

**HOME OFFICE
SPACE SAVERS**

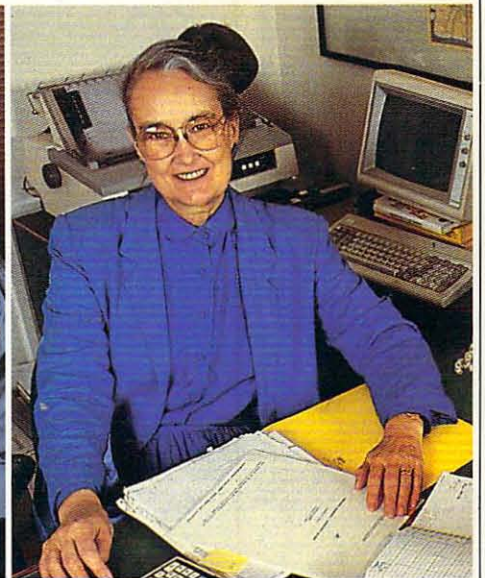
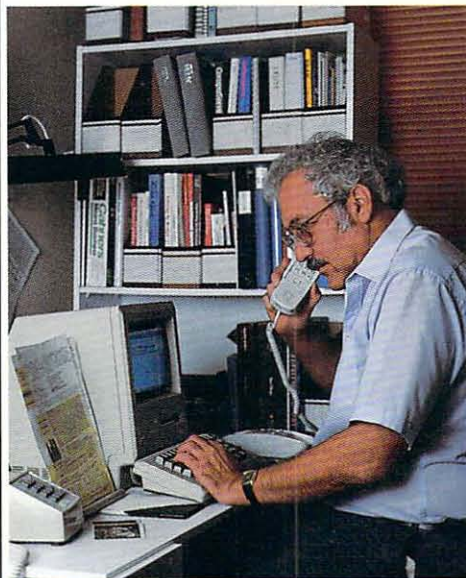
FAMILY COMPUTING

IBM's Model 30: A Hands-On Review



Making Music
On-line Research
MoneyMate
for the IBM
Dedicated
Game Machines
Crossword Puzzler
and BTU Calculator
Programs

Home Business: Four Profiles of Success



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& MACINTOSH, ATARI 800/XL/XE SERIES,
COMMODORE 64/128, IBM PC & COMPATIBLES,
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FAMILY COMPUTING

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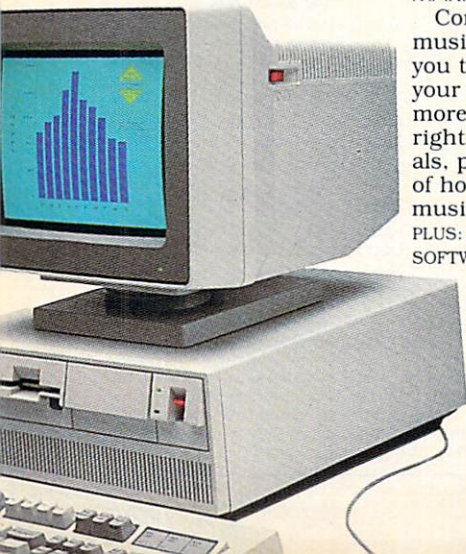
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Don't let cooling bills make you hot under the collar! *A/C Sizer* can help you select the air conditioner that's right for the space you want to cool. Program for Adam, Apple, Atari, Commodore, IBM PC & compatible, Macintosh, Tandy, and TI computers.*

69 PUZZLE

Crossword Puzzler, this month presented for Commodore, IBM PC & compatible, and Tandy computers with a Fourth of July theme, is the first in a series of crossword puzzles for these and other machines.* NEXT MONTH: SOLUTION TO THE FOURTH OF JULY PUZZLE, PLUS DATA FOR A NEW PUZZLE

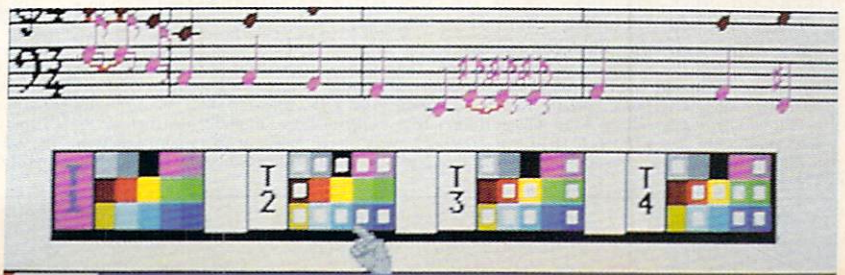
75 READER-WRITTEN PROGRAM

This fun, colorful graphics program for the Apple II series celebrates our nation's birthday—and has an exciting story behind its creation.*

*See program for specific computer models and hardware requirements.

COVER PHOTOGRAPHS BY DAVID HARPER, JIM KNOWLES, CLARK FISHER, MARK ADAMS (CLOCKWISE, FROM TOP LEFT)

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CLASSIFIEDS

FAMILY COMPUTING (ISSN 0738-6079) is published monthly by Scholastic Inc., 730 Broadway, New York, NY 10003. Subscriptions: in the U.S. and possessions, 12 issues for \$19.97; outside the U.S. add \$6 (surface mail) or \$25.97 (air-mail). Office of publication: 351 Garver Rd., P.O. Box 2700, Monroe, OH 45050-2700. Second-class postage paid at Monroe, OH 45050-9998 and additional offices. POSTMASTER: Send address changes and notice of undelivered copies to FAMILY COMPUTING, P.O. Box 2511, Boulder, CO 80302. Printed in U.S.A. Copyright © 1987 by Scholastic Inc. All rights reserved.

ate excitement for you. The manufacturers can't seem to build the portables fast enough—and while their manufacturing departments struggle to keep up with demand, R & D keeps adding improved features.

