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FOR THE HOME AND HOME OFFICE

AUGUST 1987

VOLUME 5
NUMBER 8

**BUYER'S GUIDE TO
Portable Computers**

FAMILY COMPUTING

The Mail-Order Buying Boom

**Panasonic's New
PC Compatible:
Business Partner
FX-600**

**Home Office:
Improving Sales**

**How to Succeed
At Moonlighting**

**On Balance: A
Finance Program
For Your Apple**

**Entertainment:
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**Remote-Control
Computing**

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SOFTWARE REVIEWS



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ATARI 400, 800, 600/800XL & 130 XE COMMODORE 64/128,
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FAMILY COMPUTING

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HOME OFFICE

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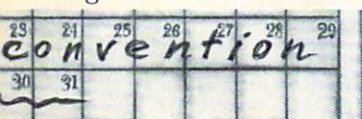
Running your own moonlighting business may be easier than you think, if you use your computer to help you with filing, marketing, designing, and a host of organizational details. Profiles of four successful professionals who moonlight.

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61 FUN-AND-GAMES PROGRAM

Crisscross stellar traffic with your towing craft to aid stalled space taxis. A game for Apple, Commodore, IBM PC & compatibles, and Tandy computers.*

64 PUZZLE

This month, *Crossword Puzzler* is presented for Adam, Apple, and Atari computers (see *July issue* for Commodore, IBM PC & compatible, and Tandy versions.*

NEXT MONTH: SOLUTION TO AUGUST PUZZLE. PLUS DATA FOR A NEW PUZZLE

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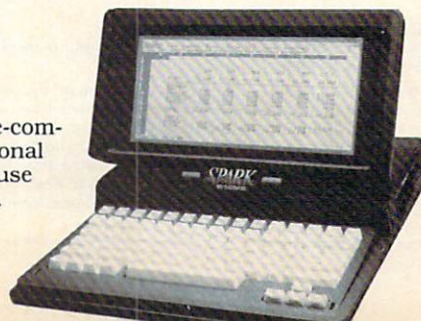
Use *Reverse Scroller* to change the direction text scrolls on your Apple, Atari, Commodore, or IBM PC or compatible.*

75 MICROTONES

Use *Three-Voice Sound Effect* to add rich tones to programs on your Apple, Atari, Commodore, IBM PCjr or compatible, or TI-99/4A computers.*

*See program for specific computer models and hardware requirements.

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COVER PHOTOGRAPH BY DONNELLY MARKS

