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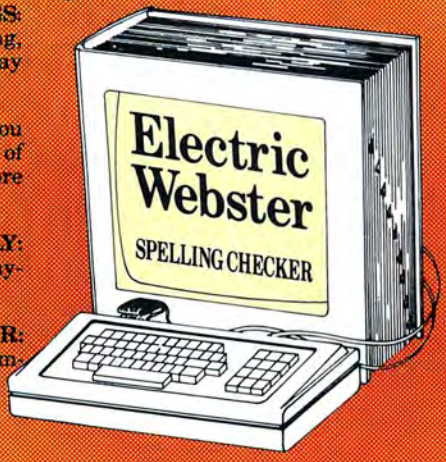

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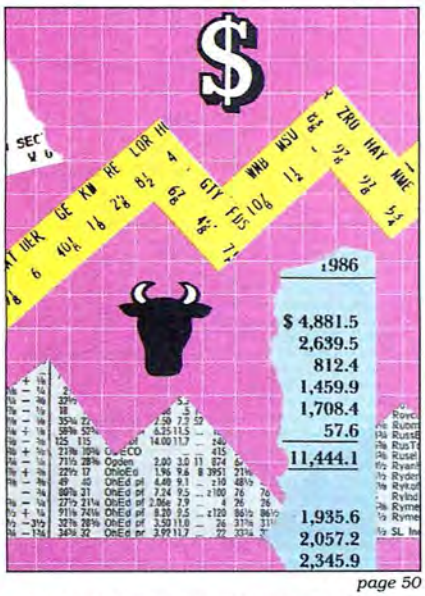

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The *80 Micro* Disk Series
(formerly Load 80)

The *80 Micro* Disk Series gathers together selected programs from this issue of *80 Micro* and puts them on a magnetic medium for your convenience. It is available on disk and runs on the Models I, III, and 4.

The *80 Micro* Disk Series programs are ready to run and can save you hours of time typing in and debugging listings. The Disk Series also gives you access to assembly-language programs if you don't have an editor/assembler. And it helps you build a substantial software library.

Using the Disk Series is simple. If you own a Model I or III disk system, you boot The *80 Micro* Disk Series disk and transfer the files to a TRSDOS system disk according to simple on-screen directions. If you own a Model 4, copy the Model 4 programs from the Series disk to your TRSDOS 6.x disk using the Copy command.

Not all programs will run on your system. Some Model III programs, for instance, will run on the Model 4 in the Model III mode, but not in the Model 4 mode. You should check the system requirements box that accompanies the article to find out what system configuration individual programs require.

If you have any questions about the programs, call Keith Johnson at 603-924-9471. Yearly disk subscriptions to The *80 Micro* Disk Series are $149.95. Individual loaders are available on disk for $17.95, including postage. To place a subscription order or to ask questions about your subscription, please call us toll free at 1-800-343-0728 between 9 a.m. and 5 p.m. Or, you can write to The *80 Micro* Disk Series, 80 Elm St., Peterborough, NH 03458.

Directory

Following a Stock Portfolio
Article: Taking Stock of Your Stock (p. 50).
System: Model 4, 32K RAM; Model III with changes.

Stoctrac lets you follow the performance of your investments with a minimum of input.
Language: Basic.
Filespec: STOCTRAC/BAS.

Handle Commodities Data Efficiently
Article: The No-Nonsense Disk Editor (p. 63).
System: Model 4, 64K RAM.

EZ Editor gives you a way to organize, edit, and store commodities data or data of any type.
Language: Basic.
Filespecs: EZEDIT/BAS, TESTGEN/BAS.

Custom Labels
Article: Easy Labels (p. 76).
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Print individual custom labels in five print styles with Labeler.
Language: Basic.
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Merge Data and Files
Article: Profile Handler (p. 78).
System: Models III/4/4P/4D, 32K RAM, Profile 3 or 4+.

With Profile Handler you can merge Profile data files with Superscripsit text files more easily.
Language: Basic.
Filespec: HANDLER/BAS.

DOS Backup Utility
Article: Jumping Flash Backup (p. 69).
System: Model 4/4P/4D, 64K RAM, Pro-Create editor/assembler (optional), TRSDOS 6.x.

Onepass lets you back up your TRSDOS 6.x or LDOS disks in a single pass.
Language: Assembly.
Filespecs: ONEPASS/SRC, ONEPASS/CMD.

Help Screens
Article: The Next Step (p. 92).
System: Model 4/4P/4D, 64K RAM, TRSDOS 6.2 or LS-DOS 6.3, Pro-Create 4.3a or MRAS editor/assembler (optional).

Add a help filter to call up help screens from within programs.
Language: Assembly; Basic or C optional.
Filespecs: HELP/FLT, DEMO4/CMD, HELP/ASM, DEFS/ASM, INSTALL/ASM, LIST4/ASM, LIST5/BAS, LIST6/CCC, TEST/HLP.

Checkbook Program
Article: Tally and Track (p. 44).
System: Model 4, 64K.

Use Budget Balancer to organize your checks in categories, balance your checkbook, and get ready for tax time.
Language: Basic.
Filespec: CHEKBOOK/BAS.

Checksum
Article: How to Use *80 Micro* Program Listings (p. 100).
System: Models I/III/4, 32K RAM.

Use our checksum program to check the accuracy of the Basic listings you type in.
Language: Basic.
Filespec: CHECKSUM/BAS.

BAS = Basic; ASM, SRC = source code; CMD, FLT = object code; CCC = C language; HLP = ASCII test file

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80 MICRO Review, November 1985

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System requirements - IBM-PC Compatible: One disk drive, 128K memory, color or monochrome monitor, and DOS 2.0 or higher.
TRS-80 Model 1/3/4/4D/4P: One disk drive and 48K memory.

New IBM Line Is No Threat

IBM's announcement of its Personal System/2 line of computers this past April could only be met with sighs of relief by the folks at Tandy. Rumors that one of the machines would be a clone killer proved unfounded, as were predictions that IBM would turn the industry upside-down with a new PC standard. MS-DOS is still very much alive, and so is the compatibles market that has revitalized Tandy during the past couple of years.

The Model 30 is a low-end system only when compared to the Models 50, 60, and 70. At $1,650, the Model 30 is not cheap. While the machine's superior graphics are impressive, they are not going to turn home and small-business users away from the less-expensive PC compatibles. Word processing, database management, and spreadsheeting are most people's primary applications, and an XT or AT clone serves those needs more than adequately.

Tandy's response to IBM's move will be interesting. Don't expect any dramatic announcements between now and the end of the year. The Tandy 1000 will undoubtedly remain the staple of its line for the immediate future. Don't be surprised by significant price cuts as the Christmas season approaches. A $699 1000 SX would sell by the boatload. Expect the 3000 HD and HL to also be priced more competitively.

Tandy officials have said that the company would not produce an 80386 machine until IBM came out with one of its own, so we can anticipate one soon. However, given Tandy's past inability to market high-end, multiuser systems, the computer probably won't make up a significant portion of Tandy's computer sales. This might change if Tandy succeeds with its efforts to sell to Fortune 1000 companies, but don't hold your breath.

Rumor has it that Tandy is preparing an MS-DOS portable. Tandy has been lukewarm about the portables market, with good reason; the potential payoff doesn't justify the investment. Unless the company rolls out a portable that is considerably better and cheaper than what's currently out there, the machine will exist mostly to supplement Tandy's main line and ensure that the company has something for everybody.

As for the new Model 30, Tandy will undoubtedly be watching the market

carefully while its engineers pick the machine apart and develop a work-alike. The company certainly doesn't need to be in any rush; some time will pass before a base of Model 30-specific software develops and the machine's sales reach critical mass. Then Tandy will do what it does best: Release a less-expensive, enhanced compatible and use its massive Radio Shack chain to force its way into the market.

With the 1000, Tandy proved that it can adopt a wait-and-see attitude before responding to a new or shifting market. It has learned that being an innovator is not nearly as profitable as being a follower. Tandy would rather say "me too" and make money than say "me first" and lose its shirt. Expect the company's response to IBM to follow the pattern.

The Model 100/102

On the subject of portables, this spring marked the fourth anniversary of the Model 100/102. While the computer does not enjoy the sales of Tandy's MS-DOS machines or the Color Computer, it holds a special place in the world of computing.

The staff of *80 Micro* was immediately captivated by the computer. "The 100 might be just another plastic box full of silicon chips, yet Tandy has somehow managed to give it a distinct personality that separates it from the competition," we said in July 1983. "Put a Model 100 in the average user's lap, and he's captivated."

The years have supported our conclusions. While portables have become bigger and better, the 100/102 continues to epitomize what superior engineering is all about. Nothing beats it as an inexpensive, all-purpose word processor and telecommunications device. It targets a market better than any other computer I can think of. And it engenders a user loyalty few other machines can claim.

The Model 100/102 has succeeded largely because it doesn't try to be all things to all people. MS-DOS compatibility isn't an issue because it doesn't try to be compatible. Expandability is irrelevant because the machine includes just about everything you need to use it. The Model 100/102 simply is what it is and does what it does with no fuss or muss.

The TRS-80s I, III, and 4 hold a more significant place in the history of computing. The Color Computer enjoys far greater sales. The Tandy 1000 is the staple of today's line. But for my money, the Model 100 is Tandy's finest achievement. The company will be hard-pressed to come up with anything else as impressive.

Odds and Ends

A short while ago, I got a call from a Tandy 1000 owner who wanted to know what the Model 4 was. The conversation brought home the point that a whole new generation of Tandy users is emerging, one that knows nothing about the history of Tandy computers and how they fit into the history of microcomputing.

In our next issue, we're taking the opportunity to change all that. August is the 10th anniversary of the introduction of the TRS-80 (later to become the TRS-80 Model I), and *80 Micro* will deviate from its normal coverage to do a bit of celebrating. New Tandy owners will learn all about how Tandy became involved in microcomputing and how the company evolved in the subsequent decade. Old-timers will get a chance to reminisce with us as we look back on the great (and not-so-great) moments in Tandy computing. A number of pioneers will contribute their thoughts and memories, so don't miss it.

Tandy 1000 owners will be glad to learn that our MS-DOS programs are now available on disk as part of the *80 Micro* Disk Series.

The Home Computerist, our new column devoted to home and personal computing, debuts this issue. The author is *80 Micro* Executive Editor Michael Nadeau. Let us know what you think and what you'd like to see the column cover. ■

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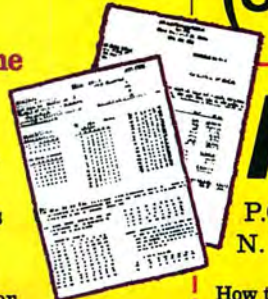

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Send your problems and solutions to Feedback Loop, 80 Micro, 80 Elm St., Peterborough, NH 03458. Where applicable, include the proper program name and version, the computer you're using (including any non-standard system configuration), the DOS version you're using, your phone number (not for publication unless you request it), and a self-addressed, stamped envelope.

Mercedes Moans

I thank you for all your letters. I regret that I cannot answer every question; sometimes it's a lack of time and other times a lack of access to particular hardware, software, or information. On occasion, if you send in a particularly difficult question, I hold on to your letter hoping I can find the correct answer, and this may result in some delay. Please be as specific as possible in your letters. Too much information is better than not enough.

I also greatly appreciate the answers, comments, and updates you send in. I find them helpful and can frequently pass them on to other readers. If you send an answer to someone in the Help section, please send a copy to me also. I like to have the answer, and I often have others writing in with the same request.

The Camel's Back

Q. I have a Tandy 1000A with a memory-plus board and piggyback memory expansion (to 640K) as well as a Sideclock piece of hardware—all in the one slot. I am contemplating the purchase of a 20-megabyte (MB) Zuckerboard hard card from ATD, but in the light of James McCord's letter (April Input, p. 10), I fear overloading the "frail" power supply in the 1000. I would also like to have a modem, but I think that if I add that, too, I might be asking for trouble. *(Robert E. Gilbert, Hendersonville, NC)*

A. Mr. McCord stated he had an internal modem, memory board, and a mouse/calendar. After he installed the three boards, the computer locked up and would not reboot. Several people have written in, referring to this letter, concerned about power-supply inadequacy. The power supply on the 1000 is 54 watts. We have a 20MB Zuckerboard hard card and 640K RAM. We have added all sorts of cards and never had a

power-supply problem.

Charles Wolff, of Indian Rocks Beach, FL, had a similar problem and decided to research it himself. He found that the mouse/calendar board and the modem both access COM1 and would lock up when used. His remedy was to reconfigure the modem board to COM2. He suggests another possible solution to allow successful operation is to have your communication package not call the clock.

Sound Loops

Q. Knowing that the Model 4P has a Sound command in Model 4 mode, I'm trying to produce sounds in Model III mode. I've tried all kinds of Pokes and Outs without success. Can you tell me how to produce sound in Model III mode on a Model 4P? *(John F. Rogers, Morgan City, LA)*

A. Sound is produced on the sound board by setting and resetting data bit zero of port 90 hexadecimal (hex) (144 decimal). The speed of the software loop determines the frequency, and thus the pitch of the tone. Because of the need for speed in the loop, accessing the port in assembly language would be best. However, you could do it in Basic as follows:

```
10 FOR K=1 TO 100:OUT &H90,0:OUT&
   H90,1:NEXT K
```

Untended Screen Dumps

Q. I'm using a Tandy 1000 with 640K, MS-DOS 2.11, and a DMP-500 printer. I have a Basic program that creates output forms on the screen containing both text and graphics. I need to print these forms over and over (as they change slightly for each master file record) in the course of the program. I use the Tandy graphics screen-dump program at present, but I have to sit at the keyboard and press shift-print when each screen is ready. I'd like to be able to key the screen dump from within my program so that I don't have to sit there all day. Can I invoke or call the screen-dump utility from within a Basic program? *(Bob Keller, Stanton, CA)*

A. Some versions of GW-Basic have the command LCopy to dump the screen to printer. If your version doesn't, use the following routine:

```
10 SCPT$ = CHR$(205) + CHR$(5) + CHR$
   (203)
20 AD = VARPTR(SCPT$)
30 PR = PEEK(AD + 2) + PEEK(AD + 1)*256
40 CALL PR
50 RETURN
```

This routine creates a 3-byte machine-language routine that calls interrupt 5H. Interrupt 5H prints all text characters on the display. To dump a graphics screen to a dot-matrix printer, load the DOS utility Graphics.COM before calling the routine.

Split Ends

Q. I am using Superscripsit on a Model 4 with a DWP 410 printer. I am having a problem defining a page. Neither Tandy nor local resources have been helpful. Maybe you can help me. *(Herbert Notkin, Sacramento, CA)*

A. Defining an actual page is a simple procedure once you get beyond some misconceptions. When you open a document, in the Open Document options, the line marked "Lines per page:" does not mean the total number of lines on a page but the number of lines that you want to print on a page. The default value is 54.

When you press control-P from the document to print the file, the printer options screen has a line marked "Page size:." This value tells Superscripsit how many actual lines are on a page. The default value is 66, the standard for 11-inch paper using ⅙-inch lines. Thus, a document with 54 printed lines has a 12-line gap, providing 1-inch (six-line) top and bottom margins. You must manually set the initial top margin by placing the printer head on the line you want the text output to begin. Form feeds are automatic thereafter, unless you are manually inserting single sheets, in which case you will have to advance the top margin each time.

In the sample printout you sent, the

Illustration by Maris Bishofs

problem block of text you pointed out was split up, printing the first part of a text section at the bottom of one page and the other part 12 blank lines later at the top of the next page. Because the text crossed the page boundary limits, a bottom and top margin were inserted. To keep a block of text intact that would otherwise be split up, place a new-page mark at the beginning of the text block by positioning the cursor over the first character in the text and pressing control-N. This produces a caret symbol in front of the character, and the "Pg:" indicator at the bottom of the screen advances a page number. When you print the document, this block will now begin at the top of the next page. You can use arrow-key-P to page through your document to find other blocks that may split inappropriately on the printout.

Video Address

Q. I ordered a monoboard from PCA Technology because I was not satisfied with the text and graphics screen resolution of my Tandy 1000 HD. After installing the board and the TTL monitor that comes with it, I'm very pleased. It works well and the screen presentation is an improvement over the original. I have had some minor problems. Tandy 1000 Deskmate does not work properly with the new board. However, I installed the 3000 version, and it works perfectly as far as I can see. Also, I had to eliminate a Tandy clock/calendar/mouse board that used an expansion slot; to keep the date I installed a 512K RAM board that incorporates the clock/calendar.

My question is in relation to the article on the 8088 architecture in "Dave's MS-DOS Column," (December 1986, p. 101). I do not understand how a 256K RAM computer handles the video that starts at absolute address B800 hex (754664 decimal). Is this address available to a computer limited to that size memory? *(Emilio Serrano, Rancagua, Chile)*

A. To make the 1000 more IBM compatible, Tandy designed the 1000 so that video memory can be addressed at B800 hex—where the IBM PC addresses color graphics adapter (CGA) video RAM. Unlike the PC, the 1000 (and PCjr) don't have RAM chips on a video board dedicated to storing the screen image. The 1000 takes 16K of your 256K of user RAM for video memory. (The 1000's GW-Basic lets you use as little as 4K or as much as 32K of RAM for video.)

The 1000's video RAM is double-mapped. If you know where the video memory is actually stored—usually the top 16K of your RAM space—you can address it there, too. However, it's safer to address it at B800 hex for the sake of compatibility.

Program Listing. Line Input.

```
100 FL$="":LINE INPUT"File to open?";FL$
110 ON ERROR GOTO 120:OPEN"I",1,FL$:CLOSE 1:GOTO 130
120 PRINT FL$" does not exist!":RESUME 100
130 ON ERROR GOTO 0 'Turn off error vector
140 OPEN"R",1,FL$  'Program continues here
```

End

Phantom Files

Q: I have a Tandy 1000. When I write programs with random file access, I have a problem. When I try to read a file that does not exist, one is created. Is there a way that I can read the file names on the disk from Basic? I want to set up a routine to prevent accidental file creation. *(Gary Lundgren, Ham Lake, MN)*

A: The Basic command Files gives several options for file display. The Program Listing is a short routine you can use in your programs to prevent them from creating a file.

Who's Driving?

Q: I have a Model III and an Epson MX-80 printer. I am using Superscripsit 1.3. Each time I print a document, the printer goes into compressed mode. I have been putting a printer code at the beginning of each document to prevent this. Can I apply a patch to keep the printer in its normal mode without using a code? If I want to print a document but not store it, I must use control-Q, go to TRSDOS, and kill the document. Can I program a user key to get me back to Superscripsit's main menu and delete the document I was working on without saving it?

Occasionally, I prepare a double-spaced document on the Open options. After I've started the actual typing, I sometimes want to change to single spacing. I have quit the document and stored it, then recalled it and reset the Open options to single space. The status line of the document shows single space, but I still get a double-spaced printout. How can I go from double space to single for the whole document? Is there a way to have parts of a document single-spaced and other parts double-spaced? *(Albert E. Spaiches, Fairport, NY)*

A: The problem with the compressed mode might be due to the printer driver you are using. Many drivers send initialization code to the printer, such as DMP220/CTL, which sets the printer up for letter-quality mode. The default DW2/CTL driver sends code to set up the external programming mode. Your printer might interpret these codes differently. Two companies that provide non-Radio Shack printer drivers for Superscripsit are Powersoft Products, 17060 Dallas Parkway, Suite 114, Dallas, TX 75248 (214-733-4475), and ALPS, 1502 County Road 25, Woodland Park, CO 80866 (800-232-2577).

Superscripsit has no built-in Kill or Remove feature, but you can use a dummy file to your advantage. Create a file called Temp to use any time you wish to operate with text that you will not need to save. Once you are done with it, delete its text using shift-up-arrow (top of text), control-X (start block), control-E (end of text), control-B (block action), control-D (delete block), and control-Y (yes, delete block). This sequence reduces the file to its minimal size. Another advantage of this method is that the pre-existence of the file lets you scoot right into the text mode without waiting for disk accesses to create a new file.

When you change the line spacing in the Open Document options, you are actually only setting the default line-spacing mode and the line-number indicator tally value. Any text already typed into the file will not be affected by this change, as its line spacing is already locked into the lower 3 bits of the fifth byte of a hidden 6-byte field at the start of each paragraph. You can change the line spacing by blocking the desired document and using the block-action subcommand "L," which lets you specify the new line spacing for that block, whether it's a single paragraph or the entire document.

Compiling the Options

Q: I needed a Basic compiler for TRSDOS 6.x or MS-DOS. What do you recommend? *(Bob Amis, Hopkinsville, KY)*

A: Your choices are limited for TRSDOS 6.x. Radio Shack makes a Basic compiler, but it is not optimal for the Model 4. Misosys Inc. (P.O. Box 239, Sterling VA 22170-0239, 703-450-4181, $124.95) offers the Enhcomp Basic Compiler, which has some unique features. Zedcor (3438 N. Country Road, Tucson, AZ 35716, 800-482-4567, $89.95) makes ZBasic, which comes in MS-DOS and TRSDOS versions. You can easily transport ZBasic code from one machine to another. If you just want an MS-DOS Basic compiler, you can't go wrong with Quick Basic from Microsoft (16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 206-882-8089, $99).

