

Need a simple way of writing text anywhere on a graphics screen? Here's a shape table that will do it for you.

Graphics Text Writer

by Dieter Botha

In answer to the question of how to write text anywhere on the graphics screen (Apple Source June/July 1983) my answer is to use a shape table. Capital letters and numerals are defined as shapes in a 5 by 7 matrix and they are placed on the Hi-Res screen with the DRAW statement.

It can be done as follows: the shape table is quite long and care must be taken when entering it into memory. Start off by typing

Three-timer contributor Dieter is an East London schoolboy.

CALL-151 (from Applesoft BASIC) to enter the monitor. You should now see the * prompt.

Now type the listing as shown. Remember to replace the hyphens with colons. It is also not necessary to enter the line numbers after 6000 — the monitor does this automatically.

When you have finished, check

each line number very carefully for errors.

If all is correct, get back to BASIC with CONTROL-C. Now type BSAVE HTEXT, A\$6000, L\$480. The shape table is now saved as a binary file called HTEXT, which takes up six sectors on the disk.

To use the shape table your BASIC program must contain the following statements in order to load the shape definitions:

Program listing 1

*6000.61D8

```
6000- 36 00 4B 00 59 00 63 00
6008- 6E 00 79 00 83 00 8E 00
6010- 9B 00 A3 00 B1 00 BD 00
6018- C8 00 D5 00 DF 00 EA 00
6020- F7 00 00 01 0C 01 18 01
6028- 21 01 29 01 35 01 3D 01
6030- 49 01 55 01 60 01 6A 01
6038- 77 01 82 01 8D 01 95 01
6040- A2 01 AA 01 B6 01 C1 01
6048- CB 01 00 00 29 2D 20 24
6050- BC 1E 1E 1E 24 24 0C 2D
6058- 2F 00 2D 2D 3F 24 24 24
6060- 17 1E 1E 00 AC 2D 25 D8
6068- 63 65 E4 3F 17 16 00 A8
6070- 2D 05 E0 1C 0C 0C 3C 3F
6078- 2F 00 24 3D 3F 27 0C 0C
6080- 0C 36 36 00 A8 2D 05 20
6088- E4 3F 27 2C 2D 3D 00 29
6090- 2D 20 1C 3F 37 26 24 0C
6098- 0C 2D 2F 00 21 64 0C 0C
60A0- 3C 3F 2F 00 20 95 2D 05
```

```
60A8- 20 1C 3F 07 20 0C 2D 15
60B0- 26 00 2D 05 60 24 E4 3F
60B8- 17 76 2D 2D 00 24 24 64
60C0- 2D 15 36 3F 2F 2D 36 26
60C8- 00 24 24 24 2D AD F6 3F
60D0- 2D 15 F6 3F 3D 00 20 24
60D8- 64 2D 15 96 F2 3F 3D 00
60E0- 24 24 24 2D AD 36 36 1E
60E8- 3F 3F 00 2D 2D DC 1B 64
60F0- 09 3F 27 24 2D 2D 2F 00
60F8- 24 4C 39 3F 24 2C 2D 3D
6100- 00 20 24 64 2D 15 16 2F
6108- 36 3E 3F 3D 00 24 24 24
6110- 95 2A AD 12 24 24 24 26
6118- 00 29 3D 24 24 24 2F 3D
6120- 00 A8 2D 20 24 24 2F 3D
6128- 00 24 24 24 4D F1 1E 1E
6130- 0E 0E 0E 0E 00 49 39 3F
6138- 27 24 24 34 00 24 24 24
6140- 15 56 64 0C 36 36 36 34
6148- 00 24 24 24 15 76 0E 76
6150- 24 24 24 26 00 20 24 64
6158- 2D 15 36 36 1E 3F 3D 00
6160- 24 24 24 2D AD 36 1E 3F
```