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Be the Programmer

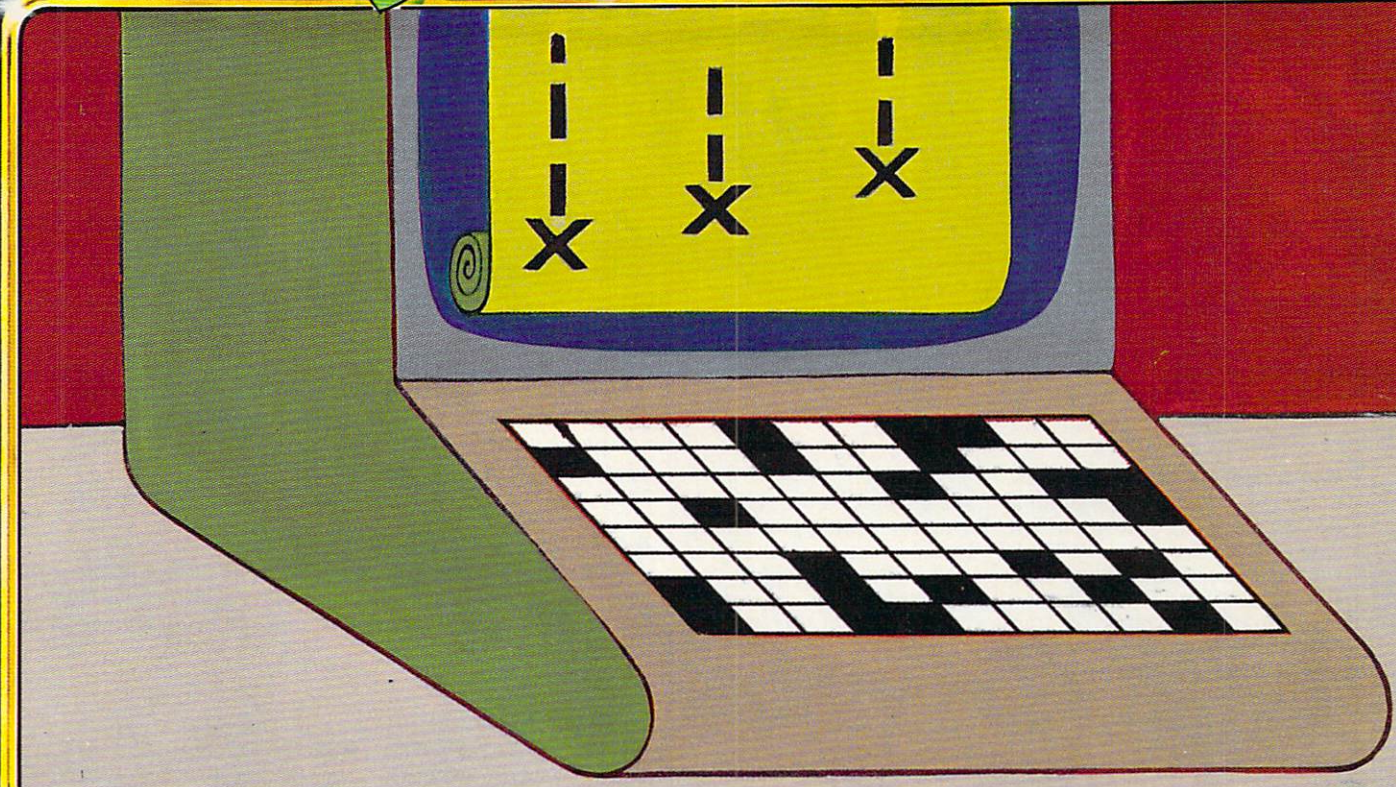


ILLUSTRATION BY BARTON STABLER

★ **A U G U S T** ★

FYI
Page 60

Useful information about our programs, including program coverage and testing and Programming P.S.

FUN-AND-GAMES PROGRAM
Page 61

Crisscross the galaxy to rescue stalled space taxis in the year 2030.

PUZZLE
Page 64

Try our latest Crossword Puzzler.
PLUS: solution to last month's puzzle.

UTILITY PROGRAM
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Reverse Scroller will enable you to scroll text down the screen instead of up.

MICROTONES
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Add rich and random sounds to your own programs with Three-Voice Sound Effect.

ILLUSTRATION BY JAMES CHERRY III

Cherry

THIS MONTH'S PROGRAM COVERAGE

Computers*	Cross-cross (pg 61)	Crossword Puzzler (pg 64)	Puzzle Clues (pg 66)	Reverse Scroller (pg 73)	Three-Voice Sound Effects (pg 75)
Adam		★	★		
Apple IIgs	★ j	★ D p	★	★	
Apple II series	★ j	★ D p	★	★	
Atari 800/XL/XE		★ D p	★	★	★
Commodore 64/128	★ j	July '87	★	★	★
IBM PC FAMILY					
IBM PC	★ j	July '87	★	★	
IBM PCjr.	★ j	July '87	★	★	★ T
IBM PS/2 Model 30	★ j	July '87	★	★	
IBM PC COMPATIBLES					
Blue Chip	★ j	July '87	★	★	
Commodore PC 10	★ j	July '87	★	★	
Epson Equity I	★ j	July '87	★	★	
Kaypro PC-10	★ j	July '87	★	★	
Leading Edge Model D	★ j	July '87	★	★	
Panasonic FX600	★ j	July '87	★	★	
Tandy 1000/EX/SX	★ j	July '87	★		★ T
Macintosh		★ p	★		★
Tandy Color Computer	★ j	July '87	★		
TI-99/4A					★

KEY ★ Program in this issue for this computer. D Disk drive required. j joystick optional. p printer optional. T Television or monitor with external speaker required for IBM PCjr and Tandy 1000 only. *see below for specific models.

THE SYSTEMS WE TEST ON

Every FAMILY COMPUTING program is thoroughly tested before publication. The exact systems we use during the testing process are listed here. While you can be sure that a program will work if your system matches ours, a comparable system configuration should also work. For example, even though we do not test on the Franklin Ace, Apple programs should work on this system. Any exception to the following hardware/software configurations will be listed in the chart above. Systems that do not have a specific printer listed were tested with Epson FX-80 printers when a printer option was available.

