables in a Boot file**

If the default values are not the ones you want, you can change them using the \*Set command. The computer does not remember system variables between sessions, so if you want different default values you must change the variable each time you use your computer. Rather than typing them each time by hand, you can include the \*Set commands in a boot file (a file that is run each time you use the computer).

However, although you could create such a boot file 'by hand', typing it in Edit, a much easier way is to use the Task manager's desktop boot facility, described in the chapter *Modifying the system start-up configuration* on page 139. You will then not need to understand anything about system variables as such, since you can simply set up the desktop the way you want it and make a desktop boot file. Even if you wish to edit the boot file created by the Task manager, that is the easiest way to start.

### **Referring to variables**

Each variable is accessed by its name, which can contain any character which is neither a space nor a control character. As with filenames, the case of characters is remembered, but is ignored when the names are looked up.

### **What are variables for?**

RISC OS uses the values of variables to make the Desktop work. When you double click on a file (not an application), RISC OS looks up the alias for RUNning that file type in the variable list. If it finds a match, the command stored in the variable (for example RMLoad %\*0) is executed, substituting the name of the file in place of the marker %\*0; otherwise an error box is displayed.

In general, files which are displayed as white squares (they have no file type icon) will give this error if you try to use them in this way.

### **Application variables**

There are many different system variables provided and used by RISC OS, as well as some which may be added by applications. You can see them all by typing \*Show (use Shift to display each successive screenful).

The following section gives standard names used for some of the variables that are bound to a particular application.

**App\$Dir**

An *App\$Dir* variable gives the full pathname of the directory that holds the application *App*. This is typically set in the application's !Run file by the line:

```
Set App$Dir <Obey$Dir>
```

**App\$Path**

An *App\$Path* variable gives the full pathname of the directory that holds the application *App*. An *App\$Path* variable differs from an *App\$Dir* variable in two important respects:

- The pathname includes a trailing '.'.
- The variable may hold a set of pathnames, separated by commas.

It's common to use an *App\$Dir* variable rather than an *App\$Path* variable, but there may be times when you need the latter.

An *App\$Path* variable might, for example, be set in the application's !Run file by the line:

```
Set App$Path <Obey$Dir>.,%.App.
```

if the application held further resources in the subdirectory *App* of the library.

**App\$Options**

An *App\$Options* variable holds the start-up options of the application *App*:

- An option that can be either on or off should consist of a single character, followed by the character '+' or '-' (eg M+ or S-).
- Other options should consist of a single character, followed by a number (eg P4 or F54).
- Options should be separated by spaces; so a complete string might be F54 M+ P4 S-.

This variable is typically used to save the state of an application to a desktop boot file, upon receipt of a desktop save message. A typical line output to the boot file might be:

```
Set App$Options F54 M+ P4 S-
```

An application should only save those options that differ from the default, so there will be no line at all if the application is in its default state.

### **App\$PrintFile**

An App\$PrintFile variable holds the name of the file or system device to which the application *App* prints. Typically this will be printer:, and would be set in your application's !Run file as follows:

```
Set App$PrintFile printer:
```

## **Changing and adding commands**

### **Alias\$Command**

An Alias\$Command variable is used to define a new command named *Command*. For example:

```
Set Alias$Mode echo |<22>|<%0>
```

By using the name of an existing command, you can change how it works.

## **Using file types**

### **File\$type\_XXX**

A File\$type\_XXX variable holds the textual name for a file having the hexadecimal file type XXX. It is typically set in the !Boot file of an application that provides and edits that file type. For example:

```
Set File$type_XXX TypeName
```

The reason the !Boot file is used rather than the !Run file is so that the file type can be converted to text from the moment its 'parent' application is first seen, rather than only from when it is run.

### **Alias\$@LoadType\_XXX, Alias\$@PrintType\_XXX and Alias\$@RunType\_XXX**

These variables set the commands used respectively to load, print and run a file of hexadecimal type XXX. They are typically set in the !Boot file of an application that provides and edits that file type. For example:

```
Set Alias$@PrintType_XXX /<Obey$Dir> -Print  
Set Alias$@RunType_XXX /<Obey$Dir>
```

Note that the above lines **both have a trailing space** (invisible in print!).

The reason the !Boot file is used rather than the !Run file is so that files of the given type can be loaded, printed and run from the moment their 'parent' application is first seen, rather than only from when it is run.

You will see this information when you have the 'Full info' type of directory display turned on.

## Setting the command line prompt

### **CLI\$Prompt**

The CLI\$Prompt variable sets the command line interpreter prompt. By default this is '\*'. One common way to change this is so that the system time is displayed as a prompt. For example:

```
SetMacro CLI$Prompt <Sys$Time> *
```

This is set as a macro so that the system time is evaluated each time the prompt is displayed.

## Configuring RISC OS commands

### **Copy\$Options, Count\$Options and Wipe\$Options**

These variables set the behaviour of the \*Copy, \*Count and \*Wipe commands. For a full description type \*Help Copy at the command line.

## System path variables

### **File\$Path and Run\$Path**

These variables control where files are searched for during, respectively, read operations or execute operations. They are both path variables, which means that – in common with other path variables – they consist of a comma separated list of full pathnames, each of which has a trailing ':'.

If you wish to add a pathname to one of these variables, you must ensure that you append it once, and once only. For example, to add the 'bin' subdirectory of an application to Run\$Path, you could use the following lines in the application's !Boot file:

```
If "<App$Path>" = "" then Set Run$Path <Run$Path>, <Obey$Dir>.bin.  
Set App$Path <Obey$Dir>.
```

## Obey files

### **Obey\$Dir**

The Obey\$Dir variable is set to the directory from which an Obey file is being run, and may be used by commands within that Obey file.

## Time and date

### **Sys\$Time, Sys\$Date and Sys\$Year**

These variables are code variables that are evaluated at the time of their use to give, respectively, the current system time, date and year.

### **Sys\$DateFormat**

The Sys\$DateFormat variable sets the format in which the date is presented by some commands.

## **!System and !Scrap**

### **System\$Dir and System\$Path**

These variables give the full pathname of the System application. They have the same value, save that System\$Path has a trailing '.', whereas System\$Dir does not. You must not change their values.

(There are two versions of this pathname for compatibility with some old applications). !System and !Scrap are contained in the !Boot application.

### **Wimp\$Scrap**

The Wimp\$Scrap variable gives the full pathname of the Wimp scrap file used by the file transfer protocol. You must not use this variable for any other purpose, nor change its value.

### **Wimp\$ScrapDir**

The Wimp\$ScrapDir variable gives the full pathname of a scrap directory within the Scrap application, which you may use to store temporary files. You must not use this variable for any other purpose, nor change its value.

## **The desktop**

### **Wimp\$State**

The Wimp\$State variable shows the current state of the Wimp. If the desktop is running, it has the value 'desktop'; otherwise it has the value 'commands'.

## Command and application options and other variables

Some commands, such as \*Copy and \*Wipe, can operate in a variety of ways. For example, you can effectively turn \*Copy into a Move command by setting the D(delete) option, which deletes the source file after copying it to another directory or filing system. You would do this by typing

```
*Set Copy$Options <Copy$Options> D
```

at the command line prompt. These options are described in the entries for each command in the chapter *Star command summaries* on page 443.

Several applications, such as Edit, Draw, Alarm and Paint, also use system variables to record, for example, whether you want the Paint colours window to appear automatically when you open a sprite window, or whether you want the toolbox to be displayed by default in Draw. Such variables use the format *App\$Options*, where *name* is the name of the application in question. These variables will only be listed in the computer's response to the \*Show command if you have changed them from their default values.

In addition to 'options', applications may use other variables for a variety of purposes. For example, Acorn Desktop Publisher needs to know where its 'Work' directory is. It will find this out when the Work directory has been displayed on the screen, and it assigns the directory's pathname to the variable *dtp\$workDir*. To avoid having to carry out this action each time you use the application, you can put a \*Set command identifying the directory in your boot file, for example:

```
*Set dtp$WorkDir adfs::HardDisc.$.Applics.dtp.WorkDir
```

### Creating your own command line prompt

You can also use a system variable to change the operating system prompt – normally \* – by setting the variable *CLI\$Prompt* to (for example) the character #:

```
*Set CLI$Prompt #
```

You can also set one variable to the value of another:

```
*Set CLI$Prompt <Sys$Time>
```

This sets the prompt to the system time, but only does so once, when the command is given. However, it would clearly be more useful if the prompt always showed the current time. To do this, change *CLI\$Prompt* from a variable into a macro. A macro is similar to a variable, but is evaluated every time it is used, instead of just once when it is set. Therefore, type the following:

```
*SetMacro CLI$Prompt <Sys$Time> *
```

Each time Return is pressed at the command line prompt a new prompt is given (unless you have not typed anything since the last Return; you will then be returned to the desktop); the current time is worked out and displayed, followed by a space character and an asterisk:

```
12:59:06 *
12:59:07 *
12:59:08 *
```

### Other uses for system variables

The names of commands may be changed using the \*Set command with variables whose name starts Alias\$... This allows you to add new commands, to change the meaning of existing commands, to combine commands together, and to add your own parameters to a command.

Programmers can use system variables to pass values between programs. One program can create and write to a variable which another program can then read. Such variables should have names starting App\$, where *App* is your program; this avoids problems caused by programmers using the same system variable names.

## Command scripts

Command scripts are files of commands that you would normally type in at the command line prompt. There are two main uses for such files:

- To set up the computer to the state you want, either when you switch on or when you start an application.

This type of command script is commonly known as a boot file, because it is used to 'boot up' the computer. You can create such a file without needing to know anything about the command line, using the **Desktop boot** facility in the Task manager, described in the chapter *Modifying the system start-up configuration* on page 139.

- To save typing in a set of commands you find yourself using frequently. For example, if you often want to display information about a file and then print it, you can combine the commands \*FileInfo and \*Type into a command script.

You may find using an Alias\$... variable to be better for the second case. The main advantage of using variables rather than command files is that they are held in memory and so are quicker in execution; however, they are only really suitable for short commands. If you use variables you will probably still want to use a command file to set them up when you switch on.

## Command and Obey file types

There are two types of file you can use for command scripts: Command files, and Obey files. The differences between these two file types are:

- An Obey file is always passed to the command line interpreter, whereas a Command file is passed to the current input.
- An Obey file is read directly, whereas a Command file is treated as if it were typed at the keyboard (and hence usually appears on the screen).
- An Obey file sets the system variable Obey\$Dir to the directory it is in.
- An Obey file can have parameters passed to it.

The differences between Command and Obey files is explained in an example on page 431.

Additionally there are the TaskExec and TaskObey file types. These are very similar to Command and Obey files. Their main advantage is that they multitask under the desktop:

- A TaskExec file is \*Exec'd in a task window.
- A TaskObey file is \*Obey'd, opening a task window only if needed for I/O. It quits the window when finished.

## Creating a command script

A command script can be created using any text or word processor. If you created the file using Edit, you should set the file's type by pressing Menu over the Edit icon on the icon bar and choosing the desired file type, such as Command or Obey.

When you save the file you should consider in which directory you will save it. By default, files are looked for first in the current directory, then in the library.

Therefore, if you want to avoid having to type the full pathname of the file every time you run it you should save it in one of the following:

- The directory from which the command script will be run (typically your root directory, or an application directory).
- The library. The library is typically \$.Library, but may be \$.ArthurLib on a network; see \*Configure Lib in the section *Configuration commands* on page 437.

## Running the script

Provided that you have set the file type to Command or Obey, the file can then be run in the same ways as any other file, by

- typing its name at the \* prompt
- typing its name preceded by a \* at any other prompt (some applications may not support this)
- double-clicking on its icon in a directory display.

The same restrictions apply as with any other file. If the file is not in either your current directory or the library, it will not be found if you just give the filename; you must give its full pathname. This assumes you have not changed the value of the system variable Run\$Path.

## Making a script run automatically

You can make scripts run automatically

- from the network when you first log on
- from a disc when you first switch the computer on
- from an application directory when the application is run.

You'll find information on how to do this in the chapter *Modifying the system start-up configuration* on page 139.

## Using parameters

An Obey file – but not a Command file – can have parameters passed to it, which can then be used by the command script. The first parameter is referred to as %0, the second as %1, and so on. You can refer to all the parameters after a particular one by putting a \* after the %, so %\*1 would refer to all the parameters from the second one onwards.

These parameters are substituted before the line is passed to the command line interpreter. Thus if an Obey file called Display contained:

```
FileInfo %0  
Type %0
```

then the command \*Display MyFile would do this:

```
FileInfo MyFile  
Type MyFile
```

Sometimes you do not want parameter substitution. For example, suppose you wish to include a \*Set Alias\$. command in your file, such as:

```
Set Alias$Mode echo |<22>|<%0> Desired-command
```

The effect of this is to create a new command 'Mode'. If you include the \*Set Alias command in an Obey file, when you run the file the %0 will be replaced by the first parameter passed to the file. To prevent the substitution you need to change the % to %%:

```
Set Alias$Mode echo |<22>|<%0> Command-needed-in-file
```

Now when the file is run, the '%%0' is changed to '%0'. No other substitution occurs at this stage, and the desired command is issued.

## Examples

These example files illustrate some of the differences between Command and Obey files:

### Example 1

```
*BASIC
AUTO
FOR I = 1 TO 10
    PRINT "Hello"
NEXT I
END
```

If this is a command file, it will enter the BASIC interpreter, and input the file shown. The command script will end with the BASIC interpreter waiting for another line of input. You can then press Esc to get a prompt, type RUN to run the program, and then type QUIT to leave BASIC. This script shows how a command file is passed to the input, and can change what is accepting its input (in this case to the BASIC interpreter).

On the other hand, if this is an Obey file it will be passed to the command line interpreter, and an attempt will be made to run these commands:

```
*BASIC
*AUTO
*FOR I = 1 TO 10
*    PRINT "Hello"
*NEXT I
*END
```

Only the first command is valid, as an Obey file all this does is to leave you in the BASIC interpreter. Type QUIT to leave BASIC; you will then get an error message saying File 'AUTO' not found, generated by the second line in the file.

### Example 2

The next example illustrates how control characters are handled:

```
echo <7>
echo |<7>
```

The control characters are represented in GTrans format (see the section *Using GS formats in scripts* on page 433). These are not interpreted until the echo command is run, and are only interpreted then because echo expects GTrans format.

The first line sends an ASCII 7 to the VDU drivers, sounding a beep. In the second line, the | preceding the < changes it from the start of a GTrans sequence to just representing the character <, so the overall effect is:

echo <7>	Send ASCII 7 to VDU drivers – beeps
echo  <7>	Send <7> to the screen

### Example 3

The last examples are a Command file:

```
*Set Alias$more %echo |<14>|m %type -tabexpand %*0|m %echo |<15>
```

and an Obey file that has the same effect:

```
Set Alias$more %echo |<14>|m %type -tabexpand %%*0|m %echo |<15>
```

The only differences between the two examples are that the Command file has a preceding \* added, to ensure that the command is passed to the command line interpreter, and that the Obey file has the %\*0 changed to %%\*0 to delay the substitution of parameters.

The file creates a new command more – taking its name from the UNIX 'more' command – by setting the variable Alias\$more:

- The % characters that precede echo and type ensure that the actual commands are used, rather than an aliased version of them.
- The sequence |m represents a carriage return in GTrans format (see the section *Using GS formats in scripts* overleaf). It is used to separate the commands, just as Return would if you were typing the commands.
- The two echo commands turn scroll mode on, then off, by sending the control characters ASCII 14 and 15 respectively to the VDU drivers.
- The | before each < prevents the control characters from being interpreted until the aliased command more is run.

The command turns scroll mode on, types a file to the screen expanding tabs as it does so, and then turns scroll mode off.

## Using GS formats in scripts

The GSTrans and GSRead formats are used by a number of commands that need to be able to handle control characters, and characters whose top bit is set. They enable you to use these characters, which would otherwise cause unpredictable output from your monitor or printer, and which would be difficult to enter directly from the keyboard. The two formats are identical.

The GSRead or GSTrans format is used by some commands to read characters that you type in. The characters are interpreted using the following conventions:

- A character preceded by a | is converted into the relevant control code: |C would become ASCII 3 (which is Ctrl C).
- An integer within angle brackets is converted into the equivalent ASCII code: <7> would become ASCII 7.
- A variable name within angle brackets is replaced by the value held in the variable, or is ignored if the variable does not exist.
- All other characters are unchanged.

A full list of ASCII codes and how to obtain them is given below. Of course, any ASCII code may be obtained by enclosing it in angle brackets as described above, and this may be easier to remember than the symbol encoding.

<b>ASCII code</b>	<b>Symbols used</b>
0	@
1 – 26	letter eg  A (or  a) = ASCII 1  M (or  m) = ASCII 13
27	[ or   {
28	\
29	] or   }
30	^ or   ~
31	_ or   '
32 – 126	keyboard character, except for:  "     <  ?
127	! coded-symbol eg ASCII 128 =   !   @ ASCII 129 =   !   A etc
128 – 255	

You must use | < to prevent the < from being interpreted as the start of a number or variable name enclosed in angled brackets.

To include leading spaces in a definition, the string must be in double quotation marks, ", which are not included in the definition. To include a literal " character in the string, use | " or "".



This chapter gives a short summary of each of the types of \*Commands and then gives a list of \*Commands in each grouping. Once you have found the \*Command of interest, you can look up a summary of its function and its syntax in the next chapter.

For full information about the star commands in this and the next chapter, refer to the RISC OS 3 *Programmer's Reference Manual*.

## Filing system commands

Before you use these commands you should have read the chapters on filing systems. Those chapters introduce the filing systems and describe how they work, and also explain the terminology used in this chapter.

In many commands, reference is made to the current directory; many parameters, if omitted, will default to this directory. You can determine at any time which the current directory is by typing \*Cat and then pressing Return; this displays a catalogue of the current directory. It is important to realise that opening or closing a directory display in the desktop does not change the current directory. Use the command \*Dir to change directory within the command line.

### General filing system commands

The commands in this section are relevant to the operation of all filing systems.

*Access	*Ex	*Rename
*Append	*Exec	*Remove
*Build	*FileInfo	*Run
*Cat	*Info	*Save
*CDir	*LCat	*SetType
*Close	*LEx	*Shut
*Copy	*Lib	*ShutDown
*Count	*List	*Spool
*Create	*Load	*SpoolOn
*Delete	*Opt 1	*Stamp
*Dir	*Opt 4	*Type
*Dump	*PipeCopy	*Up
*EnumDir	*Print	*Wipe

## **Filing system-specific commands**

The commands below are specific to particular filing systems, and you can only use them when the relevant filing system is selected as the current filing system.

### **Disc-specific commands**

The Advanced Disc Filing System (ADFS) is the default filing system, and is supplied with every system. However most of these commands also apply to other disc filing systems such as the SCSI Filing System (SCSI) and the Compact Disc Filing System (CDFS). ADFS controls the local disc storage media (floppy disc, and hard disc). This version of ADFS is compatible with previous versions of Acorn ADFS.

*ADFS	*Defect	*Mount
*Back	*Dismount	*NameDisc
*Backup	*DOSMap	*NoDir
*Bye	*Drive	*NoLib
*CheckMap	*Format	*NoURD
*Compact	*Free	*URD
*CopyBoot	*Map	*Verify

### **Network-specific commands**

The Network Filing System is for use with a local area network. For general information on NetFS, see the chapter *Disks and filing systems* on page 41.

