VOLUME 2

THE BEST OF FAMILY COMPUTING ALL NEW PROGRAMS

FOR
APPLE II SERIES
COMMODORE 64/128 (64 MODE)
IBM PC & COMPATIBLES

BY THE FAMILY COMPUTING TECHNICAL STAFF

VOLUME 2

THE BEST OF FAMILY COMPUTING ALL NEW PROGRAMS

BY THE FAMILY COMPUTING TECHNICAL STAFF



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Put your files in order with *Home Information Manager*, an electronic filing program that helps you keep files from collecting dust, and prints out a hard copy whenever you need one. *Home Information Manager* works just like a recipe box filled with index cards, and you can have as many "file boxes" as will fit on your disks.

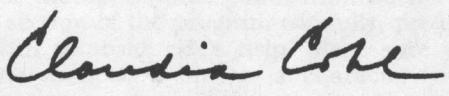
THE BEST OF THE BEST

Year after year, FAMILY COMPUTING's programs continue to be one of the most-responded-to sections of the magazine. While interest in our special, original programs never seems to wane, our readers' taste in programs does change.

Originally, holiday-related and seasonal programs were all the rage. The computer was such a novelty, especially at home, that the major impulse was to look for fun and for simple ways to make the computer perform. In addition, many of the computer brands then making their way into homes had limited memory, and their owners naturally put them to limited use.

Today's computer user at home is far more sophisticated, and the computers being bought for family use are dramatically more powerful. Families today use their computers for education, business, home management, and personal finance, as well as for entertainment. FAMILY COMPUTING's programs now reflect these broad interests.

The eight programs in this collection are for use on Apple II series, Commodore 64/128, and IBM PC and compatible computers. They cover all major applications, and we hope they'll add to your fun, learning, and productivity with your computer.



CLAUDIA COHL
EDITOR-IN-CHIEF

KEYS TO TYPING IN PROGRAMS

Before typing in a program . . .

1. Check to see if it will run on your computer under a version of BASIC you have available (the program heading will tell you what kind of BASIC and what special equipment, if any, the program requires).

2. If you have a disk drive, prepare a disk for saving the program once you're finished typing. Your Disk Operating System or disk drive manual will tell you how.

3. Get your version of BASIC fired up and ready. Read the introductory chapters of your BASIC manual carefully.

While typing, keep in mind that . . .

1. BASIC programs consist of "lines," each beginning with a line number and containing letters, numbers, and punctuation marks of various kinds. Each "line" may be composed of several "statements"—instructions that tell the computer to perform various actions—and may continue over several physical lines on the page and/or on your screen.

When typing in a BASIC program, forget considerations of format and get the *content* of what you type to match the *content* of what you see on the printed page. Regardless of how margins may break up a program "line," it hasn't ended until you reach another line number or the end of the program listing. Begin typing with the line number, then continue on, typing every letter, number, space, and punctuation mark in the order it appears, ignoring margins. Where the "line" ends, there will usually be some trailing spaces (which you don't have to type in), followed by the next line number at the left margin of the listing. At this point, all you have to do is press the RETURN or ENTER key to register the "line" in your computer's memory, then continue with the next "line."

2. All marks in a program listing—including every letter, number, space, and punctuation mark—*mean* something to your computer. Moreover, even symbols that look very similar to you mean completely different things to the machine. For example, it is important to distinguish between "1" (number one) and "l" (small letter "L"), or "O" (capital letter "O") and "0" (digit zero). Note that zeros are slashed in all program listings to facilitate discrimination.

It's important, therefore, to duplicate every line exactly when typing. Otherwise you can't expect the program to work as it should, or even work at all. Even upper- and lower-case is important on certain computers; the words "PRINT" and "print" may mean completely different things.

3. Each computer has its own commands and keys for program "editing," and your user's manual will tell you how to use them. Besides the editing keys, there are two sure-fire ways of correcting errors in a BASIC program line. If you're just typing along and make a mistake, press the DELETE key (the back arrow key on most systems) to rub out the offending character, and then continue typing. Once youve press RETURN or ENTER to register the line, mistakes are a little harder to fix. You must use the editing keys or type the line in again from the beginning (including the line number) and press RETURN or ENTER. The new line will replace the old one with the same line number in your computer's memory. This option is a little more work, but foolproof.

4. Periodically, during the course of a typing session, in between typing sessions, and always before attempting to run any program you've typed in, make sure to save the program on a disk or cassette. Until you do so, there's no permanent record of your work. Saving a program is usually as easy as typing SAVE "filename" (substitute a one-word name of your choice between the quotes), and pressing RETURN or ENTER. Check your manual for more precise instructions. Each computer system has its own quirks, and it's important to get things like program saving right the first time.

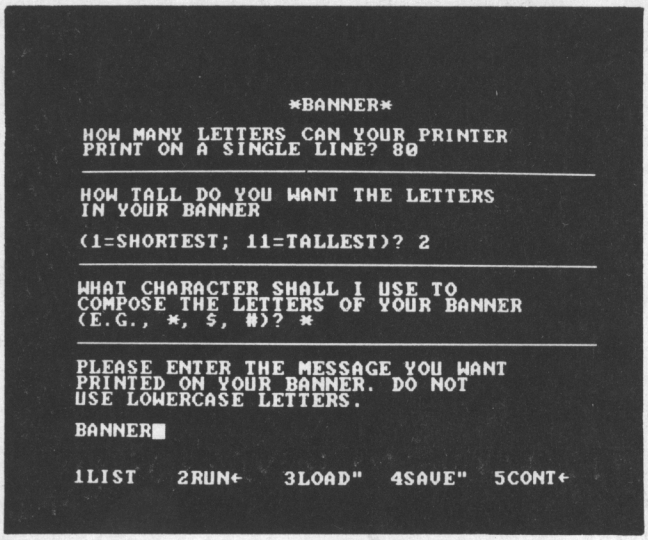
After you've finished . . .

1. Just type "RUN" and press RETURN or ENTER. If you've typed everything in correctly, the program should work as described.

2. Of course, it almost never does. Not even for seasoned programmers. Typing in a program and having it run right off the bat qualifies as a small miracle. Usually there are one or more mistakes, major or minor, that have slipped past your careful scrutiny, and are causing your computer to do unexpected things. Not to worry. Now comes what some people consider the most enjoyable part of the programming process: a procedure called "debugging"—finding and eliminating your mistakes. To review portions of your program on the computer screen, use the LIST command as explained in your BASIC manual. If you have a printer, you might find it more convenient to print out what you've typed (check your manual for the appropriate command). Look over each section of the program carefully, preferably with someone else's help. Make sure you haven't dropped a line or a character, miscounted spaces between a pair of quotes, mistaken a comma for a period, mixed up an "O" and a zero, or (most likely) all of the above. When you find a mistake, retype the offending line from the original listing, including the line number, and press RETURN or ENTER as explained above.

BANNER

By John Jainschigg



Want to send someone an unusual greeting? Design a grand welcome for a returning student or traveler? Or simply announce something in letters TOO BIG to be ignored? You can, with our *Banner* program, your computer, and your printer. *Banner* will print any brief message lengthwise on your printer in letters up to 8 inches high (or more, depending on carriage width).

When you're ready to print your banner, first make sure your printer is hooked up and turned on, then type RUN. The program will ask you how many characters your printer can print on a line (a standard printer prints 80 characters on a line, but 40 characters is also common). Check your printer manual if you're not sure, and input the required information. Then press RETURN or ENTER.

Next, the program will prompt you to tell it how big you want the letters of your banner to be. Select from among the range of sizes the computer offers.

Then the computer will ask what character you want used in composing your banner. Input a single character (e.g., *, $, #). The computer will draw the big letters in your banner using the character you have selected.

Finally, the program will prompt you to input your message. Use uppercase letters, numbers, spaces, and normal punctuation only. Lowercase, special, and graphic characters will appear as blanks in the completed banner. Note that on the Apple II series and C 64, putting a comma in your message will cause the part of the message following it to be ignored. To avoid wasting paper, it's best to experiment with short messages first. Have fun!

Apple II series/*Banner*

```
10 DIM A%(471),BIN%(6)
20 HOME
30 PRINT TAB(6);"GETTING READY ... PLEASE WAIT."
40 FOR I = 0 TO 464 STEP 8
50 FOR J = 0 TO 7
60 IF J = 0 OR J = 7 THEN A%(I+J) = 0:GOTO 80
70 READ A%(I+J)
80 NEXT J
90 NEXT I
100 A%(80) = 8
110 A%(87) = 8
120 A%(367) = 63
130 A%(447) = 63
140 FOR I = 0 TO 6
150 BIN%(I) = 2^I
160 NEXT I
170 HOME
180 PRINT TAB(17);"*BANNER*"
190 PRINT
200 PRINT "HOW MANY LETTERS CAN YOUR PRINTER"
210 INPUT "PRINT ON A SINGLE LINE?";CL
220 IF CL >= 7 AND CL <= 136 THEN 270
230 PRINT
```

```
240 PRINT "I DON'T THINK THAT'S RIGHT."
250 PRINT "PLEASE CHECK YOUR MANUAL."
260 GOTO 200
270 HOME
280 PRINT "HOW TALL DO YOU WANT THE LETTERS"
290 PRINT "IN YOUR BANNER"
300 PRINT
310 PRINT "(1=SHORTEST; ";INT(CL/7);"=TALLEST)";
320 INPUT CC
330 IF CC < 1 OR CC > INT(CL/7) THEN 300
340 HOME
350 PRINT "WHAT CHARACTER SHALL I USE TO"
360 PRINT "COMPOSE THE LETTERS OF YOUR BANNER"
370 INPUT "(E.G., *, $, #)?";CH$
380 IF CH$ = "" THEN 340
390 CH$ = LEFT$(CH$,1)
400 HOME
410 PRINT "PLEASE ENTER THE MESSAGE YOU WANT"
420 PRINT "PRINTED ON YOUR BANNER. DO NOT USE"
430 PRINT "LOWERCASE LETTERS OR COMMAS."
440 PRINT
450 INPUT MESSAGE$
460 PRINT
470 PRINT "WHEN YOUR PRINTER IS READY,"
480 PRINT "PLEASE PRESS ANY KEY.";
490 GET K$
500 PRINT:PRINT CHR$(4);"PR# 1"
510 FOR I = 1 TO LEN(MESSAGE$)
520 PNTR = (ASC(MID$(MESSAGE$,I,1))-32)*8
530 IF PNTR < 0 OR PNTR > 464 THEN PNTR = 0
540 FOR J = PNTR TO PNTR+7
550 LINE$ = ""
560 V = A%(J)
570 FOR K = 6 TO 0 STEP -1
580 IF V >= BIN%(K) THEN V = V-BIN%(K):C$ = CH$:GOTO 600
590 C$ = " "
600 FOR L = 1 TO CC
610 LINE$ = C$+LINE$
620 NEXT L
630 NEXT K
640 FOR K = 1 TO (CC+1)/2
650 PRINT LINE$
660 NEXT K
670 NEXT J
680 NEXT I
690 PRINT:PRINT CHR$(4);"PR# 0"
700 HOME
710 PRINT "YOUR BANNER IS FINISHED."
720 PRINT
730 PRINT "PRESS <P> TO PRINT ANOTHER BANNER"
740 PRINT "OR <E> TO END.";
750 GET K$
760 IF K$ = "P" OR K$ = CHR$(112) THEN 270
770 IF K$ <> "E" AND K$ <> CHR$(101) THEN 750
780 END
1000 DATA 0,0,0,0,0,0,0,0,0,61,61,0,0
1010 DATA 0,56,0,0,56,0,18,63,18,18,63,18
1020 DATA 18,58,107,107,46,36,51,54,12,24,51,35
1030 DATA 6,47,121,93,118,39,0,0,52,56,0,0
```

```
1040 DATA 0,0,30,63,51,33,33,51,63,30,0,0
1050 DATA 42,62,28,28,62,42,8,8,62,62,8,8
1060 DATA 0,0,13,14,0,0,8,8,8,8,8,8
1070 DATA 0,0,3,3,0,0,3,6,12,24,48,32
1080 DATA 30,63,37,41,63,30,1,17,63,63,1,1
1090 DATA 17,51,39,45,57,17,34,35,41,61,55,34
1100 DATA 6,14,26,63,63,2,58,59,41,41,47,38
1110 DATA 30,63,41,41,47,6,32,35,39,44,56,48
1120 DATA 22,63,41,41,63,22,16,57,41,43,62,28
1130 DATA 0,0,54,54,0,0,0,0,109,110,0,0
1140 DATA 0,8,28,54,99,65,18,18,18,18,18,18
1150 DATA 65,99,54,28,8,0,16,48,37,45,56,16
1160 DATA 30,63,33,45,61,29,15,31,50,50,31,15
1170 DATA 63,63,41,41,63,22,30,63,33,33,51,18
1180 DATA 63,63,33,51,30,12,63,63,41,41,41,33
1190 DATA 63,63,40,40,40,32,30,63,33,37,39,39
1200 DATA 63,63,8,8,63,63,33,33,63,63,33,33
1210 DATA 2,3,1,1,63,62,63,63,12,30,51,33
1220 DATA 63,63,1,1,1,1,63,63,24,12,24,63
1230 DATA 63,63,28,14,63,63,30,63,33,33,63,30
1240 DATA 63,63,36,36,60,24,30,63,33,34,63,29
1250 DATA 63,63,36,38,63,25,16,57,41,41,47,6
1260 DATA 32,32,63,63,32,32,63,63,1,1,63,63
1270 DATA 60,62,3,3,62,60,63,63,6,12,6,63
1280 DATA 51,63,12,12,63,51,48,56,15,15,56,48
1290 DATA 35,39,45,57,49,33
```

Commodore 64 & 128 (C 64 mode)/*Banner*

```
10 DIM A%(471),BIN%(6)
20 PRINT CHR$(147);
30 PRINT TAB(5);"GETTING READY ... PLEASE WAIT."
40 FOR I=0 TO 464 STEP 8
50 FOR J=0 TO 7
60 IF J=0 OR J=7 THEN A%(I+J)=0:GOTO 80
70 READ A%(I+J)
80 NEXT J
90 NEXT I
100 A%(80)=8
110 A%(87)=8
120 A%(367)=63
130 A%(447)=63
140 FOR I=0 TO 6
150 BIN%(I)=2^I
160 NEXT I
170 PRINT CHR$(147);
180 PRINT TAB(16);"*BANNER*"
190 PRINT
200 PRINT "HOW MANY LETTERS CAN YOUR PRINTER"
210 INPUT "PRINT ON A SINGLE LINE";CL
220 IF CL>=7 AND CL<=136 THEN 270
230 PRINT
240 PRINT "I DON'T THINK THAT'S RIGHT."
250 PRINT "PLEASE CHECK YOUR MANUAL."
260 GOTO 200
270 PRINT CHR$(147);
280 PRINT "HOW TALL DO YOU WANT THE LETTERS"
290 PRINT "IN YOUR BANNER"
300 PRINT
```

```
310 PRINT "(1=SHORTEST;";STR$(INT(CL/7));"=TALLEST)";
320 INPUT CC
330 IF CC<1 OR CC>INT(CL/7) THEN 300
340 PRINT CHR$(147);
350 PRINT "WHAT CHARACTER SHALL I USE TO"
360 PRINT "COMPOSE THE LETTERS OF YOUR BANNER"
370 PRINT
380 INPUT "(E.G., *, $, #)";CH$
390 IF CH$="" THEN 340
400 CH$=LEFT$(CH$,1)
410 PRINT CHR$(147);
420 PRINT "PLEASE ENTER THE MESSAGE YOU WANT"
430 PRINT "PRINTED ON YOUR BANNER. DO NOT USE"
440 PRINT "LOWERCASE LETTERS OR COMMAS."
450 PRINT
460 MESSAGE$=""
470 INPUT MESSAGE$
480 PRINT
490 PRINT "WHEN YOUR PRINTER IS READY,"
500 PRINT "PLEASE PRESS ANY KEY."
510 GET K$
520 IF K$="" THEN 510
530 OPEN 4,4
540 CMD4
550 FOR I=1 TO LEN(MESSAGE$)
560 PNTR=(ASC(MID$(MESSAGE$,I,1))-32)*8
570 IF PNTR<0 OR PNTR>464 THEN PNTR=0
580 FOR J=PNTR TO PNTR+7
590 LINE$=""
600 V=A%(J)
610 FOR K=6 TO 0 STEP -1
620 IF V>=BIN%(K) THEN V=V-BIN%(K):C$=CH$:GOTO 640
630 C$=" "
640 FOR L=1 TO CC
650 LINE$=C$+LINE$
660 NEXT L
670 NEXT K
680 FOR K=1 TO (CC+1)/2
690 PRINT LINE$
700 NEXT K
710 NEXT J
720 NEXT I
730 PRINT#4
740 CLOSE 4
750 PRINT CHR$(147);
760 PRINT "YOUR BANNER IS FINISHED."
770 PRINT
780 PRINT "PRESS <P> TO PRINT ANOTHER"
790 PRINT "BANNER OR <E> TO END."
800 GET K$
810 IF K$="P" THEN 270
820 IF K$<>"E" THEN 800
830 END
1000 DATA 0,0,0,0,0,0,0,0,61,61,0,0
1010 DATA 0,56,0,0,56,0,18,63,18,18,63,18
1020 DATA 18,58,107,107,46,36,51,54,12,24,51,35
1030 DATA 6,47,121,93,118,39,0,0,52,56,0,0
1040 DATA 0,0,30,63,51,33,33,51,63,30,0,0
1050 DATA 42,62,28,28,62,42,8,8,62,62,8,8
```

```
1060 DATA 0,0,13,14,0,0,8,8,8,8,8,8
1070 DATA 0,0,3,3,0,0,3,6,12,24,48,32
1080 DATA 30,63,37,41,63,30,1,17,63,63,1,1
1090 DATA 17,51,39,45,57,17,34,35,41,61,55,34
1100 DATA 6,14,26,63,63,2,58,59,41,41,47,38
1110 DATA 30,63,41,41,47,6,32,35,39,44,56,48
1120 DATA 22,63,41,41,63,22,16,57,41,43,62,28
1130 DATA 0,0,54,54,0,0,0,0,109,110,0,0
1140 DATA 0,8,28,54,99,65,18,18,18,18,18,18
1150 DATA 65,99,54,28,8,0,16,48,37,45,56,16
1160 DATA 30,63,33,45,61,29,15,31,50,50,31,15
1170 DATA 63,63,41,41,63,22,30,63,33,33,51,18
1180 DATA 63,63,33,51,30,12,63,63,41,41,41,33
1190 DATA 63,63,40,40,40,32,30,63,33,37,39,39
1200 DATA 63,63,8,8,63,63,33,33,63,63,33,33
1210 DATA 2,3,1,1,63,62,63,63,12,30,51,33
1220 DATA 63,63,1,1,1,1,63,63,24,12,24,63
1230 DATA 63,63,28,14,63,63,30,63,33,33,63,30
1240 DATA 63,63,36,36,60,24,30,63,33,34,63,29
1250 DATA 63,63,36,38,63,25,16,57,41,41,47,6
1260 DATA 32,32,63,63,32,32,63,63,1,1,63,63
1270 DATA 60,62,3,3,62,60,63,63,6,12,6,63
1280 DATA 51,63,12,12,63,51,48,56,15,15,56,48
1290 DATA 35,39,45,57,49,33
```

IBM PC & compatibles/*Banner*

This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter or Monochrome/Printer Card, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

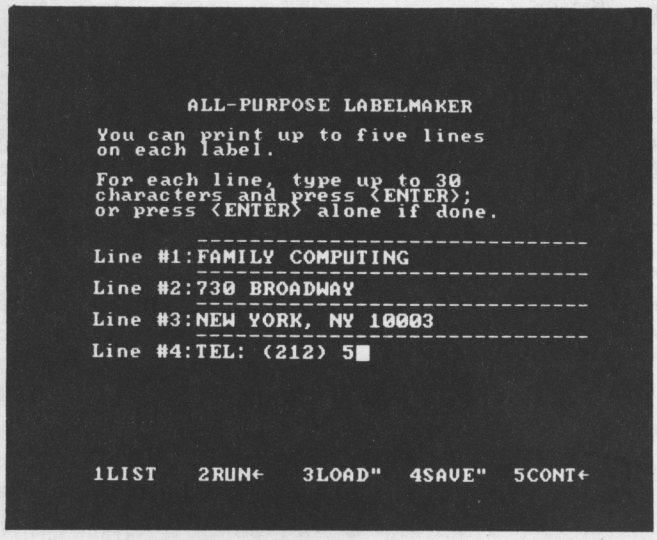
```
10 DIM A%(471),BIN%(6)
20 WIDTH 40
30 SCREEN 1,0
40 CLS
50 PRINT TAB(6);"GETTING READY ... PLEASE WAIT."
60 FOR I=0 TO 464 STEP 8
70 FOR J=0 TO 7
80 IF J=0 OR J=7 THEN A%(I+J)=0:GOTO 100
90 READ A%(I+J)
100 NEXT J
110 NEXT I
120 A%(80)=8
130 A%(87)=8
140 A%(367)=63
150 A%(447)=63
160 FOR I=0 TO 6
170 BIN%(I)=2^I
180 NEXT I
190 CLS
200 PRINT TAB(17);"*BANNER*"
210 PRINT
220 PRINT "HOW MANY LETTERS CAN YOUR PRINTER"
230 INPUT "PRINT ON A SINGLE LINE";CL
240 IF CL>=7 AND CL<=136 THEN 290
250 PRINT
260 PRINT "I DON'T THINK THAT'S RIGHT."
270 PRINT "PLEASE CHECK YOUR MANUAL."
280 GOTO 220
290 CLS
```

```
300 PRINT "HOW TALL DO YOU WANT THE LETTERS"
310 PRINT "IN YOUR BANNER"
320 PRINT
330 PRINT "(1=SHORTEST;";STR$(INT(CL/7));"=TALLEST)";
340 INPUT CC
350 IF CC<1 OR CC>INT(CL/7) THEN 320
360 CLS
370 PRINT "WHAT CHARACTER SHALL I USE TO"
380 PRINT "COMPOSE THE LETTERS OF YOUR BANNER"
390 INPUT "(E.G., *, $, #)";CH$
400 IF CH$="" THEN 360
410 CH$=LEFT$(CH$,1)
420 CLS
430 PRINT "PLEASE ENTER THE MESSAGE YOU WANT"
440 PRINT "PRINTED ON YOUR BANNER. DO NOT"
450 PRINT "USE LOWERCASE LETTERS."
460 PRINT
470 LINE INPUT MESSAGE$
480 PRINT
490 PRINT "WHEN YOUR PRINTER IS READY,"
500 PRINT "PLEASE PRESS ANY KEY."
510 K$=INKEY$
520 IF K$="" THEN 510
530 FOR I=1 TO LEN(MESSAGE$)
540 PNTR=(ASC(MID$(MESSAGE$,I,1))-32)*8
550 IF PNTR<0 OR PNTR>464 THEN PNTR=0
560 FOR J=PNTR TO PNTR+7
570 LN$=""
580 V=A%(J)
590 FOR K=6 TO 0 STEP -1
600 IF V<BIN%(K) THEN LN$=STRING$(CC,32)+LN$:GOTO 630
610 V=V-BIN%(K)
620 LN$=STRING$(CC,CH$)+LN$
630 NEXT K
640 FOR K=1 TO (CC+1)/2
650 LPRINT LN$
660 NEXT K
670 NEXT J
680 NEXT I
690 CLS
700 PRINT "YOUR BANNER IS FINISHED."
710 PRINT
720 PRINT "PRESS <P> TO PRINT ANOTHER"
730 PRINT "BANNER OR <E> TO END."
740 K$=INKEY$
750 IF K$="P" OR K$="p" THEN 290
760 IF K$<>"E" AND K$<>"e" THEN 740
770 END
1000 DATA 0,0,0,0,0,0,0,0,61,61,0,0
1010 DATA 0,56,0,0,56,0,18,63,18,18,63,18
1020 DATA 18,58,107,107,46,36,51,54,12,24,51,35
1030 DATA 6,47,121,93,118,39,0,0,52,56,0,0
1040 DATA 0,0,30,63,51,33,33,51,63,30,0,0
1050 DATA 42,62,28,28,62,42,8,8,62,62,8,8
1060 DATA 0,0,13,14,0,0,8,8,8,8,8,8
1070 DATA 0,0,3,3,0,0,3,6,12,24,48,32
1080 DATA 30,63,37,41,63,30,1,17,63,63,1,1
1090 DATA 17,51,39,45,57,17,34,35,41,61,55,34
1100 DATA 6,14,26,63,63,2,58,59,41,41,47,38
```

```
1110 DATA 30,63,41,41,47,6,32,35,39,44,56,48
1120 DATA 22,63,41,41,63,22,16,57,41,43,62,28
1130 DATA 0,0,54,54,0,0,0,0,109,110,0,0
1140 DATA 0,8,28,54,99,65,18,18,18,18,18,18
1150 DATA 65,99,54,28,8,0,16,48,37,45,56,16
1160 DATA 30,63,33,45,61,29,15,31,50,50,31,15
1170 DATA 63,63,41,41,63,22,30,63,33,33,51,18
1180 DATA 63,63,33,51,30,12,63,63,41,41,41,33
1190 DATA 63,63,40,40,40,32,30,63,33,37,39,39
1200 DATA 63,63,8,8,63,63,33,33,63,63,33,33
1210 DATA 2,3,1,1,63,62,63,63,12,30,51,33
1220 DATA 63,63,1,1,1,1,63,63,24,12,24,63
1230 DATA 63,63,28,14,63,63,30,63,33,33,63,30
1240 DATA 63,63,36,36,60,24,30,63,33,34,63,29
1250 DATA 63,63,36,38,63,25,16,57,41,41,47,6
1260 DATA 32,32,63,63,32,32,63,63,1,1,63,63
1270 DATA 60,62,3,3,62,60,63,63,6,12,6,63
1280 DATA 51,63,12,12,63,51,48,56,15,15,56,48
1290 DATA 35,39,45,57,49,33
```

ALL-PURPOSE LABELMAKER

By Joey Latimer



All-Purpose Labelmaker can handle most of your spur-of-the-moment labelmaking needs quickly and easily. To use *All-Purpose Labelmaker*, you'll need a printer and continuous-form labels that are 3.5 inches wide by 1 inch long.

Start by typing *All-Purpose Labelmaker* into your computer, and SAVEing it on disk or cassette. Before you risk expensive labels, we advise you to test the program thoroughly using regular paper.

When you type RUN, *All-Purpose Labelmaker* will prompt you to enter the text you want printed on your label. Enter up to five lines of text, each containing up to 30 characters (letters, numbers, spaces, and punctuation). Unless you have an IBM PC or compatible, don't use commas (,) or colons (:) when entering label text. Press RETURN or ENTER after typing in each line. If you want your label to have fewer than five lines of text, just press RETURN or ENTER alone to let the computer know you're done.

Next, you'll be asked how you want your label printed. Press the C key to center text between your label's margins, or the L key to align text with the label's left margin. Finally, make sure your printer is ready and press any key to begin printing.

If the program seems to be working correctly, replace the standard paper with labels and try again. You may have to adjust the position of the labels in your printer for the best alignment.

