

FIRST LEVEL

Apple II Plus

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# The nibble Designer

## The NIBBLE Designer

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At first glance, The NIBBLE Designer might seem to be just another Hi-Res sketching program. But hidden inside is the potential for it to be used in the area of Computer Aided Design (CAD). CAD is a technique which is as important to design as word processing is to writing. It offers the same benefits, such as the ease of making changes and the ability to use repetitive graphic elements without completely redefining them each time. Of course, this program cannot compete with the megabuck CAD systems, but you may be surprised by how much can be done on an Apple.

### DESIGNER APPLICATIONS

Here are some interesting potential applications for The Designer:

**Furniture Layout** can be aided by building shapes for desks, chairs, sofas, tables, etc. With The Designer, you can do alternate layouts on the screen in a snap.

**Circuit/Pipe Layout** for plumbing; planning your sprinkler system; electrical design, etc.

**Gardening/Landscaping** for your home and yard.

**Games for Small Children** with different faces, noses, eyes, ears, etc. for making Funny Faces.

**Title Displays** for presentations and your own programs.

**Shapes and Characters** for Hi-Res Games

The Designer is a versatile and easy-to-use system that lets you concentrate on creativity without drudgery.

### HOW IT OPERATES

The Designer is used to draw and combine shapes from a shape table on the Hi-Res screen. The program's versatility lies in the fact that you can use it with any shape table you have. To cite a classic example, suppose you create a shape table containing various electronic components and gates. Then using this table with NIBBLE Designer, you can create and refine electronic schematics. If you were designing a number of circuits which used the same design power supply, you could do a schematic of that section of the circuit, save it to disk, then bring it back to form the basis of each of the final circuit schematics. By creating a table with the desired elements you can do any sort of design work you wish.

**These specialized shape tables can be created quickly and easily by using the program 'The Illustrator' which appears in this issue.**

The Designer also has its own shape table which includes various sizes of circles, squares, triangles and rectangles which might be useful.

### CONTROL SUMMARY

Most of the functions of The Designer can be used by pressing the key corresponding to the first letter of the function's name. Since there are quite a few functions, it was a challenge to dream up a name for each function

which would both indicate what the function does and have a unique first letter. Another consideration was to try not to use any of the keys immediately adjacent to the I, J, K and M keys. Normally these keys are operated without looking at the keyboard, making it easy to accidentally hit an adjacent key. Despite this, I wound up having to use the 'N' key, but fortunately the results of pressing it are not fatal or irreversible.

The following screens display a summary of the controls and their functions:

```
-----THE NIBBLE DESIGNER-----
USING THIS PROGRAM YOU MAY DRAW SHAPES
FROM YOUR FAVORITE SHAPE TABLES ON THE
HI-RES SCREEN. THERE IS ALSO A STANDARD
SHAPE TABLE CALLED 'USER'S' PROGRAM THAT
INCLUDES VARIOUS CIRCLES, SQUARES, ETC
FOR YOU TO USE.

-----DRAWING CONTROLS-----
D - DRAW SHAPE
X - XDRAW SHAPE
A - INCREASE ROTATION
I - INCREASE ROTATION
C - DECREASE ROTATION
S - SCALE
C - CHANGE COLOR
*** WARNING! CTRL-C STOPS PROGRAM!
CTRL-N - SHOW NEXT SHAPE IN TABLE
      (OR TYPE IN SHAPE'S NUMBER)
CTRL-E - COLOR THE ENTIRE SCREEN
(PUSH 'M' FOR MORE, <ESC> TO RETURN)
```

```
-----MOVEMENT CONTROLS-----
-IF ACTION CONTROLLED BY KEYBOARD.
I - MOVE SHAPE UP ONE DOT
L - MOVE SHAPE LEFT ONE DOT
R - MOVE SHAPE RIGHT ONE DOT
D - MOVE SHAPE DOWN ONE DOT
CTRL-I - MOVE SHAPE UP 8 DOTS
CTRL-L - MOVE SHAPE LEFT 8 DOTS
CTRL-R - MOVE SHAPE RIGHT 8 DOTS
CTRL-D - MOVE SHAPE DOWN 8 DOTS
-IF ACTION CONTROLLED BY PADDLES.
PDL(0) - MOVE SHAPE HORIZONTALLY
PDL(1) - MOVE SHAPE VERTICALLY
BUTTON - DRAW THE SHAPE
(PUSH 'M' FOR MORE, <ESC> TO RETURN)
```

```
-----OTHER CONTROLS-----
F - SWITCH BETWEEN FULL SCREEN AND
  MIXED SCREEN
T - SWITCH BETWEEN PROGRAM SHAPE
  TABLE AND USER'S SHAPE TABLE
CTRL-A - LOAD A DIFFERENT USER TABLE
CTRL-R - CONTROL AND SWITCH BETWEEN PADDLE
  AND JOYSTICK COMMANDS
P - PUT THE HI-RES SCREEN ON DISK
G - GET A SCREEN IMAGE FROM DISK
CTRL-D - LOAD A VECTOR FILE IN PLACE OF
  THE SHAPE TABLE BEING USED.
CTRL-Q - DISKS CATALOG
<ESC> - DISPLAYS THESE INSTRUCTIONS.
      - QUITS THE PROGRAM.
REMEMBER THAT ANY OF THE SHAPES CAN
BE USED AS A 'BRUSH' AND MOVED ALONG TO
FILL IN AN AREA, OR OVERLAPPED TO CREATE
NEW PATTERNS AND EFFECTS. EXPERIMENT!
(PUSH 'R' TO RE-READ, <ESC> TO RETURN)
```

Besides using the N and CTRL-N keys to step through the shape table, you may also select a shape by typing in its number. The program expects a three digit number, so to select shape number 5 you must type 005. If you make a mistake or change your mind halfway through doing this, push any key to cancel the selection.