*Net	*InetInfo	*NetStat
*AddFS	*InetConfig	*NetProbe
*AddMap	*ListFS	*Pass
*Bye	*ListPS	*PS
*Free	*Logon	*SDisc
*FS	*Mount	*SetPS
*I am	*NetMap	

### **Other filing system-specific commands**

The Advanced Disc Filing System (ADFS) and, for network users, the Network Filing System (NetFS) are the most commonly used, but more specialised filing systems – such as the RAM filing system (RAMFS) and the desktop filing system (ResourceFS) – have commands to select them, which are listed below. Some of these filing systems may not be present on your computer.

*Ram	*SCSI	*CDFS
*ResourceFS		

## Configuration commands

These commands are used to configure, or set up, the computer. The main command used is the \*Configure command, which has many possible parameters, one for each of the CMOS RAM options you can set with it. CMOS RAM contains values of settings used at start up time; these values are not lost when mains power is switched off, since CMOS RAM is supported by batteries: the memory is therefore known as 'non-volatile'.

The Configure application, !Configure, can control most of these features, such as mouse speed, keyboard auto-repeat, sound volume, printer type, the keyboard Caps Lock, and the type of window dragging. The !Configure application is described in the chapter *Setting the desktop configuration* on page 117.

Changes set with \*Configure are recorded immediately, but take effect only after power on or a hard reset.

The Configure application also provides a facility for saving configurations as files. Such files will incorporate settings only for those features that can be set with the !Configure application, not for those that have to be set in the command line.

The \*Status command displays a list of the current options and their currently assigned values, the entire collection of settings being known as the configuration status of the machine.

## User preferences

This group of configuration commands allows you to customise the operation of your computer to suit your personal working style.

*Configure Boot	*Configure Lib	*Configure Repeat
*Configure BootNet	*Configure Loud	*Configure Scroll
*Configure Caps	*Configure Mode	*Configure ShCaps
*Configure Delay	*Configure NoBoot	*Configure SoundDefault
*Configure Dir	*Configure NoCaps	*Configure Truncate
*Configure DumpFormat	*Configure NoDir	
*Configure FileSystem	*Configure NoScroll	
*Configure Language	*Configure Quiet	

## **Desktop preferences**

This group of configuration commands allows you to set up your desktop configuration to suit your own way of working. These commands are usually set using the !Configure application.

- |                                 |                              |
|---------------------------------|------------------------------|
| *Configure MouseStep            | *Configure WimpDragMove      |
| *Configure WimpAutoMenuDelay    | *Configure WimpFlags         |
| *Configure WimpDoubleClickDelay | *Configure WimpMenuDragDelay |
| *Configure WimpDoubleClickMove  | *Configure WimpMode          |
| *Configure WimpDragDelay        |                              |

## **Hardware configuration**

This group of configuration commands allows you to set up your computer to suit its hardware specification and the range of peripherals such as printers that are connected to it.

- |                     |                        |                      |
|---------------------|------------------------|----------------------|
| *Configure Baud     | *Configure FS          | *Configure Print     |
| *Configure BST      | *Configure GMT         | *Configure PS        |
| *Configure Cache    | *Configure HardDiscs   | *Configure Step      |
| *Configure Country  | *Configure IDEDiscs    | *Configure Sync      |
| *Configure Data     | *Configure Ignore      | *Configure Territory |
| *Configure Drive    | *Configure MonitorType | *Configure TimeZone  |
| *Configure DST      | *Configure NoDST       | *Configure TV        |
| *Configure Floppies |                        |                      |

## **Memory allocation**

This group of configuration commands allows you to optimise the use of memory. The default memory allocations take into account the model number of your Acorn computer (and hence the overall size of memory), so these values should not be changed for general use.

For many of these commands you can specify the amount of memory to reserve either in kilobytes or in pages of memory. It is preferable to use kilobytes, as the page size could change on future versions of the hardware. The current page size is 4Kbytes.

You can see how memory is allocated and make temporary changes by using the Task manager from the desktop.

- |                         |                              |
|-------------------------|------------------------------|
| *Configure ADFSbuffers  | *Configure FontMax5          |
| *Configure ADFSDirCache | *Configure PrinterBufferSize |
| *Configure FontSize     | *Configure RAMFsSize         |
| *Configure FontMax      | *Configure RMASize           |
| *Configure FontMax1     | *Configure ScreenSize        |
| *Configure FontMax2     | *Configure SpriteSize        |
| *Configure FontMax3     | *Configure SystemSize        |
| *Configure FontMax4     |                              |

## System variables

The chapter *The command line* on page 411 describes how RISC OS stores settings used at start-up time in the computer's RAM.

These are the commands used for system variables:

- |       |           |        |
|-------|-----------|--------|
| *Show | *SetEval  | *Unset |
| *Set  | *SetMacro |        |

## Module-related commands

A relocatable module is a piece of software which, when loaded into the machine, behaves like a normal application program or as an extension to the operating system. Modules can contain programming languages or filing systems; they can be used to add new \* commands.

Relocatable modules run in an area of memory known as the Relocatable Module Area (RMA) which is maintained by the system. They are 'relocatable' because they can be loaded at any particular location in memory.

RISC OS provides facilities for integrating modules in such a way that, to the user, they appear to be a full part of the system. For instance, the operating system responds to the \*Help command, extracting automatically any relevant help text.

Several \* commands are provided by the operating system for handling modules, including one for loading a module file from the filing system, and these are described in detail in the next chapter.

- |           |           |             |
|-----------|-----------|-------------|
| *Modules  | *RMInsert | *RMRun      |
| *RMClear  | *RMKill   | *RMTidy     |
| *RMEnsure | *RMLoad   | *ROMModules |
| *RMFaster | *RMReInit | *Unplug     |

## Sound system commands

RISC OS contains a sound synthesizer which allows up to eight 'instruments' to be played at once, with mono or stereo sound production for each instrument. The sound system can be controlled with great subtlety, the details of which are outside the scope of this guide. Individual sound commands are listed below; for further information, refer to the chapter on Sound in the *RISC OS Programmer's Reference Manual*.

The Maestro program is included on the Applications disc; it enables you to compose and replay music.

*Audio	*Speaker	*Tuning
*ChannelVoice	*Stereo	*Voices
*QSound	*Tempo	*Volume
*Sound		

## FX commands

\*FX commands access the operating system OS\_Byte routines and require from one to three parameters. Like many of the operating system commands, many \*FX actions can be carried out from the desktop. For example, the printer ignore character can be set using the Configure application. In addition, there is little error handling built in to \*FX commands, and invalid values are not rejected and may have unpredictable results. Most \*FX commands have now been replaced by better RISC OS operations; \*FX commands have been retained for reasons of backwards compatibility.

For further information, refer to the *RISC OS Programmer's Reference Manual*.

## Debugger commands

These commands are for use when debugging applications:

*BreakClr	*Debug	*MemoryA
*BreakList	*InitStore	*MemoryI
*BreakSet	*Memory	*ShowRegs
*Continue		

## Desktop commands

These commands are related to the desktop, filer and wimp behaviour:

*AddTinyDir	*Filer_Run	*ShellCLI_TaskQuit
*Backdrop	*Filters	*ShowFree
*Desktop	*IconSprites	*TaskWindow
*Desktop_...	*Pin	*ToolSprites
*Desktop_SetPalette	*Pinboard	*WimpMode
*Filer_Action	*Pointer	*WimpPalette
*Filer_Boot	*RemoveTinyDir	*WimpSlot
*Filer_CloseDir	*ShellCLI_I	*WimpTask
*Filer_OpenDir	*ShellCLI_Task	*WimpWriteDir

## Sprite commands

These commands are used to control sprites:

*SChoose	*SFlipX	*SLoad
*ScreenLoad	*SFlipY	*SMerge
*ScreenSave	*SGet	*SNew
*SCopy	*SInfo	*SRename
*SDelete	*SList	*SSave
*SDisc		

## Font commands

These commands are used to control fonts and font usage:

*FontCat	*FontList	*LoadFontCache
*FontInstall	*FontRemove	*SaveFontCache
*FontLibrary		

## Filing system locking commands

These commands are used to control file system locking:

*FSLock_ChangePassword	*FSLock_Status
*FSLock_Lock	*FSLock_Unlock

## Miscellaneous star commands

These commands control the behaviour of the keyboard, VDU and printer ports, including customising the computer for international use. In addition, there are commands of interest to programmers and those who wish to prepare Obey files or start up scripts (for more information, see the chapter *The command line* on page 411).

*Alphabet	*Echo	*Obey
*Alphabets	*Error	*Podules
*BASIC	*Eval	*PoduleLoad
*BASIC64	*Go	*PoduleSave
*BlankTime	*Gos	*Quit
*Cache	*If	*Shadow
*ChangeDynamicArea	*Ignore	*Territories
*ColourTrans	*Key	*Time
*Country	*Keyboard	*TV
*Countries		

This is an alphabetical list of every \* Command available under RISC OS 3. It does not contain \* Commands provided by the addition of expansion cards or extra filing systems.

Each command is followed by a short explanation of its function and its command syntax. This is not intended as a complete explanation of the command, but as a quick reference for experienced users who may prefer to use the command line. All of these commands are explained in greater detail in the *RISC OS Programmer's Reference Manual*.

## Command syntax

The syntax of each command in the following sections is described in a standard way. The symbols used in syntax descriptions are:

- |                |   |
|----------------|---|
| <i>italics</i> | indicate that an actual value must be substituted. For example, <i>filename</i> means that an actual filename must be supplied. |
| [ . . . ]      | indicate that the item enclosed in the square brackets is optional.   |
|                | indicates alternatives. For example, 0   1 means that the value 0 or 1 must be supplied.  |

## The star commands

### \*Access

\*Access changes the attributes of all objects matching the wildcard specification. These attributes control whether you can run, read from, write to and delete a file.

Attributes are:

L	Lock object against deletion by any user
W	Write permission for you
R	Read permission for you
/	Separator between your permissions and the public's
W	Write permission for the public (on NetFS)
R	Read permission for the public (on NetFS)

\*Access *object\_spec* [*attributes*]

### **\*AddFS**

\*AddFS adds a remote file server's disc to the list of file servers' discs that are known to NetFS. If only the file server is specified, then all its discs will be removed from the list.

\*AddFS *file\_server\_number* [*disc\_number* [:] *disc\_name*]

### **\*AddMap**

Adds an entry to the Net address map

\*AddMap [*IP address*] [*network*]

### **\*AddTinyDir**

\*AddTinyDir adds a file, application or directory to the icon bar. If no pathname is given, it adds a blank directory icon to the icon bar.

\*AddTinyDir [*object*]

### **\*ADFS**

\*ADFS selects the Advanced Disc Filing System as the current filing system.

\*ADFS

### **\*Alphabet**

\*Alphabet selects an alphabet, setting it according to the country name or alphabet name. With no parameter, this command displays the currently selected alphabet.

\*Alphabet [*country\_name|alphabet\_name*]

### **\*Alphabets**

\*Alphabets lists all the alphabets currently supported.

\*Alphabets

### **\*Append**

\*Append opens an existing file so you can add more data to the end of the file. Pressing Escape finishes the input.

\*Append *filename*

## \*Audio

\*Audio turns the Sound system on or off.

\*Audio On|Off

## \*Back

\*Back swaps the current and previously selected directories on the current filing system.

\*Back

## \*BackDrop

\*BackDrop puts the first sprite in the given sprite file on the desktop background. If no filename is specified, the current backdrop's placing is altered.

\*BackDrop [-Centre|-Scale|-Tile|-Remove] [filename]

## \*Backup

\*Backup copies the used part of one floppy disc to another; free space is not copied.

\*Backup source\_drive dest\_drive [Q]

## \*BASIC

\*BASIC starts the ARM BBC BASIC V interpreter. For full details of BBC BASIC, see the BBC BASIC *Reference Manual*, available from your Acorn supplier.

\*BASIC [options]

## \*BASIC64

\*BASIC64 starts the ARM BBC BASIC VI interpreter, supplied on disc with your RISC OS computer – provided its module has already been loaded, or is in the library. For full details of BBC BASIC, see the BBC BASIC *Reference Manual*, available from your Acorn supplier.

\*BASIC64 [options]

### **\*BlankTime**

\* BlankTime sets the time in seconds before the screen blanks. If, during this time, there is no activity (i.e. no keyboard or mouse input is received, and – with the W option – there is no writing to the screen) the screen then blanks.

The blank time is only retained until the next reset.

\*BlankTime [W|O] [time]

### **\*BreakClr**

\*BreakClr removes the breakpoint at the specified address or register value. If you give no parameter then you can remove all breakpoints.

\*BreakClr [addr|reg]

### **\*BreakList**

\*BreakList lists all the breakpoints that are currently set.

\*BreakList

### **\*BreakSet**

\*BreakSet sets a breakpoint at the specified address or register value.

\*BreakSet addr|reg

### **\*Build**

\*Build opens a new file and directs subsequent input to it. Pressing Escape finishes the input.

\*Build filename

### **\*Bye**

\*Bye ends a filing system session by closing all files and unsetting all directories and libraries.

Other actions are filing system dependent, and where relevant may include dismounting discs, parking the heads of hard discs, and logging off the current files server.

\*Bye

\*Bye [:] file\_server (NetFS syntax)

**\*Cache**

\*Cache turns the cache on or off. With no parameter, it gives the cache's current state.

\*Cache [On|Off]

**\*Cat**

\*Cat lists all the objects in a directory (by default the current directory).

\*Cat [directory]

**\*CDir**

\*CDir creates a directory with the specified pathname. On NetFS, you can also give the size of the directory.

\*CDir directory [size\_in\_entries]

**\*CDFS**

\*CDFS selects the CD-ROM Filing System as the current filing system. This command is only available if you have a CD-ROM drive fitted.

\*CDFS

**\*ChangeDynamicArea**

\*ChangeDynamicArea changes the size of the font cache, system sprite area and/or RAM disc.

\*ChangeDynamicArea [-FontSize n[K]] [-SpriteSize n[K]] [-RamFsSize n[K]]

**\*ChannelVoice**

\*ChannelVoice assigns a voice to a channel. By default, only the first of the eight voices will be available. To make others available, use the BASIC VOICES n command.

\*ChannelVoice channel voice\_number|voice\_name

### **\*CheckMap**

\*CheckMap checks that the map of an E- or F-format disc has the correct checksums and is consistent with the directory tree. If only one copy of the map is good, it allows you to rewrite the bad one with the information in the good one.

\*CheckMap [disc\_spec]

If the map information cannot be cured, you should backup all of your files and then reformat your hard disc. Contact your supplier for more information.

### **\*Close**

\*Close closes all open files on the current filing system.

\*Close

### **\*ColourTrans...**

\*ColourTrans... commands are for internal use only, and you should not use them.

### **\*Compact**

\*Compact collects together free space on a disc by moving files.

\*Compact [disc\_spec]

### **\*Configure**

\*Configure sets the value of a configuration option in the CMOS RAM. If no parameters are specified, the available configuration options are listed.

\*Configure [option [value]]

### **\*Configure ADFSbuffers**

\*Configure ADFSbuffers sets the configured number of 1 Kbyte file buffers reserved for ADFS in order to speed up operations on open files. A value of 1 sets a default value appropriate to the computer's RAM size; a value of 0 disables fast buffering on open files.

\*Configure ADFSbuffers n

### **\*Configure ADFSDirCache**

\*Configure ADFSDirCache sets the configured amount of memory reserved for the directory cache. A value of 0 sets a default value appropriate to the computer's RAM size.

\*Configure ADFSDirCache size[K]

### **\*Configure Baud**

- \*Configure Baud sets the configured baud rate for the serial port.
- \*Configure Baud *n*

### **\*Configure Boot**

- \*Configure Boot sets the configured boot action so that a power on, reset or Ctrl Break runs a boot file.
- \*Configure Boot

### **\*Configure BootNet**

- \*Configure BootNet enables or disables AUN client stations booting from expansion card ROM.
- \*Configure BootNet On|Off

### **\*Configure BST**

- \*Configure BST (short for British Summer Time) is identical to the command \*Configure DST, and is enabled only on machines configured for the UK territory.
- \*Configure BST

### **\*Configure Cache**

- \*Configure Cache sets the configured cache state to be on or off.
- \*Configure Cache On|Off

### **\*Configure Caps**

- \*Configure Caps sets the configured value for Caps Lock to ON.
- \*Configure Caps

### **\*Configure Country**

- \*Configure Country sets the configured alphabet and keyboard layout.
- \*Configure Country *country\_name*

### **\*Configure Data**

- \*Configure Data sets the configured data word format for the serial port.
- \*Configure Data *n*

### **\*Configure Delay**

- \*Configure Delay sets the configured delay before keys start to auto-repeat.
- \*Configure Delay *n*

### **\*Configure Dir**

- \*Configure Dir sets the configured disc mounting so that discs are mounted at power on.
- \*Configure Dir

### **\*Configure Drive**

- \*Configure Drive sets the configured number of the drive that is selected at power on.
- \*Configure Drive *n*

### **\*Configure DST**

- \*Configure DST sets the configured value for daylight saving time to ON.
- The time zone is set when you configure your computer's territory, rather than by this command.
- \*Configure DST

### **\*Configure DumpFormat**

- \*Configure DumpFormat sets the configured format used by the \*Dump, \*List and \*Type commands.
- \*Configure DumpFormat *n*

### **\*Configure FileSystem**

- \*Configure FileSystem sets the configured filing system to be used at power on or hard reset.
- \*Configure FileSystem *fs\_name|fs\_number*

### **\*Configure Floppies**

- \*Configure Floppies sets the configured number of floppy disc drives recognised at power on.
- \*Configure Floppies *n*

### **\*Configure FontMax**

- \*Configure FontMax sets the configured maximum size of the font cache.
- \*Configure FontMax mK|n

### **\*Configure FontMax1**

- \*Configure FontMax1 sets the maximum height at which to scale from a bitmap font rather than from an outline font.
- \*Configure FontMax1 max\_height

### **\*Configure FontMax2**

- \*Configure FontMax2 sets the maximum height at which to scale from outlines to anti-aliased bitmaps, rather than to 1 bit per pixel bitmaps.
- \*Configure FontMax2 max\_height

### **\*Configure FontMax3**

- \*Configure FontMax3 sets the maximum height at which to retain bitmaps in the cache, rather than the outlines from which they were converted.
- \*Configure FontMax3 max\_height

### **\*Configure FontMax4**

- \*Configure FontMax4 sets the maximum width at which to use horizontal subpixel anti-aliasing.
- \*Configure FontMax4 max\_width

### **\*Configure FontMax5**

- \*Configure FontMax5 sets the maximum height at which to use vertical subpixel anti-aliasing.
- \*Configure FontMax5 max\_height

### **\*Configure FontSize**

- \*Configure FontSize sets the configured amount of memory reserved for the font cache.
- \*Configure FontSize sizeK

### \*Configure FS

\*Configure FS sets the configured default file server for NetFS.

\*Configure FS *file\_server*

### \*Configure GMT

\*Configure GMT (short for Greenwich Mean Time) is identical to the command

\*Configure NoDST, and is enabled only on machines configured for the UK territory.

