Sound Proof

Sound synthesis using the Dragon 32

The Dragon 32 is supplied with only a single square wave oscillator for programming sound, but the wonderfully simple sound commands allowed by Microsoft Extended Colour BASIC enable the construction of music strings that play a passable tune with one command. Unfortunately, there is no means of generating noise. This is very strange as it is difficult to imagine an arcade-type game that does not require noise at some point to make the sound effects interesting.

The SOUND command is useful for sound effects only and the format is as follows:

SOUND P,D

where: P = Pitch (1-255) and D = Duration (1-255). Pitch is highly inaccurate and bears little relation to a standard musical scale, though middle C can be approximated with the value 89 and reference A at 440Hz is about 159. Duration is similarly inexact but 16 is near to one second, 32 roughly equivalent to two seconds and so on.

This program shows how SOUND can be used for a special effect; in this case, with a little imagination, a UFO taking off:

```
10 FOR P=10 TO 170 STEP 10
20 FOR D=16 TO 1 STEP -1
30 SOUND P,D
40 NEXT D
50 NEXT P
```

PLAY can set an exact pitch, duration and volume for a note. It can also specify a string of such notes to be PLAYed with a selected pause between them at a variable tempo. This makes the construction of tunes with different note lengths and pauses very easy — all PLAYed with this single command:

PLAY "T;O;V;L;N;P"

where: T = Tempo (T1–T255); O = Octave (O1–O5); V = Volume (V0–V15); L = Length of note (L1–L255); N = Note value (1–12 or note letter); and P = Pause before next note (P1–P255).

It isn't strictly necessary to use the semi-colons between parameters but it would be wise to include them for clarity. The example is very much an arbitrary representation as the parameters can be set in any order. T, O, V, and L retain their values until specified otherwise. In fact, T, O, V, L, and P default to T2, O2, W15, L4 and P0 respectively, unless otherwise specified, so it isn't always necessary to include them in the PLAY statement.

Where timing is involved, as in L and P, the values specified can be thought of as 'notes', and fractions of 'notes' where L1 or P1 is a whole note, L2 or P2 a half note and so on. The actual timing of these is selected by the tempo parameter T, where T1 is slow (a note has a long duration) and T255 is

Light Entertainment

The second instalment of the graphics capabilities of the BBC Model B

BBC BASIC does not provide the full range of high resolution commands that are available on some microcomputers. For example, there are no CIRCLE or PAINT commands. However, it is possible to simulate most facilities using a few lines of BBC BASIC.

The graphics screen has the same co-ordinates regardless of the level of resolution selected, and the axes have their origin in the bottom left-hand corner. The following commands provide control over the graphics screen:

MOVEx,y

This command moves the graphics cursor to the point with (x,y) co-ordinates, but does not draw a line. Note that the graphics cursor can move completely independently of the text cursor.

DRAWx,y

As the name suggests, DRAW draws a line from the current graphics cursor position to the point on the screen with the (x,y) co-ordinates.

PLOTk,x,y

PLOT is a multi-purpose command; its function is governed by the value given to the variable k:

Value of k	Function
0	move relative to last point
1	draw line from origin in foreground colour
2	draw line from origin in inverse colour
3	draw line from origin in background colour
4	same as MOVE
5	same as DRAW
6	same as DRAW but in inverse colour
7	same as DRAW but in background colour