Apple II series/*All-Purpose Labelmaker*

```
10 DIM L$(5)
20 HOME
30 PRINT TAB(9);"ALL-PURPOSE LABELMAKER"
40 PRINT
50 PRINT "YOU CAN PRINT UP TO FIVE LINES"
60 PRINT "ON EACH LABEL."
70 PRINT
80 PRINT "FOR EACH LINE, TYPE UP TO 30"
90 PRINT "CHARACTERS AND PRESS <RETURN>;"
100 PRINT "OR JUST PRESS <RETURN> WHEN DONE."
110 PRINT
120 LN = 1
130 PRINT TAB(10);"------------------------------"
140 PRINT "LINE #";LN;
150 INPUT ": ";L$(LN)
160 IF L$(LN) = "" THEN 250
170 IF LEN(L$(LN)) <= 30 THEN 230
180 PRINT
190 PRINT "THAT LINE WAS TOO LONG."
200 PRINT "PLEASE TRY AGAIN."
210 PRINT
220 GOTO 130
230 LN = LN+1
240 IF LN < 6 THEN 130
250 HOME
```

```
260 PRINT "DO YOU WANT THIS LABEL"
270 PRINT
280 PRINT "<C>ENTERED, OR"
290 PRINT "<L>EFT-JUSTIFIED?";
300 GET CN$
310 IF CN$ <> "C" AND CN$ <> CHR$(99) AND CN$ <> "L" AND CN$ <> CHR$(108) THEN 3
00
320 PRINT
330 PRINT
340 PRINT "WHEN YOUR PRINTER IS READY,"
350 PRINT "PLEASE PRESS ANY KEY.";
360 GET K$
370 PRINT
380 PRINT CHR$(4);"PR#1"
390 FOR I = 1 TO 6
400 IF I >= LN THEN PRINT:GOTO 430
410 IF CN$ = "C" AND CN$ <> CHR$(99) THEN PRINT SPC(15-LEN(L$(I))/2);
420 PRINT L$(I)
430 NEXT I
440 PRINT CHR$(4);"PR#0"
450 HOME
460 PRINT "WOULD YOU LIKE TO"
470 PRINT
480 PRINT "<P>RINT THIS LABEL AGAIN,"
490 PRINT "<C>OMPOSE ANOTHER LABEL, OR"
500 PRINT "<Q>UIT?";
510 GET K$
520 IF K$ = "P" OR K$ = CHR$(112) THEN 250
530 IF K$ = "C" OR K$ = CHR$(99) THEN 20
540 IF K$ <> "Q" AND K$ <> CHR$(113) THEN 510
```

Commodore 64 & 128 (C 64 mode)/*All-Purpose Labelmaker*

```
10 DIM L$(5)
20 PRINT CHR$(147);
30 PRINT TAB(9);"ALL-PURPOSE LABELMAKER"
40 PRINT
50 PRINT "YOU CAN PRINT UP TO FIVE LINES"
60 PRINT "ON EACH LABEL."
70 PRINT
80 PRINT "FOR EACH LINE, TYPE UP TO 30"
90 PRINT "CHARACTERS AND PRESS <RETURN>;"
100 PRINT "OR JUST PRESS <RETURN> WHEN DONE."
110 PRINT
120 LN=1
130 PRINT TAB(9);"------------------------------"
140 PRINT "LINE #";CHR$(LN+48);
150 L$(LN)="":INPUT L$(LN)
160 IF L$(LN)="" THEN 250
170 IF LEN(L$(LN))<=30 THEN 230
180 PRINT
190 PRINT "THAT LINE WAS TOO LONG."
200 PRINT "PLEASE TRY AGAIN."
210 PRINT
220 GOTO 130
230 LN=LN+1
240 IF LN<6 THEN 130
250 PRINT CHR$(147);
```

```
26Ø PRINT "DO YOU WANT THIS LABEL"
27Ø PRINT
28Ø PRINT "<C>ENTERED, OR"
29Ø PRINT "<L>EFT-JUSTIFIED?"
3ØØ GET CN$
31Ø IF CN$<>"C" AND CN$<>"L" THEN 3ØØ
32Ø PRINT
33Ø PRINT "WHEN YOUR PRINTER IS READY,"
34Ø PRINT "PLEASE PRESS ANY KEY."
35Ø GET K$
36Ø IF K$="" THEN 35Ø
37Ø OPEN 4,4
38Ø FOR I=1 TO 5
39Ø IF I>=LN THEN PRINT#4:GOTO 42Ø
4ØØ IF CN$="C" THEN PRINT#4,SPC(15-LEN(L$(I))/2);
41Ø PRINT#4,L$(I)
42Ø NEXT I
43Ø PRINT#4
44Ø CLOSE 4
45Ø PRINT CHR$(147);
46Ø PRINT "WOULD YOU LIKE TO"
47Ø PRINT
48Ø PRINT "<P>RINT THIS LABEL AGAIN,"
49Ø PRINT "<C>OMPOSE ANOTHER LABEL, OR"
5ØØ PRINT "<Q>UIT?"
51Ø GET K$
52Ø IF K$="P" THEN 25Ø
53Ø IF K$="C" THEN 2Ø
54Ø IF K$<>"Q" THEN 51Ø
```

IBM PC & compatibles/*All-Purpose Labelmaker*

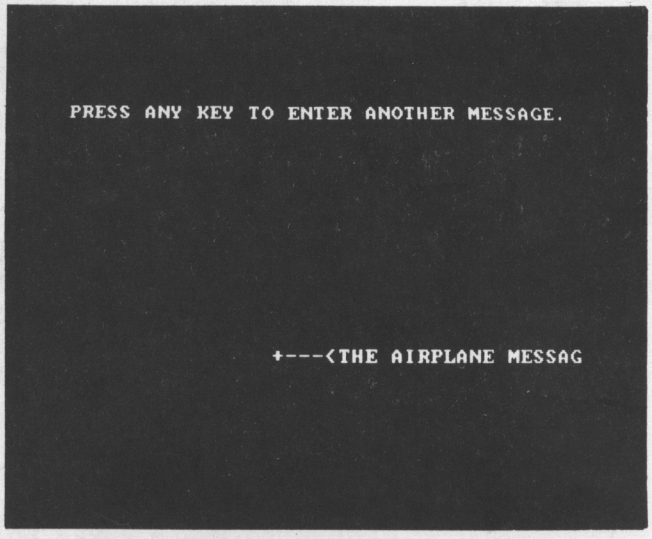
This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter or Monochrome/Printer Card, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; Tandy 1000 w/GW BASIC 2.02 version 01.01.00.

```
1Ø DIM L$(5)
2Ø CLS
3Ø PRINT TAB(8);"ALL-PURPOSE LABELMAKER"
4Ø PRINT
5Ø PRINT "You can print up to five lines"
6Ø PRINT "on each label."
7Ø PRINT
8Ø PRINT "For each line, type up to 3Ø"
9Ø PRINT "characters and press <ENTER>;"
1ØØ PRINT "or press <ENTER> alone if done."
11Ø PRINT
12Ø LN=1
13Ø PRINT TAB(9);STRING$(3Ø,"-")
14Ø PRINT "Line #";CHR$(LN+48);":";
15Ø LINE INPUT L$(LN)
16Ø IF L$(LN)="" THEN 25Ø
17Ø IF LEN(L$(LN))<=3Ø THEN 23Ø
18Ø PRINT
19Ø PRINT "That line was too long."
2ØØ PRINT "Please try again."
21Ø PRINT
22Ø GOTO 13Ø
23Ø LN=LN+1
24Ø IF LN<6 THEN 13Ø
```

```
250 CLS
260 PRINT "Do you want this label"
270 PRINT
280 PRINT "<c>entered, or"
290 PRINT "<l>eft-justified?"
300 CN$=INKEY$
310 IF CN$<>"C" AND CN$<>"c" AND CN$<>"L" AND CN$<>"l" THEN 300
320 PRINT
330 PRINT "When your printer is ready,"
340 PRINT "please press any key."
350 K$=INKEY$
360 IF K$="" THEN 350
370 FOR I=1 TO 6
380 IF I>=LN THEN LPRINT:GOTO 410
390 IF CN$="C" OR CN$="c" THEN LPRINT SPC(15-LEN(L$(I))/2);
400 LPRINT L$(I)
410 NEXT I
420 CLS
430 PRINT "Would you like to"
440 PRINT
450 PRINT "<p>rint this label again,"
460 PRINT "<c>ompose another label, or"
470 PRINT "<q>uit?"
480 K$=INKEY$
490 IF K$="P" OR K$="p" THEN 250
500 IF K$="C" OR K$="c" THEN 20
510 IF K$<>"Q" AND K$<>"q" THEN 480
```

AIRPLANE MESSAGE SERVICE

By Joey Latimer



I'm sure most of you have been at a ball game or at the beach, and seen an airplane zip by, pulling a message banner. The idea is that if the plane flies by often enough, everyone in the crowd is sure to see the message at least once.

With that in mind, we've designed this program for those of you who have a hard time synchronizing communications with other members of your family. It's called *Airplane Message*, and parents—it is guaranteed to get through to kids!

PROGRAM NOTES

Airplane Message demonstrates "horizontal scrolling"—a technique for moving images across a computer screen. To understand how scrolling works, visualize a long strip of parchment wrapped around two rollers. If you hold the rollers some distance apart and turn them, anything printed on the paper will move by as the paper unwinds off one roller and winds onto the other.

In computer terms, scrolling involves setting up the equivalent of a strip of parchment (a long string of characters containing a message, bounded at each end by a group of blank spaces) and printing incremental sections of this string on the screen so that the message seems to move from one side to the other.

Let's look at how *Airplane Message* sets up its "parchment." First, you are asked to type in a brief message. Type in your message (no commas) and press RETURN or ENTER. The letters you type are taken in by an INPUT statement, and placed in a *string* variable, M$.

Next, the airplane shape (a "+" sign), the tow rope (three dashes), and the banner borders ("<" and ">") are added to your message. This forms a new string called P$ that looks like this:

+---<YOUR MESSAGE>

Then a number of blank spaces equal to the number of letters that can fit on one line of your computer's screen are added to each end of P$. For example, if your screen is 32 characters wide, P$ ends up looking something like this:

(*32 spaces*)+---<YOUR MESSAGE>(*32 spaces*)

Now P$ is ready for scrolling. A variable called T is set to point to the first character of P$. With MID$, the program selects a screen-wide section of P$ starting at point T, and prints this section on a predetermined screen line. Then the value of T is increased to 2. The program selects a new section of P$ starting at the second character, and prints this on top of the old one. The program repeats the process, each time selecting and printing a substring from a little further down the line, making the airplane message move across your screen.

If you want a challenge, see if you can figure out how to do the following.

- Modify *Airplane Message* so that the plane flies from left to right, instead of right to left (easy).
- Change the program so that the plane flies on a diagonal, or up and down (harder).
- Use the scrolling technique to make a program that works like a movie marquee: one that makes a message move all the way around the borders of your screen (very hard!).

Apple II series/*Airplane Message*

```
10 HOME
20 PRINT TAB(3);"+---<THE AIRPLANE MESSAGE SERVICE>"
30 PRINT
```

```
40 PRINT "TYPE IN A BRIEF MESSAGE;"
50 PRINT "THEN PRESS <RETURN>."
60 PRINT
70 INPUT "";M$
80 IF LEN(M$) < 170 THEN 110
90 PRINT "YOUR MESSAGE IS TOO LONG. TRY AGAIN."
100 GOTO 30
110 HOME
120 P$ = "+---<"+M$+">"
130 FOR I = 1 TO 40
140 P$ = " "+P$+" "
150 NEXT I
160 PRINT "PRESS ANY KEY TO ENTER ANOTHER MESSAGE."
170 V = INT(RND(1)*22)+2
180 T = 1
190 VTAB V
200 PRINT MID$(P$,T,40);
209 REM --SEE IF A KEY HAS BEEN PRESSED--
210 IF PEEK(-16384) < 128 THEN 240
219 REM --PREPARE FOR MORE INPUT--
220 POKE -16368,0
230 GOTO 10
240 IF T = LEN(P$)-39 THEN 290
250 T = T+1
260 FOR D = 1 TO 50
270 NEXT D
280 GOTO 190
290 FOR D = 1 TO 1000
300 NEXT D
310 GOTO 170
```

Commodore 64 & 128 (C 64 mode)/*Airplane Message*

```
10 PRINT CHR$(147);
20 PRINT TAB(3);"+--<THE AIRPLANE MESSAGE SERVICE>"
30 PRINT
40 PRINT "TYPE IN A BRIEF MESSAGE;"
50 PRINT "THEN PRESS <RETURN>."
60 PRINT
70 INPUT M$
80 PRINT CHR$(147);
90 P$="+---<"+M$+">"
100 FOR I=1 TO 40
110 P$=" "+P$+" "
120 NEXT I
130 PRINT "PRESS ANY KEY TO ENTER ANOTHER MESSAGE."
140 V=INT(RND(1)*23)
150 T=1
160 PRINT CHR$(19);
170 POKE 214,V:PRINT
180 PRINT MID$(P$,T,40);
190 GET K$
200 IF K$<>"" THEN 10
210 IF T=LEN(P$)-39 THEN 260
220 T=T+1
230 FOR D=1 TO 50
240 NEXT D
250 GOTO 170
```

```
26Ø FOR D=1 TO 1ØØØ
27Ø NEXT D
28Ø GOTO 14Ø
```

IBM PC & compatibles/*Airplane Message*

This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter or Monochrome/Printer Card, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

```
9 REM --CHANGE LINE 1Ø TO WL=8Ø FOR 8Ø-COLUMN SCREEN--
1Ø WL=4Ø
2Ø WIDTH WL:KEY OFF
3Ø CLS
4Ø PRINT TAB((WL/2)-17);"+---<THE AIRPLANE MESSAGE SERVICE>"
5Ø PRINT
6Ø PRINT "TYPE IN A BRIEF MESSAGE;"
7Ø PRINT "THEN PRESS <ENTER>."
8Ø PRINT
9Ø LINE INPUT M$
1ØØ IF LEN(M$)<25Ø-WL*2 THEN 13Ø
11Ø PRINT "YOUR MESSAGE IS TOO LONG. TRY AGAIN."
12Ø GOTO 5Ø
13Ø CLS
14Ø P$=STRING$(WL,32)+"+---<"+M$+">"+STRING$(WL,32)
15Ø PRINT TAB((WL/2)-19);"PRESS ANY KEY TO ENTER ANOTHER MESSAGE."
16Ø V=INT(RND*22)+2
17Ø T=1
18Ø LOCATE V,1:PRINT MID$(P$,T,WL);
19Ø IF INKEY$<>"" THEN 3Ø
2ØØ IF T=LEN(P$)-(WL-1) THEN 23Ø
21Ø T=T+1
22Ø GOTO 18Ø
23Ø FOR D=1 TO 1ØØØ
24Ø NEXT D
25Ø GOTO 16Ø
```

BAR GRAPH

By John Jainschigg

Almost nothing's as useful as a graph when you're trying to compare data or spot a trend. *Bar Graph* makes it easy to use your computer to graph small amounts of data: bills, stock prices, heights or weights, or even the way your moods shift from day to day!

When you RUN the program, you will be asked to enter a name and a value for each item you want to graph. For example, if you're graphing your 1984 phone bills, you might enter JANUARY, JAN, or 1/84 as the name of your first item. If your January bill was for $95.75, you would enter 95.75 as this item's value. Note that dollar signs, unit symbols (i.e., lbs., oz.), etc. must be omitted when entering values. Note also that *Bar Graph* will not accept values less than zero.

When you're finished entering items, just press RETURN or ENTER when asked for the name of the next item. The program will ask you to supply a title for the graph; then it will draw the graph on the screen, using the name you've supplied for each item to label the corresponding bar. The program will print only as much of a label as will fit on the screen . . . don't be surprised if WEDNESDAY comes out as WEDN.

PROGRAM NOTES

Bar Graph is a simple program that graphs a body of data by scaling its values to fit in the limited space of your computer's screen. A general-purpose graphing program should be able to handle values of any size. For this reason, it can't simply draw a five-block bar to represent the value 5; a 10-block bar for 10, and so on, as this would restrict the program to handling only numbers in a very limited range.

The answer to this problem is *scaling*: converting a group of values to numbers that will fit nicely on the screen while maintaining their proportions to one another. *Bar Graph* does this by finding the largest value in a group of items and determining what fraction of this value each other value represents. It then multiplies this fraction by the maximum number of graphic units that can be displayed to determine the number of units in that value's bar. For example, if the largest value you input is 5 and your screen has room for a bar 20 units high, the value 5 will be drawn as a 2 unit bar, and the value 3 as a bar 3/5 as high, or $3 \times 20 = 12$ units high.

It might be interesting to modify *Bar Graph* to work with a printer, or add routines to save a group of values to tape or disk for later retrieval. Or you could try redesigning the program to work in graphic modes or higher resolution, improving its ability to depict small differences between values over a broader range.

Apple II series/*Bar Graph*

```
10 DIM A(37),L$(37)
20 FOR J = 1 TO 38:B$ = B$+CHR$(32):NEXT J
30 M = 0:I = 1
39 REM --GET NAME OF ITEM--
40 GOSUB 1000:IF I <> 20 THEN 80
50 VTAB 3:PRINT CHR$(7);"WARNING! IF YOU ADD MORE ITEMS, THERE"
60 PRINT TAB(8);"WILL BE NO SPACE BETWEEN THE"
70 PRINT TAB(12);"BARS IN YOUR GRAPH."
80 VTAB 7:PRINT "PLEASE ENTER THE NAME OF ITEM #";I;"."
90 IF I = 1 THEN 120
100 PRINT "(JUST PRESS <RETURN> IF"
110 PRINT "YOU HAVE NO MORE ITEMS.)"
120 PRINT:INPUT "";L$(I)
130 IF L$(I) <> "" THEN 180
140 IF I = 1 THEN 40
150 VTAB 12:PRINT "ARE YOU FINISHED ENTERING ITEMS?";
160 GET K$:IF K$ = "Y" THEN 230
170 GOTO 40
179 REM --GET VALUE FOR THAT ITEM--
180 GOSUB 1000:VTAB 7:PRINT "WHAT IS THE VALUE FOR"
190 PRINT "ITEM #";I;" (";L$(I);")";
```

```
200 INPUT A(I):IF A(I) < 0 THEN 180
210 IF M < A(I) THEN M = A(I)
220 I = I+1:IF I < 38 THEN 40
230 I = I-1:IF M = 0 THEN M = 1
240 HOME:PRINT "WHAT IS THE TITLE OF YOUR GRAPH?"
250 PRINT:INPUT "";T$:IF T$ = "" THEN 240
260 IF LEN(T$) > 38 THEN T$ = LEFT$(T$,38)
270 C = INT(21-(INT(38/I)*I)/2)
279 REM --DRAW GRAPH--
280 HOME:PRINT TAB(C-1);M
290 FOR J = 1 TO 18:PRINT TAB(C-1);CHR$(124):NEXT J
300 PRINT TAB(C-1);"0"
310 LW = INT(38/I)-(I < 20)
320 FOR J = 1 TO I:VTAB 21:HTAB C
330 IF LEN(L$(J)) >= LW THEN PRINT LEFT$(L$(J),LW):GOTO 350
340 PRINT L$(J)
350 CH = INT(A(J)/M*18+0.5):IF CH < 1 THEN 400
360 FOR K = 1 TO CH
370 VTAB 20-K:HTAB C
380 INVERSE:PRINT LEFT$(B$,LW):NORMAL
390 NEXT K
400 C = C+INT(38/I):NEXT J
410 VTAB 22:PRINT TAB(20-LEN(T$)/2);
420 INVERSE:PRINT T$:NORMAL:PRINT
430 PRINT TAB(6);"(PRESS ANY KEY TO CONTINUE.)";
440 GET K$:HOME
450 PRINT "PRESS <D> TO DRAW ANOTHER GRAPH"
460 PRINT "OR <Q> TO QUIT.";
470 GET K$:IF K$ = "Q" THEN END
480 IF K$ = "D" THEN 30
490 GOTO 470
999 REM --SET UP SCREEN FOR INPUT--
1000 HOME:PRINT TAB(16);"*BAR GRAPH*"
1010 VTAB 22:HTAB 3:INVERSE
1020 PRINT "YOU HAVE ROOM LEFT FOR ";
1030 FLASH:PRINT 38-I;
1040 INVERSE:PRINT " ITEM(S)."
1050 NORMAL:RETURN
```

Commodore 64 & 128 (C 64 mode)/*Bar Graph*

```
10 DIM A(37),L$(37),KO(7)
20 FOR J=1 TO 7:READ KO(J):NEXT J
30 FOR J=1 TO 38:B$=B$+CHR$(32):NEXT J
40 M=0:I=1:Z=1
49 REM --SET BORDER AND SCREEN COLORS--
50 POKE 53280,0:POKE 53281,0
59 REM --GET NAME OF ITEM--
60 GOSUB 1000:IF I<>20 THEN 100
70 POKE 214,3:PRINT:PRINT CHR$(28);"WARNING! IF YOU ADD MORE ITEMS, THERE"
80 PRINT TAB(7);"WILL BE NO SPACE BETWEEN THE"
90 PRINT TAB(11);"BARS IN YOUR GRAPH."
99 REM --"POKE 214,7" PUTS CURSOR ON LINE 7+1--
100 POKE 214,7:PRINT
110 PRINT CHR$(5);"PLEASE ENTER THE NAME OF ITEM #";STR$(I);"."
120 IF I=1 THEN 150
130 PRINT "(JUST PRESS <RETURN> IF"
140 PRINT "YOU HAVE NO MORE ITEMS.)"
```

```
150 PRINT:L$(I)="":INPUT L$(I)
160 IF L$(I)<>"" THEN 220
170 IF I=1 THEN 60
180 POKE 214,13:PRINT:PRINT CHR$(158);"ARE YOU FINISHED ENTERING ITEMS?";
190 GET K$:IF K$="" THEN 190
200 IF K$="Y" THEN 280
210 GOTO 60
219 REM --GET VALUE FOR THAT ITEM--
220 GOSUB 1000:POKE 214,7:PRINT
230 PRINT CHR$(5);"WHAT IS THE VALUE FOR"
240 PRINT "ITEM #";STR$(I);" (";L$(I);")";
250 A(I)=0:INPUT A(I):IF A(I)<0 THEN 220
260 IF M<A(I) THEN M=A(I)
270 I=I+1:IF I<38 THEN 60
280 I=I-1:IF M=0 THEN M=1
290 PRINT CHR$(147);
300 PRINT CHR$(5);"WHAT IS THE TITLE OF YOUR GRAPH?"
310 PRINT:T$="":INPUT T$:IF T$="" THEN 290
320 IF LEN(T$)>38 THEN T$=LEFT$(T$,38)
330 C=INT(21-(INT(38/I)*I)/2)
339 REM --DRAW GRAPH--
340 PRINT CHR$(147);CHR$(158):PRINT
350 PRINT TAB(C-1);CHR$(157);M
360 FOR J=1 TO 18:PRINT TAB(C-1);CHR$(125):NEXT J
370 PRINT TAB(C-1);"0"
380 LW=INT(38/I)+(I<20)
390 FOR J=1 TO I
400 PRINT CHR$(KO(Z))
410 POKE 214,20:PRINT:PRINT TAB(C);
420 IF LEN(L$(J))>=LW THEN PRINT LEFT$(L$(J),LW):GOTO 440
430 PRINT L$(J)
440 CH=INT(A(J)/M*18+0.5):IF CH<1 THEN 500
450 FOR K=1 TO CH
459 REM --"POKE 211,C" PUTS CURSOR IN COLUMN C+1--
460 POKE 214,20-K:PRINT:POKE 211,C
470 PRINT CHR$(18);LEFT$(B$,LW);CHR$(146)
480 NEXT K
490 Z=Z+1:IF Z=8 THEN Z=1
500 C=C+INT(38/I):NEXT J
510 POKE 214,21:PRINT
520 PRINT CHR$(5);TAB(20-LEN(T$)/2);CHR$(18);T$;CHR$(146)
530 PRINT:PRINT TAB(6);"(PRESS ANY KEY TO CONTINUE.)";
540 GET K$:IF K$="" THEN 540
550 PRINT CHR$(147);"PRESS <D> TO DRAW ANOTHER GRAPH"
560 PRINT "OR <Q> TO QUIT."
570 GET K$:IF K$="" THEN 570
580 IF K$="Q" THEN END
590 IF K$="D" THEN 40
600 GOTO 570
999 REM --SET UP SCREEN FOR INPUT--
1000 PRINT CHR$(147);CHR$(153);TAB(15);"*BAR GRAPH*"
1010 POKE 214,20:PRINT
1020 PRINT CHR$(18);CHR$(28);
1030 PRINT TAB(2);" YOU HAVE ROOM LEFT FOR ";
1040 PRINT CHR$(146);38-I;
1050 PRINT CHR$(18);" ITEM(S).";CHR$(146)
1060 RETURN
1999 REM --HERE ARE COLORS OF BARS--
2000 DATA 28,30,31,129,156,158,159
```

IBM PC & compatibles/*Bar Graph*

This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

```
10 WIDTH 40:KEY OFF:SCREEN 0,1
20 DIM A(37),L$(37)
30 M=0:I=1:Z=1
39 REM --GET NAME OF ITEM--
40 GOSUB 1000:IF I<>20 THEN 80
50 LOCATE 3,1:PRINT "WARNING! IF YOU ADD MORE ITEMS, THERE"
60 PRINT TAB(6);"WILL BE NO SPACE BETWEEN THE"
70 PRINT TAB(11);"BARS IN YOUR GRAPH."
80 LOCATE 7,1:PRINT "PLEASE ENTER THE NAME OF ITEM";STR$(I);"."
90 IF I=1 THEN 120
100 PRINT "(JUST PRESS <ENTER> IF"
110 PRINT "YOU HAVE NO MORE ITEMS.)"
120 PRINT:INPUT L$(I)
130 IF L$(I)<>"" THEN 180
140 IF I=1 THEN 40
150 LOCATE 11,1:PRINT "ARE YOU FINISHED ENTERING ITEMS?";
160 K$=INKEY$:IF K$="" THEN 160
170 IF K$="Y" OR K$="y" THEN 230 ELSE 40
179 REM --GET VALUE FOR THAT ITEM--
180 GOSUB 1000:LOCATE 7,1:PRINT "WHAT IS THE VALUE FOR"
190 PRINT "ITEM";I;"(";L$(I);")";
200 INPUT A(I):IF A(I)<0 THEN 180
210 IF M<A(I) THEN M=A(I)
220 I=I+1:IF I<38 THEN 40
230 I=I-1:IF M=0 THEN M=1
240 CLS:PRINT "WHAT IS THE TITLE OF YOUR GRAPH?":PRINT
250 INPUT T$:IF T$="" THEN 240
260 IF LEN(T$)>38 THEN T$=LEFT$(T$,38)
270 C=INT(21-(INT(38/I)*I)/2)
279 REM --DRAW GRAPH--
280 CLS:PRINT TAB(C-1);RIGHT$(STR$(M),LEN(STR$(M))-1)
290 FOR J=1 TO 18:PRINT TAB(C-1);CHR$(124):NEXT J
300 PRINT TAB(C-1);"0"
310 LW=INT(38/I)+(I<20)
320 FOR J=1 TO I:LOCATE 21,C:COLOR Z
330 IF LEN(L$(J))>=LW THEN PRINT LEFT$(L$(J),LW) ELSE PRINT L$(J)
340 CH=INT(A(J)/M*18+.5)
350 FOR K=1 TO CH
360 LOCATE 20-K,C:PRINT STRING$(LW,219)
370 NEXT K
380 Z=Z+1:IF Z=6 THEN Z=1
390 C=C+INT(38/I):NEXT J
400 COLOR 7:LOCATE 22,20-LEN(T$)/2:PRINT T$
410 PRINT:PRINT TAB(7);"(PRESS ANY KEY TO CONTINUE.)";
420 K$=INKEY$:IF K$="" THEN 420 ELSE CLS
430 PRINT "PRESS <D> TO DRAW ANOTHER GRAPH"
440 PRINT "OR <Q> TO QUIT.";
450 K$=INKEY$:IF K$="" THEN 450
460 IF K$="Q" OR K$="q" THEN END
470 IF K$="D" OR K$="d" THEN 30 ELSE 450
999 REM --SET UP SCREEN FOR INPUT--
1000 CLS:PRINT TAB(14);"*BAR GRAPH*"
1010 LOCATE 22,3:PRINT "YOU HAVE ROOM LEFT FOR";
1011 COLOR 23:PRINT 38-I;:COLOR 7:PRINT "ITEM(S)."
1020 RETURN
```

MAZE CREATOR

By Steven C.M. Chen

Just about everybody likes to solve mazes. Whether it's the "map" of an adventure game, the twists and turns of a hedge maze in an English formal garden, the labyrinth that held the mythical Minotaur in ancient Crete, or the pencil-and-paper kind, mazes seem to have an eternal fascination. The main problem for devotees is finding enough new territory to conquer; once you've solved a maze, the challenge is gone.

This *Maze Creator* program is an inexhaustible supply of mazes for every member of the family. The program is flexible enough to produce both tiny mazes suitable for young children, and complex giants that will challenge the mazemaster of the house; the difficulty level for each maze is the player's choice. Each maze produced by the program has one, and only one, solution.

NEW WAYS TO PLAY

Maze Creator does more than give you a choice between printing out its inventions or threading your way through them on-screen (or both). If using your keyboard, joystick, or mouse to move through the on-screen maze (play level 1) is too easy, you can advance to play level 2, in which you begin with a completely blank maze, analogous to a "diagramless" crossword puzzle. Bits of interior wall appear on the screen only when you run into them. (To provide some incentive to play carefully, the program keeps track of your BLUNDERS; you can play against someone else—or yourself—to try to minimize your blunder count.)

When you progress to play level three, not even the pieces of wall appear. Your only clues that you've run into a wall are a "beep" and the fact that you can't move any further in a given direction. You have to hold the structure of the maze in your head! (If this turns out to be too hard, sneak a peek at a printout of the maze, if you made one before you started play.)

SAVE YOURSELF SOME TYPING

Since *Maze Creator* is quite a lengthy program, use special care when typing it in and proofreading your work, and get a friend or family member to help if you can.

Before you start, take a look at the options following your version and decide which ones you want to include in your program. Rather than publishing one mammoth program that contains all the possible options (meaning that you would have to type in program lines for features you don't want), we let you choose what you want to include.

The program listings we present in full let you use the keyboard to move through on-screen mazes. If you don't have a printer, you can save yourself quite a bit of time by typing in the version listed as "Maze Creator w/o printer." If you do have a printer, type in the version listed as "Maze Creator w/printer." You can print mazes with asterisks for walls or (if you have a printer with Epson-compatible graphics) fancy-looking mazes like the one on page 28.

Check your printer manual to find out if it has Epson-compatible graphics control codes. If it does, you can add a few lines to the program to get solid-wall mazes.

There's a simpler "fix" that improves the look of your printed-out mazes by placing the asterisks closer together. To take advantage of this improvement, look up the control codes to change the line pitch in your printer's manual, and follow the instructions given under "Options," below. If your printer is only 40 columns wide, there's another change given to handle that.

Finally, there's a little program "patch" that lets you use a joystick instead of the keyboard to move around the maze.