\*Configure GMT

### \*Configure IDEDiscs

\*Configure IDEDiscs sets the configured number of IDE hard disc drives recognised at power on.

\*Configure IDEDiscs *n*

### \*Configure Ignore

\*Configure Ignore sets the configured printer ignore character.

\*Configure Ignore [*ASCII\_code*]

### \*Configure Language

\*Configure Language sets the configured language used at power on.

\*Configure Language *module\_no*

### \*Configure Lib

\*Configure Lib sets the configured library selected by NetFS after logon (0 for the default library, 1 for \$ArthurLib).

\*Configure Lib [0 | 1]

### \*Configure Loud

\*Configure Loud sets the configured volume for the beep to its loudest volume.

\*Configure Loud

### **\*Configure Mode**

\*Configure Mode sets the configured screen mode used by the machine. It is identical to the command \*Configure WimpMode.

\*Configure Mode *screen\_mode*|Auto

### **\*Configure MonitorType**

\*Configure MonitorType sets the configured monitor type.

\*Configure MonitorType *n*|Auto

### **\*Configure MouseStep**

\*Configure MouseStep sets the configured value for how fast the pointer moves as you move the mouse.

\*Configure MouseStep *n*

### **\*Configure MouseType**

Selects the type of pointer device. Serial or quadrature.

\*Configure MouseType *n*

### **\*Configure NoBoot**

\*Configure NoBoot sets the configured boot action so that a Shift power on, Shift reset or Shift Break runs a boot file.

\*Configure NoBoot

### **\*Configure NoCaps**

\*Configure NoCaps sets the configured value for Caps Lock to OFF.

\*Configure NoCaps

### **\*Configure NoDir**

\*Configure NoDir sets the configured disc mounting so that discs are not mounted at power on.

\*Configure NoDir

### \*Configure NoDST

\*Configure NoDST sets the configured value for daylight saving time to OFF.

The time zone is set when you configure your computer's territory, rather than by this command.

\*Configure NoDST

### \*Configure NoScroll

\*Configure NoScroll sets the configured scrolling so the screen does not scroll upwards at the end of a line.

\*Configure NoScroll

### \*Configure Print

\*Configure Print sets the configured default destination for printed output.

\*Configure Print n

### \*Configure PrinterBufferSize

\*Configure PrinterBufferSize sets the configured amount of memory reserved for printer buffering. This parameter should not be used or modified.

\*Configure PrinterBufferSize mK|n

### \*Configure PS

\*Configure PS sets the configured default network printer server.

\*Configure PS *printer\_server*

### \*Configure Quiet

\*Configure Quiet sets the configured volume for the beep to half its loudest volume.

\*Configure Quiet

### \*Configure RamFSSize

\*Configure RamFSSize sets the configured amount of memory reserved for the RAM Filing System to use.

\*Configure RamFSSize mK|n

### **\*Configure Repeat**

\*Configure Repeat sets the configured interval between the generation of auto-repeat keys.

\*Configure Repeat *n*

### **\*Configure RMASize**

\*Configure RMASize sets the configured extra area of memory reserved for relocatable modules

\*Configure RMASize *mK|n*

### **\*Configure ScreenSize**

\*Configure ScreenSize sets the configured amount of memory reserved for screen display.

\*Configure ScreenSize *mK|n*

### **\*Configure Scroll**

\*Configure Scroll sets the configured scrolling so the screen scrolls upwards at the end of a line.

\*Configure Scroll

### **\*Configure ShCaps**

\*Configure ShCaps sets the configured value for Caps Lock to ON, Shift producing lower case letters.

\*Configure ShCaps

### **\*Configure SoundDefault**

\*Configure SoundDefault sets the configured speaker setting, volume and voice.

\*Configure SoundDefault *speaker volume voice\_number*

### **\*Configure SpriteSize**

\*Configure SpriteSize sets the configured amount of memory reserved for the system sprite area.

\*Configure SpriteSize *mK|n*

### **\*Configure Step**

\*Configure Step sets the configured step rate of one or all floppy disc drives.  
\*Configure Step *n* [*drive*]

### **\*Configure Sync**

\*Configure Sync sets the configured type of synchronisation for vertical sync output.  
\*Configure Sync 0|1|Auto

### **\*Configure SystemSize**

\*Configure SystemSize sets the configured extra area of memory reserved for the system heap.  
\*Configure SystemSize *mK|n*

### **\*Configure Territory**

\*Configure Territory sets the configured default territory for the machine. Use this command with caution; if you set a territory that is unavailable your computer will not start, and so you will have to reset your CMOS RAM.  
\*Configure Territory *territory*

### **\*Configure TimeZone**

\*Configure TimeZone sets the configured local time offset from UTC. The time offset must be in the range -13:45 to +13:45, and must be an exact multiple of 15 minutes.  
\*Configure TimeZone [+|-] *hours[:minutes]*

### **\*Configure Truncate**

\*Configure Truncate sets the configured value for whether or not filenames are truncated when too long for a filing system to handle.  
\*Configure Truncate On|Off

### **\*Configure TV**

\*Configure TV sets the configured vertical screen alignment and screen interlace.  
\*Configure TV [*vert\_align[[,]interlace*]]

### **\*Configure WimpAutoMenuDelay**

\*Configure WimpAutoMenuDelay sets the configured time the pointer must rest over a menu item before its submenu (if any) is automatically opened.

\*Configure WimpAutoMenuDelay *delay*

### **\*Configure WimpDoubleClickDelay**

\*Configure WimpDoubleClickDelay sets the configured time after a single click during which a double click is accepted.

\*Configure WimpDoubleClickDelay *delay*

### **\*Configure WimpDoubleClickMove**

\*Configure WimpDoubleClickMove sets the configured distance from the position of a single click within which a double click is accepted.

\*Configure WimpDoubleClickMove *distance*

### **\*Configure WimpDragDelay**

\*Configure WimpDragDelay sets the configured time after a single click after which a drag is started.

\*Configure WimpDragDelay *delay*

### **\*Configure WimpDragMove**

\*Configure WimpDragMove sets the configured distance from the position of a single click that the pointer has to move for a drag to be started.

\*Configure WimpDragMove *distance*

### **\*Configure WimpFlags**

\*Configure WimpFlags sets the configured behaviour of windows when dragged, and of error boxes:

<b>Bit</b>	<b>Meaning when set</b>
0	window position drags are continuously redrawn
1	window resizing drags are continuously redrawn
2	horizontal scroll drags are continuously redrawn
3	vertical scroll drags are continuously redrawn
4	no beep is generated when an error box appears

- 5 windows can be dragged partly off screen to right and bottom
- 6 windows can be dragged partly off screen in all directions
- 7 open submenus automatically

\*Configure WimpFlags n

### \*Configure WimpFont

\*Configure WimpFont sets the font to be used within the desktop for icons and menus. 0 means use Wimp\$, 1 means use system font, 2 to 15 refer to ROM fonts.

\*Configure WimpFont n

### \*Configure WimpMenuDragDelay

\*Configure WimpMenuDragDelay sets the configured time before an automatically opened submenu is closed. During this time you can move the pointer over other menu entries without closing the submenu, making it easy to reach the submenu.

\*Configure WimpMenuDragDelay delay

### \*Configure WimpMode

\*Configure WimpMode sets the configured screen mode used by the machine. It is identical to the command \*Configure Mode.

\*Configure WimpMode screen\_mode|Auto

### \*Continue

\*Continue resumes execution after a breakpoint, using the saved state.

\*Continue

### \*Copy

\*Copy makes a copy between directories of any object(s) that match the given wildcard specification. Options are taken from the system variable Copy\$Options, and those given to the command.

**Options** (use '~' to force off, e.g. ~C):

		<b>Default</b>
A(ccess)	Force destination access to same as source	ON
C(onfirm)	Prompt for confirmation of each copy	ON
D(elete)	Delete the source object after copy	OFF
F(orce)	Force overwriting of existing objects	OFF
L(ook)	Look at destination before loading source file	OFF
N(ewer)	Copy only if source more recent than destination	OFF
P(rompt)	Prompt for disc to be changed as needed in copy	OFF

<b>Q(</b> uick)	Use application workspace as a buffer	OFF
<b>R(e</b> curse)	Copy subdirectories and contents	OFF
<b>S(tamp)</b>	Restamp date-stamped files after copying	OFF
<b>(s)T(ructure)</b>	Copy only the directory structure	OFF
<b>V(erbose)</b>	Print information on each object copied	ON

\*Copy *source\_spec destination\_spec* [[~]options]

### \*CopyBoot

\*CopyBoot copies the boot block from one MS-DOS floppy disc over the boot block of another.

\*CopyBoot *source\_drive dest\_drive*

### \*Count

\*Count adds up the size of data held in one or more objects that match the given wildcard specification. Options are taken from the system variable Count\$Options, and those given to the command.

Options (use '~' to force off, e.g. ~C):	Default
<b>C(onfirm)</b>	Prompt for confirmation of each count
<b>R(e</b> curse)	Count subdirectories and contents
<b>V(erbose)</b>	Print information on each file counted

\*Count *object\_spec* [[~]options]

### \*Countries

\*Countries lists all the countries currently supported.

\*Countries

### \*Country

\*Country selects the appropriate alphabet and keyboard layout for a given country. With no parameter, this command displays the currently selected country.

\*Country [*country\_name*]

### \*Create

\*Create reserves space for a new file. No data is transferred to the file. The optional load and execution addresses and length are in hexadecimal.

\*Create *filename* [*length exec\_addr load\_addr*]]

### \*Debug

- \*Debug enters the debugger. Type Quit to exit.
- \*Debug

### \*Defect

- \*Defect reports what object contains a defect, or (if none) marks the defective part of the disc so it will no longer be used.
- \*Defect *disc\_spec disc\_addr*

### \*Delete

- \*Delete erases a single named file or empty directory.
- \*Delete *object\_spec*

### \*Desktop

- \*Desktop initialises all desktop facilities, then starts the Desktop. It also runs an optional \* Command or file of \* Commands.
- \*Desktop [*command| -File filename*]

### \*Desktop\_...

- \*Desktop\_... commands (except for \*Desktop\_SetPalette: see below) are for internal use only, and you should not use them.

### \*Desktop\_SetPalette

- \*Desktop\_SetPalette alters the current Wimp palette.
- \*Desktop\_SetPalette *RGB0 ... RGB15 RGBbor RGBptr1 ... RGBptr3*

### \*Dir

- \*Dir selects a directory (by default the user root directory) as the current directory on a filing system.
- \*Dir [*directory*]

**\*Dismount**

\*Dismount ensures that it is safe to finish using a disc by closing all its files, unsetting all its directories and libraries, forgetting its disc name (if a floppy disc) and parking its read/write head.

\*Dismount [*disc\_spec*]

**\*DOSMap**

\*DOSMap specifies a mapping between an MS-DOS extension and a RISC OS file type. If the only parameter given is an MS-DOS extension, then the mapping (if any) for that extension is cancelled. If no parameter is given, then all current mappings are listed.

The mappings are only retained until the next reset.

\*DOSMap [*MS-DOS\_extension* [*file\_type*]]

**\*Drive**

\*Drive sets the current drive if NoDir is set.

\*Drive *drive*

**\*Dump**

\*Dump displays the contents of a file, in hexadecimal and ASCII codes. The optional file offset and start address are in hexadecimal.

\*Dump *filename* [*file\_offset* [*start\_address*]]

**\*Echo**

\*Echo displays a string on the screen (after translating it using OS\_CSTrans).

\*Echo *string*

**\*EnumDir**

\*EnumDir creates a file of object leafnames from a directory that match the wildcarded pattern (by default '\*\*').

\*EnumDir *directory output\_file* [*pattern*]

**\*Error**

\*Error generates an error with the given error number and explanatory text.

\*Error [*error\_no*] *text*

## \*Eval

\*Eval evaluates an integer, logical, bit or string expression.

The expression can use the following operators:

+	addition or string concatenation
-, *, /, MOD	integer operations
=, <, >, <=, >=, <>	string or integer comparison
<<, >>	arithmetic shift left and right
>>>	logical shift right
STR, VAL	conversion between strings and integers
AND, OR, EOR, NOT	(bitwise) logical operators
RIGHT, LEFT	substring extraction
LEN	string length

You can also use brackets.

\*Eval *expression*

## \*Ex

\*Ex lists all the objects in a directory (by default the current directory) together with their corresponding file information.

\*Ex *[directory]*

## \*Exec

\*Exec instructs the operating system to take its input from the specified file. If no parameter is given, the current exec file is closed.

\*Exec *[filename]*

## \*FileInfo

\*FileInfo gives full file information for the specified object(s).

\*FileInfo *object\_spec*

## \*Filer\_Action

\*Filer\_Action is used to start a Filer\_Action task running. This command is intended for use only within desktop applications.

\*Filer\_Action

**\*Filer\_Boot**

\*Filer\_Boot boots the specified desktop application by running its !Boot file.

\*Filer\_Boot *application*

**\*Filer\_CloseDir**

\*Filer\_CloseDir closes a directory display on the Desktop, and any of its sub-directories.

\*Filer\_CloseDir *directory*

**\*Filer\_OpenDir**

\*Filer\_OpenDir opens a directory display on the Desktop. Switches are:

<b>Switch</b>	<b>Alternative</b>	<b>Meaning</b>
-SmallIcons	-si	display small icons
-LargeIcons	-li	display large icons
-FullInfo	-fi	display full information
-SortByName	-sn	display sorted by name
-SortByType	-st	display sorted by type
-SortByDate	-sd	display sorted by date
-SortBySize	-ss	display sorted by size

Each parameter (in the syntax) below – except for the switches – can be preceded by a keyword:

<b>Keyword</b>	<b>Alternative</b>	<b>Precedes parameter</b>
-directory	-dir	directory
-topleftx	-x0	x
-toplefty	-y1	y
-width	-w	width
-height	-h	height

\*Filer\_OpenDir *directory* [*x y [width height]*] [*switches*]

**\*Filer\_Run**

\*Filer\_Run performs the equivalent of double-clicking on an object in a directory display.

\*Filer\_Run *object*

## **\*Filters**

\*Filters lists all currently active pre- and post-Wimp\_Poll filters.

\*Filters

## **\*FontCat**

\*FontCat lists the fonts available in Font\$Path, or in the given directory.

\*FontCat [directory]

## **\*FontInstall**

\*FontInstall adds a directory to the list of those scanned for fonts. It also rescans the directory, even if it was already known to the Font Manager.

\*FontInstall [directory]

## **\*FontLibrary**

\*FontLibrary sets a directory as the font library, replacing the previous library in the list of those scanned for fonts.

\*FontLibrary directory

## **\*FontList**

\*FontList displays the fonts in the font cache, its size, and its free space.

\*FontList

## **\*FontRemove**

\*FontRemove removes a directory from the list of those scanned for fonts.

\*FontRemove [directory]

## **\*Format**

\*Format prepares a new floppy disc for use, or erases a used disc for re-use.

Formats are:

F	1.6M	RISC OS 3	77-entry directories, new map
E	800K	RISC OS	77-entry directories, new map
D	800K	Arthur 1.2	77-entry directories, old map
L	640K	all ADFS	47-entry directories, old map
DOS/Q	1.44M	MS-DOS 3.20	double sided high density 3 1/2" disc
DOS/M	720K	MS-DOS 3.20	double sided 3 1/2" disc
DOS/H	1.2M	MS-DOS 3	double sided high density 5 1/4" disc

DOS/N	360K	MS-DOS 2, 3	double sided 3 1/2", 5 1/4" disc
DOS/P	180K	MS-DOS 2, 3	single sided 5 1/4" disc
DOS/T	320K	MS-DOS 1, 2, 3	double sided 5 1/4" disc
DOS/U	160K	MS-DOS 1, 2, 3	single sided 5 1/4" disc
Atari/M	720K	Atari ST	double sided 3 1/2" disc
Atari/N	360K	Atari ST	single sided 3 1/2" disc

The centre column gives the earliest version of the operating system that these formats are compatible with. Early models of RISC OS computers cannot use DOS/H, DOS/Q and F formats. RISC OS 2 only supports L, D and E formats.

The default is to use F-format if possible; otherwise E-format is used.

\*Format drive [format [disc\_name]] [Y]

### \*Free

\*Free displays the total free space remaining on a disc. For NetFS, \*Free displays a user's total free space, as well as the total free space for the disc.

\*Free [disc\_spec]

\*Free [:file\_server] [user\_name] (NetFS syntax)

### \*FS

\*FS selects the current file server, restoring that file server's context (for example, its current directory). If no argument is supplied, information is given about your current file server, followed by any non-current servers.

\*FS [[:]file\_server]

### \*FSLock\_ChangePassword

\*FSLock\_ChangePassword changes the password needed to unlock the system.

\*FSLock\_ChangePassword [FSName] [New[New[Old]]]

### \*FSLock\_Lock

\*FSLock\_Lock locks the computer against modification

\*FSLock\_Lock

### \*FSLock\_Status

\*FSLock\_Status reports on whether a filing system is currently locked or unlocked.

\*FSLock\_Status

### \*FSLock\_Unlock

\*FSLock\_Unlock unlocks the currently locked filing system when given the right password. If the -full flag is not given, then the filing system is only unlocked until the next reset of the computer.

\*FSLock\_Unlock

### \*FX

\*FX calls OS\_Byte to alter status variables, and to perform other closely related actions.

\*FX *reason\_code* [[,] *r1* [[,] *r2*]]

### \*Go

\*Go calls machine code at the given address (default &8000), passing it an optional environment string.

\*Go [*hexadecimal\_address*] [ ; *environment*]

### \*GOS

\*GOS calls command line mode, and hence allows you to type \* Commands.

\*GOS

### \*Help

\*Help gives brief information about each command. There are also some special keywords:

\*Help Commands

lists all the available utility commands

\*Help FileCommands

lists all the commands relating to filing systems

\*Help Modules

lists the names of all currently loaded modules, with their version numbers and creation dates

\*Help Station

displays the current network and station numbers of your machine

\*Help Syntax

explains the format used for syntax messages

\*Help [*keyword*]

**\*I am**

\*I am selects NetFS and logs you on to a file server. Your user name and password are checked by the file server against the password file before allowing you access.

\*I am [:]file\_server\_number|:file\_server\_name user\_name [:Return]password

**\*IconSprites**

\*IconSprites merges the sprites in a file with those in the Wimp sprite area.

\*IconSprites filename

**\*If**

\*If conditionally executes a \* Command, depending on the value of an expression.

\*If expression Then command [Else command]

**\*Ignore**

\*Ignore sets the printer ignore character.

\*Ignore [ASCII\_code]

**\*InetInfo**

\*InetInfo displays information and statistics about the current state of the Internet module, which forms a part of the AUN software.

\*InetInfo

**\*InetConfig**

\*InetConfig changes the allocation of internal buffers.

\*InetConfig n

**\*Info**

\*Info gives file information for the specified object(s).

\*Info object\_spec

**\*InitStore**

\*InitStore fills user memory with the specified value or register value, or with the value &E6000010 (which is an illegal instruction) if no parameter is given.

