IMAGEWRITER AND SCRIBE CONTROL

Use one of these *menu-driven printer utilities to set up a variety of typefaces on your Imagewriter or Scribe printer. You can even select combinations of options. By substituting the appropriate codes, the programs can be modified for other printers.*

Most commercially available printer utilities are written for the Epson printer. Epson is a popular brand, but growing numbers of people are buying the Apple Imagewriter or the Apple Scribe. They need printer control programs, too.

Part II of the *Imagewriter User's Manual* lists a BASIC program called HEXCODE that changes the default printer settings from the keyboard or from a text file on disk. The process can be cumbersome, since it requires you to look up each sequence in the manual. Instead, I developed two programs that let you change printer settings from a menu.

The Imagewriter and Scribe control programs give you an easy method of changing the most commonly used printer functions. Just RUN the appropriate program and make your selections from the menu. The new functions will remain in effect until you shut the printer off or change them.

USING THE PROGRAMS

The Imagewriter Control Program

After a reminder to turn on your printer, a menu display lists the type fonts and styles. The Imagewriter can print in six typefaces (see **Figure 1**): extended, Pica, Elite, semicondensed, condensed and ultracondensed. Two of the typefaces, Pica and Elite, can be printed in proportional type. All of the typefaces can be printed in any combination of normal or boldface with an underline and/or in headline mode.

Suppose you want to print a title as an extended, boldface headline with an underscore. You would select these options by choosing A, J, L and N from the main menu. The typeface option you choose remains in effect until you choose another typeface. The boldface, underline and headline modes may be turned off by pressing K, M and O, respectively. Pressing S resets the printer to the default mode: the Elite typeface with normal spacing, printing six lines per inch and the left margin set to zero.

Menu option I lets you print slashed zeros to distinguish them from the letter O. The default mode is unslashed zeros. The R option sets the spacing to eight lines per inch instead of six.

You can begin printing at any column from 0 to 95 by selecting T (change left margin) and entering a three-digit number from 000 to 095. This option is particularly handy for printing hex dumps. After printing on a sheet or two, roll back the printer paper, select T again, and change the setting to set up a column to the right of what has already been printed. You can easily get four or five columns of a hex dump on a single sheet of paper. Be careful where you set the left margin. Depending on the typeface you use, characters that go past the 80th column may be overprinted on the same line.

The Scribe Control Program

The Scribe control program works the same as the Imagewriter program. The menu looks the same, but the two printers have quite different capabilities. Scribe can print only two typefaces, Pica (menu option C) and ultracondensed (menu option D). However, like the Imagewriter, it can print either typeface in headline and/or underline modes. Pressing H selects headline mode and I turns it off. Pressing J turns on underline mode and K turns it off. Examples of these typefaces are shown in **Figure 2**.

The Scribe has a letter mode and a draft mode, which the Imagewriter does not have. The switch located on the front panel of the Scribe is normally used to select either mode, but you may do this from the keyboard by pressing A to enter draft mode and B to print in letter mode. Select S to reset the printer to the default settings (Pica typeface in draft mode with the left margin set to zero).

To print on the clear acetate used with overhead projectors, choose option E. This changes the density of the type so that it prints more clearly on the hard acetate surface.

The Scribe is also capable of printing slashed zeros; press G to choose this option. The default mode is unslashed zeros. To print eight lines per inch instead of six, select P. To print three lines per inch (the equivalent of double-spacing in six lines per inch mode), press R.

The Scribe allows instant access to superscripts and subscripts, features that must be downloaded to the Imagewriter. Selecting L for superscript mode prints a very small character above the normal print line, and selecting M for subscript mode does the same below the line. Both options can be combined with headline and/or underline modes.

To set the left margin to any column from 0 to 95, select T and enter a three-digit number from 000 to 095. When printing in Pica, the maximum number of characters per line is 80. Characters beyond the 80th column will be overprinted on the same line.

ENTERING THE PROGRAMS

To key in the Imagewriter control program, type in Listing 1 and save it with the command:

SAVE IWRITER.UTILITY

To key in the Scribe control program, type in **Listing 2** and save it with the command:

SAVE SCRIBE.UTILITY

For help in entering *Nibble* listings, see "A Welcome to New *Nibble* Readers" at the beginning of this issue.