Adam w/80K RAM, Coleco SmartBASIC V1.0, disk enhanced by MMSG, Coleco disk drive, AdamDOS, and color monitor. **Apple IIe** in 40-column mode w/64K RAM, DOS 3.3, two disk drives, MPC parallel printer interface, monochrome and color monitor. Apple programs should also work on Apple IIc/II Plus. **Apple IIgs** w/1MB RAM, one 3.5" and one 5.25" disk drive, ProDOS 3.3, and Apple RGB monitor. **Atari 800XL** w/two disk drives, DOS II version 2.05, Atari 850 interface, and color monitor. Atari programs should also work on Atari 800(w/48K), 1200XL, 65/130XE. Smaller programs should work on Atari 400 & 600XL. **Commodore 128** in C 64 mode with two 1571 disk drives, color monitor, and Micrografix parallel graphics interface. Programs should also work on Commodore 64/64C/128D. **IBM PC** w/640K RAM, Disk BASIC D2.00, IBM Monochrome Display and Printer Adapter, monochrome monitor, IBM Color/Graphics Monitor Adapter, RGB monitor, AST Sixpack Plus, and IBM PC DOS 3.10. **IBM PCjr** w/128K RAM, one disk drive, IBM PC DOS 2.10, cartridge BASIC J1.00. **IBM PS/2 Model 30** w/640K RAM, one floppy and one hard-disk drive, RGB monitor, IBM PC DOS 3.30, and IBM PC BASIC A3.30. **Macintosh** w/512K RAM, two disk drives, Microsoft BASIC 2.1, and ImageWriter printer. Macintosh programs should also work on 128K Mac/Mac Plus/SE/II, and under Microsoft BASIC 2.0. **Tandy Color Computer 2** w/64K RAM, Disk Extended Color BASIC 1.1, two disk drives, Botek serial to parallel printer interface, color monitor. It should also work on Color Computer 1 (w/64K) and 3. **TI-99/4A** w/8K RAM, peripheral expansion system, disk drive, RS232 Interface Card, and TI-99/4 Impact Printer.

The following PC compatibles have been added to our testing list. IBM PC programs should also work on other PC compatibles w/at least 128K.

Blue Chip w/512K RAM, two disk drives, monochrome monitor, MS-DOS 3.20, GW-BASIC 3.20. **Commodore PC-10** w/640K RAM, two disk drives, monochrome monitor, MS-DOS 3.20, GW-BASIC 3.20. **Epson Equity I** w/256K RAM, two disk drives, monochrome display adapter, monochrome monitor, MS-DOS 3.10, GW-BASIC 3.10. **Kaypro PC 10** w/640K RAM, two disk drives, RGB monitor, MS-DOS 2.11, GW-BASIC 2.02. **Leading Edge**

Model D w/640K RAM, two disk drives, monochrome and RGB monitors, MS-DOS 3.10, GW-BASIC 3.11. **Panasonic FX600** w/640K RAM, two disk drives MS-DOS 3.10, GW-BASIC 3.10, enhanced graphics adapter, RGB monitor. **Tandy 1000** w/256K RAM, two disk drives, MS-DOS 2.11 version 02.11.22, GW-BASIC 2.02 version 01.01.00, RGB monitor. **Tandy 1000 EX** w/256K RAM, two disk drives, MS-DOS 2.11 version 02.11.24, GW-BASIC 2.02 version 01.02.00, RGB monitor. **Tandy 1000 SX** w/384K RAM, two disk drives, MS-DOS 3.20 version 03.20.00, GW-BASIC 3.20 version 03.20.00, RGB monitor.

(212) 505-3703

A HELP LINE FOR PROGRAM PROBLEMS

Call our Program Status Line any time of day or night to receive an up-to-date summary of our latest programs, the machines on which they run, and any corrections or enhancements to the programs.

PROGRAMMING P.S.

Corrections to Previous Months' Programs

Micro Phonebook (May 1987, page 66)

Apple II series: Often, the program doesn't sort correctly. To fix the sorting feature, change lines 1030 and 1040 to read as follows:

```
1030 PBS(V,Y) = VS:NEXT Y
1040 NEXT V:NEXT U:A = FRE(0):GOTO 90
```

Home Message Center (June 1987, page 66)

IBM PC & compatibles w/128K RAM & disk drive:

Due to a printer error, lines 2010 and 2020 did not print clearly. The lines should read as follows:

```
2010 PRINT " Re: ";MCS(X,3)
2020 PRINT " Date: ";MCS(X,4);" Time: ";MCS(X,5)
```

A/C Sizer (July 1987, page 62)

IBM PC compatibles: On some PC compatibles, the statement WIDTH 40 produces an Illegal Function Call error. If you have this problem, change line 30 to read as follows:

```
30 KEY OFF
```

Crossword Puzzler (July 1987, page 69)

Tandy 1000/EX/SX: The CTRL-S command suspends program execution on the Tandy 1000/EX/SX, so CTRL-F must be used to SAVE puzzles. To make this version SAVE properly, change lines 180, 190, 560, and 1390 to read as follows:

```
180 CS="BAEDPF":W=0:IF MS=2 THEN 210
190 GOSUB 3000:GOTO 390
560 PRINT TAB(4);"<CTRL>+<F>=Save & Return to Menu"
1390 MS=4;W=1;CS="EAFDP":GOTO 390
```

BUG IN TANDY BASIC

While testing our programs at FAMILY COMPUTING, we ran across a bug in the new BASIC for the Tandy 1000 EX and Tandy 1000 SX. Any BASIC program using the PLAY statement may lock up the system depending on the notes being played. For information on how to fix this problem, contact your local Tandy Training and Support Center.