\*InitStore [value|reg]

### \*Key

\*Key assigns a string to a function key.  
\*Key *keynumber* [*string*]

### \*Keyboard

\*Keyboard selects the appropriate keyboard layout for a given country. With no parameter, this command displays the currently selected keyboard layout.  
\*Keyboard [*country\_name*]

### \*LCat

\*LCat lists all the objects in the named library subdirectory (by default the current library).  
\*LCat [*directory*]

### \*LEx

\*LEx lists all the objects in the named library subdirectory (by default the current library) together with their file information.  
\*LEx [*directory*]

### \*Lib

\*Lib selects a directory (the default is filing system dependent) as the current library on a filing system.  
\*Lib [*directory*]

### \*List

\*List displays the contents of the named file using the configured DumpFormat. Each line is numbered.  
\*List [-File] *filename* [-TabExpand]

### \*ListFS

\*ListFS displays a list of the file servers which NetFS is able to recognise. The optional argument forces the list to be updated before it is displayed.  
\*ListFS [-force]

**\*ListPS**

\*ListPS lists all the currently available printer servers, optionally showing their status as well.

\*ListPS [-full]

**\*Load**

\*Load loads the named file. The optional load address is in hexadecimal.

\*Load *filename* [*load\_addr*]

**\*LoadFontCache**

\*LoadFontCache loads a file that was previously saved using \*SaveFontCache back into the font cache.

\*LoadFontCache *filename*

**\*LoadModeFile**

\*LoadModeFile reads screen mode definitions from the given file and makes these the current screen modes.

\*LoadModeFile *filename*

**\*Logon**

\*Logon logs you on to a file server. Your user name and password are checked by the file server against the password file before allowing you access.

\*Logon [[:]*file\_server\_number*|:*file\_server\_name*] *user\_name* [[:Return]*password*]

**\*Map**

\*Map displays a disc's free space map.

\*Map [*disc\_spec*]

**\*Memory**

\*Memory displays the values in memory, in bytes if the optional B is given, or in words otherwise.

\*Memory [B] *addr1|reg1*

\*Memory [B] *addr1|reg1 [+|-] addr2|reg2*

\*Memory [B] *addr1|reg1 +|- addr2|reg2 +addr3|reg3*

## **\*MemoryA**

\*MemoryA displays and alters memory in bytes, if the optional B is given, or in words otherwise.

\*MemoryA [B] *addr|reg1 [value|reg2]*

## **\*MemoryI**

\*MemoryI disassembles memory into ARM instructions.

\*MemoryI *addr1|reg1*

\*MemoryI *addr1|reg1 [+|-]addr2|reg2*

\*MemoryI *addr1|reg1 +|-addr2|reg2 +addr3|reg3*

## **\*ModelList**

\*ModelList lists all the loaded colour models.

\*ModelList

## **\*Modules**

\*Modules displays information about all installed relocatable modules.

\*Modules

## **\*Mount**

\*Mount prepares a disc for general use by setting the current directory to its root directory, setting the library directory (if it is currently unset) to \$.Library, and unsetting the User Root Directory. For NetFS, \*Mount selects a disc from the file server by setting the current directory, the library directory and the User Root Directory.

\*Mount [*disc\_spec*]

\*Mount [:] *disc\_spec* (NetFS syntax)

## **\*NameDisc**

\*NameDisc (or alternatively, \*NameDisk) changes a disc's name.

\*NameDisc *disc\_spec new\_name*

## **\*Net**

\*Net selects the Network Filing System as the current filing system.

\*Net

**\*NetMap**

\*NetMap displays the current AUN map table either for the specified net, or for all nets if no parameter is specified. The map table shows the net number of each net, its name, and its Internet address.

\*NetMap *n*

**\*NetStat**

\*NetStat displays the current status of any network interface(s) configured for AUN. The optional parameter *a* gives extra information, including traffic counters and full IP addresses.

\*NetStat *n*

**\*NetProbe**

\*NetProbe reports if a remote station is accessible and active, and hence can be reached from the local station and network. This command does so by sending a control message to the specified station and awaiting a reply.

\*NetProbe *n*

**\*NoDir**

\*NoDir unsets the current directory.

\*NoDir

**\*NoLib**

\*NoLib unsets the library directory.

\*NoLib

**\*NoURD**

\*NoURD unsets the User Root Directory (URD).

\*NoURD

**\*Obey**

\*Obey executes a file of \* commands. Argument substitution is performed on each line, using parameters passed in the command. With the -v option, each line is displayed before execution. With the -c option, the file is cached and executed from memory.

\*Obey [[-v] [-c] [filename [parameters]]]

## \*Obey2

\*Obey2 checks !Boot and !Run files before passing them to the Obey module for execution.

\*Obey2 [\*Obey parameters]

## \*Opt 1

\*Opt 1 sets the filing system message level (for operations involving loading, saving or creating a file) for the current filing system:

*Opt 1,0	No filing system messages
*Opt 1,1	Filename printed
*Opt 1,2	Filename, hexadecimal addresses and length printed
*Opt 1,3	Filename, and either date stamp and length, or hexadecimal load and exec addresses printed

\*Opt 1 [[,]n]

## \*Opt 4

\*Opt 4 sets the boot action for the current filing system:

*Opt 4,0	No boot action
*Opt 4,1	*Load boot file
*Opt 4,2	*Run boot file
*Opt 4,3	*Exec boot file

\*Opt 4 [[,]n]

## \*Pass

\*Pass changes your password on your current files server.

\*Pass [old\_password [new\_password]]

## \*Pin

\*Pin adds a file, application or directory to the desktop pinboard, positioning its icon at the given coordinates (in OS units).

\*Pin object x y

## \*Pinboard

\*Pinboard initialises the pinboard, removing any existing pinned icons and backdrop.

\*Pinboard [-Grid]

## \*PipeCopy

\*PipeCopy copies a file one byte at a time to one or two output files.

\*PipeCopy *source\_file destination\_file1 [destination\_file2]*

## \*PoduleLoad

Copies a file into an expansion card's RAM.

\*PoduleLoad *expansion\_card\_number filename [offset]*

## \*Podules

\*Podules displays a list of the installed expansion cards and extension ROMs.

\*Podules

## \*PoduleSave

\*PoduleSave copies an expansion card's ROM into a file.

\*PoduleSave *expansion\_card\_number filename size [offset]*

## \*Pointer

\*Pointer turns the mouse pointer on or off.

\*Pointer [0|1]

## \*Print

\*Print displays the contents of the named file by sending each byte to the VDU.

\*Print *filename*

## \*PS

\*PS changes the default printer server, checking that the new one exists.

\*PS *printer\_server*

**\*QSound**

\*QSound generates a sound after a given delay.

\*QSound *channel amplitude pitch duration beats*

**\*Quit**

\*Quit exits from the current application.

\*Quit

**\*Ram**

\*Ram selects the RAM filing system as the current filing system.

\*Ram

**\*Remove**

\*Remove erases a single named file or empty directory. No error message is given if the object does not exist.

\*Remove *filename*

**\*RemoveTinyDir**

\*RemoveTinyDir removes a file, application or directory icon that was previously placed on the icon bar by a \*AddTinyDir command. If no pathname is given, all such icons are removed from the icon bar.

\*RemoveTinyDir [object]

**\*Rename**

\*Rename changes the name of an object, within the same storage unit.

To move objects between discs or filing systems, use the \*Copy command with the **D**(elete) option set.

\*Rename *object new\_name*

**\*ResourceFS**

\*ResourceFS selects the Resource Filing System as the current filing system.

\*ResourceFS

**\*RMClear**

\*RMClear deletes all relocatable modules from the module area. Use this command only with extreme caution, as it is so drastic in its effects.

**\*RMClear**

**\*RMEnsure**

\*RMEnsure checks that a module is present and is the given version (or a more recent one). The command is executed if this is not the case.

**\*RMEnsure *module\_title* *version\_number* [*command*]**

**\*RMFaster**

\*RMFaster makes a module faster by copying it from ROM to RAM.

**\*RMFaster *module\_title***

**\*RMInsert**

\*RMInsert reverses the action of a previous \*Unplug command, but without reinitialising any modules.

**\*RMInsert *module\_title* [*ROM\_section*]**

**\*RMKill**

\*RMKill deactivates and deletes a relocatable module. Use this command only with extreme caution, as it may be drastic in its effects.

**\*RMKill *module\_title*[%instantiation]**

**\*RMLoad**

\*RMLoad loads and initialises a relocatable module.

**\*RMLoad *filename* [*module\_init\_string*]**

**\*RMReInit**

\*RMReInit reinitialises a relocatable module, reversing the action of any previous \*RMKill or \*Unplug command. Use this command only with extreme caution, as it may be drastic in its effects.

**\*RMReInit *module\_title* [*module\_init\_string*]**

### \*RMRUN

- \*RMRUN runs a relocatable module, first loading and initialising it if necessary.
- \*RMRUN *filename*

### \*RMTIDY

- \*RMTIDY is no longer used and using this command has no effect.
- \*RMTIDY

### \*ROMMODULES

- \*ROMMODULES displays information about all relocatable modules currently installed in ROM.
- \*ROMMODULES

### \*RUN

- \*Run loads and executes a file, optionally passing a list of parameters to it.
- \*Run *filename* [*parameters*]

### \*SAVE

- \*Save copies the given area of memory to the named file. The length and addresses are in hexadecimal.
- \*Save *filename start\_addr end\_addr [exec\_addr [load\_addr]]*
- \*Save *filename start\_addr + length [exec\_addr [load\_addr]]*

### \*SAVEFONTCACHE

- \*SaveFontCache saves the current contents of the font cache to a file.
- \*SaveFontCache *filename*

### \*SCHOOSER

- \*SChoose selects a sprite from the system sprite area for use in subsequent sprite plotting operations.
- \*SChoose *sprite\_name*

### \*SCopy

\*SCopy makes a copy of the source sprite within the system sprite area, and renames it as the destination sprite.

\*SCopy *source\_sprite\_name dest\_sprite\_name*

### \*ScreenLoad

\*ScreenLoad loads the contents of a sprite file into the graphics window.

\*ScreenLoad *filename*

### \*ScreenSave

\*ScreenSave saves the contents of the graphics window and its palette to a file.

\*ScreenSave *filename*

### \*SCSI

\*SCSI selects the SCSI Filing System as the current filing system. This command is only available if you have a SCSI expansion card fitted.

\*SCSI

### \*SDDelete

\*SDDelete deletes one or more sprites from the system sprite area.

\*SDDelete *sprite\_name1 [sprite\_name2...]*

### \*SDisc

\*SDisc selects a disc from the current file server by setting the current directory, the library directory and the User Root Directory.

\*SDisc [:] *disc\_spec*

### \*Set

\*Set assigns a string value to a system variable.

\*Set *varname value*

### \*SetEval

\*SetEval evaluates an expression and assigns its value to a system variable.

\*SetEval *varname expression*

### \*SetMacro

\*SetMacro assigns an expression to a system variable. The expression is evaluated each time the variable is used.

\*SetMacro *varname expression*

### \*SetPS

\*SetPS changes the default printer server, without checking that the new one exists.

\*SetPS *printer\_server*

### \*SetType

\*SetType sets the file type of the named file to the given textual file type or hexadecimal number. If the file does not have a date stamp, then it is stamped with the current time and date.

The command \*Show File\$Type\* displays a list of valid file types.

\*SetType *filename file\_type*

### \*SFlipX

\*SFlipX reflects a sprite in the system sprite area about its x axis.

\*SFlipX *sprite\_name*

### \*SFlipY

\*SFlipY reflects a sprite in the system sprite area about its y axis.

\*SFlipY *sprite\_name*

### \*SGet

\*SGet gets a sprite from a rectangular area of the screen, defined by the two most recent graphics positions (inclusive), and then saves it in the system sprite area.

\*SGet *sprite\_name*

### \*Shadow

\*Shadow sets which bank of screen memory is used on subsequent mode changes.

\*Shadow [0|1]

### **\*ShellCLI**

\*ShellCLI invokes a command shell from a Wimp program, starting it as a Wimp task.

\*ShellCLI

### **\*ShellCLI\_Task**

\*ShellCLI\_Task runs an application in a window. This command is intended for use only within desktop applications.

### **\*ShellCLI\_TaskQuit**

\*ShellCLI\_TaskQuit quits the current task window. This command is intended for use only within desktop applications.

### **\*Show**

\*Show displays the name, type and current value of any system variables matching the name given. If no name is given, all system variables are displayed.

\*Show [variable\_spec]

### **\*ShowFree**

\*ShowFree shows within a desktop window the amount of free space on a device.

\*ShowFree -fs fs\_name device

### **\*ShowRegs**

\*ShowRegs displays the register contents for the saved state.

\*ShowRegs

### **\*Shut**

\*Shut closes all open files on all filing systems.

\*Shut

### **\*ShutDown**

\*ShutDown closes all open files on all filing systems, logs off all NetFS file servers and parks hard disc heads.

\*ShutDown

**\*SInfo**

\*SInfo displays information on the system sprite workspace.

\*SInfo

**\*SList**

\*SList lists the names of all the sprites in the system sprite area.

\*SList

**\*SLoad**

\*SLoad loads a sprite file into the system sprite area.

\*SLoad *filename*

**\*SMerge**

\*SMerge merges the sprites in a file with those in the system sprite area.

\*SMerge *filename*

**\*SNew**

\*SNew deletes all the sprites in the system sprite area.

\*SNew

**\*Sound**

\*Sound generates an immediate sound.

\*Sound *channel amplitude pitch duration*

**\*Speaker**

\*Speaker turns the internal speaker(s) on or off.

\*Speaker On|Off

**\*Spool**

\*Spool sends everything appearing on the screen to the specified file. If no filename is given, the current spool file is closed.

\*Spool [*filename*]

## **\*SpoolOn**

\*SpoolOn adds everything appearing on the screen to the end of an existing file. If no filename is given, the current spool file is closed.

\*SpoolOn [filename]

## **\*SRename**

\*SRename renames a sprite within the system sprite area.

\*SRename *old\_sprite\_name new\_sprite\_name*

## **\*SSave**

\*SSave saves the system sprite area as a sprite file.

\*SSave *filename*

## **\*Stamp**

\*Stamp sets the date stamp on a file to the current time and date. If the file has not previously been date stamped, it is also given file type Data (&FFD).

\*Stamp *filename*

## **\*Status**

\*Status displays the value of a configuration option in the CMOS RAM. If no option is specified, the values of all configuration options are shown.

\*Status [option]

## **\*Stereo**

\*Stereo sets the position in the stereo image of a sound channel.

\*Stereo *channel position*

## **\*TaskWindow**

\*TaskWindow starts a background task, which will open a task window if it needs to get input, or to output a character to the screen.

\*TaskWindow [*command*] [[-wimpslot] *nK*] [[-name] *taskname*] [-ctrl]  
[-display] [-quit] [-task &xxxxxxxx] [-txt &xxxxxxxx]

### **\*Tempo**

\*Tempo sets the Sound system tempo.

\*Tempo *tempo*

### **\*Territories**

\*Territories lists the currently loaded territory modules.

\*Territories

### **\*Time**

\*Time displays the day, date and time of day.

\*Time

### **\*ToolSprites**

\*ToolSprites merges the sprites in a file with those in the Wimp's pool of border sprites, which are used to redraw window borders.

\*ToolSprites *filename*

### **\*Tuning**

\*Tuning alters the overall tuning of the Sound system. A value of zero resets the default tuning.

\*Tuning *relative\_change*

### **\*TV**

\*TV adjusts the vertical screen alignment and screen interlace.

\*TV [*vert\_align*[[,]*interlace*]]

### **\*Type**

\*Type displays the contents of the named file using the configured DumpFormat.

\*Type [-File] *filename* [-TabExpand]

### **\*Unplug**

\*Unplug kills and disables all copies of a ROM resident module. If no parameters are given, the unplugged ROM modules are listed.

\*Unplug [*module\_title* [*ROM\_section*]]

### **\*Unset**

\*Unset deletes a system variable.

\*Unset *variable\_spec*

### **\*Up**

\*Up moves the current directory up the directory structure by the specified number of levels.

\*Up [*levels*]

### **\*URD**

\*URD sets the User Root Directory (URD). If no directory is specified, the URD is set to the root directory.

\*URD [*directory*]

### **\*Verify**

\*Verify checks that the whole disc (by default the current disc) is readable.

\*Verify [*disc\_spec*]

### **\*Voices**

\*Voices displays a list of the installed voices by name and number, and shows which voice is assigned to each of the eight channels.

\*Voices

### **\*Volume**

\*Volume sets the maximum overall volume of the Sound system.

\*Volume *volume*

### **\*Vrmload**

\*Vrmload tests the integrity of the module chain before loading a module.

\*Vrmload *filename*

### **\*Vrmlrun**

\*Vrmlrun tests the integrity of the module chain before running a module.

\*Vrmlrun *filename*

### \*WimpKillSprite

\*WimpKillSprite removes a sprite from the wimp sprite pool.  
\*WimpKillSprite *spritename*

### \*WimpMode

\*WimpMode changes the current screen mode used by the Desktop.  
\*WimpMode *screen\_mode*

### \*WimpPalette

\*WimpPalette uses a palette file to set the Wimp's colour palette.  
\*WimpPalette *filename*

### \*WimpSlot

\*WimpSlot changes the memory allocation for the current and (optionally) the next Wimp task.  
\*WimpSlot [-min] *minsize[K]* [-max *maxsize[K]*] [-next *nextsize[K]*]

### \*WimpTask

\*WimpTask starts up a new task from within another task.  
\*WimpTask *command*

### \*WimpWriteDir

\*WimpWriteDir sets the direction of text entry for writeable icons to either the default for the current territory, or the reverse of that.

\*WimpWriteDir 0|1

### \*Wipe

\*Wipe deletes one or more objects that match the given wildcard specification. Options are taken from the system variable Wipe\$Options, and those given to the command.

**Options** (use '~' to force off, e.g. ~C):

C(onfirm)	Prompt for confirmation of each deletion	ON
F(orce)	Force deletion of locked objects	OFF
R(ecurse)	Delete subdirectories and contents	OFF
V(erbose)	Print information on each object deleted	ON

\*Wipe *object\_spec* [[~] *options*]

# Appendices



# Appendix A: Getting the best out of 2MB, 3MB and 4MB computers



Modern computers have come a long way since the first BBC Model A, with 16KB of RAM. A 2MB RISC OS computer has 128 times as much memory. However, at the same time, applications have become a lot more powerful and some can use up a large part of your computer's memory, making it hard to get the best advantage of the multi-tasking facilities offered by RISC OS.

This appendix therefore presents some suggestions for getting the best out of 2MB, 3MB and 4MB computers.

## Resetting the computer

Some applications require the loading of software extensions to the operating system. When you remove such an application from the icon bar, it may leave some or all of these extension behind, since they may be needed by another application. However, when you are very short of space, this behaviour – normally helpful – may mean that you do not have enough space for the next application.

It is therefore a good idea to reset the computer before attempting to load an application that will need almost all the computer's RAM. Before doing this, make sure you save any work you have done, as it is lost from the computer's memory when you reset. To reset the computer, press Ctrl-Break. Then load the application you want to use.

If you have a 2MB computer that runs some applications each time you switch on, you can save memory not starting up these applications. The chapter *Modifying the system start-up configuration* on page 139 shows you how to do this.

## **Choice of screen display**



You can save some memory by using a screen display that does not use much memory. To do this you should typically only use a 16 colour screen display and use a relatively low resolution typically not more than 640 x 480.