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READERS RESPOND

In Quest of Lowercase

Dan Walters of Cape Girardeau, MO, wrote regarding Tom Milbern's (April 1987) search for a TRS-80 Model I lowercase kit: "The modification is easy, if you know how to solder and aren't afraid of cutting up your circuit board. The modification appeared in the March 1980 *80 Microcomputing* [p. 72]. It requires the addition of two chips (which are piggybacked on existing chips in the keyboard), a couple cut traces, and the addition of a switch. The switch returns the machine to an unmodified state."

The parts (two chips, a resistor, a switch, and a few pieces of wire) can be obtained in any electronics supply store for just a few dollars. You can contact Dan on the Exclusive-80 TBBS bulletin board at 215-739-9512. For a copy of the modification article, send a business-size, stamped, self-addressed envelope to Mercedes Silver, c/o *80 Micro*, 80 Elm St., Peterborough, NH 03458.

Jack Decker of Sault Ste. Marie, MI, wrote that Don McKenzie (29 Ellesmere Crescent, Tullamarine, Victoria 3043, Australia, international direct dial 011 + 61 + 3 + 338-6286) has a lowercase kit for the Model I called Jackgen3. You can buy the character generator EPROM and instructions only for $12.90 (all prices are in Australian dollars), and a printed circuit board (helpful, but an experienced hardware hacker can get by without it) is $6 additional. A complete assembled and tested kit is $29.90 (however, even if you buy the assembled and tested kit, you must still piggyback a 2102 memory chip and do a small amount of trace cutting and jumpering). Add $4.45 per order for airmail shipment to the U.S. or Canada. You should receive your order in approximately three weeks. Don also offers other hardware modifications and will send a catalog for $3 (U.S. funds) to cover airmail costs.

Tim Worcester (Electronic Closet, 8187 Blakely Court W., Bainbridge Island, WA 98110) carries lowercase kits for the Model I ($12.75 for one font plus $2 for a 2102 video RAM chip) and custom character fonts for the Models III/4 ($20.75 for one set).

Life After 1987

Mike Zarowitz of San Carlos, CA, wrote in response to Thomas McClellan's question in the May 1987 Feedback Loop (p. 12) regarding the dates on TRSDOS 6.2. He has also been following the discussion of employing Memdisk with Superscripsit for speed and ease of use.

He has put two programs on the *80 Micro* BBS (603-924-6985, 8-bit words, 1 stop bit, no parity) as well as other BBSes. The first, Datefix/DOC, is two sets of patches to allow TRSDOS 6.2 to accept dates up to 1989 and then from 1990 to 1997. The second, Assign/CMD (and Assign/DOC), is a TRSDOS 6.2 utility that lets you reorder the file search path, make system files resident in Memdisk instead of user memory, and reassign the system drive to a drive other than logical drive zero. These capabilities provide faster file access. In addition you will always have a complete system available, and your user memory is not gobbled up storing the system files.

If you are a Superscripsit user, you can put SYS1, 2, and 3/SYS (the file access overlays) and the most frequently called SCRxx/CTL modules into Memdisk. Assign Memdisk as logical drive zero (the first drive searched for a file), the data disk as the upper floppy drive (logical drive 1), and the remainder of the system and less frequently called files (e.g., printer drivers) as the lower floppy (logical drive 2). Since DOS no longer searches the slower floppy drives first for the SCRxx/CTL files in Memdisk, the files are now swapped in "instantly." Regular disk access is also speeded up. Assign does away with having to swap set-up disks to keep DOS from loading files from the floppy instead of Memdisk. The cost is only 80 bytes.

The CM-5 That Would

Daniel J. Fox of Columbus, IN, had the same problem as Gary Spielman (April Feedback Loop, p. 12) with his CM-5 monitor when he moved to a sunlit room (an area of the video screen had a different color than the rest of the screen). He went to the local Radio Shack store. They looked at three others straight from the box and found the same problem with all of them. Daniel believes the main cause is reflected glare. Once he moved his computer back to a darker room, he had no further problem.

Hot CM-2

Percy Rogerson of Lexington, SC, wrote that he installed a Zuckerboard hard disk card in his Tandy 1000. He reported, "The installation was a snap and copying DOS was no big chore. The hard card booted as it should and things looked rosy." He closed up the 1000 and placed the CM-2 monitor on the computer. The hard card refused to boot. However, it would boot fine with the monitor next to the computer. Figuring the weight of the monitor was causing the hard card to break contact with the slot on the motherboard, he put the monitor on a stand. The hard card still would not boot. He placed a sheet of aluminum foil between the computer and placed the monitor on the foil. The hard card booted fine. He concludes, "We must have the only CM-2 that creates that much RF."

HELP

My Kingdom (Queendom) for a Driver

Help! This month alone, I had 10 requests for printer drivers. I need information on what drivers are available. Let me know if you have written printer drivers that are not part of a software package.

Currently, I am looking for drivers for the following combinations:

- Scripsit Pro with Epson FX-80
- Microsoft's Windows with the Radio Shack DMP 500 and C-Itoh 8510AP printers;
- Formation with the Gemini 10 and Radio Shack DMP 430 printers;
- Print Shop or Print Master with the Radio Shack DMP 500 printer;
- Wordperfect on a Radio Shack DMP 430; to use boldface and underline;
- Microsoft Word with the Citizen Premiere 35 printer.

MORE HELP

►Ranny Robertson Jr. (2314 Hilliard Road, Richmond, VA 23228) is looking for a patch for Videotex Plus in the autolog mode. It expects a Radio Shack modem, and he has a Signalman Mark XII.

►Barry Underwood (257 Calkins St., Palmer, MA 01069) is looking for an RS-232 interface for the Model I expansion interface.

►Harold May (428 Phillippa, Hinsdale, IL 60521) is looking for a Sprinter board and extended 48K memory board from Holmes for his Model III. He is also looking for technical information or schematics on the Compactor I (CP/M) and Compactor IV (80-column video and RS-232) from Hurricane Labs, circa 1983. He's also looking for the book *TRSDOS Commented* by Soft Sector Marketing.

►James R. Primm (RR #2 Box 218, Paris, MO 65275) is looking for an address for Prolok and Vault Corp.

►Edward Lange (67 Dundalk Ave., Dundalk, MD 21222) is looking for a patch. He has a Radio Shack disk drive (catalog no. 23-1160) and a Vista V80 disk drive. Using Newdos/80 2.0 and TRSDOS 2.3, the drives are incompatible with each other without a 40-millisecond track-to-track access time patch to Newdos and TRSDOS.

►Barry Dorfman (11704 Wilshire Blvd., Suite 230, W. Los Angeles, CA 90025) has Electric Pencil for his Model III. He is looking for a patch to bypass the graphics display and go directly to the menu. ■

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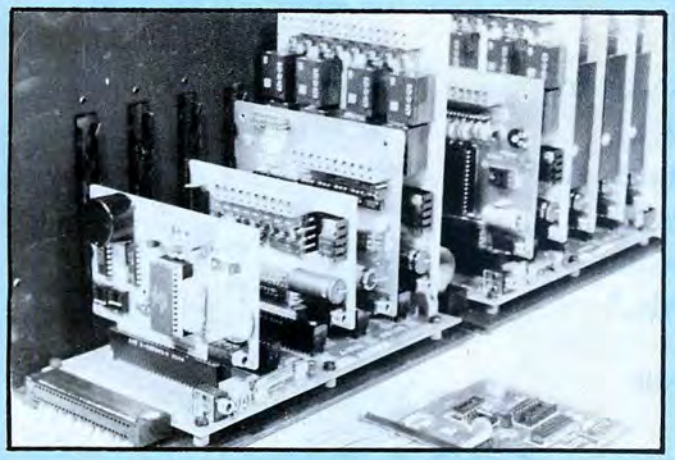

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- A-BUS cards are shipped with power supplies (except PD-123) and detailed manuals (including schematics and programming examples).

Relay Card — RE-140: $129

Includes eight industrial relays, (3 amp contacts, SPST) individually controlled and latched. 8 LED's show status. Easy to use (OUT or POKE in BASIC). Card address is jumper selectable.

Reed Relay Card — RE-156: $99

Same features as above, but uses 8 Reed Relays to switch low level signals (20mA max). Use as a channel selector, solid state relay driver, etc.

Analog Input Card — AD-142: $129

Eight analog inputs. 0 to +5V range can be expanded to 100V by adding a resistor. 8 bit resolution (20mV). Conversion time 120us. Perfect to measure voltage, temperature, light levels, pressure, etc. Very easy to use.

12 Bit A/D Converter — AN-146: $139

This analog to digital converter is accurate to .025%. Input range is −4V to +4V. Resolution: 1 millivolt. The on board amplifier boosts signals up to 50 times to read microvolts. Conversion time is 130ms. Ideal for thermocouple, strain gauge, etc. 1 channel. (Expand to 8 channels using the RE-156 card).

Digital Input Card — IN-141: $59

The eight inputs are optically isolated, so it's safe and easy to connect any "on/off" devices, such as switches, thermostats, alarm loops, etc. to your computer. To read the eight inputs, simply use BASIC INP (or PEEK).

24 Line TTL I/O — DG-148: $65

Connect 24 input or output signals (switches or any TTL device) to your computer. The card can be set for: input, latched output, strobed output, strobed input, and/or bidirectional strobed I/O. Uses the 8255A chip.

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Remote Control Keypad Option — RC-121: $49
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TRS-80 Model 102, 200 Plugs into 40 pin "system bus".	AR-136...$69
Model 100. Uses 40 pin socket. (Socket is duplicated on adapter).	AR-135...$69
TRS-80 Mod 3,4,4 D. Fits 50 pin bus. (With hard disk, use Y-cable).	AR-132...$49
TRS-80 Model 4P. Includes extra cable. (50 pin bus is recessed).	AR-137...$62
TRS-80 Model I. Plugs into 40 pin I/O bus on KB or E/I.	AR-131...$39
Color Computers (Tandy). Fits ROM slot. Multipak, or Y-cable.	AR-138...$49

A-BUS Cable (3 ft, 50 cond.) — CA-163: $24

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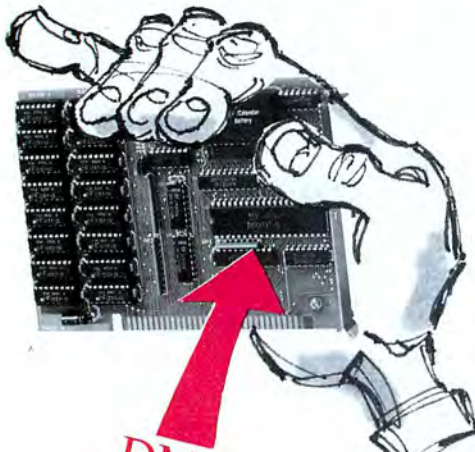

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June 1986 Issue

PCM Magazine

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Price List

Part #	Description	Price
Tandy 1000		
2002	Memory Expansion With 256K	$109
2003	Memory Expansion With 512K	$149
2004	Clock/Calendar Option	$ 49
2006	Secondary Expansion Memory With 256K	$109
2007	Secondary Expansion Memory with 384K	$125
2009	Multifunction Board With 512K, Serial, And Clock	$279
2016	Hard Disk Card	$599
Tandy 1000SX		
2006	Memory Expansion With 256K	$109
2027	Multifunction Board With 256K, Serial, And Clock	$199
2016	Hard Disk Card	$599
Tandy 3000HD and HL		
2017	Hard Disk Card For HL	$599
2033	Serial Port Board for HD	$139
2034	Second Serial Port For 2033	$ 79
2036	Multifunction Board For HL With 128K, Serial, And Clock	$199
Tandy 1000, 1000SX, and 3000HL		
2004	Clock/Calendar Chip Option	$ 49
2031	Clock/Calendar Board With Software	$ 59
2029	Serial Port Board	$ 99
2030	Second Serial Port For 2029 And 2027	$ 49
2035	MS DOS 3.2 With GW BASIC	$ 89

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Model	Qty.	Unit Price	Ext. Price
TANDY 1000			
2002	_____	$109	_____
2003	_____	149	_____
2004	_____	49	_____
2006	_____	109	_____
2007	_____	125	_____
2009	_____	279	_____
2016	_____	599	_____
TANDY 1000SX			
2006	_____	109	_____
2027	_____	199	_____
2016	_____	599	_____
TANDY 3000			
2017	_____	599	_____
2033	_____	139	_____
2034	_____	79	_____
2036	_____	199	_____
TANDY 1000, 1000SX, 3000			
2004	_____	49	_____
2031	_____	59	_____
2029	_____	99	_____
2030	_____	49	_____
2035	_____	89	_____

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Model	Qty.	Unit Price	Ext. Price
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2002	_____	$109	_____
2003	_____	149	_____
2004	_____	49	_____
2006	_____	109	_____
2007	_____	125	_____
2009	_____	279	_____
2016	_____	599	_____
TANDY 1000SX			
2006	_____	109	_____
2027	_____	199	_____
2016	_____	599	_____
TANDY 3000			
2017	_____	599	_____
2033	_____	139	_____
2034	_____	79	_____
2036	_____	199	_____
TANDY 1000, 1000SX, 3000			
2004	_____	49	_____
2031	_____	59	_____
2029	_____	99	_____
2030	_____	49	_____
2035	_____	89	_____

Subtotal _____
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Name _____

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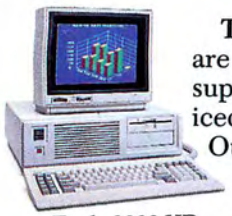

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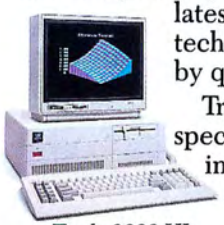

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Tandy versus IBM: Round 2

Update

Photo. IBM's new Personal System/2 line of computers faces tougher competition than the original PC did back in 1981.

The personal computer industry and IBM finally went on their blind date April 2, but the rendezvous wasn't the transcendent happening some people had in mind. Even though four systems ranging in price from $1,695 to $10,995 were among the dozens of products introduced in New York City that day, industry analysts and third-party developers sounded disappointed, while admitting that big changes are coming nonetheless (see the Photo).

The oft-mentioned "clone killer" is, in reality, something less. At $1,695, the 8086-based, 8-megahertz (MHz) Personal System/2 Model 30 seems too expensive to much affect a market abundant in clones selling for half the price. (Adding a monochrome monitor pushes the cost to $1,945; the cheapest IBM color monitor raises the total to $2,290.)

It's not that Big Blue isn't offering any bang for the buck, though. The built-in, 640- by 480-pixel color graphics card goes beyond the industry standard, and storage capacity exceeds that of most small-size PCs, with two 720K, 3½-inch disk drives (or one 720K and one 20MB hard disk for $2,295) offered as standard. Furthermore, IBM says it is breaking new ground by using its own advanced, million-bit chips previously used only in minicomputers and mainframes.

The Model 30 is probably the only one of the four with any hope of appealing to home and small-business users, who represent the largest segment of the clone makers' market. Corporations that buy in quantity are the intended audience for the rest of IBM's song and dance.

The Personal System/2 Model 50 ($3,595) is an 80286-based computer with built-in video, 1MB RAM, a 1.44MB, 3½-inch disk drive, and a 20MB hard disk. The Model 60, like the Model 50, runs at 10MHz and offers up to 70MB of hard-disk storage for $5,295–$6,295. It is a floor-based system that can double as the hub of an office network. Finally, the Model 80 is IBM's 80386 speedster, running at 16 or 20MHz with up to 115MB of hard-disk storage; it has a $6,995–$10,995 price tag that only a corporation could love.

More important to hardware and software companies and users is the operating system IBM plans to run on the new machines. Called Operating System/2 (OS/2), the Microsoft product won't be released to software developers until Aug. 1, and consumers must wait until early 1988. IBM says OS/2 is "designed to exploit the memory capacity and power of the advanced Intel 80286 and 80386 microprocessors, as well as future advanced microprocessors." In the meantime, DOS 3.3—a relatively minor enhancement of DOS 3.2—is available for PC/XT/AT and Personal System/2 owners.

People whose livelihoods depend on following IBM were thrown into a tizzy by the uncertainty surrounding OS/2, even though IBM's intention was to give them time to plan their strategies. An IBM vice president said, "Announcing product details and our strategic direction. . .provides our customers with critical planning information and allows IBM to offer broad-based technical education before the product is generally available."

Maybe so, but it's a long time between April and August. Software companies now have to decide whether to maintain any DOS 3 programs or jump with both feet into OS/2. Several major companies, including Lotus Development Corp., maker of 1-2-3, said they would maintain both DOS and OS/2 versions of their programs. There was further speculation that OS/2 will contain networking codes that are nearly impossible to imitate, which could throw a wrench into the clone makers' foray into the business arena. Few analysts, however, seemed to doubt that someone will decipher the machines' ROM code, opening the way for another round of cloning mania.

Tandyland

Tandy officials took a "What, me worry?" attitude toward the IBM introductions, saying the Model 30 is priced too high to threaten sales of the Tandy 1000 SX and EX. In fact, Tandy didn't seem impressed by *any* of the news from New York—which isn't surprising—but they did have their arguments ready.

"Nobody feels IBM did anything in the way of a clone killer," said Ed Juge, Tandy director of market information. Rather, he said, "They circled the wagons around DP (data processing) and ceded the bottom end to the compatibles. . . .They didn't give me a compelling reason to go out and buy the product." The Model 30 features "old boards," forces people to use 3½-inch drives, and contains "nothing that you can't currently have in an AT or XT on a board," according to Juge. The fact that IBM uses its own chips merits a big "Who cares?" except that the new design may slow down companies that put together clones using off-the-shelf chips. "We use five proprietary chips in our own EX," Juge noted.

What about the IBM enhancements that make it easier to connect microcomputers to mainframes? Juge doubted that anyone but the top 200 companies in the world will be interested. "How many people need access to a mainframe?" he asked.

Juge admitted that the 32-bit Micro Channel interface bus of the Models 50, 60, and 80 "might be something we'll have to back up and take a look at." If the corporate world accepts the IBM configuration as its standard, Tandy may have to change its own networking strategy, which "could cost us a little business," according to Juge.

Users of Tandy MS-DOS computers have little to worry about if Juge's interpretation of the DOS puzzle is correct. Tandy engineers already have access to parts of OS/2 and anticipate few problems in working with it. Rumored doubts about OS/2's ability to run older programs as efficiently as MS-DOS—if it can at all—had Juge and other analysts wondering whether there will be any mad rush to buy the new DOS.

Tandy may stand to gain business from Big Blue's long-awaited move, according to Juge, if buyers who were holding out for a low-cost IBM machine now go with a 1000 SX or EX. But the Fort Worth execs probably shouldn't get too comfortable. IBM could yet come out with a clone killer or drop the price of the Model 30 to a more competitive level—although the latter would be an atypical move for the world's largest computer company.

Did ogling the IBM brood rouse Tandy's urge to procreate? Usually reliable sources say Tandy has an 80386-based computer and a laser printer waiting in the wings for the right moment. Those of you who watch this space regularly may remember last year's report that Tandy was waiting to see what IBM did before committing to the 386. What gives?

Tandy, as usual, won't say anything until the boxes are on the loading dock. Juge, however, opined along the lines that someone ought to push the idea of buying a $3,500–$4,000 386 machine solely to run existing programs faster—and quit crying that there's no software that takes full advantage of the hardware. Besides, who says you can't put an 80386 chip in an XT or AT box?

Tandy 1000 owners who run Lotus's 1-2-3 may wonder why they can't upgrade to version 2.01 even if they offer a million dollars for it. One Tandy devotee, a businessman, said he got the runaround from both companies when he inquired persistently into the matter. At least once, he thought of junking his Tandy 1000.

Although Tandy sold version 1.0 in Radio Shack Computer Centers (RSCCs), it has never offered a discounted upgrade through the same channels. The reason: 2.01 isn't even certified by Lotus to run on the 1000 or 1000 SX and EX, according to Gregory Jarboe, director of corporate communications for Lotus. Version 2.0, which was released in September 1985, was followed in early 1986 by 2.01. Lotus certified the Tandy 3000 as being compatible last summer after running an involved battery of tests. But Tandy didn't send the 1000 test models to Lotus until early this year, Jarboe said, adding that the testing process takes at least several weeks to complete.

Lotus has no contract with Tandy to sell the new 1-2-3 in RSCCs, according to Jarboe. He denied that the companies may have had a falling out that left neither one wanting to support an upgrade. Juge said he didn't know why the test models were sent late, but he noted Tandy has been overtaxed trying to fill back orders for the computers.

If certification goes through, Tandy 1000 owners who have version 1.0 can upgrade to 2.01 for $150.

The dress and grooming code Tandy imposed in May 1986 so irked the manager of the RSCC in Monterey, CA, that he refused to shave off his mustache and was fired. That wasn't the end of it. Mark Richards filed suit against Tandy in Monterey Superior Court last Aug. 20, claiming breach of contract and wrongful dismissal. An out-of-court settlement was reached in February, one month before a scheduled jury trial. Details of the settlement were undisclosed.

Tandy might have won the case anyway. According to Rita Risser, a lawyer with Employment Rights Attorneys in San Jose, CA, courts tend to allow companies discretion in hiring and firing. Furthermore, grooming requirements are usually upheld as long as they don't discriminate against a person on the basis of his race, creed, age, sex, and so on. Tandy apparently anticipated potential challenges based on race discrimination when it exempted employees with a valid medical excuse. Some black men have a skin condition that is aggravated by shaving.