NEW BASIC FOR MS-DOS

Microsoft Corp. recently introduced QuickBASIC 3.0, an advanced BASIC compiler that is substantially faster than the earlier version 2.0. With its improved speed, fully integrated debugger, and new extensions to the BASIC language, BASIC users now have access to many advanced programming capabilities previously available only to C and Pascal programmers. QuickBASIC 3.0 lists for \$99, but registered users of earlier versions of QuickBASIC 2.0 can upgrade for a small fee. For more information, contact Microsoft Customer Service, 16011 NE 36th Way, Box 97017, Redmond, WA 98073-9717.

CROSSWORD PUZZLER

BY STEVE C.M. CHEN AND KAREN KANE

This is the second in a series of crossword puzzles. Last month we presented a Fourth of July puzzle program with versions for the Commodore 64/128, IBM PC and compatibles, and Tandy Color Computer. The solution appears in this issue. This month's Crossword Puzzler has a computer theme and is translated for Adam, Apple, Atari, and Macintosh computers. Or you can type the data for this month's puzzle (see Computer Puzzle Data below) into last month's program if you have a Commodore, PC compatible, or CoCo. The solution to this puzzle will appear in next month's issue along with data for a back-to-school puzzle. Copies of the July issue are available for \$3.95 from Crossword Puzzler, c/o FAMILY COMPUTING Back Issues, 730 Broadway, New York, NY 10003. Please specify the brand and model of your computer when ordering.

If you're tired of newspaper crossword puzzles that are smudged and ripped from repeated erasures, if you become cross-eyed from deciphering the layers of inked-in letters

when you try to solve a puzzle in pen, or if you're just a fan of challenging puzzles, then Crossword Puzzler is the program for you! Type in and run the program, then type in a few short lines of data we supply, and you'll be able to solve (or print out) that month's FAMILY COMPUTING crossword puzzle. Or, you can create your own crossword puzzle for a friend to solve. And, of course, you can duplicate a puzzle that you see in a book or newspaper and solve it on your computer screen instead!

To use our crossword puzzle program, just type in the version for your computer and SAVE it. When you run the program, a main menu will offer you five choices: 1) Create your own crossword puzzle, 2) Work on an existing puzzle, 3) Create a puzzle using FC data, 4) Solve a puzzle, or 5) Quit.

1) CREATE YOUR OWN PUZZLE

When you choose option 1 from the main menu, a 15-by-15 grid of dots appears on the screen. This grid is where you enter the letters and solid blocks

that make up any crossword design.

Along with the grid is a command menu describing the operations available when creating your own puzzle. To enter a letter just type it. Enter a solid block by pressing CTRL-B (see special instructions for Macintosh below). Or, if you just want to move around the grid, use the cursor keys. (Apple II users can move up by simultaneously pressing the CTRL-K keys and move down by pressing the CTRL-J keys.) The grid is set up for a 15-by-15 square puzzle but, if you want a smaller puzzle, you can make a new border by filling in the extra squares with solid blocks. To "erase" an entry, type over it with a new letter or a block, or type a period (".") to leave the square blank. At any time, you can print the current puzzle with the CTRL-P command, SAVE it and return to the main menu with CTRL-S or press CTRL-E to exit to the main menu without saving. If you choose this option, though, you'll lose all your work!

2) WORK ON AN EXISTING PUZZLE

This feature allows you to load a previously SAVED puzzle that you have started to design and want to change. When the puzzle appears on the screen, you can use all the same commands that are available when creating a puzzle. Make sure to SAVE your new version under a different name, unless you want to SAVE over the old one.

3) CREATE A PUZZLE USING FC DATA

When you choose to create one of FAMILY COMPUTING's puzzles (option 3 on the main menu), a table will appear where you input the data for one of our original puzzles. This month the puzzle has a computer theme, and the data listed below establish the pattern of blank spaces and solid blocks that relates to the crossword clues. When you have correctly typed in a line of data, you can press RETURN or ENTER and input the next line. Once all of the data is correctly entered, you must SAVE it. You can exit the data input feature without saving by typing CTRL-E, but no warning will be given.

4) SOLVE A PUZZLE

To solve a puzzle, choose option 4 from the main menu and type in the name of the saved puzzle that you wish to work on. You can load either a FAMILY COMPUTING puzzle or one that you or a friend has designed. In either case, the unsolved or partially solved puzzle pattern will appear ready for input. You can move around the puzzle in the same manner as you do when creating a puzzle, but the option to add or erase blocks is not available.

5) QUIT

Choose this option to exit from the program. You will be asked if you're sure you want to QUIT so that if you haven't SAVED or PRINTED your most recent work, you have a chance to go back and do so.