## **Opening directory displays**



When you open a display for a directory containing applications, the computer loads the applications' sprite files, which then occupy some of the computer's memory. For example, if you have a hard disc and you keep a lot of applications in a single directory, their sprites might take up as much as 30K. If you are very short of memory, you cannot afford to waste this space and you should therefore not open directories containing applications you do not want to use. To achieve this, keep your applications – especially those with large sprite files – in separate directories.

If you hold down Ctrl when opening a directory by double-clicking, the sprites used by any applications are not loaded into the sprite pool; this also saves memory.

## **Printing**



If you do not intend to do any printing during your session, do not load the Printer manager.

For non-PostScript printers, the printing process also requires memory to use as a buffer space; the more that is available for this, the faster printing will be.

On non-PostScript printers, printing in landscape format uses more memory than printing in portrait format.

If you are printing directly from an application you can quit the Printer manager; this saves some memory. Note, you must start-up and then quit the Printer manager for this to work correctly.

## **Optimising memory usage**

Use the Task manager to display the computer's current memory usage. You can change any of the red bars to release as much memory as possible for applications. Candidates for reduction include:

- The Screen memory.
- The Font cache (provided the application does not make extensive use of fonts; if redrawing the screen takes a long time, you have made the font cache too small).

- The System sprites: this can always be reduced to zero except when playing some games.
- The Module area.

## **Installing more memory**

Perhaps the easiest way to increase the usability of your computer is to add additional memory to your computer.

## **Installing video memory**

If you are using a computer that does not have any video RAM (VRAM) installed then you may benefit from adding some, especially if you use 256, 32 thousand or 16 million colour display modes regularly (you can't display 16 million colours without VRAM).

- VRAM speeds up the transfer of display information from the computer to the monitor dramatically.
- VRAM frees the main processor from the overheads of managing the transfer of information to the monitor. This means that the processor can now spend more of its time processing information.
- VRAM also gives you access to improved screen display options; you can access more colours at greater resolutions.



# Appendix B: The Font manager



RISC OS computers contain a range of fonts stored permanently in the computer's memory and on the disc. These fonts are used not only for displaying characters on the screen but also for printing (PostScript printers use their own built-in fonts). The fonts are controlled by a part of the operating system called the Font manager.

Most fonts can be used in any size and have italic and bold variants; some of them use proportional spacing, so that a narrow letter such as 'l' takes up less horizontal space than a wide letter, such as 'M'.

## The Font manager

The Acorn Font manager uses 'outline' fonts (like Draw files), where only the outline of each character is stored. When you request a font, the computer loads the outline font, scales it to the size you want, and fills in the outline.

The Font manager is set up to provide a reasonable blend of screen quality and performance for the majority of users. However, it is possible to change the Font manager's settings to produce a system with different characteristics. These settings are described in this chapter.

## Anti-aliasing and hinting

The Font manager uses two techniques to improve the quality of fonts. The first of these is the *anti-aliasing*, of screen displays. If the outline of a character passes partially through a pixel (a pixel is the smallest building block available on the monitor screen), a non-anti-aliasing font can only paint the whole pixel or none of it. The result is a jagged edge to the character.

Anti-aliasing relies on an optical trick: the jagged edges are smoothed out by the addition of extra pixels in intermediate colours. You can see how this is done by first typing some text in an **Edit** window (using a fairly small size – 12 or 14 point, say), or loading an Edit file. Press Menu, move the pointer to the **Display** submenu, and from there to the **Fonts** submenu. This will show a list of fonts available. Click on **Trinity/Medium** to display the text in an anti-aliased font.

To examine the display more closely, use the !CloseUp application.

The Font manager also uses a second technique to improve the appearance of fonts, one that applies both to the screen and to printers. This is called *hinting*. The outline of the character being displayed (or printed) is subtly altered in ways that depend on the resolution of the image being produced. This is particularly effective when fonts are scaled, and when half-tones are not available, as on most printers.

## Font cacheing

With each outline font that is requested, the computer calculates the bitmap font it needs to display the font at the desired size. It keeps as many of these bitmap fonts as it can in an area of memory called the font cache. If the font cache is not large enough to hold the bitmaps of all the fonts that are in use at a given time, any extra fonts are loaded from the filing system as necessary.

The outline fonts are converted into bitmap fonts (for the particular font size) because the computer can send these to the computer screen at a much faster rate than it can outline fonts.

The computer attempts to retain in memory the fonts which are in greatest demand, but to do this requires some sophisticated guesswork. Since this is not always totally successful (the computer cannot read your mind!) there is sometimes a delay as the font is loaded from the filing system and displayed on the screen.

## Matching font performance to your needs

There is inevitably a trade-off between speed and font appearance. Since users' priorities and aesthetic judgements vary, RISC OS provides two ways of tailoring font performance to your needs and preferences. You can

- change the size of the font cache
- change the way anti-aliasing is done (or switch it off altogether).

### Changing the minimum size of the font cache



If you are using a lot of different fonts, you can increase the minimum size of the cache, so that the text is drawn more quickly. This is done by setting the **Font cache** in the **Memory allocation** screen of the !Boot application (to set it permanently) or by setting the **Font cache** size option in the Task Manager's **Task display** window (to set it for the current session only).

**Warning:** The Font cache size set in the Memory allocation screen is overridden by the value given in your desktop boot file. If you change the Font cache size you must also save your desktop boot file again so that your change can take effect.

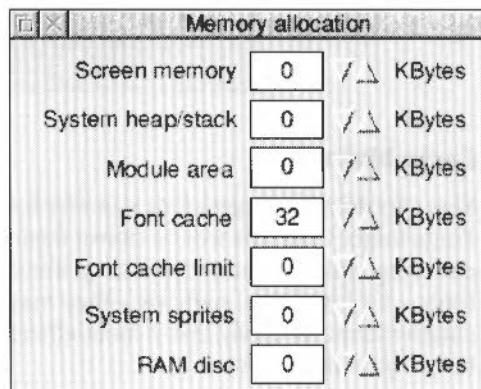
How to set the Default font cache and the Font cache limit using !Boot is explained in the chapter *Setting the desktop configuration* on page 117.

The best size for the font cache depends on several factors: how much memory your computer has, whether you have a hard disc or not, and the number of different fonts you are currently using in an application. A computer with 4MB of memory can benefit from a cache of 256KB; with 8MB of memory this can be increased to 512KB, or more if needed.

### Allowing the font cache to grow

If the size of the font cache is too small, the Font manager attempts to increase its size up to the maximum specified by the maximum font cache. If this happens it shrinks back to the normal current size as soon as any fonts can be discarded. The Font manager decides to do this rather than throw away cached blocks of currently 'open' fonts.

The value for the maximum font cache size can be set using the **Font cache limit** option on the **Memory allocation** screen of **!Boot**.



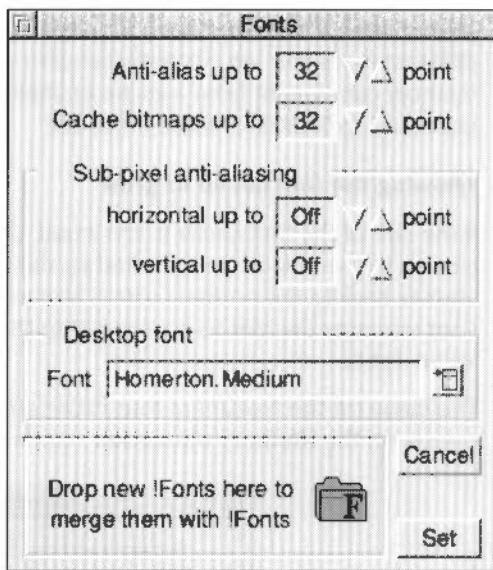
### Controlling anti-aliasing and hinting

**F**onts The effects of anti-aliasing can be fine tuned using the **Fonts** screen in the **!Boot** application. Each parameter is specified in points and can be set for both screen and printer.

#### Anti-alias

You can use the Fonts window to place an upper limit on the size of anti-aliased fonts; fonts in larger sizes are printed without anti-aliasing. Larger fonts benefit less from anti-aliasing, and since a computed anti-aliased bitmap font occupies a

lot more memory than a non-anti-aliased bitmap, for most purposes it is not worth displaying large fonts with anti-aliasing. This parameter is relevant only to the screen display.



### **Cache bitmaps**

This specifies the largest font size which is to be kept in the font cache as a bitmap. Fonts larger than this will be drawn from outlines directly to the screen without caching and without anti-aliasing. If it is set high, and you are using a few large fonts – for headlines, perhaps – they may take up all the font cache, flushing out smaller fonts. You may find it most efficient to set this value to the size of the body text in your document.

**Note:** Cache bitmaps cannot be set to a value lower than the outline font point size.

This parameter is relevant for the printer, especially if you are printing documents with a lot of text. Its ideal value depends on the screen display mode, printer type and the printer resolution.

### **Sub-pixel anti-aliasing**

This controls a refinement of anti-aliasing in which four separate versions of each character are retained. This can have a beneficial effect on the quality of characters at small sizes. This parameter is relevant only to the screen display; it does not affect printing.

If you use this option you should increase your font cache by four times to store the extra font shapes needed. If you don't, your system performance may be adversely affected.

## Troubleshooting

If every repaint on the screen causes intensive disc and hourglass activity, then the font cache may be too small to hold the range of fonts you are trying to use. In these circumstances, try the following:



- 1 Increase the size of the font cache using the Task manager/Task display window. The addition of even small amounts of cache can often improve things dramatically.
- 2 Reduce the maximum size for anti-aliasing. This will enable the font cache to be used more economically with a large number of fonts. You should not normally reduce the maximum anti-aliasing size below 12points.
- 3 Reduce the maximum height of cached bitmaps value. This should reduce disc activity, but the action of painting on the screen will become much slower.

## Printing



When printing, there are conflicting requirements for memory. The Font manager needs memory to cache fonts, and the printer driver needs memory to build up a page image to send to the printer. As both of these affect printing speed, you will have to experiment to find the optimum. Typically, more memory given to the font cache (or maximum font cache option) results in quicker printing.

The maximum height of cached bitmaps affects whether fonts are cached when printing. If this value is smaller than your typical body text size, there may be a very long pause at the start of each printed page, as all the characters on the page are rendered from the outline form.

As a general rule these remarks do not apply to PostScript printing, which operates in a different way.



# Appendix C: Configuration information



Using a desktop boot file enables you to specify exactly how your computer starts up, so that the applications you most commonly use are available as soon as you switch on. You can also control the way these applications behave by setting options within the desktop boot file. This appendix describes these options.



**This appendix assumes that you know how to generate and edit the contents of the Desktop boot file stored within the !Boot application (see page 139). The information in this chapter is not needed for general operation of the computer and should only be used with care.**

## Alarm configuration



If you create a Desktop boot file while Alarm is running, it will incorporate any changes you have made to certain user preferences in a line beginning  
Set Alarm\$Options

### Alarm\$Options

Alarm\$Options also uses the values of –timeout, –weekwork and –format to set up Alarm. It is, however, much easier to set these using the Alarm setup window and then to save a Desktop boot file than to edit these options directly.

Alarm\$Options controls the format of the time and date display on the icon bar when the Display format is set to **User defined**. By default, it is

```
-format %z12:%mi:%se %pm. %zdy/%zmn/%yr
```

This will produce displays like this:

```
12:12:32 pm. 23/1/90  
1:15:30 am. 1/12/89
```

For full information on time and date formats, see the next section.

### Time and date display formats

The date and time format can be set by giving the system variable Alarm\$Options a string made up of time and date variables as listed below. You can also enter these options in the !Alarm Setup window in the User defined field.

Name	Value	Example
%se	seconds	59
%mi	minutes	05
%12	hours in 12 hour format	07
%24	hours in 24 hour format	23
%am or %pm	'AM' or 'PM'	pm
%we	weekday, in full	Thursday
%w3	weekday, in three characters	Thu
%wn	weekday, as a number	5
%dy	day of the month	01
%st	'st', 'nd', 'rd' or 'th'	st
%mo	month name, in full	September
%m3	month name, in three characters	Sep
%mn	month as a number	09
%ce	century	19
%yr	year within century	87
%wk	week of the year, Mon to Sun	52
%dn	day of the year	364
%0	insert an ASCII 0 zero byte	
%%	insert a %	

Numbers are generated as a fixed width with leading zeros (e.g. %mi can give a result of 05). To remove leading zeros, prefix the code with a z (e.g. %zmi gives a result of 5).

Plain text can also be included in the variable string; for example:

%we the %dy%st %m3 %yr

would display in the form:

Wednesday the 21st Jan 84

## **Paint configuration**



You may wish to change some aspects of the way new Paint windows appear when you first open them. For example, a new window normally opens with zoom magnification set to 1:1, but you may prefer to have the Zoom option set to 2:1 each time you start Paint.

You can set features of this type by setting up Paint as you wish to use it, then save these features in a Desktop boot file.

There are several features of Paint that you can set before saving a Desktop boot file, so that they are set up the way you want them each time you switch on. The Paint features that will be recorded when you go through this process are known as Paint\$Options.

## Saving display features

Any Paint display features that you set before creating your boot file will be saved, so that the computer not only loads Paint, but sets the display features you have chosen.

If you wish to set the Paint display features, **without running Paint itself**, follow these steps:

- 1 Create a Desktop boot file.
- 2 Load the resulting file into Edit by dragging it onto the Edit icon (not by double-clicking: this will run the file).
- 3 Search for the line which runs Paint: this will read something like

Run Resources:\$ .Apps.!Paint

- 4 Delete that line and save the !Boot file again.  
(Leave the line starting

Set Paint\$Options  
unchanged.)

## Customising the Desktop boot file

If you change some of Paint's display features and then create a Desktop boot file using the Task manager, you can load the file into Edit to examine it. You will find a line reading

Set Paint\$Options ...

where the string of letters and numbers corresponds to the display features you have selected.

Here are two examples:

Set Paint\$Options DFW C+ T+ G7

This means show full info, use desktop colours, colours window and toolbox on, grid displayed in black (colour 7).

Set Paint\$Options DDB CS T- Z4:1

This means show drawing and name, use BBC colours, small colours window on, toolbox off, zoom factor 4:1.

If you create a Desktop boot file automatically, you may still want to edit it later. The following list of options therefore shows the parameters for Set Paint\$Options.

<b>Letter</b>	<b>Feature controlled</b>	<b>Values</b>	<b>Possible Meaning</b>
D	Sprite file window display	D or F	Drawing and name or Full info
		W or B	Desktop colours on (Wimp) or off (use BBC colours)
C	Colours displayed when new sprite window opened	+ or - L S	Colours window on or off Small colours off Small colours on
T	Toolbox displayed automatically	+ or -	Toolbox on or off
Z	Default zoom factor	a : b	Specifies zoom factor
G	Automatic grid display	+ or - n	Grid on or off (at zoom factors of 4:1 or above); n specifies colour for the grid.

If you have not changed any settings for Paint, the line will appear in your Desktop boot file as:

```
Set Paint$Options ""
```

## **Default values**

Default values for Paint are:

```
DDW C+L T+ Z1:1G+7
```

- DDW Show drawing and name, use desktop colours.
- C+L Display colours window (normal size) when a sprite is loaded.
- T+ Display toolbox when Paint is loaded.
- Z1:1 Zoom 1:1 (normal size).
- G+7 Grid on with black grid lines.

When editing the Desktop boot file, you should make sure that the Paint\$Options line is placed before the line that runs the Paint application.

## SciCalc configuration



Saving a Desktop boot file will save your SciCalc configuration, however you may wish to change some aspects of the way SciCalc operates. For example, the position of the SciCalc window when it is opened, the number base it uses and the angle mode it uses.

These features are stored by setting up SciCalc as you wish to use it, and then saving the Desktop boot file.

### Customising the Desktop boot file

The SciCalc window can be opened at a chosen place on the screen by editing your Desktop boot file and inserting the system variable SciCalc\$Window. For example:

```
Set SciCalc$Window 700,900
```

The numbers are the x and y graphics coordinates for the bottom-left corner of the displayed window.

You can also choose a particular base and trigonometric mode in which SciCalc is to start, by setting SciCalc\$Options, for example

```
Set SciCalc$Options 2,1
```

The first number specifies the base, the second the mode. Allowed values are

Base -	1 Decimal	2 Binary	3 Octal	4 Hexadecimal
Mode -	1 Radians	2 Degrees	3 Gradians	

The last example sets the base to binary and the trigonometric mode (used when you next change to decimal base) to radians. The default values are 1,2 – decimal and degrees.

## Pinboard configuration

Saving a Desktop boot file will save the exact configuration (including the icons and the backdrop) of your Pinboard. It does not save information about iconised application windows.

Add one or more of the following lines to the Desktop boot file:

Pinboard -Grid	Starts the Pinboard with grid lock.
Pinboard	Starts the Pinboard without grid lock.

Backdrop <i>filename</i>	Gives the filename of the sprite to be used as a Pinboard backdrop, for example Backdrop adfs::4.\$.alfalfa Makes a backdrop by displaying the sprite alfalfa.
Backdrop <i>filename</i> -Scale	Scales the sprite so that it covers the background completely.
Backdrop <i>filename</i> -Centre	Centres the sprite so that it keeps its proportions.
Backdrop <i>filename</i> -Tile	Makes enough copies of the sprite to cover the background completely.
Pin <i>filename position</i>	Gives the position of an icon on the background, for example Pin Resources:\$ Apps.!Configure 350 500 puts the !Configure icon on the background at position 350 500 (given in OS units).

## Edit configuration



You may wish to change some aspects of the way new Edit windows appear. For example, a new window normally opens using black text on a white background, but you may prefer to have blue text on a red background ready to use each time you start Edit.

You can set features of this type by setting up Edit just as you wish to use it, then save these features by saving a Desktop boot file.

There are several features of Edit that you can set before saving a Desktop boot file, so that they are set up the way you want them each time you switch on. The Edit features that will be recorded when you go through this process are known as **Edit\$Options**.

### Saving display features

Any Edit display features that you set before creating your boot file will be saved, so that the computer not only loads Edit, but sets the display features you have chosen.

If you wish to set the Edit display features each time you start your computer, **without running Edit itself**, follow these steps:

- 1 Create a Desktop boot file.
- 2 Load the resulting !Boot file into Edit by dragging it onto the Edit icon (not by double-clicking; this will run the !Boot file).
- 3 Search for the line which runs Edit: this will read something like

Run Resources:\$..Apps.!Edit

- 4 Delete that line and save the !Boot file again.

(Leave the line starting

Set Edit\$Options  
unchanged.)

### Customising the Desktop boot file

If you change some of Edit's display features and then create a Desktop boot file using the Task manager, you can load the file into Edit to examine it. You will find a line reading

Set Edit\$Options ...

where the string of letters and numbers corresponds to the display features you have selected. (If you have not changed any display features, no `Edit$Options` line will appear in your boot file.)

Here are two examples:

```
Set Edit$Options F13 B0 W8 H12 NTrinity.Medium
```

This sets the text colour to olive green (colour 13) on a white background (colour 0), the font width and height to 8 and 12 points respectively, and the font to Trinity Medium.

```
Set Edit$Options F8 D NCorpus.Medium
```

This sets the text colour to dark blue, leaving the background white, switches word wrap on, and sets the font to Corpus Medium.

If a font name is specified it must appear last in the list of Edit\$Options.

