Editorial Control

Most microcomputers allow programs to be edited on the screen, saving a considerable amount of time and effort

Everybody makes mistakes when they use a computer keyboard, and for that simple reason it is necessary to have editing facilities. There are many situations where we may want to change the data displayed, from simply correcting a typing mistake or altering some erroneous statement, to updating information that has changed since it was first entered.

Many applications programs include some form of specialised 'editor'. The editing functions of a word processor, for example, are designed to cope with the kind of alterations that are made to the draft stages of reports and letters. These include the ability to delete sentences, move whole paragraphs to other places in the text, and change all occurrences of a name or phrase to a new one.

However, almost all home computers have some sort of editor — built into their operating system in ROM — geared to editing program listings. Programs are extremely vulnerable to mistakes. In any program, syntax errors will occur with great regularity, and there will almost certainly be bugs in its operation that will need to be eliminated, not to mention the enhancements that may be required later. The facilities offered by your computer's editor can make a great deal of difference to the development time of a long program. We must stress, however, that a good programmer spends a considerable amount of time testing out the operation of his program on paper before typing the listing into a computer. It is very bad programming procedure to type in the first solution that comes into your head and spend 90 per cent of the program development time de-bugging it.

There are two kinds of editors: 'screen editors' and 'line editors'. The former are considerably more flexible and easier to use, but the latter are far more common in home computers. Line editors derive from the days when all computing was done through teletypes or terminals to a remote computer. Teletypes had a buffer memory of just one line of 80 characters (80 bytes). The programmer could obtain a printed list of the whole program by typing LIST, but if, for example, a correction to line 120 was required, it was necessary to type in that whole line again. On some systems typing EDIT 120 would result in a printout of that particular line, and alterations or deletions could then be made with the 'backspace' and 'rubout' keys (insertions were still impossible). Other commands such as DELETE (a specified range of line numbers) were added, but the restriction of having to call up and modify a whole line was still there.

The editors on many home computers still behave as though they have only a one-line buffer, when in fact the whole screen is memory-mapped — each character location corresponds to a byte of memory.

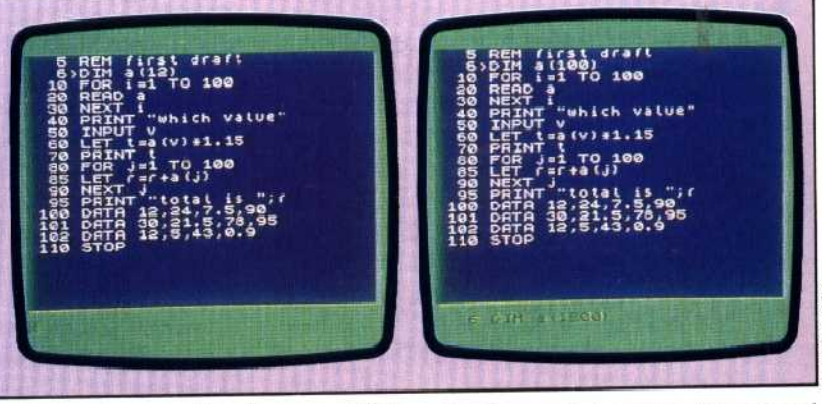
A screen editor is far more efficient. It allows you to move text or graphics around the screen with ease. Whenever you press RETURN, the editor reads the whole line on which the cursor is lying into the interpreter, where it is executed (if the line consists of a command) or entered into the program (if it begins with a line number). By using the four arrow keys, the user can move the cursor to any point in the program as displayed, and then insert, delete or overwrite characters as desired.

A screen editor has to be written in machine code to achieve the necessary speed, and it can feature some extremely useful facilities. The best screen editors will allow a listing to be scrolled up as well as down, and allow whole lines as well as individual characters to be inserted or deleted. Some even feature commands similar to those of word processors that find and alter all occurrences of a particular character string.

Editors are becoming more sophisticated and easy to use with each new generation of computers. With the introduction of mice (see page 296) and software that mimics the manual processes of cutting and pasting pieces of text, the time taken to edit a document or listing to its final form is being gradually reduced.

Line By Line

The editing facilities on a Sinclair Spectrum are considerably better than most types of line editor, though by no means as easy to use as a full screen editor. To change a particular line in a program, the current position marker (>), which appears between the line number and the line itself, must be moved to the correct line using the cursor up and down keys



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