Richards' attorney Donald Hubbard said his client felt unfairly treated because the Tandy policy went into effect four months after he transferred to Monterey from the San Francisco Bay area. Richards, who had had the mustache for 12 years before going to work for Tandy in 1985, felt it gave his youthful face an appearance that would help him as a manager. The mustache was light and neatly groomed, and Richards always wore a business suit, according to Hubbard, who added that the store improved financially during Richards' tenure.

Hubbard said the litigants were enjoined from talking about the terms of the settlement.

Micro Trends

Competition in the world of operating-system software development is rare. One reason is that few companies have the resources to debug the code and make sure it runs on a wide range of computers. Wendin, a family-run company in Spokane, WA, came up with a novel way to debug its MS-DOS workalike that is scheduled for sale this month: Have a contest to see who can find the most bugs.

Participants in "The Great Wendin-DOS Debugging Contest" submitted $20 in return for a complete Wendin-DOS disk, which they could run with their choice of software on an IBM PC/XT/AT or "true" compatible. To qualify for 2–5 points, contestants had to find *and correct* as many bugs as they could before June 1 (simply finding a program that doesn't run or identifying incompatible commands was worth 1 point). To earn 5 points, the ambitious had to come up with a suggestion for running an unexecutable program, or else "write a small program in C or assembly language that calls DOS through the INT 21 interface and compare its behavior under Wendin-DOS and MS-DOS. If the program functions differently under Wendin-DOS, submit the source program, DOS call, or sequence of instructions that caused the differing behavior and, if possible, a brief description of why the output differs."

Grand prize was $500, while runners-up were to receive anything from DOS toolboxes to mugs that read, "I debugged the DOS of the future." (The winners aren't named here because the contest was to end well after press time.)

At the West Coast Computer Faire held in San Francisco on March 26–29, software engineers (and brothers) Steve and Gregory Jones worked a booth with marketing rep Zane Troester, using microphones to exhort passers-by to enter the contest or view a demonstration. Gregory Jones explained the contest by saying "it is hard for us to call up and ask for evaluations. We're asking people to use their MS-DOS software and tell us what works and what doesn't."

The Joneses claim Wendin-DOS is a self-bootable operating system having the multiuser and multitasking features that Microsoft has promised to include in a future MS-DOS. They were to begin shipping the product to OEMs in June. ■

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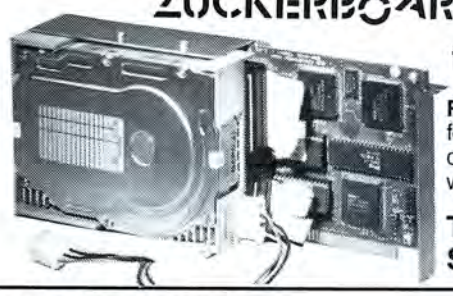

FEATURES: • A microprocessor-controlled servo mechanism guarantees high performance and maximum reliability • 20 MegaBytes formatted capacity • Compact design • DC power only (+12V and +5V) • Access time: 85ms • Pre-formatted with MSDOS • Uses only 1 slot • 2-year warranty • ***Just Plug In and Go!***

T20MB	20 MegaByte Hard Disk Drive for TANDY 1000.	**$579.95**
SX20MB	20 MegaByte Hard Disk Drive for TANDY 1000SX. . . .	**$589.95**

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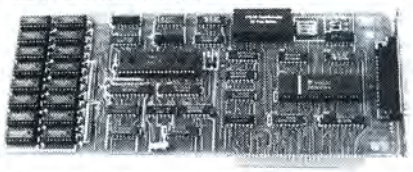

• Expands the Tandy 1000 (128K Version) to as much as 640K • Comes with RS232 serial port, RAM Disk Spooler and on-board DMA controller chip • Made in U.S.A. • 2-year warranty

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MTAN-256K	256K RAM & Manual.		**$179.95**
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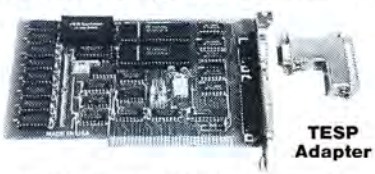

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The Zuckerboard Multifunction Board provides an extra 256K of memory bringing your 384K Tandy 1000SX to the maximum of 640K. Board comes complete with serial port (expandable to two, see below: TESP $39.95) and is addressable up to 4 COM. RAM Disk Printer Spooler Software and 20-year battery backed clock/calendar are also included. Made in the U.S.A. 2-year warranty and documentation included.

M256K	Includes 256K RAM.	**$189.95**
TESP	Second Serial Port for M256K.	**$ 39.95**

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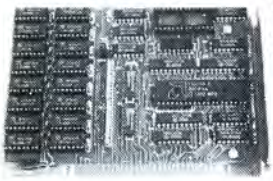

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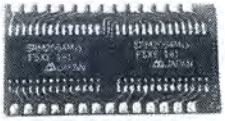

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The Print Goes On

If you use a Model 4P, the DWP 210, and Dosplus, you might be interested in this tip. When using the LList command from Basic or LPrint from within a program, a device I/O error occurs and the system aborts printing. To solve the problem, type the following before going into Basic:

```
ASSIGN @PR SPOOL CHRS = 260
```

You can use a larger number of characters; 260 keeps the printer buffer full and avoids the error.

M. H. Briggs
Walla Walla, WA

Underscore Cursor

I have a patch for Superscripsit 1.00.00 on the Model 4 to change the cursor from the big block (8FH) to an underscore (5FH):

```
Build Scripsit/Fix
D37, 0B = 5F:F37, 0B = 8F
D3E, 93 = 5F:F3E, 93 = 8F
D3E, A7 = 5F:F3E, A7 = 8F
```

Then press control-shift-clear. Now type PATCH SCRIPSIT/CTL USING SCRIPSIT/FIX.

Howard Johnson
Lakewood, CO

Words That Count

Word Count (see Program Listing 1) counts the number of words present in any pure ASCII file. It distinguishes words by either a space, which should appear after every word, or a double space, which occurs after the end of a sentence.

Alex Roosakos
Millbrae, CA

No Questions Asked

In the TRSDOS 6.2 manual, the following examples demonstrate the use of Input:

```
INPUT Y%
```

or

```
INPUT "ENTER YOUR NAME
  AND AGE (NAME,AGE)";N$, A
```

Any time you use Input as shown, a question mark (?) appears on the screen at the point where entered information will be displayed. To eliminate the question mark, you can use Line Input as follows:

```
LINE INPUT A$
```

or

```
LINE INPUT "LAST NAME,
  FIRST NAME? ";N$, A
```

However, you can use Line Input only for string variables. Since the information asked for is often not in the form of a question, the question mark looks out of place. It can easily be eliminated. If you use the following instead, the question mark will not appear:

```
INPUT " ",Y%
```

or

```
INPUT "ENTER YOUR NAME
  AND AGE (NAME,AGE)",N$, A
```

You will get a syntax error unless the Input is followed by quotation marks, then the comma and the variable. This works for either string or numeric variables. You might want to leave a space before the closing quotation mark.

F. G. Taylor
Gulfport, MS

Stash the Slash

The next time you write a program that requires input of the date, don't use the MM/DD/YY format. Just put in the numbers and let the computer supply any slashes or dashes. Enter Jan. 1, 1987 as 10187 and Dec. 31,1987 as 123187. Near the beginning of your program (after any Clear statement), insert the following user-defined function:

```
DEF FNDT$(D) = LEFT$(STR$
  (D),LEN(STR$(D)) - 4) + "/" +
  MID$(STR$(D),LEN(STR$(D))
  - 3,2) + "/" + RIGHT$(STR$
  (D),2)
```

Use the following lines in the body of your program where you enter the date:

```
100 PRINT@(H,L),"Date (mmdd
    yy)";:INPUT " ",D
110 PRINT@(H,L),CHR$(30)
    "Date: "FNDT$(D)
```

The date is now available for storage in either numerical (D) or string (FNDT$(D)) form. The numerical form is single precision, which should be more economical of memory than the string form.

Certain numerical operations might require the date in a form suitable for sorting. Clearly, that is not the case when the month and day come before the year, since, for example, 123186 is greater than 10187. However, if the year comes first, you must establish the proper order, at least within the same century. That transposition can be done as follows:

```
YMD = (D - 100*INT(D/100))
  *10000 + INT(D/100)
```

Then 10187 becomes 870101 and 123186 becomes 861231. You can also convert this line to a user-defined function.

Patrick A. Gainer
Tanner, WV

Program Listing 1. Program to count words in an ASCII file. See p. 100 for information on using checksums.

```
99 'Word Count - By Alex Roosakos
100 CLS:CLEAR 10000                                                    '*  1093
110 PRINT "ASCII File Word Counter"                                    '*  2664
120 PRINT:LINE INPUT "Enter the filename: ";F$                         '*  3445
130 PRINT:PRINT "Working ..."                                          '*  2039
140 OPEN "I",1,F$                                                      '*   903
150 IF EOF(1) THEN 220 ELSE LINE INPUT #1,A$:A$=A$+" "                 '*  3034
160 FOR I=1 TO LEN(A$)                                                 '*  1261
170     IF MID$(A$,I,1)<>" " THEN 210                                  '*  1869
180     IF MID$(A$,I,2)="  " THEN I=I+1                                '*  1994
190     X=X+1:X$=STR$(X)                                               '*  1340
200     PRINT @290,STRING$(6-LEN(X$),"0");RIGHT$(X$,LEN(X$)-1)         '*  3521
210 NEXT I:GOTO 150                                                    '*  1156
220 PRINT:PRINT "Finished counting words.":END                         '*  3755
```

End

Illustrations by Julia Talcott

All Keyed Up

I recently updated from the Tandy version of Microsoft Word 1.00 to 3.10 on my Tandy 1000. I soon discovered that the shift-insert (insert from scrap while deleting highlighted text) and the shift-delete (delete highlighted text completely, not to scrap) functions only produced the plus (+) and minus (–) characters shown on the keyboard instead of the desired functions.

On the IBM PC, insert and delete are on the numeric keypad zero and period (.) keys. I tried shift-zero (keypad), which did emulate shift-insert, but shift-period (keypad) just beeped.

I tried KEYCNVRT.SYS, which is supposed to make the Tandy keyboard more closely emulate the IBM PC keyboard, but it didn't work with Word 3.10.

KEYCNVRT.SYS only worked for six keys, and not the one I was concerned with. The problem was with the scan codes produced by each key. Knowing this, I patched the Tandy KEYCNVRT.SYS program.

Put a disk with a copy of Debug in drive A and a disk with KEYCNVRT.SYS in drive B. At the prompts, type as follows:

```
A> DEBUG B:KEYCNVRT.SYS
-E124 2E 56 53
-W
-Q
```

Now enter DEVICE = KEYCNVRT.SYS into your CONFIG.SYS file. The shift-period (keypad) combination will emulate the shift-delete function.

Jim Swavely
Easton, PA

Dynamite Solution

Debbie Cooper's program ("Deep-Six Your Directories," March 1987, p. 70) deletes Tandy 1000 directories without first erasing the programs. The following batch file, Blast (see Program Listing 2), does much the same thing in 224 bytes. To write Blast to disk, enter COPY CON BLAST.BAT, enter each line in turn, then press the F6 key and enter to complete and record the batch file. To run Blast, type BLAST directory, where "directory" is the name of the directory you want to eliminate.

Michael P. Weinstein
Fort Valley, GA

Roundabout Sound

Most Model III games that use the cassette port for sound can be changed so they use the Model 4 speaker. Change all appearances of D3FF hexadecimal (hex) to D390 hex. A word of warning, though; since not all programs use the same scheme for sound routines, this might not work on some programs.

If you want to make your Model 4 screen "shake," try the following line:

```
10 FOR COUNTER=1 TO 200:
   OUT 239,191:OUT 239,200:
   NEXT COUNTER
```

Jeff Schickel
Malone, NY

Penny Wise

The inaccuracies of storing numbers in Basic, discussed by Bruce Tonkin in "The Art of Programming" (March 1987, p. 87), are compounded by writing to and from disk. I got around some of these problems in my balance-sheet program by defining constants with extra trailing zeros: C1# = 426379.92000 rather than C1# = 426379.92.

Also, in my payroll program, which repeatedly stores and reads back throughout the year, I do all calculations and data storage in pennies. Basic handles these accurately, since they are whole numbers. Just divide by 100 before printing out the checks or summaries.

John P. Jones
Fairmont, WV

Program Listing 2. A batch file that deletes Tandy 1000 directories.

```
ECHO OFF
CLS
CD\%1
DIR
ECHO THESE ARE THE FILES YOU WILL BE PURGING. TYPE CTRL-C TO ABORT
ECHO IF YOU ABORT AT THIS POINT, TYPE CD\ AT THE DOS PROMPT
PAUSE
ERASE *.*
CD\
RMDIR\%1
ECHO DIRECTORY %1 HAS BEEN PURGED
```

End

Georgian Calendar

In financial work, files must be dated. The chart below lets you express a date in three characters in such a way that, when incorporated in the file name or extension, you can sort the files by date. The system covers the years from Jan. 1, 1980 (A11) to Dec. 31, 2005 (ZCV).

Change the normal order of MDY (month/day/year) to YMD and pick the values off the chart in that order, for example, Dec. 23, 1986 = 86/12/23 = G/C/N = GCN.

```
00s>0 1 2 3 4 5 6 7 8 9
1980s & 10s>A B C D E F G H I J
1990s & 20s>K L M N O P Q R S T
2000s & 30s>U V W X Y Z
```

George F. Mueden Jr.
New York, NY

Golden Oldie

In the December 1985 Reader Forum (p. 25) it was reported that Clifford Knight's Scripaid modification to Model 4 Scripsit 1.00.00 (January 1985, p. 61) will not work with Scripsit 1.00.01.

The problem lies in the patch that Radio Shack issued to fix a spooling problem, which placed a CD hexadecimal (hex) value (a Z80 Call instruction) immediately before a Scripaid-inserted Call instruction and causes the program to go awry. You can apply two simple solutions.

If you have the source listing on disk, change line 650 to read:

```
00650 PRCALL EQU 61EDH ;LOCATION OF @PRT SVC CALL
```

Reassemble the listing as Enhance/OVL and go on as usual.

If you have the assembled version, as supplied on the 1986 Best of the Model 4 disk or the January 1985 Load 80 disk, then apply the following two patches to a backup copy of Enhance/OVL:

```
PATCH ENHANCE/OVL (X'46C9' = EB 61 00)
PATCH ENHANCE/OVL (X'61ED' = CD 84 63)
```

This clears up all incompatibility problems with the newer version of Scripsit and lets you use the enhancements provided by Mr. Knight's program.

David Goben
Mansfield Center, CT

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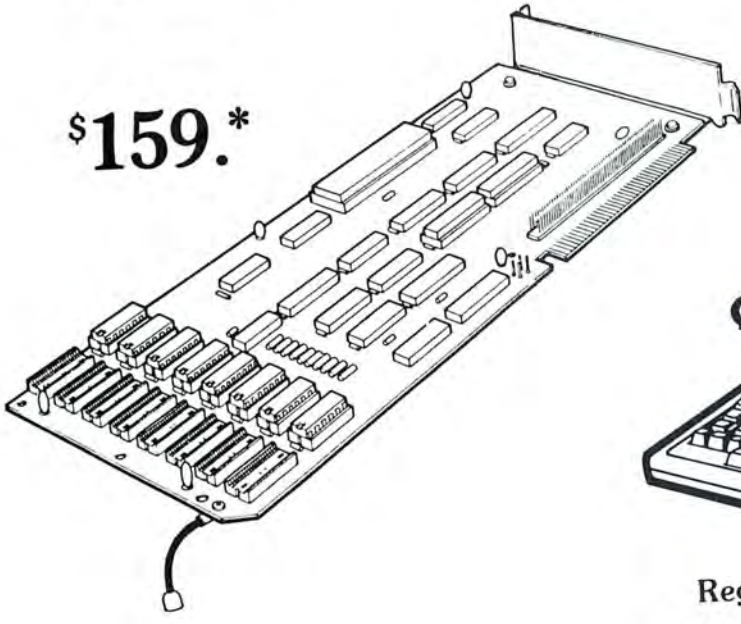

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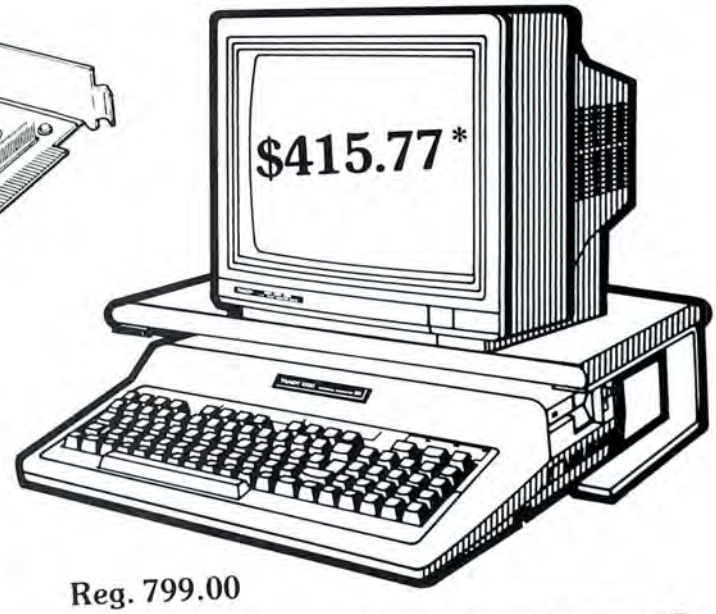

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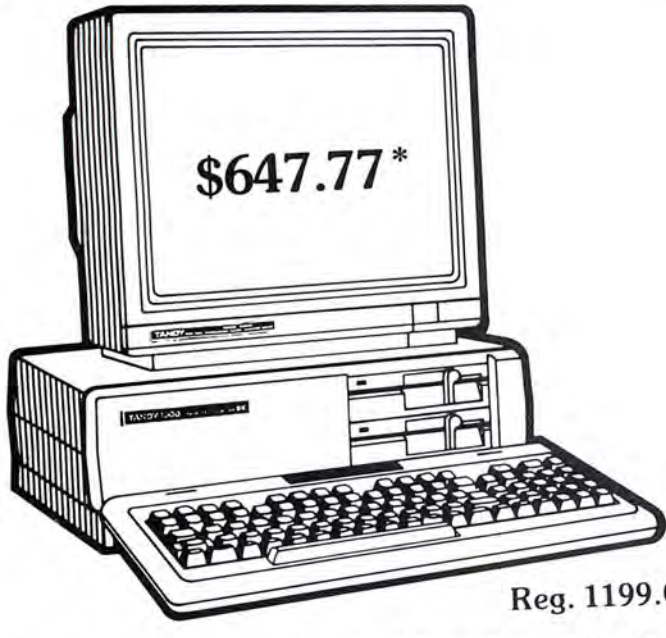

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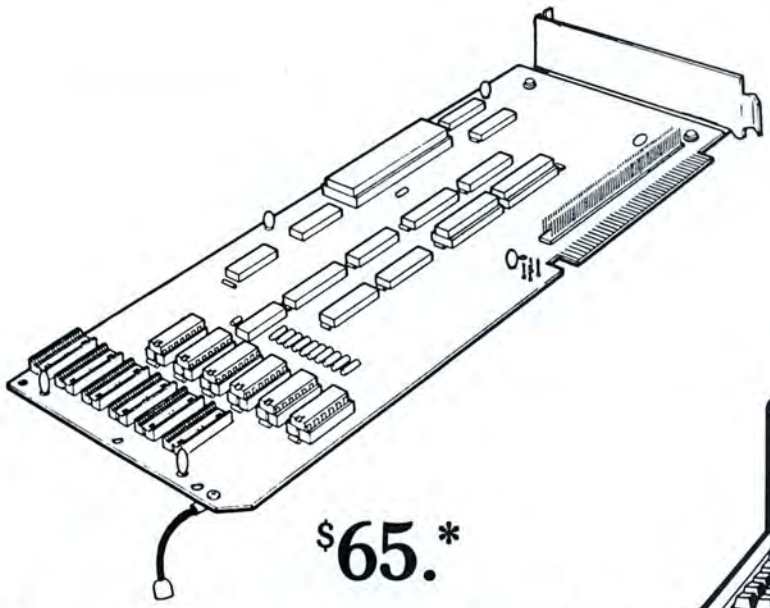

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by John McCormick

Andrew Tobias's Managing Your Money 2.0 runs on the Tandy 1000/1200/3000 and requires 256K. It's available from Tandy's Express Order Service (EOS no. 25-1159) or from MECA Inc., 285 Riverside Ave., Westport, CT 06880, 203-222-9087. $199.

Sylvia Porter's Your Personal Financial Planner, Vol. I, runs on the Tandy 1000/1200/3000 and requires 128K. Timeworks Inc., 444 Lake Cook Road, Deerfield, IL 60015. 312-948-9200, $99.95.

When Ben Franklin said "A penny saved is a penny earned," he was speaking about a pretax penny. If you're in a 25 percent bracket, a dollar saved is actually a dollar and 25 cents earned. If you figure the costs of earning the dollar as opposed to just holding on to it, the figures get even higher.

Sylvia Porter and Andrew Tobias, two prominent financial gurus, have lent their names to sophisticated money-management programs intended to help you keep better track of how you spend and save your money, with an eye to decreasing the spending and increasing the saving.