The table below identifies the display features that will be recorded when you do this, and provides a reference for those who may wish to create their own boot file without using the Desktop boot facility, or who may wish to edit a boot file after creating it.

<b>Letter</b>	<b>Feature specified</b>	<b>Default</b>
F	Foreground (text) colour	7 (black)
B	Background	0 (white)
W	Font width	10
H	Font height	10
M	Left margin in pixels	0
L	Extra spacing between lines (a negative number will produce closer lines)	0
R	Window wrap	off
D	Wordwrap on new windows	off
O	Overwrite in new windows	off
T	Column tab	off
U	Size of undo buffer in bytes	5000
A	Work area	77
N	Font name	System font

## Draw configuration



You may wish to change some aspects of the way new Draw windows appear. For example, a new window normally opens with the closed line tool selected, but you may prefer to have the Select tool ready to use each time you start Draw.

You can set features of this type by setting up Draw as you wish to use it, then save these features by creating a Desktop boot file.

There are several features of Draw that you can set before saving a Desktop boot file, so that they are set up the way you want them each time you switch on. The Draw features that will be recorded when you go through this process are known as Draw\$Options.

### Saving display features

Any Draw features that you set before creating your boot file will be saved, so that the computer not only loads Draw, but sets the features you have chosen.

If you wish to set the Draw features, **without running Draw itself**, follow these steps:

- 1 Create a Desktop boot file.
- 2 Load the resulting !Boot file into Edit by dragging it onto the Edit icon (not by double-clicking; this will run the !Boot file).
- 3 Search for the line which runs Draw: this will read something like

Run Resources:\$ .Apps. !Draw

- 4 Delete that line and save the !Boot file again.  
(Leave the line starting

Set Draw\$Options  
unchanged.)

### Customising the Desktop boot file

If you change some of Draw's default features and then create a Desktop boot file using the Task manager, you can load the file into Edit to examine it. You will find a line reading

Set Draw\$Options "..."

where the string of letters and numbers between the double quotes corresponds to the features you have selected. If you have not changed any features, the Set Draw\$Options line will appear in your boot file as

Set Draw\$Options ""

Here are two examples of Draw\$Options:

```
Set Draw$Options P4L T- MS
```

This selects a paper size of A4 in landscape format, turns the Toolbox off and chooses the select tool as default.

```
Set Draw$Options G1x10SL ML
```

This causes a 1 inch grid with 1/10 inch subdivisions to be displayed, with grid lock on, and the line tool selected as default.

If you do not specify an option in the command, it will be set to the default. Case is not significant, except for the values that can be given to the M option: L or l, and C or c (see the list below).

The table overleaf provides a reference for those who may wish to create their own boot file without using the Task manager, or who may wish to edit a boot file after creating it.

<b>Letter</b>	<b>Feature controlled</b>	<b>Possible values</b>	<b>Meaning</b>
P	Paper size and format	n L S	Paper size An (eg A4) Landscape format (if not set, portrait is used) Show paper limits
G	Grid	axb I A S L C	a = spacing, b = subdivisions Isometric (rectangular if not set) Auto-adjust on Show grid Grid lock on cm units (inches if not set)
Z	Zoom	a : b L	Set zoom to a : b Zoom lock on
T	Toolbox display	+ or -	Toolbox on or off
M	Tool/mode selected	One of: L l C c R E T S	Line Closed line Curve Closed curve Rectangle Ellipse Text Select

## Default settings

The default settings used by Draw are as follows:

Setting	Meaning
P4	A4 portrait format, paper limits not shown
G1x4A	1 inch rectangular grid with 1/4 inch subdivisions, not shown or locked, auto-adjust on.
Z1:1	Zoom 1:1, zoom lock off.
T+	Toolbox on.
M1	Closed line tool selected

## Increasing the Undo buffer size

When you make a change to your diagram, such as deleting an object, Draw stores the previous state of the diagram in a buffer (area of memory) so that it can restore it if you use the **Undo** option. This buffer has, by default, a size of 5KB. Experienced users of RISC OS may wish to use the Command Line to increase the size of the buffer. To do this, enter the Command Line and type

`Set Draw$Options Un`

substituting for *n* the size you want, in bytes. To make the buffer this size each time you use Draw, edit the line that the Task manager will have created for you in your boot file (described in the section *Saving display features* on page 505), adding the *Un* immediately before the double quotes at the end of the line.



# Appendix D: BBC BASIC

**B**BBC BASIC is still one of the most popular and widely-used programming languages. It consists of special keywords from which the programmer can create sequences of instructions, or programs, to be carried out by the computer. Such programs might perform calculations, create graphics on the screen, manipulate data, or carry out virtually any action involving the computer and the devices connected to it. Several examples of programs written in BBC BASIC are provided on the Applications suite.

The BASIC language operates within an environment provided by the computer's operating system. The operating system is responsible for controlling the devices available to the computer, such as the keyboard, the screen, and the filing system. For example, it is the operating system which reads each key you press and displays the appropriate character on the screen. Operating system commands can be entered directly from within BASIC by prefixing them with an asterisk (\*).

If you want to find out more about the BBC BASIC programming language, you need the *BBC BASIC Reference Manual* available from your Acorn supplier.

On-line help is available within BASIC; just type HELP (in uppercase) for more information.

## BBC BASIC V and VI

There are two variants of BBC BASIC supplied with RISC OS 3: BASIC V and BASIC VI.

BASIC V is in the ROM and is almost identical to the BASIC V supplied earlier versions of RISC OS. A small number of faults have been corrected.

BASIC VI is essentially the same as BASIC V, but it uses 8 bytes (or 64 bits) to store floating point numbers. BASIC V only uses 5 bytes, so it is slightly less accurate. The 8 byte representation used follows the IEEE standard. Unlike BASIC V, BASIC VI makes use of a hardware floating point unit if it is fitted.

## **Entering BASIC**

### **Basic V**

To start BASIC V, display the Task manager menu (click Menu over the Acorn icon at the bottom righthand corner of the desktop). Choose the **Task window** option and then type the following:

BASIC

Press Return, and the BASIC V version and memory option will be displayed on the screen.

BASIC can also be started from the New Task option on the Task Manager or from the command line (press F12).

### **Basic VI**

BBC BASIC VI is different to BBC BASIC V in that it is stored on disc, not in the computer's ROM. BASIC VI is also known as BASIC64.

BASIC VI is used by some applications (for example SciCalc) so it may get loaded into memory without you having to take any special action.

To start BASIC VI, display the Task manager menu (click Menu over the Acorn icon at the bottom righthand corner of the desktop). Choose the **Task window** option and then type the following:

BASIC64

Press Return, and the BASIC VI version and memory option will be displayed on the screen.

BASIC 64 can also be started from the New task option on the Task manager menu or from the command line (press F12).

BASIC files saved from both BASIC V and BASIC VI are the same and can be run using either BASIC.

## **Leaving BASIC**

To leave BASIC, type QUIT (which must be in uppercase) or type \*Quit.

## Features in BASIC VI

The CRUNCH command strips various spaces from a program. Its argument is a 5-bit binary word. Each bit in the word has a different meaning (for instance bit 0 controls the stripping of spaces before statements; bit 2 controls the stripping out of REM statements).

The TEXTLOAD command can load a file that is either a BASIC program, or a BASIC program that was saved as a text file. In the latter case, TEXTLOAD automatically renames the program. TEXTSAVE stores a BASIC program as a text file, and strips out the line numbers.

## Writing and editing BASIC files

Edit will automatically convert BASIC files to and from BASIC tokenised format. Now all editing of BASIC files can be done using Edit. Edit is fully described in the chapter *Edit* on page 247.

## Command line syntax for BASIC

The following pages describe in full the command line interface for BASIC V and BASIC VI.

# \*BASIC

The command to enter the BASIC V interpreter.

## Syntax

\*BASIC [*options*]

## Purpose

To enter BASIC V.

The options control how the interpreter will behave when it starts, and when any program that it executes terminates. If no option is given, BASIC simply starts with a message of the form:

```
ARM BBC BASIC V version 1.05 (C) Acorn 1989  
Starting with 643324 bytes free
```

The number of bytes free in the above message will depend on the amount of memory in your Next slot. The first line is also used for the default REPORT message, before any errors occur.

One of three options may follow the \*BASIC command to cause a program to be loaded, and, optionally, executed automatically. Alternatively, you can use a program that is already loaded into memory by passing its address to the interpreter. Each of these possibilities is described in turn below.

In all cases where a program is specified, this may be a tokenised BASIC program, as created by a SAVE command, or a textual program, which will be tokenised (and possibly renumbered) automatically.

\*BASIC -help

This command causes BASIC to print some help information describing the options documented here. Then BASIC starts as usual.

\*BASIC [-chain] *filename*

If you give a *filename* after the \*BASIC command, optionally preceded by the keyword -chain, then the named file is loaded and executed. When the program stops, BASIC enters immediate mode, as usual.

\*BASIC -quit *filename*

This behaves in a similar way to the previous option. However, when the program terminates, BASIC quits automatically, returning to the environment from which the interpreter was originally called. If you have a variable BASIC\$Crunch

defined, it also performs a CRUNCH \$1111 on the program. This is the default action used by BASIC programs that are executed as \* commands. In addition, the function QUIT returns TRUE if BASIC is called in this fashion.

\*BASIC -load *filename*

This option causes the file to be loaded automatically, but not executed. BASIC remains in immediate mode, from where the program can be edited or executed as required.

\*BASIC @*start, end*

This acts in a similar way to the -load form of the command. However, the program that is 'loaded' automatically is not in a file, but already in memory. Following the @ are two addresses. These give, in hexadecimal, the address of the start of the in-core program, and the address of the byte after the last one. The program is copied to PAGE and tokenised if necessary.

Note that the in-core address description is fixed format. It should be in the form:

@xxxxxxxxx,xxxxxxxx

where x means a hexadecimal digit. Leading zeros must be supplied. The command line terminator character must come immediately after the last digit. No spaces are allowed.

\*BASIC -chain @*start, end*

This behaves like the previous option, but the program is executed as well. When the program terminates, BASIC enters immediate mode.

\*BASIC -quit @*start, end*

This option behaves as the previous one, but when the BASIC program terminates, BASIC automatically quits. The QUIT flag will return TRUE during the execution of the program.

## Examples

```
*BASIC
*BASIC -quit shellProg
*BASIC @000ADF0C,000AE345
*BASIC -chain fred
```

## **\*BASIC64**

The command to enter the BASIC VI interpreter.

### **Syntax**

**\*BASIC64 [options]**

### **Purpose**

This has exactly the same purpose as the \*BASIC command, and takes the same options, the only difference being that it enters the BASIC VI interpreter instead of the BASIC V interpreter. Additionally CRUNCH is used automatically by BASIC64.

If no option is given, BASIC VI simply starts with a message of the form:

```
ARM BBC BASIC VI version 1.05 (C) Acorn 1989
```

```
Starting with 581628 bytes free.
```

The number of bytes free in the above message will depend on the amount of free space in your Next slot.

### **Examples**

```
*BASIC64  
*BASIC64 -quit shellProg  
*BASIC64 @000ADF0C,000AE345  
*BASIC64 -chain fred
```

## New features in RISC OS 3 Version 3.5

The version of BASIC in your computer has been extended for use with the new systems available.

### Colour

- COLOUR n [TINT t]: set text foreground colour [and tint]
- GCOL n [TINT t]: set graphics foreground colour [and tint]

If n is less than 128, the foreground colour is set to colour n

if n is greater than 128, the background colour is set to colour n-128

COLOUR n,p: set palette entry for logical colour n to physical colour p.

COLOUR r,g,b: set colour to r, g, b.

COLOUR n,r,g,b: set palette entry for n to r, g, b physical colour.

GCOL <action>,n [TINT t]: set graphics foreground/background colour and action.

GCOL |<action>,|r,g,b: set colour to r, g, b.

### Mode

Set the screen mode:

- MODE <number>|<string>
- See page 83 for more information about this string.

As a function MODE gives the current screen mode.

### Point

POINT (X,Y) supports 16bpp and 32bpp colours.



# Appendix E: RISC OS file types

**F**ile types are three-digit hexadecimal numbers. They are divided into ranges:

E00 - FFF	allocated by Acorn for generic data types
B00 - DFF	allocated by Acorn to software houses for applications
A00 - AFF	reserved for use by Acorn applications
400 - 9FF	allocated by Acorn to software houses for applications
100 - 3FF	allocated by Acorn to public domain applications
000 - OFF	free for users

For each type, there may be a default action on loading and running the file. These actions may change, depending on whether the desktop is in use, and which applications have been seen. The system variables Alias\$@LoadType\_XXX and Alias\$@RunType\_XXX give the actions (XXX = file type).

Some types have a textual equivalent set at start-up, which may be used in most commands (but not in the above system variables) instead of the hexadecimal code. These are indicated in the table below by a dagger '†'. For example, file type &FFF is set at start-up to have the textual equivalent **Text**. Other textual equivalents may be set as an application starts – for example, Acorn Desktop Publisher sets up file type &AF9 to be **DtpDoc**, and file type &AFA to be **DtpStyle**. These textual equivalents are set using the system variables File\$type\_XXX, where XXX is the file type.

You should use the hexadecimal file type in command scripts and in programs, otherwise you will find that your files will give an error if you try to run them on a machine that uses a territory with different textual equivalents.

The following types are currently used or reserved by Acorn. Not all file types used by software houses are shown. This list may be extended from time to time:

## Acorn file types

Type	Description	Textual equivalent
FFF	Plain ASCII text	Text †
FFE	Command (Exec) file	Command †
FFD	Data	Data †
FFC	Position independent code	Utility †
FFB	Tokenised BASIC program	BASIC †
FFA	Relocatable module	Module †

Type	Description	Textual equivalent	
FF9	Sprite or saved screen	Sprite	†
FF8	Absolute application loaded at &8000	Absolute	†
FF7	BBC font file (sequence of VDU operations)	BBC font	†
FF6	Font	Font	†
FF5	PostScript	PoScript	†
FF4	Dot Matrix data file	Printout	†
FF3	LaserJet data file	LaserJet	
FF2	Configuration (CMOS RAM)	Config	†
FF1	Raw unprocessed data (e.g. terminal streams)	RawData	
FF0	Tagged Image File Format	TIFF	
FED	Palette data	Palette	†
FEC	Template file	Template	†
FEB	Obey file	Obey	†
FEA	Desktop	Desktop	†
FE9	ViewWord	ViewWord	
FE8	ViewPS	ViewPS	
FE7	ViewSheet	ViewSht	
FE6	UNIX executable	UNIX Ex	
FE4	DOS file	DOS	†
FE3	Atari file	Atari	
FE2	Commodore Amiga file	Amiga	
FE1	Make data	Make	
FDF	TCP/IP suite: VT220 script	VTScript	
FDE	TCP/IP suite: VT220 setup	VTSetup	
FDD	Master utilities	MasterUtil	
FDC	TCP/IP suite: unresolvable UNIX soft link	SoftLink	
FDB	Text using CR and LF for line ends	TextCRLF	
FDA	PC Emulator: DOS batch file	MSDOSbat	
FD9	PC Emulator: DOS executable file	MSDOSexe	
FD8	PC Emulator: DOS command file	MSDOScom	
FD7	Obey file in a task window	TaskObey	†
FD6	Exec file in a task window	TaskExec	†
FD5	DOS Pict	Pict	
FD4	International MIDI Assoc. MIDIfiles standard	MIDI	
FD3	Acorn DDE: debuggable image	DeblImage	
FD1	BASIC stored as text	BASICTxt	
FD0	PC Emulator: configuration	PCEmConf	
FCF	Font cache	Cache	†
FCE	FileCore floppy disc image	FileCoreFloppyDisc	
FCD	FileCore hard disc image	FileCoreHardDisc	
FCC	Device object within DeviceFS	Device	†

Type	Description	Textual equivalent
FCA	Single compressed file	Squash
FC9	Sun raster file	SunRastr
FC8	DOS MultiFS disc image	DOSDisc †

## Industry standard file types

Type	Description	Textual equivalent
DFE	Comma separated variables	CSV
DEA	Data exchange format (AutoCAD etc)	DXF
DB4	SuperCalc III file	SuperCalc
DB3	DBase III file	DBaseIII
DB2	DBase II	DBaseII
DB1	DBase index file	DBaseIndex
DB0	Lotus 123 file	WK1 (was Lotus123)
CE5	TeX file	TeX
CAF	IGES graphics	IGES
CAE	Hewlett-Packard graphics language	HPGLPlot
C85	JPEG (Joint Photographic Experts Group) file	JPEG

## BBC ROM file type

Type	Description	Textual equivalent
BBC	BBC ROM file (ROMFS)	BBC ROM †

## Acornsoft file types

Type	Description	Textual equivalent
AFF	Draw file	DrawFile †
AFE	Mouse event record	Mouse
AFA	DTP style file	DtpStyle
AF9	DTP documents	DtpDoc
AF8	First Word Plus file	1stWord+
AF7	Help file	HelpInfo
AF1	Maestro file	Music
AF0	ArcWriter file	ARCWriter
AE9	Alarm file	Alarms
ADB	Outline font (obsolete file type)	New Font



# Appendix F: The fancy text file format

**F**ancy text format understands text printing options such as Print quality and Control codes. Plain text format ignores these settings.

The fancy text file format is mainly the same as the 1st Word Plus file format, and so most of the highlighting (in 1st Word Plus files) is printed correctly. This means you don't have to load 1st Word Plus to print out your 1st Word Plus files (although you can't print sprites).

## The Fancy text file format

This section specifies the fancy text file format; it is of interest to advanced users only. The format consists of plain text with the following added special sequences.

### Character sequences

In a text file, the character sequence is a character that stands for the ASCII value given in brackets in the table below:

Character sequence	Meaning	Action
<8>	Backspace character	Backspace if possible
<9>	Tab character	Tabulate to next 8th column
<10>	Line Feed character	Possible end-of-line (depends on options)
<11><x>	Conditional page break	Page break if less than x-16 lines left on page, else a new line
<12>	Unconditional page break	Go to a new page (i.e. a page break)
<13>	Return character	Possible end-of-line (depends on options)
<24><x><y>	Footnote reference	Reference to footnote <n>, so print <n>. (x & y are ignored but must be present)
<n>		
<25>	Soft hyphen	Always print a hyphen
<27>	Escape character	Start escape sequence

Character sequence	Meaning	Action
<28>,<29>,<30>	Soft space	Discard if precedes a <10>, <11>, <12> or <13>, else print a space
<31>	Format character	Start format sequence (reserved for Acorn use)
<127>	Delete character	Ignored

### Escape sequences

In a text file, the escape sequence is a character that stands for the ASCII value given in brackets in the table below followed by a binary number.

Escape sequence	Meaning
<27><%11000000>	Starts literal escape sequence. This is equivalent to <27><192>. A literal escape sequence is a sequence of characters which are sent directly to the printer – and hence are printer-specific. The sequence is ended by a <27><0>.
	A "ll" pair sends a "l" character, a "l?" pair sends a <127>, and any other "l<x>" sequence sends <x AND 31>. Thus to send an escape character use "l ".
<27><%10fedcba>	If 'a' is 1 then bold style (on = 1, off = 0) If 'b' is 1 then light style (on = 1, off = 0) If 'c' is 1 then italic style (on = 1, off = 0) If 'd' is 1 then underline (on = 1, off = 0) If 'e' is 1 then superscript (on = 1, off = 0) If 'f' is 1 then subscript (on = 1, off = 0) This is equivalent to the range of escape sequences <27><128> to <27><191>.
<27><other>	Ignored

The file format is almost a subset of the 1st Word Plus file format, the basic omissions being headers and footers, and an incomplete implementation of footnotes.