### SCREEN FILL

Filling the entire screen with a particular color is a handy way of starting a drawing. Select the color you wish for the background by pushing the C key. When the desired color

is displayed in the text window, push CTRL-E. This will erase any drawing on the screen and let you start fresh.

### MOVE AND DRAW

There are advantages to both methods of controlling the action of the shape. Using the keyboard gives greater precision and freedom from paddle jitter. The shape can be moved quickly into position by holding down the CTRL key and pressing one of the four direction keys I, J, K and M. Final adjustments are done by pressing just the direction keys.

Assuming the scale and rotation factors are suitable, press D to DRAW the shape or X to XDRAW it.

```
-----THE NIBBLE DESIGNER-----
nibble
nibble
nibble
nibble
-----THE NIBBLE DESIGNER-----
COLOR : WHITE      NUMBER OF SHAPE : 1
ACTION : KEYBOARD  ROTATION : 0      X : 165
TABLE : USER'S    SCALE : 1          Y : 42
```

Using paddles or a joystick makes it easy to use the shape as a brush. For example, if you select one of the circle shapes, by slowly moving it around the screen while holding down a button, you can create a twisting tube pattern.

You can also use one of the shapes as an eraser to remove errors and make changes.

### FULL/MIXED SCREEN

Using the F key you can switch between viewing the entire graphics screen and having part of it covered by the text window. The text window shows the status of several things, such as the color selected, and is also used for messages and input prompting. If you are working with the full screen and use a command which requires that you see the text window, then the program will automatically switch you back to the mixed screen.

When you use T to switch between your own shape table and the program's table, the appropriate one is loaded from disk. If you have switched disks, the program won't be able to find the correct table and it will inform you of this. Just insert the correct disk and try again.

### USING VECTOR TABLES

Besides using shape tables, this program can also draw a shape based on a vector file created by The Illustrator (in this issue). This could come in handy should you not be able to find a particular table, but just the vector files that went into it. Once you are finished using a vector file, press T to load your shape table back in. If you haven't specified a user shape table, then the standard shape table will be loaded.

### TABLE/PROGRAM

The majority of the shapes in TABLE/PROGRAM are designed to be used at a scale factor of one. Enlarging a particular circle, for example, will not result in a larger size solid

circle. Try it and see. That is why several sizes of each shape have been provided. Each group of shapes is designed to 'nest' within each other.

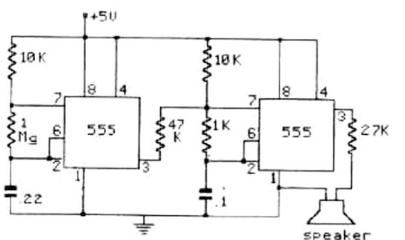
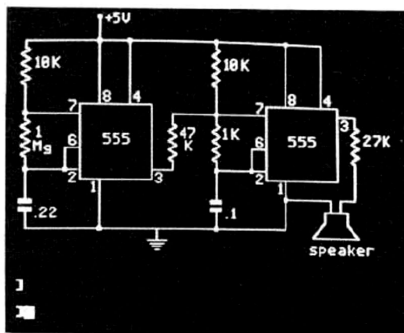
So if you wish to draw a large solid circle, draw the smallest solid circle, and then advance to the next shape, which is a ring that fits around that circle, and draw it. Of course, if you want a circular ring, then draw just that particular shape.

The few shapes which can be scaled are the line (shape number 2), the square (shape number 3) and the rectangle (shape number 24). The line is particularly useful. To draw any line, scale up the shape to the length required, rotate it if required, and if it looks right then press D to draw it. Remember to reduce the scale back down to one before switching to a solid shape or you'll be treated to a fascinating graphics display.

### ELECTRONIC FLASHER — A CASE STUDY

In order to make the multitude of functions a little clearer, let's develop the simple electronic schematic shown in **Illustration 1**. Assume that you have already created a shape table (and saved it to disk with the name ELECTRONICS) which contains the shapes of any electronic components you might wish to use. The ones we will be concerned with here are: 1) a line, 2) a square for the I.C.s, 3) a resistor, 4) a non-polarized capacitor, 5) a ground symbol, 6) a speaker and 7) a 3 by 3 dot which will be used to indicate connections where lines meet. If you choose to exercise this case study, you must type in the **Electronics Shape Table** from page 36. (For instructions on entering hex code directly into memory, see the Letters section of this issue.) When it is completely entered, it can be saved to disk with the command:

**BSAVE TABLE/ELECTRONICS,  
AS9C5, L\$4E2**



Run NIBBLE Designer. After being asked if you want instructions, you will be prompted for the name of the shape table you wish to use with The Designer. If you press the

RETURN key, the default table shown in parentheses will be loaded. Type in **ELECTRONICS**, and **TABLE/ELECTRONICS** which contains our shapes will be loaded. The screen is cleared and the first shape of the table is displayed.

The text window indicates the current drawing color (white 1), the number of the shape being displayed (1), whether the shape can be moved about under keyboard or paddle control (keyboard), the rotation factor used in drawing the shape (0), the X-coordinate of the shape (140), whether the table being used is the user's or the standard program table (user's), the scale factor used in drawing the shape (1) and finally, the Y-coordinate of the shape (90).