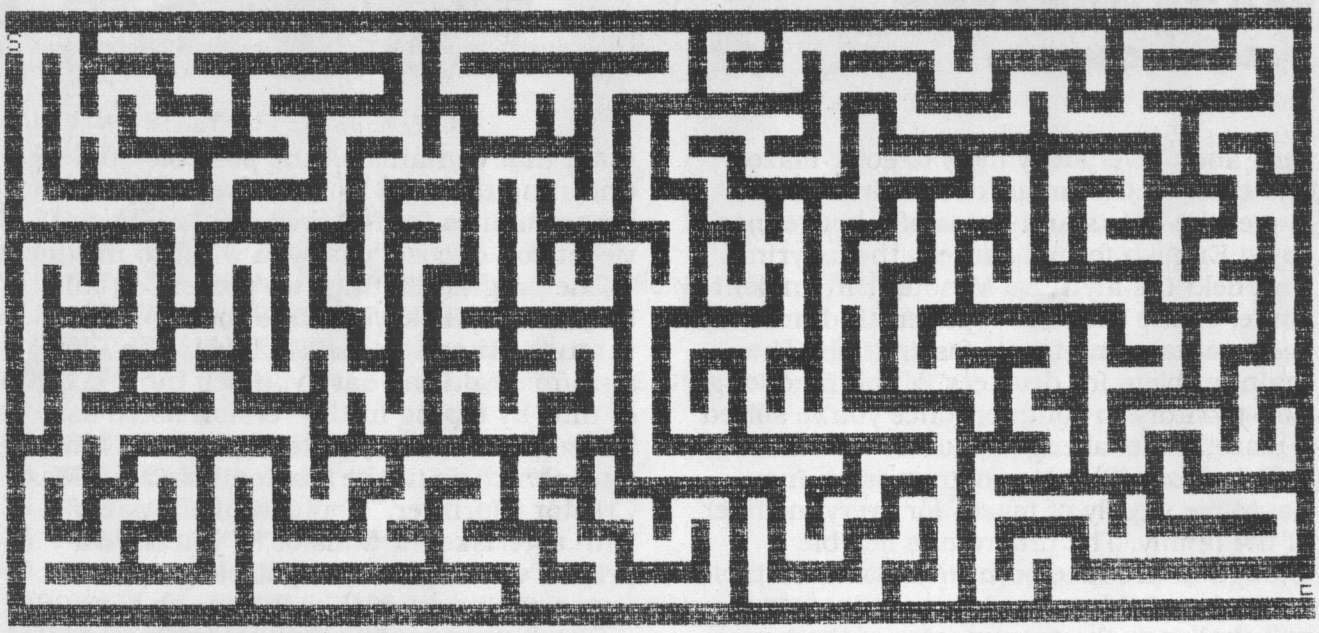
RUNNING THE PROGRAM

The program is very easy to use; just RUN it and follow the instructions on the screen. If you decide to change the size of the maze to be generated, remember to press ENTER or RETURN after typing in the new height and/or width. Everywhere else in the program, ENTER or RETURN isn't necessary; you need to press only one key (e.g., pressing Y for yes will allow you to choose the size of maze you want; pressing N for no will select the preprogrammed size).

At the start of the program, you'll be asked whether you want to print out your maze or display it. If you choose to display it, you'll get a chance to print it out, too, before play begins.

In play mode, your task is to move the asterisk from S ("start") to E ("end"). Unless you've typed in the joystick option, use the I (up), J (left), K (down), and L (right) keys to move through the maze.

—L.P.



Apple II series w/printer/*Maze Creator*

```
10 DIM CD(4,2),RD(4,3),RP(3),XR(2),YR(2):NORMAL
20 MS = 2:SP$ = CHR$(32):FOR I = 1 TO 4
30 FOR J = 1 TO 3:READ RD(I,J):NEXT J,I
40 FOR I = 1 TO 4:FOR J = 1 TO 2:READ CD(I,J):NEXT J,I
50 XR(1) = 59:XR(2) = 39:YR(1) = 59:YR(2) = 23
60 HOME:PRINT TAB(53);"* MAZE CREATOR *":PRINT
70 PRINT " PRESS <D> TO DISPLAY THE MAZE ON YOUR"
80 PRINT TAB(6);"SCREEN OR <P> TO PRINT IT OUT.";
90 GOSUB 3000:MS = (K = 80)+2*(K = 68)
100 ON (MS = 0) GOTO 90:HOME
110 PRINT "THE PROGRAM IS NOW SET TO GENERATE A"
120 PRINT "MAZE OF SIZE ";XR(MS);" X ";YR(MS);" (WIDTH X HEIGHT)."
130 PRINT "DO YOU WANT TO CHANGE THE SIZE?"
140 GOSUB 3000:IF K <> 78 AND K <> 89 THEN 140
150 IF K = 78 THEN MX = XR(MS):MY = YR(MS):GOTO 190
160 POKE -16368,0
170 T$ = "WIDTH":A = XR(MS):GOSUB 2000:MX = K
180 T$ = "HEIGHT":A = YR(MS):GOSUB 2000:MY = K
190 QX = MX-1:QY = MY-1:MAX = QX*QY/4
200 HOME:DIM MP%(MX,MY),PT%(MAX,1)
210 PRINT TAB(6);"I'M NOW GENERATING YOUR MAZE."
220 FOR X = 1 TO MX:FOR Y = 1 TO MY
230 MP%(X,Y) = -1:NEXT Y,X
240 F = 0:LC = MAX:C = 1:CX = 2:CY = 2
250 PT%(1,0) = 2:PT%(1,1) = 2:MP%(2,2) = 2
260 GOSUB 1000:IF V <> 0 THEN 310
270 R = MP%(CX,CY):MP%(CX-CD(R,1)/2,CY-CD(R,2)/2) = -1
280 MP%(CX,CY) = 0:C = C-1
290 PT%(LC,0) = CX:PT%(LC,1) = CY:LC = LC-1
300 CX = PT%(C,0):CY = PT%(C,1):PRINT "-";:GOTO 260
310 R = RP(RND(1)*V+1)
320 TX = CX+CD(R,1):TY = CY+CD(R,2)
330 IF (R = 1 AND (TX = 2 OR TX = QX)) OR (R = 4 AND (TY = 2 OR TY = QY)) THEN 3
10
340 MP%(CX+CD(R,1)/2,CY+CD(R,2)/2) = 5
350 C = C+1:CX = TX:CY = TY:MP%(CX,CY) = R
360 PT%(C,0) = CX:PT%(C,1) = CY:PRINT "+";
```

```
370 IF CX <> QX OR CY <> QY THEN 260
380 PRINT:MP%(QX,QY) = 5:IF C = MAX THEN 510
390 F = 1:W = 4:L = 1
400 PRINT "#";:CX = PT%(L,0):CY = PT%(L,1)
410 IF MP%(CX,CY) = 5 THEN 480
420 GOSUB 1000:IF V = 0 THEN MP%(CX,CY) = 5:GOTO 480
430 R = RP(RND(1)*V+1):C = C+1
440 MP%(CX+CD(R,1)/2,CY+CD(R,2)/2) = 5
450 CX = CX+CD(R,1):CY = CY+CD(R,2)
460 MP%(CX,CY) = R:PT%(C,0) = CX:PT%(C,1) = CY
470 PRINT "@";:GOTO 420
480 L = L+W:IF L < C THEN 400
490 IF C = MAX THEN 510
500 PRINT:L = 1:W = W-(W = 4)*3:GOTO 400
510 HOME
520 IF MS = 1 THEN GOSUB 4000:GOTO 880
530 PRINT "PLAY LEVEL 1 IS THE EASIEST; 3 IS THE"
540 PRINT "HARDEST."
550 PRINT "AT WHICH LEVEL DO YOU WANT TO PLAY?"
560 GOSUB 3000:LS = K-48:IF LS < 1 OR LS > 3 THEN 560
570 HOME:PRINT "DO YOU WANT TO PRINT A COPY OF THE MAZE"
580 PRINT "BEFORE YOU BEGIN?"
590 GOSUB 3000:IF K <> 78 AND K <> 89 THEN 590
600 IF K = 89 THEN HOME:GOSUB 4000
610 HOME:LM = INT(20-MX/2):CX = 2:CY = 2:SC = 0
620 INVERSE:FOR Y = 1 TO MY:VTAB Y:HTAB LM+1:PRINT SP$;
630 HTAB LM+MX:PRINT SP$;:NEXT Y
640 FOR X = LM+2 TO LM+QX:VTAB 1:HTAB X:PRINT SP$;
650 VTAB MY:HTAB X:PRINT SP$;:NEXT X:NORMAL
660 VTAB 2:HTAB LM+1:PRINT "S";
670 VTAB QY:HTAB LM+MX:PRINT "E";:IF LS <> 1 THEN 710
680 INVERSE:FOR Y = 2 TO QY:FOR X = 2 TO QX
690 IF MP%(X,Y) = -1 THEN VTAB Y:HTAB LM+X:PRINT SP$;
700 NEXT X:NEXT Y:NORMAL
710 VTAB CY:HTAB LM+CX:PRINT "*";
720 GOSUB 3000
730 DX = (K = 76)-(K = 74):DY = (K = 75)-(K = 73)
740 IF DX = 0 AND DY = 0 THEN 720
750 TX = CX+DX:TY = CY+DY
760 IF MP%(TX,TY) <> -1 THEN 820
770 PRINT CHR$(7);:IF LS = 1 THEN 720
780 SC = SC+1:VTAB 24:HTAB 15-INT(LEN(STR$(SC))/2)
790 PRINT "BLUNDERS = ";SC;:IF LS = 3 THEN 720
800 IF TX = 1 AND TY = 2 THEN 720
810 INVERSE:VTAB TY:HTAB LM+TX:PRINT SP$;:NORMAL:GOTO 720
820 VTAB CY:HTAB LM+CX:PRINT SP$;
830 CX = TX:CY = TY:IF CX <> QX OR CY <> QY THEN 710
840 VTAB CY:HTAB LM+CX:PRINT "*";
850 FOR L = 1 TO 10:PRINT CHR$(7);:NEXT L
860 VTAB 24:HTAB 40:FOR L = 1 TO 24
870 FOR D = 1 TO 100:NEXT D:PRINT:NEXT L
880 HOME:PRINT "DO YOU WANT TO GENERATE ANOTHER MAZE?"
890 GOSUB 3000:IF K <> 78 AND K <> 89 THEN 890
900 IF K = 89 THEN RUN
910 POKE -16368,0:END
1000 V = 0:FOR Z = 1 TO 3:T = RD(MP%(CX,CY),Z)
1010 X = CX+CD(T,1):Y = CY+CD(T,2)
1020 IF X < 2 OR X > QX OR Y < 2 OR Y > QY THEN 1040
1030 IF MP%(X,Y) < F THEN V = V+1:RP(V) = T
```

```
1040 NEXT Z:RETURN
2000 PRINT:PRINT "THE ";T$;" MUST BE AN ODD NUMBER"
2010 PRINT "BETWEEN 9 AND ";A;"."
2020 PRINT "WHAT ";T$;" DO YOU CHOOSE";:INPUT K$
2030 IF K$ = "" THEN 2020
2040 K = INT(VAL(K$)):IF K < 9 OR K > A OR K/2 = INT(K/2) THEN 2000
2050 RETURN
3000 POKE -16368,0
3010 K = PEEK(-16384)-128
3030 E = RND(1):IF K < 0 THEN 3010
3040 K = K-32*(K > 96)*(K < 123):RETURN
4000 PRINT TAB(3);"PRESS <RETURN> WHEN YOUR PRINTER IS"
4010 PRINT TAB(18);"READY."
4020 GOSUB 3000:IF K <> 13 THEN 4020
4040 A$ = "*"
4050 B$ = SP$
4060 E$ = "E"
4070 S$ = "S"
4080 PRINT:PRINT CHR$(4);"PR# 1":PRINT
4100 POKE 35,1:FOR Y = 1 TO MY
4120 FOR X = 1 TO MX
4130 IF Y = 2 AND X = 1 THEN PRINT S$;:GOTO 4170
4140 IF Y = QY AND X = MX THEN PRINT E$;:GOTO 4170
4150 IF MP%(X,Y) = -1 THEN PRINT A$;:GOTO 4170
4160 PRINT B$;
4170 NEXT X:PRINT:NEXT Y:PRINT
4190 PRINT CHR$(4);"PR# 0"
4200 PRINT:POKE 35,24:RETURN
5000 DATA 1,2,4,1,2,3,2,3,4,1,3,4
5010 DATA 0,-2,2,0,0,2,-2,0
```

Apple II series w/o printer/*Maze Creator*

```
10 DIM CD(4,2),RD(4,3),RP(3),XR(2),YR(2):NORMAL
20 MS = 2:SP$ = CHR$(32):FOR I = 1 TO 4
30 FOR J = 1 TO 3:READ RD(I,J):NEXT J,I
40 FOR I = 1 TO 4:FOR J = 1 TO 2:READ CD(I,J):NEXT J,I
50 XR(1) = 59:XR(2) = 39:YR(1) = 59:YR(2) = 23
60 HOME:PRINT TAB(53);"* MAZE CREATOR *":PRINT
110 PRINT "THE PROGRAM IS NOW SET TO GENERATE A"
120 PRINT "MAZE OF SIZE ";XR(MS);" X ";YR(MS);" (WIDTH X HEIGHT)."
130 PRINT "DO YOU WANT TO CHANGE THE SIZE?"
140 GOSUB 3000:IF K <> 78 AND K <> 89 THEN 140
150 IF K = 78 THEN MX = XR(MS):MY = YR(MS):GOTO 190
160 POKE -16368,0
170 T$ = "WIDTH":A = XR(MS):GOSUB 2000:MX = K
180 T$ = "HEIGHT":A = YR(MS):GOSUB 2000:MY = K
190 QX = MX-1:QY = MY-1:MAX = QX*QY/4
200 HOME:DIM MP%(MX,MY),PT%(MAX,1)
210 PRINT TAB(6);"I'M NOW GENERATING YOUR MAZE."
220 FOR X = 1 TO MX:FOR Y = 1 TO MY
230 MP%(X,Y) = -1:NEXT Y,X
240 F = 0:LC = MAX:C = 1:CX = 2:CY = 2
250 PT%(1,0) = 2:PT%(1,1) = 2:MP%(2,2) = 2
260 GOSUB 1000:IF V <> 0 THEN 310
270 R = MP%(CX,CY):MP%(CX-CD(R,1)/2,CY-CD(R,2)/2) = -1
280 MP%(CX,CY) = 0:C = C-1
290 PT%(LC,0) = CX:PT%(LC,1) = CY:LC = LC-1
300 CX = PT%(C,0):CY = PT%(C,1):PRINT "-";:GOTO 260
```

```
310 R = RP(RND(1)*V+1)
320 TX = CX+CD(R,1):TY = CY+CD(R,2)
330 IF (R = 1 AND (TX = 2 OR TX = QX)) OR (R = 4 AND (TY = 2 OR TY = QY)) THEN 3
10
340 MP%(CX+CD(R,1)/2,CY+CD(R,2)/2) = 5
350 C = C+1:CX = TX:CY = TY:MP%(CX,CY) = R
360 PT%(C,0) = CX:PT%(C,1) = CY:PRINT "+";
370 IF CX <> QX OR CY <> QY THEN 260
380 PRINT:MP%(QX,QY) = 5:IF C = MAX THEN 510
390 F = 1:W = 4:L = 1
400 PRINT "#";:CX = PT%(L,0):CY = PT%(L,1)
410 IF MP%(CX,CY) = 5 THEN 480
420 GOSUB 1000:IF V = 0 THEN MP%(CX,CY) = 5:GOTO 480
430 R = RP(RND(1)*V+1):C = C+1
440 MP%(CX+CD(R,1)/2,CY+CD(R,2)/2) = 5
450 CX = CX+CD(R,1):CY = CY+CD(R,2)
460 MP%(CX,CY) = R:PT%(C,0) = CX:PT%(C,1) = CY
470 PRINT "@";:GOTO 420
480 L = L+W:IF L < C THEN 400
490 IF C = MAX THEN 510
500 PRINT:L = 1:W = W-(W = 4)*3:GOTO 400
510 HOME
530 PRINT "PLAY LEVEL 1 IS THE EASIEST; 3 IS THE"
540 PRINT "HARDEST."
550 PRINT "AT WHICH LEVEL DO YOU WANT TO PLAY?"
560 GOSUB 3000:LS = K-48:IF LS < 1 OR LS > 3 THEN 560
610 HOME:LM = INT(20-MX/2):CX = 2:CY = 2:SC = 0
620 INVERSE:FOR Y = 1 TO MY:VTAB Y:HTAB LM+1:PRINT SP$;
630 HTAB LM+MX:PRINT SP$;:NEXT Y
640 FOR X = LM+2 TO LM+QX:VTAB 1:HTAB X:PRINT SP$;
650 VTAB MY:HTAB X:PRINT SP$;:NEXT X:NORMAL
660 VTAB 2:HTAB LM+1:PRINT "S";
670 VTAB QY:HTAB LM+MX:PRINT "E";:IF LS <> 1 THEN 710
680 INVERSE:FOR Y = 2 TO QY:FOR X = 2 TO QX
690 IF MP%(X,Y) = -1 THEN VTAB Y:HTAB LM+X:PRINT SP$;
700 NEXT X:NEXT Y:NORMAL
710 VTAB CY:HTAB LM+CX:PRINT "*";
720 GOSUB 3000
730 DX = (K = 76)-(K = 74):DY = (K = 75)-(K = 73)
740 IF DX = 0 AND DY = 0 THEN 720
750 TX = CX+DX:TY = CY+DY
760 IF MP%(TX,TY) <> -1 THEN 820
770 PRINT CHR$(7);:IF LS = 1 THEN 720
780 SC = SC+1:VTAB 24:HTAB 15-INT(LEN(STR$(SC))/2)
790 PRINT "BLUNDERS = ";SC;:IF LS = 3 THEN 720
800 IF TX = 1 AND TY = 2 THEN 720
810 INVERSE:VTAB TY:HTAB LM+TX:PRINT SP$;:NORMAL:GOTO 720
820 VTAB CY:HTAB LM+CX:PRINT SP$;
830 CX = TX:CY = TY:IF CX <> QX OR CY <> QY THEN 710
840 VTAB CY:HTAB LM+CX:PRINT "*";
850 FOR L = 1 TO 10:PRINT CHR$(7);:NEXT L
860 VTAB 24:HTAB 40:FOR L = 1 TO 24
870 FOR D = 1 TO 100:NEXT D:PRINT:NEXT L
880 HOME:PRINT "DO YOU WANT TO GENERATE ANOTHER MAZE?"
890 GOSUB 3000:IF K <> 78 AND K <> 89 THEN 890
900 IF K = 89 THEN RUN
910 POKE -16368,0:END
1000 V = 0:FOR Z = 1 TO 3:T = RD(MP%(CX,CY),Z)
1010 X = CX+CD(T,1):Y = CY+CD(T,2)
```

```
1020 IF X < 2 OR X > QX OR Y < 2 OR Y > QY THEN 1040
1030 IF MP%(X,Y) < F THEN V = V+1:RP(V) = T
1040 NEXT Z:RETURN
2000 PRINT:PRINT "THE ";T$;" MUST BE AN ODD NUMBER"
2010 PRINT "BETWEEN 9 AND ";A;"."
2020 PRINT "WHAT ";T$;" DO YOU CHOOSE";:INPUT K$
2030 IF K$ = "" THEN 2020
2040 K = INT(VAL(K$)):IF K < 9 OR K > A OR K/2 = INT(K/2) THEN 2000
2050 RETURN
3000 POKE -16368,0
3010 K = PEEK(-16384)-128
3030 E = RND(1):IF K < 0 THEN 3010
3040 K = K-32*(K > 96)*(K < 123):RETURN
5000 DATA 1,2,4,1,2,3,2,3,4,1,3,4
5010 DATA 0,-2,2,0,0,2,-2,0
```

OPTIONS FOR THE APPLE VERSION

1. If you can change the "line pitch" (lines per inch) of your printer, change it to eight lines per inch in line 4090 and back to normal (usually six lines per inch) in line 4180. For example, if your printer manual says the command sequence for eight lpi is ESCAPE 1 and the sequence for six lpi is ESCAPE 2, you'd add the following lines to the program:

```
4090 PRINT CHR$(27);"1"
4180 PRINT CHR$(27);"2"
```

(Note that CHR$ (27) is the equivalent of ESCAPE.)

2. If you have a 40-column printer, change line 50 to read as follows:

```
50 XR(1) = 39:XR(2) = 39:YR(1) = 59:YR(2)
 = 23
```

3. If your printer has Epson-compatible graphics capability, change lines 4040-4070 to read as follows:

```
4040 A$ = CHR$(255):FOR X = 2 TO 6:A$ = A
$+CHR$(255):NEXT X
4050 B$ = CHR$(0):FOR X = 2 TO 6:B$ = B$+
CHR$(0):NEXT X
4060 E$ = CHR$(0)+CHR$(62)+CHR$(42)+CHR$(
42)+CHR$(42)+CHR$(34)
4070 S$ = CHR$(52)+CHR$(82)+CHR$(74)+CHR$
(74)+CHR$(36)+CHR$(0)
```

Also, add lines 4030, 4090, 4110, and 4180:

```
4030 MB = 6*MX:LB = INT(MB/256):FB = MB-L
B*256
4090 PRINT CHR$(27);"1"
4110 PRINT CHR$(27);"K";CHR$(FB);CHR$(LB);
4180 PRINT CHR$(27);"2"
```

4. If you would like to use a joystick to move around the maze, change lines 720-740 to read as follows:

```
720 DY = (PDL(1) > 192)-(PDL(1) < 64)
730 DX = (PDL(0) > 192)-(PDL(0) < 64)
740 IF (DX = 0)+(DY = 0) <> 1 THEN 720
```

Commodore 64 & 128 (C 64 mode) w/printer/*Maze Creator*

```
10 POKE 650,128:POKE 649,1:PRINT CHR$(5)
20 DIM CD(4,2),RD(4,3),RP(3),XR(2),YR(2)
30 MS=2:BK$=CHR$(166):CL$=CHR$(147):SP$=CHR$(32)
40 FOR I=1 TO 4:FOR J=1 TO 3:READ RD(I,J):NEXT J,I
50 FOR I=1 TO 4:FOR J=1 TO 2:READ CD(I,J):NEXT J,I
60 XR(1)=59:XR(2)=39:YR(1)=59:YR(2)=23
70 S=54272:FOR X=0 TO 24:POKE S+X,0:NEXT X
80 POKE S+5,9:POKE S+6,0:POKE S+1,100:POKE S+24,15
90 PRINT CL$;TAB(52);"* MAZE CREATOR *":PRINT
100 PRINT " PRESS <D> TO DISPLAY THE MAZE ON YOUR"
110 PRINT TAB(5);"SCREEN OR <P> TO PRINT IT OUT.";
120 GOSUB 3000:MS=-(K=80)-2*(K=68)
130 ON -(MS=0) GOTO 120:PRINT CL$;
140 PRINT "THE PROGRAM IS NOW SET TO GENERATE A"
150 PRINT "MAZE OF SIZE";XR(MS);"X";YR(MS);"(WIDTH X HEIGHT)."
160 PRINT "DO YOU WANT TO CHANGE THE SIZE?"
```

```
17Ø GOSUB 3ØØØ:IF K<>78 AND K<>89 THEN 17Ø
18Ø IF K=78 THEN MX=XR(MS):MY=YR(MS):GOTO 21Ø
19Ø K$="":T$="WIDTH":A=XR(MS):GOSUB 2ØØØ:MX=K
2ØØ K$="":T$="HEIGHT":A=YR(MS):GOSUB 2ØØØ:MY=K
21Ø QX=MX-1:QY=MY-1:MAX=QX*QY/4
22Ø PRINT CL$;:DIM MP%(MX,MY),PT%(MAX,1)
23Ø PRINT TAB(5);"I'M NOW GENERATING YOUR MAZE."
24Ø FOR X=1 TO MX:FOR Y=1 TO MY:MP%(X,Y)=-1:NEXT Y,X
25Ø F=Ø:LC=MAX:C=1:CX=2:CY=2
26Ø PT%(1,Ø)=2:PT%(1,1)=2:MP%(2,2)=2
27Ø GOSUB 1ØØØ:IF V<>Ø THEN 32Ø
28Ø R=MP%(CX,CY):MP%(CX-CD(R,1)/2,CY-CD(R,2)/2)=-1
29Ø MP%(CX,CY)=Ø:C=C-1
3ØØ PT%(LC,Ø)=CX:PT%(LC,1)=CY:LC=LC-1
31Ø CX=PT%(C,Ø):CY=PT%(C,1):PRINT "-";:GOTO 27Ø
32Ø R=RP(RND(1)*V+1):TX=CX+CD(R,1):TY=CY+CD(R,2)
33Ø IF(R=1 AND (TX=2 OR TX=QX)) OR (R=4 AND (TY=2 OR TY=QY)) THEN 32Ø
34Ø MP%(CX+CD(R,1)/2,CY+CD(R,2)/2)=5
35Ø C=C+1:CX=TX:CY=TY:MP%(CX,CY)=R
36Ø PT%(C,Ø)=CX:PT%(C,1)=CY:PRINT "+";
37Ø IF CX<>QX OR CY<>QY THEN 27Ø
38Ø PRINT:MP%(QX,QY)=5:IF C=MAX THEN 51Ø
39Ø F=1:W=4:L=1
4ØØ PRINT "#";:CX=PT%(L,Ø):CY=PT%(L,1)
41Ø IF MP%(CX,CY)=5 THEN 48Ø
42Ø GOSUB 1ØØØ:IF V=Ø THEN MP%(CX,CY)=5:GOTO 48Ø
43Ø R=RP(RND(1)*V+1):C=C+1
44Ø MP%(CX+CD(R,1)/2,CY+CD(R,2)/2)=5
45Ø CX=CX+CD(R,1):CY=CY+CD(R,2)
46Ø MP%(CX,CY)=R:PT%(C,Ø)=CX:PT%(C,1)=CY
47Ø PRINT "@";:GOTO 42Ø
48Ø L=L+W:IF L<C THEN 4ØØ
49Ø IF C=MAX THEN 51Ø
5ØØ PRINT:L=1:W=W+(W=4)*3:GOTO 4ØØ
51Ø PRINT CL$;
52Ø IF MS=1 THEN GOSUB 4ØØØ:GOTO 91Ø
53Ø PRINT "PLAY LEVEL 1 IS THE EASIEST; 3 IS THE"
54Ø PRINT "HARDEST."
55Ø PRINT "AT WHICH LEVEL DO YOU WANT TO PLAY?"
56Ø GOSUB 3ØØØ:LS=K-48:IF LS<1 OR LS>3 THEN 56Ø
57Ø PRINT CL$;"DO YOU WANT TO PRINT A COPY OF THE MAZE"
58Ø PRINT "BEFORE YOU BEGIN?"
59Ø GOSUB 3ØØØ:IF K<>78 AND K<>89 THEN 59Ø
6ØØ IF K=89 THEN PRINT CL$;:GOSUB 4ØØØ
61Ø PRINT CL$;:LM=INT(2Ø-MX/2):CX=2:CY=2:SC=Ø
62Ø FOR Y=1 TO MY:POKE 214,Y-1:PRINT
63Ø PRINT TAB(LM);BK$;SPC(QX-1);BK$;:NEXT Y
64Ø FOR X=LM+2 TO LM+QX:POKE 214,Ø:PRINT
65Ø PRINT TAB(X-1);BK$;
66Ø POKE 214,MY-1:PRINT:PRINT TAB(X-1);BK$;:NEXT X
67Ø POKE 214,1:PRINT:PRINT TAB(LM);"S";
68Ø POKE 214,QY-1:PRINT
69Ø PRINT TAB(LM+MX-1);"E";:IF LS<>1 THEN 73Ø
7ØØ FOR Y=2 TO QY:POKE 214,Y-1:PRINT:PRINT SPC(LM+1);
71Ø FOR X=2 TO QX:PRINT CHR$(32-(MP%(X,Y)=-1)*134);
72Ø NEXT X,Y
73Ø POKE 214,CY-1:PRINT:PRINT TAB(LM+CX-1);"*";
74Ø GOSUB 3ØØØ
75Ø DX=(K=74)-(K=76):DY=(K=73)-(K=75)
```

```
760 IF DX=0 AND DY=0 THEN 740
770 TX=CX+DX:TY=CY+DY
780 IF MP%(TX,TY)<>-1 THEN 850
790 POKE S+4,17:FOR D=1 TO 100:NEXT D
800 POKE S+4,16:IF LS=1 THEN 740
810 SC=SC+1:POKE 214,23:PRINT
820 PRINT TAB(14-INT(LEN(STR$(SC))/2));"BLUNDERS =";SC;:IF LS=3 THEN 740
830 IF TX=1 AND TY=2 THEN 740
840 POKE 214,TY-1:PRINT:PRINT TAB(LM+TX-1);BK$;:GOTO 740
850 POKE 214,CY-1:PRINT:PRINT TAB(LM+CX-1);SP$;
860 CX=TX:CY=TY:IF CX<>QX OR CY<>QY THEN 730
870 POKE 214,CY-1:PRINT:PRINT TAB(LM+CX-1);"*";
880 FOR L=1 TO 10:POKE S+4,17:FOR D=1 TO 100:NEXT D
890 POKE S+4,16:NEXT L:POKE 214,24:PRINT
900 FOR L=1 TO 24:FOR D=1 TO 70:NEXT D:PRINT:NEXT L
910 PRINT CL$;"DO YOU WANT TO GENERATE ANOTHER MAZE?"
920 GOSUB 3000:IF K<>78 AND K<>89 THEN 920
930 IF K=89 THEN RUN
940 POKE S+24,0:END
1000 V=0:FOR Z=1 TO 3:T=RD(MP%(CX,CY),Z)
1010 X=CX+CD(T,1):Y=CY+CD(T,2)
1020 IF X<2 OR X>QX OR Y<2 OR Y>QY THEN 1040
1030 IF MP%(X,Y)<F THEN V=V+1:RP(V)=T
1040 NEXT Z:RETURN
2000 PRINT:PRINT "THE ";T$;" MUST BE AN ODD NUMBER"
2010 PRINT "BETWEEN 9 AND";STR$(A);"."
2020 PRINT "WHAT ";T$;" DO YOU CHOOSE";:INPUT K$
2030 IF K$="" THEN 2020
2040 K=INT(VAL(K$)):IF K<9 OR K>A OR K/2=INT(K/2) THEN 2000
2050 RETURN
3000 GET K$:IF K$="" THEN E=RND(1):GOTO 3000
3010 K=ASC(K$):K=K+32*(K>96)*(K<123):RETURN
4000 PRINT TAB(2);"PRESS <RETURN> WHEN YOUR PRINTER IS"
4010 PRINT TAB(17);"READY."
4020 GOSUB 3000:IF K<>13 THEN 4020
4040 A$="*"
4050 B$=SP$
4060 S$="S"
4070 E$="E"
4080 OPEN 4,4
4100 FOR Y=1 TO MY
4120 FOR X=1 TO MX
4130 IF Y=2 AND X=1 THEN PRINT#4,S$;:GOTO 4170
4140 IF Y=QY AND X=MX THEN PRINT#4,E$;:GOTO 4170
4150 IF MP%(X,Y)=-1 THEN PRINT#4,A$;:GOTO 4170
4160 PRINT#4,B$;
4170 NEXT X:PRINT#4:NEXT Y:PRINT#4
4190 PRINT#4:CLOSE 4
4200 PRINT:RETURN
5000 DATA 1,2,4,1,2,3,2,3,4,1,3,4
5010 DATA 0,-2,2,0,0,2,-2,0
```