Each program comes on three disks, and, from the moment you open the packages, it's obvious they are serious about money. Tobias's Managing Your Money (MYM) relies on a lot of on-screen help information and a complete set of sample entries in each subject area to support its simple documentation.

Porter's Your Personal Financial Planner (YPFP) relies less on help screens, but the extensive documentation is easy to read and understand.

MYM offers simple graphs and leans more heavily on investment management, while YPFP uses sophisticated graphics to closely analyze expenses and budgets. Both programs are copy-protected, but MYM only asks for the key disk occasionally, while YPFP requires it for each startup.

Both programs load rather slowly, because they're large, but once operating in a particular section they are fast and responsive.

In addition to budget planning and investment management, these programs help you print your monthly checks and keep track of expenses, allocating paid amounts to the proper categories and balancing your accounts. YPFP makes it easy to enter detailed home budget data, while with MYM it's easy to manage investments. MYM even warns you when options are about to expire and notifies you when investments turn long-term.

Managing Your Money lets you estimate your taxes.

Managing Your Money

When you enter Managing Your Money, it greets you with a humorous quotation and reminds you of any notes you've entered on your calendar for that particular day.

One section lets you enter as detailed a budget plan as you desire, with monthly updates on the actual amounts spent. It automatically tallies how much over or under budget you are for the year to date. If you are operating a small business, you can use this section to keep track of accounts payable and receivable and print your invoices.

Another section helps you plan your taxes and handles schedules A, B, C, D, E, F, G, SE, W, and 2105, along with alternative minimum tax. It also provides for changes in the tax code. *(Version 3.0 of Managing Your Money is now available and includes updates for the 1986 Tax Reform Act.—Eds.)*

The insurance program asks you questions to steer you toward the most appropriate insurance policies, and the financial calculator presents you with word problems in plain English to help you clarify and calculate decisions on retirement planning, investment analysis, mortgage refinancing, and inflation problems.

The portfolio manager is powerful and easy to use. It keeps track of your stock portfolios (real or hypothetical) and automatically reminds you when an investment goes long-term. You enter the details of each investment, and the screen displays summaries based on your specified criteria.

The net-worth calculator draws upon data you've entered into the other sections to keep a running account of your net worth and show you how this year's finances compare to last year's.

The last section is a simple data base in which you can store facts about anyone you know, from your doctor to relatives to lodge members, and quickly search for the information when you need it. You can also use this card file to prepare mailing lists, and, if you've got a modem, the file can dial the phone numbers it contains.

MYM can print more than 30 reports covering all aspects of the program, and you can transfer these reports to Lotus's 1-2-3 or Symphony. They're saved as ASCII files, so you can load them into a word processor to integrate them into customized reports.

Your Personal Financial Planner

Your Personal Financial Planner includes income and expense statements, balance sheets, and a detailed financial planner that helps you make long-range investment decisions.

You use the transaction manager to enter all income and expenses, and, if you want, it prints your checks. The program transfers the information you enter to appropriate locations in the other portions of the program.

The budget manager is the heavy-duty portion of this software, because it lets you carefully plan and analyze your budget. The section features graphs showing percentages, ratios, charts, and other information to simplify budget analysis.

YPFP includes a pop-up notepad and calculator that you can call up as you use the program. If you don't already have these convenient programs, then con-

sider these two of YPFP's advantages over MYM.

The asset/liability manager's accounting categories and index numbers keep track of your stocks, bonds, savings, and other investments. Like any other accounting system, YPFP can create income and expense reports along with balance sheets to let you assess your financial health.

YPFP uses a number of accounting terms that will be familiar to anyone who has previously taken an accounting or bookkeeping course. Its similarity to standard accounting programs will make this the easiest package for anyone with an accounting background to use. If you don't have such a background, don't worry; the documentation is easy to understand and tells you all you need to know about accounting.

Planning for the Future

Although MYM provides for retirement planning and insurance analysis, YPFP is the clear winner in this category. It leads you through an extensive analysis of your present financial position (based primarily on information gathered from the budget and assets portions you previously completed) and then asks for details of your future plans and dreams.

YPFP helps plan your financial goals.

YPFP takes the information you enter and produces an extensive report (about 10 printed pages, depending on how complicated your life is) that explains your present position, the changes you need to make to reach your future goals, and the budget that will help.

This planning section is easily the equivalent of several long sessions with the average financial planner. If you follow its advice, the program will pay for itself many times over.

Conclusions

If most of your budgeting consists of making certain you transfer enough money from your money market to checking before the bill for the swimming pool comes, and you manage portfolios for your wife and three children in addition to your own, then Andrew Tobias's Managing Your Money is the package for you to buy.

If, on the other hand, you are still saving for your first Certificate of Deposit, and, even though you should have enough money coming in, a little more seems to go out each month, then you'd better get Sylvia Porter's Your Personal Financial Planner.

The closer you are to the middle ground between these extremes, the more difficult the choice becomes. But whichever you buy, you'll have a top-notch money-management package.

Both companies have announced accessory programs that expand each package's investment-management facilities, even letting you automatically update your portfolio with data from Dow Jones News Service and other sources.■

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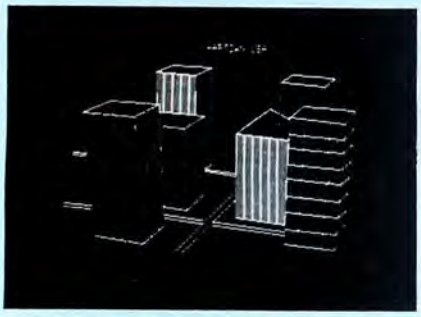
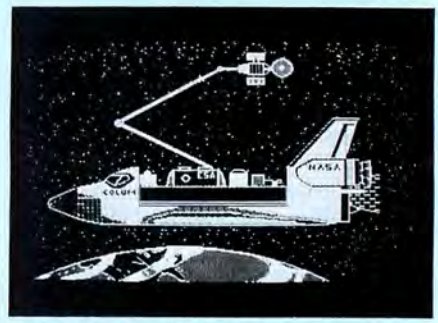


Superior Hardware. The Grafyx Solution provides 153,600 pixel elements which are arranged in a 640 × 240 or on the Model III a 512 × 192 matrix. Hundreds of new business, personal, engineering, and educational applications are now possible. The hi-res display can be shown on top of the standard display containing text, special characters, and block graphics. This simplifies program debugging, text labeling, and upgrading current programs to use graphics. The Grafyx Solution fits completely within any tape or disk based Model 4, 4D, 4P, or III. Installation is easy with the plug-in, clip-on Grafyx Solution board.

Superior Basic. Over 20 commands are added to the Basic language. These commands will set, clear or complement points, lines, boxes, circles, ellipses, or arcs. The hi-res screen can be printed on any of 30 popular printers or saved or loaded to disk without leaving Basic. Areas may be filled in with any of 256 patterns. Sections of the screen may be saved and then put back using any of five logical functions. Labels can be printed in any direction. The viewing area can be changed. The entire screen can be complemented or cleared. Graphics Basic provides dot densities of 640 × 240, 320 × 240, 160 × 240, and 160 × 120, all of which can be used in the same display.



Superior Software. The board comes with over 40 programs and files which make it easier to use, serve as practical applications, demonstrate its capabilities, and serve as programming examples. The software works with TRSDOS 1.3, 6.1.2, 6.2; DOSPLUS 3.4, 3.5, 4; LDOS; and Newdos80. The Grafyx Solution is also supported by over 20 optional applications programs: Draw, Bizgraph, xT.CAD, 3D-Plot, Mathplot, Surface Plot, Chess, Slideshow, etc.

The Grafyx Solution package is shipped complete for $199.95 (reduced from $299.95). The manual only is $12. Payment may be by check, Visa/MC, or COD. Domestic shipping is free on pre-paid orders. Texas residents add 5⅛% tax.

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If You Could Read My Mind

by John McCormick

Mindreader runs on Tandy 1000/1200/3000 (256K) and requires DOS 2.x. Businessoft Inc., 703 Giddings Ave., M-4, Annapolis, MD 21401, 800-843-6964. $65.

Expensive word processors with sophisticated features are great for writers and secretaries with lots of typing experience, but what about the poor executive who can't type and just needs to write an occasional business letter for his one-man fruit-stand business?

Mindreader is a word processor for the hunt-and-peck typist. As you use the program, it "learns" the words you use most often and guesses the word you're trying to type. When you've typed two or more letters, Mindreader displays one or more choices of words or phrases it thinks you might be looking for. If none of the choices are correct, ignore the window and keep typing. If one of the choices is correct, pressing a key puts it into your text.

Mindreader defaults to the first choice on the list, which you can choose with the semicolon (;) key. If you reject the first choice in favor of another twice in a row, the program lists your choice first on the list from then on.

When you exit Mindreader, it saves your word preferences. It doesn't have to relearn your vocabulary each time you begin the program. The more you use this artificially intelligent word guesser, the more useful it becomes, because it remembers the words and phrases you are most likely to use.

The Word Processor

Obviously, this word-guessing feature would be a real nuisance to an experienced typist, so Mindreader offers several operating modes, including one that makes it a standard word processor. Standard, except that you can quickly insert prerecorded words, phrases, and paragraphs into the text.

You can define up to 260 700-character text blocks and call them to the screen with three keystrokes and create additional keyboard macros to handle command procedures, such as formatting. These are features that you would expect only in the most expensive programs.

Mindreader also offers block operations, split screen, a spelling checker, search and replace, and line drawing as part of its word-processing features, and seems to lack only advanced formatting (such as columns) and sophisticated printer controls. You get mail merge, complete with zip-code sorting, and several ways to print out name and address files.

Mindreader doesn't have to relearn your vocabulary each time you begin the program.

These word-processing features alone are remarkable in a package for $65.

Operation

Since Mindreader is intended for occasional typists, it limits documents to a maximum of 1,200 lines, enough for

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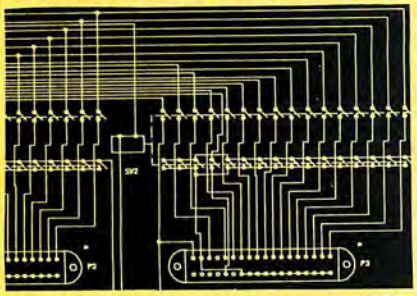

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most contracts and normal business correspondence. If you need to write a longer document, you'll have to break it into more than one file.

The program is a bit schizophrenic. It resembles a serious, business-office word processor, but it tries to entertain with fancy graphics (including an overly decorated and very slow opening screen), strange sounds (which, fortunately, you can turn off), and a word-guessing game. The game is reasonably entertaining, but I can't understand why it's here. The disk space would be better spent on word-processing features or longer document files.

Function keys 1–10 and their assigned functions appear across the top of the screen, and shifted and alternate function keys appear across the bottom. This eliminates the need for help screens but limits the usable screen to 20 lines.

Pressing F1 displays a list of suffixes; you can select one and add it to the word you just typed. Pressing F2 makes a word plural, but not always successfully: "Deer" becomes "deers," and "sheep" becomes "sheeps." For many common words this automatic-plural feature is accurate, but for most typists, it's much easier to just type the plural.

Pressing the F10 key while in a document not only displays the number of lines used, the space left, and the word count; it also shows the total number of keystrokes and characters, your typing efficiency, and how much of the document Mindreader created. The program can also tell you your typing speed.

Another Mindreader option automatically saves your work every 20 minutes.

Documentation

The documentation is simple and to the point. Since Mindreader lacks many of the complicated commands of more ambitious word processors, it is easy to use, and its documentation reflects this.

Summary

It's hard to say just who would get the most from this innovative software. Some two-finger typists will find it useful, and others probably won't, because they'll have to keep looking up from the keyboard to see the word-guessing options.

An experienced typist can shut off these windows and have a good, low-end word processor. Its features aren't all comparable to Wordstar's or Wordperfect's, but they're excellent for letters and short documents.

Mindreader could benefit from a clearer focus, though. It would be a better package if its creators forgot the games, noise, and flashy graphics and kept this a more serious program that hunt-and-peck typists could grow with.■

8087 Support for Quick Basic

by Thomas L. Quindry

87Quickbasic Support 6.2 runs on the Tandy 1000/1200/3000, requires an 8087 chip, and supports Microsoft Quick Basic versions 1.0, 2.0, and 2.01 and the IBM Basic Compiler. Hauppauge Computer Works Inc., 358 Veterans Memorial Highway, Commack, NY 11725, 516-360-3827. $69.

87Basic runs on the Tandy 1000/1200/3000, requires an 8087 chip, and supports Quick Basic 1.01, 1.02A, and 2.00A and the IBM Basic Compiler 1.00 and 2.00. Microway, P.O. Box 79, Kingston, MA 02364, 617-746-7341. $150. (Specify your compiler and version when ordering.)

The advent of the Microsoft Quick Basic and the IBM Basic compilers has put new life into Basic. But those with the 8087 math coprocessor chip in their machines have not been able to work in compiled Basic and still take full advantage of the 8087's features, so companies have developed packages like the 87Quickbasic Support and 87Basic to support Quick Basic and the 8087 chip.

87Quickbasic Support

The Hauppauge 87Quickbasic Support 6.2 comes with two libraries that let you compile your Basic programs while you use the 8087 chip. One library, HCW.LIB, is for Quick Basic 2.0; the other, HCW2.LIB, is for version 1.0x. The Support package also includes a demonstration program, a test program, and a program called Mathunit.COM that tests to see if the 8087 chip is installed properly and can set or reset its enable flag.

Some software checks this flag to see if your computer has an 8087 chip installed. Since the Tandy 1000 does not set the math coprocessor flag when you turn the computer on, Mathunit can be useful. When the flag isn't set to signal that the 8087 chip is installed, certain programs bypass 8087 programming in favor of alternative code for the normal 8088 mode.

It seems that neither the 87Quickbasic Support nor 87Basic check this flag before they run the programs they've compiled.

Simple to Use

Using 87Quickbasic Support is simple: Use the /O option to compile your Basic program so you can create a standalone version and link the object code generated. You must also have the standard Quick Basic libraries, BCOM10.LIB

or BCOM20.LIB, available on the default drive because the HCW programs call on them.

87Basic

Microway's 87Basic works differently than does the Hauppauge program, but it's just as simple. A batch file installs needed programs from the Microway set onto a special disk you have set up for your compilation programs or onto a hard disk. Within the batch program you create substitute libraries called NRUN20 and NCOM20 by making changes to Quick Basic's BRUN20 and BCOM20 libraries.

Running 87Basic calls QB and sets up the NRUN20 or NCOM20 libraries as the default, depending on whether you specify the run-time or stand-alone compilation, respectively.

A Real Advantage

87Basic offers a real advantage over 87Quickbasic Support's HCW libraries, because it lets you create stand-alone files or smaller compiled Basic files to use with Quick Basic's run-time support library. Hauppauge's programs can only create stand-alone files.

While 87Quickbasic Support's programs don't give you a chance to compile and link programs from Quick Basic 2.0's menu mode, you can try both with 87Basic.

Unfortunately, you'll always come up with a fatal-error message. This means that neither support program offers you Quick Basic 2.0's advantages over version 1.0x: the ability to test out your programs directly from the menu mode while keeping the 8087's speed advantage.

You still can test your compiled Basic programs in the normal Quick Basic program, but, depending on your program, not having the speed advantage can mean a longer development time.

Benchmarks

I became somewhat suspicious when benchmark tests on both the 87-Quickbasic Support and 87Basic showed that Quick Basic 1.02 programs with 8087 support ran two to eight times faster than Quick Basic 2.0 programs. In fact, the same was true even without the 8087 support.

I had used the menu mode rather than the batch mode to compile the Quick Basic 2.0 programs. Version 1.02 only has a batch mode. I found that compiling programs using Quick Basic 2.0 in the batch mode gave results comparable to version 1.02 compiled programs.

The menu option is supposed to default to compilation in the quick mode, but its results don't match what the menu claims are its optimal speed or size selections. As a result, programs compiled from the menu run much slower than those compiled in the batch mode. I redid the tests using QB 2.0 in the batch mode.

Programs with 87Quickbasic Support ran slower than those with 87Basic support. In many tests, the Hauppauge programs ran at about the same speed as programs compiled without 8087 support. Matrix multiplication tests showed the Hauppage programs as running slower than their unsupported counterparts.

Neither support program has the ability to test out programs directly from menu.

87Basic for Speed

On the other hand, programs with 87Basic support ran about 1.67 times faster than they did without such support. Adding eigenvalue or complex elements to the matrix multiplication gave the Hauppage programs a slight advantage over unsupported programs, but the Microway-supported programs ran twice as fast as those with 87Quickbasic Support.

Microway programs continued to shine over Hauppauge programs in tests with polynomials and complex coefficients, differentiation, integration, multiple regression, Lagrangian equations, and analysis of variance. However, both showed significant speed increases in finding the roots of a fourth-order equation and in performing complex exponential equations.

Summary

Although both Quick Basic support programs work well, speed puts Microway's 87Basic way out in front. It generally runs about 1½ to 2 times faster the 87Quickbasic Support. 87Basic also enhances more Quick Basic computations than does the Hauppauge product.■

Microsoft's newest version of Quick Basic, 3.0, includes 8087 support. See more information on this product in the New Products section, p. 108. —Eds.

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A Great Idea, Poorly Executed

by David A. Williams

ED/ASM-86 runs on the Tandy 1000/1200/3000 requires a color-graphics adapter, and supports the 8086, 80186, 80286, and 8087 chips. Misosys, P.O. Box 239, Sterling, VA 22170-0239, 703-450-4181. $89.95.

I should have known what was coming when I opened the three-ring manual and found that all the pages were punched on the wrong side. I had to remove the pages, turn them over, and read the manual from back to front. As I got into ED/ASM-86, I found that it has other peculiarities.

The package is an integrated editor, assembler, linker, and debugger. It's a great idea. You use the editor to create a source file, assemble it to memory, debug it, and save a COM or EXE file to disk, all without leaving the editor environment. As I said, it's a great idea—unfortunately, it's poorly executed.

The manual devotes a section to each of the major program functions. Its descriptions of the commands are complete and clear, but shy of examples. The appendix includes a command summary and a list of error messages.

Half of the 200-page manual is an assembly-language tutorial. Not a bad idea, although I've seen better treatments. ED/ASM-86 could be a good learning tool, because it makes it so easy to create, test, and run small programs.

The tutorial describes all the 8086 and 8087 instructions, but the descriptions are too sketchy to be of much value for serious programming. The novice programmer will require a more complete description of the assembly process.

The Editor

ED/ASM-86 has both a line and a screen editor. The line editor is similar to those that came with early versions of Basic: It's a relic compared to modern screen editors. The screen editor is fine, but—are you ready for this?—it only works with a color-graphics adapter (CGA). Forget your hi-res monochrome adapter, forget Hercules, forget the EGA and Multisync monitor you just went in hock to get.

I don't get this. If you're not going to use color or graphics, which ED/ASM-86 doesn't, then why design an editor that requires a color-graphics adapter? No one who values his or her eyesight will use the CGA for extended text work. The only reason I own one is so I can test programs that require it.

When you load ED/ASM-86, it comes up in the line-editor mode. If you've never used a line editor, you might not know how painful and tedious they can be. You can switch over to the screen editor, but you have to use the line editor to assemble and debug your program.

ED/ASM-86 stores source files in a non-ASCII format that another editor can't read. You can load ASCII files and save files in ASCII format, but be prepared to wait awhile. A 27K file took 78 seconds to load and 6½ minutes to save.

The editor I normally use would have done each in about two seconds. But ED/ASM-86 is fast with files you've saved in the utility's own tokenized format.

Why design an editor that requires a color-graphics adapter if you can't use color or graphics?

Doing so doesn't save much disk space, though. My 27K file was only 500 bytes smaller in tokenized format.

The Assembler

You can assemble your program to memory or to a disk file. When you're debugging, you will usually assemble to memory. The default output is a COM file, but you can also produce EXE files. Other options produce an assembly listing on a disk file or the printer and a symbol table.

Using Microsoft's Macro Assembler and a batch file to run the programs required, I can assemble, link, and convert the aforementioned 27K file to COM format in less than two minutes. ED/ASM-86 ground away silently for about three minutes, displayed error messages for another two minutes, spent 10 minutes writing to disk, then informed me that it found 252 errors.

Why did it spend all that time writing to disk when it found that many errors? Beats me. There is a command that will run the assembler without creating any output except the necessary error messages, but you shouldn't have to tell it not to write a useless file.

I tried to assemble a shorter file and got two errors. ED/ASM-86 won't accept a line like CMP CL,"Q", because it requires single quotation marks. It also seemed to have trouble with some of the macros I was using, although files for which it gave error messages executed properly when assembled to a COM file. After changing the offending instructions and expanding the macros, I was able to get my test program to assemble in memory.

The Debugger

Then I entered the debugger to execute the test program. It's similar to the MS-DOS Debug program, and like Debug, ED/ASM-86 lacks a trace command capable of skipping over subroutines and software-interrupt routines. The Microsoft assembler includes this valuable feature in its symbolic debugger.

I couldn't get the Go command, which begins program execution, or the T command, which single-steps through the program, to work properly. Then I discovered both are case sensitive. That is, you must type the hexadecimal (hex) address used with these commands in uppercase letters. The other commands I tried don't require this, and, although it shows the examples in uppercase, the manual doesn't mention it.