Begin the schematic by drawing the two 555 Timer Integrated Circuits. Select the square, shape number 2 in our table, either by pressing the N key to advance to the next shape in the table, or by typing 002. Move the box over to the left side of the screen by holding down the CTRL key and pressing the J key.

To make sure there is enough room to label the I.C. and its pins, increase the scale of the shape by pressing the S key. If it looks all right then press the D key to draw the shape.

Now move over to the right side of the screen by using the CTRL key and the K key and draw the second I.C.

Reduce the scale back down to one by pressing the CTRL and S keys and select the resistor shape from the table. My particular resistor shape was oriented horizontally, so to use it on the drawing it must be rotated 90 degrees. Press the R key and hold down the REPT key until ROTATION equals 16.

Move the shape around using the four direction keys and draw the various resistors.

If you decide to change the placement of a resistor, switch the color to BLACK 1 (the background color) and draw the shape again, thereby erasing it. You could also get away with just XDRAWING the shape since we are working in just black and white.

Next add the capacitors, the speaker and the ground symbol. Then connect these elements by using shape number one, the line. I use a very short 3-dot line and scale it up to whatever length is needed. After rotating and positioning the shape, press D to draw the connection. You can also draw lines by using a shorter length, perhaps at a scale factor of 3 or 4, and drawing it repeatedly as you move it along in one direction.

After the lines are drawn, show the connections by positioning the dot, shape number 7, over the junctions and drawing it.

Finally, you can label the drawing if you have created a shape table which contains the alphabet. Press CTRL-T and type in the name of your alphabet shape table, and it will take the place of the electronics table. Label the drawing by placing and drawing letters and numbers as required.

To preserve your masterpiece, press the P key to put the screen image on disk. Give the picture a name and it will be safely stored away.

### HOW TO LOAD THE DESIGNER

Due to the size of this program, it must be loaded above the High Resolution Screen 1. This is accomplished in the first line of the program; you must save the program to disk with the name NIBBLE DESIGNER. This allows the program about 22K of memory,

minus what is needed for strings and variables. The space below the Hi-Res screen is occupied by whatever shape table the program is using.

Type in the main Applesoft program and save it under the name NIBBLE DESIGNER. Next create the shape table called TABLE/PROGRAM (Listing Two) which is used by the main program. It represents the illustrations accompanying this article (Figs. 1 to 22). You can type the hex listing into memory and then save it on disk with the command:

**BSAVE TABLE/PROGRAM, AS801, L\$7C5**

For more instructions on entering machine language directly into memory, see the Letters column in this issue.

### DESIGNER MODIFICATIONS

The most useful modification that could be made to NIBBLE Designer is the addition of a dump-to-printer routine for the Hi-Res screen. There are two blank lines, numbers 1320 and 1330, where branches to new functions can be added. The electronic schematic shown in Illustration 1 was made using a Centronics 739 combined with a SAK Data interface with built-in dump routines.

A modification which I've already tried is adding a 'Decrease Color Number' function activated by CTRL-C to maintain consistency with scale, rotation and shape number controls. I set up an overall ONERR GOTO routine which trapped the CTRL-C interrupt and changed the color appropriately, but sometimes the interrupt would occur before the flashing shape had been erased. This left a ghost image on the screen. This difficulty could be overcome with additional programming effort, but since there are only six colors to cycle through it is not a great problem.

If you would like to try your hand at machine language, how about a routine which inverts the colors of the Hi-Res screen, or even a color-fill routine?

### CUSTOM DESIGNERS

Instead of just modifying The Designer, you could use its routines to form the basis of a wide variety of more specialized design programs; for example, a program to design office interiors. The base building outlines which show the core walls, columns, windows, electrical ducts, etc. could be stored on disk. When designing a particular area, this basic outline could be loaded in from disk and partitions, doors, and furniture manipulated to complete the design.

One could even check to see if a particular piece of equipment will fit through a doorway and around a corner by moving its shape along that path on the plan. When creating this sort of specialized application, the selection of shapes could be improved by setting up a menu of available shapes. This cannot be done with The Designer as it stands, because the length and contents of the user's shape table are unknown. Other controls could be made easier to use, such as allowing only 45 degree increments of rotation.

Going in an entirely different direction, how about a program for kids which allows them to make monsters? The shape table would include different types of heads, legs, bodies, tails, wings, etc. These could be assembled as desired. You could even include comic book type sound effect words to be added to the final picture.

The major aspect of Computer Aided Design which is not touched upon in this program is the analysis of the design as it is being done. This can range from area and cost calcula-

tions for package designers to simulation of electronic circuits to stress analysis. All of these sorts of features could be added to create more specialized design programs.

The Designer is a general purpose design tool which can give you a feel for how these sorts of programs can be of assistance to you. But don't forget that you can use it to just doodle on the screen too!