Commodore 64 & 128 (C 64 mode) w/o printer/*Maze Creator*

```
10 POKE 650,128:POKE 649,1:PRINT CHR$(5)
20 DIM CD(4,2),RD(4,3),RP(3),XR(2),YR(2)
30 MS=2:BK$=CHR$(166):CL$=CHR$(147):SP$=CHR$(32)
40 FOR I=1 TO 4:FOR J=1 TO 3:READ RD(I,J):NEXT J,I
50 FOR I=1 TO 4:FOR J=1 TO 2:READ CD(I,J):NEXT J,I
```

```
60 XR(1)=59:XR(2)=39:YR(1)=59:YR(2)=23
70 S=54272:FOR X=0 TO 24:POKE S+X,0:NEXT X
80 POKE S+5,9:POKE S+6,0:POKE S+1,100:POKE S+24,15
90 PRINT CL$;TAB(52);"* MAZE CREATOR *":PRINT
140 PRINT "THE PROGRAM IS NOW SET TO GENERATE A"
150 PRINT "MAZE OF SIZE";XR(MS);"X";YR(MS);"(WIDTH X HEIGHT)."
160 PRINT "DO YOU WANT TO CHANGE THE SIZE?"
170 GOSUB 3000:IF K<>78 AND K<>89 THEN 170
180 IF K=78 THEN MX=XR(MS):MY=YR(MS):GOTO 210
190 K$="":T$="WIDTH":A=XR(MS):GOSUB 2000:MX=K
200 K$="":T$="HEIGHT":A=YR(MS):GOSUB 2000:MY=K
210 QX=MX-1:QY=MY-1:MAX=QX*QY/4
220 PRINT CL$;:DIM MP%(MX,MY),PT%(MAX,1)
230 PRINT TAB(5);"I'M NOW GENERATING YOUR MAZE."
240 FOR X=1 TO MX:FOR Y=1 TO MY:MP%(X,Y)=-1:NEXT Y,X
250 F=0:LC=MAX:C=1:CX=2:CY=2
260 PT%(1,0)=2:PT%(1,1)=2:MP%(2,2)=2
270 GOSUB 1000:IF V<>0 THEN 320
280 R=MP%(CX,CY):MP%(CX-CD(R,1)/2,CY-CD(R,2)/2)=-1
290 MP%(CX,CY)=0:C=C-1
300 PT%(LC,0)=CX:PT%(LC,1)=CY:LC=LC-1
310 CX=PT%(C,0):CY=PT%(C,1):PRINT "-";:GOTO 270
320 R=RP(RND(1)*V+1):TX=CX+CD(R,1):TY=CY+CD(R,2)
330 IF(R=1 AND (TX=2 OR TX=QX)) OR (R=4 AND (TY=2 OR TY=QY)) THEN 320
340 MP%(CX+CD(R,1)/2,CY+CD(R,2)/2)=5
350 C=C+1:CX=TX:CY=TY:MP%(CX,CY)=R
360 PT%(C,0)=CX:PT%(C,1)=CY:PRINT "+";
370 IF CX<>QX OR CY<>QY THEN 270
380 PRINT:MP%(QX,QY)=5:IF C=MAX THEN 510
390 F=1:W=4:L=1
400 PRINT "#";:CX=PT%(L,0):CY=PT%(L,1)
410 IF MP%(CX,CY)=5 THEN 480
420 GOSUB 1000:IF V=0 THEN MP%(CX,CY)=5:GOTO 480
430 R=RP(RND(1)*V+1):C=C+1
440 MP%(CX+CD(R,1)/2,CY+CD(R,2)/2)=5
450 CX=CX+CD(R,1):CY=CY+CD(R,2)
460 MP%(CX,CY)=R:PT%(C,0)=CX:PT%(C,1)=CY
470 PRINT "@";:GOTO 420
480 L=L+W:IF L<C THEN 400
490 IF C=MAX THEN 510
500 PRINT:L=1:W=W+(W=4)*3:GOTO 400
510 PRINT CL$;
530 PRINT "PLAY LEVEL 1 IS THE EASIEST; 3 IS THE"
540 PRINT "HARDEST."
550 PRINT "AT WHICH LEVEL DO YOU WANT TO PLAY?"
560 GOSUB 3000:LS=K-48:IF LS<1 OR LS>3 THEN 560
610 PRINT CL$;:LM=INT(20-MX/2):CX=2:CY=2:SC=0
620 FOR Y=1 TO MY:POKE 214,Y-1:PRINT
630 PRINT TAB(LM);BK$;SPC(QX-1);BK$;:NEXT Y
640 FOR X=LM+2 TO LM+QX:POKE 214,0:PRINT
650 PRINT TAB(X-1);BK$;
660 POKE 214,MY-1:PRINT:PRINT TAB(X-1);BK$;:NEXT X
670 POKE 214,1:PRINT:PRINT TAB(LM);"S";
680 POKE 214,QY-1:PRINT
690 PRINT TAB(LM+MX-1);"E";:IF LS<>1 THEN 730
700 FOR Y=2 TO QY:POKE 214,Y-1:PRINT:PRINT SPC(LM+1);
710 FOR X=2 TO QX:PRINT CHR$(32-(MP%(X,Y)=-1)*134);
720 NEXT X,Y
730 POKE 214,CY-1:PRINT:PRINT TAB(LM+CX-1);"*";
```

```
740 GOSUB 3000
750 DX=(K=74)-(K=76):DY=(K=73)-(K=75)
760 IF DX=0 AND DY=0 THEN 740
770 TX=CX+DX:TY=CY+DY
780 IF MP%(TX,TY)<>-1 THEN 850
790 POKE S+4,17:FOR D=1 TO 100:NEXT D
800 POKE S+4,16:IF LS=1 THEN 740
810 SC=SC+1:POKE 214,23:PRINT
820 PRINT TAB(14-INT(LEN(STR$(SC))/2));"BLUNDERS =";SC;:IF LS=3 THEN 740
830 IF TX=1 AND TY=2 THEN 740
840 POKE 214,TY-1:PRINT:PRINT TAB(LM+TX-1);BK$;:GOTO 740
850 POKE 214,CY-1:PRINT:PRINT TAB(LM+CX-1);SP$;
860 CX=TX:CY=TY:IF CX<>QX OR CY<>QY THEN 730
870 POKE 214,CY-1:PRINT:PRINT TAB(LM+CX-1);"*";
880 FOR L=1 TO 10:POKE S+4,17:FOR D=1 TO 100:NEXT D
890 POKE S+4,16:NEXT L:POKE 214,24:PRINT
900 FOR L=1 TO 24:FOR D=1 TO 70:NEXT D:PRINT:NEXT L
910 PRINT CL$;"DO YOU WANT TO GENERATE ANOTHER MAZE?"
920 GOSUB 3000:IF K<>78 AND K<>89 THEN 920
930 IF K=89 THEN RUN
940 POKE S+24,0:END
1000 V=0:FOR Z=1 TO 3:T=RD(MP%(CX,CY),Z)
1010 X=CX+CD(T,1):Y=CY+CD(T,2)
1020 IF X<2 OR X>QX OR Y<2 OR Y>QY THEN 1040
1030 IF MP%(X,Y)<F THEN V=V+1:RP(V)=T
1040 NEXT Z:RETURN
2000 PRINT:PRINT "THE ";T$;" MUST BE AN ODD NUMBER"
2010 PRINT "BETWEEN 9 AND";STR$(A);"."
2020 PRINT "WHAT ";T$;" DO YOU CHOOSE";:INPUT K$
2030 IF K$="" THEN 2020
2040 K=INT(VAL(K$)):IF K<9 OR K>A OR K/2=INT(K/2) THEN 2000
2050 RETURN
3000 GET K$:IF K$="" THEN E=RND(1):GOTO 3000
3010 K=ASC(K$):K=K+32*(K>96)*(K<123):RETURN
5000 DATA 1,2,4,1,2,3,2,3,4,1,3,4
5010 DATA 0,-2,2,0,0,2,-2,0
```

OPTIONS FOR THE COMMODORE VERSION

1. If you can change the "line pitch" (lines per inch) of your printer, change it to eight lines per inch in line 4090 and back to normal (usually six lines per inch) in line 4180. For example, if your printer manual says the command sequence for eight lpi is ESCAPE 1 and the sequence for six lpi is ESCAPE 2, you'd add the following lines to the program:

```
4090 PRINT#4,CHR$(27);"1"
4180 PRINT#4,CHR$(27);"2"
```

(Note that CHR$ (27) is the equivalent of ESCAPE.*)*

2. If you have a 40-column printer, change line 60 to read as follows:

```
60 XR(1)=39:XR(2)=39:YR(1)=59:YR(2)=23
```

3. If your printer has Epson-compatible graphics capability, change lines 4040-4070 to read as follows:

```
4040 A$=CHR$(255):FOR X=2 TO 6:A$=A$+CHR$
(255):NEXT X
4050 B$=CHR$(0):FOR X=2 TO 6:B$=B$+CHR$(0
):NEXT X
4060 E$=CHR$(0)+CHR$(62)+CHR$(42)+CHR$(42
)+CHR$(42)+CHR$(34)
4070 S$=CHR$(52)+CHR$(82)+CHR$(74)+CHR$(7
4)+CHR$(36)+CHR$(0)
```

Also, add lines 4030, 4090, 4110, and 4180:

```
4030 MB=6*MX:LB=INT(MB/256):FB=MB-LB*256
4090 PRINT#4,CHR$(27);"1"
4110 PRINT#4,CHR$(27);"K";CHR$(FB);CHR$(L
B);
4180 PRINT#4,CHR$(27);"2"
```

4. If you would like to use a joystick to move around the maze, change lines 740 and 750 to read as follows:

```
740 J=PEEK(56321) AND 15
750 DX=(J=11)-(J=7):DY=(J=14)-(J=13)
```

IBM PC & compatibles (40-column version) w/printer/*Maze Creator*

This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

```
10 DEF SEG=0:DEFINT A-Z:SCREEN 0,0:KEY OFF
20 SW=40
40 DIM CD(4,2),RD(4,3),RP(3),XR(2),YR(2)
50 WIDTH SW:LOCATE ,,0:MS=2:SP$=CHR$(32)
60 FOR I=1 TO 4:FOR J=1 TO 3:READ RD(I,J):NEXT J,I
70 FOR I=1 TO 4:FOR J=1 TO 2:READ CD(I,J):NEXT J,I
80 XR(1)=59:XR(2)=39:YR(1)=59:YR(2)=23
90 CLS:PRINT:PRINT TAB(13);"* MAZE CREATOR *":PRINT
100 PRINT " Press <D> to display the maze on your"
110 PRINT TAB(6);"screen or <P> to print it out.";
120 GOSUB 3000:MS=-(K=80)-2*(K=68)
130 IF MS=0 THEN 120 ELSE CLS
140 PRINT "The program is now set to generate a"
150 PRINT "maze of size";XR(MS);"x";YR(MS);"(width x height)."
160 PRINT "Do you want to change the size?"
170 GOSUB 3000:IF K<>78 AND K<>89 THEN 170
180 IF K=78 THEN MX=XR(MS):MY=YR(MS):GOTO 220
190 POKE 1050,PEEK(1052)
200 T$="width":H=XR(MS):GOSUB 2000:MX=K
210 T$="height":H=YR(MS):GOSUB 2000:MY=K
220 QX=MX-1:QY=MY-1:MAX=QX*QY/4
230 CLS:DIM MP(MX,MY),PT(MAX,1)
240 PRINT TAB(6);"I'm now generating your maze."
250 FOR X=1 TO MX:FOR Y=1 TO MY:MP(X,Y)=-1:NEXT Y,X
260 F=0:LC=MAX:C=1:CX=2:CY=2
270 PT(1,0)=2:PT(1,1)=2:MP(2,2)=2
280 GOSUB 1000:IF V<>0 THEN 330
290 R=MP(CX,CY):MP(CX-CD(R,1)/2,CY-CD(R,2)/2)=-1
300 MP(CX,CY)=0:C=C-1
310 PT(LC,0)=CX:PT(LC,1)=CY:LC=LC-1
320 CX=PT(C,0):CY=PT(C,1):PRINT "-";:GOTO 280
330 R=RP(INT(RND*V)+1):TX=CX+CD(R,1):TY=CY+CD(R,2)
340 IF (R=1 AND (TX=2 OR TX=QX)) OR (R=4 AND (TY=2 OR TY=QY)) THEN 330
350 MP(CX+CD(R,1)/2,CY+CD(R,2)/2)=5
360 C=C+1:CX=TX:CY=TY:MP(CX,CY)=R
370 PT(C,0)=CX:PT(C,1)=CY:PRINT "+";
380 IF CX<>QX OR CY<>QY THEN 280
390 PRINT:MP(QX,QY)=5:IF C=MAX THEN 510
400 F=1:W=4:L=1
410 PRINT "#";:CX=PT(L,0):CY=PT(L,1)
420 IF MP(CX,CY)=5 THEN 490
430 GOSUB 1000:IF V=0 THEN MP(CX,CY)=5:GOTO 490
440 R=RP(INT(RND*V)+1):C=C+1
450 MP(CX+CD(R,1)/2,CY+CD(R,2)/2)=5
460 CX=CX+CD(R,1):CY=CY+CD(R,2)
470 MP(CX,CY)=R:PT(C,0)=CX:PT(C,1)=CY
480 PRINT "@";:GOTO 430
490 L=L+W:IF L<C THEN 410 ELSE IF C=MAX THEN 510
500 PRINT:L=1:W=W+(W=4)*3:GOTO 410
510 CLS
520 IF MS=1 THEN GOSUB 4000:GOTO 880
530 PRINT "Play level 1 is the easiest; 3 is the"
540 PRINT "hardest."
550 PRINT "At which level do you want to play?"
```

```
560 GOSUB 3000:LS=K-48:IF LS<1 OR LS>3 THEN 560
570 CLS:PRINT "Do you want to print a copy of the maze"
580 PRINT "before you begin?"
590 GOSUB 3000:IF K<>78 AND K<>89 THEN 590
600 IF K=89 THEN CLS:GOSUB 4000
610 CLS:LM=INT((SW-MX)/2):CX=2:CY=2:SC=0
620 LOCATE 1,LM+1:PRINT STRING$(MX,219)
630 LOCATE MY,LM+1:PRINT STRING$(MX,219)
640 FOR Y=2 TO QY:LOCATE Y,LM+1
650 PRINT CHR$(219);SPC(QX-1);CHR$(219);:NEXT Y
660 LOCATE 2,LM+1:PRINT "S";
670 LOCATE MY-1,LM+MX:PRINT "E";:IF LS<>1 THEN 710
680 FOR Y=2 TO QY:LOCATE Y,LM+2
690 FOR X=2 TO QX:PRINT CHR$(32-187*(MP(X,Y)=-1));
700 NEXT X,Y
710 LOCATE CY,LM+CX:PRINT "*";
720 GOSUB 3000
730 DX=(K=74)-(K=76):DY=(K=73)-(K=75)
740 IF DX=0 AND DY=0 THEN 720
750 TX=CX+DX:TY=CY+DY
760 IF MP(TX,TY)<>-1 THEN 820
770 SOUND 100,2:IF LS=1 THEN 720
780 SC=SC+1:HL=LEN(STR$(SC)):LOCATE 24,INT((SW-HL)/2)-4
790 PRINT "Blunders =";SC;:IF LS=3 THEN 720
800 IF TX=1 AND TY=2 THEN 720
810 LOCATE TY,LM+TX:PRINT CHR$(219);:GOTO 720
820 LOCATE CY,LM+CX:PRINT SP$;
830 CX=TX:CY=TY:IF CX<>QX OR CY<>QY THEN 710
840 LOCATE CY,LM+CX:PRINT "*";
850 FOR L=1 TO 10:SOUND 100,2:FOR D=1 TO 20
860 NEXT D,L:LOCATE 24,SW-1:FOR L=1 TO 24
870 FOR D=1 TO 100:NEXT D:PRINT:NEXT L
880 CLS:PRINT "Do you want to generate another maze?"
890 GOSUB 3000:IF K<>78 AND K<>89 THEN 890
900 IF K=89 THEN RUN ELSE END
1000 V=0:FOR Z=1 TO 3:T=RD(MP(CX,CY),Z)
1010 X=CX+CD(T,1):Y=CY+CD(T,2)
1020 IF X<2 OR X>QX OR Y<2 OR Y>QY THEN 1040
1030 IF MP(X,Y)<F THEN V=V+1:RP(V)=T
1040 NEXT Z:RETURN
2000 PRINT:PRINT "The ";T$;" must be an odd number"
2010 PRINT "between 9 and";STR$(H);"."
2020 PRINT "What ";T$;" do you choose";:INPUT K$
2030 IF K$="" THEN 2020 ELSE K=VAL(K$)
2040 IF K<9 OR K>H OR (K MOD 2)=0 THEN 2000
2050 RETURN
3000 POKE 1050,PEEK(1052)
3010 K$=INKEY$:IF K$="" THEN E=RND:GOTO 3010
3020 K=ASC(K$):K=K-32*(K>96)*(K<123):RETURN
4000 PRINT TAB(3);"Press <ENTER> when your printer is"
4010 PRINT TAB(17);"ready."
4020 GOSUB 3000:IF K<>13 THEN 4020 ELSE PRINT
4040 A$="*"
4050 B$=SP$
4060 E$="E"
4070 S$="S"
4090 FOR Y=1 TO MY
4110 FOR X=1 TO MX
4120 IF Y=2 AND X=1 THEN LPRINT S$;:GOTO 4150
```

```
413Ø IF Y=QY AND X=MX THEN LPRINT E$;:GOTO 415Ø
414Ø IF MP(X,Y)=-1 THEN LPRINT A$; ELSE LPRINT B$;
415Ø NEXT X:LPRINT:NEXT Y:LPRINT
417Ø PRINT:RETURN
5ØØØ DATA 1,2,4,1,2,3,2,3,4,1,3,4
5Ø1Ø DATA Ø,-2,2,Ø,Ø,2,-2,Ø
```

IBM PC & compatibles (40-column version) w/o printer/*Maze Creator*

This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

```
1Ø DEF SEG=Ø:DEFINT A-Z:SCREEN Ø,Ø:KEY OFF
2Ø SW=4Ø
4Ø DIM CD(4,2),RD(4,3),RP(3),XR(2),YR(2)
5Ø WIDTH SW:LOCATE ,,Ø:MS=2:SP$=CHR$(32)
6Ø FOR I=1 TO 4:FOR J=1 TO 3:READ RD(I,J):NEXT J,I
7Ø FOR I=1 TO 4:FOR J=1 TO 2:READ CD(I,J):NEXT J,I
8Ø XR(1)=59:XR(2)=39:YR(1)=59:YR(2)=23
9Ø CLS:PRINT:PRINT TAB(13);"* MAZE CREATOR *":PRINT
14Ø PRINT "The program is now set to generate a"
15Ø PRINT "maze of size";XR(MS);"x";YR(MS);"(width x height)."
16Ø PRINT "Do you want to change the size?"
17Ø GOSUB 3ØØØ:IF K<>78 AND K<>89 THEN 17Ø
18Ø IF K=78 THEN MX=XR(MS):MY=YR(MS):GOTO 22Ø
19Ø POKE 1Ø5Ø,PEEK(1Ø52)
2ØØ T$="width":H=XR(MS):GOSUB 2ØØØ:MX=K
21Ø T$="height":H=YR(MS):GOSUB 2ØØØ:MY=K
22Ø QX=MX-1:QY=MY-1:MAX=QX*QY/4
23Ø CLS:DIM MP(MX,MY),PT(MAX,1)
24Ø PRINT TAB(6);"I'm now generating your maze."
25Ø FOR X=1 TO MX:FOR Y=1 TO MY:MP(X,Y)=-1:NEXT Y,X
26Ø F=Ø:LC=MAX:C=1:CX=2:CY=2
27Ø PT(1,Ø)=2:PT(1,1)=2:MP(2,2)=2
28Ø GOSUB 1ØØØ:IF V<>Ø THEN 33Ø
29Ø R=MP(CX,CY):MP(CX-CD(R,1)/2,CY-CD(R,2)/2)=-1
3ØØ MP(CX,CY)=Ø:C=C-1
31Ø PT(LC,Ø)=CX:PT(LC,1)=CY:LC=LC-1
32Ø CX=PT(C,Ø):CY=PT(C,1):PRINT "-";:GOTO 28Ø
33Ø R=RP(INT(RND*V)+1):TX=CX+CD(R,1):TY=CY+CD(R,2)
34Ø IF (R=1 AND (TX=2 OR TX=QX)) OR (R=4 AND (TY=2 OR TY=QY)) THEN 33Ø
35Ø MP(CX+CD(R,1)/2,CY+CD(R,2)/2)=5
36Ø C=C+1:CX=TX:CY=TY:MP(CX,CY)=R
37Ø PT(C,Ø)=CX:PT(C,1)=CY:PRINT "+";
38Ø IF CX<>QX OR CY<>QY THEN 28Ø
39Ø PRINT:MP(QX,QY)=5:IF C=MAX THEN 51Ø
4ØØ F=1:W=4:L=1
41Ø PRINT "#";:CX=PT(L,Ø):CY=PT(L,1)
42Ø IF MP(CX,CY)=5 THEN 49Ø
43Ø GOSUB 1ØØØ:IF V=Ø THEN MP(CX,CY)=5:GOTO 49Ø
44Ø R=RP(INT(RND*V)+1):C=C+1
45Ø MP(CX+CD(R,1)/2,CY+CD(R,2)/2)=5
46Ø CX=CX+CD(R,1):CY=CY+CD(R,2)
47Ø MP(CX,CY)=R:PT(C,Ø)=CX:PT(C,1)=CY
48Ø PRINT "@";:GOTO 43Ø
49Ø L=L+W:IF L<C THEN 41Ø ELSE IF C=MAX THEN 51Ø
5ØØ PRINT:L=1:W=W+(W=4)*3:GOTO 41Ø
51Ø CLS
53Ø PRINT "Play level 1 is the easiest; 3 is the"
```

```
540 PRINT "hardest."
550 PRINT "At which level do you want to play?"
560 GOSUB 3000:LS=K-48:IF LS<1 OR LS>3 THEN 560
610 CLS:LM=INT((SW-MX)/2):CX=2:CY=2:SC=0
620 LOCATE 1,LM+1:PRINT STRING$(MX,219)
630 LOCATE MY,LM+1:PRINT STRING$(MX,219)
640 FOR Y=2 TO QY:LOCATE Y,LM+1
650 PRINT CHR$(219);SPC(QX-1);CHR$(219);:NEXT Y
660 LOCATE 2,LM+1:PRINT "S";
670 LOCATE MY-1,LM+MX:PRINT "E";:IF LS<>1 THEN 710
680 FOR Y=2 TO QY:LOCATE Y,LM+2
690 FOR X=2 TO QX:PRINT CHR$(32-187*(MP(X,Y)=-1));
700 NEXT X,Y
710 LOCATE CY,LM+CX:PRINT "*";
720 GOSUB 3000
730 DX=(K=74)-(K=76):DY=(K=73)-(K=75)
740 IF DX=0 AND DY=0 THEN 720
750 TX=CX+DX:TY=CY+DY
760 IF MP(TX,TY)<>-1 THEN 820
770 SOUND 100,2:IF LS=1 THEN 720
780 SC=SC+1:HL=LEN(STR$(SC)):LOCATE 24,INT((SW-HL)/2)-4
790 PRINT "Blunders =";SC;:IF LS=3 THEN 720
800 IF TX=1 AND TY=2 THEN 720
810 LOCATE TY,LM+TX:PRINT CHR$(219);:GOTO 720
820 LOCATE CY,LM+CX:PRINT SP$;
830 CX=TX:CY=TY:IF CX<>QX OR CY<>QY THEN 710
840 LOCATE CY,LM+CX:PRINT "*";
850 FOR L=1 TO 10:SOUND 100,2:FOR D=1 TO 20
860 NEXT D,L:LOCATE 24,SW-1:FOR L=1 TO 24
870 FOR D=1 TO 100:NEXT D:PRINT:NEXT L
880 CLS:PRINT "Do you want to generate another maze?"
890 GOSUB 3000:IF K<>78 AND K<>89 THEN 890
900 IF K=89 THEN RUN ELSE END
1000 V=0:FOR Z=1 TO 3:T=RD(MP(CX,CY),Z)
1010 X=CX+CD(T,1):Y=CY+CD(T,2)
1020 IF X<2 OR X>QX OR Y<2 OR Y>QY THEN 1040
1030 IF MP(X,Y)<F THEN V=V+1:RP(V)=T
1040 NEXT Z:RETURN
2000 PRINT:PRINT "The ";T$;" must be an odd number"
2010 PRINT "between 9 and";STR$(H);"."
2020 PRINT "What ";T$;" do you choose";:INPUT K$
2030 IF K$="" THEN 2020 ELSE K=VAL(K$)
2040 IF K<9 OR K>H OR (K MOD 2)=0 THEN 2000
2050 RETURN
3000 POKE 1050,PEEK(1052)
3010 K$=INKEY$:IF K$="" THEN E=RND:GOTO 3010
3020 K=ASC(K$):K=K-32*(K>96)*(K<123):RETURN
5000 DATA 1,2,4,1,2,3,2,3,4,1,3,4
5010 DATA 0,-2,2,0,0,2,-2,0
```

OPTIONS FOR THE IBM PC VERSION

This 80-column option been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter or Monochrome/Printer Card, w/Disk BASIC D2.00 or Advanced BASIC A2.00. IBM PCjr w/128K RAM, w/Cartridge BASIC J1.00. Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

1. If your system can display 80 columns, change lines 20 and 80 to read as follows:

```
20 SW=80
```

```
80 XR(1)=59:XR(2)=69:YR(1)=59:YR(2)=23
```

2. If you can change the "line pitch" (lines per inch) of your printer, change it to eight lines per inch in line 4080 and back to normal (usually six lines per inch) in line 4160. For example, if your printer manual says the command sequence for eight lpi is ESCAPE 1 and the sequence for six lpi is ESCAPE 2, you'd add the following lines to the program:

```
4080 LPRINT CHR$(27);"1"
4160 LPRINT CHR$(27);"2"
```

(Note that CHR$ (27) is the equivalent of ESCAPE.)