Toshiba offers the T1100 Plus PC-compatible and the T3100 AT-compatible. Except for its LCD display, the T1100 received rave reviews. No sooner said than improved: The new version sports the latest in relatively inexpensive LCD technology—a supertwist screen—for improved contrast. With 640K RAM, two 3.5-inch drives, and built-in parallel and serial ports, the T1100 Plus lists for \$2,099.

Meanwhile, Zenith Data Systems ([312] 699-4800) has an upgrade in the works for its very successful Z-181 portable. The new model (dubbed the Z-183) will reportedly offer 640K RAM and increased clock speed (to 8 MHz). A 10MB hard-disk model (an unusual option in a battery-operated portable) is planned.

Clone War Victims. Buying mail-order PC clones can be a money-saving strategy, but let the buyer beware, as they say. *InfoWorld*, a weekly computer industry publication, reports two clone-marketing companies are in deep trouble. Conroy-LaPointe Inc., which filed for bankruptcy in July 1986, has now sold off its assets. Meanwhile, Kameron Labs has filed for bankruptcy and, in a very disturbing move, invalidated warranties on products bought before the filing. According to *InfoWorld*, customers are now being charged \$40 an hour for the repair of products that they thought would still be under warranty.

STEVE MORGENSTERN can be reached on *CompuServe* (ID: 72545.606).

TANDY

BY STEPHEN MILLER

Public demand has convinced Tandy that the Trackstar 128 Emulation board should be made available to everyone. Trackstar, developed by Diamond Computer Systems ([408] 736-2000), allows your old Tandy 1000 or the newer 1000 SX to run most programs written for the Apple IIe/IIc computers, as well as MS-DOS programs. (The board will not fit in the EX.) Trackstar 128 has been

marketed only to schools, but is now available through your local Radio Shack store, as well as from Compatible Peripherals ([305] 962-8846).

If you have a substantial investment in Apple software but want to move over to the MS-DOS world, this seems to be a relatively painless compromise. The board sells for \$399.95, plus \$25 for installation. Part of the installation involves complete removal of the disk drives to allow for the attachment of an external Apple drive.

Keyboard Complaints. Having been subjected to learning the key placement on the original IBM PC keyboard, I found the Tandy 1000 keyboard took time getting used to. For those who either haven't adjusted or who really like the IBM layout, Tandy now offers its version of the IBM enhanced keyboard. (It's the same one that comes with the Tandy 3000 HD.) The keyboard costs \$119.95, and the adapter, which should be available this month, will cost \$99.95.

Driving the EX. Now that IBM has introduced its Personal System/2 with 3.5-inch disk drives, more and more software will become available in 3.5-inch format. Tandy must have foreseen this, because it markets a 3.5-inch drive that plugs right into the 1000 EX. The 3.5-inch disks store 720K (twice what the 5.25-inch disks store) and are smaller and sturdier.

The 3.5-inch drive plugs into the back of the EX just like the 5.25-inch drive does. I formatted the disk using the same format command that came with my EX DOS disk. Since I want the 3.5-inch drive to be my start-up drive and hold all the system files, I formatted the disk using the `FORMAT/S` command. To make the system boot from the 3.5-inch disk, press the F3 key as you turn on the computer, until you hear a beep.

Taking advantage of the large storage space, I then loaded my word processor, communications program, and several utilities all onto that one disk. While it doesn't have nearly the capacity of a hard-disk drive, the 3.5-inch drive does give you more storage capacity and cuts down on disk swapping.

STEVE MILLER is a computer consultant and journalist.

ORPHANS

BY PATRICK SPERA

I remember when I received my first Sinclair ZX81. It had a terrible overheating problem. I fixed it by placing the circuit board in my freezer and running the video, tape, and keyboard cables to the top of the icebox. The setup worked, but I tired quickly of standing on a chair to type in programs!

Now, since most of my machines lack a fan for draw-through cooling, I currently use a six-inch desk fan that blows cooler air across the computer. I also don't power them up in the heat of the day if I can avoid it—because out here in Oklahoma, it gets hot!

Columbia Lives! Columbia, makers of the Columbia PC, an IBM-compatible sold in the early 1980s, was one of the many computer companies that folded. But this story has a happy ending—by not ending at all.

The owner of Godfather's Computer Syndicate ([305] 774-1111) bought the rights to the Columbia PC, 1600, Portable, and ATC-6000. He currently supports these machines with parts and service.

In addition, owner Alan Welsh organized a national Columbia Owners Group (P.O. Box 2584, Altamonte Spring, FL 32714; [305] 774-1111). If you hurry, you can join for a \$25 charter membership fee.

ADAM Software. Reedy Software (10085 60th Street, S.E., Alto, MI 49302) has released *Solo Adventures #3* (DDP, \$10.95; disk, \$8.95), a companion for its graphic adventure *MageQuest* (DDP, \$15.95; disk \$13.95). In this new series of adventures, you once again attempt to thwart the vile plans of Enteon, Lord of Dire. Face monsters and magic as you seek to recover the Vicars of Wer.

