BIG MACRO

We continue our series on spreadsheet modelling by looking at the use of keyboard macros in 1-2-3, a worksheet with integrated database and graphics functions from the Lotus Development Corporation.

The spreadsheet programs we have examined so far have been designed for home micros like the BBC, the Spectrum, the Commodore 64 and the Sinclair QL. These programs are necessarily hampered by the limited amount of RAM available for the program itself and the models developed. Similar programs written for the IBM PC, the ACT Apricot, and other business machines can take advantage of large resident memories and greater processing speed. As a result, some of the most innovative modelling programs can be run only on expensive machines of this kind. An example is Lotus 1-2-3, an integrated spreadsheet, database, and graphics program, which we looked at briefly on page 644.

1-2-3 imposes considerable demands for memory on a computer by the nature of its design. Besides requiring enough RAM to handle the code for its three main applications, it also needs space for a worksheet with a theoretical maximum capacity of 256 columns by 1,028 rows. Memory is allocated to the worksheet only as needed but, even so, early versions of Lotus 1-2-3 require a minimum of 128 Kbytes simply to run, and later versions demand at least 256 Kbytes. The costs of a program like 1-2-3 and a system to run it are extremely high, but the result for the user is a program with a wide range of features. In this article we will show you how to use one of 1-2-3's most interesting facilities, the keyboard macro. But to understand macros, we must first examine the way 1-2-3 works.

POWER-UP

When powered up, 1-2-3 displays the Lotus Access System, a set of commands for data management. Placing the cursor on the first choice, 1-2-3, and pressing Return loads the worksheet into memory and prepares the screen display. 1-2-3's rows are labelled with letters and the columns are numbered. As with Multiplan, which we loooked at in our last instalment (see page 764), 1-2-3 is menu-driven. The main menu is displayed when you press the / key. From that point on, menu options are selected either by typing the first letter of the appropriate command or by placing the cursor on the command and pressing Return.

1-2-3 has so many command options that there

are several layers of sub-menus. While this means the user can use Lotus to perform literally hundreds of tasks, it also means that some operations require a large number of keystrokes (see diagram). To illustrate this point, let's look at an example. 1-2-3 allow you to name a cell or a region of cells with an identifying label. When you want to act on the named region — including it in a formula, for example — the name is used in place of the cell reference, as follows:

A3 – B3 = C3
cell references

SALES – COST = PROFIT
name references

Naming regions simplifies and accelerates finding things on a large worksheet. To name a group of four cells in 1-2-3 requires the following keystrokes:

/ — displays the main menu;
R(ange) — tells 1-2-3 that you are going to perform an operation on a small group of cells, rather than the entire worksheet;
N(ame) — the identified range of cells is to be given a name;
C(reate) — prepares 1-2-3 to accept a name and attach it;
Type the NAME to be attached: "START", for example;
Return to accept the active cell as the beginning of the range;
Cursor right four spaces;
Return to accept the active cell as the end of the range.

Thus this process requires 10 keystrokes, plus the name itself.

To reduce this to a more manageable number, 1-2-3 permits the use of keyboard macros. Macros are like simple programs, written in 1-2-3's operating language. They are created by storing the required keystrokes in a small portion of the worksheet, naming the location, then assigning the name to a specific key on the keyboard. From then on, the keystrokes will be carried out automatically by 1-2-3 whenever the assigned key is pressed in conjunction with a special function key, labelled ALT on the IBM PC and compatible machines.

To automate the cell-naming process, we begin by allocating a section of cells on the worksheet to the macro. These cells must be chosen carefully for two reasons. First, they must occupy a safe space on the worksheet, an area in which data will never be placed. Secondly, as mentioned earlier, 1-2-3 allocates space in memory only for cells that are activated. A cell is activated whenever it is pointed to by the cursor, so empty spaces between data cells will be given a space in memory. Thus, if a macro is placed far to the right of the rest of the

The Lotus Screen
The main menu in Lotus is brought to the screen by pressing the / key, as in VisiCalc

Macro Economics
Here is our range-naming macro as it appears in the worksheet. Macro instructions can carry down a column, if necessary