SOLUTION TO LAST MONTH'S PUZZLE

L	I	F	E		T	R	A	P		H	A	Y		
Y	A	R	N		H	A	R	I		A	R	A	B	
	N	E	C		I	S	A	T		N	E	W	E	R
	G	E	O	G	R	A	P	H	I	C	A	L	L	Y
		R	A	T					N	O			L	E
I	N	D	E	P	E	N	D	E	N	C	E			
D	A	R		S	E					K	E	T	C	H
O	M	A	R		N		A	R	T		L	A	O	
L	E	G	A	L			T	E	E	N		P	O	D
			B	I	R	T	H	D	A	Y	C	A	K	E
B	J			B	A	N				P	E	R		W
R	E	P	R	E	S	E	N	T	A	T	I	O	N	
A	L	L	E	R			E	A	R		E	M	I	T
S	L	E	P	T			T	A	R	T	R	I	N	A
S	O	A	P	Y			T	O	Y		S	T	A	R

HINTS ON SAVING

When SAVING your puzzles, it's a good idea to give them names to distinguish between puzzles that are being created and ones that are being solved.

For example, if you are creating a puzzle with beach words, you may SAVE the first version as MYBEACH.1 and a final version as MYBEACH.SOL. This final version can then be used in two ways by Crossword Puzzler. If it is LOAD-

PUZZLE

ed from menu option 4 (Solve a Puzzle), only the pattern of blocks will show up on screen so the puzzle is ready for someone to solve. While solving a puzzle, it's very important to SAVE partially solved puzzles with a name different from the solution such as MYBEACH.TRY. If MYBEACH.SOL is LOADED from menu option 2 (Work on an Existing Puzzle), the completed puzzle shows up.

SPECIAL INSTRUCTIONS FOR MACINTOSH PUZZLERS

On the Macintosh, there is no CTRL key. To perform a control function you simply use the OPTION key along with the key that corresponds to the operation you want. For example, to insert a solid block into the puzzle you would type OPTION-B.

Also, the Macintosh does not have cursor keys. To move around the grid, use OPTION-K to move up, OPTION-M to move left, OPTION-, to move down, and OPTION-. to move right.

Computer-Puzzle Data

A FAKA,EBJB,FCMC,DDGD,1106
 B NDOD,BECE,EEHE,IEJE,1128
 C KELE,HFIF,AGDG,JGDH,1134
 D IHKH,EIFI,KIOI,BJEJ,1160
 E FJGJ,KJLJ,CKDK,JKLK,1173
 F NKDL,HLML,AMDM,IMDN,1181
 G HNNN,ONEO,FOGO,HOIO,1213
 H JOZZ,ZZZZ,ZZZZ,ZZZZ,6413

Computer-Puzzle Clues

Across

1A Spread
 1G CLS in Applesoft BASIC
 1L Type style
 2A Word with communicate or vision
 2F Bar used to raise pitch of stringed instruments
 2K Made of flax
 3A Banish
 3G Unexpected
 3N Spielberg character
 4A Anatomical vessel
 4E Egyptian sun-god
 4H Disk division
 5F Mr. Lewis of sci-fi
 5M Recede; abate
 6A Computer hotbed; two words with 6J across
 6J See 6A across
 7B Prefix for host or exist
 7E What an Epson FX-80 can do
 7K Smallest amount
 8A Portion of land
 8E Command to reverse last action
 8L Feminine suffix
 9A _____date; overwhelm
 9G Wicked
 9L Grande or de Janeiro
 10C Compass direction
 10H Superlative suffix
 10M Possess
 11A Symbol for technetium
 11E Electronic drawing pad or Australian marsupial
 12A Sneaky
 12E Computer corp.

Down

12I Clan
 12N Opposite of out
 13B Letters in a ligature
 13E System of symbols
 13J Equality
 14A Andy's sidekick
 14E Word with skeleton or skate
 14I Fundamental; computer language
 15A Trial
 15K Rodent

Down

1A Wozniak and Jobs
 1B _____decimal
 1C Ivy League bulldogs
 1D Moray
 1G Owls
 1H Musical composition
 1I A la _____
 1L End, to Guido
 1M Not off
 1N Born, in Nice
 1O Explosive
 2K Common BASIC keyword, often omitted
 3E Pause in speech
 3J City belonging to no state, abbr.
 4F Oak nut
 4M Kin
 5D Fa sharp
 5G Slyly disparaging
 5N Give
 5O Eight bits
 6B Symbol
 6C Type of water lily
 6E Heart of a computer

6K Alabama, abbr.

6L Lascivious look

7H New

8A Prints a program

8J Key below SHIFT on IBM PC

9D St. with Lincoln as capital

9I One thing _____good as another (two words)

100 The Big Apple

11B Copy

11E Gun's recoil

11F Woodwind instrument

11G Airmail delivery, abbr.