Cheese tasters in the audience might want to try Reedy's *Lab Mouse* (DDP, \$12.95; disk, \$10.95). This game gives you a mouse's eye view of a maze. Find out just how hard those lab mice work for their supper! And if you want a copy of Reedy's current catalog, just send the publisher a self-addressed, stamped envelope.

PATRICK SPERA can be reached on *CompuServe* (ID: 76703.4350).

the PROGRAMMER

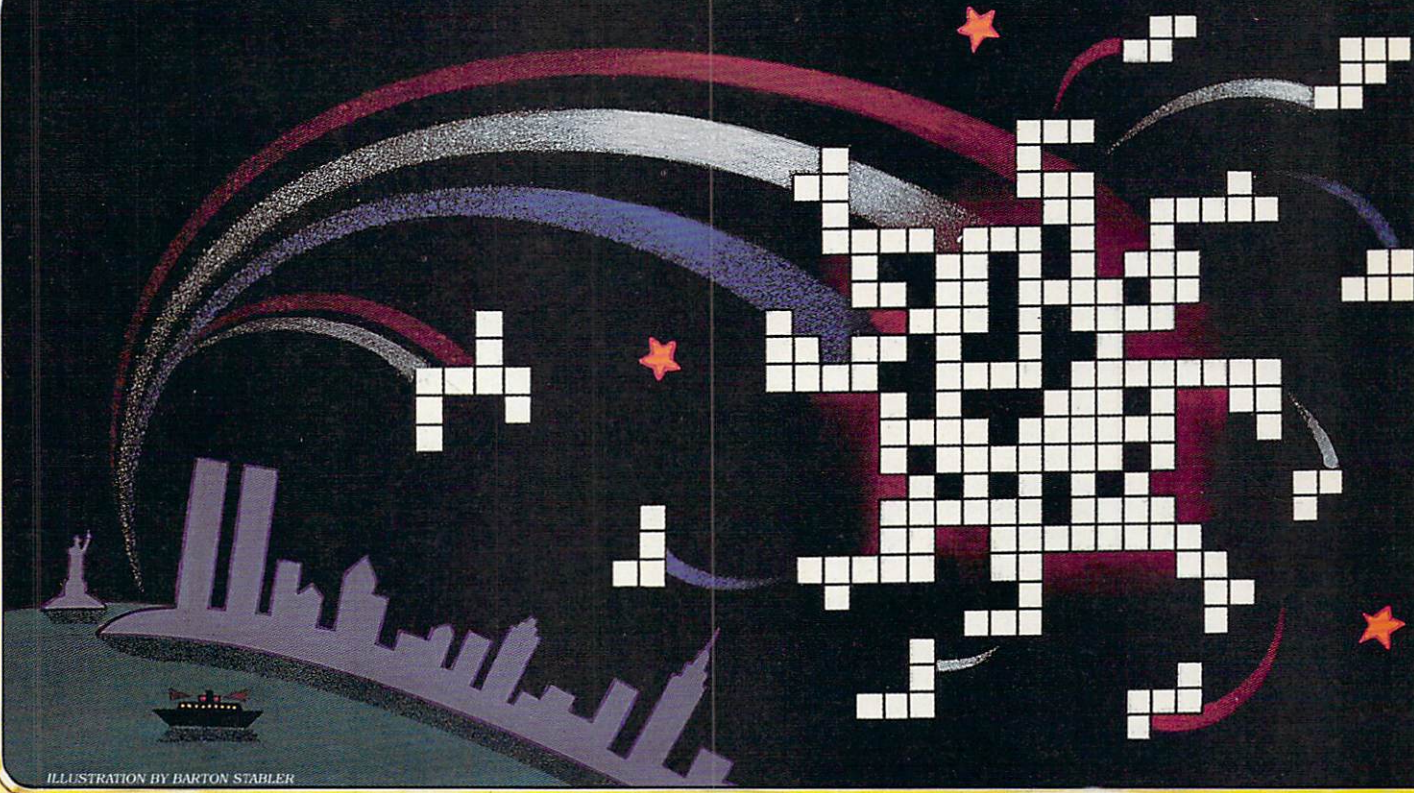


ILLUSTRATION BY BARTON STABLER

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NEWS

Page 60

Read about our new machine coverage and program testing and the new FAMILY COMPUTING Program Status Line.

Also, don't forget to check for corrections and debugging hints in Programming P.S. and Tips to the Typist.

HOME-HELPER PROGRAM

Page 62

Use *A/C Sizer* to help determine what size air conditioner you need to keep cool.

PUZZLE

Page 69

Look for Fourth of July words in this month's *Crossword Puzzler*, or design your own puzzle with any theme you like.

READER-WRITTEN PROGRAM

Page 75

Discover how a Maine minister learned to program an Apple IIc and get through a disabling illness; then, try his star-spangled program, *The Patriot*.

NEW! EXPANDED COVERAGE OF POPULAR COMPUTERS Programs Now Tested on More PC Compatibles; VIC-20, Model III/4 Programs Discontinued

You, our readers, often ask us for more programs in each issue, and for programs that are even more useful, games with more spectacular effects, productivity programs with more functions. Some of our best-received programs, such as *Home Information Manager* and *Maze Creator*, have also been among the longest, most feature-filled.