3. If you have a 40-column printer, change line 80 to read as follows:

```
80 XR(1)=39:XR(2)=39:YR(1)=59:YR(2)=23
```

4. If your printer has Epson-compatible graphics capability, change lines 4040-4070 to read as follows:

```
4040 A$=STRING$(6,255)
4050 B$=STRING$(6,0)
4060 E$=CHR$(0)+CHR$(62)+STRING$(3,42)+CH
R$(34)
4070 S$=CHR$(52)+CHR$(82)+STRING$(2,74)+C
HR$(36)+CHR$(0)
```

Also, add lines 4030, 4080, 4100, and 4160:

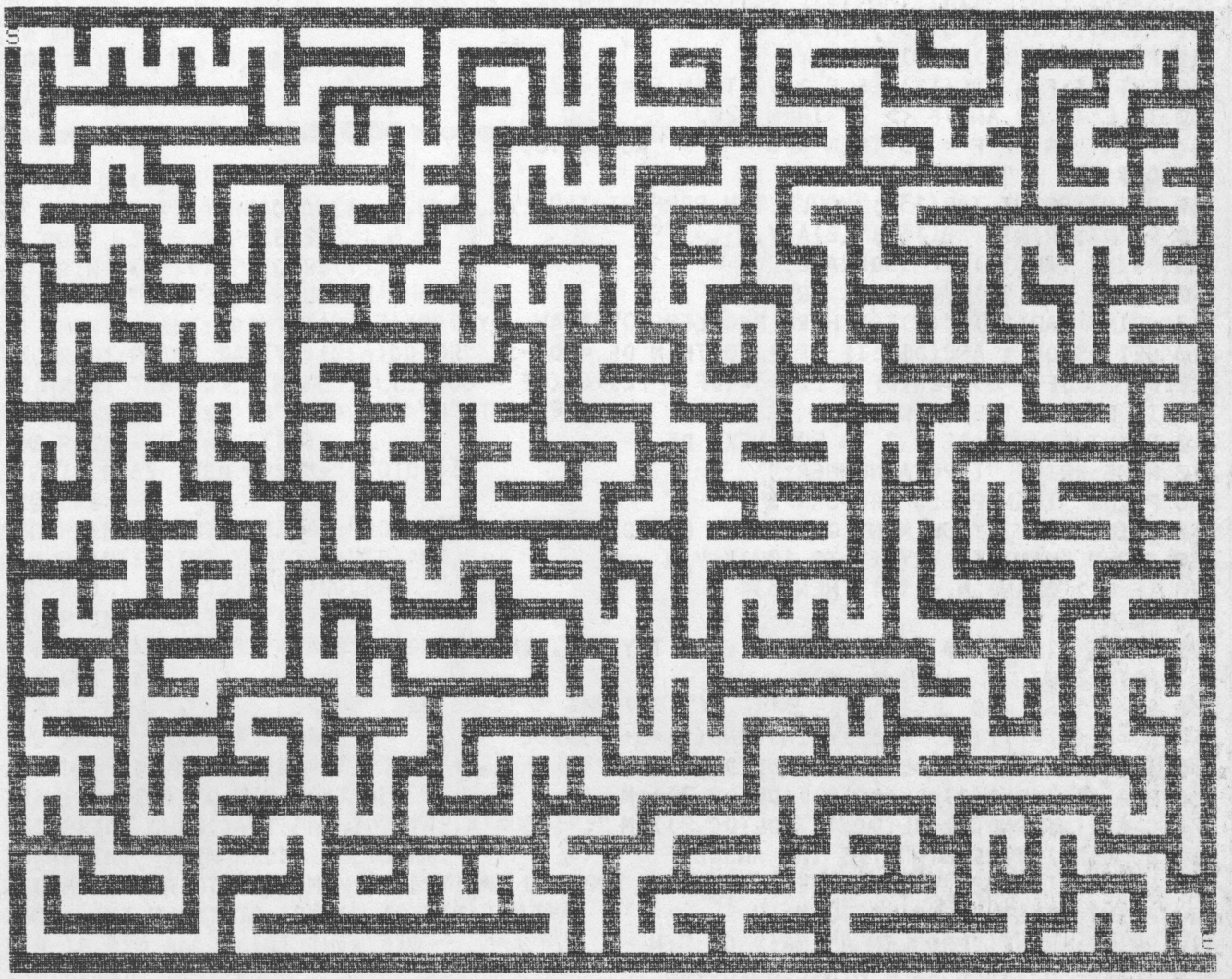
```
4030 WIDTH "LPT1:",255:MB=6*MX:LB=MB/256:
FB=MB-LB*256
4080 LPRINT CHR$(27);"1"
4100 LPRINT CHR$(27);"K";CHR$(FB);CHR$(LB
);
4160 LPRINT CHR$(27);"2"
```

5. If you would like to use a joystick to move around the maze, change lines 720-740 to read as follows:

```
720 J0=STICK(0):J1=STICK(1)
730 DX=(J0<24)-(J0>72):DY=(J1<24)-(J1>72)
740 IF (DX=0)+(DY=0)<>-1 THEN 720
```

Also, add line 30:

```
30 STRIG ON
```



MULTIMATH

By Joey Latimer

Multimath is a simple drill-and-practice program designed to help improve your addition and multiplication speed. *Multimath* has four difficulty levels from which to choose, and you can set the number of problems you want to include in a particular drill. One twist that makes *Multimath* different from other drill-and-practice programs you may have seen is that instead of asking you to add or multiply *two* numbers, *Multimath* requires you to add or multiply *three* numbers at a time. This means you have to perform two mathematical operations to find each answer.

Hackers' Note: You may find it challenging to modify the program so it imposes a time limit for each answer. A further improvement might be to add a musical and/or graphic "reward" for correct answers.

Apple II series/*Multimath*

```
10 DIM DL(4,2)
20 FOR I = 1 TO 4:READ DL(I,1),DL(I,2):NEXT I
30 HOME:HTAB 9:VTAB 10
40 PRINT "PRESS ANY KEY TO BEGIN.";
50 POKE -16368,0
60 IF PEEK(-16384) < 128 THEN N = RND(1):GOTO 60
70 POKE -16368,0
80 HOME:PRINT TAB(13);"*-MULTIMATH-*"
90 PRINT:PRINT:PRINT TAB(13);"DO YOU WANT TO ..."
100 PRINT:PRINT TAB(13);"(A)DD OR"
110 PRINT TAB(13);"(M)ULTIPLY? ";
120 GET T$:F = ASC(T$):IF F > 90 THEN F = F-32
130 IF F <> 65 AND F <> 77 THEN 120
140 PRINT T$:IF F = 65 THEN OP$ = " + ":GOTO 160
150 OP$ = " * "
160 PRINT:PRINT TAB(13);"WOULD YOU PREFER ..."
170 PRINT:PRINT TAB(13);"(E)ASY,"
180 PRINT TAB(13);"(M)ODERATE,"
190 PRINT TAB(13);"(H)ARD, OR"
200 PRINT TAB(13);"(V)ERY HARD PROBLEMS? ";
210 GET D$:DF = ASC(D$):IF DF > 90 THEN DF = DF-32
220 DC = (DF = 69)+2*(DF = 77)+3*(DF = 72)+4*(DF = 86)
230 IF DC = 0 THEN 210
240 PRINT D$:FOR DE = 1 TO 500:NEXT DE
250 HOME:PRINT "TYPE A NUMBER;"
260 PRINT "THEN PRESS <RETURN>."
270 PRINT:PRINT "HOW MANY QUESTIONS DO YOU"
280 INPUT "WANT TO TRY (1 TO 100)? ";N
290 IF N > 0 AND N < 101 THEN 330
300 PRINT
310 PRINT "1 TO 100 ARE VALID. PLEASE TRY AGAIN."
320 GOTO 270
330 PR = 1:SC = 0
340 M = ((F = 77)+(F = 65)*(INT(RND(1)*3+1)))*DC
350 A = (INT(RND(1)*DL(DC,1))+DL(DC,2))*M
360 B = (INT(RND(1)*DL(DC,1))+DL(DC,2))*M
370 C = (INT(RND(1)*DL(DC,1))+DL(DC,2))*M
380 HOME:PRINT:PRINT "TYPE THE ANSWER"
390 PRINT "(OR <E> TO END THE QUIZ);"
400 PRINT "THEN PRESS <RETURN>."
410 PRINT:PRINT "PROBLEM #";PR;" OF ";N
420 IF F = 65 THEN AN = A+B+C:GOTO 440
```

```
430 AN = A*B*C
440 HTAB 11:VTAB 10:PRINT A;OP$;B;OP$;C;" = ";
450 INPUT A$
460 IF A$ = "E" OR A$ = CHR$(101) THEN HOME:GOTO 600
470 IF VAL(A$) = 0 THEN 380
480 IF VAL(A$) <> AN THEN 500
490 PRINT:PRINT TAB(16);"RIGHT!":SC = SC+1:GOTO 510
500 PRINT:PRINT TAB(11);"SORRY ... IT'S ";AN;"."
510 FOR DE = 1 TO 1000:NEXT DE
520 IF PR < N THEN PR = PR+1:GOTO 340
530 HOME:HTAB 4:VTAB 2
540 PRINT "YOUR SCORE IS ";SC;" OUT OF ";PR;" ..."
550 PRINT
560 IF SC > PR*.9 THEN PRINT TAB(4);"A TRUE GENIUS!":GOTO 600
570 IF SC > PR*.69 THEN PRINT TAB(4);"SHARP AS A TACK!":GOTO 600
580 IF SC > PR*.49 THEN PRINT TAB(4);"JUST WARMING UP!":GOTO 600
590 PRINT TAB(4);"THINK HARDER!"
600 PRINT:PRINT:PRINT TAB(4);"DO YOU WANT TO ..."
610 PRINT
620 PRINT TAB(4);"(R)EPEAT THE SAME TYPE OF QUIZ,"
630 PRINT TAB(4);"(T)RY ANOTHER TYPE OF QUIZ, OR"
640 PRINT TAB(4);"(Q)UIT? ";
650 GET K$
660 IF K$ = "R" OR K$ = CHR$(114) THEN 330
670 IF K$ = "T" OR K$ = CHR$(116) THEN 80
680 IF K$ <> "Q" AND K$ <> CHR$(113) THEN 650
690 END
1000 DATA 5,1,5,6,10,11,70,21
```

Commodore 64 & 128 (C 64 mode)/*Multimath*

```
10 DIM DL(4,2)
20 FOR I=1 TO 4:READ DL(I,1),DL(I,2):NEXT I
30 POKE 53280,0:POKE 53281,0
40 PRINT CHR$(147);CHR$(155)
50 PRINT TAB(12);"*-MULTIMATH-*"
60 PRINT:PRINT:PRINT TAB(13);"DO YOU WANT TO ..."
70 PRINT:PRINT TAB(13);"(A)DD OR"
80 PRINT TAB(13);"(M)ULTIPLY? ";
90 GET T$:IF T$<>"A" AND T$<>"M" THEN 90
100 PRINT T$:F=ASC(T$)
110 IF F=65 THEN OP$="+":GOTO 130
120 OP$="*"
130 PRINT:PRINT TAB(13);"WOULD YOU PREFER ..."
140 PRINT:PRINT TAB(13);"(E)ASY,"
150 PRINT TAB(13);"(M)ODERATE,"
160 PRINT TAB(13);"(H)ARD, OR"
170 PRINT TAB(13);"(V)ERY HARD PROBLEMS? ";
180 GET D$
190 IF D$<>"E" AND D$<>"M" AND D$<>"H" AND D$<>"V" THEN 180
200 PRINT D$:DF=ASC(D$)
210 DC=-(DF=69)-2*(DF=77)-3*(DF=72)-4*(DF=86)
220 FOR DE=1 TO 500:NEXT DE
230 PRINT CHR$(147):PRINT "TYPE A NUMBER;"
240 PRINT "THEN PRESS <RETURN>."
250 PRINT:PRINT "HOW MANY QUESTIONS DO YOU"
260 INPUT "WANT TO TRY (1 TO 100)";N
270 IF N>0 AND N<101 THEN 310
280 PRINT
```

```
290 PRINT "1 TO 100 ARE VALID. PLEASE TRY AGAIN."
300 GOTO 250
310 PR=1:SC=0
320 M=(-(F=77)-(F=65)*(INT(RND(1)*3+1)))*DC
330 A=(INT(RND(1)*DL(DC,1))+DL(DC,2))*M
340 B=(INT(RND(1)*DL(DC,1))+DL(DC,2))*M
350 C=(INT(RND(1)*DL(DC,1))+DL(DC,2))*M
360 PRINT CHR$(147):PRINT
370 PRINT "TYPE THE ANSWER"
380 PRINT "(OR <E> TO END THE QUIZ);"
390 PRINT "THEN PRESS <RETURN>."
400 PRINT:PRINT "PROBLEM #";PR;"OF";N
410 IF F=65 THEN AN=A+B+C:GOTO 430
420 AN=A*B*C
430 POKE 214,10:PRINT
440 PRINT TAB(10);A;OP$;B;OP$;C;"= ";:INPUT A$
450 IF A$="E" THEN PRINT CHR$(147):GOTO 590
460 IF VAL(A$)=0 THEN 360
470 IF VAL(A$)<>AN THEN 490
480 PRINT:PRINT TAB(16);"RIGHT!":SC=SC+1:GOTO 510
490 PRINT
500 PRINT TAB(11);"SORRY ... IT'S";AN;CHR$(20);"."
510 FOR DE=1 TO 1000:NEXT DE
520 IF PR<N THEN PR=PR+1:GOTO 320
530 PRINT CHR$(147):PRINT
540 PRINT TAB(4);"YOUR SCORE IS";SC;"OUT OF";PR;"..."
550 IF SC>PR*0.9 THEN PRINT TAB(4);"A TRUE GENIUS!":GOTO 590
560 IF SC>PR*0.69 THEN PRINT TAB(4);"SHARP AS A TACK!":GOTO 590
570 IF SC>PR*0.49 THEN PRINT TAB(4);"JUST WARMING UP!":GOTO 590
580 PRINT TAB(4);"THINK HARDER!"
590 PRINT:PRINT:PRINT TAB(4);"DO YOU WANT TO ..."
600 PRINT
610 PRINT TAB(4);"(R)EPEAT THE SAME TYPE OF QUIZ,"
620 PRINT TAB(4);"(T)RY ANOTHER TYPE OF QUIZ, OR"
630 PRINT TAB(4);"(Q)UIT? ";
640 GET K$:IF K$="" THEN 640
650 IF K$="R" THEN 310
660 IF K$="T" THEN 40
670 IF K$<>"Q" THEN 640
680 END
1000 DATA 5,1,5,6,10,11,70,21
```

IBM PC & compatibles/*Multimath*

This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter or Monochrome/Printer Card, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

```
10 DIM DL(4,2):DEFDBL A-C
20 WIDTH 40:KEY OFF:RANDOMIZE
30 FOR I=1 TO 4:READ DL(I,1),DL(I,2):NEXT I
40 CLS:PRINT TAB(12);"*-MULTIMATH-*"
50 PRINT:PRINT:PRINT TAB(13);"Do you want to ..."
60 PRINT:PRINT TAB(13);"(a)dd or"
70 PRINT TAB(13);"(m)ultiply? ";
80 T$=INKEY$:IF T$="" THEN 80
90 F=ASC(T$):IF F>90 THEN F=F-32
100 IF F<>65 AND F<>77 THEN 80
110 PRINT T$:IF F=65 THEN OP$="+" ELSE OP$="*"
120 PRINT:PRINT TAB(13);"Would you prefer ..."
```

```
130 PRINT:PRINT TAB(13);"(e)asy,"
140 PRINT TAB(13);"(m)oderate,"
150 PRINT TAB(13);"(h)ard, or"
160 PRINT TAB(13);"(v)ery hard problems? ";
170 D$=INKEY$:IF D$="" THEN 170
180 DF=ASC(D$):IF DF>90 THEN DF=DF-32
190 DC=-(DF=69)-2*(DF=77)-3*(DF=72)-4*(DF=86)
200 IF DC=0 THEN 170 ELSE PRINT D$
210 FOR DE=1 TO 500:NEXT DE
220 CLS:PRINT "Type a number;"
230 PRINT "then press <ENTER>."
240 PRINT:PRINT "How many questions do you"
250 INPUT "want to try (1 to 100)";N
260 IF N>0 AND N<101 THEN 300
270 PRINT
280 PRINT "1 to 100 are valid. Please try again."
290 GOTO 240
300 PR=1:SC=0
310 M=(-(F=77)-(F=65)*INT(RND*3+1))*DC
320 A=(INT(RND*DL(DC,1))+DL(DC,2))*M
330 B=(INT(RND*DL(DC,1))+DL(DC,2))*M
340 C=(INT(RND*DL(DC,1))+DL(DC,2))*M
350 CLS:PRINT:PRINT "Type the answer"
360 PRINT "(or <E> to end the quiz);"
370 PRINT "then press <ENTER>."
380 PRINT:PRINT "Problem #";PR;"of";N
390 IF F=65 THEN AN=A+B+C ELSE AN=A*B*C
400 LOCATE 10,11
410 PRINT A;OP$;B;OP$;C;"= ";:INPUT A$
420 IF A$="E" OR A$="e" THEN CLS:GOTO 560
430 IF VAL(A$)=0 THEN 350
440 IF VAL(A$)<>AN THEN 460
450 PRINT:PRINT TAB(16);"Right!":SC=SC+1:GOTO 480
460 PRINT
470 PRINT TAB(11);"Sorry ... it's";AN;CHR$(29);"."
480 FOR DE=1 TO 1250:NEXT DE
490 IF PR<N THEN PR=PR+1:GOTO 310
500 CLS:LOCATE 2,4
510 PRINT "Your score is";SC;"out of";PR;"..."
520 IF SC>PR*.9 THEN PRINT TAB(4);"a true genius!":GOTO 560
530 IF SC>PR*.69 THEN PRINT TAB(4);"sharp as a tack!":GOTO 560
540 IF SC>PR*.49 THEN PRINT TAB(4);"just warming up!":GOTO 560
550 PRINT TAB(4);"think harder!"
560 PRINT:PRINT:PRINT TAB(4);"Do you want to ..."
570 PRINT
580 PRINT TAB(4);"(r)epeat the same type of quiz,"
590 PRINT TAB(4);"(t)ry another type of quiz, or"
600 PRINT TAB(4);"(q)uit? ";
610 K$=INKEY$:IF K$="" THEN 610
620 IF K$="R" OR K$="r" THEN 300
630 IF K$="T" OR K$="t" THEN 40
640 IF K$<>"Q" AND K$<>"q" THEN 610
650 END
1000 DATA 5,1,5,6,10,11,70,21
```

PORTRAIT

By Joey Latimer

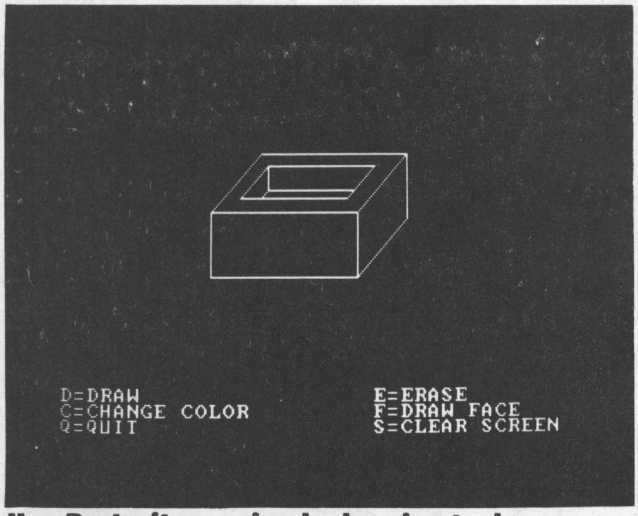
If you've always wanted to be a Rembrandt, but can't stand the smell of turpentine, then this program may be just the thing for you! *Portrait* draws the outline of a face and leaves the rest up to you.

Set your computer to all uppercase letters before running the program. First, choose the color of your "brush" by pressing the "C" key. When you've selected a color, type "F" and the face outline will appear on your screen.

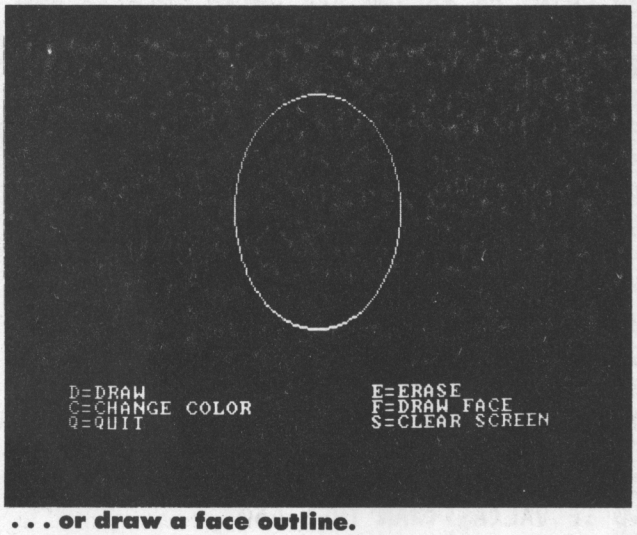
You can draw either with a joystick or by using your keyboard (type "D" and use the direction keys previously indicated on the screen). To erase, type "E" and again use your direction keys. Or, hold down the fire button on your joystick. You can change "brush" colors at any point by pressing the "C" key.

To clear your drawing from your screen press the "S" key. When you're finished type "Q" for quit.

If you wish to draw on a blank screen, don't type "F" for face outline at the beginning.



Use *Portrait* as a simple drawing tool . . .



. . . or draw a face outline.

Apple II series/*Portrait*

```
10 DIM KT$(8),XT(8),YT(8)
19 REM --PRINT INSTRUCTIONS--
20 TEXT:HOME
30 PRINT "DO YOU WANT TO USE THE <K>EYBOARD OR","<J>OYSTICK?"
40 GET C$
50 IF C$ <> "K" AND C$ <> "J" THEN 40
60 HOME
70 IF C$ = "J" THEN PRINT "PLEASE PLUG IN YOUR JOYSTICK AND CENTER THE STICK.":G
OTO 120
80 PRINT TAB(47);"HERE ARE YOUR DRAWING KEYS:"
90 PRINT TAB(57);"U  I  O"
100 PRINT TAB(57);"J     L"
110 PRINT TAB(57);"M  ,  ."
120 PRINT TAB(49);"PRESS ANY KEY TO BEGIN."
130 GET R$
140 IF C$ = "J" THEN XS = PDL(0):YS = PDL(1)
150 HOME
160 HGR
170 FOR I = 1 TO 8
180 READ K,XT(I),YT(I)
190 KT$(I) = CHR$(K)
200 NEXT I
210 READ X,Y,NC,S
220 VTAB 22
```

```
230 IF C$ = "K" THEN PRINT " D=DRAW";SPC(18);"E=ERASE":GOTO 250
240 PRINT " MOVE STICK TO DRAW";SPC(6);"<FIRE>=ERASE"
250 PRINT " C=CHANGE COLOR";SPC(10);"F=DRAW FACE"
260 PRINT " Q=QUIT";SPC(18);"S=CLEAR SCREEN"
269 REM --ERASE AND PLOT PIXEL--
270 IF S = 1 THEN HCOLOR= 0:HPLOT HC,HR:HPLOT HC+1,HR
280 HCOLOR= NC
290 HPLOT X,Y
300 HPLOT X+1,Y
310 HC = X
320 HR = Y
329 REM --READ KEYBOARD--
330 K = PEEK(49152)
340 IF K < 127 AND C$ = "K" THEN 330
350 IF K < 127 AND C$ = "J" THEN K$ = "":GOTO 470
360 K$ = CHR$(K-128)
370 POKE 49168,0
380 IF K$ = "E" THEN S = 1
390 IF K$ = "D" THEN S = 2
400 IF K$ = "S" THEN RESTORE:GOTO 150
410 IF K$ = "C" THEN NC = NC+1
420 IF NC = 4 THEN NC = 5
430 IF NC > 7 THEN NC = 1
440 IF K$ = "F" THEN 620
450 IF K$ = "Q" THEN TEXT:HOME:END
460 IF C$ = "K" THEN 540
469 REM --READ JOYSTICK--
470 S = 2
480 IF PEEK(49249) > 127 THEN S = 1
490 IF PDL(0) < XS-15 THEN X = X-1
500 IF PDL(0) > XS+15 THEN X = X+1
510 IF PDL(1) < YS-15 THEN Y = Y-1
520 IF PDL(1) > YS+15 THEN Y = Y+1
530 GOTO 570
540 FOR I = 1 TO 8
550 IF K$ = KT$(I) THEN X = X+XT(I):Y = Y+YT(I):I = 8
560 NEXT I
570 IF X > 278 THEN X = 0
580 IF X < 0 THEN X = 278
590 IF Y > 159 THEN Y = 0
600 IF Y < 0 THEN Y = 159
610 GOTO 270
619 REM --DRAW FACE--
620 FOR I = 1/30 TO 8*ATN(1) STEP 1/30
630 XF = SIN(I)*52+139
640 YF = COS(I)*50+79
650 HPLOT XF,YF
660 HPLOT XF+1,YF
670 NEXT I
680 GOTO 290
1000 DATA 77,-1,1,44,0,1,46,1,1,74,-1,0
1010 DATA 76,1,0,85,-1,-1,73,0,-1,79,1,-1
1020 DATA 139,79,2,2
```

Commodore 64 & 128 (C 64 mode)/*Portrait*

```
10 DIM KT$(8),XT(8),YT(8)
19 REM --PRINT INSTRUCTIONS--
20 POKE 53281,6
```

```
30 PRINT CHR$(147);"DO YOU WANT TO USE THE <K>EYBOARD OR","<J>OYSTICK?"
40 GET C$
50 IF C$<>"K" AND C$<>"J" THEN 40
60 PRINT CHR$(147)
70 IF C$="K" THEN 100
80 PRINT "PLEASE PLUG YOUR JOYSTICK INTO CONTROL","PORT 1."
90 GOTO 140
100 PRINT TAB(47);"HERE ARE YOUR DRAWING KEYS:"
110 PRINT TAB(56);"U I O"
120 PRINT TAB(56);"J   L"
130 PRINT TAB(56);"M , ."
140 PRINT TAB(49);"PRESS ANY KEY TO BEGIN."
150 GET R$
160 IF R$="" THEN 150
170 PRINT CHR$(147)
180 FOR I=1 TO 8
190 READ JS(I),K,XT(I),YT(I)
200 KT$(I)=CHR$(K)
210 NEXT I
220 READ SM,CM,X,Y,NC,S
230 POKE 214,24
240 PRINT
250 IF C$="J" THEN PRINT "MOVE STICK TO DRAW";TAB(24);"<FIRE> TO ERASE":GOTO 270
260 PRINT "D=DRAW";TAB(25);"E=ERASE"
270 PRINT "C=COLOR";TAB(9);"F=FACE";TAB(17);"Q=QUIT";TAB(25);"S=CLEAR SCREEN";
279 REM --ERASE AND PLOT BLOCKS--
280 IF S=1 THEN POKE CM+HC+40*HR,6:POKE SM+HC+40*HR,160
290 POKE CM+X+40*Y,NC
300 POKE SM+X+40*Y,160
310 HC=X
320 HR=Y
329 REM --READ KEYBOARD--
330 GET K$
340 IF K$="" THEN 430
350 IF K$="E" THEN S=1
360 IF K$="D" THEN S=2
370 IF K$="S" THEN RESTORE:GOTO 170
380 IF K$="C" THEN NC=NC+1
390 IF NC>15 THEN NC=0
400 IF NC=6 THEN NC=7
410 IF K$="F" THEN 580
420 IF K$="Q" THEN PRINT CHR$(147):END
430 IF C$="K" THEN 490
439 REM --READ JOYSTICK--
440 S=2
450 JV=PEEK(56321)
460 FR=JV AND 16
470 IF FR=0 THEN S=1
480 JV=15-(JV AND 15)
490 FOR I=1 TO 8
500 IF C$="K" THEN IF K$=KT$(I) THEN X=X+XT(I):Y=Y+YT(I):I=8:GOTO 520
510 IF C$="J" THEN IF JV=JS(I) THEN X=X+XT(I):Y=Y+YT(I):I=8
520 NEXT I
530 IF X>39 THEN X=0
540 IF X<0 THEN X=39
550 IF Y>22 THEN Y=0
560 IF Y<0 THEN Y=22
570 GOTO 280
579 REM --DRAW FACE--
```

```
580 FOR I=1/8 TO 4.1*TAN(1) STEP 1/8
590 XF%=SIN(I)*7.5+19
600 YF%=COS(I)*8.5+11
610 POKE CM+XF%+40*YF%,NC
620 POKE SM+XF%+40*YF%,160
630 NEXT I
640 POKE CM+16+40*19,6
650 POKE SM+16+40*19,160
660 GOTO 290
1000 DATA 6,77,-1,1,2,44,0,1,10,46,1,1,4,74,-1,0
1010 DATA 8,76,1,0,5,85,-1,-1,1,73,0,-1,9,79,1,-1
1020 DATA 1024,55296,19,11,4,2
```