11K Muscle contraction

12C Years

12J Gov't. agency

12L Threesome

12N Pronoun

13M Place for patients in critical condition

14A IBM PC model with "Advanced Technology"

Adam/Crossword Puzzler

```
10 DIM bd$(15,15),dm$(2),n$(15):d$ = CHR$(4)
20 g$ = CHR$(7):p$ = CHR$(46):q$ = CHR$(34)
30 sp$ = CHR$(32):dm$(1) = "--- ACROSS"+sp$
40 dm$(2) = "--- DOWN"+sp$+sp$+sp$
50 cl$ = sp$:FOR a = 2 TO 31:cl$ = cl$+sp$:NEXT a
60 pf$ = "#":FOR a = 2 TO 33:pf$ = pf$+"#":NEXT a
70 ul$ = CHR$(95):ul$ = ul$+ul$+ul$+ul$
80 FOR a = 1 TO 15:n$(a) = STR$(a)+sp$:NEXT a
90 HOME:PRINT TAB(7);"CROSSWORD PUZZLER":PRINT
100 PRINT "<1> Create your own crossword"
110 PRINT TAB(5);"puzzle"
120 PRINT "<2> Work on an existing puzzle"
130 PRINT "<3> Create a puzzle using FC"
140 PRINT TAB(5);"data"
150 PRINT "<4> Solve a puzzle":PRINT "<5> Quit"
160 PRINT:PRINT TAB(10);"Selection: ";
170 GET k$:ms = VAL(k$)
180 IF ms < 1 OR ms > 5 THEN PRINT g$;GOTO 170
190 HOME:ON ms GOTO 200,200,1050,220,1450
200 c$ = "BAEDLS":w = 0:IF ms = 2 THEN 230
210 GOSUB 3000:GOTO 440
220 c$ = "EASDL":w = 1
230 HOME:INPUT "What is the name of this puzzle? ";f$
240 IF f$ = "" THEN 90
250 ONERR GOTO 420
260 HOME:PRINT d$;"open ";f$
270 PRINT d$;"read ";f$:INPUT t
280 IF w = 0 AND t = 1 THEN 360
290 FOR y = 1 TO 15:FOR x = 1 TO 15
300 INPUT bd$(x,y):NEXT x,y:HOME
310 PRINT d$;"close ";f$:CLRERR
320 IF w = 0 OR t = 1 THEN 440
330 FOR x = 1 TO 15:FOR y = 1 TO 15
340 IF bd$(x,y) <> sp$ THEN bd$(x,y) = p$
350 NEXT y,x:GOTO 440
360 HOME:PRINT d$;"close ";f$
370 CLRERR:HOME
380 PRINT g$;g$;"Sorry! This file is not"
390 PRINT "loadable from menu choice 2."
400 PRINT "Select <4> Solve a puzzle to"
410 PRINT "load it.":GOSUB 3500:GOTO 230
420 HOME:PRINT d$;"close ";f$:CLRERR
430 GOSUB 4000:GOTO 230
440 HOME:tm = 2:lm = 7:wd = 17:ht = 15:GOSUB 2000
450 VTAB 1:HTAB 8
460 FOR a = 1 TO 15:PRINT CHR$(64+a);:NEXT a
470 FOR y = 1 TO 15:VTAB 2+y:HTAB 4:PRINT n$(y);
480 VTAB 2+y:HTAB 8:FOR x = 1 TO 15:t$ = bd$(x,y)
490 IF t$ <> sp$ THEN PRINT t$;:GOTO 510
500 INVERSE:PRINT t$;:NORMAL
510 NEXT x:VTAB y+2:HTAB 25:PRINT n$(y)
520 NEXT y:sk = 2
530 VTAB 20:IF ms = 4 THEN 570
540 PRINT "<CTRL+A>=Across <CTRL+B>=Block"
550 PRINT "<CTRL+D>=Down <CTRL+E>=Exit"
560 cx = 1:cy = 1:GOTO 620
570 cx = 0:cy = 0:FOR y = 1 TO 15:FOR x = 1 TO 15
580 IF bd$(x,y) = p$ THEN cx = x:cy = y:x = 15:y = 15
590 NEXT x,y
600 PRINT "<CTRL+A>=Across <CTRL+D>=Down"
```