HOW THE PROGRAMS WORK

Like other printers, Imagewriter and Scribe accept nonprinting code sequences that override the default settings stored in the printer's ROM (read-only memory). With few exceptions, these codes begin with the control character ESCAPE. ESCAPE cannot be sent directly to the printer from the keyboard, so it is sent in the decimal ASCII form, CHR$(27). Any code can be sent to the printer by concatenating the printer command to CHR$(27). For example:

PRINT CHR$(27)+CHR$(78)

is the sequence for Pica type. Another way to send the same code would be:

PRINT CHR$(27); "N"

since N is the character represented by ASCII code 78.

Although most printer commands are ESCape sequences, some are control codes. From the keyboard, these are obtained by pressing <CTRL> and another key at the same time. Control codes are not displayed when a program is listed, so it's best to stick with CHR$( ) equivalents, using the ASCII code.

As part of the initialization process, each code or code sequence is assigned to its own string variable. For instance, in line 840 of both programs, the string CHR$(27)+CHR$(88) is assigned to the variable J$. When the underline option is chosen from the menu,

FIGURE 1: Imagewriter Typefaces

FIGURE 2: Scribe Typefaces

the command string is sent to the printer with a simple PRINT J$ command.

PROGRAM LOGIC

Both programs begin in line 90. Program flow passes to line 730, which initializes the variables and establishes the ONERR GOTO. If your printer card is not in slot 1, change line 930 to "PR#n" (where n is the slot number of the printer interface card). Do not make this change on the //c, since the //c printer is always in slot 1. If you operate in 80-column mode, change the PR#0 in lines 940 and 960 to PR#3. Also, leave out the ONERR GOTO in line 730 until you're sure your program has been properly entered and is running correctly. The string variables used for printer control are well-documented in the REM statements.

Program flow returns to line 100 to print the title screen and copyright notice, then line 120 reminds the user to turn on the printer. The computer will hang if you attempt to send a code sequence when the printer is off. When the printer is turned on, the program will operate normally. Lines 130-340 display the main menu. Line 350 ensures that only valid keypresses are accepted by converting them to numbers from 65 (A) to 84 (T) via Applesoft's ASC function.

If T (change left margin) is selected, the program goes to line 610 to ask for a numeric input to change the left margin. Lines 650 and 660 make sure that only the proper code is sent to the printer, and if not, line 690 displays a reminder on the screen. Next, the program returns to the main menu (line 130) for new input.

IMAGEWRITER SLASHED ZEROS

When you select the slashed zeros function for the Imagewriter, a strange quirk occurs. The *Imagewriter User's Manual, Part I: Reference*, gives the sequence of codes to use this function as:

"ESCAPE - D - CONTROL-A - CONTROL-@" (CHR$(27) + CHR$(68) + CHR$(1) + CHR$(0))

This is incorrect. A more recent manual for the //c and Imagewriter transposes the CONTROL-A and CONTROL-@. When I tried the original code, the zeros were slashed, but special characters appeared in Italian! The new code avoids the Italian character problem, but it adds a linefeed so that all copy is double-spaced. The solution is to issue additional code that removes the extra linefeed, along with the code that slashes the zeros. It does the job, albeit clumsily. Incidentally, the Imagewriter's DIP switch 1-5 should be set to the closed position for this to work correctly.

CUSTOMIZATION

It is very easy to modify either program for use with printers other than Imagewriter or Scribe. Just change the functions you want to implement in lines 190-370 and refer to your printer's manual for the corresponding codes to plug into lines 740-920. It is fairly easy to keep track of the function you wish to implement. Selecting A from the main menu prints A$, B prints B$, and so on. You can easily substitute functions other than those in the Imagewriter and Scribe programs, too.