IBM PC & compatibles/*Portrait*

This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

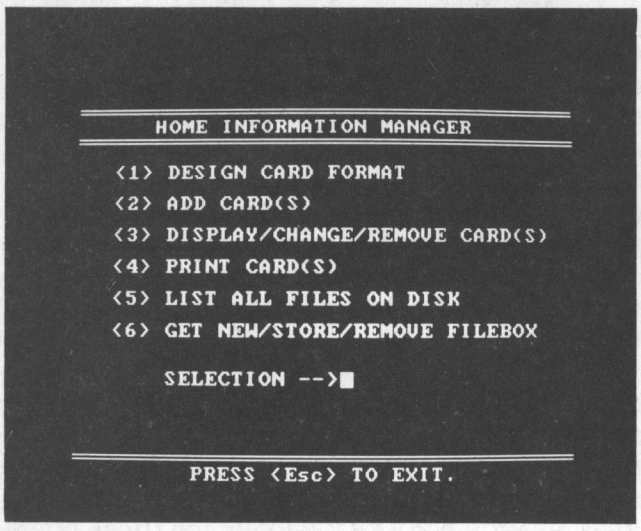
```
10 DIM KT$(8),XT(8),YT(8)
20 WIDTH 40
30 KEY OFF
40 SCREEN 1,0
50 COLOR 0,2
60 LOCATE ,,0
69 REM --PRINT INSTRUCTIONS--
70 CLS
80 PRINT "DO YOU WANT TO USE THE <K>EYBOARD OR","<J>OYSTICK?"
90 C$=INKEY$
100 IF C$<>"J" AND C$<>"K" THEN 90
110 CLS
120 IF C$="J" THEN STRIG ON:PRINT "PLEASE PLUG IN YOUR JOYSTICK AND CENTER THE S
TICK.":GOTO 210
130 FOR I=1 TO 8
140 READ K,XT(I),YT(I)
150 KT$(I)=CHR$(K)
160 NEXT I
170 PRINT CHR$(31);TAB(8);"HERE ARE YOUR DRAWING KEYS:"
180 PRINT CHR$(31);TAB(17);"U  I  O"
190 PRINT CHR$(31);TAB(17);"J     L"
200 PRINT CHR$(31);TAB(17);"M  ,  ."
210 PRINT CHR$(31);TAB(10);"PRESS ANY KEY TO BEGIN."
220 A$=INKEY$
230 IF A$="" THEN 220
240 IF C$="J" THEN XS=STICK(0):YS=STICK(1)
250 RESTORE 1020
260 READ X,Y,NC,S
270 CLS
280 LOCATE 23,2
290 IF C$="K" THEN PRINT "D=DRAW";SPC(17);"E=ERASE":GOTO 310
300 PRINT "MOVE STICK TO DRAW";SPC(5);"<FIRE>=ERASE"
310 PRINT " C=CHANGE COLOR";SPC(9);"F=DRAW FACE";
320 LOCATE 25,2
330 PRINT "Q=QUIT";SPC(17);"S=CLEAR SCREEN";
339 REM --ERASE AND PLOT PIXEL--
340 IF S=1 THEN PRESET(HC,HR),0
350 PSET(X,Y),NC
360 HC=X
370 HR=Y
379 REM --READ KEYBOARD--
```

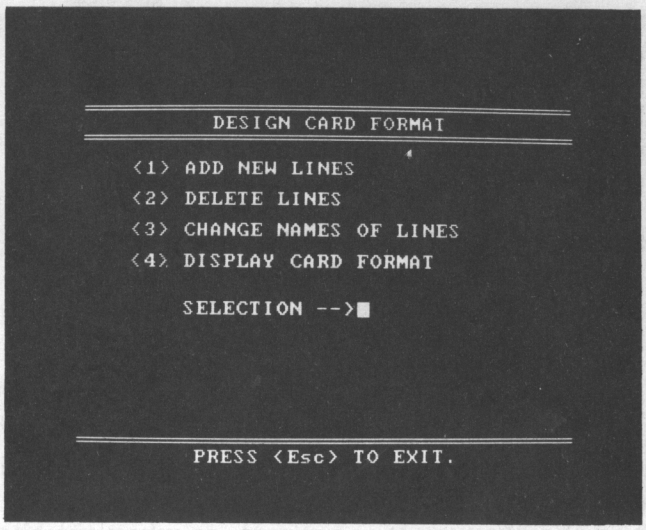
```
380 K$=INKEY$
390 IF K$="" THEN IF C$="K" THEN 380 ELSE 460
400 IF K$="E" THEN S=1 ELSE IF K$="D" THEN S=2
410 IF K$="S" THEN 250
420 IF K$="C" THEN NC=NC+1
430 IF NC>3 THEN NC=1
440 IF K$="F" THEN 600
450 IF K$="Q" THEN CLS:END
460 IF C$="K" THEN 540
469 REM --READ JOYSTICK--
470 FB=STRIG(1)
480 XC=STICK(0)
490 YC=STICK(1)
500 IF FB=-1 THEN S=1 ELSE S=2
510 IF XC<XS-15 THEN X=X-1 ELSE IF XC>XS+15 THEN X=X+1
520 IF YC<YS-15 THEN Y=Y-1 ELSE IF YC>YS+15 THEN Y=Y+1
530 GOTO 570
540 FOR I=1 TO 8
550 IF K$=KT$(I) THEN X=X+XT(I):Y=Y+YT(I):I=8
560 NEXT I
570 IF X>319 THEN X=0 ELSE IF X<0 THEN X=319
580 IF Y>175 THEN Y=0 ELSE IF Y<0 THEN Y=175
590 GOTO 340
599 REM --DRAW FACE--
600 PSET(159,147),NC
610 FOR I=1/30 TO 8*ATN(1) STEP 1/30
620 LINE -(SIN(I)*50+159,COS(I)*60+87),NC
630 NEXT I
640 GOTO 350
1000 DATA 77,-1,1,44,0,1,46,1,1,74,-1,0
1010 DATA 76,1,0,85,-1,-1,73,0,-1,79,1,-1
1020 DATA 159,87,1,2
```

HOME INFORMATION MANAGER

Put Your Files on a Floppy Disk (or Cassette) with This Mini-Data-Base Program

Program by Steven C.M. Chen
Introduction by Lance Paavola





Home Information Manager is an electronic filing program that helps you gather files onto a slim, neat, portable disk or cassette, and print out a hard copy whenever you want. Try it if you're not ready to buy a commercial data-base program yet. Maybe you're unsure whether storing your records electronically makes sense, or all you think you'll want to computerize is your 100-name Christmas card list. It may take a while to type in, but when you're finished, it's a program you can use every day. You can pinpoint a particular piece of information without having to thumb through it all. You can make changes without a mess. And you can consolidate your files in one place.

THE FIRST STEPS

Begin by carefully typing in and SAVEing the program. You may also wish to SAVE a second (backup) copy of the program on a separate disk or tape at this time. Before you RUN the program, make sure your printer (if you have one) and disk drive or Datasette are connected and turned on.

Don't be discouraged if the program doesn't RUN the first time; with such a long program, you're bound to make typing errors. LIST it on the printer and proofread carefully. When you've got the program running, SAVE the final version and make a backup copy.

You can save your own data on the same disk or cassette as your working copy of *Home Information Manager*. If you prefer to keep your data on separate disks or cassettes, get them now, format the disks, and label appropriately (e.g., MOM, DAD, JODY; or FINANCIAL, PERSONAL).

Before you transfer important records to your *Home Information Manager* disks or cassettes, test the program by creating a few sample fileboxes and filling in some info. When you're confident you've located any remaining typing errors, and have a good idea of how the program operates, you're ready to start using it in earnest.

A COMPUTERIZED FILEBOX

To make *Home Information Manager* easy to learn, we've designed it to work just like a recipe box filled with index cards. You can have as many "fileboxes" as will fit on your disks or cassettes.

Since you'll usually put different kinds of information on each line of every index card, you should assign a name to each line to remind you of what goes where. For example, for a catalog of your books (or books you've borrowed or lent), you might label the first line AUTHOR; the second, TITLE; the third, PUBLISHER; the fourth, DATE; the fifth, SUBJECT for general subject area; and the sixth, LOCATION for where it's shelved or who borrowed it.

Once you've typed in information about your books (choice two on the menu), you can print out a catalog of your library (choice

four); add new books as you acquire them (choice two) and remove ones you've disposed of (choice three); change any entry (i.e., change the LOCATION of a book from DEN to BEDROOM—choice three again); or display or print out the information about a particular book or all the books on a given subject (also choice three).

Choice six lets you store the filebox you're working on (all cards and the card format) on disk or tape; bring a new one into memory from disk or tape; and remove (erase) a filebox. Choice five, available only to disk users, displays the names of all the fileboxes (and other files) you've saved on disk.

EASY TO USE

For the most part, it will be obvious how to use the program, and you'll quickly learn how to use even the more obscure features (with a little experimentation). Here are some general principles:

1. *When to Press RETURN or ENTER (the ↵ key on the IBM PC).* When you see a menu and the SELECTION → prompt, or when you're asked for a line number, just press the number key for the option or line you want. You'll go directly there without having to press RETURN or ENTER. But whenever you're asked to type in something longer than one character—a card number, say, or a line name—the program waits for you to press RETURN or ENTER to indicate you're done.

2. *Moving Back Up Through the Menus.* If you ever get lost in the program, decide you don't want the choice you just made after all, or have finished with an option, you can always press the ESC key (the left arrow key on the C64). This will take you to the previous menu at any time (except when you're reading from, or writing onto, a disk or tape), even when you're in the middle of typing in a line.

3. *Built-in Editor.* When you see a less-than sign (<), or a backwards arrow (←) on the IBM PC, and a blinking cursor, you are using the built-in editor subprogram. You can then type in and edit a line of text. It will let you make changes in the line until you press RETURN or ENTER.

You are always in "insert mode"; that is, any character you type will be inserted in the line at the cursor's position. The left and right cursor keys move the cursor within the line; the DEL key (DELETE key on the Apple) deletes the character under the cursor. Apple II plus computers don't have a DELETE key. You have to use CTRL-D instead (hold down the CONTROL key and press D).

A FEW HINTS

Remembering these few key points will make using the program easier:

1. When designing a card format, make sure you allow space for all the lines you might need (up to a maximum of nine). Once you start adding cards to the filebox, you can't add or delete lines without losing all the cards in memory. (You *can* change the names of existing lines, though.)

2. Since there's no SORT function to rearrange your cards in alphabetic or numeric order, you should type in your information in the order you want it to appear. You *can* add a card in the middle, but you have to wait for the computer to shift all the other cards back.

3. When you choose DISPLAY/CHANGE/REMOVE or PRINT and then WORK WITH (or PRINT) SELECTED CARDS, you're given two choices. MATCH FROM BEGINNING OF LINE checks to see if a line *begins* with the characters you've specified. SEARCH WHOLE LINE looks for those characters *everywhere* within a line, but takes much longer. For example, if you tell the program to look for SMITH, SEARCH WHOLE LINE would find both SMITH, JOE and JOE SMITH; MATCH FROM BEGINNING OF LINE would find only SMITH, JOE.

Bear in mind that the program considers uppercase and lowercase letters to be different, so a search for SMITH would not find "Smith" or "smith."

4. When you PRINT a card or cards, they'll be printed with a predefined format (left margin and number of lines skipped between cards). You can change this predefined format by choosing CHANGE PRINTER OPTIONS from the PRINT CARD(S) menu.

5. The number of cards you can add to a filebox is determined by the number of lines in your card format. When you ADD CARD(S), you'll see how many cards you've used and how many more will fit in your current filebox.

6. Remember to back up your disks frequently—certainly after every session in which you enter a lot of information. If you have a printer, it's a good idea to make a printout of everything in your fileboxes occasionally. To be absolutely safe, you can print out each new index card as you add it, then throw out your accumulated hard copies when you do a master printout of the entire file (or when you back up the disk or tape).

Apple II series w/48K RAM, disk drive (printer optional), & DOS 3.3*/*Home Information Manager*