We'll be publishing more "meaty" programs, and sometimes more programs in an issue, for a wide range of computers: the Apple II series; the Atari 800/XL/XE series; the Commodore 64/64C/128/128D; the IBM PC, PCjr, PS/2 Model 30, and compatibles; and the Tandy Color Computer/2/3. We'll also continue to present programs for the Adam, Macintosh, and TI-99/4A. Occasionally, we'll publish special programs for one computer only (like *The Patriot* in this issue), or programming features that cover one particular computer system in depth.

GONE BUT NOT FORGOTTEN

To provide the space for this increased coverage, we have had to cease publishing programs for the Tandy Models III/4 (which have been overshadowed in Tandy's line by the spectacularly successful 1000 series and the Color Computer), and for the VIC-20. And as your needs evolve and the computers you own change, our coverage will continue to grow and change with you.

However, if you own any of these computers, you'll continue to find a wide variety of features of interest and use to you in every issue of *FAMILY COMPUTING*. Look for ideas, resources, and tips that can help you put your computer to better use and keep it operating efficiently. There will be more stories explaining how families like yours are using their computers to change their lives for the better. Special buyer's guides to computer systems and to IBM compatibles will assist you if you decide to buy a second (or third) computer, or to trade in for a new model. If you subscribe to CompuServe, watch the *FAMILY COMPUTING FORUM* (GO FAMFORUM) for VIC-20 and Model III/4 programs published over the last four years that you may have missed.

And don't forget Machine Specifics; turn there every month to keep in touch with the latest developments in the Commodore and Tandy worlds.

NEW COVERAGE OF "CLONES"

Because of the explosive popularity of PC-compatible computers, we are now testing our IBM programs to see if they work the way they should on a number of the MS-DOS brands. These machines include Amstrad, Blue Chip, Commodore, Epson, Kaypro, Leading Edge, Panasonic, Tandy, and Zenith. Most of our IBM PC programs should run on "true" compatibles with no trouble, if you have the right system configuration (color graphics, for example). But now you can check to make sure a program will work flawlessly on your system *before* you type it in.

You can tell at a glance which programs will run on your computer, whether it's an Apple or an Amstrad, and where in the issue they can be found by checking "This Month's Program Coverage" chart that will appear in *The Programmer* each month. Any additional hardware/software requirements are listed there as well.

If you ever have a problem with a program, refer to "Tips to the Typist" in this section, or call our answering machine (see box on page 62) for program updates.

THE SYSTEMS WE TEST ON

Every *FAMILY COMPUTING* program is thoroughly tested before publication. The exact systems we use during the testing process are

THIS MONTH'S PROGRAM COVERAGE

Computers*	A/C Sizer (pg 62)	Crossword Puzzler (pg 69)	The Patriot (pg 75)
Adam	★	F	
Apple IIcs	★	F	★ S
Apple II series	★	F	★
Atari 800/XL/XE	★	F	
Commodore 64/128	★	★ D p	
IBM PC FAMILY			
IBM PC	★	★ D p	
IBM PCjr	★	★ D p	
IBM PS/2 Model 30	★	★ D p	
IBM PC COMPATIBLES			
Blue Chip	★	★ D p	
Commodore PC 10	★	★ D p	
Epson Equity I	★	★ D p	
Kaypro PC 10	★	★ D p	
Leading Edge Model D	★	★ D p	
Panasonic FX600	★	★ D p	
Tandy 1000/EX/SX	★	★ D p	
Zenith Z148PC	★	★ D p	
Macintosh	★	F	
Tandy Color Computer	★	★ D p	
TI-99/4A	★		

KEY ★ Program written for this computer; D Disk drive required; F Version for this computer will appear in a future issue; p Printer optional; S Operate at normal speed; * See below for specific models

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+. **APPLE IIgs** w/1 MB 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 TV. It should also work on Color Computer 1 (w/64K) and 3. **TI-99/4A** with 8K RAM, peripheral expansion system, disk drive, TI parallel and serial printer interface, and TI-99/4A Impact Printer.

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

AMSTRAD w/640K RAM, two disk drives, MS-DOS 3.20, Locomotive BASIC, RGB monitor. **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, color/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/384K RAM, two disk drives, MS-DOS 3.20 version 03.20.00, GW-BASIC 3.20 version 03.20.00, RGB monitor. **TANDY 1000 SX** w/256K RAM, two disk drives, MS-DOS 2.11 version 02.11.24, GW-BASIC 2.02 version 01.02.00, RGB monitor. **ZENITH Z148PC** w/640K RAM, two disk drives, MS-DOS 3.10, GW-BASIC 3.10, RGB monitor.

TIPS TO THE TYPIST

SOME GENERAL RULES

1. Read instructions and program headings carefully.
2. Don't let fatigue and boredom contribute to inaccuracy. If you're new to programming, type in a longer program in easy stages, SAVING each installment as you go.
3. Assume that every character in a program listing must be copied accurately if a program is to work.
4. Watch out for potential trouble spots. About 90 percent of all typing errors occur in DATA statements.
5. Be aware that our program listings are printed 54 characters wide. Thus, a single BASIC program "line" (sometimes called a "logical line") may appear as several lines in our listing. If you are typing along and reach the right margin of the printed listing, don't press RETURN or ENTER before checking to see if the program "line" you're typing really ends there.
6. To correct an error in a BASIC program line, type the line in again from the beginning, and press RETURN or ENTER to replace the old line.