listing continues

graphics

listing 1 continued

```
6168- 3F 00 20 24 64 2D 15 36
6170- 36 16 1C 1C 3E 3D 00 24
6178- 24 24 2D AD F6 3F 0E 0E
6180- 0E 0C 00 2D 2D 20 1C 3F
6188- 07 20 0C 2D 3D 00 09 24
6190- 24 E4 2B 2D 3D 00 20 24
6198- 24 4D 31 36 36 1E 3F 3D
```

```
61A0- 00 09 E4 1C 24 6C 09 36
61A8- F6 F4 00 24 24 24 4D 31
61B0- 36 36 3E E0 17 14 00 64
61B8- 04 E0 6C 09 F6 1E 0E 0E
61C0- 26 00 09 24 3C 1C 24 4D
61C8- 31 F6 F7 00 2D 2D DC 1B
61D0- 0C 0C 0C 0C 3C 3F 2F 00
61D8- 00
```

You must always put in the poke statements because these are the pointers to the shape table's address.

Listing 2 is a BASIC programme to draw simple graphs on an x,y axis. I use it to draw a graph of my examination results in percentages.

From line 10 to 40 the program loads HTEXT and sets the

pointers. In line 78 the DIM statement allows for 9 inputs. (This is not really necessary if fewer than 10 points are needed on the y axis of the graph.) Line 90 requests the 9 subject results to be entered. Line 180 draws the borders for the graph. Lines 200 to 210 plots the starting point. Lines 230 and 260 plots the rest of the graph. Lines 370 to 420 draws and

positions the horizontal numbers.

From line 440 to 480 the vertical numbers are drawn. Line 500 writes the word "percentage" next to the left margin. Line 510 writes the word "subject" below the graph. From line 530 to 540 the midline of the graph is drawn.

It should be quite straightforward to change this graph plotter to suit individual tastes.

Program listing 2

```
1LIST
10 REM LOAD SHAPE TABLE
20 D$ = CHR$(4)
30 PRINT D$"BLOAD HTEXT"
40 POKE 232,0: POKE 233,96
50 REM RESET VARIABLES AND CLEAR SCREEN
60 CLEAR: TEXT: HOME
70 DIM V(9)
80 PRINT: PRINT "LIST THE PERCENTAGES"
90 FOR J = 1 TO 9: INPUT V(J): NEXT J

95 REM NO. OF POINTS ON X AXIS
100 LV = 100
105 REM NO. OF INTERVALS ON X AXIS
110 IN = 21
120 REM HIRES GRAPH
130 HGR2: HCOLOR= 3
140 SCALE= 1: ROT= 0
150 GOTO 280
160 GOTO 330
170 REM DRAW BORDERS
180 HPLLOT 25,0 TO 25,151: HPLLOT 25,151 TO 279,151
190 REM START FROM
200 P=150*V(1)/LV
210 HPLLOT INT (279/9),(150-
220 REM PLOT GRAPH
230 REM I=1 TO 9.
240 P = 150 * V(I) / LV
250 HPLLOT TO INT (279 / 9 * I) , (150 - P)
260 NEXT I
270 END
280 FOR L = 0 TO 159 STEP (159 / IN)
290 IF L = > 151 THEN 310
300 HPLLOT 25,L TO 30,L
310 NEXT L
320 GOTO 160
330 FOR X = 3 TO 279 STEP INT (279 / 9)
340 S = S + 1
350 IF S = 1 THEN 400: REM ERASE 0
360 DRAW S AT X - 2,160
370 HPLLOT X,151 TO X,147
380 NEXT
390 HPLLOT 279,151 TO 279,147
400 DRAW 10 AT 275,159
410 REM DRAW VERT NUMERALS
420 DRAW 1 AT 18,154
430 DRAW 6 AT 12,78: DRAW 1 AT 18,78
440 DRAW 1 AT 12,7: DRAW 1 AT 18,7: DRAW 2 AT 6,7
450 DRAW 6 AT 18,116: DRAW 3 AT 11,116
460 DRAW 8 AT 12,40: DRAW 6 AT 19,40
470 REM DRAW PERCENTAGE AND SUBJECT
480
490
```

listing continues