LISTING 1: IWRITER.UTILITY

```
10   REM ***********************
20   REM *    IWRITER.UTILITY   *
30   REM *         BY           *
40   REM *   TERRY M. SCHWARTZ  *
50   REM * COPYRIGHT (C) 1986   *
60   REM * BY MICROSPARC, INC   *
70   REM * CONCORD, MA  01742   *
80   REM ***********************
90   GOSUB 730: REM INITIALIZE
100  TEXT : HOME : HTAB 10: PRINT '** IWRITER
     .UTILITY **": PRINT : HTAB 11: PRINT "BY
     TERRY M SCHWARTZ"
110  VTAB 22: PRINT "** COPYRIGHT 1986 BY MIC
     ROSPARC, INC. **"
120  VTAB 12: HTAB 3: PRINT "PLEASE BE SURE P
     RINTER IS TURNED ON.": PRINT : HTAB 14: PRINT
     "PRESS <RETURN> ";: GET RM$
130  HOME : HTAB 8: PRINT "PLEASE SELECT A FU
     NCTION:": PRINT
140  PRINT "<Q>-QUIT"
150  PRINT "<A>-PRINT EXTENDED TYPEFACE"
160  PRINT "<B>-PRINT PICA TYPEFACE"
170  PRINT "<C>-PRINT ELITE TYPEFACE"
180  PRINT "<D>-PRINT PICA (PROPORTIONAL SPAC
     ING)"
190  PRINT "<E>-PRINT ELITE (PROPORTIONAL SPA
     CING)"
200  PRINT "<F>-PRINT SEMICONDENSED TYPEFACE"
210  PRINT "<G>-PRINT CONDENSED TYPEFACE"
220  PRINT "<H>-PRINT ULTRA-CONDENSED TYPEFAC
     E"
230  PRINT "<I>-PRINT SLASHED ZEROS"
240  PRINT "<J>-BEGIN BOLDFACE MODE"
250  PRINT "<K>-LEAVE BOLDFACE MODE"
260  PRINT "<L>-BEGIN HEADLINE MODE"
270  PRINT "<M>-LEAVE HEADLINE MODE"
280  PRINT "<N>-BEGIN UNDERLINE MODE"
290  PRINT "<O>-LEAVE UNDERLINE MODE"
300  PRINT "<P>-BEGIN FEEDING SIX LINES PER I
     NCH"
310  PRINT "<R>-BEGIN FEEDING EIGHT LINES PER
      INCH"
320  PRINT "<S>-CANCEL ALL INSTRUCTIONS (RESE
     T)"
330  PRINT "<T>-CHANGE LEFT MARGIN"
340  HTAB 5: VTAB 24: PRINT "SELECTION";: VTAB
     24: HTAB 2: GET PS$: PRINT PS$
350  IF ASC (PS$) < 65 OR ASC (PS$) > 84 THEN
      PRINT CHR$ (7): GOTO 130: REM ASSURE O
     NLY LETTERS A-T ARE ACCEPTED
360  IF PS$ = "Q" THEN  POKE 216,0: HOME : END
     : REM CLEAR ONERR FLAG AND QUIT
370  IF PS$ = "T" THEN 610
380  PRINT D$ + XS: REM TURN PRINTER CARD ON
390  IF PS$ = "A" THEN  PRINT A$
400  IF PS$ = "B" THEN  PRINT B$
410  IF PS$ = "C" THEN  PRINT C$
420  IF PS$ = "D" THEN  PRINT DD$
430  IF PS$ = "E" THEN  PRINT E$
440  IF PS$ = "F" THEN  PRINT F$
450  IF PS$ = "G" THEN  PRINT G$
460  IF PS$ = "H" THEN  PRINT H$
470  IF PS$ = "I" THEN  PRINT I$
480  IF PS$ = "J" THEN  PRINT J$
490  IF PS$ = "K" THEN  PRINT K$
500  IF PS$ = "L" THEN  PRINT L$
510  IF PS$ = "M" THEN  PRINT M$
520  IF PS$ = "N" THEN  PRINT N$
530  IF PS$ = "O" THEN  PRINT O$
540  IF PS$ = "P" THEN  PRINT P$
550  IF PS$ = "R" THEN  PRINT R$
560  IF PS$ = "S" THEN  PRINT S$
570  PRINT D$ + Z$: GOTO 130: REM TURN PRINTE