A HELP LINE FOR PROGRAM PROBLEMS (212) 505-3703

We have a new Program Status Line that you can call to receive an up-to-date summary of our latest programs, the machines they run on, and any corrections or enhancements to the programs.

Every program we publish is put through a rigorous testing process, and our goal each month is to give you only perfect programs. However, our programs must go through many phases of development in a very short time, and errors could creep in at any stage, despite our constant testing. We are distressed when this happens, because our hard work has gone to waste and because of all the trouble this causes you.

You can now call the Program Status Line, any time of day or night, for a quick report on the status of each program we've published in the last few months. That way, if there is an error in a program, we can tell you about it immediately and let you know when the correction will appear.

PROGRAMMING P.S.

Correction to a Previous Month's Program

On Top of Spaghetti (May 1987, page 59)

Adam: Line 2030 is missing from the published listing. The line should read as follows:

```
2030 DATA 682,1,644,1,682,1,766,1,859,9
```

HOW MUCH COOLING CAPACITY DO YOU NEED?

Use Our Program and Don't Get Left Out in the Heat

BY PASQUALE M. CIRULLO

The temperature outside has soared past 90 degrees. The humidity is 85 percent. Your air conditioner is running full blast. As the sweat rolls down your brow, your dog looks at you with her big eyes as if to say, "Why is it so hot in here?" The air conditioner just isn't doing its job. Why?

Probably your air conditioner doesn't have enough capacity. A room air conditioner's cooling capacity is measured in British Thermal Units or BTUs. The higher the capacity, the more work an air conditioner can do. Determining the capacity you need can be a little tricky because it depends on many different factors, including the types of windows you have, your walls, roof or ceiling, and floor, and, of course, the climate where you live.

To assist you in choosing the air conditioner that's right for the space you want to cool, type in *A/C Sizer*, SAVE, and RUN it. When you RUN the program, you will be asked a series of questions relating to the room you want to cool. Answer yes-or-no questions by pressing Y or N (you need not press RETURN or ENTER). When you are asked for a number or two, type the number (if there are two, separate them with commas) and press RETURN. For example, when asked, "What are the width and height of window #1 in inches?" you might type "24,52" and press RETURN.

You might want to jot down a few measurements (all measurements are in feet except for the windows which should be measured in inches) and other specifics about the



room before you RUN the program.

Here is a breakdown of what the computer will ask you and what you need to know.

1. Will the air conditioner be used only at night? If the air conditioner is used only between sunset and sunrise, it does not have to be as large as it would if it were used during the day, and you should answer Y.

2. Windows: The computer will ask you for the number of windows that face in each of the following directions: northeast, east, southeast, south, southwest, west, and northwest. If you have windows facing in a particular direction, the computer will then ask you for the width and height of each window in inches. Also of importance is whether the windows are covered by shades or outside awnings and whether the windows are glass blocks, are double pane, or have storm windows.

If you answered Y to question #1, the computers will only ask how many windows are single pane and how many are double

pane. If a window is either glass block or has storm windows, consider it a double pane window. You will also be asked for the dimensions of these windows in inches.

3. Walls: The computer will ask if the outside walls are of light construction. If the walls exposed to the outside are either uninsulated frame walls or masonry walls 8 inches or less in thickness, answer Y to this question. If the walls are insulated frame walls or masonry walls over 8 inches in thickness, answer N. The program also needs to know the total length of the room's exterior walls, the length of those exterior walls that face north, and the total length of its interior walls. For exterior walls, consider a wall that is shaded by a permanent structure, such as another building, to be facing North. Trees and shrubbery are not considered to be permanent structures. For interior walls, do not include walls between two air-conditioned rooms, only walls between an air-conditioned room and a non-air-conditioned room. Doors should be considered as being part of the wall.

4. Roof or Ceiling: You will be asked for the length and width of the ceiling. You will also be asked a series of yes or no questions about your ceiling. If your building has an attic, answer N when asked if the roof is directly overhead. You will then be asked if your roof or ceiling is insulated.

5. Floor: If your space is directly on the ground or above the basement, the heat gain from the floor does not count in determining the size of the air conditioner.

6. Doors and Arches: The computer will ask for the total width, in feet, of all doors and arches between the air-conditioned space and any non-air conditioned space. If the total width

is larger than five feet, the two spaces should be considered as one room. Otherwise, the calculation will be inaccurate.

7. Map Factor: Locate where you live on the map (see map) and enter the number that appears in that zone. For example, if you live near Phoenix, Arizona enter 1.5. If you live near Portland, Maine enter 0.7.

8. People: Enter the number of people that normally occupy the space.

9. Lights and Electrical Equipment: Enter the total number of watts for lights and other electrical equipment, except the air conditioner, that will be used when the air conditioner is used. Include such items as the lights, stereo equipment, and TV sets.

After you have answered the final question, you will be presented with a list of the sources of heat in the room and how much heat is gained from each item. The final line on the screen, Total Cooling Load, is the air-conditioner capacity you will need to cool the room.

BEST RESULTS

For best results, choose an air conditioner that is close to the capacity determined by A/C Sizer. If you have to choose between an air conditioner with a higher and one with a lower capacity than called for by the program, choose the air conditioner with the smaller size. In general, an undersized unit that operates nearly continuously is more satisfactory than an oversized unit that runs intermittently.