*See modification for ProDOS on page 71.

```
10 DIM DM$(2),F$(9),M$(7),MI(8),SM$(18),Y$(2700),YN$(1),Z$(9)
20 D$ = CHR$(4):E$ = CHR$(27):G$ = CHR$(7)
30 RE$ = CHR$(13):SP$ = CHR$(32):FT = 0:RT = 0
40 YN$(0) = "N":YN$(1) = "Y":LM = 1:SP = 1:PF = 0
50 HF = 1:FOR I = 1 TO 7:READ M$(I):NEXT I
60 MI(0) = 1:FOR I = 1 TO 7:READ T:MI(I+1) = MI(I)+T
70 FOR J = MI(I) TO MI(I+1)-1:READ SM$(J):NEXT J,I
80 FOR I = 0 TO 2:READ DM$(I):NEXT I
90 BL$ = SP$:L$ = SP$:FOR I = 1 TO 38:BL$ = BL$+SP$
100 L$ = L$+CHR$(61):NEXT I:TEXT:HOME
110 GOSUB 2400:VTAB 1:HTAB 1:PRINT L$:PRINT RE$;L$
120 POKE 34,3:POKE 35,22
130 HOME
140 R$ = "HOME INFORMATION MANAGER":GOSUB 2720
150 PRINT:FOR I = 1 TO 6
160 PRINT TAB(5);"<";I;"> ";M$(I);RE$:NEXT I
170 PRINT:PRINT TAB(9);"SELECTION -->";
180 A$ = "6":GOSUB 2300:MS = VAL(K$)
190 IF K$ = E$ THEN MS = 7
200 IF (MS <> 3 AND MS <> 4) OR RT > 0 THEN 230
210 GOSUB 2700:PRINT "NO CARDS PRESENT."
220 GOSUB 2100:GOTO 130
230 ON MS GOTO 240,560,900,1020,1340,1390,1890
240 FL = 29:GOSUB 3000:IF K$ = E$ THEN 130
250 A$ = STR$(FT):IF SE > 2 OR RT < 1 THEN 270
260 GOSUB 2710:GOSUB 2500:ON K$ = E$ GOTO 240:RT = 0
270 IF FT = 0 AND SE > 1 THEN 440
280 ON SE GOTO 290,370,460,530
290 GOSUB 3100:IF FT < 9 THEN 320
300 PRINT "A CARD HAS ONLY 9 LINES!"
310 GOSUB 2100:GOTO 540
320 FT = FT+1:C = FT
330 H$ = "LINE "+STR$(C)+":":T$ = ""
340 GOSUB 6000:IF K$ = E$ THEN FT = FT-1:GOTO 540
350 F$(FT) = T$:IF FT < 9 THEN 290
360 GOSUB 3100:GOTO 310
370 GOSUB 3100:IF FT < 1 THEN 450
380 A$ = STR$(FT)
390 PRINT "WHICH LINE DO YOU WANT TO DELETE? ";
400 GOSUB 2300:IF K$ = E$ THEN 540
410 C = VAL(K$):IF C = FT THEN 430
420 FOR I = C TO FT-1:F$(I) = F$(I+1):NEXT I
430 FT = FT-1:IF FT > 0 THEN 370
440 GOSUB 2710
450 PRINT "NO LINES PRESENT.":GOSUB 2100:GOTO 540
460 GOSUB 3100
470 PRINT "CHANGE THE NAME OF WHICH LINE #? ";
480 GOSUB 2300:IF K$ = E$ THEN 240
490 PRINT K$:C = VAL(K$)
500 H$ = "LINE "+STR$(C)+":":T$ = F$(C)
510 GOSUB 6000:IF K$ = E$ THEN 460
520 F$(C) = T$:GOTO 460
530 GOSUB 3100:GOTO 240
540 MAX = 0:IF FT > 0 THEN MAX = INT(2700/FT)
550 GOTO 240
560 W$ = E$:IF FT > 0 THEN 590
```

```
57Ø GOSUB 27ØØ:PRINT "YOU MUST ";M$(1);" (OPTION 1"
58Ø PRINT "ON MAIN MENU) FIRST.":GOSUB 21ØØ:GOTO 13Ø
59Ø IF RT = MAX THEN GOSUB 27ØØ:GOTO 65Ø
6ØØ GOSUB 3ØØØ:IF K$ = E$ THEN 13Ø
61Ø GOSUB 271Ø:FL = 38:IF SE = 2 THEN 76Ø
62Ø GOSUB 26ØØ
63Ø RT = RT+1:IF RT < MAX+1 THEN 66Ø
64Ø RT = MAX
65Ø PRINT G$;DM$(2):GOSUB 21ØØ:GOTO 13Ø
66Ø VTAB 4:HTAB 15:PRINT "CARD ";RT
67Ø C = RT:FOR L = 1 TO FT:GOSUB 32ØØ
68Ø IF K$ <> E$ THEN Y$(T) = T$:GOTO 7ØØ
69Ø L = FT:RT = RT-1
7ØØ NEXT L:IF K$ = E$ THEN 6ØØ
71Ø PRINT L$:PRINT DM$(Ø)
72Ø VTAB 2Ø:PRINT "CARDS USED: ";RT
73Ø VTAB 21:PRINT "CARDS LEFT: ";MAX-RT;SP$;
74Ø GOSUB 22ØØ:ON K$ = SP$ GOTO 62Ø:GOTO 13Ø
75Ø GOSUB 271Ø:IF RT = MAX THEN 65Ø
76Ø H$ = "INSERT BEFORE WHICH CARD #?":T$ = ""
77Ø FL = 39:GOSUB 6ØØØ:IF K$ = E$ THEN 6ØØ
78Ø GOSUB 271Ø
79Ø C = VAL(T$):IF C > Ø AND C < RT+1 THEN 81Ø
8ØØ PRINT G$;DM$(1):GOSUB 21ØØ:GOTO 59Ø
81Ø PRINT TAB(13);"NEW CARD ";C
82Ø FOR L = 1 TO FT:GOSUB 32ØØ
83Ø IF K$ = E$ THEN L = FT:GOTO 85Ø
84Ø Z$(L) = T$
85Ø NEXT L:IF K$ = E$ THEN 6ØØ
86Ø FOR J = RT*FT TO (C-1)*FT+1 STEP -1
87Ø Y$(J+FT) = Y$(J):NEXT J:RT = RT+1
88Ø FOR J = 1 TO FT:Y$((C-1)*FT+J) = Z$(J):NEXT J
89Ø GOTO 75Ø
9ØØ F = -1
91Ø GOSUB 3ØØØ:IF K$ = E$ THEN 13Ø
92Ø GOSUB 271Ø:IF SE = 2 THEN 1Ø1Ø
93Ø H$ = "START WITH WHICH CARD?":T$ = "":FL = 32
94Ø GOSUB 6ØØØ:IF K$ = E$ THEN 91Ø
95Ø V = VAL(T$):IF V > Ø AND V < RT+1 THEN 97Ø
96Ø PRINT L$:PRINT G$;DM$(1):GOSUB 21ØØ:GOTO 91Ø
97Ø GOSUB 39ØØ:J = V
98Ø W$ = "":GOSUB 4ØØØ:IF W$ = E$ THEN 91Ø
99Ø J = J+1:IF J < RT+1 THEN 98Ø
1ØØØ HOME:PRINT G$;DM$(2):GOSUB 21ØØ:GOTO 91Ø
1Ø1Ø GOSUB 5ØØØ:GOTO 91Ø
1Ø2Ø RA$ = " (1-"+STR$(RT)+")?"
1Ø3Ø FL = 6:GOSUB 3ØØØ:IF K$ = E$ THEN 13Ø
1Ø4Ø GOSUB 271Ø:ON SE GOTO 1Ø5Ø,1Ø8Ø,113Ø,114Ø,115Ø
1Ø5Ø PRINT "PRINT WHICH CARD #";RA$
1Ø6Ø GOSUB 37ØØ:IF RF THEN 1Ø3Ø
1Ø7Ø R1 = T:R2 = T:GOSUB 38ØØ:GOTO 1Ø2Ø
1Ø8Ø PRINT "START WITH WHICH CARD #";RA$
1Ø9Ø GOSUB 37ØØ:R1 = T:IF RF THEN 1Ø3Ø
11ØØ PRINT "STOP WITH WHICH CARD #";RA$
111Ø GOSUB 37ØØ:R2 = T:IF (RF) OR R2 < R1 THEN 1Ø3Ø
112Ø GOSUB 38ØØ:GOTO 1Ø2Ø
113Ø R1 = 1:R2 = RT:GOSUB 38ØØ:GOTO 1Ø2Ø
114Ø GOSUB 5ØØØ:GOTO 1Ø2Ø
115Ø FL = 37:H$ = "LEFT MARGIN (Ø-4Ø):"
```

```
116Ø T$ = STR$(LM)
117Ø GOSUB 6ØØØ:IF K$ = E$ THEN 1Ø2Ø
118Ø LM = VAL(T$):IF LM > -1 AND LM < 41 THEN 121Ø
119Ø LM = 1:VTAB 4:PRINT BL$
12ØØ VTAB 4:HTAB 1:GOTO 116Ø
121Ø H$ = "BLANK LINES BETWEEN CARDS (Ø-66):"
122Ø T$ = STR$(SP)
123Ø GOSUB 6ØØØ:IF K$ = E$ THEN 1Ø2Ø
124Ø SP = VAL(T$):IF SP > -1 AND SP < 67 THEN 127Ø
125Ø SP = Ø:VTAB 5:PRINT BL$
126Ø VTAB 5:HTAB 1:GOTO 122Ø
127Ø H$ = "PAUSE AFTER EACH CARD (Y/N):":T$ = YN$(PF)
128Ø GOSUB 6ØØØ:IF K$ = E$ THEN 1Ø2Ø
129Ø PF = (LEFT$(T$,1) = "Y")
13ØØ H$ = "PRINT LINE NAMES (Y/N):":T$ = YN$(HF)
131Ø GOSUB 6ØØØ:IF K$ = E$ THEN 1Ø2Ø
132Ø HF = (LEFT$(T$,1) = "Y")
133Ø PRINT L$:GOSUB 21ØØ:GOTO 1Ø2Ø
134Ø GOSUB 27ØØ:ONERR GOTO 137Ø
135Ø POKE 35,24:HOME
136Ø PRINT:PRINT D$;"CATALOG,D1"
137Ø PRINT L$:GOSUB 24ØØ:GOSUB 21ØØ
138Ø POKE 35,22:POKE 216,Ø:GOTO 13Ø
139Ø FL = 35
14ØØ GOSUB 3ØØØ:IF K$ = E$ THEN 13Ø
141Ø GOSUB 271Ø
142Ø IF SE <> 2 OR RT < 1 THEN 144Ø
143Ø GOSUB 25ØØ:HOME:IF K$ = E$ THEN 14ØØ
144Ø T$ = "":IF SE = 1 THEN H$ = "STORE UNDER WHAT NAME?"
145Ø IF SE = 2 THEN H$ = "GET WHICH FILEBOX?"
146Ø IF SE = 3 THEN H$ = "REMOVE WHICH FILEBOX?"
147Ø GOSUB 6ØØØ:IF T$ = "" OR K$ = E$ THEN 14ØØ
148Ø IF VAL(T$) <> Ø OR ASC(T$) = 48 THEN 14ØØ
149Ø T$ = T$+".HIM":POKE 35,24:HOME:ONERR GOTO 151Ø
15ØØ ON SE GOTO 164Ø,179Ø,162Ø
151Ø ER = PEEK(222)
152Ø HOME
153Ø PRINT D$;"CLOSE ";T$:PRINT G$;
154Ø IF ER = 5 THEN PRINT "FILE INCOMPLETE: ";INT(J/FT);" OF ";RT;" CARDS READ."
:GOTO 186Ø
155Ø IF ER = 4 THEN PRINT "DISK IS WRITE PROTECTED."
156Ø IF ER = 6 THEN PRINT "THAT FILEBOX IS NOT ON THIS DISK."
157Ø IF ER = 8 OR ER = 9 OR ER = 11 THEN PRINT "DISK ERROR."
158Ø IF ER = 9 THEN PRINT "SORRY, THIS DISK IS FULL.  TRY ANOTHER."
159Ø IF ER = 13 THEN PRINT "THAT IS NOT A FILEBOX FILE."
16ØØ PRINT L$:GOSUB 24ØØ:GOSUB 21ØØ
161Ø POKE 35,22:POKE 216,Ø:GOTO 14ØØ
162Ø PRINT D$;"DELETE ";T$
163Ø GOSUB 24ØØ:GOTO 161Ø
164Ø ONERR GOTO 171Ø
165Ø PRINT D$;"LOCK ";T$
166Ø PRINT D$;"UNLOCK ";T$
167Ø PRINT G$;"THAT FILEBOX IS ALREADY ON THIS DISK."
168Ø PRINT "PRESS <SPACE BAR> TO REPLACE IT."
169Ø GOSUB 24ØØ:GOSUB 22ØØ:IF K$ = E$ THEN 161Ø
17ØØ POKE 35,24:HOME:PRINT:PRINT D$;"DELETE ";T$
171Ø PRINT D$;"OPEN ";T$
172Ø PRINT D$;"WRITE ";T$
173Ø PRINT "FILEBOX":PRINT FT:PRINT RT
```

```
1740 PRINT LM:PRINT SP:PRINT PF:PRINT HF
1750 FOR J = 1 TO FT:PRINT CHR$(34);F$(J);CHR$(34)
1760 NEXT J:IF RT = 0 THEN 1780
1770 FOR J = 1 TO RT*FT:PRINT CHR$(34);Y$(J);CHR$(34):NEXT J
1780 PRINT D$;"CLOSE ";T$:GOSUB 2400:GOTO 1610
1790 PRINT D$;"UNLOCK ";T$
1800 PRINT D$;"OPEN ";T$
1810 PRINT D$;"READ ";T$
1820 INPUT C$:IF C$ <> "FILEBOX" THEN ER = 13:GOTO 1530
1830 INPUT FT:INPUT RT:INPUT LM:INPUT SP:INPUT PF:INPUT HF
1840 FOR J = 1 TO FT:INPUT F$(J):NEXT J:IF RT = 0 THEN 1860
1850 FOR J = 1 TO RT*FT:INPUT Y$(J):NEXT J
1860 MAX = 0:IF FT > 0 THEN MAX = INT(2700/FT)
1870 PRINT D$;"CLOSE ";T$
1880 PRINT "FILEBOX IS NOW IN MEMORY.":GOTO 1600
1890 GOSUB 3000:IF SE = 1 OR K$ = E$ THEN 130
1900 TEXT:HOME:END
2000 POKE -16368,0
2010 K = PEEK(-16384):IF K < 128 THEN 2010
2020 K$ = CHR$(K-128):POKE -16368,0:RETURN
2100 GOSUB 2000:ON K$ <> E$ GOTO 2100:RETURN
2200 GOSUB 2000:IF K$ <> E$ AND K$ <> SP$ THEN 2200
2210 RETURN
2300 GET K$
2310 IF K$ <> E$ AND (K$ < "1" OR K$ > A$) THEN 2300
2320 RETURN
2400 VTAB 23:HTAB 1:PRINT L$
2410 VTAB 24:HTAB 11:PRINT "PRESS <ESC> TO EXIT.";
2420 RETURN
2500 PRINT "WARNING!  USE OF THIS OPTION WILL ERASE"
2510 PRINT "CONTENTS OF ALL CARDS FROM MEMORY."
2520 PRINT:PRINT DM$(0):GOSUB 2200:RETURN
2600 POKE 35,18:HOME:POKE 35,22:RETURN
2700 HOME:R$ = M$(MS):GOTO 2720
2710 HOME:R$ = SM$(MI(MS)+SE-1):GOTO 2720
2720 VTAB 2:HTAB 1:PRINT BL$:VTAB 2:HTAB 1
2730 PRINT SPC((40-LEN(R$))/2);R$:VTAB 4:RETURN
3000 GOSUB 2700:PRINT:FOR I = MI(MS) TO MI(MS+1)-1
3010 PRINT TAB(6);"<";I-MI(MS)+1;"> ";SM$(I)
3020 PRINT:NEXT I:A$ = STR$(MI(MS+1)-MI(MS))
3030 PRINT:PRINT TAB(10);"SELECTION -->";
3040 GOSUB 2300:SE = VAL(K$):RETURN
3100 GOSUB 2710:IF FT < 1 THEN RETURN
3110 FOR I = 1 TO FT
3120 PRINT "LINE ";I;": ";F$(I):NEXT I
3130 PRINT L$:IF MS = 3 OR MS = 4 THEN RETURN
3140 IF SE = 4 THEN GOSUB 2100
3150 RETURN
3200 T = (C-1)*FT+L:H$ = F$(L)+":":T$ = ""
3210 IF W$ = "C" THEN T$ = Y$(T)
3220 GOSUB 6000:RETURN
3300 W$ = "":PRINT TAB(LM+15);"CARD  ";J
3310 FOR Z = 1 TO FT:T$ = "":IF HF THEN T$ = F$(Z)+": "
3320 PRINT TAB(LM);T$;Y$((J-1)*FT+Z)
3330 W$ = CHR$(PEEK(-16384)):IF W$ = E$ THEN Z = FT:J = R2
3340 NEXT Z:IF W$ = E$ THEN RETURN
3350 IF SP = 0 THEN 3370
3360 FOR Z = 1 TO SP:PRINT:NEXT Z
3370 GOSUB 2600:IF PF = 0 THEN RETURN
```

```
3380 PRINT D$;"PR# Ø":PRINT DM$(Ø):GOSUB 22ØØ
3390 PRINT:PRINT D$;"PR# 1":IF K$ = SP$ THEN RETURN
3400 J = R2:RETURN
3500 PRINT TAB(15);"CARD ";J:PRINT L$
3510 FOR Z = 1 TO FT:PRINT F$(Z);":";Y$((J-1)*FT+Z)
3520 NEXT Z:PRINT L$:RETURN
3600 PRINT "PRESS <SPACE BAR> WHEN PRINTER IS READY."
3610 GOSUB 22ØØ:RETURN
3700 RF = 1:H$ = "?":T$ = "":GOSUB 6ØØØ:PRINT L$
3710 IF K$ = E$ OR T$ = "" THEN RETURN
3720 T = VAL(T$):IF T > Ø AND T <= RT THEN RF = Ø:RETURN
3730 PRINT G$;DM$(1):PRINT L$
3740 GOSUB 21ØØ:RETURN
3800 GOSUB 36ØØ:IF K$ = E$ THEN RETURN
3810 PRINT:PRINT D$;"PR# 1"
3820 FOR J = R1 TO R2:GOSUB 33ØØ
3830 NEXT J:PRINT D$;"PR# Ø":RETURN
3900 VTAB 19:HTAB 1
3910 PRINT "PRESS <C> TO CHANGE THIS CARD,"
3920 PRINT "PRESS <P> TO PRINT IT,"
3930 PRINT "PRESS <R> TO REMOVE IT, OR"
3940 PRINT "PRESS <SPACE BAR> TO MOVE TO NEXT CARD.";:RETURN
4000 GOSUB 26ØØ:GOSUB 35ØØ
4010 GOSUB 2ØØØ:IF K$ = E$ THEN W$ = E$:J = RT:RETURN
4020 IF K$ = SP$ THEN RETURN
4030 ON K$ = "C" GOTO 4110:IF K$ = "R" THEN 4170
4040 IF K$ <> "P" THEN 4010
4050 HOME
4060 IF F THEN GOSUB 36ØØ:IF K$ = E$ THEN 41ØØ
4070 F = Ø:PRINT "NOW PRINTING CARD ";J
4080 PRINT:PRINT D$;"PR# 1"
4090 GOSUB 33ØØ:PRINT D$;"PR# Ø"
4100 J = J-1:GOSUB 39ØØ:RETURN
4110 HOME:GOSUB 271Ø
4120 FL = 39:PRINT TAB(15);"CARD ";J
4130 C = J:W$ = "C":FOR L = 1 TO FT:GOSUB 32ØØ
4140 IF K$ = E$ THEN L = FT:GOTO 416Ø
4150 Y$(T) = T$
4160 NEXT L:J = J-1:GOSUB 39ØØ:RETURN
4170 HOME:GOSUB 35ØØ
4180 PRINT "PRESS <SPACE BAR> TO REMOVE THIS CARD."
4190 GOSUB 22ØØ:GOSUB 39ØØ:IF K$ = E$ THEN J = J-1:RETURN
4200 IF J = RT THEN 423Ø
4210 FOR Z = (J-1)*FT+1 TO (RT-1)*FT
4220 Y$(Z) = Y$(Z+FT):NEXT Z
4230 RT = RT-1:J = J-1:RETURN
5000 GOSUB 311Ø:A$ = STR$(FT)
5010 W$ = "":PRINT "SELECT CARDS BY WHICH LINE #?";
5020 GOSUB 23ØØ:IF K$ = E$ THEN RETURN
5030 V = VAL(K$):GOSUB 26ØØ
5040 PRINT "WHAT TEXT ARE YOU SEARCHING FOR?"
5050 FL = 38:H$ = "?":T$ = "":GOSUB 6ØØØ
5060 IF K$ = E$ OR T$ = "" THEN RETURN
5070 HOME:PRINT
5080 PRINT TAB(5);"<1> MATCH FROM BEGINNING OF LINE"
5090 PRINT RE$;TAB(5);"<2> SEARCH WHOLE LINE":PRINT
5100 A$ = "2":PRINT TAB(9);"SELECTION -->";
5110 GOSUB 23ØØ:IF K$ = E$ THEN RETURN
5120 SF = Ø:SR$ = T$:LS = LEN(SR$)
```

```
5130 J = 1:IF K$ = "2" THEN 5220
5140 HOME
5150 PRINT TAB(10);"CHECKING CARD ";J
5160 IF SR$ <> LEFT$(Y$((J-1)*FT+V),LS) THEN 5180
5170 SF = 1:W$ = "":GOSUB 3900:GOSUB 4000:HOME
5180 POKE -16368,0:X$ = CHR$(PEEK(-16384))
5190 IF W$ = E$ OR X$ = E$ THEN RETURN
5200 J = J+1:IF J <= RT THEN 5140
5210 GOTO 5330
5220 Z$ = Y$((J-1)*FT+V):LZ = LEN(Z$)
5230 HOME:PRINT TAB(10);"CHECKING CARD ";J
5240 IF Z$ = "" OR LZ < LS THEN 5320
5250 FOR W = 1 TO LZ-LS+1
5260 IF SR$ <> MID$(Z$,W,LS) THEN 5280
5270 W = 256:SF = 1:W$ = "":GOSUB 3900:GOSUB 4000:HOME
5280 POKE -16368,0:X$ = CHR$(PEEK(-16384))
5290 IF W$ = E$ OR X$ = E$ THEN W = 300
5300 NEXT W
5310 IF W$ = E$ OR (X$ = E$ AND K$ <> E$) THEN RETURN
5320 J = J+1:IF J < RT+1 THEN 5220
5330 HOME:IF SF < 1 THEN 5350
5340 PRINT "NO MORE CARDS MATCH!":GOSUB 2100:RETURN
5350 PRINT "NO CARDS MATCH!":GOSUB 2100:RETURN
6000 PRINT H$;:XL = PEEK(36):YL = PEEK(37)+1
6010 PC = 2:T$ = SP$+T$
6020 VTAB YL:HTAB XL+1:PRINT T$;"<";SP$
6030 VTAB YL:HTAB XL+PC
6040 GET K$:K = ASC(K$):IF K = 127 THEN K = 4
6050 IF K > 31 THEN 6120
6060 ER = (K = 13)+(K = 27):IF ER THEN 6150
6070 CU = (K = 21)-(K = 8):IF K = 4 THEN 6110
6080 IF CU = 0 THEN 6030
6090 PC = PC+CU:PC = PC+(PC < 2)-(PC > LEN(T$)+1)
6100 GOTO 6030
6110 T$ = LEFT$(T$,PC-1)+MID$(T$,PC+1,LEN(T$)):GOTO 6020
6120 IF LEN(T$) > FL-XL-1 THEN 6040
6130 T$ = LEFT$(T$,PC-1)+K$+MID$(T$,PC,LEN(T$))
6140 PC = PC+1:GOTO 6020
6150 T$ = MID$(T$,2,FL)
6160 VTAB YL:HTAB XL+2:PRINT T$;SP$:VTAB YL+1
6170 RETURN
7000 DATA DESIGN CARD FORMAT,ADD CARD(S)
7010 DATA DISPLAY/CHANGE/REMOVE CARD(S),PRINT CARD(S)
7020 DATA LIST ALL FILES ON DISK
7030 DATA GET NEW/STORE/REMOVE FILEBOX,QUIT
7040 DATA 4,ADD NEW LINES,DELETE LINES
7050 DATA CHANGE NAMES OF LINES,DISPLAY CARD FORMAT
7060 DATA 2,ADD AT END,INSERT BEFORE END
7070 DATA 2,LOOK AT CARDS CONSECUTIVELY
7080 DATA WORK WITH SELECTED CARD(S)
7090 DATA 5,PRINT ONE CARD,PRINT A RANGE OF CARDS
7100 DATA PRINT ALL CARDS,PRINT SELECTED CARD(S)
7110 DATA CHANGE PRINTER OPTIONS,1,DISK
7120 DATA 3,STORE THIS FILEBOX ON DISK
7130 DATA GET A FILEBOX FROM DISK
7140 DATA REMOVE A FILE FROM DISK
7150 DATA 2,RETURN TO MAIN MENU,QUIT
8000 DATA "PRESS <SPACE BAR> TO CONTINUE."
8010 DATA NO SUCH CARD!,NO MORE CARDS!
```

```
10 DIM DM$(2),F$(9),M$(7),MI(8),SM$(20),TY$(2),TY(2),Y$(2700),YN$(1),Z$(9)
20 T=53272:POKE T+8,14:POKE T+9,12:POKE T,21
30 POKE 649,1:LOC=49152
40 E$=CHR$(95):SP$=CHR$(32):RE$=CHR$(13):HM$=CHR$(19)
50 CL$=CHR$(147):BL$=CHR$(144):WH$=CHR$(5)
60 PRINT CHR$(8);WH$;CL$:FT=0:RT=0
70 YN$(0)="N":YN$(1)="Y":LM=0:SP=0:PF=0:HF=1
80 FOR I=49152 TO 49215:READ V:POKE I,V:NEXT I
90 FOR I=1 TO 7:READ M$(I):NEXT I:TEST$="FILEBOX"
100 MI(0)=1:FOR I=1 TO 7:READ T:MI(I+1)=MI(I)+T
110 FOR J=MI(I) TO MI(I+1)-1:READ SM$(J):NEXT J,I
120 TY$(1)="W":TY$(2)="R":TY(1)=1:TY(2)=0
130 FOR I=0 TO 2:READ DM$(I):NEXT I
140 L$=BL$+SP$:FOR I=1 TO 38
150 L$=L$+CHR$(195):NEXT I:L$=L$+WH$
160 PRINT CL$:GOSUB 2600:PRINT HM$;L$
170 PRINT TAB(8);"HOME INFORMATION MANAGER"
180 PRINT L$;RE$:FOR I=1 TO 6
190 PRINT TAB(5);"<";CHR$(I+48);"> ";M$(I);RE$:NEXT I
200 PRINT:PRINT TAB(9);"SELECTION -->";
210 A$="6":GOSUB 2300:MS=VAL(K$):IF K$=E$ THEN MS=7
220 IF (MS<>3 AND MS<>4) OR RT>0 THEN 250
230 GOSUB 3000:PRINT "NO CARDS PRESENT."
240 GOSUB 2100:GOTO 160
250 ON MS GOTO 260,580,920,1040,1360,1530,1980
260 FL=29:GOSUB 3100:IF K$=E$ THEN 160
270 A$=MID$(STR$(FT),2):IF SE>2 OR RT<1 THEN 290
280 GOSUB 3020:GOSUB 2700:ON -(K$=E$) GOTO 260:RT=0
290 IF FT=0 AND SE>1 THEN 460
300 ON SE GOTO 310,390,480,550
310 GOSUB 3200:IF FT<9 THEN 340
320 PRINT "A CARD HAS ONLY 9 LINES!"
330 GOSUB 2100:GOTO 560
340 FT=FT+1:C=FT
350 H$="LINE"+STR$(C)+":":T$=""
360 GOSUB 6000:IF K$=E$ THEN FT=FT-1:GOTO 560
370 F$(FT)=T$:IF FT<9 THEN 310
380 GOSUB 3200:GOTO 330
390 GOSUB 3200:IF FT<1 THEN 470
400 A$=MID$(STR$(FT),2)
410 PRINT "WHICH LINE DO YOU WANT TO DELETE? ";
420 GOSUB 2300:IF K$=E$ THEN 560
430 C=VAL(K$):IF C=FT THEN 450
440 FOR I=C TO FT-1:F$(I)=F$(I+1):NEXT I
450 FT=FT-1:IF FT>0 THEN 390
460 GOSUB 3020
470 PRINT "NO LINES PRESENT.":GOSUB 2100:GOTO 560
480 GOSUB 3200
490 PRINT "CHANGE THE NAME OF WHICH LINE #? ";
500 GOSUB 2300:IF K$=E$ THEN 260
510 PRINT K$:C=VAL(K$)
520 H$="LINE"+STR$(C)+":":T$=F$(C)
530 GOSUB 6000:IF K$=E$ THEN 480
540 F$(C)=T$:GOTO 480
550 GOSUB 3200:GOTO 260
560 MAX=0:IF FT>0 THEN MAX=INT(2700/FT)
570 GOTO 260
```

```
580 W$=E$:IF FT>0 THEN 610
590 GOSUB 3000:PRINT "YOU MUST ";M$(1);" (OPTION 1"
600 PRINT "ON MAIN MENU) FIRST.":GOSUB 2100:GOTO 160
610 IF RT=MAX THEN GOSUB 3000:GOTO 670
620 GOSUB 3100:IF K$=E$ THEN 160
630 GOSUB 3020:FL=38:IF SE=2 THEN 780
640 GOSUB 2900
650 RT=RT+1:IF RT<MAX+1 THEN 680
660 RT=MAX
670 PRINT DM$(2):GOSUB 2100:GOTO 160
680 PRINT TAB(15);"CARD";RT
690 C=RT:FOR L=1 TO FT:GOSUB 3300
700 IF K$<>E$ THEN Y$(T)=T$:GOTO 720
710 L=FT:RT=RT-1
720 NEXT L:IF K$=E$ THEN 620
730 PRINT L$:PRINT DM$(0)
740 POKE 214,19:PRINT:PRINT "CARDS USED:";RT
750 PRINT "CARDS LEFT:";STR$(MAX-RT);SP$
760 GOSUB 2200:ON -(K$=SP$) GOTO 640:GOTO 160
770 GOSUB 3020:IF RT=MAX THEN 670
780 H$="INSERT BEFORE WHICH CARD #?":T$=""
790 FL=39:GOSUB 6000:IF K$=E$ THEN 620
800 GOSUB 3020
810 C=VAL(T$):IF C>0 AND C<RT+1 THEN 830
820 PRINT DM$(1):GOSUB 2100:GOTO 610
830 PRINT TAB(13);"NEW CARD";C
840 FOR L=1 TO FT:GOSUB 3300
850 IF K$=E$ THEN L=FT:GOTO 870
860 Z$(L)=T$
870 NEXT L:IF K$=E$ THEN 620
880 FOR J=RT*FT TO (C-1)*FT+1 STEP -1
890 Y$(J+FT)=Y$(J):NEXT J:RT=RT+1
900 FOR J=1 TO FT:Y$((C-1)*FT+J)=Z$(J):NEXT J
910 GOTO 770
920 F=-1
930 GOSUB 3100:IF K$=E$ THEN 160
940 GOSUB 3020:IF SE=2 THEN 1030
950 H$="START WITH WHICH CARD?":T$="":FL=32
960 GOSUB 6000:IF K$=E$ THEN 930
970 V=VAL(T$):IF V>0 AND V<RT+1 THEN 990
980 PRINT L$:PRINT DM$(1):GOSUB 2100:GOTO 930
990 GOSUB 3900:J=V
1000 W$="":GOSUB 4000:IF W$=E$ THEN 930
1010 J=J+1:IF J<RT+1 THEN 1000
1020 GOSUB 2800:PRINT DM$(2):GOSUB 2100:GOTO 930
1030 GOSUB 5000:GOTO 930
1040 RA$=" (1-"+MID$(STR$(RT),2)+")?"
1050 FL=6:GOSUB 3100:IF K$=E$ THEN 160
1060 GOSUB 3020:ON SE GOTO 1070,1100,1150,1160,1170
1070 PRINT "PRINT WHICH CARD #";RA$
1080 GOSUB 3700:IF RF THEN 1050
1090 R1=T:R2=T:GOSUB 3800:GOTO 1040
1100 PRINT "START WITH WHICH CARD #";RA$
1110 GOSUB 3700:R1=T:IF RF THEN 1050
1120 PRINT "STOP WITH WHICH CARD #";RA$
1130 GOSUB 3700:R2=T:IF RF OR R2<R1 THEN 1050
1140 GOSUB 3800:GOTO 1040
1150 R1=1:R2=RT:GOSUB 3800:GOTO 1040
1160 GOSUB 5000:GOTO 1040
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117Ø FL=37:VC=3:H$="LEFT MARGIN (Ø-4Ø):"
118Ø T$=MID$(STR$(LM),2)
119Ø GOSUB 6ØØØ:IF K$=E$ THEN 1Ø4Ø
12ØØ LM=VAL(T$):IF LM>-1 AND LM<41 THEN 123Ø
121Ø LM=Ø:YL=VC:BL=1:XL=Ø:GOSUB 24ØØ
122Ø YL=YL-1:GOSUB 25ØØ:GOTO 118Ø
123Ø VC=VC+1:H$="BLANK LINES BETWEEN CARDS (Ø-66):"
124Ø T$=MID$(STR$(SP),2)
125Ø GOSUB 6ØØØ:IF K$=E$ THEN 1Ø4Ø
126Ø SP=VAL(T$):IF SP>-1 AND SP<67 THEN 129Ø
127Ø SP=Ø:YL=VC:BL=1:XL=Ø:GOSUB 24ØØ
128Ø YL=YL-1:GOSUB 25ØØ:GOTO 124Ø
129Ø H$="PAUSE AFTER EACH CARD (Y/N):":T$=YN$(PF)
13ØØ GOSUB 6ØØØ:IF K$=E$ THEN 1Ø4Ø
131Ø PF=-(LEFT$(T$,1)="Y")
132Ø H$="PRINT LINE NAMES (Y/N):":T$=YN$(HF)
133Ø GOSUB 6ØØØ:IF K$=E$ THEN 1Ø4Ø
134Ø HF=-(LEFT$(T$,1)="Y")
135Ø PRINT L$:GOSUB 21ØØ:GOTO 1Ø4Ø
136Ø GOSUB 3ØØØ
137Ø F=Ø:C=Ø:D$="":CLOSE 2:OPEN 2,8,Ø,"$"
138Ø PRINT "DISK NAME: ";
139Ø GET#2,N$:IF N$=CHR$(199) THEN 15ØØ
14ØØ IF N$<>CHR$(34) THEN 139Ø
141Ø GET#2,N$:IF N$=CHR$(34) THEN 144Ø
142Ø GET W$:IF W$=E$ THEN CLOSE 2:GOTO 16Ø
143Ø D$=D$+N$:GOTO 141Ø
144Ø IF F=Ø THEN PRINT D$:F=1:GOTO 139Ø
145Ø IF LEFT$(D$,4)<>"HIM/" THEN D$="":GOTO 139Ø
146Ø PRINT MID$(D$,5):D$="":F=F+1:C=1:IF F<16 THEN 139Ø
147Ø F=1:PRINT L$:PRINT DM$(Ø):GOSUB 22ØØ
148Ø IF K$=E$ THEN CLOSE 2:GOTO 16Ø
149Ø GOSUB 3ØØØ:GOTO 139Ø
15ØØ CLOSE 2:PRINT RE$;L$
151Ø IF C=Ø THEN PRINT "NO FILEBOXES ON THIS DISK."
152Ø GOSUB 22ØØ:GOTO 16Ø
153Ø FL=35
154Ø GOSUB 26ØØ:GOSUB 31ØØ:IF K$=E$ THEN 16Ø
155Ø GOSUB 3Ø2Ø
156Ø IF (SE<>2 AND SE<>4) OR RT<1 THEN 158Ø
157Ø GOSUB 27ØØ:GOSUB 29ØØ:IF K$=E$ THEN 154Ø
158Ø IF SE>2 THEN 162Ø
159Ø PRINT "POSITION TAPE; THEN PRESS <SPACE BAR>."
16ØØ GOSUB 22ØØ:IF K$=E$ THEN 153Ø
161Ø OPEN 2,1,TY(SE),"":GOTO 181Ø
162Ø T$="":IF SE=3 THEN H$="STORE UNDER WHAT NAME?"
163Ø IF SE=4 THEN H$="GET WHICH FILEBOX?"
164Ø IF SE=5 THEN H$="REMOVE WHICH FILEBOX?"
165Ø GOSUB 6ØØØ:IF T$="" OR K$=E$ THEN 154Ø
166Ø OPEN 2,8,8,PR$+"Ø:HIM/"+T$+",S,R":CLOSE 2
167Ø OPEN 15,8,15:INPUT#15,ER,ER$:CLOSE 15
168Ø GOSUB 29ØØ:IF ER<>Ø THEN 17ØØ
169Ø ON SE-2 GOTO 175Ø,18ØØ,178Ø
17ØØ IF ER=62 AND SE=3 THEN 18ØØ
171Ø IF ER=62 THEN PRINT "THAT FILEBOX IS NOT ON THIS DISK.":GOTO 174Ø
172Ø IF ER<>72 THEN PRINT ER$;".":GOTO 174Ø
173Ø PRINT "SORRY, THIS DISK IS FULL.  TRY ANOTHER."
174Ø PRINT L$:GOSUB 21ØØ:GOTO 154Ø
175Ø PRINT "THAT FILEBOX IS ALREADY ON THIS DISK."
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176Ø PRINT "PRESS <SPACE BAR> TO REPLACE IT."
177Ø GOSUB 22ØØ:IF K$=E$ THEN 154Ø
178Ø OPEN 15,8,15:PRINT#15,"SØ:HIM/"+T$:CLOSE 15
179Ø IF SE=5 THEN 154Ø
18ØØ OPEN 2,8,2,"Ø:HIM/"+T$+",S,"+TY$(SE-2)
181Ø PRINT CL$:GOSUB 3Ø2Ø
182Ø ON SE GOTO 183Ø,188Ø,183Ø,188Ø
183Ø PRINT#2,"FILEBOX":PRINT#2,FT:PRINT#2,RT
184Ø PRINT#2,LM:PRINT#2,SP:PRINT#2,PF:PRINT#2,HF
185Ø FOR J=1 TO FT:PRINT#2,CHR$(34);F$(J);CHR$(34):NEXT J:IF RT=Ø THEN 187Ø
186Ø FOR J=1 TO RT*FT:PRINT#2,CHR$(34);Y$(J);CHR$(34):NEXT J
187Ø CLOSE 2:GOTO 153Ø
188Ø INPUT#2,C$:IF C$=TEST$ THEN 191Ø
189Ø CLOSE2:PRINT "THIS IS NOT A FILEBOX FILE."
19ØØ GOTO 196Ø
191Ø INPUT#2,FT:INPUT#2,RT:INPUT#2,LM
192Ø INPUT#2,SP:INPUT#2,PF:INPUT#2,HF
193Ø FOR J=1 TO FT:INPUT#2,F$(J):NEXT J:IF RT=Ø THEN 195Ø
194Ø FOR J=1 TO RT*FT:INPUT#2,Y$(J):NEXT J
195Ø CLOSE 2:PRINT "FILEBOX IS NOW IN MEMORY."
1955 MAX=Ø:IF FT>Ø THEN MAX=INT(27ØØ/FT)
196Ø GOSUB 26ØØ:GOSUB 21ØØ:GOTO 154Ø
198Ø GOSUB 31ØØ:IF SE=1 OR K$=E$ THEN 16Ø
199Ø PRINT CL$:END
2ØØØ GET K$:ON -(K$="") GOTO 2ØØØ:RETURN
21ØØ GOSUB 2ØØØ:ON -(K$<>E$) GOTO 21ØØ:RETURN
22ØØ GOSUB 2ØØØ:IF K$<>E$ AND K$<>SP$ THEN 22ØØ
221Ø RETURN
23ØØ GOSUB 2ØØØ
231Ø IF K$<>E$ AND (K$<"1" OR K$>A$) THEN 23ØØ
232Ø RETURN
24ØØ SYS 49152,YL,BL:RETURN
25ØØ POKE 214,YL:PRINT:POKE 211,XL:RETURN
26ØØ XL=Ø:YL=22:GOSUB 25ØØ:PRINT L$
261Ø PRINT TAB(11);"PRESS <";E$;"> TO EXIT.";:RETURN
27ØØ PRINT "WARNING!  USE OF THIS OPTION WILL ERASE"
271Ø PRINT "CONTENTS OF ALL CARDS FROM MEMORY."
272Ø PRINT:PRINT DM$(Ø):GOSUB 22ØØ:RETURN
28ØØ SYS LOC,3,2Ø:POKE 214,2:PRINT:RETURN
29ØØ SYS LOC,3,15:POKE 214,2:PRINT:RETURN
3ØØØ YL=Ø:BL=23:GOSUB 24ØØ
3Ø1Ø PRINT HM$;L$:R$=M$(MS):GOTO 3Ø4Ø
3Ø2Ø YL=Ø:BL=16:GOSUB 24ØØ
3Ø3Ø PRINT HM$;L$:R$=SM$(MI(MS)+SE-1)
3Ø4Ø PRINT SPC((4Ø-LEN(R$))/2);R$:PRINT L$:RETURN
31ØØ GOSUB 3ØØØ:PRINT:FOR I=MI(MS) TO MI(MS+1)-1
311Ø PRINT TAB(6);"<";CHR$(I+49-MI(MS));"> ";SM$(I)
312Ø PRINT:NEXT I:A$=RIGHT$(STR$(MI(MS+1)-MI(MS)),1)
313Ø PRINT:PRINT TAB(1Ø);"SELECTION -->";
314Ø GOSUB 23ØØ:SE=VAL(K$):RETURN
32ØØ GOSUB 3Ø2Ø:IF FT<1 THEN RETURN
321Ø FOR I=1 TO FT:PRINT BL$;
322Ø PRINT "LINE";STR$(I);": ";WH$;F$(I):NEXT I
323Ø PRINT L$:IF MS=3 OR MS=4 THEN RETURN
324Ø IF SE=4 THEN GOSUB 21ØØ
325Ø RETURN
33ØØ T=(C-1)*FT+L:H$=F$(L)+":":T$=""
331Ø IF W$="C" THEN T$=Y$(T)
332Ø GOSUB 6ØØØ:RETURN
```

```
3400 W$="":PRINT#4,TAB(LM+15);"CARD";J
3410 FOR Z=1 TO FT:T$="":IF HF THEN T$=F$(Z)+": "
3420 PRINT#4,TAB(LM);T$;Y$((J-1)*FT+Z)
3430 GET W$:IF W$=E$ THEN Z=FT:J=R2
3440 NEXT Z:IF W$=E$ THEN RETURN
3450 IF SP=0 THEN 3470
3460 FOR Z=1 TO SP:PRINT#4:NEXT Z
3470 GOSUB 2900:IF PF=0 THEN RETURN
3480 PRINT DM$(0):GOSUB 2200:IF K$=SP$ THEN RETURN
3490 J=R2:RETURN
3500 PRINT TAB(15);"CARD";J:PRINT L$
3510 FOR Z=1 TO FT:PRINT F$(Z);":";Y$((J-1)*FT+Z)
3520 NEXT Z:PRINT L$:RETURN
3600 PRINT "PRESS <SPACE BAR> WHEN PRINTER IS"
3610 PRINT "READY.":GOSUB 2200:RETURN
3700 RF=-1:H$="?":T$="":GOSUB 6000:PRINT L$
3710 IF K$=E$ OR T$="" THEN RETURN
3720 T=VAL(T$):IF T>0 AND T<=RT THEN RF=0:RETURN
3730 PRINT:PRINT L$:PRINT DM$(1)
3740 GOSUB 2100:RETURN
3800 GOSUB 3600:IF K$=E$ THEN RETURN
3810 OPEN4,4:CMD4
3820 FOR J=R1 TO R2:GOSUB 3400
3830 NEXT J:PRINT#4:CLOSE4:RETURN
3900 POKE 214,18:PRINT
3910 PRINT "PRESS <C> TO CHANGE THIS CARD,"
3920 PRINT "PRESS <P> TO PRINT IT,"
3930 PRINT "PRESS <R> TO REMOVE IT, OR"
3940 PRINT "PRESS <SPACE BAR> TO MOVE TO NEXT CARD.":RETURN
4000 GOSUB 2900:GOSUB 3500
4010 GOSUB 2000:IF K$=E$ THEN W$=E$:J=RT:RETURN
4020 IF K$=SP$ THEN RETURN
4030 ON -(K$="C") GOTO 4110:IF K$="R" THEN 4170
4040 IF K$<>"P" THEN 4010
4050 GOSUB 2800
4060 IF F THEN GOSUB 3600:IF K$=E$ THEN 4100
4070 F=0:PRINT "NOW PRINTING CARD";J
4080 OPEN4,4:CMD4
4090 GOSUB 3400:PRINT#4:CLOSE4
4100 J=J-1:GOSUB 3900:RETURN
4110 GOSUB 2800
4120 GOSUB 3020:FL=39:PRINT TAB(15);"CARD";J
4130 C=J:W$="C":FOR L=1 TO FT:GOSUB 3300
4140 IF K$=E$ THEN L=FT:GOTO 4160
4150 Y$(T)=T$
4160 NEXT L:J=J-1:GOSUB 3900:RETURN
4170 GOSUB 2800:GOSUB 3500
4180 PRINT "PRESS <SPACE BAR> TO REMOVE THIS CARD."
4190 GOSUB 2200:GOSUB 3900:IF K$=E$ THEN J=J-1:RETURN
4200 IF J=RT THEN 4220
4210 FOR Z=(J-1)*FT+1 TO (RT-1)*FT:Y$(Z)=Y$(Z+FT):NEXT Z
4220 RT=RT-1:J=J-1:RETURN
4230 PRINT "<SPACE BAR> TO MOVE TO NEXT CARD.":RETURN
5000 GOSUB 3210:A$=RIGHT$(STR$(FT),1)
5010 W$="":PRINT "SELECT CARDS BY WHICH LINE #?";
5020 GOSUB 2300:IF K$=E$ THEN RETURN
5030 V=VAL(K$):GOSUB 2900
5040 PRINT "WHAT TEXT ARE YOU SEARCHING FOR?"
5050 FL=40:H$="?":T$="":GOSUB 6000
```

```
5060 IF K$=E$ OR T$="" THEN RETURN
5070 GOSUB 2400:POKE 214,2:PRINT:PRINT
5080 PRINT TAB(5);"<1> MATCH FROM BEGINNING OF LINE"
5090 PRINT RE$;TAB(5);"<2> SEARCH WHOLE LINE":PRINT
5100 A$="2":PRINT TAB(8);"SELECTION -->";
5110 GOSUB 2300:IF K$=E$ THEN RETURN
5120 GOSUB 2400:SF=0:SR$=T$:LS=LEN(SR$)
5130 J=1:IF K$="2" THEN 5210
5140 POKE 214,2:PRINT
5150 PRINT TAB(10);"CHECKING CARD";J
5160 IF SR$<>LEFT$(Y$((J-1)*FT+V),LS) THEN 5180
5170 SF=1:W$="":GOSUB 3900:GOSUB 4000:GOSUB 2800
5180 GET X$:IF W$=E$ OR X$=E$ THEN RETURN
5190 J=J+1:IF J<=RT THEN 5140
5200 GOTO 5320
5210 Z$=Y$((J-1)*FT+V):LZ=LEN(Z$)
5220 POKE 214,2:PRINT
5230 PRINT TAB(10);"CHECKING CARD";J
5240 IF Z$="" OR LZ<LS THEN 5310
5250 FOR W=1 TO LZ-LS+1
5260 IF SR$<>MID$(Z$,W,LS) THEN 5280
5270 W=256:SF=1:W$="":GOSUB 3900:GOSUB 4000:GOSUB 2800
5280 GET X$:IF W$=E$ OR X$=E$ THEN W=300
5290 NEXT W:IF W=300 THEN RETURN
5300 IF W$=E$ OR X$=E$ THEN RETURN
5310 J=J+1:IF J<RT+1 THEN 5210
5320 GOSUB 2800:IF SF<1 THEN 5340
5330 PRINT "NO MORE CARDS MATCH!":GOSUB 2100:RETURN
5340 PRINT "NO CARDS MATCH!":GOSUB 2100:RETURN
6000 T$=SP$+T$:PRINT H$;
6010 XL=PEEK(211):YL=PEEK(214)-1:PC=2:HL=XL
6020 GOSUB 2500:PRINT T$;"<";SP$;
6030 POKE 214,YL:PRINT:POKE 211,XL+PC-1
6040 POKE 204,0:GET K$:IF K$="" THEN 6040
6050 POKE 204,1:K=ASC(K$):IF K>31 AND K<91 THEN 6120
6060 ER=(K=13)+(K=95):IF ER THEN 6150
6070 CU=-(K=29)+(K=157):IF CU=0 THEN 6090
6080 PC=PC+CU:PC=PC-(PC<2)+(PC>LEN(T$)+1):GOTO 6020
6090 IF PC<3 OR K<>20 THEN 6030
6100 T$=LEFT$(T$,PC-2)+MID$(T$,PC,LEN(T$))
6110 PC=PC-1:GOTO 6020
6120 IF LEN(T$)>FL-XL-1 THEN 6030
6130 T$=LEFT$(T$,PC-1)+K$+MID$(T$,PC,LEN(T$))
6140 PC=PC+1:GOTO 6020
6150 GOSUB 2500:PRINT T$;SP$
6160 T$=MID$(T$,2):RETURN
7000 DATA 32,253,174,32,235,183,134,253,169,0,133
7010 DATA 251,169,4,133,252,166,20,240,16,24,165
7020 DATA 251,105,40,133,251,165,252,105,0,133,252
7030 DATA 202,208,240,166,253,169,32,160,39,145
7040 DATA 251,136,16,251,24,165,251,105,40,133,251
7050 DATA 165,252,105,0,133,252,202,208,231,96
8000 DATA DESIGN CARD FORMAT,ADD CARD(S)
8010 DATA DISPLAY/CHANGE/REMOVE CARD(S),PRINT CARD(S)
8020 DATA LIST FILEBOXES ON DISK
8030 DATA GET NEW/STORE/REMOVE FILEBOX,QUIT
8040 DATA 4,ADD NEW LINES,DELETE LINES
8050 DATA CHANGE NAMES OF LINES,DISPLAY CARD FORMAT
8060 DATA 2,ADD AT END,INSERT BEFORE END
```

```
8070 DATA 2,LOOK AT CARDS CONSECUTIVELY
8080 DATA WORK WITH SELECTED CARD(S)
8090 DATA 5,PRINT ONE CARD,PRINT A RANGE OF CARDS
8100 DATA PRINT ALL CARDS,PRINT SELECTED CARD(S)
8110 DATA CHANGE PRINTER OPTIONS,1,DISK
8120 DATA 5,STORE THIS FILEBOX ON TAPE
8130 DATA GET A FILEBOX FROM TAPE
8140 DATA STORE THIS FILEBOX ON DISK
8150 DATA GET A FILEBOX FROM DISK
8160 DATA REMOVE A FILEBOX FROM DISK
8170 DATA 2,RETURN TO MAIN MENU,QUIT
9000 DATA "PRESS <SPACE BAR> TO CONTINUE."
9010 DATA NO SUCH CARD!,NO MORE CARDS!
```