PUZZLE

```

610 PRINT "<CTRL+E>=Exit"
620 PRINT "<CTRL+L>=Print current puzzle"
630 PRINT "<CTRL+S>=Save & return to menu"
640 IF cx <> 0 THEN 670
650 bd$(1,1) = p$:cx = 1:cy = 1
660 VTAB 3:HTAB 8:PRINT p$;
670 VTAB 19:HTAB 9:PRINT CHR$(64+cx);n$(cy);dm$(sk/2)
680 VTAB cy+2:HTAB cx+7
690 GET k$:k = ASC(k$)
700 dk = (k = 163)+2*(k = 161)+3*(k = 160)+4*(k = 162)
710 IF dk <> 0 THEN GOSUB 4500:GOTO 670
720 IF k$ > CHR$(31) THEN 1010
730 ck = 0:t$ = CHR$(ASC(k$)+64):FOR a = 1 TO LEN(c$)
740 IF MID$(c$,a,1) = t$ THEN ck = a:a = LEN(c$)
750 NEXT a:IF ck = 0 THEN PRINT g$;:GOTO 690
760 IF w = 0 THEN ON ck GOTO 780,800,810,800,860,1000
770 ON ck GOTO 810,800,1000,800,860
780 bd$(cx,cy) = sp$:VTAB cy+2:HTAB cx+7
790 INVERSE:PRINT sp$;:NORMAL:GOTO 1040
800 sk = ck:GOTO 670
810 nl = 5:GOSUB 5000:VTAB 19
820 PRINT g$;g$;"You have not saved this puzzle.";
830 PRINT "ARE YOU SURE YOU WANT TO EXIT?";
840 GOSUB 5500:nl = 2:GOSUB 5000
850 ON k$ = "Y" GOTO 90:GOTO 530
860 nl = 5:GOSUB 5000:VTAB 19
870 PRINT "Press any key when printer is"
880 PRINT "ready.";:GET k$:HOME
890 PR# 1:PRINT SPC(5);:FOR a = 1 TO 15
900 PRINT CHR$(64+a);sp$;:NEXT a:PRINT
910 PRINT SPC(3);pf$
920 FOR y = 1 TO 15:PRINT n$(y);
930 IF y < 10 THEN PRINT sp$;
940 PRINT "#";sp$;:FOR x = 1 TO 15:t$ = bd$(x,y)
950 IF t$ <> sp$ THEN PRINT t$;sp$;:GOTO 970
960 PRINT "*";sp$;
970 NEXT x:PRINT "#";sp$;n$(y):NEXT y
980 PRINT SPC(3);pf$
990 PRINT:PR# 0:GOTO 440
1000 GOSUB 6000:ON f$ = "" GOTO 440:GOTO 90
1010 GOSUB 2500:IF (k$ < "A" OR k$ > "Z") AND k$ <> p$
    THEN PRINT g$;:GOTO 680
1020 bd$(cx,cy) = k$
1030 VTAB cy+2:HTAB cx+7:PRINT k$;
1040 dk = sk:GOSUB 4500:GOTO 670
1050 VTAB 1:HTAB 8:PRINT "INPUT FC DATA":GOSUB 3000
1060 zy = 1:h$ = ul$:t$ = ul$:FOR a = 1 TO 4
1070 h$ = h$+" "+ul$:t$ = t$+ul$:NEXT a:cd$ = ""
1080 VTAB zy+1:HTAB 1:PRINT CHR$(64+zy);sp$;h$
1090 a$ = t$:zx = 0
1100 VTAB 19:PRINT "Press <RETURN> to move to next"
1110 PRINT "line or <CTRL+E> to exit"
1120 PRINT "without saving."
1130 VTAB zy+1:HTAB zx+3+INT(zx/4)
1140 GET k$:dx = (k$ = CHR$(161))-(k$ = CHR$(163))
1150 ON (dx = 0) GOTO 1170:zx = zx+dx
1160 zx = zx+((zx = -1)-(zx = 20))*20:GOTO 1130
1170 IF k$ = CHR$(5) THEN PRINT g$;g$;:GOTO 90
1180 IF k$ <> CHR$(13) THEN 1400
1190 nl = 3:GOSUB 5000:cv = VAL(RIGHT$(a$,4))
1200 ct = 0:FOR a = 1 TO 16:ct = ct+ASC(MID$(a$,a,1))
1210 NEXT a:IF ct = cv-(cv > 5000)*5000 THEN 1250
1220 VTAB 19:FLASH
1230 PRINT g$;g$;"You have made a typo in line ";CHR$(
64+zy);".":NORMAL
1240 GOSUB 3500:nl = 4:GOSUB 5000:zx = 0:GOTO 1100
1250 IF cv > 5000 THEN 1280
1260 cd$ = cd$+LEFT$(a$,16):zy = zy+1
1270 ON zy < 16 GOTO 1080:GOTO 1310
1280 t = 16:FOR a = 1 TO 15 STEP 2
1290 IF MID$(a$,a,1) = "Z" THEN t = a-1:a = 15
1300 NEXT a:cd$ = cd$+LEFT$(a$,t)
1310 FOR a = 1 TO LEN(cd$)-1 STEP 2
1320 x$ = MID$(cd$,a,1):y$ = MID$(cd$,a+1,1)

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1330 bd$(ASC(x$)-64,ASC(y$)-64) = sp$:NEXT a
1340 GOSUB 6000:IF f$ = "" THEN PRINT g$;g$;:GOTO 1340
1350 HOME:PRINT "Press <M> for menu or <S> to"
1360 PRINT "solve the puzzle.";
1370 GET k$:GOSUB 2500:IF k$ <> "M" AND k$ <> "S" THEN
    PRINT g$;:GOTO 1370
1380 IF k$ = "M" THEN 90
1390 ms = 4:w = 1:c$ = "EASDP":GOTO 440
1400 GOSUB 2500:IF (k$ < "A" OR k$ > "Z") AND (k$ < "0"
    OR k$ > "9") THEN PRINT g$;:GOTO 1130
1410 VTAB zy+1:HTAB zx+3+INT(zx/4):PRINT k$;
1420 IF zx = 0 THEN a$ = k$+MID$(a$,2):GOTO 1440
1430 a$ = LEFT$(a$,zx)+k$+MID$(a$,zx+2)
1440 zx = zx+1-(zx = 19):GOTO 1130
1450 PRINT g$;"Are you sure you want to quit? ";
1460 GOSUB 5500:IF k$ = "N" THEN 90
1470 HOME:END
2000 INVERSE:VTAB tm:HTAB lm
2010 PRINT SPC(wd):FOR y = 1 TO ht
2020 VTAB tm+y:HTAB lm:PRINT sp$;
2030 VTAB tm+y:HTAB lm+wd-1:PRINT sp$:NEXT y
2040 VTAB tm+ht+1:HTAB lm:PRINT SPC(wd):NORMAL:RETURN
2500 k = ASC(k$)
2510 k$ = CHR$(k-(k > 96)*(k < 123)*32):RETURN
3000 FOR x = 1 TO 15:FOR y = 1 TO 15
3010 bd$(x,y) = p$:NEXT y,x:RETURN
3500 PRINT:PRINT "Press any key to continue.";
3510 GET k$:RETURN
4000 PRINT:FLASH:PRINT g$;g$;"DISK I/O ERROR."
4010 PRINT:NORMAL
4020 PRINT "Please check disk & disk drive."
4030 GOSUB 3500:RETURN
4500 ON dk GOTO 4510,4510,4530,4530
4510 cx = cx-(dk = 1)+(dk = 2)
4520 cx = cx+((cx = 0)-(cx = 16))*15:GOTO 4550
4530 cy = cy-(dk = 3)+(dk = 4)
4540 cy = cy+((cy = 0)-(cy = 16))*15
4550 IF bd$(cx,cy) = sp$ AND w = 1 THEN 4500
4560 RETURN
5000 VTAB 19:HTAB 1:FOR a = 1 TO nl:PRINT cl$;
5010 NEXT a:RETURN
5500 GET k$:GOSUB 2500:IF k$ <> "Y" AND k$ <> "N" THEN
    PRINT g$;:GOTO 5500
5510 RETURN
6000 HOME:INPUT "Save under what name? ";f$
6010 IF f$ = "" THEN RETURN
6020 ONERR GOTO 6090
6030 PRINT d$;"open ";f$:PRINT d$;"write ";f$:PRINT w
6040 FOR y = 1 TO 15:FOR x = 1 TO 15
6050 PRINT q$;bd$(x,y);q$
6060 NEXT x,y:HOME
6070 PRINT d$;"close ";f$
6080 CLRERR:RETURN
6090 HOME:PRINT d$;"close ";f$:CLRERR
6100 GOSUB 4000:f$ = "":RETURN