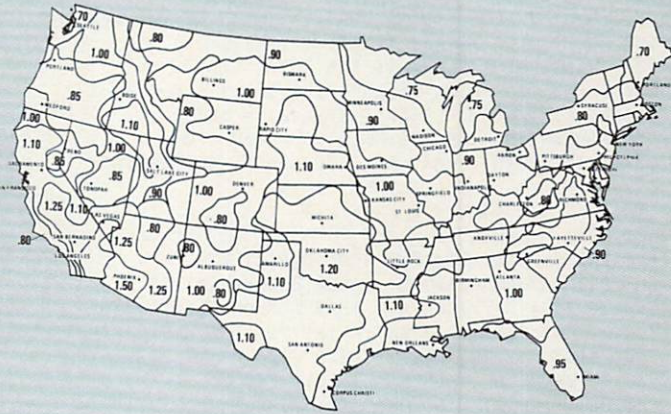
When purchasing your air conditioner, also look for the EER (Energy Efficiency Rating) of the unit. The higher the EER, the more efficient the unit is. The EER can be found on the bright yellow "Energy-Guide" labels that are on all room air conditioners. The labels will show the unit's cooling capacity (in

BTU/hr), its EER, and how that unit compares in efficiency to other models of the same capacity.

EDITOR'S NOTE: Technical assistance for this program was supplied by the Association

of Home Appliance Manufacturers. For more information on air conditioners and other home appliances, contact The Association of Home Appliance Manufacturers, 20 North Wacker Drive, Chicago, Illinois 60606.