## LISTING 1: NIBBLE DESIGNER

LIST

```

10 REM *****
11 REM * NIBBLE DESIGNER * DISK'A OFFER
12 REM * BY COLIN FRENCH * ED. The Designer/Illustrator, Disk Zap, and
13 REM * COPYRIGHT (C) 1983 * NIBBLE Inferno are available on diskette for
14 REM * BY MICROSPARC, INC * an introductory price of $19.95 + $1.50
15 REM * LINCOLN, MA. 01773 * shipping/handling ($2.50 outside the U.S.)
16 REM ***** from NIBBLE, PO Box 325, Lincoln, MA 01773.
90 IF PEEK (104) = 64 THEN 120 Offer expires 7/31/83.
90 POKE 103,1: POKE 104,64: POKE 16384,0
100 PRINT CHR$(4);"RUN NIBBLE DESIGNER"
110 REM ***** INITIALIZE VARIABLES *****
120 D$ = CHR$(4): TEXT = HOME
130 DIM C$(7),A$(1),T$(2)
140 C$(0) = "BLACK 1":C$(1) = "GREEN":C$(2) = "BL
UE"
150 C$(3) = "WHITE 1":C$(4) = "BLACK 2":C$(5) = "OR
ANGE"
160 C$(6) = "VIOLET":C$(7) = "WHITE 2"
170 A$(0) = "KEYBOARD":A$(1) = "PADDLES"
180 T$(0) = "USER'S":T$(1) = "PROGRAM":T$(2) = "NO
NE"
190 D$ = CHR$(4):XC = 140:YC = 90
200 TABLE = 0:SCREEN = 0:ACT = 0
210 CC = 3: HCOLOR = CC:RR = 0: ROT = RR
220 SS = 1: SCALE = SS:NN = 1
230 FAST = 8:UN$ = "":NUM$ = ""
240 REM -SET SHAPE TABLE ADDRESS-
250 POKE 232,1: POKE 233,8
260 REM -DISPLAY INTRODUCTION-
270 GOSUB 4000
280 REM -GET SHAPE TABLE'S NAME-
290 LOC = 1: GOTO 400
300 :
310 REM ***** INITIALIZE SCREEN *****
320 :
330 HGR
340 HOME : VTAB 21
350 INVERSE : PRINT " * NIBBLE DESIGNER * ? -IN
STRUCTIONS "; NORMAL
360 PRINT "COLOR "; C$(CC); " NUMBER OF SHAPE :
"; HTAB 37: PRINT NN
370 PRINT "ACTION: ";A$(ACT); " ROTATION: X:
"; HTAB 29: PRINT RR; HTAB 37: PRINT XC
380 PRINT "TABLE ";T$(TABLE); " SCALE :
Y: "; HTAB 29: PRINT SS; HTAB 37: PRINT Y
C:
390 GOTO 1000
400 :
410 REM ***** GET NAME OF USER'S TABLE *****
420 :
430 TABLE = 0:NN = 1
440 IF SCREEN = 1 THEN SCREEN = 0: POKE - 16301,0
450 HOME : VTAB 24: PRINT " (DEFAULT= TABLE/";
460 IF UN$ < > " THEN PRINT UN$";";
470 IF UN$ = "" THEN PRINT T$(1);";";
480 HTAB 1: VTAB 22: PRINT "YOUR TABLE'S NAME? TA
BLE/";
490 LMT = 22: GOSUB 700: IF W$ = "" THEN W$ = UN$
500 IF W$ = "" THEN TABLE = 1: GOTO 590
510 ONERR GOTO 550
520 VTAB 22: PRINT : PRINT D$;"BLOAD TABLE/";W$;
,A$001"
530 REM -RESET ERROR FLAG-
540 POKE 216,0:UN$ = W$: GOTO 660
550 POKE 216,0: HOME : VTAB 22
560 IF PEEK (222) = 11 THEN PRINT "THAT IS NOT A
LEGAL FILE NAME.": PRINT "TRY AGAIN. (PUSH <
RETURN>)" ; GET Z$: GOTO 400
570 IF PEEK (222) = 6 THEN PRINT "THAT TABLE IS
NOT ON THIS DISK.": PRINT "TRY AGAIN. (PUSH <
RETURN>)" ; GET Z$: GOTO 400
580 GOTO 900
590 ONERR GOTO 630
600 VTAB 22: PRINT : PRINT D$;"BLOAD TABLE/PROGRAM
,A$001"
610 REM -RESET ERROR FLAG-
620 POKE 216,0: GOTO 660
630 POKE 216,0: HOME : VTAB 22
640 IF PEEK (222) = 6 THEN PRINT "TABLE/PROGRAM
ISN'T ON THIS DISK.": PRINT "INSERT CORRECT DI
SK. (PUSH <RETURN>)" ; GET Z$: GOTO 400
650 GOTO 900
660 REM -GET NUMBER OF SHAPES IN TABLE-
670 SNUM = PEEK (2049)
680 IF LOC = 1 THEN GOTO 300
690 GOTO 340
700 :
710 REM ***** MULTI-LETTER INPUT ROUTINE *****
720 :
730 W$ = ""
740 GET Z$
750 IF Z$ = CHR$(13) THEN RETURN
760 IF Z$ = CHR$(8) THEN 790
770 IF LEN (W$) = LMT THEN 740
780 PRINT Z$;W$ = W$ + Z$: GOTO 740
790 IF LEN (W$) = 0 THEN 740
800 PRINT CHR$(8); PRINT " "; PRINT CHR$(8);
810 IF LEN (W$) = 1 THEN 730
820 W$ = LEFT$(W$, LEN (W$) - 1): GOTO 740
900 :
910 REM ***** UNUSUAL DISK ERRORS *****
920 :
930 PRINT "A SYSTEM ERROR #"; PEEK (222);" HAS OCC
URRED"
940 PRINT "LINE #"; PEEK (218) + PEEK (219) * 256
950 POKE 216,0: END
1000 :
1010 REM ***** MAIN LOOP *****
1020 :
1030 XDRAW NN AT XC,YC
1040 REM -CHECK FOR KEYPRESS-
1050 K = PEEK (- 16384): POKE - 16368,0
1060 XDRAW NN AT XC,YC
1070 IF K < 128 THEN K$ = "": GOTO 1340
1080 K$ = CHR$(K - 128)

