Lighting Up Dragon

...and graphics capabilities of the Dragon 32

The Dragon 32 computer features a particular dialect of BASIC known as 'Microsoft Extended Colour Basic'. Several other computers on the market are also based on this version of BASIC, most notably the Tandy range of colour computers. Microsoft BASIC is easy to use and has a good range of commands to draw lines, circles, and other geometric shapes. Once drawn, these shapes may be coloured in to give impressive screen displays for little programming effort.

The Dragon 32 has seven levels of resolution, giving the user the ability to work with the screen divided into 512 individual points at the lowest level, and up to 49,152 points at the highest. There are eight colours available, but the choice may be limited to four or even two colours when working in high resolution.

Modes Of Resolution

The normal 16 rows by 32 columns character screen forms the lowest level of resolution and the PRINT@ command enables a character to be placed in any one of the 512 screen locations. As well as the normal character set there are also 16 low resolution graphics characters available in eight colours.

The next mode of resolution divides the screen into 32 rows and 64 columns. The size of each square in this mode is therefore a quarter of that of a normal character. Points of this size can be plotted on the screen by the SET command and may be rubbed out by the RESET command.

Both of the above modes can be displayed at the same time and are termed the low resolution text screens. There are also five levels of high resolution screens, but these cannot be displayed simultaneously or with the low level screens. The five high resolution modes offer choices based on the standard of resolution and the number of colours available and are selected using the PMODE command.

PMODE	Resolution	Colours Available
0	128*96	2
1	128*96	4
2	128*192	2
3	128*192	4
4	256*192	2

There is, of course, a trade-off between resolution, colour and the amount of memory needed to store the screen information and this must be taken into account when writing large BASIC programs that also use high resolution displays.

Although there are only a limited number of colours available in high resolution, the Dragon does have a facility for selecting one of two colour sets. This is accomplished by the SCREEN command. For example, SCREEN 1,0 selects a high resolution screen and colour set 0. SCREEN 1,1 again selects a high resolution screen but this time an alternative colour set is used.

PAINT
This command is very useful in assisting the programmer to produce interesting pictures. Using PAINT causes the computer to start colouring in the screen from a given point until a boundary line is reached. This means that circles, triangles and any other closed shape can be filled in simply.

DRAW
DRAW mimics the movement of the pencil on the screen, allowing the user to draw lines in any one of four directions. The DRAW command will also allow the completed picture to be rotated or enlarged.

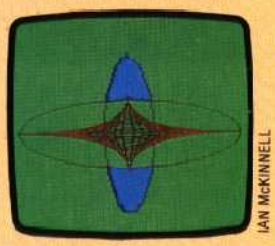
GET and **PUT**
GET instructs the computer to store a screen display in its memory and PUT causes such a display to be reprinted on the screen.

PSET and **PRESET**
These commands are the high resolution equivalents of SET and RESET discussed earlier and switch a particular point on the screen either on or off. The colour of the point can also be determined.

LINE
The LINE command joins two specified points together with a straight line in high resolution.

CIRCLE
CIRCLE allows the user to draw high resolution circles with a given centre and radius. Fractions of a whole circle may also be drawn to form arcs and the circular shape may be condensed to produce ellipses.

The Dragon 32 is a reasonably priced computer with many advanced commands to aid graphics programming. It is more suited to uses that involve static displays rather than those that require fast-moving action. The high resolution mode commands, in particular, make this an ideal computer for the adventurous-minded child. The Dragon's main drawback is its inability to display both text and high resolution graphics on the screen simultaneously. This means that it cannot be used to display statistical data in the form of bar charts or pie charts.



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Colour Command
This display is typical of the effects that can be achieved on a Dragon using just a few of its high level commands

High Resolution
Here is a short program for the Dragon 32 to demonstrate some of its high resolution capabilities. The program uses PMODE 3; this is not the highest mode but it does allow some use of colour.

```
10 PCLS:PMODE3,1
20 SCREEN 1,0
30 COLOR 0,1
40 FOR X=0 TO 127 STEP 10
50 LINE(X,85)-(127,85-X/3),
   PSET
60 LINE(X,85)-(127,85+X/3),
   PSET
70 LINE(255-X,85)-(127,85-
   X/3),PSET
80 LINE(255-X,85)-(127,85+
   X/3),PSET
90 NEXT X
100 CIRCLE(127,85),128,4,0.3
110 CIRCLE(127,85),30,4,3
120 PAINT(130,30),3,4
130 PAINT(130,130),3,4
140 GOTO 140
150 END
```