# Appendix G: Old-type screen modes

This appendix gives information about the numbered screen modes that were used with earlier versions of the RISC OS operating system. This information is only needed for backward compatibility purposes: for example, you may be using an old software application or game that demands a particular old type screen mode.

## The Display manager

This section gives a quick recap on how the new screen Display manager operates and where to find more information.



In the Screen configuration option of !Boot, the type of monitor used with your computer is defined. This controls the selection of resolutions used by the Screen manager. The Screen configuration option of !Boot is described on page 128.



The Display manager is used to choose the display resolution and number of colours used by the desktop. The Display manager is described on page 79.

The display options that your monitor can use depend upon the characteristics of your monitor. These characteristics are described in a special file called a ModelInfo file. This file is tuned to each monitor type and should not normally be changed. If there is no monitor type for your particular monitor you should contact your Acorn dealer for information.

## Backward compatible screen modes

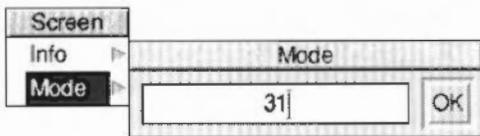
This computer still supports old type screen modes. Screen modes were the way colours and resolutions were selected in the RISC OS 3.1, RISC OS 3.0 and RISC OS 2 operating systems.

There are several reasons why you may want to use an old type screen mode:

- To play a game that demands an old type screen mode.
- To use an application that demands an old type screen mode.
- To generate old type sprite files from !Paint.

## **Choosing a backward compatible mode**

You can choose old-type numbered modes from the Display manager icon bar menu. Choose the Mode window, delete any information in the box, and then type in the mode number you want to use. Click on OK.



## **Old type sprite files**

Your computer uses a new, improved sprite file format, the file type used to save !Paint pictures. However you cannot use one of these new format sprite files on a computer running RISC OS 3.1 or earlier. If you want to use a sprite on a computer running an earlier version of the operating system you should create it while using one of the backward compatible screen modes. Alternatively the graphic translator application !ChangeFSI can convert between sprite types.

## **Mode table**

The table of modes on the following pages show:

- The mode number.
- The text resolution in columns × rows.
- The graphics resolution in pixels, which corresponds to the clarity of the mode's display.
- The number of colours available.
- The monitor types that support that mode:

0	Standard monochrome or colour monitor
1	Multi frequency monitor
3	VGA-type monitor
4	Super VGA-type monitor

## List of screen modes

This is the list of screen modes supplied with RISC OS. Third party suppliers may produce software and hardware that produces different video modes; such modes are not listed here.

<b>Mode</b>	<b>Text resolution</b>	<b>Pixel resolution</b>	<b>Logical colours</b>	<b>Monitor types</b>	<b>Notes</b>
0	80 × 32	640 × 256	2	0,1,3,4	③
1	40 × 32	320 × 256	4	0,1,3,4	③
2	20 × 32	160 × 256	16	0,1,3,4	③
3	80 × 25	Text only	2	0,1,3,4	③④⑥
4	40 × 32	320 × 256	2	0,1,3,4	③
5	20 × 32	160 × 256	4	0,1,3,4	③
6	40 × 25	Text only	2	0,1,3,4	③④⑥
7	40 × 25	Teletext	16	0,1,3,4	③④
8	80 × 32	640 × 256	4	0,1,3,4	③
9	40 × 32	320 × 256	16	0,1,3,4	③
10	20 × 32	160 × 256	256	0,1,3,4	③
11	80 × 25	640 × 250	4	0,1,3,4	③
12	80 × 32	640 × 256	16	0,1,3,4	③
13	40 × 32	320 × 256	256	0,1,3,4	③
14	80 × 25	640 × 250	16	0,1,3,4	③
15	80 × 32	640 × 256	256	0,1,3,4	③
16	132 × 32	1056 × 256	16	0,1	⑤
17	132 × 25	1056 × 250	16	0,1	⑥
18	80 × 64	640 × 512	2	1	
19	80 × 64	640 × 512	4	1	
20	80 × 64	640 × 512	16	1	
21	80 × 64	640 × 512	256	1	
22	96 × 36	768 × 288	16	0,1	①
23	not supported				
24	132 × 32	1056 × 256	256	0,1	⑤
25	80 × 60	640 × 480	2	1,3,4	
26	80 × 60	640 × 480	4	1,3,4	
27	80 × 60	640 × 480	16	1,3,4	
28	80 × 60	640 × 480	256	1,3,4	
29	100 × 75	800 × 600	2	1,4	①②
30	100 × 75	800 × 600	4	1,4	①②

<b>Mode</b>	<b>Text resolution</b>	<b>Pixel resolution</b>	<b>Logical colours</b>	<b>Monitor types</b>	<b>Notes</b>
31	100 × 75	800 × 600	16	1,4	①②
32	100 × 75	800 × 600	256	1,4	①②⑦
33	96 × 36	768 × 288	2	0,1	①
34	96 × 36	768 × 288	4	0,1	①
35	96 × 36	768 × 288	16	0,1	①
36	96 × 36	768 × 288	256	0,1	①
37	112 × 44	896 × 352	2	1	①
38	112 × 44	896 × 352	4	1	①
39	112 × 44	896 × 352	16	1	①
40	112 × 44	896 × 352	256	1	①
41	80 × 44	640 × 352	2	1,3,4	①③
42	80 × 44	640 × 352	4	1,3,4	①③
43	80 × 44	640 × 352	16	1,3,4	①③
44	80 × 25	640 × 200	2	1,3,4	①③
45	80 × 25	640 × 200	4	1,3,4	①③
46	80 × 25	640 × 200	16	1,3,4	①③
47	45 × 60	360 × 480	256	1,3,4	①⑦
48	40 × 60	320 × 480	16	1,3,4	①⑦
49	40 × 60	320 × 480	256	1,3,4	①⑦

### Notes on the display modes

These notes refer to the note numbers in the far right column of the table.

- 1 These modes were not available in RISC OS 2.00, nor (except for mode 31) were they available in RISC OS 2.01.
- 2 These modes are not available on early models of RISC OS computers (i.e. the Archimedes 300 series, 440, and 400/1 series, and the BBC A3000).
- 3 If you are using a VGA or Super-VGA-type monitor, these modes are all displayed on a screen having 352 raster lines. Where a mode has fewer than 352 vertical pixels, it is centred on the screen with blank lines at the top and bottom. Because of their appearance these modes are known as letterbox modes. The refresh rate is 70Hz.
- 4 These modes provide compatibility with BBC and Master series computers.
- 5 In these modes circles, arcs, sectors and segments do not look circular. This is because the aspect ratio of the pixels is not in a 1:2, 1:1 or 2:1 ratio.

- 6 These are gap modes, where the colour of the gaps is not necessarily the same as the text background.
- 7 These modes were not available in earlier versions of the operating system.

## 256 colour modes

In 256 colour modes, there are some restrictions on the control of the colours. Only 64 base colours may be selected; 4 levels of tinting turn the base colours into 256 shades. Also, the selection from the colour palette of 4096 shades is only possible in groups of 16.

### Monitor types

If an attempt is made to select a mode which is not appropriate to the current monitor type, a suitable mode for that monitor is used.

### Monitor types and screen modes

Not all monitors can display all of the old type screen modes. The following table lists the screen modes each monitor can display:

Monitor type Mode	Standard	Multi frequency	VGA & LCD	Super VGA
Mode 0 - 15	✓	✓	✓ †	✓ †
16,17	✓	✓		
18 - 21		✓		
22	✓	✓		
23		Not supported		
24	✓	✓		
25 - 28		✓	✓	✓
29 - 31		✓		✓
33 - 36	✓	✓		
37 - 40		✓		
41 - 46		✓	✓	✓

† VGA and Super VGA type monitors can display modes 0 to 15 with reduced height (letterbox mode). These modes are retained for compatibility.



# Appendix H: Removing a disc defect

This appendix shows you how to map out a defect in your hard disc so that any defects in your hard disc can be made inaccessible. In this way you can still use your hard disc without using the part of the disc that contains the defect.

## What is a defect

If you are using your hard disc and see an error message such as:

Disc error 08 at :4/0001040

then you have found a disc defect.

You might also find a disc defect if you are Verifying your disc.

## Removing the defect

Assuming that you see an error message such as:

Disc error 08 at :0/0001040

write it down. The last number is the disc address.

- 1 At the command line type \*Defect, the disc name and the last part of the disc address:

\*Defect HardDisc4 1040

- 2 If this section of disc is in use you will see a message such as:

.myfile1 has defect at offset 800  
.myfile2 must be moved

- 3 Copy these files to another part of the disc (into another directory) and delete the originals. The affected part of the disc is now unallocated.

- 4 At the command line type the \*Defect command again:

\*Defect HardDisc4 1040

The affected part of the disc is now made inaccessible.

## Technical details

### \*Defect

Reports what object contains a defect, or (if none) marks the defective part of the disc so it will no longer be used

#### Syntax

*\*Defect disc\_spec disc\_addr*

#### Parameters

*disc\_spec* the name of the disc or number of the disc drive

*disc\_addr* the hexadecimal disc address where the defect exists, which must be a multiple of 256 – that is, it must end in '00'

#### Use

\*Defect reports what object contains a defect, or (if none) marks the defective part of the disc so it will no longer be used. \*Defect is typically used after a disc error has been reported, and the \*Verify command has confirmed that the disc has a physical defect, and given its disc address.

If the defect is in an unallocated part of the disc, \*Defect will render that part of the disc inaccessible by altering the 'map' of the disc.

If the defect is in an allocated part of the disc, \*Defect tells you what object contains the defect, and the offset of the defect within the object. This may enable you to retrieve most of the information held within the object, using suitable software. You must then delete the object from the defective disc. \*Defect may also tell you that some other objects must be moved: you should copy these to another disc, and then delete them from the defective disc. Once you have removed all the objects that the \*Defect command listed, there is no longer anything allocated to the defective part of the disc; so you can repeat the \*Defect command to make it inaccessible.

Sometimes the disc will be too badly damaged for you to successfully delete objects listed by the \*Defect command. In such cases the damage cannot be repaired, and you must restore the objects from a recent backup.

## **Example**

```
*Verify mydisc
Disc error 08 at :4/00010400
*Defect mydisc 10400
$.mydir must be moved
 myfile1 has defect at offset 800
 myfile2 must be moved
```

## **Related commands**

\*CheckMap, \*Verify



# Appendix I: Character sets

This chapter shows the character table for the Latin1 alphabet set available on your Acorn computer. The Latin1 character set is the alphabet normally used by the desktop. It is based on the International Standards Organisation ISO 8859 document.

## Loading an alphabet

When you load an alphabet it overlays the previous alphabet. Most alphabets have a number of undefined characters. These are shown in the table by a light grey square. In such cases, the previous character definition for that code remains in effect.

The character codes 0 - 31 and 127 are not printable characters. They are represented in the table by a dark grey square. You can load an alternative alphabet using the \*Alphabet command.

## How alphabets are initially set up

### The default alphabet

The default alphabet always contains all characters that are defined in the Latin1 alphabet. Note that this definition has been gradually extended by the addition of extra characters in the range &80 - &9F (128 - 159).

The computer's representation of characters that are not defined in the Latin1 alphabet varies. They are represented by the hexadecimal value of their character code. In the future some of these undefined characters may be used to further extend the Latin1 alphabet, or their representation may change. Consequently, you must not rely upon their initial representation.

### The configured alphabet

The default alphabet is overlaid by the alphabet that is correct for the computer's configured territory, as set by \*Configure Territory.

## Keyboard short-cuts

There are some useful keyboard short-cuts which you can use to access various characters and alphabets while you are working. You can use these wherever you can use the keyboard: for example, in the Command Line, in an application like !Edit, or when entering a filename to save a file.

### Using top bit set characters

Although the easiest way of inserting top bit set characters into your document is using the !Chars application (see page 345), you can also insert them by using special key combinations. Characters are entered using the Alt key and the numeric keypad.

Alt <decimal character code typed on numeric keypad>

Enters the character corresponding to the character code typed.

### Changing between alphabets

Alt Ctrl F1 Selects the keyboard layout appropriate to the country UK.

Alt Ctrl F2 Selects the keyboard layout appropriate to the country for which the computer is configured (if available).

### Switching between other alphabets

The following sequence also switches the keyboard layout:

- 1 Press and hold Alt and Ctrl together.
- 2 Press F12.
- 3 Release Ctrl.
- 4 Still holding Alt, type on the numeric keypad the international telephone dialling code for the country you want (eg 49 for Germany, 39 for Italy, 33 for France).
- 5 Release Alt.

## Typing special characters

Sometimes you need to be able to type special characters that are not apparently on the keyboard, such as accented characters, or symbols like ©. You can in fact get at lots of extra characters using the Alt key. The keyboard map at the bottom of this page shows all the characters that are available. Here's how to type them:

## Typing accented characters



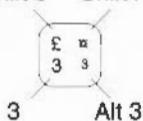
Some of the keys on the figure below are marked with a black area in one corner. These keys allow you to accent characters. The accent in each case is the character nearest the black area of the key.

For example, to type an 'e' with an acute accent (é):

- 1 Whilst holding down the Alt key, press and release the | key.
- 2 Release the Alt key.
- 3 Press and release the E key.

## Typing other special characters

Shift 3   Shift Alt 3



You can type the other special characters shown in the *keyboard map* using the instructions shown in the inset on the left.

For example, to type a ☺ symbol:

- 1 Hold down the Shift and Alt keys, press and release the 3 key.
- 2 Release the Shift and Alt keys.

The application !Chars also lets you insert many special characters and symbols into your document. For more information, refer to page 345.

**Special Characters: Keyboard Map**

soft hyphen (shy)



## Keyboard layouts

Only the UK keyboard layout is supplied in ROM. Contact your supplier for information about keyboard layouts for other countries. The !IntKey application supplied with earlier version of RISC OS is no longer fully supported.

**Latin1 alphabet (ISO 8859/1)**

This is the default alphabet used by Acorn computers.

	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	
+0	.		0	@	P	'	p		'		°	À	Ð	à	ð	0	
+1	!	1	A	Q	a	q	W	'	i	±	Á	Ñ	á	ñ	1		
+2	"	2	B	R	b	r	w	<	¢	²	Â	Ò	â	ò	2		
+3	#	3	C	S	c	s		>	£	³	Ã	Ó	â	ó	3		
+4	\$	4	D	T	d	t		"	¤	'	Ä	Ô	ä	ô	4		
+5	%	5	E	U	e	u	Ý	"	¥	µ	Å	Õ	å	õ	5		
+6	&	6	F	V	f	v	ÿ	,	I	¶	Æ	Ö	æ	ö	6		
+7	'	7	G	W	g	w		-	§	.	Ç	×	ç	÷	7		
+8	(	8	H	X	h	x		—	"	,	È	Ø	è	ø	8		
+9	)	9	I	Y	i	y		-	©	1	É	Ù	é	ù	9		
+10	*	:	J	Z	j	z		Œ	¤	º	Ê	Ú	ê	ú	A		
+11	+	;	K	[	k	{		œ	«	»	Ë	Û	ë	û	B		
+12	,	<	L	\	l		...	†	¬	¼	Ì	Ü	í	ü	C		
+13	-	=	M	]	m	}	™	‡	-	½	Í	Ý	í	ý	D		
+14	.	>	N	^	n	~	%	fi	®	¾	Î	Þ	î	þ	E		
+15	/	?	O	_	o	.	fl	-	¿	Í	Þ	ï	ÿ	ÿ	F		
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

In RISC OS 2 characters &80 - &9F (128 - 159) are undefined.

In RISC OS 3 (version 3.00) characters &80 - &8B (128 - 139) are undefined.

## Latin2 alphabet (ISO 8859/2)

	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	
+0			0	@	P	`	p		'		°	Ŕ	Đ	í	đ	0	
+1		!	1	A	Q	a	q		'	A	a	Á	Ń	á	ń	1	
+2		"	2	B	R	b	r		<	ˇ	ˋ	Â	Ñ	â	ň	2	
+3		#	3	C	S	c	s		>	Ł	ł	Ă	Ó	ă	ó	3	
+4		\$	4	D	T	d	t		"	¤	‘	Ä	Ô	ä	ô	4	
+5		%	5	E	U	e	u		"	Ł	Ł	Í	Õ	í	õ	5	
+6		&	6	F	V	f	v		"	Ś	ś	Ć	Ö	ć	ö	6	
+7		'	7	G	W	g	w		-	§	ˇ	Ç	×	ç	÷	7	
+8		(	8	H	X	h	x		-	”	,	Č	Ř	č	ř	8	
+9		)	9	I	Y	i	y		-	Š	š	É	Ü	é	ü	9	
+10		*	:	J	Z	j	z		Œ	Ş	ş	È	Ú	è	ú	A	
+11		+	;	K	[	k	{		œ	Ť	ť	Ë	Ü	ë	ü	B	
+12		,	<	L	\	l		...	†	Ž	ž	Ě	Ü	ě	ü	C	
+13		-	=	M	]	m	}	TM	‡	-	"	Í	Ý	í	ý	D	
+14		.	>	N	^	n	~	%oo	fi	Ž	ž	Î	Ï	í	ѣ	E	
+15		/	?	O	_	o			fl	Ž	ž	Đ	ß	đ	‘	F	
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

In RISC OS 2 characters &80 - &9F (128 - 159) are undefined.

## Latin3 alphabet (ISO 8859/3)

	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	
+0		0	@	P	`	p		'		°	À	à					0
+1	!	1	A	Q	a	q		'	H	h	Á	Ñ	á	ñ			1
+2	"	2	B	R	b	r		<	^	2	Â	Ò	â	ò			2
+3	#	3	C	S	c	s		>	£	3	Ó						3
+4	\$	4	D	T	d	t		"	¤	'	Ä	Ô	ä	ô			4
+5	%	5	E	U	e	u		"		μ	Ç	Ğ	ç	ğ			5
+6	&	6	F	V	f	v		"	H	h	Ç	Ö	ç	ö			6
+7	'	7	G	W	g	w		-	§	.	Ç	x	ç	÷			7
+8	(	8	H	X	h	x		-	"	,	È	Ğ	è	ğ			8
+9	)	9	I	Y	i	y		-	i	i	É	Ù	é	ù			9
+10	*	:	J	Z	j	z		Œ	Ş	ş	Ê	Ú	ê	ú			A
+11	+	;	K	[	k	{		œ	Ğ	ğ	Ë	Û	ë	û			B
+12	,	<	L	\	l		...	†	J	j	Ì	Ü	í	ü			C
+13	-	=	M	]	m	}	TM	‡	-	½	Í	Ü	í	ü			D
+14	.	>	N	^	n	~	%oo	fi			Î	Ş	î	ş			E
+15	/	?	O	_	o		.	fl	Ž	ž	Ï	Þ	ï	þ	.		F
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

In RISC OS 2 characters &80 - &9F (128 - 159) are undefined.