     R CARD OFF. OUTPUT TO SCREEN AGAIN
580  REM
590  REM SET LEFT MARGIN
600  REM
610  HOME
620  VTAB 20: PRINT "(PLEASE PRESS <RETURN> A
     FTER ENTRY)"
630  VTAB 10: PRINT "HOW MANY SPACES FROM THE
      LEFT DO YOU"
640  PRINT "WANT TO BEGIN PRINTING? ";: INPUT
     "(000-095) ";LM$
```

```
650   IF LM$ < "000" OR LM$ > "095" THEN 680
660   IF  LEN (LM$) < > 3 THEN 680
670   PRINT D$ + X$: PRINT  CHR$ (27) + CHR$
      (76) + LM$: PRINT D$ + Z$: GOTO 130
680   PRINT  CHR$ (7)
690   VTAB 12: PRINT "           ": VTAB 15
      : PRINT "YOU MUST ENTER 3 NOS. FROM 000
      TO 095": GOTO 620: REM 15 SPACES
700   REM ............
710   REM . INITIALIZE .
720   REM ............
730   ONERR  GOTO 960
740   A$ =  CHR$ (27) +  CHR$ (110): REM EXTEND
      ED FACE
750   B$ =  CHR$ (27) +  CHR$ (78): REM PICA FA
      CE
760   C$ =  CHR$ (27) +  CHR$ (69): REM ELITE F
      ACE (DEFAULT SETTING)
770   D$ =  CHR$ (4): REM CONTROL D
780   DD$ =  CHR$ (27) +  CHR$ (112): REM PICA
      PROPORTIONAAL SPACING
790   E$ =  CHR$ (27) +  CHR$ (80): REM ELITE P
      ROPORTIONAL SPACING
800   F$ =  CHR$ (27) +  CHR$ (101): REM SEMICO
      NDENSED FACE
810   G$ =  CHR$ (27) +  CHR$ (113): REM CONDEN
      SED FACE
820   H$ =  CHR$ (27) +  CHR$ (81): REM ULTRA C
      ONDENSED FACE
830   I$ =  CHR$ (27) +  CHR$ (68) +  CHR$ (0) +
      CHR$ (1) +  CHR$ (27) +  CHR$ (90) +  CHR$
      (128) +  CHR$ (0): REM SLASHED ZEROS
840   J$ =  CHR$ (27) +  CHR$ (33): REM BEGIN B
      OLDFACE MODE
850   K$ =  CHR$ (27) +  CHR$ (34): REM LEAVE B
      OLDFACE MODE
860   L$ =  CHR$ (14): REM BEGIN HEADLINE MODE
870   M$ =  CHR$ (15): REM LEAVE HEADLINE MODE
880   N$ =  CHR$ (27) +  CHR$ (88): REM BEGIN U
      NDERLINE MODE
890   O$ =  CHR$ (27) +  CHR$ (89): REM LEAVE U
      NDERLINE MODE
900   P$ =  CHR$ (27) +  CHR$ (65): REM BEGIN F
      EEDING 6 LINES/INCH
910   R$ =  CHR$ (27) +  CHR$ (66): REM BEGIN F
      EEDING 8 LINES/INCH
920   S$ =  CHR$ (27) +  CHR$ (99): REM RESTORE
      STANDARD INSTRUCTIONS
930   X$ = "PR#1": REM CHANGE THIS IF YOUR CARD
      IS NOT IN SLOT 1
940   Z$ = "PR#0": REM CHANGE THIS TO "PR#3" IF
      YOU OPERATE FROM 80 COLS.
950   RETURN
960   PRINT  CHR$ (4);"PR#0": PRINT  CHR$ (7):
      HOME : REM CHANGE TO "PR#3" IF YOU OPER
      ATE FROM 80 COLS.
970   IF  PEEK (222) = 254 THEN  PRINT "INPUT
      ERROR.....PLEASE REENTER DATA.": PRINT :
      PRINT "PRESS <RETURN> ";: GET ANS$: HOME
      : GOTO 690
980   IF  PEEK (222) < > 254 THEN  PRINT "UND
      EFINED ERROR....": PRINT : PRINT "PRESS
      <RETURN> ";: GET ANS$: GOTO 130
```