```

```

1090 REM -BRANCH TO FUNCTIONS-
1100 IF ASC (K$) > = ASC ("0") AND ASC (K$) <
= ASC ("9") THEN 1900
1110 IF NUM$ < > " THEN NUM$ = "": VTAB 22: HTAB
37: PRINT " "; HTAB 37: PRINT NN
1120 IF K$ = "C" THEN 2000
1130 IF K$ = "R" THEN 2100
1140 IF K$ = CHR$(18) THEN 2150
1150 IF K$ = "S" THEN 2200
1160 IF K$ = CHR$(19) THEN 2250
1170 IF K$ = "N" THEN 2300
1180 IF K$ = CHR$(14) THEN 2350
1190 IF K$ = "D" THEN DRAW NN AT XC,YC: GOTO 1000
1200 IF K$ = "X" THEN XDRAW NN AT XC,YC: GOTO 100
0
1210 IF K$ = "F" THEN 2400
1220 IF K$ = "T" THEN 2500
1230 IF K$ = "A" THEN 2700
1240 IF K$ = CHR$(20) THEN LOC = 2: GOTO 400
1250 IF K$ = "P" THEN 2800
1260 IF K$ = "O" THEN 3000
1270 IF K$ = "V" THEN 3200
1280 IF K$ = CHR$(5) THEN HPL0T 0,0: CALL 62454
: GOTO 1000
1290 IF K$ = CHR$(27) THEN TEXT = HOME : END
1300 IF K$ = CHR$(4) THEN 3400
1310 IF K$ = "?" THEN GOSUB 5000: POKE - 16304,0
: GOTO 340
1320 REM -ADD FUNCTION BRANCH HERE-
1330 REM -ADD FUNCTION BRANCH HERE-
1340 REM -MOVING OF SHAPE-
1350 IF ACT = 1 THEN 1450
1360 IF K$ = "I" THEN YC = YC - 1: IF YC < 0 THEN
YC = 191
1370 IF K$ = "J" THEN XC = XC - 1: IF XC < 0 THEN
XC = 279
1380 IF K$ = "K" THEN XC = XC + 1: IF XC > 279 THEN
XC = 0
1390 IF K$ = "M" THEN YC = YC + 1: IF YC > 191 THEN
YC = 0
1400 IF K$ = CHR$(9) THEN YC = YC - FAST: IF YC <
0 THEN YC = YC + 191
5090 PRINT "INCLUDES VARIOUS CIRCLES, SQUARES, ETC
"
5100 PRINT "FOR YOU TO USE.": PRINT
5110 PRINT "-----DRAWING CONTROLS-----"
5120 PRINT " D -DRAW SHAPE"
5130 PRINT " X -XDRAW SHAPE"
5140 PRINT " R -INCREASE ROTATION"
5150 PRINT " CTRL-R -DECREASE ROTATION"
5160 PRINT " S -INCREASE SCALE"
5170 PRINT " CTRL-S -DECREASE SCALE"
5180 PRINT " C -CHANGE COLOR"
5190 PRINT " *** WARNING!! CTRL-C STOPS PROGRAM! "
5200 PRINT " N -SHOW NEXT SHAPE IN TABLE"
5210 PRINT " CTRL-N -SHOW PREVIOUS SHAPE IN TABLE"
5220 PRINT " (OR TYPE IN SHAPE'S NUMBER)"
5230 PRINT " CTRL-E -COLOR THE ENTIRE SCREEN"
5240 VTAB 24: PRINT " (PUSH 'M' FOR MORE, <ESC> TO
RETURN) ";
5250 GET Z$: IF Z$ = CHR$(27) THEN 5660
5260 IF Z$ < > "M" THEN 5250
5270 HOME : PRINT "-----MOVEMENT CONTROLS---
-----": PRINT
5280 PRINT " -IF ACTION CONTROLLED BY KEYBOARD:" : PRINT
5290 PRINT " I -MOVE SHAPE UP ONE DOT"
5300 PRINT " J -MOVE SHAPE LEFT ONE DOT"
5310 PRINT " K -MOVE SHAPE RIGHT ONE DOT"
5320 PRINT " M -MOVE SHAPE DOWN ONE DOT"
5330 PRINT " CTRL-I -MOVE SHAPE UP 8 DOTS"
5340 PRINT " CTRL-J -MOVE SHAPE LEFT 8 DOTS"
5350 PRINT " CTRL-K -MOVE SHAPE RIGHT 8 DOTS"
5360 PRINT " CTRL-M -MOVE SHAPE DOWN 8 DOTS": PRINT
5370 PRINT " -IF ACTION CONTROLLED BY PADDLES:" : PRINT
5380 PRINT " PDL(0) -MOVE SHAPE HORIZONTALLY"
5390 PRINT " PDL(1) -MOVE SHAPE VERTICALLY"
5400 PRINT " BUTTON -DRAW THE SHAPE"
5410 VTAB 24: PRINT " (PUSH 'M' FOR MORE, <ESC> TO
RETURN) ";
5420 GET Z$: IF Z$ = CHR$(27) THEN 5660
5430 IF Z$ < > "M" THEN 5420
5440 HOME : PRINT "-----OTHER CONTROLS-----
-----": PRINT
5450 PRINT " F -SWITCH BETWEEN FULL SCREEN AN
D"
5460 PRINT " MIXED SCREEN."
5470 PRINT " T -SWITCH BETWEEN PROGRAM SHAPE"
5480 PRINT " TABLE AND USER'S SHAPE TABLE."
5490 PRINT " CTRL-T -LOAD A DIFFERENT USER TABLE."
5500 PRINT " A -ACTION: SWITCH BETWEEN PADDLE
"
5510 PRINT " CONTROL AND KEYBOARD CONTROL."
5520 PRINT " P -PUT THE HI-RES SCREEN ON DISK
"
5530 PRINT " G -GET A SCREEN IMAGE FROM DISK."
5540 PRINT " V -LOAD A VECTOR FILE IN PLACE 0
F"
5550 PRINT " THE SHAPE TABLE BEING USED."
5560 PRINT " CTRL-D -DISK CATALOG."
5570 PRINT " ? -DISPLAYS THESE INSTRUCTIONS."
5580 PRINT " <ESC> -QUITS THE PROGRAM.": PRINT
5590 PRINT " REMEMBER THAT ANY OF THE SHAPES CAN"
5600 PRINT " BE USED AS A 'BRUSH' AND MOVED ALONG T
O"
5610 PRINT " FILL IN AN AREA, OR OVERLAPPED TO CREA
TE";
5620 PRINT " NEW PATTERNS AND EFFECTS. EXPERIMENT!
": PRINT
5630 VTAB 24: PRINT " (PUSH 'R' TO RE-READ, <ESC> T
O RETURN) ";
5640 GET Z$: IF Z$ = "R" THEN 5030
5650 IF Z$ < > CHR$(27) THEN 5640
5660 HOME : RETURN