## Latin4 alphabet (ISO 8859/4)

	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	
+0	.		0	@	P	`	p		'		°	Ā	Ð	ā	ð	0	
+1	!	1	A	Q	a	q		'	A	a	Á	Ñ	á	ñ	1		
+2	"	2	B	R	b	r		<	K	,	Â	Ó	â	ó	2		
+3	#	3	C	S	c	s		>	R	ř	Ã	Ķ	ā	ķ	3		
+4	\$	4	D	T	d	t		"	¤	'	Ä	Ö	ä	ö	4		
+5	%	5	E	U	e	u		"	Í	í	Å	Õ	å	õ	5		
+6	&	6	F	V	f	v		"	L	ł	Æ	Ö	æ	ö	6		
+7	'	7	G	W	g	w		-	§	„	l	x	j	÷	7		
+8	(	8	H	X	h	x		-	"	,	Č	Ø	č	ø	8		
+9	)	9	I	Y	i	y		-	Š	š	É	Ü	é	ü	9		
+10	*	:	J	Z	j	z		Œ	Ē	ē	Ë	Ú	ë	ú	A		
+11	+	;	K	[	k	{		œ	Ģ	ģ	Ë	Ü	ë	ú	B		
+12	,	<	L	\	l		...	†	Ƒ	ƒ	É	Ü	é	ü	C		
+13	-	=	M	]	m	}	TM	‡	-	D	Í	Ü	í	ü	D		
+14	.	>	N	^	n	~	%o	fi	Ž	ž	Í	Ü	í	ü	E		
+15	/	?	O	_	o		•	fl	‐	ŋ	Í	Þ	í	þ	F		
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

In RISC OS 2 characters &80 - &9F (128 - 159) are undefined.

## Cyrillic alphabet (ISO 8859/5)

	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	
+0		0	@	P	`	p				A	R	a	r				0
+1		!	1	A	Q	a	q			Ё	Б	С	б	с	ё		1
+2		"	2	B	R	b	r				В	Т	в	т			2
+3		#	3	C	S	c	s				Г	У	г	у			3
+4		\$	4	D	T	d	t				Д	Ф	д	ф			4
+5		%	5	E	U	е	u				Е	Х	е	х			5
+6		&	6	F	V	f	v				Ж	Ц	ж	ц			6
+7		'	7	G	W	g	w				З	Ч	з	ч			7
+8		(	8	H	X	h	x				И	Ш	и	ш			8
+9		)	9	I	Y	i	y				Й	Щ	й	щ			9
+10		*	:	J	Z	j	z				К	Ъ	к	ъ			A
+11		+	;	K	[	k	{				Л	Ы	л	ы			B
+12		,	<	L	\	l					М	Ь	м	ь			C
+13		-	=	M	]	m	}			-	Н	Э	н	э			D
+14		.	>	N	^	n	~				О	Ю	о	ю			E
+15		/	?	O	_	o					П	Я	п	я			F
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

## Greek alphabet (ISO 8859/7)

	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	
+0		0	@	P	`	p				◦	ι	Π	υ	π		0	
+1	!	1	A	Q	a	q			‘	±	A	P	α	ρ		1	
+2	"	2	B	R	b	r			’	²	B		β	ς		2	
+3	#	3	C	S	c	s			£	³	Γ	Σ	γ	σ		3	
+4	\$	4	D	T	d	t			’	Δ	T	δ	τ			4	
+5	%	5	E	U	e	u			„	E	Υ	ε	υ			5	
+6	&	6	F	V	f	v			׀	À	Z	Φ	ζ	ϕ		6	
+7	'	7	G	W	g	w			§	·	H	X	η	χ		7	
+8	(	8	H	X	h	x			“	Ѐ	Θ	Ψ	θ	ψ		8	
+9	)	9	I	Y	i	y			©	Ҥ	I	Ω	ι	ω		9	
+10	*	:	J	Z	j	z			׀	K	Ӯ	κ	Ӯ			A	
+11	+	;	K	[	k	{			«	»	ѧ	Ӯ	λ	Ӯ		B	
+12	,	<	L	\	l				¬	Օ	M	ѧ	μ	օ		C	
+13	-	=	M	]	m	}			-	½	N	է	ν	՞		D	
+14	.	>	N	^	n	~			՚	Յ	Յ	՚	ξ	՞		E	
+15	/	?	O	_	o				—	Ջ	O	ի	օ			F	
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	

## Hebrew alphabet (ISO 8859/8)

## Cyrillic2 alphabet (DOS code page 866)

	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
+0		0	@	P	'	р	А	Р	а							р
+1		!	1	A	Q	а	q	Б	С	б						с
+2		"	2	B	R	b	r	В	Т	в						т
+3		#	3	C	S	c	s	Г	У	г						у
+4		\$	4	D	T	d	t	Д	Ф	д						ф
+5		%	5	E	U	е	у	Е	Х	е						х
+6		&	6	F	V	f	v	Ж	Ц	ж						ц
+7		'	7	G	W	g	w	З	Ч	з						ч
+8		(	8	H	X	h	x	И	Ш	и						ш
+9		)	9	I	Y	i	y	Й	Щ	й						щ
+10		*	:	J	Z	j	z	К	Ь	к						ъ
+11		+	;	K	[	k	{	Л	Ы	л						ы
+12		,	<	L	\	l		М	Ь	м						ь
+13		-	=	M	]	m	}	Н	Э	н						э
+14		.	>	N	^	n	~	О	Ю	о						ю
+15		/	?	O	_	o		П	Я	п						я
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

## BFont characters

This character set is used in the BBC Master microcomputer. It is retained for the sake of compatibility, but should not be used for new applications.

		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Nothing	Clear graphics		█	█	█	█	█	█	█	█	█	█	█	█	█	█
1	Next to printer	Define text colour	!	1	A	Q	a	q	▀	▀	▀	▀	▀	▀	▀	▀	▀
2	Start printer	Define graphics colour	"	2	B	R	b	r	▀	▀	▀	▀	▀	▀	▀	▀	▀
3	Stop printer	Define logical colours	#	3	C	S	c	s	▀	▀	▀	▀	▀	▀	▀	▀	▀
4	Separate cursors	Default logical colours	\$	4	D	T	d	t	▀	▀	▀	▀	▀	▀	▀	▀	▀
5	Join cursors	Disable VDU	%	5	E	U	e	u	▀	▀	▀	▀	▀	▀	▀	▀	▀
6	Enable VDU	Select mode	&	6	F	V	f	v	▀	▀	▀	▀	▀	▀	▀	▀	▀
7	Bell	Reprogram characters	'	7	G	W	g	w	▀	▀	▀	▀	▀	▀	▀	▀	▀
8	Back	Define graphics area	(	8	H	X	h	x	←	↑	↓	→	▀	▀	▀	▀	▀
9	Forward	Plot	)	9	I	Y	i	y	→	↓	↑	←	▀	▀	▀	▀	▀
A	Down	Default text / graphics areas	*	:	J	Z	j	z	+	-	×	·	K	I	K	▀	▀
B	Up	Nothing	+	;	K	O	k	o	↑	↓	↔	↔	▀	▀	▀	▀	▀
C	Clear screen	Define text area	,	<	L	N	l	n	▀	▀	▀	▀	M	T	▀	▀	▀
D	Start of line	Define graphics origin	-	=	M	J	m	j	→	↓	↑	·	N	I	▀	▀	▀
E	Paged mode	Move text cursor to (0,0)	.	>	H	N	n	▀	▀	▀	▀	▀	▀	▀	▀	▀	▀
F	Scroll mode	Move text cursor	/	?	0	0	0	0	Back space and delete	▀	▀	▀	▀	▀	▀	▀	▀

# Appendix J: Error messages

There are many possible error messages; this appendix lists some of the more common ones you might see. It also tells you what the more likely causes of an error message are, and what you can do about it. You may occasionally see other error messages which will usually be self-explanatory. If you have serious problems, especially recurring ones, consult your supplier.

## User Errors

These are errors that are mainly caused by you, the user, performing an inappropriate action. Most of these errors are listed in this chapter, together with a way of curing the error.

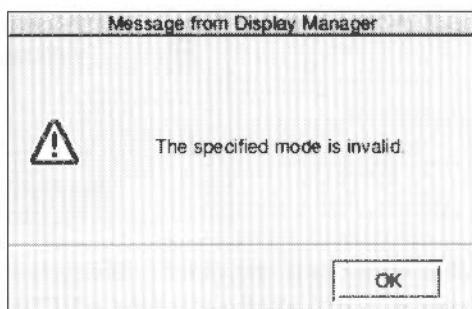
## Internal errors

These errors are not caused by the user, but are problems with the system or the Application you are using. The most common internal errors are listed here, together with an explanation as to their cause. Most errors of this type start with the word Internal.

## Error message windows

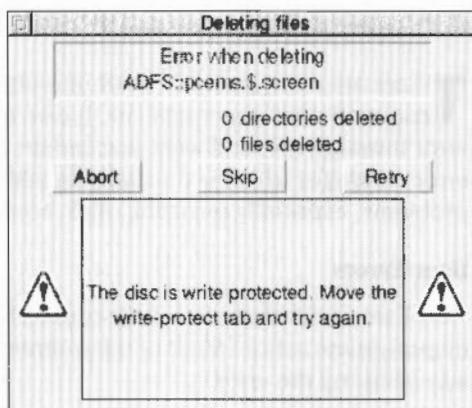
### Standard error boxes

This is what a typical error message window looks like:



## Filer error messages

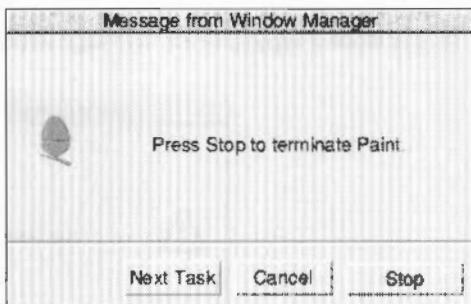
There is another type of error window you may see. This is generated by the desktop Filer and looks like this:



This type of error box is generated when a file operation is not completed. You should clear the fault and then click on the appropriate option. For information about these options, turn to the section *The Filer desktop interface* on page 8.

## Application error boxes

This type of error box is displayed when one of the applications in the computer generates an error.



This error box is displayed by the system monitor. It acts like a watchdog and is only activated when something is wrong. The system monitor allows you to selectively remove tasks from the memory of your computer. It is used when you want to remove a task that is misbehaving but you do not want to restart the whole computer system. You'll find out how to use the system monitor in *Managing the desktop* on page 103.

## Error messages

Most error messages are self-explanatory; just follow the instructions given in the error message and try again. This section lists the error messages that may need more explanation.

### **There is not enough memory...**

#### **xxx free memory is needed before the application will start**

You need to free more memory before the application will run. You can do this by

- quitting other applications and modules.
- using the Task manager application to reduce the amount of memory used by other things, such as the font cache and system sprite pool
- changing to a screen display with a lower resolution and/or fewer colours
- discarding the RAM disc if you have one. See the appendix *Getting the best out of 2MB, 3MB and 4MB computers* on page 487.

There is a limit on the amount of memory an application can use (approximately 28MB) and you may see this message if your application reaches this limit.

### **An application that loads a file of this type has not been found by the filer....**

Before you can load a file, the application that the file uses must be loaded. The computer cannot find the application unless the operating system knows where it is stored. The easiest way to tell the computer this is to display the application in a directory display. You could also tell the computer about the application in your Desktop boot file.

### **Chars is unable to display the currently selected outline font**

There is not enough memory reserved for the font cache. Use the Task manager to increase the amount of font cache memory.

### **Disc error**

This may appear for a variety of reasons. The most common explanation is that the floppy disc has a fault on it. You should copy the data onto another disc and then reformat the disc. If you want to try to salvage the disc without formatting it use the command \*Defect.

### **Disc not understood – has it been formatted**

This error message occurs if you put in a disc that has not been formatted or has been formatted in an unknown format. For example an unused and unformatted disc will give this error message and so will a disc formatted to an Apple Macintosh standard since RISC OS does not understand this format.

### **Filename not recognised**

The file you have requested has not been found. Make sure that the file exists in the directory you have specified and then try again.

### **This file has been left open from a previous operation**

An operation was interrupted by an error, a reset, or similar. Go to the command line by pressing F12 and type in \*Close to close the open file. Press F12 to return to the desktop and then repeat the command that caused the error. If the error persists, restart your computer. \*Close will close all files on the current filing system only. \*Shut closes all open files on all filing systems.

### **File type is unrecognised**

An unrecognised file type is usually displayed as an empty white icon. Nothing will happen when it is double clicked. You should find the application needed to run it. If you drag the file to !Edit you can view the contents of the file in ASCII format (though this may be unhelpful if the file is not a text file).

### **The area of memory reserved for fonts is full**

The space reserved for fonts has been used up. Use the Task manager to reserve more space for the font cache. Alternatively use the Configure application to set the font cache automatically.

### **Free space map full**

The data on your disc has become fragmented, and you should compact the disc. This error is only encountered if you are using the old type D or L formats. Discs are compacted using the \*Compact command. See the Command Line section of this guide for the \*Compact command.

### **Internal error: undefined instruction**

This error may be caused by a bug in the application you are using. Quit the application and then restart the application.

### **Internal error: abort on data transfer**

This error may be caused by a bug in the application you are using. Quit the application and then restart the application.

### **Internal address error**

This error may be caused by a bug in the application you are using. Quit the application and then restart the application.

## No reply from the network station

There is a delay on the Econet or the Server is off net; try repeating the command that caused it. If the error happens repeatedly, ask your system manager for help.

## Not logged on

You have asked the computer to load a file or application from the network, but you are not logged on. You will see this message if you have just copied an application from the network, logged off, and then tried to load a file straight into the application without loading the application first. The computer tries to load the application from where it first saw it – the network. To avoid this problem, you should first load the application from your disc copy of it, and then load the file.

## No free printer server of this type

The printer is not responding. Check that it is plugged in. If you are using the network printer server, try again later when it may be free; if this error occurs repeatedly, consult your system manager.

## Printer in use

You are trying to print from more than one application at once. Wait for the first application to finish before printing from the other one.

## Printer jammed

The printer is not responding. Check that it is plugged in. If you are using the network printer server, try again later when it may be free; if this error occurs repeatedly, consult your system manager.

## The disc is write protected...

The floppy disc you are trying to access is write protected. Move the write-protect tab and try again.

## System resources cannot be found

The !System application (provided on disc with your computer) cannot be found. Display the directory containing !System and repeat your command. Some applications need to 'see' !System, even though they do not use it.

## The access details set for this item do not allow this

Change the access details using the **File/Access** menu so that access is allowed and then try again.

### **The maximum number of items in a directory has been reached**

You cannot have more than 77 objects in an ADFS directory. You should create a new directory to save your work in.

### **The network is not plugged in**

Check the cable running from the socket at the back of the computer to the network socket.

### **The network station you have requested does not appear to be listening**

There is a delay on the network. Try repeating the command that caused it. If the error happens repeatedly, ask your system manager for help.

### **There is a problem with the network...**

Follow the instructions given in the error message. If the errors persist inform your supervisor or network manager of the problem.

### **There is no reply from the Network station requested**

You have tried to access a network file server, but you have used the wrong station number.

### **This item has been locked to stop changes being made to it**

You tried to do something forbidden to a locked file, such as delete it. Change the lock access details using the **File/Access/Access** details window so that access is allowed and then try again.

### **This screen mode is unsuitable for displaying the desktop**

You cannot use this display mode with the desktop. Change to another mode using the Display Manager.

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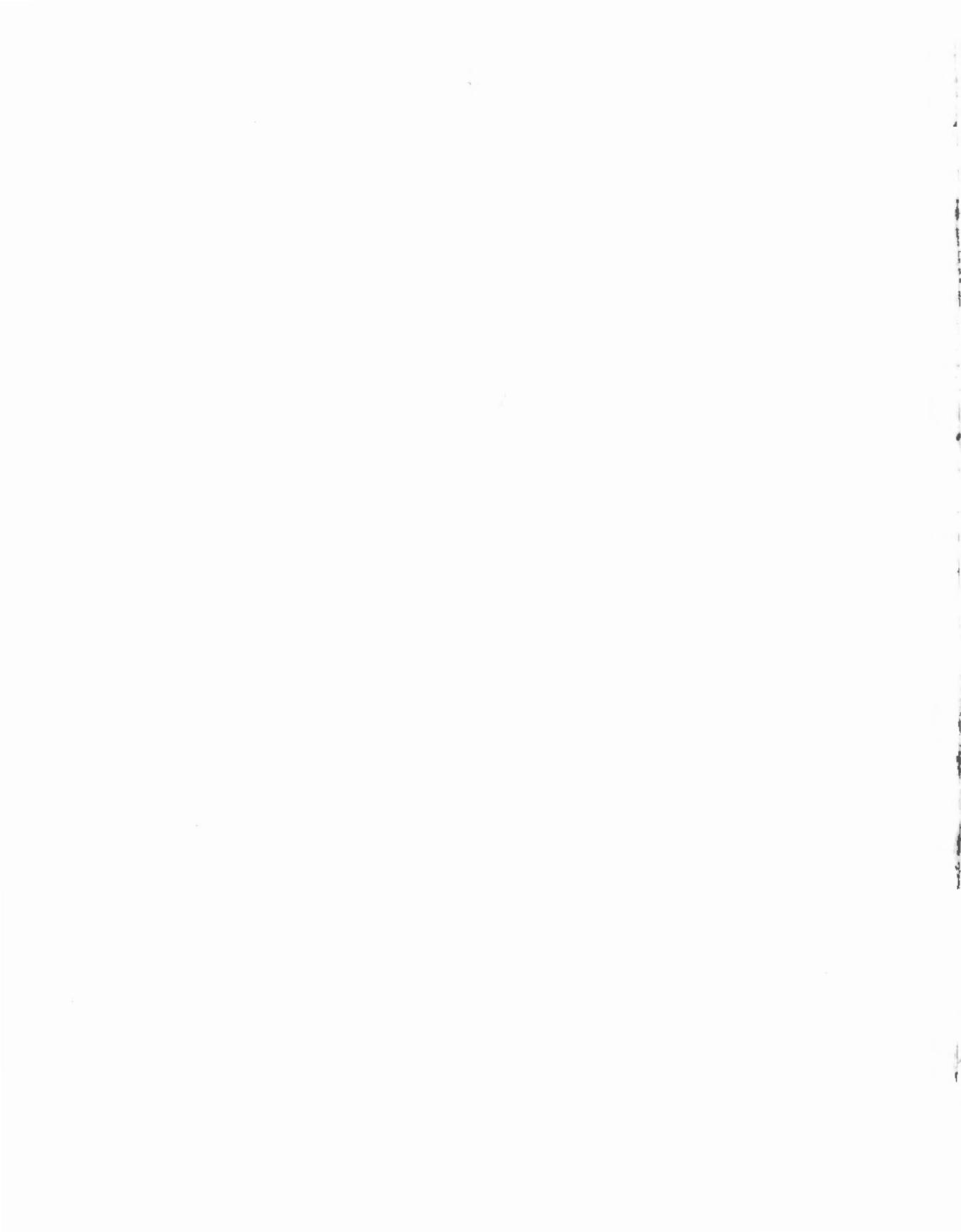
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