Specification for

Doctor
Disc Doctor

A ROM based utility program
for the BBC micro

Computer
Concepts

This DISC DOCTOR ROM started life as a few disc utility routines enabling parts of the disc to be searched and examined. However the ROM has steadily been extended to include very many new commands and features, some of which have nothing to do with discs. Although the DISC DOCTOR name has remained this ROM is really a collection of general purpose utilities of use to ANYONE with a BBC machine.

One of the great advantages of ROM based software is its instant availability. This is especially true of utility routines that tend not to get used if they have to be loaded from tape or disc every time the machine is switched on. Another main advantage is that the routines are in ROM rather than user RAM, and are therefore out of the way. Most of them use no user memory at all and therefore it is possible to format a disc, disassemble a section of memory or find a string in memory without corrupting any programs.

All the commands in DISC DOCTOR are accessed by typing an asterisk (*) followed by the command. These 'star' commands are accessible from BASIC and other language ROMS such as WORDWISE. All the commands can be accessed from within the user's own BASIC programs.

Once the DISC DOCTOR ROM has been plugged in, typing *HELP DISC DOCTOR will list all the commands and their syntax. The following list gives a brief description of these commands. The names in brackets following the command indicate the arguments required, although many of them are optional.

DIS (<sta>)(<end>)(<ofs>)

This powerful disassembler converts machine code instructions back to normal assembly language. Because this uses no RAM, the usual worry of where to put a tape based program without disturbing your machine code program is overcome. This will disassemble memory between specified limits. An offset address can be added to the output so that the disassembly appears to have come from a different address. The disassembly output can be directed to the printer or to file (using *SPOOL), either one instruction at a time or continuously. It is also possible to follow jumps and branches and to skip calls into the MOS or BASIC. A special DATA mode can be entered when disassembling areas of text or data such as jump tables etc. The disassembly listing shows memory address, assembler mnemonics, the Hex bytes and their ASCII representation.

DISCTAPE <afsp> (<afsp>) ...

This will automatically load all files specified by <afsp> from disc and transfer them to tape. The files can be saved with or without their directory character. If no filename is given then all files will be transferred. No attempt is made to 'unlock' or alter the program in any way.

DOWNLOAD <fsp> (<adr>)

This loads a specified file from the current filing system (tape, disc etc) and then moves it to the file's reload address, or to an address specified in the command.

DSEARCH <str> <trk> (<trk> <sct> <drv>)

This will search the current disc for a string of characters (which may contain any byte). The search starts from the specified track. When the string is found the relevant sector is displayed for editing by the DZAP routine (see below). Pressing the COPY key will cause the search to continue for the next occurrence of the string.

DZAP <trk>(<trk> <sct> <drv>)

This disczap routine displays a disc sector for possible editing. The optional parameters (<trk> <sct> <drv>) would be used to tell the DISC DOCTOR the actual format of the disc, allowing discs from other computer systems to be examined. When editing, a copy of the sector is held in memory. This is only copied back onto the disc when you are sure of all the changes made. The editing display is fully interactive allowing the cursor to be moved freely around the area of disc memory shown. Any byte can be changed by entering its value in Decimal, Hex, Binary or ASCII. The cursor keys move the cursor around the sector displayed. It is easy to move onto the next or previous sector and the next or previous track.

EDIT <key no.>

Once a function key has been defined on the BBC machine using the *KEY command, it is not normally possible to see how the key was defined. This command displays the true definitions of all or any function key. In this way the function keys can be edited using cursor and COPY keys as usual.

FIND <str>

FOR BASIC PROGRAMS ONLY: This command displays all the line numbers in a BASIC program in which the specified string occurs. The string may contain any numeric code. This allows the easy location of variables etc. This command will not operate on second processors.

FORM <drv> <no. trks> (<stt>) (<S>)

This formats a blank disc in drive <drv> with the number of tracks given in the second argument. The actual track where the formatting starts can also be set. The last optional argument (<S>) allows special dual catalogue discs to be formatted. These allow up to 60 files to be held on each side of the disc. See SWAP command.

JOIN <fsp> <afsp> (<afsp>) ...

This will allow two or more disc files to be joined together. It is also useful for making a copy of a file with different name on the same disc. BASIC programs cannot be joined in this way.

MENU <drv>

All programs saved with a special directory character will be displayed in a menu format. To load and run any of the displayed programs the user simply selects the correct menu option. This will handle both BASIC and machine code programs. Alternatively pressing BREAK-M will also activate the menu.

MOVE <dest page> (<src page>)

Moves a BASIC program in memory from the page given (<src page>) to the new page value (<dest page>). Both arguments are optional. If no source page is given then it will assume the current value of BASIC's page. If no destination is given then it will put it at &EOO - the usual page setting for a tape based machine. This command will not operate on second processors.

MSEARCH <str> (<adr>)

Searches memory starting at the address given for an occurrence of the specified string. As usual, the string may contain any character code. If the string is found then the area of memory around the string is displayed for possible editing as in MZAP below. Pressing the COPY key will cause a search for the next occurrence of the string. This command will not operate on second processors.

MZAP (<adr>)

The area of memory around the address given (as an argument to the command) is displayed for editing. This is very similar to the DZAP command except that it is purely a memory editor. This is a fully interactive editor allowing the cursor to be moved to point at any byte. A new value may then be typed in to replace the existing value. Like the DZAP editor new values can be entered in Hex, Decimal or ASCII. I/O processor only.

PARTLOAD <fsp> <ofs> <ext> <adr>

This allows parts of a file to be loaded into memory. This would allow very large files (such as spooled programs) to be split up into smaller more manageable sections.

RECOVER <trk> <sct> <sct> <adr> <drv>

This allows the specified number of sectors to be loaded directly off the disc into memory. This does not look at the directory on the disc and so can recover ANY data on the disc surface even deleted programs, as long as they haven't been overwritten. Sectors are read into I/O processor memory when a second processor is fitted.

RESTORE <trk> <sct> <sct> <adr> <drv>

The opposite of the above command. It will put back directly onto the disc the specified section of memory.

SHIFT <src> <dest> <ext>

Moves a block of memory from the source address given to the destination address. The argument<ext>controls how much is transferred. This command will only operate on memory in the I/O processor.

SWAP (<drv>)

This command, which will only work on specially formatted discs, will swap the current catalogue with another on the disc. This allows up to 60 files to be held on each surface of a disc and therefore overcomes one of the main limitations of the ACORN DFS.

TAPEDISC (<fsp>) ...

The opposite of DISCTAPE. It will automatically transfer files from tape to disc. If no filename is given then all files will be transferred. No attempt is made to 'unlock' protected discs.

VERIFY (<drv>) (<no. trks>) (<stt>)

Verifies that the disc in the current or specified drive is readable, with the option to verify only the specified tracks.

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