

CHARACTER FORMING

We have looked at how to define your own characters on the Commodore, here we provide two programs for the BBC Micro and the Spectrum. Both machines have an area of memory reserved for the user's characters, which makes character generation a far simpler exercise.

The Spectrum's approach to user-defined characters is typically matter-of-fact: 168 bytes at the top of memory are dedicated by the operating system to the user's character definitions (though this memory can be used for other purposes, such as storing machine code programs or data). This space allows 21 character definitions to be stored, and the operating system attaches a CHR\$ value in the range 144 to 164 to each definition. The characters so defined are regarded by the machine as the characters 'a' to 'u' in graphics (G) mode. The user-defined graphics (UDG) system variable (address 32600) points to the first byte of the dedicated memory area, but you don't have to do complicated sums with this variable to find the start address of a character definition. The

you can SAVE the UDG area by the following command:

SAVE "udgfile" CODE (USR "A"), 168

and reload it thus:

LOAD "udgfile" CODE

The BBC Micro's treatment of user-defined graphics is similar, at first glance, to the Spectrum's. The 256 bytes between &0C00 and &0CFF are reserved for the definitions of the ASCII-coded characters 224 to 255. If the character set is imploded (see *The BBC Advanced User Guide*, page 136) then those definitions are also applied to the ASCII codes 128 to 159, 160 to 191 and 192 to 223. In the exploded state, the entire printable character set (from CHR\$(32) to CHR\$(255)) can be redefined, but at the cost of user RAM. For most purposes, a maximum of 32 special characters should suffice.

The program functions are the same as in the Commodore and Spectrum versions. The arrow keys control the cursor, and the function keys, f1 to f3, access the toggle, redefine and place commands. As before, the exclamation mark, '!', is the program terminator.



Spectrum

command LET address=USR "A" returns the address of the first byte of the definition of the character inside the quotes.

Comparing the length and structure of the Commodore and Spectrum lists demonstrates the relative ease of use of the Spectrum's methods.

The program is a straightforward translation of the Commodore version (see page 572). The Spectrum's normal cursor keys (shifted 5, shifted 6, etc.) control the edit cursor, and the unshifted 6, 7 and 8 keys are the command keys — toggle a cell, change the edit character, and place a character in the text window. The exclamation mark is the exit command.

When you have defined your new characters,



BBC Micro

Notice the OS calls at lines 70 and 180: these disable and enable the COPY functions so that the arrow keys can be used in the program; if you quit the program other than through the '!' command, you must type *FX4,0 at the start of a new line to re-enable the editing keys.

The BBC Micro does allow you to use VDU23 to define characters, but in this case it is simpler to calculate the relevant addresses and then PEEK and POKE them individually.

You can SAVE your special characters thus:

*SAVE "filename" 0C00 0CFF

and reload them thus:

*LOAD"