IBM PC & compatibles/*Home Information Manager*

This program has been tested and found to work on the following computers and hardware configurations, using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter or Monochrome/Printer Card, w/DOS 2.0 or higher, and Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

```
10 DEF SEG:CLEAR ,&HF000:KEY OFF
20 DIM DM$(3),F$(9),M$(7),MI(8),SM$(200),Y$(2700),YN$(1),Z$(9)
30 WIDTH "SCRN:",40:SCREEN 0,0:LOCATE ,,0
40 E$=CHR$(27):SP$=CHR$(32):RE$=CHR$(13)
50 CLS:FT=0:RT=0:CD=&HF000
60 YN$(0)="N":YN$(1)="Y":LM=0:SP=1:PF=0:HF=1
70 FOR I=1 TO 7:READ M$(I):NEXT I:TEST$="FILEBOX"
80 MI(0)=1:FOR I=1 TO 7:READ T:MI(I+1)=MI(I)+T
90 FOR J=MI(I) TO MI(I+1)-1:READ SM$(J):NEXT J,I
100 FOR I=0 TO 3:READ DM$(I):NEXT I
110 FOR I=0 TO 71:READ V:POKE CD+I,V:NEXT I
120 L$=SP$+STRING$(38,205)
130 CLS:GOSUB 2500:GOSUB 2600
140 GOSUB 2920:PRINT TAB(8);"HOME INFORMATION MANAGER"
150 GOSUB 2900:PRINT:FOR I=1 TO 6
160 PRINT TAB(5);"<";CHR$(I+48);"> ";M$(I);RE$:NEXT I
170 PRINT:PRINT TAB(9);"SELECTION -->";
180 A$="6":GOSUB 2400:MS=VAL(K$):IF K$=E$ THEN MS=7
190 IF (MS<>3 AND MS<>4) OR RT>0 THEN 210
200 GOSUB 3000:PRINT DM$(3):GOSUB 2200:GOTO 140
210 ON MS GOTO 220,540,850,990,1310,1400,1830
220 FL=30:GOSUB 3100:IF K$=E$ THEN 140
230 A$=MID$(STR$(FT),2):IF SE>2 OR RT<1 THEN 250
240 GOSUB 3010:GOSUB 2700:IF K$=E$ THEN 220 ELSE RT=0
250 GOSUB 3010:IF FT=0 AND SE>1 THEN 420
260 ON SE GOTO 270,350,440,510
270 GOSUB 3200:IF FT<9 THEN 300
280 PRINT "A CARD HAS ONLY 9 LINES!"
290 GOSUB 2200:GOTO 520
300 FT=FT+1:C=FT
310 H$="LINE"+STR$(C)+":":T$=""
320 GOSUB 6000:IF K$=E$ THEN FT=FT-1:GOTO 520
330 F$(FT)=T$:IF FT<9 THEN 270
340 GOSUB 3200:GOTO 290
350 GOSUB 3200:IF FT<1 THEN 420
360 A$=MID$(STR$(FT),2)
370 PRINT "WHICH LINE DO YOU WANT TO DELETE? ";
380 GOSUB 2400:IF K$=E$ THEN 520
390 C=VAL(K$):IF C=FT THEN 410
400 FOR I=C TO FT-1:F$(I)=F$(I+1):NEXT I
```

```
410 FT=FT-1:IF FT>0 THEN 350
420 GOSUB 2910:PRINT "NO LINES PRESENT."
430 GOSUB 2200:GOTO 520
440 GOSUB 3200
450 PRINT "CHANGE THE NAME OF WHICH LINE #? ";
460 GOSUB 2400:IF K$=E$ THEN 220
470 PRINT K$:C=VAL(K$)
480 H$="LINE"+STR$(C)+":":T$=F$(C)
490 GOSUB 6000:IF K$=E$ THEN 440
500 F$(C)=T$:GOTO 440
510 GOSUB 3200:GOTO 220
520 IF FT>0 THEN MAX=2700\FT ELSE MAX=0
530 GOTO 220
540 W$=E$:IF FT>0 THEN 570
550 GOSUB 3000:PRINT "YOU MUST ";M$(1);" (OPTION 1"
560 PRINT "ON MAIN MENU) FIRST.":GOSUB 2200:GOTO 140
570 IF RT=MAX THEN GOSUB 3000:GOTO 620
580 GOSUB 3100:IF K$=E$ THEN 140
590 GOSUB 3010:FL=39:IF SE=2 THEN 730
600 GOSUB 2910:RT=RT+1
610 IF RT<MAX+1 THEN 630 ELSE RT=MAX
620 PRINT DM$(2):GOSUB 2200:GOTO 140
630 PRINT TAB(15);"CARD";RT
640 C=RT:FOR L=1 TO FT:GOSUB 3300
650 IF K$<>E$ THEN Y$(T)=T$:GOTO 670
660 L=FT:RT=RT-1
670 NEXT L:IF K$=E$ THEN 580
680 PRINT L$:PRINT DM$(0)
690 LOCATE 21,1:PRINT "CARDS USED:";RT
700 PRINT "CARDS LEFT:";MAX-RT
710 GOSUB 2300:IF K$=SP$ THEN 600 ELSE 140
720 GOSUB 3010:IF RT=MAX THEN 620
730 H$="INSERT BEFORE WHICH CARD #?":T$=""
740 FL=35:GOSUB 6000:IF K$=E$ THEN 580
750 GOSUB 3010:C=VAL(T$):IF C>0 AND C<RT+1 THEN 770
760 PRINT DM$(1):GOSUB 2200:GOTO 570
770 PRINT TAB(13);"NEW CARD";C
780 FOR L=1 TO FT:GOSUB 3300
790 IF K$=E$ THEN L=FT ELSE Z$(L)=T$
800 NEXT L:IF K$=E$ THEN 580
810 FOR J=RT*FT TO (C-1)*FT+1 STEP -1
820 Y$(J+FT)=Y$(J):NEXT J:RT=RT+1
830 FOR J=1 TO FT:Y$((C-1)*FT+J)=Z$(J):NEXT J
840 GOTO 720
850 F=-1
860 GOSUB 3100:IF K$=E$ THEN 140
870 IF RT>0 THEN 890
880 GOSUB 2910:PRINT DM$(3):GOSUB 2200:GOTO 140
890 GOSUB 3010:IF SE=2 THEN 980
900 H$="START WITH WHICH CARD?":T$="":FL=33
910 GOSUB 6000:IF K$=E$ THEN 860
920 V=VAL(T$):IF V>0 AND V<RT+1 THEN 940
930 PRINT L$:PRINT DM$(1):GOSUB 2200:GOTO 860
940 GOSUB 3830:J=V
950 W$="":GOSUB 4000:IF W$=E$ THEN 860
960 J=J+1:IF J<RT+1 THEN 950
970 GOSUB 3000:PRINT DM$(2):GOSUB 2200:GOTO 860
980 GOSUB 5000:GOTO 860
990 RA$=" (1-"+MID$(STR$(RT),2)+")?"
```

```
1000 FL=7:GOSUB 3100:IF K$=E$ THEN 140
1010 IF RT>0 THEN 1030
1020 GOSUB 2910:PRINT DM$(3):GOSUB 2200:GOTO 140
1030 GOSUB 3010:ON SE GOTO 1040,1070,1120,1130,1140
1040 PRINT "PRINT WHICH CARD #";RA$
1050 GOSUB 3700:IF RF THEN 1000
1060 R1=T:R2=T:GOSUB 3800:GOTO 990
1070 PRINT "START WITH WHICH CARD #";RA$
1080 GOSUB 3700:R1=T:IF RF THEN 1000
1090 PRINT "STOP WITH WHICH CARD #";RA$
1100 GOSUB 3700:R2=T:IF RF OR R2<R1 THEN 1000
1110 GOSUB 3800:GOTO 990
1120 R1=1:R2=RT:GOSUB 3800:GOTO 990
1130 GOSUB 5000:GOTO 990
1140 FL=38:H$="LEFT MARGIN (0-40):"
1150 T$=MID$(STR$(LM),2)
1160 GOSUB 6000:IF K$=E$ THEN 990
1170 LM=VAL(T$)
1180 IF LM<0 OR LM>40 THEN LOCATE CSRLIN-1,1:GOTO 1150
1190 H$="BLANK LINES BETWEEN CARDS (0-66):"
1200 T$=MID$(STR$(SP),2)
1210 GOSUB 6000:IF K$=E$ THEN 990
1220 SP=VAL(T$)
1230 IF SP<0 OR SP>66 THEN LOCATE CSRLIN-1,1:GOTO 1200
1240 H$="PAUSE AFTER EACH CARD (Y/N):":T$=YN$(PF)
1250 GOSUB 6000:IF K$=E$ THEN 990
1260 PF=-(LEFT$(T$,1)="Y")
1270 H$="PRINT LINE NAMES (Y/N):":T$=YN$(HF)
1280 GOSUB 6000:IF K$=E$ THEN 990
1290 HF=-(LEFT$(T$,1)="Y")
1300 PRINT L$:GOSUB 2200:GOTO 990
1310 GOSUB 3100:IF K$=E$ THEN 1380
1320 CLS:GOSUB 2500:GOSUB 3010
1330 ON ERROR GOTO 1360
1340 FILES CHR$(16+ASC(K$))+":*.HIM"
1350 GOSUB 2600:GOSUB 2200:GOTO 1380
1360 PRINT "CHECK DISKS AND DRIVE."
1370 GOSUB 2600:GOSUB 2200:RESUME 1310
1380 ON ERROR GOTO 0:CLS:GOSUB 2500
1390 GOSUB 2600:GOTO 140
1400 FL=31
1410 GOSUB 3100:IF K$=E$ THEN 1380
1420 GOSUB 3010:IF SE<>2 OR RT<1 THEN 1440
1430 GOSUB 2700:GOSUB 2910:IF K$=E$ THEN 1410
1440 T$="":IF SE=1 THEN H$="STORE UNDER WHAT NAME?"
1450 IF SE=2 THEN H$="GET WHICH FILEBOX?"
1460 IF SE=3 THEN H$="REMOVE WHICH FILEBOX?"
1470 GOSUB 6000:IF T$="" OR K$=E$ THEN 1410
1480 T$=T$+".HIM":ON ERROR GOTO 1500
1490 GOSUB 2910:IF SE=1 THEN 1550 ELSE 1600
1500 IF ERR=53 AND SE=1 THEN RESUME 1600
1510 IF ERR=53 THEN PRINT "THAT FILEBOX IS NOT ON THIS DISK.":GOTO 1590
1520 IF ERR=71 THEN PRINT "THE DISK IS NOT READY; CHECK THE DRIVE.":GOTO 1590
1530 IF ERR=61 THEN PRINT "SORRY, THIS DISK IS FULL.  TRY ANOTHER.":GOTO 1590
1540 PRINT "ERROR";STR$(ERR);" HAS OCCURRED.  PLEASE CHECK YOUR MANUAL.":GOTO 15
90
1550 OPEN T$ FOR INPUT AS # 2:CLOSE 2
1560 PRINT "THAT FILEBOX IS ALREADY ON THIS DISK."
1570 PRINT "PRESS <SPACE BAR> TO REPLACE IT."
```

```
1580 GOSUB 2300:IF K$=SP$ THEN 1600 ELSE 1410
1590 PRINT L$:GOSUB 2600:GOSUB 2200:RESUME 1410
1600 CLS:GOSUB 2500:GOSUB 3010
1610 ON SE GOTO 1620,1700,1820
1620 OPEN T$ FOR OUTPUT AS # 2
1630 PRINT#2,TEST$:PRINT#2,FT:PRINT#2,RT
1640 PRINT#2,LM:PRINT#2,SP:PRINT#2,PF:PRINT#2,HF
1650 FOR J=1 TO FT:PRINT#2,CHR$(34);F$(J);CHR$(34)
1660 NEXT J:IF RT=0 THEN 1690
1670 FOR J=1 TO RT*FT
1680 PRINT#2,CHR$(34);Y$(J);CHR$(34):NEXT J
1690 CLOSE 2:GOSUB 2600:GOTO 1410
1700 OPEN T$ FOR INPUT AS # 2
1710 INPUT#2,C$:IF C$=TEST$ THEN 1740
1720 CLOSE 2:PRINT "THAT IS NOT A FILEBOX FILE."
1730 GOTO 1810
1740 INPUT#2,FT:INPUT#2,RT:INPUT#2,LM
1750 INPUT#2,SP:INPUT#2,PF:INPUT#2,HF
1760 FOR J=1 TO FT:INPUT#2,F$(J):NEXT J
1770 IF RT=0 THEN 1790
1780 FOR J=1 TO RT*FT:INPUT#2,Y$(J):NEXT J
1790 CLOSE 2:PRINT "FILEBOX NOW IN MEMORY."
1800 IF FT>0 THEN MAX=2700\FT ELSE MAX=0
1810 GOSUB 2600:GOSUB 2200:GOTO 1410
1820 KILL T$:GOSUB 2600:GOTO 1410
1830 GOSUB 3100:IF SE=1 OR K$=E$ THEN 140 ELSE CLS:END
2000 K$=INKEY$:IF K$="" THEN 2000 ELSE RETURN
2100 LOCATE ,,1,0,7:GOSUB 2000:LOCATE ,,0:RETURN
2200 GOSUB 2000:IF K$<>E$ THEN 2200 ELSE RETURN
2300 GOSUB 2000:IF K$<>E$ AND K$<>SP$ THEN 2300
2310 RETURN
2400 GOSUB 2100
2410 IF K$<>E$ AND (K$<"1" OR K$>A$) THEN 2400
2420 RETURN
2500 PRINT L$:PRINT:PRINT L$:RETURN
2600 LOCATE 23,1:PRINT L$
2610 PRINT TAB(11);"PRESS <Esc> TO EXIT.";:RETURN
2700 PRINT "WARNING!  USE OF THIS OPTION WILL ERASE"
2710 PRINT "CONTENTS OF ALL CARDS FROM MEMORY."
2720 PRINT:PRINT DM$(0):GOSUB 2300:RETURN
2800 CALL CD(A%,BL%):LOCATE A%,1:RETURN
2900 A%=4:BL%=19:GOSUB 2800:RETURN
2910 A%=4:BL%=14:GOSUB 2800:RETURN
2920 A%=2:BL%=1:GOSUB 2800:RETURN
3000 R$=M$(MS):GOTO 3020
3010 R$=SM$(MI(MS)+SE-1)
3020 GOSUB 2900:GOSUB 2920
3030 PRINT SPC((40-LEN(R$))/2);R$:LOCATE 4,1:RETURN
3100 GOSUB 3000:PRINT:FOR I=MI(MS) TO MI(MS+1)-1
3110 PRINT TAB(6);"<";CHR$(I+49-MI(MS));"> ";SM$(I)
3120 PRINT:NEXT I:A$=RIGHT$(STR$(MI(MS+1)-MI(MS)),1)
3130 PRINT:PRINT TAB(10);"SELECTION -->";
3140 GOSUB 2400:SE=VAL(K$):RETURN
3200 GOSUB 2900:IF FT<1 THEN RETURN
3210 FOR I=1 TO FT
3220 PRINT "LINE";STR$(I);": ";F$(I):NEXT I
3230 PRINT L$:IF MS=3 OR MS=4 THEN RETURN
3240 IF SE=4 THEN GOSUB 2200:RETURN ELSE RETURN
3300 T=(C-1)*FT+L:H$=F$(L)+":":T$=""
```

```
3310 IF W$="C" THEN T$=Y$(T)
3320 GOSUB 6000:RETURN
3400 W$="":LPRINT TAB(LM+15);"CARD";J
3410 FOR Z=1 TO FT:T$="":IF HF THEN T$=F$(Z)+": "
3420 LPRINT TAB(LM);T$;Y$((J-1)*FT+Z)
3430 W$=INKEY$:IF W$=E$ THEN Z=FT:J=R2
3440 NEXT Z:IF W$=E$ THEN RETURN
3450 IF SP=0 THEN 3470
3460 FOR Z=1 TO SP:LPRINT:NEXT Z
3470 GOSUB 2910:IF PF=0 THEN RETURN
3480 PRINT DM$(0):GOSUB 2300:IF K$=SP$ THEN RETURN
3490 J=R2:RETURN
3500 PRINT TAB(15);"CARD";J:PRINT L$
3510 FOR Z=1 TO FT:PRINT F$(Z);": ";Y$((J-1)*FT+Z)
3520 NEXT Z:PRINT L$:RETURN
3600 PRINT "PRESS <SPACE BAR> WHEN PRINTER IS READY."
3610 GOSUB 2300:RETURN
3700 RF=-1:H$="?":T$="":GOSUB 6000:PRINT L$
3710 IF K$=E$ OR T$="" THEN RETURN
3720 T=VAL(T$):IF T>0 AND T<=RT THEN RF=0:RETURN
3730 PRINT DM$(1):GOSUB 2200:RETURN
3800 GOSUB 3600:IF K$=E$ THEN RETURN
3810 FOR J=R1 TO R2:GOSUB 3400
3820 NEXT J:LPRINT:RETURN
3830 LOCATE 19,1
3840 PRINT "PRESS <C> TO CHANGE THIS CARD,"
3850 PRINT "PRESS <P> TO PRINT IT,"
3860 PRINT "PRESS <R> TO REMOVE IT, OR"
3870 PRINT "PRESS <SPACE BAR> TO MOVE TO NEXT CARD.":RETURN
4000 GOSUB 2910:GOSUB 3500
4010 GOSUB 2000:IF K$=E$ THEN W$=E$:J=RT:RETURN
4020 IF K$=SP$ THEN RETURN
4030 IF K$="C" THEN 4090 ELSE IF K$="R" THEN 4140
4040 IF K$<>"P" THEN 4010 ELSE GOSUB 2900
4050 IF F THEN GOSUB 3600:IF K$=E$ THEN 4080
4060 F=0:PRINT "NOW PRINTING CARD";J
4070 GOSUB 3400:LPRINT
4080 J=J-1:GOSUB 3830:RETURN
4090 GOSUB 2900
4100 GOSUB 3010:FL=40:PRINT TAB(15);"CARD";J
4110 C=J:W$="C":FOR L=1 TO FT:GOSUB 3300
4120 IF K$=E$ THEN L=FT ELSE Y$(T)=T$
4130 NEXT L:J=J-1:GOSUB 3830:RETURN
4140 GOSUB 2900:GOSUB 3500
4150 PRINT "PRESS <SPACE BAR> TO REMOVE THIS CARD."
4160 GOSUB 2300:GOSUB 3830:IF K$=E$ THEN J=J-1:RETURN
4170 IF J=RT THEN 4190
4180 FOR Z=(J-1)*FT+1 TO (RT-1)*FT:Y$(Z)=Y$(Z+FT):NEXT Z
4190 RT=RT-1:J=J-1:RETURN
4200 PRINT "<SPACE BAR> TO MOVE TO NEXT CARD.":RETURN
5000 GOSUB 3210:A$=RIGHT$(STR$(FT),1)
5010 W$="":PRINT "SELECT CARDS BY WHICH LINE #?";
5020 GOSUB 2400:IF K$=E$ THEN RETURN
5030 V=VAL(K$):GOSUB 2910
5040 PRINT "WHAT TEXT ARE YOU SEARCHING FOR?"
5050 FL=40:H$="?":T$="":GOSUB 6000
5060 IF K$=E$ OR T$="" THEN RETURN
5070 GOSUB 2900:LOCATE 5,5
5080 PRINT "<1> MATCH FROM BEGINNING OF LINE"
```

```
5090 PRINT RE$;TAB(5);"<2> SEARCH WHOLE LINE":PRINT
5100 A$="2":PRINT TAB(8);"SELECTION -->";
5110 GOSUB 2400:IF K$=E$ THEN RETURN
5120 GOSUB 2900:SF=0:SR$=T$:LS=LEN(SR$)
5130 J=1:IF K$="2" THEN 5190
5140 LOCATE 4,10:PRINT "CHECKING CARD";J
5150 IF SR$<>LEFT$(Y$((J-1)*FT+V),LS) THEN 5170
5160 SF=1:W$="":GOSUB 3830:GOSUB 4000:GOSUB 2900
5170 X$=INKEY$:IF W$=E$ OR X$=E$ THEN RETURN
5180 J=J+1:IF J<=RT THEN 5140 ELSE 5290
5190 Z$(0)=Y$((J-1)*FT+V):LZ=LEN(Z$(0))
5200 LOCATE 4,10:PRINT "CHECKING CARD";J
5210 IF Z$(0)="" OR LZ<LS THEN 5280
5220 FOR W=1 TO LZ-LS+1
5230 IF SR$<>MID$(Z$(0),W,LS) THEN 5250
5240 W=256:SF=1:W$="":GOSUB 3830:GOSUB 4000:GOSUB 2900
5250 X$=INKEY$:IF W$=E$ OR X$=E$ THEN W=300
5260 NEXT W:IF W=300 THEN RETURN
5270 IF W$=E$ OR X$=E$ THEN RETURN
5280 J=J+1:IF J<RT+1 THEN 5190
5290 GOSUB 2900:IF SF<1 THEN 5310
5300 PRINT "NO MORE CARDS MATCH!":GOSUB 2200:RETURN
5310 PRINT "NO CARDS MATCH!":GOSUB 2200:RETURN
6000 PRINT H$;:XL=POS(0):YL=CSRLIN:PC=2:T$=SP$+T$
6010 LOCATE YL,XL:PRINT T$;E$;SP$
6020 LOCATE YL,XL+PC-1
6030 GOSUB 2100:IF K$=RE$ OR K$=E$ THEN 6130
6040 IF LEN(K$)=1 THEN 6090
6050 K=ASC(MID$(K$,2)):CU=(K=75)-(K=77)
6060 IF K=83 THEN 6080 ELSE IF CU=0 THEN 6030
6070 PC=PC+CU:PC=PC-(PC<2)+(PC>LEN(T$)+1):GOTO 6020
6080 T$=LEFT$(T$,PC-1)+MID$(T$,PC+1,LEN(T$)):GOTO 6010
6090 IF K$<SP$ THEN 6030
6100 IF LEN(T$)>FL-XL-1 THEN 6030
6110 T$=LEFT$(T$,PC-1)+K$+MID$(T$,PC,LEN(T$))
6120 PC=PC+1:GOTO 6010
6130 T$=MID$(T$,2,FL):LOCATE YL,XL+1:PRINT T$;SP$
6140 LOCATE YL+1,1:RETURN
7000 DATA DESIGN CARD FORMAT,ADD CARD(S)
7010 DATA DISPLAY/CHANGE/REMOVE CARD(S),PRINT CARD(S)
7020 DATA LIST ALL FILES ON DISK
7030 DATA GET NEW/STORE/REMOVE FILEBOX,QUIT
7040 DATA 4,ADD NEW LINES,DELETE LINES
7050 DATA CHANGE NAMES OF LINES,DISPLAY CARD FORMAT
7060 DATA 2,ADD AT END,INSERT BEFORE END
7070 DATA 2,LOOK AT CARDS CONSECUTIVELY
7080 DATA WORK WITH SELECTED CARD(S)
7090 DATA 5,PRINT ONE CARD,PRINT A RANGE OF CARDS
7100 DATA PRINT ALL CARDS,PRINT SELECTED CARD(S)
7110 DATA CHANGE PRINTER OPTIONS,2,"DISK A:","DISK B:"
7120 DATA 3,STORE THIS FILEBOX ON DISK
7130 DATA GET A FILEBOX FROM DISK
7140 DATA REMOVE A FILEBOX FROM DISK
7150 DATA 2,RETURN TO MAIN MENU,QUIT
8000 DATA "PRESS <SPACE BAR> TO CONTINUE."
8010 DATA NO SUCH CARD!,NO MORE CARDS!
8020 DATA NO CARDS PRESENT.
9000 DATA &H55,&H06,&H8B,&HEC,&HB4,&H0F,&HCD,&H10,&H8A
9010 DATA &HDC,&H80,&HF8,&H07,&H75,&H08,&HB8,&H00,&HB0
```

```
9020 DATA &H8E,&HC0,&HF9,&H72,&H05,&HB8,&H00,&HB8,&H8E
9030 DATA &HC0,&H8B,&HB6,&H0A,&H00,&H8B,&H84,&H00,&H00
9040 DATA &HFE,&HC8,&HF6,&HE3,&HD1,&HE0,&H8B,&HF8,&H8B
9050 DATA &HB6,&H08,&H00,&H8B,&H8C,&H00,&H00,&HB4,&H07
9060 DATA &HB0,&H20,&HB7,&H00,&H51,&H8B,&HCB,&HFC,&HF3
9070 DATA &HAB,&H59,&HE2,&HF7,&H07,&H5D,&HCA,&H04,&H00
```

MODIFICATION FOR PRODOS

Apple II series w/64K RAM, disk drive (printer optional), & ProDOS/*Home Information Manager*

Use the DOS 3.3 version, except change line 1360 to read as follows:

```
1360 PRINT:PRINT D$;"CAT,D1"
```