```



LISTING 2: TABLE/PROGRAM

\*801.FC5

0801- 1C 00 3A 00 3C 00 3F  
 0803- 00 45 00 74 00 C3 00 65  
 0810- 01 49 02 5E 02 80 02 B4  
 0818- 02 FD 02 28 03 6C 03 F7  
 0820- 03 D4 04 E3 04 03 05 34  
 0828- 05 74 05 88 05 BE 05 14  
 0830- 06 8B 06 93 06 B1 06 D4  
 0838- 06 3B 07 05 00 3F 07 00  
 0840- 33 2D 24 3F 06 00 3F 3F  
 0848- 2E 2D 35 3F 3F 36 25 35  
 0850- 25 35 25 35 25 35 25 3C  
 0858- 3F 27 2D 2D 3C 3F 27 2D  
 0860- 2D 3C 3F 27 2D 2D 3C 3F  
 0868- 3F 3F 3F 2E 2D 35 3F 3F  
 0870- 2E 2D 35 00 24 1B 1B 3B  
 0878- 37 2D 3E 37 2D 3E 37 36  
 0880- 25 2C 36 25 2C 36 25 2C  
 0888- 36 25 2C 36 25 2C 36 25  
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 08E8- 24 2C 36 2E 24 2C 36 2E  
 08F0- 24 2C 36 2E 24 2C 36 2E  
 08F8- 24 2C 36 2E 24 2C 36 2E  
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 0908- 2D 25 3F 27 2D 25 3F 27  
 0910- 2D 25 3F 27 2D 25 3F 27  
 0918- 2D 25 3F 27 2D 25 3F 27  
 0920- 2D 25 3F 27 2D 25 3F 27  
 0928- 36 3E 24 3C 36 3E 24 3C  
 0930- 36 3E 24 3C 36 3E 24 3C  
 0938- 36 3E 24 3C 36 3E 24 3C  
 0940- 36 3E 24 3C 36 3E 24 3C  
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 0960- 3F 37 2D 35 3F 37 2D 35  
 0968- 1B 1B 1B 1B 3F 37 2D 35  
 0970- 3F 37 2D 35 3F 37 2D 35  
 0978- 3F 37 2D 35 3F 37 2D 35  
 0980- 3F 37 2D 35 3F 37 2D 35  
 0988- 3F 37 2D 2D 24 2C 36 2E  
 0990- 24 2C 36 2E 24 2C 36 2E  
 0998- 24 2C 36 2E 24 2C 36 2E  
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 09A8- 24 2C 36 2E 24 2C 36 2E  
 09B0- 24 2C 36 2E 24 2C 36 2E  
 09B8- 24 2C 36 2E 2D 25 3F 27  
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 09C8- 2D 25 3F 27 2D 25 3F 27  
 09D0- 2D 25 3F 27 2D 25 3F 27  
 09D8- 2D 25 3F 27 2D 25 3F 27  
 09E0- 2D 25 3F 27 2D 25 3F 27  
 09E8- 2D 25 3F 27 2D 25 3F 27  
 09F0- 2D 25 24 3C 36 3E 24 3C  
 09F8- 36 3E 24 3C 36 3E 24 3C  
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 0A40- 3F 37 2D 35 3F 37 2D 35  
 0A48- 00 31 1B 1B 36 35 35 2D  
 0A50- 2D 25 25 25 24 3C 3C  
 0A58- 3F 3E 3E 3E 36 00 4E 1B  
 0A60- 1B 1B 33 2E 36 35 35 2D  
 0A68- 2E 2D 2D 2C 25 25 2C  
 0A70- 24 24 27 3C 3C 3C 27 3F  
 0A78- 3F 37 3F 3E 3E 36 37 06  
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 0AB8- 1B 1B 1B 1B 1B 3E 2E 36  
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 0AE8- 3F 27 3F 3F 3F 3F 3F 3F  