MAP FACTORS



Adam & Apple II series/A/C Sizer

```

10 DIM CF(9,2),DL(8),F(8,3),HG(9),Q(9)
20 DIM D$(8),H$(9),L$(9)
30 FOR X = 1 TO 8:READ D$(X):NEXT X
40 FOR X = 1 TO 9:READ H$(X):NEXT X
50 FOR X = 1 TO 9:READ L$(X):NEXT X
60 FOR X = 6 TO 8:L$(X) = "":NEXT X
70 FOR X = 1 TO 9:READ CF(X,1),CF(X,2):NEXT X
80 FOR X = 1 TO 8:FOR Y = 1 TO 3:READ F(X,Y):NEXT Y,X
90 D$$ = CHR$(45):FOR X = 2 TO 30:D$$ = D$$+CHR$(45)
100 NEXT X:HOME:PRINT TAB(11);"A/C SIZER":PRINT
110 PRINT "WILL THE AIR CONDITIONER BE"
120 PRINT "USED ONLY AT NIGHT? ";GOSUB 2000
130 PRINT Z$:IF Z$ = "Y" THEN T = 1:HG(1) = 0:GOTO 390
140 T = 2:SP = 0:DP = 0:FOR X = 1 TO 8:C = 1:WT = 1
150 HOME:PRINT TAB(12);H$(1):PRINT
160 PRINT "HOW MANY WINDOWS FACE":PRINT D$(X);
170 INPUT N:IF N < 0 THEN 150
180 IF N = 0 THEN DL(X) = 0:GOTO 350
190 GOSUB 3000:PRINT
200 PRINT "ARE THESE WINDOWS COVERED BY"
210 PRINT "SHADES? ";GOSUB 2000:PRINT Z$
220 IF Z$ = "Y" THEN C = 2:GOTO 260
230 PRINT:PRINT "ARE THESE WINDOWS COVERED BY"
240 PRINT "OUTSIDE AWNINGS? ";GOSUB 2000:PRINT Z$
250 IF Z$ = "Y" THEN C = 3
260 PRINT:PRINT "ARE THE WINDOWS GLASS BLOCKS? ";
270 GOSUB 2000:PRINT Z$
280 IF Z$ = "Y" THEN WT = 0.5:DP = DP+SF:GOTO 340
290 PRINT:PRINT "ARE THE WINDOWS DOUBLE GLASS OR"
300 PRINT "DO THEY HAVE STORM WINDOWS? ";GOSUB 2000
310 PRINT Z$
320 IF Z$ = "Y" THEN WT = 0.8:DP = DP+SF:GOTO 340
330 SP = SP+SF
340 DL(X) = SF*WT*F(X,C)
350 NEXT X:HG(1) = DL(1)
360 FOR X = 2 TO 7:IF DL(X) > HG(1) THEN HG(1) = DL(X)
370 NEXT X:HG(1) = HG(1)+DP*7+SP*14
380 Q(1) = SP+DP:GOTO 480
390 HOME:PRINT TAB(12);H$(1):PRINT
400 PRINT "HOW MANY WINDOWS ARE SINGLE"
410 INPUT "GLASS? ";N:IF N < 0 THEN 390
420 IF N = 0 THEN 440
430 GOSUB 3000:HG(1) = HG(1)+SF*14:Q(1) = SF
440 PRINT:PRINT "HOW MANY WINDOWS ARE DOUBLE"

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HOME-HELPER PROGRAM

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450 INPUT "GLASS OR GLASS BLOCK? ";N:IF N < 0 THEN 440
460 IF N = 0 THEN 480
470 GOSUB 3000:HG(1) = HG(1)+SF*7:Q(1) = Q(1)+SF
480 HOME:PRINT TAB(13);H$(2)
490 PRINT:PRINT "ARE THE OUTSIDE WALLS OF LIGHT"
500 PRINT "CONSTRUCTION? ";:GOSUB 2000:PRINT Z$
510 IF Z$ = "Y" THEN CF(1,2) = 30:CF(2,2) = 60
520 PRINT:PRINT "WHAT IS THE TOTAL LENGTH OF THE"
530 INPUT "ROOM'S EXTERIOR WALLS? ";TL
540 IF TL < 0 THEN 520
550 HG(2) = TL*CF(2,T)
560 PRINT:PRINT "WHAT IS THE LENGTH OF EXTERIOR"
570 INPUT "WALLS FACING NORTH? ";L:IF L < 0 THEN 560
580 HG(2) = HG(2)+L*(CF(1,T)-CF(2,T))
590 PRINT:PRINT "WHAT IS THE TOTAL LENGTH OF"
600 INPUT "INTERIOR WALLS? ";LI:IF LI < 0 THEN 590
610 HG(2) = HG(2)+LI*CF(3,T):Q(2) = TL+LI
620 HOME:PRINT TAB(12);H$(3):A = 4:B = 0
630 PRINT:PRINT "WHAT ARE THE LENGTH AND WIDTH"
640 INPUT "OF THE CEILING? ";L,W
650 IF L < 0 OR W < 0 THEN 620
660 Q(3) = L*W:Q(4) = Q(3)
670 PRINT:PRINT "IS THE ROOF DIRECTLY"
680 PRINT "OVERHEAD? ";:GOSUB 2000:PRINT Z$
690 IF Z$ = "Y" THEN A = 1:A$ = "ROOF":GOTO 730
700 A$ = "CEILING":PRINT:PRINT "IS THE ATTIC DIRECTLY"
710 PRINT "OVERHEAD? ";:GOSUB 2000:PRINT Z$
720 IF Z$ = "N" THEN A = 3:GOTO 750
730 PRINT:PRINT "IS THE ";A$;" INSULATED? ";
740 GOSUB 2000:PRINT Z$:IF Z$ = "Y" THEN B = 1
750 R = A+B:HG(3) = Q(3)*CF(3+R,T)
760 HOME:PRINT TAB(13);H$(4)
770 PRINT:PRINT "IS THERE AN OCCUPIED SPACE"
780 PRINT "BELOW YOU? ";:GOSUB 2000
790 PRINT Z$:IF Z$ = "N" THEN HG(4) = 0:GOTO 810
800 HG(4) = 3*Q(4)
810 HOME:PRINT TAB(13);H$(5)
820 PRINT:PRINT "WHAT IS THE WIDTH OF DOORS"
830 PRINT "AND ARCHES CONTINUOUSLY OPEN"
840 INPUT "TO UNCONDITIONED SPACE? ";Q(5)
850 IF Q(5) < 0 THEN 810
860 HG(5) = Q(5)*CF(9,T):HG(6) = 0
870 FOR X = 1 TO 5:HG(6) = HG(6)+HG(X):NEXT X
880 HOME:PRINT TAB(11);H$(7)
890 PRINT:PRINT "WHAT IS THE MAP FACTOR"
900 INPUT "(SEE FIGURE #1)? ";Q(7)
910 IF Q(7) < 0.7 OR Q(7) > 1.5 THEN 880
920 HG(7) = HG(6)*Q(7)
930 HOME:PRINT TAB(13);H$(8)
940 PRINT:PRINT "HOW MANY PEOPLE WILL USE THE"
950 INPUT "SPACE ON A CONTINUOUS BASIS? ";Q(8)
960 IF Q(8) < 0 THEN 930
970 HG(8) = Q(8)*600
980 HOME:PRINT TAB(13);H$(9)
990 PRINT:PRINT "WHAT IS THE TOTAL WATTAGE OF"
1000 PRINT "ELECTRICAL EQUIPMENT USED IN"
1010 INPUT "THE SPACE TO BE COOLED? ";Q(9)
1020 IF Q(9) < 0 THEN 980
1030 HG(9) = Q(9)*3:BTU = INT(HG(7)+HG(8)+HG(9))
1040 HOME:PRINT TAB(6);"HEAT GAIN BY SOURCE"
1050 PRINT:PRINT TAB(24);"BTU/HR"
1060 PRINT TAB(24);"-----":FOR X = 1 TO 9
1070 Q$ = STR$(INT(Q(X))):HG$ = STR$(INT(HG(X)))
1080 IF X = 7 THEN Q$ = STR$(Q(7))
1090 IF X = 6 THEN 1140
1100 E = 15-LEN(HG$(X))-LEN(Q$)
1110 G = 13-LEN(L$(X))-LEN(HG$)
1120 PRINT H$(X);SPC(E);Q$;" ";L$(X);SPC(G);HG$
1130 GOTO 1150
1140 PRINT:PRINT H$(6);SPC(21-LEN(HG$));HG$:PRINT D$$
1150 NEXT X:PRINT:PRINT "TOTAL COOLING LOAD";
1160 BT$ = STR$(BTU):E = 11-LEN(BT$):PRINT SPC(E);BT$
1170 PRINT:END
2000 GET Z$:Z = ASC(Z$)

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2010 Z$ = CHR$(Z-32*(Z > 96)*(Z < 123))
2020 IF Z$ <> "Y" AND Z$ <> "N" THEN 2000
2030 RETURN
3000 SF = 0:FOR Y = 1 TO N
3010 PRINT:PRINT "WHAT ARE THE WIDTH AND HEIGHT"
3020 PRINT "OF WINDOW #";Y;:INPUT " IN INCHES? ";W,H
3030 IF W < 0 OR H < 0 THEN 3010
3040 SF = SF+((W*H)/144):NEXT Y:RETURN
4000 DATA NORTHEAST,EAST,SOUTHEAST,SOUTH,SOUTHWEST
4010 DATA WEST,NORTHWEST,NORTH,WINDOWS,WALLS,CEILING
4020 DATA FLOOR,DOORS,SUBTOTAL,MAP FACTOR,PEOPLE
4030 DATA LIGHTS,SQFT,FT,SQFT,SQFT,FT,FT,FT,FT,W
4040 DATA 20,20,20,30,30,30,5,19,3,8,3,3,7,12,4,5,200
4050 DATA 300,60,25,20,80,4,0,25,75,30,20,75,35,20,110
4060 DATA 45,30,150,65,45,120,50,35,0,0,0

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Atari 800/XL/XE/A/C Sizer