END OF LISTING 1

```
                    KEY PERFECT 5.0
                        RUN ON
                    IWRITER.UTILITY
    ===================================
    CODE-5.0    LINE# - LINE#    CODE-4.0
    --------    -------------    --------
    F940EA72      10 -   100       7863
    9680D8C3     110 -   200       BBF0
    98CB6AAE     210 -   300       854A
    B348A0C2     310 -   400       A5A5
    DA789B96     410 -   500       4343
    CBCB4104     510 -   600       4DEA
    A18AB83C     610 -   700       8CC1
    A5998704     710 -   800       8343
    9D5DBCA1     810 -   900       BCF7
    93DBBBB8     910 -   980       CE40
    300BFEA0 = PROGRAM TOTAL =     0BDE
```

LISTING 2: SCRIBE.UTILITY

```
10    REM ......................
20    REM .   SCRIBE.UTILITY     .
30    REM .        BY            .
40    REM . TERRY M. SCHWARTZ    .
50    REM . COPYRIGHT (C) 1986   .
60    REM . BY MICROSPARC, INC   .
70    REM . CONCORD, MA  01742   .
80    REM ......................
90    GOSUB 730: REM INITIALIZE
100   TEXT : HOME : HTAB 11: PRINT "** SCRIBE.
      UTILITY **": PRINT : HTAB 11: PRINT "BY
      TERRY M. SCHWARTZ"
110   VTAB 22: PRINT "** COPYRIGHT 1986 BY MIC
      ROSPARC, INC. **"
120   VTAB 12: HTAB 3: PRINT "PLEASE BE SURE P
      RINTER IS TURNED ON.": PRINT : HTAB 14: PRINT
      "PRESS <RETURN> ";: GET RM$
130   HOME : HTAB 8: PRINT "PLEASE SELECT A FU
      NCTION:": PRINT
140   PRINT "<Q>-QUIT"
150   PRINT "<A>-PRINT DRAFT MODE"
160   PRINT "<B>-PRINT LETTER MODE"
170   PRINT "<C>-PRINT PICA TYPEFACE"
180   PRINT "<D>-PRINT ULTRA-CONDENSED TYPEFAC
      E"
190   PRINT "<E>-PRINT LOW DENSITY"
200   PRINT "<F>-PRINT NORMAL DENSITY"
210   PRINT "<G>-PRINT SLASHED ZEROS"
220   PRINT "<H>-BEGIN HEADLINE MODE"
230   PRINT "<I>-LEAVE HEADLINE MODE"
240   PRINT "<J>-BEGIN UNDERLINE MODE"
250   PRINT "<K>-LEAVE UNDERLINE MODE"
260   PRINT "<L>-BEGIN SUPERSCRIPT MODE"
270   PRINT "<M>-BEGIN SUBSCRIPT MODE"
280   PRINT "<N>-LEAVE SUPER/SUBSCRIPT MODE"
290   PRINT "<O>-BEGIN FEEDING SIX LINES PER I
      NCH"
300   PRINT "<P>-BEGIN FEEDING EIGHT LINES PER
       INCH"
310   PRINT "<R>-BEGIN FEEDING DOUBLE SPACE"
320   PRINT "<S>-CANCEL ALL INSTRUCTIONS (RESE
      T)"
330   PRINT "<T>-CHANGE LEFT MARGIN"
340   HTAB 5: VTAB 24: PRINT "SELECTION";: VTAB
      24: HTAB 2: GET PS$: PRINT PS$
350   IF  ASC (PS$) < 65 OR  ASC (PS$) > 84 THEN
      PRINT  CHR$ (7): GOTO 130: REM ASSURE O
      NLY LETTERS A-T ARE ACCEPTED
360   IF PS$ = "Q" THEN  POKE 216,0: HOME : END
      : REM CLEAR ONERR FLAG AND QUIT
370   IF PS$ = "T" THEN 610
380   PRINT D$ + X$: REM TURN PRINTER CARD ON
390   IF PS$ = "A" THEN  PRINT A$
400   IF PS$ = "B" THEN  PRINT B$
410   IF PS$ = "C" THEN  PRINT C$
420   IF PS$ = "D" THEN  PRINT DD$
430   IF PS$ = "E" THEN  PRINT E$
440   IF PS$ = "F" THEN  PRINT F$
450   IF PS$ = "G" THEN  PRINT G$
460   IF PS$ = "H" THEN  PRINT H$
470   IF PS$ = "I" THEN  PRINT I$
480   IF PS$ = "J" THEN  PRINT J$
490   IF PS$ = "K" THEN  PRINT K$
500   IF PS$ = "L" THEN  PRINT L$
510   IF PS$ = "M" THEN  PRINT M$
520   IF PS$ = "N" THEN  PRINT N$
530   IF PS$ = "O" THEN  PRINT O$
540   IF PS$ = "P" THEN  PRINT P$
550   IF PS$ = "R" THEN  PRINT R$
560   IF PS$ = "S" THEN  PRINT S$
570   PRINT D$ + Z$: GOTO 130: REM TURN PRINTE