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 0AF8- 37 36 37 36 00 3E 36 36  
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 0B18- 3C 36 3E 24 17 36 36 0E  
 0B20- 24 2C 36 36 25 24 2C 00  
 0B28- 31 12 12 32 2E 24 35 2E  
 0B30- 24 0C 36 25 24 35 26 31  
 0B38- 0C 3F 2C 25 3F 2C 25 3F  
 0B40- 1C 2D 3C 24 33 3E 24 1C  
 0B48- 36 27 3C 36 27 3C 36 27  
 0B50- 3C 32 3E 22 24 17 36 3E  
 0B58- 24 16 33 2D 3E 37 2D 3E  
 0B60- 37 29 35 39 3F 0E 35 25  
 0B68- 35 2E 24 05 00 12 12 12  
 0B70- 12 36 2E 24 2C 36 2E 25  
 0B78- 27 25 27 29 36 2E 24 24  
 0B80- 0C 36 36 25 24 24 2C 36  
 0B88- 36 26 21 2C 3C 2C 25 3F  
 0B90- 27 2D 25 3F 27 2D 25 3F  
 0B98- 27 2B 2D 25 3B 3F 1C 2D  
 0BA0- 2D 1C 24 33 3E 24 3C 36  
 0BA8- 3E 24 24 37 36 27 24 3C  
 0BB0- 36 3E 24 3C 36 3E 24 3C  
 0BB8- 36 3E 24 3C 36 3E 27 24  
 0BC0- 37 36 36 23 24 3C 36 36  
 0BC8- 36 27 24 24 17 36 37 35  
 0BD0- 3F 2E 2D 3E 3F 2E 2D 3E  
 0BD8- 3F 2E 2D 15 3F 3F 0E 2D  
 0BE0- 2D 3A 3F 2F 32 0E 24 35  
 0BE8- 36 25 24 35 36 2E 24 2C  
 0BF0- 36 36 25 24 35 36 04 00  
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 0C08- 3A 3F 37 2E 2C 2E 2C 2E  
 0C10- 3E 3F 37 2D 2D 2D 3A 3F  
 0C18- 3F 2E 26 31 2E 24 35 36  
 0C20- 25 24 35 36 2E 24 24 15  
 0C28- 35 37 35 37 29 24 2C 36  
 0C30- 2E 24 3C 36 2E 24 2C 36  
 0C38- 2E 24 2C 36 2E 24 24 35  
 0C40- 36 2D 3C 2C 3C 2C 0C 36  
 0C48- 36 25 24 24 35 36 2E 24  
 0C50- 24 3C 2C 35 36 36 0C 24  
 0C58- 25 27 2D 3C 3F 27 2D 2D  
 0C60- 0C 3F 3F 2C 2D 25 3F 3F  
 0C68- 2C 2D 25 3F 3F 2C 2D 25  
 0C70- 3F 3F 3C 2C 35 2D 3C 0C  
 0C78- 3F 3F 27 2D 2D 3C 3F 3F  
 0C80- 1C 2D 2D 25 27 17 24 37  
 0C88- 3E 24 3C 36 3E 24 24 37  
 0C90- 36 26 38 2C 3C 2C 1C 37  
 0C98- 36 27 24 37 36 27 24 37  
 0CA0- 36 27 24 37 36 27 24 37  
 0CA8- 36 3E 24 3C 37 35 37 35  
 0CB0- 3F 22 24 3C 36 36 3E 24  
 0CB8- 24 37 36 36 35 3F 24 24  
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 0CC8- 3E 3F 37 37 2E 2D 25 3C  
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 0CD8- 2D 2D 25 27 3C 24 27 1E  
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 0CF8- 24 27 3C 34 33 3E 36 37  
 0D00- 3E 36 00 00 1B 1B 1B 33  
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 0D10- 2D 2D 2D 2D 2D 2D 2D 2D  
 0D18- 25 27 3C 24 27 3C 24 27  
 0D20- 3C 24 27 3C 24 27 3C 24  
 0D28- 27 1E 36 37 3E 36 37 3E