The debugger accepts program labels instead of absolute addresses, as in GO=SEG START:OFFSET START, but this format locked up the computer as often as it worked. In fact, both the debugger and the line editor often locked up my machine, and I had to reboot to get going again.

Maybe my computer was at fault, although my Tandy 1200 is very IBM-compatible, and I have yet to find a reliable program that won't run on it. The ED/ASM-86 program disk includes a file for computers that aren't highly compatible. I tried that, too, but the result was the same.

You can save what ED/ASM-86 calls link files. These are similar to, but incompatible with, what real programmers call object files. ED/ASM-86 can call link files to combine them with source files at the time of assembly. An unfortunate result of this scheme is that there is no way to assemble a module that you can link with a compiler-generated program module.

Summary

There isn't much point in discussing ED/ASM-86's other features. The idea of an integrated package is appealing, but even if it worked properly, this one has too many drawbacks: non-ASCII source-file format, an inability to produce compatible object files, and an inadequate editor. If you're getting into assembly, buy Microsoft's MASM macro assembler and a good editor, or you might look at a couple of the shareware assemblers and editors out there.■

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PC-DeskMates, a powerful multi-function memory resident utility, is included so you can start using the Clone when you receive it. You get an alarm, clock, calculator, calendar, notepad, phone dialer, typewriter, and access to DOS level commands. The Clone also comes with Qmodem, the famous modem program which enables you to access the world of telecommunications. PC-Write, probably the best shareware word processor available, is also furnished. Your Clone comes ready to work for you.

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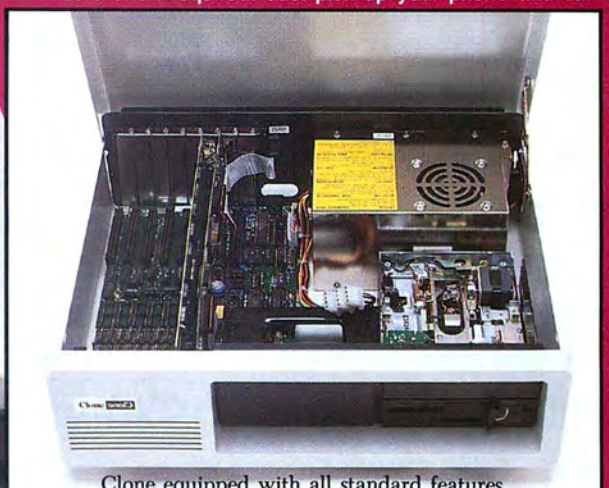

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US VS. THEM

FEATURES	CLONE	IBM PC/XT	TANDY 1000 EX (SX)	LEADING EDGE Model D
Microprocessor: Intel 8088 @ 4.77mHz	YES	YES	YES	YES
	8mHz Optional	NO	7.16mHz STD	NO
Power Supply Rating	150 WATT	63.5 WATT	54 WATT	130 WATT
IBM Standard Bus:	YES	YES	NO	YES
Operating System:	MS-DOS 3.2	EXTRA	MS-DOS 2.11 (3.2)	MS-DOS 3.1
Disk BASIC:	YES	IN ROM	YES	YES
MS-DOS and BASIC Ref. manuals:	YES	EXTRA	EXTRA	YES
Standard System RAM:	640K	256K	256K (384K)	512K
Cost to Expand RAM:	-0-	$$	$259 ($129)	$
Keyboard:	'AT' STYLE	STD	NON-STD	STD
Video Monitor: (composite)	INCLUDED	EXTRA	EXTRA	INCLUDED
Video Outputs:	BW/NTSC/RGB	EXTRA	NTSC, RGB	B/W, RGB
Disk Drive Capacity:	1-360K	1-360K	1-360K (2-360K)	2-360K
Max Number of Internal Drives:	4	4	1 (2)	2
Internal Expansion Slots:	8	5	1 (5)	4
Accepts Standard IBM Cards:	YES	YES	NO (10" Only)	YES
8087 Math Co-Processor Option:	YES	YES	NO (YES)	YES
Sturdy Steel Case:	YES	YES	PLASTIC	PLASTIC
Standard Parallel Ports:	1	0	1	1
Standard Joystick and Light Pen Ports:	YES	NO	J (J/LP)	NO
Standard Serial Ports:	2 (1 Optional)	0	0	1
Warranty	1 YEAR	90 DAYS	90 DAYS	15 MONTHS
Clock/Calendar	YES	NO	NO	YES
Cost Ready-to-Run	$699	$3,063	$1,398+ ($1,683+)	$1,295
8mHz Option	$799			

Add $35 for ground delivery; $70 for air.

IBM XT cost figures*: Video Display Adapter $250; Video Display $275; IBM XT computer $2,145; Additional Ports, serial port, game port, parallel port, 640K RAM $308; DOS 3.2 and BASIC $85; Total $3,063. Does not include the battery back-up clock calendar. No light pen port.

Tandy 1000 cost figures*: DOS 2.11 and BASIC reference manuals $29+; Memory Plus Expansion Board (to 384K) $129+; 256K Additional RAM $129+; One serial Port $79+; Battery Back-up Clock Calendar $99+; Composite Monochrome Monitor $129+; Model 1000 EX Computer $799; Model 1000 SX Computer $1199; We were not able to equip the Tandy 1000 to directly compare with the Clone because of the 1000's inherent design limitations.

*The above prices are list prices as best we could determine. Both the IBM and Tandy are available at a discount.

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2nd 360K TEAC Half-height Floppy Drive	$99	HiRes RGB Color Monitor 640 x 200	$299
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30mb 40ms Seagate Internal HD	699	HiRes Mono Monitor 720 x 348	110
80286 SpeedKit. Makes XT faster than AT	399	5339 Accounting Keyboard	89
300-1200 Internal Modem & Software	149	300 Watt Uninterruptable Power Supply	299

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CP/M Software for Under $50

by Jack Feldman

Express 2.0 runs on the TRS-80 Model 4 under CP/M. TCI, 17733 205th Ave. N.E., Woodinville, WA 98072, 206-788-9732 (after 6 p.m. Pacific time) $29.95. Specify 5¼-inch format. (CP/M-86 and MS-DOS version, $34.95.)

Spellsys runs on the TRS-80 Model 4 under CP/M. Microgroup, P.O. Box 65, Bend, OR 97709, 503-382-8048. $29.95.

Write-Hand-Man runs on the TRS-80 Model 4 under CP/M. Poor Person Software, 3721 Starr King Circle, Palo Alto, CA 94306. 415-493-3735. $49.95. Specify 5¼-inch format.

CP/M programs don't have to be expensive to be good. The three reviewed here cost less than $50 each. Express 2.0 is a text editor, Spellsys is a spelling checker, and Write-Hand-Man is a windowing desk accessory with interesting features.

Express 2.0

Express comes with a 112-page manual and a 5¼-inch disk in the format of your choice. The disk contains the Express files and Roff4, a public-domain text formatter. Express 2.0 is a text editor, as opposed to a word processor. A text editor lets you create an ASCII file most often used for writing code, but needs separate printer-driver and formatting programs. However, Express's block-print function lets you use it as a word processor.

If you need more sophisticated text formatting, you can include Roff4's commands in an Express file. Roff4's documentation is in a text file that refers to other files that are not on the disk. The file contains enough information to get you started, but helpful printer-initialization files and other information are available on SIG/M, Vol. 174 and Vol. 195 (available from most CP/M clubs or a CP/M RBBS).

Express's documentation lists and explains every command and describes each feature. It also includes complete instructions for installing the program on your computer.

Installing Express on the Model 4 is simple. As with any editor, you use a series of inputs from the keyboard to tell it what to do. You can use Express immediately once you tell the configuration program that your Model 4 emulates the ADM3A.

One of the program's nicer features is that you can redefine the codes that control it. Sometimes it's a necessity, because Express looks for codes from keys that aren't on the Model 4's keyboard. For example, Express uses the escape key as a toggle between the edit and the command mode. Since there's no escape key on the Model 4, I defined F1 to take its place.

Or, if you are already familiar with a certain word processor's commands, you can redefine each Express command so that it matches what you have been using. A file called Cheater lets you edit and print a reference card of your new codes.

You can also use up to a 10-key combination to define a macro key, and each macro can hold up to 254 characters. The number of macros you can define is staggering. For example, you can define a key as LET and use up to 254 keystrokes to create the beginning of a letter or a complete form.

You might use ENV as the macro to address an envelope. You create a file, type in an address in the first three or four lines, and then use the ENV macro key to move the address to the proper place on the envelope, place the return address in the upper left corner of the envelope, jump to the command mode, and use Block Print to print all the information on an envelope.

Remember, you have 254 keystrokes to use for the macro. If you combine this with the keystroke flexibility of the Model 4's CP/M, then the sky's the limit.

Express lets you type in more text than memory can hold. When the buffer fills, it sends part of its contents to disk, so the text can expand to fill the disk space.

You don't need to fear the "Disk full" message, because you can execute Rename, Copy, Erase, Type, DIR, and Log without leaving the program. If you run out of disk space, you can erase your backup files or use the Copy command to move files to another disk so that you won't worry about losing your text. Log gives you access to any disk or user area on your disks.

Spellsys

Spellsys requires no complicated installation; you can change a few defaults, but that's all. Because word processors use different codes as instructions for formatting, the Spellsys configuration program lets you set up the text-formatting codes you want to use; they won't interfere with the spelling checker. The setup is simple, and then you're ready to proceed to check the spelling in a file.

The program divides the process into three parts: checking the spelling, reviewing the results, and fixing the file. Each part has its own file that you can access independently. The most efficient way is to use the main program, SS, which coordinates the work of the three modules and does the housekeeping for the scratch files created during the checking and updating processes. Everything is menu-driven and easy to use.

When you call SS, the program asks for the file and its location. The checker sorts and counts the words and tells you the exact number of different words in the file. Next it checks the words against the 48,000-word dictionary file, and then against a dictionary file you have built. SS creates a file of words that it hasn't found. The file is used for the review.

The spelling checker can only list those words it doesn't find. That doesn't mean every listed word isn't spelled correctly; it just might not be in the dictionary. Also, a misspelled word might match another entry in the dictionary. For example, if you type "form" when you mean "from," the checker won't catch the error.

When SS collects the words it can't match, it presents you with several options. You can see the word in context, compare it to similar words in the SS dictionary, try variant spellings, add the word to your dictionary, and so on.

Write-Hand-Man

Write-Hand-Man (WHM) is also easy to configure for the Model 4; it involves only three steps. First, you indicate the terminal your computer emulates (ADM3A), then you choose the trigger character that activates WHM, and finally you determine if you want to reserve extra memory for the program to run other applications.

The problems that occur in configuring WHM for the Model 4 are similar to those for configuring Express. Choosing the terminal is easy, but, as with Express, sometimes CP/M looks for the control key in combination with keys that aren't on the Model 4 keyboard. The answer was to go to the CP/M Config program and program the F2 key for the proper control sequence. In WHM, the escape key (still F1) toggles you out of the program and its modules.

When you press the trigger key, you jump out of your application and into the WHM menu, from which you can choose Notepad, Dialing Phone Book, Calendar, Directory Read, View (ASCII files), Calculate, Keys, and Other.

You can make entries into Notepad and edit them with Wordstar control sequences. Phone Book uses the Hayes dialing scheme, but you must enter the hexadecimal (hex) address of your computer's RS-232C port. For the Model 4, that address is EB.

Calendar is a simple set of 14 pages

labeled from Monday through Sunday of the following week. When you've gone through the first week, pressing control-C clears the slate and moves the second week into the first slot so you can begin again.

WHM's strength is its ease of use, but the manual is not nearly as useful as the program.

Typing DIR (directory) causes WHM to look for a file, if you tell it what disk and user area to search. It can also give you a complete directory of any drive or user area you specify. It uses the present logged-in drive as the default.

Selecting View lets you page back and forth through an ASCII file. If you are in the midst of entering text and need to refer to another file, Calculate creates a calculator on which you can check the figures as you work in another program. Keys lets you set up and edit eight macro keys.

The Other option was originally placed in the menu to let you add your own programs to operate under the WHM environment. Then the author added some utilities, including Hex and ASCII, that you can call from the Other menu. As a result, Other is the option that gives WHM its real power.

Hex is a hex calculator, and entering ASCII displays a table of decimal and hex values for control codes and printable ASCII characters.

Other also includes Swap, a utility that lets you run a new program without exiting the one you're already in. Just press the trigger key, select "O" from the menu, and type SWAP. A prompt asks for the file that you want to use. Swap saves information about your current program to disk, and when you return to WHM and exit to your original application, Swap reads the file back into memory, refreshes the screen, and puts you back where you left off, as if you had never exited.

WHM also includes a cut-and-paste feature by which you can move data from Notepad, results from Calculate, and data from the View window into your other applications. For example, if you need an address from your Phone Book file, you can access it with View, store it as a macro key, and then use that key to paste it into your original application file—a nice feature.

The manual is not nearly as useful as the program it documents. It often tells you what you can do without telling you how. For example, it describes Swap without explaining that you access it through the "O" selection on the menu. All the manual tells you about autodialing is that it is a feature.

WHM's strength is its ease of use, but the documentation weakens its usefulness.

Summary

These three programs are excellent starter programs for the new CP/M user. Express 2.0 with Roff4 and Spellsys form a sophisticated word-processing package for less than $70, and Write-Hand-Man is a convenient windowing/desk accessory.

Look for a public-domain version of Express in the download section of the *80 Micro* bulletin board (603-924-6985). ■

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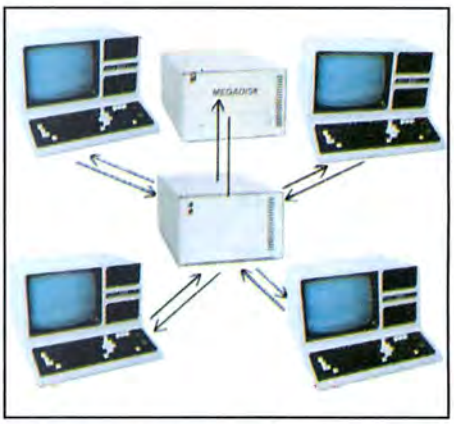

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Evelyn Wood Dynamic Reader

Evelyn Wood Dynamic Reader runs on the Tandy 1000/1200/3000. Timeworks Inc., 444 Lake Cook Road, Deerfield, IL 60015, 312-948-9200. $89.95.

Evelyn Wood's name has long been associated with faster reading. Now this two-disk set containing 10 reading lessons and 50 exercises with a supplemental reading book lets you take her famous course on your computer and promises to get you reading at two to 10 times your present rate.

The basic strategy behind the Wood method is to force you to break the habit of vocalizing each word, either audibly or mentally, as you read it. The course gradually increases the speed at which you read through text: On-screen and supplemental reading gives you lots of practice, and frequent tests assure that you understand what you're reading. Progress reports let you see how you're doing.

The program takes a long time to load new tasks from the main menu, and since you must run it from a floppy, single-disk users might be doing a lot of disk swapping. —*John McCormick*

Word for Word

Word for Word runs on the Tandy 1000/1200/3000 (256K) and requires two floppy drives or one floppy and a hard drive. Mastersoft Inc., 4621 N. 16th St., Suite A-108, Phoenix, AZ 85016, 602-277-0900. $149.

Word for Word (WFW) is a file-conversion utility that lets you translate the file format of one brand of word-processing software to another.

WFW supports Wordstar, Wordperfect, Multimate, PFS:Write, IBM Writing Assistant, Volkswriter, and several communications formats. However, it doesn't support IBM Displaywrite's document context architecture (DCA) format, which has nearly become a standard in the word-processing environment.

I used WFW to translate files between Wordstar, Wordperfect, and Multimate formats. Although Wordstar is probably the best-known file format on the market, WFW could not handle simple translations like removing the soft spaces from justified text.

WFW also had problems converting simple headers and footers. It incorrectly translated centered Multimate titles and page numbers when converting to a Wordperfect document. WFW also changed all the fancy line-draw characters to standard ANSI characters even though both word processors allow such characters. In the conversion process, WFW set the margins and tabs for each page. It overrode Wordperfect's default settings and eliminated the top and left margins.

The utility also has problems with forced page ends. Wordperfect automatically determines page length and does not require a forced page break, although Multimate does. WFW inserted hard page breaks corresponding to the Mulitmate page ends in some places—but not in every place.

WFW didn't perform conversions to Wordstar format well, either. It converted Wordstar's five-space tabs to eight spaces and wouldn't even attempt justification. Each soft hyphen had a hard return at the end of the line, forcing an abnormal paragraph structure. The utility added hard carriage returns to many lines, which made the lines hard to format within Wordstar. WFW ignored multiple-spacing commands entirely; in Wordstar that means you have to edit the entire document if you want additional carriage returns between the paragraphs.

WFW is also a large program: It comes on two disks and took up over 300K on my hard disk, even though I'd only loaded selected files. On the other hand, it's the fastest conversion utility I've ever used.

So what's the verdict? WFW does support most of the popular IBM-compatible word processors, but omitting Displaywrite's DCA format was a serious oversight. You'll probably have to do some work cleaning up the files WFW translates for you. But if you want to transfer files between word-processing programs that WFW supports, you'll find it does an adequate job. —*John B. Harrell*

ICLE

ICLE runs on the Model 4/4P/4D (64K) and requires TRSDOS 6.2 and one disk drive. AISE, 1799-D S. Lee St., Lakewood, CO 80226, 303-989-6068. $14.95.

TRSDOS 6.2 lacks one useful feature—a command-line editor. Often the Model 4 aborts long, intricate commands because the program you're writing contains syntax errors or parameter misuse.

ICLE gives TRSDOS the command line editor it lacks. With ICLE installed, the familiar TRSDOS Ready prompt changes to ICLE Ready. Although the ICLE Ready command interpreter functions much the same as its TRSDOS counterpart, a few important differences between the two exist. The shift-clear keys now replace the left arrow to backspace and erase. Pressing the F1 key places ICLE in the edit mode. While in the edit mode, ICLE displays the last 20 commands at the top of the screen, while the command you're editing appears on the bottom display line.

Along with its editing capabilities, ICLE automatically performs string substitutions, such as changing a period to a slash in file names to avoid an error.

ICLE can also avert errors by performing either literal- or command-string substitutions. ICLE permits up to 20 string substitutes at any given time. Once in the substitution mode, you change substitutes with an editor that is similar to the ICLE edit-mode editor.

An excellent 16-page manual covers ICLE's features in sufficient detail. The only drawback to the utility is that after it completes a command, it takes a little longer for the ICLE Ready prompt to appear than it does for the TRSDOS Ready prompt. —*Mark D. Goodwin*

Wrong Answers to Non-Problems

Advanced Microsoft Word by Mark Brownstein, Osborne McGraw-Hill, 2600 Tenth St., Berkeley, CA 94701, 800-227-0900, $17.95.

Word is a complex program, and the manuals accompanying release 1.0 were terribly inadequate. Version 2.0 was a major improvement, and the documentation for version 3.0 is among the best I've seen. The on-disk tutorial, which you can access while editing a document, has received rave reviews.

Brownstein's book, *Advanced Microsoft Word*, then is a solution to a problem that doesn't exist. Still, it can be helpful to read a subject presented from a different viewpoint. Also, books of this type are usually sprinkled with helpful hints, and this one is no exception.

Unfortunately, *Advanced Microsoft Word* is also sprinkled with errors, descriptions of non-existent commands, and inaccurate procedural explanations. I found 18 errors in three early chapters. Hyphenation, described twice, is presented incorrectly in both places.

Some explanations are much less clear than their counterparts in the Microsoft manual. The author's terminology is sometimes inconsistent with that of the Microsoft manual. For instance, what Microsoft calls optional hyphens, he calls soft hyphens.

The book covers all Word's major features, but some advanced topics are given only cursory treatment. For example, index and table-of-contents generation gets a total of eight pages compared to 30 pages in the Word manual.

In the forward, the author admits he is unfamiliar with Word when he started the book. Any good advice, and there is probably some, is overshadowed by the numerous errors. —David Williams

Circle 250 on Reader Service card.