      R CARD OFF. OUTPUT TO SCREEN AGAIN
580   REM
590   REM SET LEFT MARGIN
600   REM
610   HOME
620   VTAB 20: PRINT "(PLEASE PRESS <RETURN> A
      FTER ENTRY)"
630   VTAB 10: PRINT "HOW MANY SPACES FROM THE
      LEFT DO YOU"
640   PRINT "WANT TO BEGIN PRINTING? ";: INPUT
      "(000-095) ";LM$
```

```
650  IF LM$ < "000" OR LM$ > "095" THEN 680
660  IF LEN (LM$) < > 3 THEN 680
670  PRINT D$ + X$: PRINT CHR$ (27) + CHR$
     (76) + LM$: PRINT D$ + Z$: GOTO 130
680  PRINT CHR$ (7)
690  VTAB 12: PRINT "                ": VTAB 15
     : PRINT "YOU MUST ENTER 3 NOS. FROM 000
     TO 095": GOTO 620: REM 15 SPACES
700  REM ×××××××××××××
710  REM × INITIALIZE ×
720  REM ×××××××××××××
730  ONERR  GOTO 960
740  A$ =  CHR$ (27) +  CHR$ (77): REM SELECT
     DRAFT MODE
750  B$ =  CHR$ (27) +  CHR$ (109): REM SELECT
     LETTER MODE
760  C$ =  CHR$ (27) +  CHR$ (78): REM PICA FA
     CE
770  D$ =  CHR$ (4): REM CONTROL D
780  DD$ =  CHR$ (27) +  CHR$ (81): REM ULTRA-
     CONDENSED FACE
790  E$ =  CHR$ (27) +  CHR$ (68) +  CHR$ (0) +
     CHR$ (8): REM PRINT LOW DENSITY
800  F$ =  CHR$ (27) +  CHR$ (90) +  CHR$ (0) +
     CHR$ (8): REM PRINT NORMAL DENSITY
810  G$ =  CHR$ (27) +  CHR$ (68) +  CHR$ (0) +
     CHR$ (1) +  CHR$ (27) +  CHR$ (90) +  CHR$
     (128) +  CHR$ (0): REM SLASHED ZEROS
820  H$ =  CHR$ (14): REM BEGIN HEADLINE MODE
830  I$ =  CHR$ (15): REM LEAVE HEADLINE MODE
840  J$ =  CHR$ (27) +  CHR$ (88): REM BEGIN U
     NDERLINE MODE
850  K$ =  CHR$ (27) +  CHR$ (89): REM LEAVE U
     NDERLINE MODE
860  L$ =  CHR$ (27) +  CHR$ (120): REM BEGIN
     SUPERSCRIPT MODE
870  M$ =  CHR$ (27) +  CHR$ (121): REM BEGIN
     SUBSCRIPT MODE
880  N$ =  CHR$ (27) +  CHR$ (122): REM LEAVE
     SUPER/SUBSCRIPT MODE
890  O$ =  CHR$ (27) +  CHR$ (65): REM BEGIN F
     EEDING 6 LINES/INCH
900  P$ =  CHR$ (27) +  CHR$ (84) + "18": REM
     BEGIN FEEDING 8 LINES/INCH
910  R$ =  CHR$ (27) +  CHR$ (84) + "48": REM
     BEGIN DOUBLE SPACE
920  S$ =  CHR$ (27) +  CHR$ (99): REM RESTORE
     STANDARD INSTRUCTIONS
930  X$ = "PR#1": REM CHANGE THIS IF YOUR CARD
     IS NOT IN SLOT 1
940  Z$ = "PR#0": REM CHANGE THIS TO "PR#3" IF
     YOU OPERATE FROM 80 COLS.
950  RETURN
960  PRINT  CHR$ (4);"PR#0": PRINT  CHR$ (7):
     HOME : REM CHANGE TO "PR#3" IF YOU OPER
     ATE FROM 80 COLS.
970  IF  PEEK (222) = 254 THEN  PRINT "INPUT
     ERROR.....PLEASE REENTER DATA.": PRINT :
     PRINT "PRESS <RETURN> ";: GET ANS$: HOME
     : GOTO 690
980  IF  PEEK (222) < > 254 THEN  PRINT "UND
     EFINED ERROR....": PRINT : PRINT "PRESS
     <RETURN> ";: GET ANS$: GOTO 130
```

END OF LISTING 2

```
                KEY PERFECT 5.0
                    RUN ON
                SCRIBE.UTILITY
========================================
   CODE-5.0    LINE# - LINE#    CODE-4.0
   --------    -------------    --------
   3F366CBC      10 -    100      7255
   DF263F3A     110 -    200      AE72
   E24134E2     210 -    300      969B
   4E39ADE9     310 -    400      9EA5
   DA789B96     410 -    500      4343
   CBCB4104     510 -    600      4DEA
   A18AB83C     610 -    700      8CC1
   D5EC6180     710 -    800      87B0
   64F5AF74     810 -    900      C837
   BE98A6A5     910 -    980      C410
   297CE2BF = PROGRAM TOTAL =      0BD3
```