0D30- 36 37 3E 06 00 1B 1B 1B  
 0D38- 1B 3B 36 37 3E 36 37 3E  
 0D40- 36 37 2D 2D 2D 2D 2D 2D  
 0D48- 2D 2D 2D 2D 2D 2D 2D 2D  
 0D50- 2D 3C 24 27 3C 24 27 3C  
 0D58- 24 27 3C 24 27 3C 24 27  
 0D60- 3C 24 27 3C 24 27 3C 34  
 0D68- 33 3E 36 37 3E 36 37 3E  
 0D70- 36 37 3E 36 37 06 00 3C  
 0D78- 37 35 3F 2E 2D 2C 2E 25  
 0D80- 27 27 25 23 1C 36 27 06  
 0D88- 00 1B 3B 37 35 3F 36 37  
 0D90- 2D 24 35 2E 24 35 2E 34  
 0D98- 35 2E 24 35 2E 24 2D 3E  
 0DA0- 2E 2D 3C 24 3F 2C 3C 27  
 0DA8- 25 3F 2C 3C 27 25 3F 0F  
 0DB0- 28 3C 3C 32 3E 3E 32 17  
 0DB8- 2E 2C 24 25 35 00 31 1B  
 0DC0- 1B 1B 2F 3A 37 35 3F 2E  
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 0DF0- 3C 27 25 3F 2C 3C 27 25  
 0DF8- 3F 2C 3C 27 25 3F 2C 3C  
 0E00- 24 27 1E 2E 3E 37 2D 1E  
 0E08- 3F 2E 3E 37 35 3F 2E 3E  
 0E10- 37 35 3F 06 00 1B 1B 1B  
 0E18- 1B 3F 2E 3E 37 35 3F 2E  
 0E20- 3E 37 35 3F 36 37 2D 24  
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 0E40- 35 2E 24 35 2E 24 35 2E  
 0E48- 24 35 2E 24 2D 3E 2E 2D  
 0E50- 3C 24 3F 2C 3C 27 25 3F  
 0E58- 2C 3C 27 25 3F 2C 3C 27  
 0E60- 25 3F 2C 3C 27 25 3F 2C  
 0E68- 3C 27 25 3F 2C 3C 27 25  
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 0E78- 3B 37 35 3F 2E 3E 37 35  
 0E80- 3F 2E 3E 37 35 3F 2E 3E  
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 0EA8- 3F 3F 3F 3F 2E 2D 2D 35  
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 0EB8- 3C 27 2D 3C 27 2D 3C 3F  
 0EC0- 3F 3F 3F 3F 3F 3F 3F 3F  
 0EC8- 2E 35 3F 2E 35 3F 2E 2D  
 0ED0- 2D 2D 2D 00 35 12 32 25  
 0ED8- 35 25 35 25 35 25 35 25  
 0EE0- 35 2D 2D 2D 3C 3F 3F 2C  
 0EE8- 2D 2D 3C 3F 3F 2C 2D 2D  
 0EF0- 3C 3F 3F 2C 2D 2D 3C 3F  
 0EF8- 3F 2C 2D 2D 3C 3F 3F 37  
 0F00- 27 37 27 37 27 37 27 37  
 0F08- 27 37 27 37 27 37 27 37  
 0F10- 27 37 27 3F 3F 3F 2E 2D  
 0F18- 2D 3E 3F 3F 2E 2D 2D 3E  
 0F20- 3F 3F 2E 2D 2D 3E 3F 3F  
 0F28- 2E 2D 2D 3E 3F 3F 2E 2D  
 0F30- 2D 25 35 25 35 25 35 25  
 0F38- 35 25 05 00 12 12 32 25  
 0F40- 35 25 35 25 35 25 35 25  
 0F48- 35 25 35 25 35 25 35 2D  
 0F50- 2D 25 3F 3F 2C 2D 25 3F  
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 0F78- 37 27 37 27 37 27 37 27  
 0F80- 37 27 37 27 37 27 37 27  
 0F88- 37 27 37 27 37 27 37 27  
 0F90- 37 27 3F 3F 3F 2D 2D 3E  
 0F98- 3F 37 2D 2D 3E 3F 37 2D  
 0FA0- 2D 3E 3F 37 2D 2D 3E 3F  
 0FA8- 37 2D 2D 3E 3F 37 2D 2D  
 0FB0- 3E 3F 37 2D 2D 25 35 25  
 0FB8- 35 25 35 25 35 25 35 25  
 0FC0- 35 25 35 25 05 00

KEY PERFECT 4.0  
RUN ON  
NIBBLE DESIGNER

CODE	LINE#	-	LINE#
6577	10	-	100
91F0	110	-	200
52C3	210	-	300
7D7D	310	-	400
721E	410	-	500
958A	510	-	600
63F1	610	-	700
4B5E	710	-	800
653C	810	-	1010
5EEA	1020	-	1110
51D0	1120	-	1210
5B09	1220	-	1310
9060	1320	-	1410
6CBD	1420	-	1900
5D4C	1910	-	2000
4DB7	2010	-	2150
5718	2160	-	2250
4EED	2260	-	2350
56EF	2360	-	2450
67F9	2460	-	2580
8986	2590	-	2710
501D	2720	-	2860
8E79	2870	-	3020
9E69	3030	-	3120
6A09	3130	-	3280
932F	3290	-	3400
620A	3410	-	4010
6708	4020	-	5020
8FE7	5030	-	5120
7B91	5130	-	5220
98B2	5230	-	5320
A3DE	5330	-	5420
9ACB	5430	-	5520
A57A	5530	-	5620
2CB9	5630	-	5660

TOTAL PROGRAM CHECK IS : 21CC

APPLE CHECKER

ON: NIBBLE DESIGNER  
TYPE: A

LENGTH: 1DAA  
CHECKSUM: C3

KEY PERFECT 4.0  
RUN ON  
TABLE/PROGRAM

CODE	ADDR#	-	ADDR#
2CC9	09C7	-	0A16
27B6	0A17	-	0A66
254E	0A67	-	0AB6
27B9	0AB7	-	0B06
282E	0B07	-	0B56
2812	0B57	-	0BA6
2952	0BA7	-	0BF6
2875	0BF7	-	0C46
2807	0C47	-	0C96
2924	0C97	-	0CE6
27E5	0CE7	-	0D36
2919	0D37	-	0D86
2715	0D87	-	0DD6
2AD9	0DD7	-	0E26
25A3	0E27	-	0E76
29E5	0E77	-	0EC6
28FA	0EC7	-	0F16
2550	0F17	-	0F66
2406	0F67	-	0FB6
2B9E	0FB7	-	1006
28C9	1007	-	1056
29AE	1057	-	10A6
2A52	10A7	-	10F6
289A	10F7	-	1146
26B7	1147	-	118B

TOTAL PROGRAM CHECK IS : 07C5

APPLE CHECKER

ON: TABLE/PROGRAM  
TYPE: B

LENGTH: 07C5  
CHECKSUM: FC