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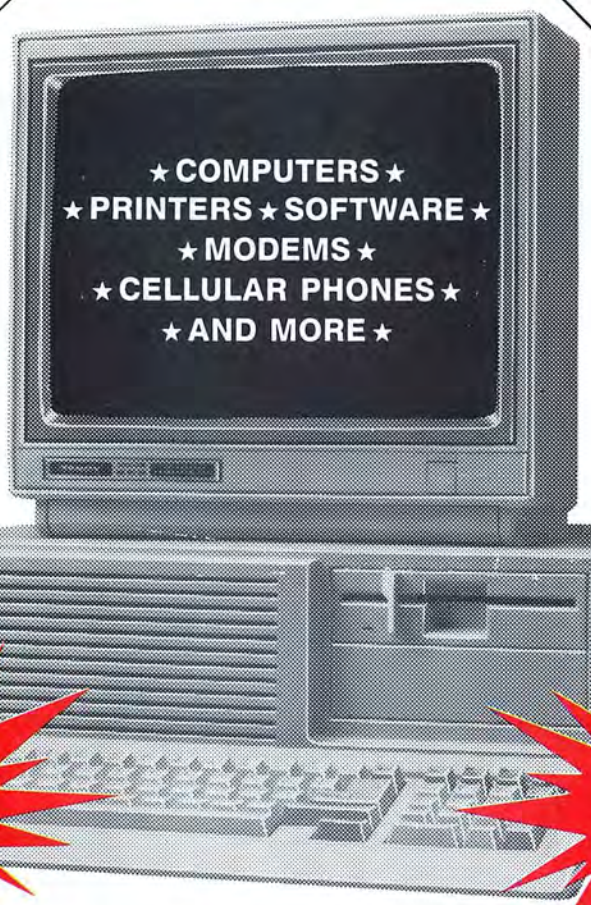

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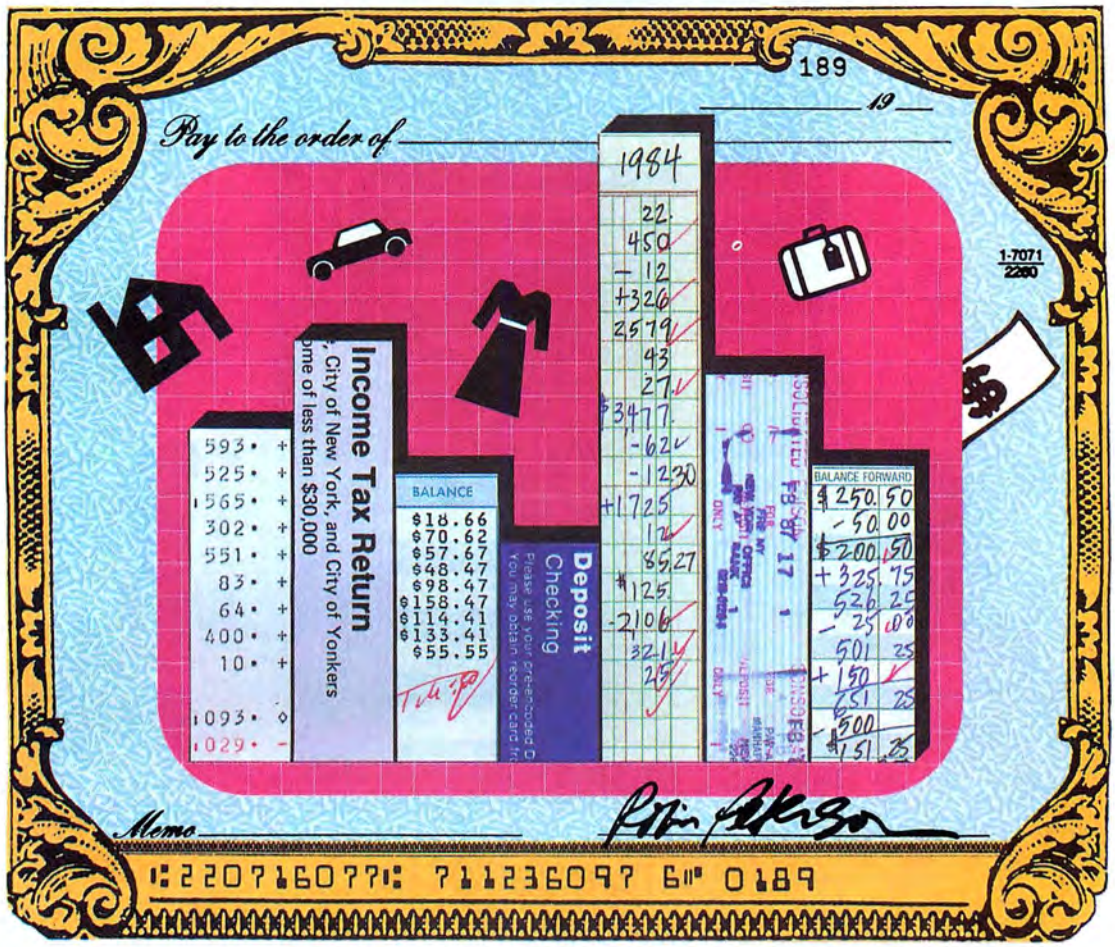

Tally and Track

Organize the checks you write by category; prepare yourself for tax time.

by David Jenkins

Illustration by Robin Peterson

Budget Balancer is a menu-driven budget-analyzing program for the Tandy 1000 that features screen or printer listings of the status of up to 26 individual accounts. (Changes for the Model 4 appear below.) With this program, you can obtain budget information for each separate category or all categories combined. In addition, the program includes routines to balance a checkbook and list checks that have a bearing on tax deductions.

The program creates a random-access file called Sample87.BUD. This file contains information on every check you enter. Each record in the file contains the check number, date, the account code, the payee, the check amount, and code indicating tax-deduction status.

Upon startup, Budget Balancer (see the Program Listing) checks the number of records in the file. If you are using Budget Balancer for the first time and Sample87.BUD is not on the disk, the program creates the file and reports that the file has zero records. After displaying the number of records, the main program menu appears on the screen with the following choices:

1. Enter Checks
2. View Accounts
3. Print Accounts
4. Taxable Entries
5. Balance Checkbook
6. Edit File
7. End Program

Your Accounts

Lines 130–150 control the account titles and the monthly budget amount. Presently, Budget Balancer has 19 different accounts; you can define up to 26. If you are using the program for your own budget, you would have to type in new information in the Data statements. You need to coordinate the data so that the first budget item you enter in line 130 has its budget amount as the first data element in line 150. Lines 190 and 200 read the data into the arrays, and you need to change the numbers to reflect the number of budget items created. (For example, if you want 20 items, the For. . .Next loop would be FOR T = 1 TO 20.)

System Requirements

Model 1000/3000
Model 4 with changes
64K RAM
Basic
Available on The Disk Series

On-Screen Budget

To begin operating the program, choose option 1 (Enter Checks) to enter your check information. Screen prompts tell you what to enter from the keyboard. The module has several error traps designed to prevent later problems in file output to the screen and printer. One error trap ensures that check numbers are within the range of 1 to 9999. (A patch below lets you exceed that amount.) Other traps format the data using two digits for the month and day and check that the account code is in the range of 1 to 26.

Once you have entered information for each check, a message asks you if the information is correct. If you spot an error in data entry, a response of "N" lets you reenter the check information. It is important to check the screen when you see this prompt because the program flows to the routine that places this information on the disk file. However, should you send erroneous information to the file, the program contains a file editor (Edit File, discussed below) that lets you correct the information in the record.

The routine of entering checks cycles until you want to end input for that particular session. The program then returns to the main menu. Since the program places check records sequentially, you can enter check information, end the session, then days later return and continue entering information right where you left off.

You might write a check to an all-purpose store where the items you purchase fit into a variety of budget categories. You can enter the check information, select one of the categories, and enter that portion of the check pertaining to that budget item. To complete entry for the other items paid by that check, you would repeat the process, selecting a subsequent category and amount, until you enter all accounts for that check.

The program does not request the year of the check. It automatically places the year (87) in the file, which saves some data-entry time. Methods to change the year and create a new file for that year are covered below.

Photo 1 shows an example of the process of entering checks in the file.

The second module, View Accounts, lets you look at all checks that apply to a

Photo 1. Entering a check into Budget Balancer.

Photo 2. Viewing checks for a selected category.

selected budget category. You can designate output to either the screen or printer. This routine totals the checks and prints the budget allotted for the year up to the current month as well as the account's balance (see Photo 2).

Print Accounts (option 3) permits you to print out the entire contents of the file or obtain a summary of all accounts, check entries, and budget balance for each month. You can direct the output to the screen or printer. Since you can use the summary to examine many or all categories, you might want to send the output to the printer.

You would examine the file's contents to look for possible data-entry errors and to obtain the record number for items needing correction. The Edit File routine requires the record number.

The Taxable Entries routine (option 4) works in the same manner as Print Accounts. However, it displays only checks that have tax status. Photo 3 shows a sample tax summary.

Balance Checkbook

I included the Balance Checkbook routine (option 5) to facilitate reconciling the checkbook register. Assuming you, like myself, might let the register slide awhile, this routine can make the job faster.

The first prompt in this routine asks for the current balance. Enter the last balanced amount on the checkbook register. Next enter the check amount; the routine automatically deducts the debit and displays the new balance on screen. It repeats this cycle until you enter the number zero for a debit amount. To enter deposits, as they occur on a register, place a minus sign before the amount. Photo 4 shows an example of the checkbook-balancing procedure.

Fixing Errors

Budget Balancer has two features to let you correct information you entered erroneously: one in the Enter Checks section and the other in the Edit File module. In Enter Checks, you simply retype the information for the current entry. Edit File (option 6) lets you pull up a specified record and change one item.

To edit a record in the file, you must know the record number. The Edit File module prompts you for that information. If you don't know the record number, you are directed to the print file segment of the Print Accounts routine. Once you enter the record number in the Edit File routine, it displays the check information on screen; you select a number corresponding to the material you need to change. Then the routine prompts you to type in the correct information (see Photo 5). Last, it places the record with its corrected information on the disk file in its original location.

Changing items is best done at the data-entry mode rather than after the fact. However, you might find even the Edit File module insufficient. You can add a third option to let you make multiple changes for a single record. You would need to add a conditional statement in the edit routine such as the following:

```
1605 INPUT "ARE THERE MORE CHANGES
     FOR THIS RECORD (Y/N) ";Y$:IF Y$ = "Y"
     OR Y$ = "y" THEN CLS:GOTO 1580
```

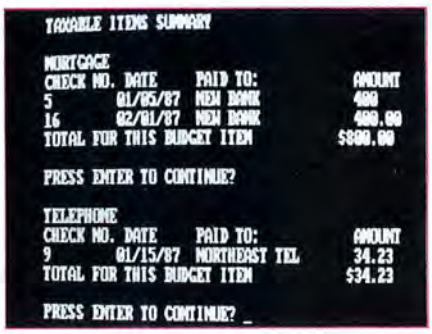

Photo 3. A sample tax summary.

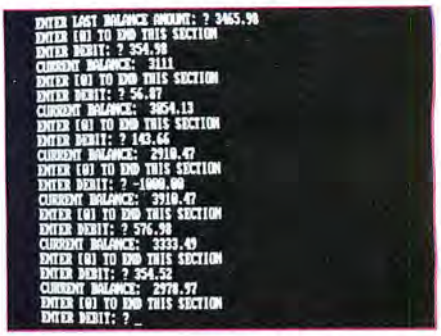

Photo 4. The checkbook-balancing procedure.

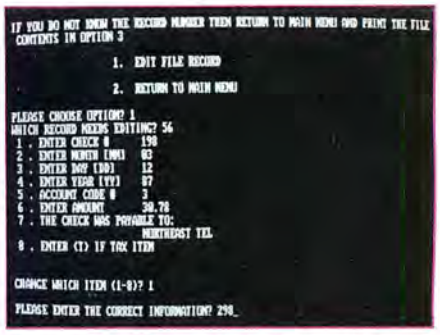

Photo 5. Editing a record already on file.

Adjustments

To increase the amount for the number of checks (going from 9999 to a maximum amount of 99999), make the following changes. (These are not the complete list-

Program Listing. Budget Balancer. See p. 100 for information on using checksums.

```
10 ' ********** BUDGET BALANCER ***********                              
20 ' ********** BY DAVID JENKINS *************                          
30 ' ******** DUBLIN, NEW HAMPSHIRE ********                            
40 '                                                                    
50 CLS :KEY OFF:CLEAR 10000                                        '*  1623
60 DIM D$(26,100),CH$(150),L$(26),M(26),MT(26), MN(26), F$(8), B$(8) '*  3399
70 OPEN "SAMPLE87.BUD" AS #1 LEN=39                                '*  2087
80 NUM% =LOF(1)/39                                                 '*  1016
90 PRINT"THERE ARE "NUM%" RECORDS IN THE FILE..."                  '*  3063
100 FOR T=1 TO 400:NEXT                                            '*  1386
110 FIELD #1,4 AS B$(1),2 AS B$(2),2 AS B$(3),2 AS B$(4),2 AS B$(5),6
     AS B$(6),20 AS B$(7),1 AS B$(8)                               '*  5035
120 '***DATA ****
130 DATA MORTGAGE,ELECTRICITY,TELEPHONE,LOAN (SNOWTHROWER),AUTO PAYME
    NT,LOAN (ADDITION),SON'S ALLOWANCE,GIFTS,AUTO INSURANCE,CLOTHING,
    FOOD,AUTO MAINTENANCE,GASOLINE,POSTAGE,ENTERTAINMENT,HOUSEHOLD  '*  6284
140 DATA TRAVEL, SAVINGS, GROOMING                                 '*  2258
150 DATA 400,40,25,210,130,150,20,10,40,38,200,120,20,20,5,10,10,10,2
    0                                                              '*  3417
160 DATA ENTER CHECKS,VIEW ACCOUNTS,PRINT ACCOUNTS,TAXABLE ENTRIES,BA
    LANCE CHECKBOOK,EDIT FILE,END PROGRAM                          '*  7247
170 DATA ENTER CHECK #,ENTER MONTH [MM],ENTER DAY [DD],ENTER YEAR [YY
    ],ACCOUNT CODE #,ENTER AMOUNT,"THE CHECK WAS PAYABLE TO:","ENTER
    <T> IF TAX ITEM"                                               '*  9905
180 '**** READ DATA ****
190 FOR T= 1 TO 19:READ L$(T):NEXT                                 '*  2036
200 FOR T= 1 TO 19:READ M(T):NEXT                                  '*  1993
```

Listing continued

ings of each line but the portions of each line as they should read.)

70 LEN = 40
110 .5 AS B$(1)
320 LEN(F$(1))>5
790 and 800 TAB(6)B$(1)

You should change lines 80, 580, 780, 860, 1190, and 1620 so that they include the following portion:

LOF(1)/40

To change the year and start a new random file for that year, change the following portions of these lines:

70 OPEN "SAMPLE88.BUD"
300 F$(4) = "88"

To run this program on the Model 4, you need to change line 70 to:

70 OPEN "D",1,"SAMPLE87/BUD",39

Also, remove the characters /39 from lines 80, 580, 780, 860, 1190, and 1620.■

David Jenkins is a programming teacher at Conval High School and was the New Hampshire alternate for the NASA teacher in space project. Write to him at RFD #2, Box 126B, Peterborough, NH 03458.

Listing continued

```
210 FOR T=1 TO 7:READ A$(T):NEXT                                        '*  1935
220 FOR T=1 TO 8: READ C$(T):NEXT                                       '*  1971
230 '**** MAIN PROGRAM OPTIONS
240 CLS:PRINT"THERE ARE "NUM%" RECORDS IN THE FILE..."                  '*  3392
250 PRINT:PRINT:PRINT TAB(25)"BUDGET PROGRAM OPTIONS"                   '*  3588
260 FOR T=1 TO 7:PRINT TAB(25)T". " A$(T):NEXT                          '*  2714
270 PRINT:INPUT"PLEASE CHOOSE OPTION";A                                 '*  2660
280 ON A GOTO 290,460,680,1110,1380,1480:END                            '*  2381
290 '***** ENTER CHECKS *********
300 CLS:F$(4)="87"                                                      '*   942
310 FOR T= 1 TO 3:PRINT T". "C$(T);:INPUT F$(T):NEXT                    '*  3129
320 IF LEN(F$(1))>4 THEN PRINT"CHECK NUMBER IS TOO LARGE":GOTO 310      '*  4089
330 IF LEN(F$(2))<>2 OR LEN(F$(3))<>2 THEN PRINT"INCORRECT DATE":GOTO
    310                                                                 '*  4391
340 PRINT"ENTER THE ACCOUNT CODE: ":GOSUB 1440                          '*  2924
350 FOR T=5 TO 8:PRINT T". "C$(T);:INPUT F$(T):NEXT                     '*  3110
360 IF VAL(F$(5))<1 OR VAL(F$(5))>26 THEN PRINT"INVALID ACCOUNT CODE.
    .";:INPUT" THE CORRECT CODE IS";F$(5):GOTO 360                      '*  7079
370 INPUT"IS THE ABOVE DATA CORRECT (Y/N)";Y$                           '*  2851
380 IF Y$= "N" OR Y$="n" THEN 290                                       '*  1837
390 NUM%=NUM% + 1:FLAG=0                                                '*  1408
400 '**** MOVE CHECK INFORMATION TO RANDOM ACCESS FILE *****
410 FOR T=1 TO 8:LSET B$(T)=F$(T):NEXT T:PUT 1,NUM%                     '*  3124
420 PRINT"DUMPING RECORD NUMBER "NUM%" IN THE DATA FILE"                '*  3598
430 IF FLAG=1 THEN RETURN                                               '*  1597
440 INPUT"DO YOU WISH TO ENTER MORE DATA (Y/N)";Y$                       '*  3204
450 IF Y$="N" OR Y$="n" THEN 230 ELSE 290                               '*  2313
460 'VIEW ACCOUNTS
470 CLS:PRINT TAB(21)"VIEW ACCOUNTS OPTIONS"                            '*  2906
480 PRINT:PRINT TAB(20)"1. SELECT ACCOUNT"                              '*  2666
490 PRINT:PRINT TAB(20)"2. RETURN TO MAIN MENU"                         '*  3004
500 PRINT:INPUT"PLEASE CHOOSE OPTION";P                                 '*  2671
510 ON P GOTO 520,230:GOTO 460                                          '*  1729
520 CLS:GOSUB 1440                                                      '*  1084
530 PRINT:INPUT"PLEASE INDICATE ACCOUNT NUMBER";N                       '*  3341
540 INPUT"WHAT IS THE CURRENT MONTH [MM]";MD                            '*  2981
550 GOSUB 1630:V=0                                                      '*  1057
560 CLS:IF P$="S" THEN PRINT TAB(25)L$(N) ELSE LPRINT TAB(25)L$(N)      '*  3976
570 IF P$="S" THEN PRINT"CHECK NO.";TAB(10)" DATE "; TAB(20)"PAID TO
    :";TAB(50)"AMOUNT" ELSE LPRINT"CHECK NO.";TAB(10)" DATE ";TAB(20)
    "PAID TO :";TAB(50)"AMOUNT"                                         '*  9535
580 FOR T=1 TO LOF(1)/39:GET 1,T:VL=VAL(B$(5))                          '*  2699
```