```

10 DIM CF(9,2),DL(8),DP(9),F(8,3),HG(9),HP(10),LP(10)
20 DIM Q(9),A$(20),BT$(10),CLS(1),D$(100),DAS(32)
30 DIM H$(100),HG$(20),L$(100),Q$(3),S$(25),SP$(1)
40 DIM T$(20),Z$(1):POKE 82,0:OPEN #1,4,0,"K:"
50 CLS=CHR$(125):SPS=CHR$(32)
60 DAS(1)="-":DAS(32)="-":DAS(2)=DAS
70 S$(1)=SPS:S$(25)=SPS:S$(2)=S$
80 FOR X=1 TO 8:DP(X)=LEN(D$)+1:READ T$
90 D$(DP(X))=T$:NEXT X:DP(9)=LEN(D$)+1
100 FOR X=1 TO 9:HP(X)=LEN(H$)+1:READ T$
110 H$(HP(X))=T$:NEXT X:HP(10)=LEN(H$)+1
120 FOR X=1 TO 9:LP(X)=LEN(L$)+1:READ T$
130 L$(LP(X))=T$:NEXT X:LP(10)=LEN(L$)+1
140 FOR X=17 TO 19:L$(X,X)=SPS:NEXT X
150 FOR X=1 TO 9:READ A,B:CF(X,1)=A:CF(X,2)=B:NEXT X
160 FOR X=1 TO 8:FOR Y=1 TO 3:READ T
170 F(X,Y)=T:NEXT Y:NEXT X
180 PRINT CLS;S$(1,11);"A/C SIZER":PRINT
190 PRINT "WILL THE AIR CONDITIONER BE USED ONLY"
200 PRINT "AT NIGHT? ";:GOSUB 2000
210 PRINT Z$:IF Z$="Y" THEN T=1:HG(1)=0:GOTO 440
220 T=2:SP=0:DP=0:FOR X=1 TO 8:C=1:WT=1
230 PRINT CLS;S$(1,12);"WINDOWS":PRINT
240 PRINT "HOW MANY WINDOWS FACE ";
250 PRINT D$(DP(X),DP(X+1)-1);:INPUT N:IF N<0 THEN 230
260 IF N=0 THEN DL(X)=0:GOTO 410
270 GOSUB 3000:PRINT
280 PRINT "ARE THESE WINDOWS COVERED BY SHADES? ";
290 GOSUB 2000:PRINT Z$:IF Z$="Y" THEN C=2:GOTO 330
300 PRINT :PRINT "ARE THESE WINDOWS COVERED BY"
310 PRINT "OUTSIDE AWNINGS? ";:GOSUB 2000:PRINT Z$
320 IF Z$="Y" THEN C=3
330 PRINT :PRINT "ARE THE WINDOWS GLASS BLOCKS? ";
340 GOSUB 2000:PRINT Z$
350 IF Z$="Y" THEN WT=0.5:DP=DP+SF:GOTO 400
360 PRINT :PRINT "ARE THE WINDOWS DOUBLE GLASS OR"
370 PRINT "DO THEY HAVE STORM WINDOWS? ";:GOSUB 2000
380 PRINT Z$:IF Z$="Y" THEN WT=0.8:DP=DP+SF:GOTO 400
390 SP=SP+SF
400 DL(X)=SF*WT*F(X,C)
410 NEXT X:HG(1)=DL(1)
420 FOR X=2 TO 7:IF DL(X)>HG(1) THEN HG(1)=DL(X)
430 NEXT X:HG(1)=DP*7+SP*14:Q(1)=SP+DP:GOTO 530
440 PRINT CLS;S$(1,12);"WINDOWS":PRINT
450 PRINT "HOW MANY WINDOWS ARE SINGLE GLASS";
460 INPUT N:IF N<0 THEN 440
470 IF N=0 THEN 490
480 GOSUB 3000:HG(1)=HG(1)+SF*14:Q(1)=SF
490 PRINT :PRINT "HOW MANY WINDOWS ARE DOUBLE GLASS"
500 PRINT "OR GLASS BLOCK";:INPUT N:IF N<0 THEN 490
510 IF N=0 THEN PRINT :GOTO 530
520 GOSUB 3000:HG(1)=HG(1)+SF*7:Q(1)=Q(1)+SF
530 PRINT CLS;S$(1,13);"WALLS"
540 PRINT :PRINT "ARE THE OUTSIDE WALLS OF LIGHT"
550 PRINT "CONSTRUCTION? ";:GOSUB 2000:PRINT Z$

```

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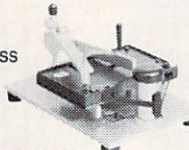
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