```

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10 DIM BD$(15,15),DM$(2),MUS(5),NS(15):D$ = CHR$(4)
20 G$ = CHR$(7):P$ = CHR$(46):Q$ = CHR$(34)
30 SP$ = CHR$(32):DMS(1) = "--- ACROSS"+SP$
40 DMS(2) = "--- DOWN"+SP$+SP$+SP$
50 CL$ = SP$:FOR L = 2 TO 37:CL$ = CL$+SP$:NEXT L
60 PFS = "#":FOR L = 2 TO 33:PFS = PFS+"#":NEXT L
70 UL$ = CHR$(95):UL$ = UL$+UL$+UL$+UL$
80 FOR L = 1 TO 15:NS(L) = STR$(L)+SP$:NEXT L
90 FOR L = 1 TO 5:READ MUS(L):NEXT L
100 HOME:LM = 1:TM = 1:WD = 40:HT = 9:GOSUB 2000
110 VTAB 1:HTAB 12:PRINT " CROSSWORD PUZZLER "
120 FOR L = 1 TO 5:VTAB 2+L:HTAB 3:PRINT MUS(L):NEXT L
130 VTAB 9:HTAB 15:PRINT "SELECTION: ";
140 GET K$:MS = VAL(K$)
150 IF MS < 1 OR MS > 5 THEN PRINT G$;:GOTO 140

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