Listing continued

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```
590 IF VL=N THEN V=V+VAL(B$(6))                                          '*  1854
600 IF P$="S" AND VL=N THEN PRINT B$(1);TAB(10)B$(2)+"/"+B$(3)+"/"+B$
    (4);TAB(20)B$(7);TAB(50)B$(6) ELSE IF VL=N THEN LPRINT B$(1);TAB(
    10)B$(2)+"/"+B$(3)+"/"+B$(4);TAB(20)B$(7);TAB(50)B$(6)               '* 10110
610 NEXT T                                                               '*   618
620 IF P$ = "S" THEN PRINT ELSE LPRINT                                   '*  2349
630 IF P$="S" THEN PRINT"THE ACCOUNT TOTAL IS ";TAB(20)USING"$$#####.
    ##";V ELSE  LPRINT"THE ACCOUNT TOTAL IS ";TAB(20)USING"$$#####.##
    ";V                                                                  '*  8136
640 IF P$="S" THEN PRINT"BUDGET AMOUNT Y-T-D IS ";TAB(20)USING"$$####
    #.##";M(N)*MD ELSE LPRINT"BUDGET AMOUNT Y-T-D IS ";TAB(20)USING"$
    $#####.##";M(N)*MD                                                   '*  8987
650 IF P$="S" THEN PRINT"ACCOUNT BALANCE IS ";TAB(20)USING"$$#####.##
    ";(M(N)*MD)-V ELSE LPRINT"ACCOUNT BALANCE IS";TAB(20)USING"$$####
    #.##";(M(N)*MD)-V                                                    '*  8854
660 PRINT:INPUT "PRESS ENTER TO RETURN TO ACCOUNT OPTIONS";E$            '*  4165
670 GOTO 460                                                             '*   688
680 '***** PRINT ACCOUNTS *******
690 CLS:PRINT TAB(21)"PRINT ACCOUNTS OPTIONS"                            '*  2992
700 PRINT:PRINT TAB(20)"1. PRINT CONTENTS OF DATA FILE"                  '*  3522
710 PRINT:PRINT TAB(20)"2. PRINT FILE DATA BY ACCOUNT"                   '*  3433
720 PRINT:PRINT TAB(20)"3. RETURN TO MAIN MENU                           '*  2967
730 PRINT:INPUT "PLEASE CHOOSE OPTION";P                                 '*  2708
740 ON P GOTO 750,830,230:GOTO 680                                       '*  1942
750 '** ALL DATA IN FILE **
760 GOSUB 1630                                                           '*   807
770 IF P$="S" THEN PRINT"LISTING CONTENTS OF THE DATA FILE" ELSE LPRI
    NT"LISTING CONTENTS OF THE DATA DILE"                                '*  6953
780 FOR T= 1 TO LOF(1)/39:GET 1,T                                        '*  1908
790 IF P$="S"THEN PRINT T". "TAB(7)B$(1) TAB(13)B$(2)"/"B$(3)"/"B$(4)
    TAB(21)B$(5)TAB(25)B$(7)TAB(45)B$(6)TAB(55) B$(8) :IF T MOD 22=0
    THEN PRINT:INPUT"PRESS ENTER TO CONTINUE";E$                         '* 10162
800 IF P$="P"THEN LPRINT T"."TAB(7)B$(1)TAB(13)B$(2)"/"B$(3)"/"B$(4)T
    AB(21)B$(5)TAB(25)B$(7)TAB(45)B$(6)TAB(55)B$(8)                      '*  6180
810 NEXT T:PRINT:INPUT"PRESS ENTER TO RETURN TO ACCOUNT OPTIONS";E$      '*  4623
820 GOTO 680                                                             '*   689
830 '**** TOTALS BY ACCOUNT
840 GOSUB 1630                                                           '*   806
850 FOR T=1 TO 26:MN(T)=0:MT(T)=0:NEXT                                   '*  2334
860 FOR T=1 TO LOF(1)/39                                                 '*  1384
870 GET 1, T: K=VAL(B$(5)):J=VAL(B$(6))                                  '*  2164
880 MN(K)=MN(K)+J                                                        '*   992
890 MT(K)=MT(K)+1                                                        '*   980
900 D$(K,MT(K))=B$(1)+"-"+B$(2)+"/"+B$(3)+"/"+B$(4)+"-"+B$(5)+B$(6)+B
    $(7)                                                                 '*  3398
910 NEXT T                                                               '*   621
920 IF P$="S" THEN PRINT "ACCOUNT SUMMARY" ELSE LPRINT "ACCOUNT SUMMA
    RY"                                                                  '*  4718
930 FOR T=1 TO 19                                                        '*   978
940 IF P$="S" THEN PRINT L$(T) ELSE LPRINT L$(T)                         '*  2908
950 IF P$="S" THEN PRINT STRING$(20,".") ELSE LPRINT STRING$(20,".")     '*  4043
960 IF P$="S" THEN PRINT ELSE LPRINT                                     '*  2292
970 IF P$="S" THEN PRINT "CHECK NO.";TAB(10)" DATE ";TAB(20)"PAID TO:
    ";TAB(40)"AMOUNT" ELSE LPRINT "CHECK NO.";TAB(10)"DATE";TAB(20)"P
    AID TO:";TAB(40)"AMOUNT"                                             '*  9441
980 FOR H=1 TO MT(T)                                                     '*  1191
990 CH$(H+1)=MID$(D$(T,H+1),6,2)                                         '*  1679
1000 A$=LEFT$(D$(T,H),4):B$=MID$(D$(T,H),6,8):F$=RIGHT$(D$(T,H),20):G
     $=MID$(D$(T,H),17,6)                                                '*  4866
1010 CH$(H)=LEFT$(B$,2):IF P$="S" THEN PRINT A$ TAB(10)B$ TAB(20)F$ T
     AB(40)G$ ELSE LPRINT A$ TAB(10)B$ TAB(20)F$ TAB(40)G$               '*  6840
1020 J=VAL(G$):TL=TL+J                                                   '*  1333
1030 IF CH$(H)=CH$(H+1) THEN 1050 ELSE IF P$="P" THEN LPRINT STRING$(
     65,".");:LPRINT TAB(5)"TOTAL FOR MONTH "CH$(H) ;TAB(25)TL;:LPRIN
     T TAB(33)"BUDGET AMOUNT "M(T);:LPRINT TAB(55)"ACCOUNT BALANCE "M
     (T)-TL:LPRINT: TL=0                                                 '* 13294
1040 IF P$="S" THEN PRINT STRING$(65,".");:PRINT TAB(5)"TOTAL FOR MON
     TH "CH$(H) ;TAB(25)TL;:PRINT TAB(33)"BUDGET AMOUNT "M(T);:PRINT
     TAB(55)"ACCOUNT BALANCE "M(T)-TL:PRINT: TL=0                        '* 11008
1050  CH=VAL(CH$(H)):NEXT H                                              '*  1579
1060 IF P$="S" THEN PRINT TAB(15)"Y-T-D BUDGET AMOUNT:"TAB(40)USING"$
     $#####.##"; M(T)*CH:PRINT TAB(15)"TOTAL EXPENDITURE: " TAB(40)US
     ING"$$#####.##";MN(T)                                               '*  9027
1070 IF P$="P" THEN LPRINT TAB(15)"Y-T-D BUDGET AMOUNT:"TAB(40)USING"
     $$#####.##"; M(T)*CH:LPRINT TAB(15)"TOTAL EXPENDITURE: " TAB(40)
     USING"$$#####.##";MN(T)                                             '*  9177
1080 IF P$="S" THEN PRINT TAB(15)"Y-T-D ACCOUNT BALANCE:"TAB(40)USING
     "$$#####.##";(M(T)*CH)-MN(T) ELSE LPRINT TAB(15)"Y-T-D ACCOUNT B
     ALANCE:"TAB(40)USING"$#####.##";(M(T)*CH)-MN(T)                     '* 10512
1090 IF P$="S" THEN PRINT:INPUT "PRESS ENTER TO CONTINUE";E$:PRINT       '*  4329
1100 NEXT T:GOTO 680                                                     '*  1222
1110 ' TOTALS OF TAXABLE ITEMS
1120 CLS:PRINT TAB(21)" TAXABLE ITEMS OPTIONS"                           '*  2955
1130 PRINT:PRINT TAB(20)"1. PRINT CHECK NUMBERS AND INFORMATION"         '*  4166
1140 PRINT:PRINT TAB(20)"2. RETURN TO MAIN MENU"                         '*  3045
1150 PRINT:INPUT"PLEASE CHOOSE OPTION";P                                 '*  2721
1160 ON P GOTO 1170,230:GOTO 1110                                        '*  1870
1170 GOSUB 1630                                                          '*   851
1180 FOR T=1 TO 26:MN(T)=0:MT(T)=0:NEXT                                  '*  2379
1190 FOR T=1 TO LOF(1)/39                                                '*  1429
1200 GET 1,T:K=VAL(B$(5)):J=VAL(B$(6)):W$=B$(8)                          '*  2617
1210 IF W$="T" OR W$ ="t" THEN 1220 ELSE 1240                            '*  2488
1220 MN(K)=MN(K)+J:MT(K)=MT(K)+1                                         '*  1874
1230 D$(K,MT(K))=B$(1)+"-"+B$(2)+"/"+B$(3)+"/"+B$(4)+"-"+B$(5)+B$(6)+
     B$(7)                                                               '*  3443
1240 NEXT T                                                              '*   666
1250 IF P$="S"THEN CLS:PRINT "TAXABLE ITEMS SUMMARY" :PRINT ELSE LPRI
     NT "TAXABLE ITEMS SUMMARY":LPRINT                                   '*  6845
1260 FOR L=1 TO 19                                                       '*  1015
1270 IF MN(L)=0 THEN 1360                                                '*  1399
1280 IF P$="S" THEN PRINT L$(L) ELSE LPRINT L$(L)                        '*  2938
1290 IF P$="S" THEN PRINT"CHECK NO.";TAB(10)" DATE ";TAB(20)"PAID TO:
     ";TAB(40)"AMOUNT" ELSE LPRINT"CHECK NO. ";TAB(10)"DATE";TAB(20)"
     PAID TO:";TAB(40)"AMOUNT"                                           '*  9453
1300 FOR H= 1 TO MT(L)                                                   '*  1250
1310 IF P$="S" THEN PRINT LEFT$(D$(L,H),4);TAB(10) MID$(D$(L,H),6,8);
      TAB(20) RIGHT$(D$(L,H),20); TAB(40) MID$(D$(L,H),17,6) ELSE LPR
     INT LEFT$(D$(L,H),4);TAB(10) MID$(D$(L,H),6,8); TAB(20) RIGHT$(D
     $(L,H),20); TAB(40) MID$(D$(L,H),17,6)                              '* 12984
1320 IF P$="S" THEN IF H MOD 20=0 THEN PRINT :INPUT"PRESS ENTER TO CO
     NTINUE";E$:PRINT                                                    '*  5434
1330 NEXT H                                                              '*   654
1340 IF P$="S" THEN PRINT"TOTAL FOR THIS BUDGET ITEM"; TAB(35) USING"
     $$#####.##";MN(L) ELSE LPRINT"TOTAL FOR THIS BUDGET ITEM"; TAB(3
     5)USING"$$#####.##";MN(L)                                           '*  9477
1350 IF P$="S" THEN PRINT:INPUT"PRESS ENTER TO CONTINUE";E$:PRINT        '*  4296
1360 NEXT L                                                              '*   661
1370 GOTO 1110                                                           '*   775
1380 '****** BALANCE CHECKBOOK *******
1390 A=0:CLS:INPUT"ENTER LAST BALANCE AMOUNT: ";A                        '*  3175
1400 PRINT"ENTER [0] TO END THIS SECTION"                                '*  2691
1410 INPUT"ENTER DEBIT: ";B:IF B=0 THEN 230                              '*  2611
1420 A=A-B:PRINT"CURRENT BALANCE: ";A                                    '*  2335
1430 GOTO 1400                                                           '*   774
1440 '****** DISPLAY ACCOUNT TITLES *******
1450 FOR T= 1 TO 12                                                      '*  1049
1460 PRINT TAB(10)T". "L$(T);TAB(50)T+12". "L$(T+12)                     '*  2811
1470 NEXT T:RETURN                                                       '*  1209
1480 '****** FILE EDITOR ********
1490 CLS:PRINT TAB(21)"EDIT OPTIONS                                      '*  2262
1500 PRINT:PRINT"IF YOU DO NOT KNOW THE RECORD NUMBER THEN RETURN TO
     MAIN MENU AND PRINT THE FILE CONTENTS IN OPTION 3"                   '*  7988
1510 PRINT:PRINT TAB(20)"1.  EDIT FILE RECORD                            '*  2795
1520 PRINT:PRINT TAB(20)"2.  RETURN TO MAIN MENU                         '*  3045
1530 PRINT:INPUT"PLEASE CHOOSE OPTION";P                                 '*  2723
1540 ON P GOTO 1550,230:GOTO 1480                                        '*  1884
1550 INPUT"WHICH RECORD NEEDS EDITING";RN                                '*  2719
1560 GET 1,RN:FOR T=1 TO 8:F$(T)=B$(T):NEXT                              '*  2577
1570 FOR T=1 TO 8:PRINT T". "C$(T);TAB(25)F$(T):NEXT                     '*  3068
1580 PRINT:INPUT"CHANGE WHICH ITEM (1-8)";D:IF D<1 OR D>8 THEN 1580      '*  4105
1590 PRINT:INPUT"PLEASE ENTER THE CORRECT INFORMATION";I$                '*  3875
1600 F$(D)=I$                                                            '*   656
1610 NUM%=RN:FLAG=1:GOSUB 400                                            '*  1802
1620 NUM%=LOF(1)/39:FLAG=0:GOTO 1480                                     '*  2138
1630 INPUT"DO YOU WANT OUTPUT ON THE SCREEN [S] OR PRINTER [P] ";P$      '*  4510
1640 IF INSTR("SsPp",P$)=0 THEN 550                                      '*  2139
1650 IF P$="s" THEN P$="S" ELSE IF P$="p" THEN P$="P"                    '*  3051
1660 RETURN                                                              '*   717
```

End

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Taking Stock of Your Stock

Illustration by Robin Peterson

Follow your stock investments with a minimum of input.

by R. J. Richardson

Stoctrac provides the small New York Stock Exchange (NYSE) investor with what he or she needs to track a portfolio on a Tandy 1000. (Changes to allow it to run on a Model III or 4 appear later on.) Stoctrac is simple in construction, avoiding the large amount of data input other programs require.

I have used this program for over 10 years to follow the performance of a stock portfolio. It does not predict, nor does it make anything resembling "buy" or "sell" guesses. What Stoctrac does provide, however, is a multitude of useful facts about your portfolio, so that you can make informed guesses, and a way to track a sample group of stocks.

Stoctrac (see the Program Listing) uses about 18K of RAM, is written in Basic, and can be easily customized. I have dimensioned Stoctrac to contain up to 20 different entries (stocks), but you can change that number by changing the value of the NS variable in line 10. Changing line 10 to read 10 NS = 30, for example, lets the program accept up to 30 different stocks, providing you have sufficient RAM. Conversely, you can lower the NS variable if you want the Stoctrac program to occupy less memory.

Establishes Two Files

Stoctrac establishes two files. The first (labeled Stoctrac.TXT) contains the stocks that make up your stock portfolio. This file is set up after you have entered your stocks into the program. Keep in mind that each time you initialize the program using menu choice 1, you erase and write over any data that previously existed in that file. Thus, you should initialize the program only once, unless you want to change the entire portfolio.

The second file that Stoctrac establishes is labeled Stoctrac.DAT. Stoctrac handles this file automatically. It is composed of stock prices (and other data) from the previous week (or whenever the program was last run) and serves to indicate comparative stock performance.

Program Initialization

Initialize the program the first time you run it or whenever you want to enter a new portfolio. Initialization (using menu choice 1) installs your stocks in a disk file call Stoctrac.TXT. Enter the stock symbol you have chosen, the number of shares bought, the total buy price, and date of purchase. You must press enter after each entry.

You are given a chance to review your entries before they are placed on disk. If an error slips by, you can use menu choice 4 to correct it.

Deleting or Adding a Stock

With menu choice 2 you can add or delete a stock from your portfolio file. The changes are written to disk after you are finished.

If you add a stock to the portfolio file and then go to menu choice 5 (the body of the program), the stock's previous week's value will be zero since it was not on the disk the previous week, and calculations relating to that figure will be wrong.

This situation will correct itself the next time you run the program. Likewise, a deleted stock throws off the numbers read in from disk, but, as above, this situation will be corrected the next time you run the program.

Entering a Stock Split

You can enter a stock split using menu choice 3. Remember to use the after-split share price for the buy price after you enter the split. However, if you don't, the situation corrects itself when you next run the program.

System Requirements

Tandy 1000/1200/2000
(Model III/4 with changes)
Basic
Printer optional
Available on The Disk Series

Listing and Editing Your Portfolio

If you only want to list your stocks, choosing zero in menu choice 4 makes no changes and returns you to the menu. To change any information about your stocks, just follow the instructions after you type in the number of the stock you want to edit.

You can display or print comparative performance figures and percentages.

Your Portfolio

Menu choice 5 gives you access to where the work of the Stoctrac takes place. Stoctrac lists each of your stocks, and you are asked to enter the closing price (in decimal), the price/earnings ratio (P/E), and the percent return—information you find in the business section of your daily newspaper.

After entering these numbers, you can display or print the comparative performance figures and percentages. Current share prices are written to disk to be recalled the next time you run the program.

To conserve memory, once you enter the per-share price, you cannot change it. If you enter an incorrect share price, restart the program and enter share price (not the portfolio) information again.

Diversion

You may also follow a "play portfolio" by picking a group of stocks from the NYSE, entering them in the program, and then updating them each week to see how your selections are doing (the Figure shows a sample stock summary). Use a different disk for each group of stocks.

Model 4 Changes

To run Stoctrac on the Model 4, change LOCATE r,c:PRINT to PRINT@(x,y), where "r" and "c" are row and column and x=r-1 and y=c-1. You must also change file names STOCTRAC.BAS, STOCTRAC.DAT, and STOCTRAC.TXT to STOCTRAC/BAS, STOCTRAC/DAT, and STOCTRAC/TXT. For the Model III, change the Model 4 PRINT@ locations to accommodate the 64-column screen.■

R. J. Richardson is a professional pilot with business experience in commercial photography. Write him at P.O. Box 55095, Valencia, CA 91355.

STOCK SUMMARY

WEEK ENDING: 05/13/86 — CLOSING DJA : 1658.24

TOTAL ALL STOCKS: $ 22075 — TOTAL BASIS: $ 21000

CHANGE PAST WEEK $ 0 — CHANGE FROM BASE $ 1075

AVERAGE % RETURN OF PORT: 3.29672

Stk.	# Shrs.	Wks. Cls.	Buy Pr.	Wk. Ago.	Val. Now.
AAA	100	12	1000	1200	1200
BBB	100	23.75	2000	2350	2375
CCDC	100	23.125	3000	2487.5	2512.5
DD	100	41	4000	4237.5	4100
E	100	51.5	5000	5237.5	5150
FFF	100	67.375	6000	6562.5	6737.5

PRICE CHANGE - WEEK ENDING 05/13/86

STK.	BAS CHGE	(%)	WK'S CHGE	(% RET)	% RET	(P/E)	P/E
AAA	200	20	0	4	4	6	6
BBB	375	18	25	4	4	6	6
CCDC	-487.5	-17	25	3	3	9	9
DD	100	2	-137.5	3.6	3.6	10	10
E	150	3	-87.5	3.1	3.1	10	10
FFF	737.5	12	175	3	3	12	12

Stock Portfolio as of 05/13/86.

No.	Symbol	Shares	Buy Price	Buy Date
1.	AAA	100	1000	02/82
2.	BBB	100	2000	03/82
3.	CCDC	100	3000	04/82
4.	DD	100	4000	05/82
5.	E	100	5000	06/83
6.	FFF	100	6000	04/85

Figure. A sample stock summary.

Program Listing. Stoctrac. See p. 100 for information on using checksums.

```
1 '  STOCTRAC.BAS
2 ' R. J. Richardson, P. O. Box 55095, Valencia, CA. 91355
4 '
5 ' ************************************************************
6 '
10 NS=20                                                        '*   449
65 CLS:ON ERROR GOTO 9000                                       '*  1584
70 GOSUB 10000:LOCATE 3,30:PRINT"STOCTRAC.BAS":PRINT TAB(29);"(c
   ) - RJR, Inc.":GOSUB 5110:GOSUB 5700                         '*  6209
80 EH=4:CLS:PRINT"- loading portfolio - ":GOSUB 5080:GOTO 4000  '*  4417
120 CLS:PRINT TAB(30)"STOCTRAC.BAS":PRINT:PRINT:PRINT TAB(30)" -
     loading portfolio -":EH=4:GOSUB 5080:PRINT:PRINT:PRINT"1. S
    tock share prices are entered in decimal.":PRINT TAB(4);"Thu
    s '1/8' is entered as '.125'."                              '* 13847
130 PRINT:PRINT"2. If the price has no fraction, enter two digit
    s only.":PRINT:INPUT"3. Enter closing Dow Jones average:";DJ
    :PRINT:INPUT"4. Enter closing date for summary (dd/mm/yy):";
    DT$:CLS                                                     '* 15783
140 BV=0:FOR X=1 TO DS:BV=BV+BP(X):NEXT X                       '*  2617
150 A=1                                                         '*   357
160 GOSUB 3200:LOCATE 11,1:PRINT S$(A),TS(A);"Shares":PRINT:INPU
    T "Closing Price:";CP(A)                                    '*  6040
170 INPUT "Percent Return:";PR(A):INPUT "P/E Ratio:";PE(A)      '*  4211
180 TV(A)=CP(A)*TS(A):GOSUB 3000:PRINT ,,CP(A),"$";TV(A)        '*  3270
185 INPUT "Hit Enter:";Z:CLS                                    '*  2016
190 A=A+1:IF A=DS+1 THEN 700 ELSE 160                           '*  2101
700 CLS:INPUT "<Enter> to load stock prices from last week:";ZQ$
    :CLS:EH=3:GOSUB 3600                                        '*  6554
740 PRINT:PRINT:INPUT "Hit enter for calculations:";ZQ$:CLS:PRIN
    T TAB(30)"Weekly Stock Summary:":PRINT:PRINT:GOTO 760       '*  9178
750 PRINT "Stock";TAB(10);"# Shares";TAB(22);"Wks. Cls.";TAB(37)
    ;"Buy Pr.";TAB(49);"Week Ago.";TAB(63);"Val. Now.":RETURN   '*  8122
```

Listing continued

Listing continued

```
760 GOSUB 750:PRINT:FOR A=1 TO DS:PRINT S$(A);TAB(10);TS(A);TAB(
    22);CP(A);TAB(37);BP(A);TAB(49);LW(A);TAB(63);TV(A)          '*  6952
765 IF A=14 THEN PRINT:INPUT"<Enter> for more:";ZQ$:CLS:GOSUB 75
    0                                                            '*  4582
767 NEXT A                                                       '*   612
770 PRINT:INPUT "Hit Enter:";A$:CLS:IF V3=3 THEN 1050            '*  3529
780 CLS:PRINT TAB(12)"Price Change Summary - Week Ending ";DT$   '*  4675
790 FOR A=1 TO DS:CB(A)=TV(A)-BP(A):NEXT A:FOR A=1 TO DS:WC(A)=T
    V(A)-LW(A):NEXT A                                            '*  4970
792 FOR A=1 TO DS:PB(A)=CB(A)/BP(A)*100:PB(A)=INT(PB(A)):NEXT A  '*  3719
795 PRINT:PRINT "Stock:";TAB(11);"Bse Chge.";TAB(23);"%";TAB(30)
    ;"Wk's Chge.";TAB(43);"(% RET)-% RET";TAB(61);"(P/E)-P/E"    '*  4399
800 PRINT:FOR A=1 TO DS:PRINT S$(A);TAB(11);CB(A);TAB(21);PB(A);
    TAB(31);WC(A);TAB(45);LR(A);TAB(51);PR(A);TAB(62);LE(A);TAB(
    67);PE(A)                                                    '*  7891
816 NEXT A:PRINT:INPUT "Hit Enter:";A$:CLS:IF V3=3 THEN 1050     '*  4004
820 FOR A=1 TO DS:TT=TT+TV(A):NEXT A:RT=0:FOR N=1 TO DS:RT=RT+(T
    V(N)*PR(N)/100):NEXT N:PA=RT/TT*100                          '*  6288
830 CLS:PRINT TAB(30)"+++ All The Real News +++":PRINT:PRINT     '*  4062
840 PRINT "Week Ending: ";DT$;TAB(50);"Closing DJA: ";DJ         '*  3879
850 PRINT:PRINT "Port. Val. Now: $";TT;TAB(50);"Basis: $";BV     '*  4088
870 TC=0:FOR A=1 TO DS:TC=TC+WC(A):NEXT A:WW=TT-BV               '*  3221
880 PRINT:PRINT "Change Past Week $";TC;TAB(50);"Change From Bas
    e $";WW:PRINT:PRINT "Average % Return of Port:";PA:PRINT:IF
    V3=3 THEN PRINT:INPUT"<Enter>:";W$:GOTO 1050                 '* 12295
885 PRINT:PRINT:PRINT:INPUT "<Enter> to save this week's values
    to disk:";ZQ$:GOSUB 3500                                     '*  6986
890 CLS:APE$="":PRINT:PRINT"Is there a printer connected and ON
    LINE?":PRINT:PRINT"Is the paper set to top of page (top of f
    orm)?":PRINT:PRINT:INPUT"Ready to LPRINT? (Y/N)";APE$:IF APE
    $="Y" OR APE$="y" THEN 895 ELSE 1050                         '* 16338
895 CLS:LOCATE 6,20:PRINT"<Enter> to Start Printing:";:INPUT ZQ$ '*  4811
900 LPRINT CHR$(30)CHR$(15)"STOCK SUMMARY";CHR$(14)              '*  3111
910 LPRINT CHR$(10)"WEEK ENDING: ";DT$;TAB(40);"CLOSING DJA :";D
    J                                                            '*  3939
920 LPRINT CHR$(10)"TOTAL ALL STOCKS: $";TT;TAB(40);"TOTAL BASIS
    : $";BV:WW=TT-BV                                             '*  5055
940 LPRINT:LPRINT "CHANGE PAST WEEK $";TC;TAB(40);"CHANGE FROM B
    ASE $";WW                                                    '*  4629
945 LPRINT:LPRINT "AVERAGE % RETURN OF PORT:";PA                 '*  3186
950 LPRINT:LPRINT CHR$(15)"Stock";TAB(10);"# Shares";TAB(22);"Wk
    s. Close";TAB(35);"Buy Price";TAB(50);"Week Ago";TAB(63);"Va
    l. Now."                                                     '*  9002
960 FOR A=1 TO DS:LPRINT S$(A);TAB(10);TS(A);TAB(22);CP(A);TAB(3
    5);BP(A);TAB(50);LW(A);TAB(63);TV(A):NEXT A                  '*  6409
970 LPRINT:LPRINT:LPRINT CHR$(15)"Price Change - Week Ending: ";
    DT$:LPRINT                                                   '*  5382
980 LPRINT CHR$(15)"Stock";TAB(10);"Base Chge";TAB(22);"%";TAB(2
    7);"Week's Chge";TAB(42);"(%Ret)-%Ret";TAB(57);"(P/E)-P/E"   '*  4655
990 FOR A=1 TO DS:LPRINT S$(A);TAB(9);CB(A);TAB(20);PB(A);TAB(28
    );WC(A);TAB(42);LR(A);TAB(48);PR(A);TAB(56);LE(A);TAB(61);PE
    (A):NEXT A                                                   '*  7960
994 LPRINT:LPRINT:LPRINT"Stock Portfolio as of ";DT$;".":LPRINT:
    LPRINT"No.";TAB(10);"Symbol";TAB(25);"Shares";TAB(41);"Buy P
    rice";TAB(60);"Buy Date"                                     '* 10741
996 LPRINT:FOR X=1 TO DS:LPRINT X;".";TAB(10);S$(X);TAB(25);TS(X
    );TAB(41);BP(X);TAB(60);DB$(X):NEXT X                        '*  6228
1000 LPRINT CHR$(14):LPRINT:LPRINT "END":FOR P=1 TO 18:LPRINT:NE
    XT P                                                         '*  4409
1010 'S$(A)=STOCK SMYBOLS:BP(A)=BASE PRICES:TS=TOTAL SHARES
1015 'LW(A)=LAST WEEK VALUE:LR=LAST WK % RET:LE=LAST WK P/E
1020 'TV(A)=TOTAL VALUE:CB(A)=CHANGE FROM BASE
1025 'WC(A)=WEEKLY CHANGE:TT=TOTAL ALL STOCKS
1030 'SS=MONY FM SLD STKS:PE=PRICE EARNINGS:PR=% RETURN
1035 'PV=PORT VALUE NOW:BV=BASE PORT VALUE
1040 'TC=TOTAL WEEKLY CHANGE:WW=TOTAL CH. FROM BASE
1050 CLS:LOCATE 8,1:PRINT"Select:";TAB(10);"1. To return to firs
    t data.":PRINT TAB(10);"2. For second data and % change."    '*  8900
1060 V3=3:PRINT TAB(10);"3. Final data summary.":PRINT TAB(10);"
    4. Additional print-out.":PRINT TAB(10);"5. Return to Main
    Menu":PRINT TAB(10);"6. End"                                 '* 10899
1070 INPUT ZQ:CLS:ON ZQ GOTO 740,780,830,890,4000,1100           '*  3154
1100 END                                                         '*   441
```

Listing continued

Listing continued

```
3000 PRINT ,,"Decimal","Total Value":RETURN                      '*  3206
3200 PRINT:PRINT:PRINT"1/8 = .125",,"1/4 = .250",,"3/8 = .375":P
    RINT"1/2 = .500",,"5/8 = .625",,"3/4 = .750":PRINT"7/8 = .8
    75":RETURN                                                   '*  7161
3500 'OPEN FOR SEQ OUTPUT THE DISK FILE "STOCTRAC.DAT"
3510 OPEN "O",1,"STOCTRAC.DAT"                                   '*  1797
3515 PRINT #1,DS                                                 '*   946
3520 FOR I%=1 TO DS                                              '*  1095
3530 PRINT #1,TV(I%),PE(I%),PR(I%)                               '*  1934
3540 NEXT I%:CLOSE:RETURN                                        '*  1667
3600 'ACCESS SEQUENTIAL INPUT DISK FILE "STOCTRAC.DAT"
3610 OPEN "I",1,"STOCTRAC.DAT":INPUT #1,ES:FOR I%=1 TO ES        '*  3482
3630 INPUT #1,LW(I%),LE(I%),LR(I%)                               '*  1923
3640 NEXT I%:CLOSE:RETURN                                        '*  1668
4000 CLS:LOCATE 2,20:PRINT"Stoctracker Program (STOCTRAC.BAS)":L
    OCATE 4,5:PRINT"Please Select a Number:":PRINT:PRINT TAB(10
    );"1. First Time Program Initialization."                    '* 12738
4010 PRINT TAB(10);"2. Delete or Add a Stock.":PRINT TAB(10);"3.
     Enter a Stock Split.":PRINT TAB(10);"4. List and Edit your
     Portfolio."                                                 '*  9944
4015 PRINT TAB(10);"5. Go Directly to the Program.":PRINT TAB(10
    );"6. End"                                                   '*  5196
4020 PRINT:PRINT "You must put your portfolio into the program b
    efore it can be used at all.":PRINT"If you have not done th
    is, you must select #1!"                                     '* 12644
4030 W=0:PRINT:PRINT:INPUT "What is your wish:";W:ON W GOTO 4500
    ,5500,6000,6500,120,8999                                     '*  5834
4500 ' ******************  FIRST INITIALIZATION  ***********
4520 CLS:PRINT"1. First Initialization:.":PRINT:PRINT:PRINT"You
     may enter up to 20 different stocks.":PRINT "You must enter
     four data items for each stock:":PRINT:PRINT TAB(10);"1. S
    tock Symbol (a 2, 3, or 4 letter code)."                     '* 17913
4530 PRINT TAB(10);"2. The number of shares of this stock which
     you own.":PRINT TAB(10);"3. Purchase price - total paid for
     all these shares.":PRINT TAB(10);"4. Date of purchase (mon
    th/year)."                                                   '* 15335
4540 PRINT:PRINT "Since this information will be stored on disk,
     please assemble it so it may be":PRINT"entered all at one
     time."                                                      '* 11144
4550 PRINT:PRINT:INPUT"Press <enter> when you are ready with all
     information.";W$                                            '*  6864
4560 CLS:PRINT"Here is an example:":PRINT:PRINT"Suppose you own
     Exxon (XON) stock. You have 100 shares for which":PRINT"you
     paid 50 ($50/share).  The brokerage commission was $86, an
    d the":PRINT"purchase was made in February, 1984."           '* 18996
4570 PRINT:PRINT "Therefore, the stock symbol is XON, number of
    shares is 100,":PRINT "total price is (5000 + 86) $5086, an
    d the buy-date is 02/84."                                    '* 11315
4580 PRINT:PRINT "Thus, your Exxon stock would be entered like t
    his:":PRINT:PRINT"Stock";TAB(20);"# of Shares";TAB(40);"Tot
    al Price";TAB(60);"Date Bought"                              '* 12114
4590 GOSUB 5200:LOCATE 14,2:PRINT "XON";:GOSUB 5200:PRINT TAB(24
    )"100";:GOSUB 5200:PRINT TAB(44)"5086";:GOSUB 5200:PRINT TA
    B(62)"02/84"                                                 '*  8050
4600 PRINT:PRINT:PRINT"DO NOT use space bar to go across the pag
    e.":PRINT "You must hit <Enter> after EACH INDIVIDUAL ENTRY
    !":PRINT:PRINT:INPUT "Press <enter> to continue";W$          '* 13847
4620 CLS:PRINT TAB(25)"1. First Initialization:":PRINT:PRINT"Ent
    er Stock Portfolio:":PRINT:PRINT"How many different stocks
    will you enter? (0 returns to menu)?";:INPUT DS:CLS:IF DS=0
     THEN 4000                                                   '* 15445
4630 PRINT "Enter your portfolio now:":GOSUB 5004                '*  3866
4635 PP=301:FOR X=1 TO DS:GOSUB 5001:GOSUB 5010                  '*  2852
4650 IF X=11 THEN CLS:PP=301:PRINT "Enter your portfolio now:":G
    OSUB 5004:GOTO 4670                                          '*  5980
4670 NEXT X:LOCATE 22,1:INPUT "<Enter>:";W$                      '*  2833
4680 CLS::PRINT"Here are your entries.":PRINT"A 'Y' (Yes) answer
     means the entry is correct.":PRINT"An 'N' answer stores th
    at entry for later correction."                              '*  3670
4700 PRINT:PRINT:PRINT:GOSUB 5003:PRINT:FOR X=1 TO DS            '*  3568
4710 GOSUB 5020:GOSUB 5030                                       '*  1525
```

Listing continued

Listing continued

```
4730 IF W$="" OR W$ <> "Y" AND W$ <> "y" AND W$ <> "N" AND W$ <>
      "n" THEN PRINT :PRINT"   P L E A S E     U S E     A
     'Y'     OR     AN     'N'       --":FOR Q=1 TO 1500:NEXT Q:G
     OSUB 5002:GOTO 4710                                        '*  6322
4740 IF W$="N" OR W$="n" THEN OP=OP+1:C(OP)=X                   '*  2683
4745 GOSUB 5002:NEXT X:LOCATE 18,1:INPUT "<Enter>";E$           '*  3438
4747 IF OP=0 THEN 4810                                          '*  1261
4750 CLS:PRINT:PRINT "You have indicated that ";OP;" entries nee
     d correction.":PRINT "Please re-answer the question, then t
     ype in correctly:"                                         '* 12135
4760 PRINT:PRINT:PRINT:PRINT:GOSUB 5003:FOR M=1 TO OP:X=C(M):GOS
     UB 5020:GOSUB 5030:IF W$="N" OR W$="n" THEN GOSUB 5002:GOSU
     B 5045:GOSUB 5025:GOSUB 5002                               '*  9513
4765 NEXT M                                                     '*   674
4770 W$="":CLS:PRINT"If your portfolio is complete and correct,
     it will be stored on disk.":PRINT"If you wish another revie
     w, answer 'Y' to the question below."                      '* 11433
4780 PRINT:PRINT "Errors may be corrected later using the revisi
     on functions on the main menu.":PRINT:INPUT "Do you wish to
      review your portfolio again (Y/N)?";W$                    '* 14044
4790 IF W$="" OR W$ <> "Y" AND W$ <> "y" AND W$ <> "N" AND W$ <>
      "n" THEN PRINT:PRINT"   P L E A S E   U S E   A   'Y'   OR
       AN   'N'     --":FOR Q=1 TO 1500:NEXT Q: CLS:GOTO 4770   '*  6136
4800 IF W$="Y" OR W$="y" THEN OP=0:GOTO 4680                    '*  2598
4810 CLS:PRINT "<Enter> will store your portfolio on disk.":PRIN
     T"From now on, it will be loaded automatically each time yo
     u use the program.":PRINT:PRINT:INPUT "<Enter>:";ZQ$:GOSUB
     5060:GOTO 4000                                             '* 16153
4998 ' *********************************************
4999 END                                                        '*   470
5000 PP=PP+20:P1=INT(PP/80):P2=PP-P1*80:LOCATE P1+1,P2:PRINT"";:
     RETURN                                                     '*  4400
5001 LOCATE 1,40:PRINT"Enter Stock #.";X:RETURN                 '*  3274
5002 FOR QT=1 TO 80:LOCATE 5,QT:PRINT " ":NEXT QT:RETURN        '*  3591
5003 PRINT"No.";TAB(10);"Symbol";TAB(25);"Shares";TAB(41);"Buy P
     rice";TAB(60);"Buy Date":PRINT:RETURN                      '*  7053
5004 PRINT:PRINT:PRINT "Stock Symbol:";TAB(20);"No. of Shares:";
     TAB(41);"Total Price:";TAB(62);"Buy Date:":RETURN          '*  8228
5005 GOSUB 5000:PRINT S$(X):GOSUB 5000:PRINT TS$(X):GOSUB 5000:P
     RINT BP$(X):GOSUB 5000:PRINT DB$(X):RETURN                 '*  6696
5009 '
5010 GOSUB 5000:INPUT S$(X):GOSUB 5000:INPUT TS$(X):GOSUB 5000:I
     NPUT BP$(X):GOSUB 5000:INPUT DB$(X):PP=PP+0:TS(X)=VAL(TS$(X
     )):BP(X)=VAL(BP$(X)):GOSUB 5001:RETURN                     '* 10134
5011 '
5020 W$="":LOCATE 10,1:PRINT X;:PRINT TAB(12) S$(X);:PRINT TAB(2
     6) TS(X);:PRINT TAB(42) BP(X);:PRINT TAB(61) DB$(X):RETURN '*  7498
5024 '
5025 LOCATE 12,1:PRINT X:LOCATE 12,10:INPUT S$(X):LOCATE 12,25:I
     NPUT TS$(X):LOCATE 12,41:INPUT BP$(X):LOCATE 12,59:INPUT DB
     $(X):TS(X)=VAL(TS$(X)):BP(X)=VAL(BP$(X)):RETURN            '* 10654
5026 '
5030 W$="":LOCATE 16,1:INPUT "IS THIS ENTRY CORRECT (Y/N)";W$:FO
     R B=1 TO 36:LOCATE 16,B:PRINT" ":NEXT B:RETURN             '*  6913
5031 '
5040 ZQ$="":PRINT:PRINT:INPUT "Remove this one? (Y/N)?";ZQ$:IF Z
     Q$="Y" OR ZQ$="y" THEN RETURN                              '*  6391
5041 IF ZQ$="N" OR ZQ$="n" THEN 4000                            '*  2057
5042 IF ZQ$="" THEN CLS:LOCATE 16,1:PRINT"Please enter 'Y' or 'N
     ':":GOSUB 5200:GOSUB 5200:GOTO 5540                        '*  6421
5045 LOCATE 16,1:PRINT "Type in the correct entry:":RETURN      '*  4455
5046 '
5050 LOCATE 10,40:PRINT "<Enter> -":RETURN                      '*  2749
5060 ' SUB TO PLACE USER'S PORTFOLIO ON DISK
5065 OPEN "O",1,"STOCTRAC.TXT":PRINT #1,DS:FOR I%=1 TO DS       '*  3528
5070 PRINT #1,S$(I%);",";TS(I%);",";BP(I%);",";DB$(I%)          '*  2849
5071 NEXT I%                                                    '*   698
5075 CLOSE:RETURN                                               '*  1153
5080 ' SUB TO READ PORTFOLIO INTO PROGRAM
5085 OPEN "I",1,"STOCTRAC.TXT"                                  '*  1839
5090 INPUT #1,DS:FOR I%=1 TO DS                                 '*  1868
```

Listing continued

Listing continued

```
5092 INPUT #1,S$(I%),TS(I%),BP(I%),DB$(I%)                      '*  2298
5094 NEXT I%                                                    '*   703
5095 CLOSE:RETURN                                               '*  1155
5098 '  ::::::::::::::::::::::::::::::::::::::::::
5100 FOR X=1 TO DS:PRINT X;".";TAB(10);S$(X);TAB(25);TS(X);TAB(4
     1);BP(X);TAB(60);DB$(X):IF X=14 THEN 5105                  '*  6207
5101 NEXT X                                                     '*   670
5102 ZQ$="":PRINT:INPUT "See it again? (Y/N):";ZQ$:IF ZQ$="Y" OR
      ZQ$="y" THEN CLS:GOSUB 5003:GOTO 5100                     '*  6585
5103 RETURN                                                     '*   713
5105 IF X=DS THEN 5102 ELSE PRINT:INPUT "<Enter> For More:";ZQ$:
     CLS:GOSUB 5003:GOTO 5101                                   '*  5871
5110 LOCATE 23,65:PRINT"Counting - - ":FOR B = 1 TO 5000:NEXT B:
     RETURN                                                     '*  4501
5200 FOR B=1 TO 3000:NEXT B:RETURN                              '*  2105
5500 ' ---------Delete or Add a Stock
5510 ZQ$="":CLS:PRINT TAB(25)"2. Delete or Add a Stock:":PRINT:P
     RINT:PRINT "Do you wish to:":PRINT:PRINT TAB(10);"(D)elete
     a Stock?":PRINT TAB(10);"(A)dd a Stock?":PRINT:PRINT TAB(10
     );"(R)eturn to Menu?":PRINT:PRINT:INPUT "<Enter> D/A/R:";ZQ
     $                                                          '* 17316
5520 IF ZQ$ <> "D" AND ZQ$ <> "d" AND ZQ$ <> "A" AND ZQ$ <> "a"
     AND ZQ$ <> "R" AND ZQ$ <> "r" THEN GOTO 5510               '*  5993
5525 IF ZQ$="R" OR ZQ$="r" THEN 4000                            '*  2072
5530 IF ZQ$="A" OR ZQ$="a" THEN 5600                            '*  2041
5540 CLS:PRINT TAB(15)"          ------------   Delete   -------
     ------":PRINT:PRINT:PRINT "Your present portfolio contains"
     ;DS;"stocks.":PRINT:PRINT                                  '* 10232
5545 PRINT"Be prepared to note the number (left column) of the s
     tock to delete:"                                           '*  6901
5550 PRINT:PRINT:INPUT "<Enter>:";ZQ$:CLS:GOSUB 5003:GOSUB 5100:
     PRINT:PRINT:PRINT"Enter the number of stock to delete - or
     - ":INPUT "Enter Zero (0) to delete nothing:";D:IF D=0 THEN
      4000                                                      '* 13942
5555 CLS:X=D:LOCATE 8,1:GOSUB 5003:GOSUB 5020:GOSUB 5040:GOSUB 5
     002                                                        '*  4119
5560 DB$(D)="Empty":S$(D)="Empty":M=0:FOR X=1 TO DS:IF S$(X)="Em
     pty" THEN 5577                                             '*  5098
5575 M=M+1:S$(M)=S$(X):TS(M)=TS(X):BP(M)=BP(X):DB$(M)=DB$(X)    '*  3541
5577 NEXT X:DS=M                                                '*  1034
5579 LOCATE 13,1:PRINT STRING$(30," "):LOCATE 13,1:PRINT"Stock #
     ";D;"deleted:":PRINT:PRINT:INPUT "<Enter> to re-list portfo
     lio before storing on disk:";ZQ$:CLS                       '* 12003
5580 CLS:GOSUB 5003:GOSUB 5100:CLS:INPUT "OK to store portfolio
     on disk? (Y/N)";ZQ$:IF ZQ$="N" OR ZQ$="n" THEN 4000        '*  7929
5582 CLS:PRINT "Writing to disk:":GOSUB 5060:GOTO 4000          '*  3817
5600 CLS:PRINT TAB(20)"----------------    Add    --------------
     ":PRINT:PRINT "Since this program does not alphabetize, the
      stock you add will appear at the":PRINT"end of the list.":
     PRINT                                                      '* 13905
5610 DS=DS+1:PRINT "Type in new stock.":PRINT:PRINT:GOSUB 5003:X
     =DS:GOSUB 5025                                             '*  5519
5615 PRINT:PRINT "Review portfolio before placing it on disk.":P
     RINT:INPUT "<Enter>:";ZQ$:CLS:GOSUB 5003:GOSUB 5100        '*  8876
5620 CLS:INPUT "OK to store portfolio on disk? (Y/N)";ZQ$:IF ZQ$
     ="N" OR ZQ$="n" THEN 4000                                  '*  6294
5630 CLS:PRINT "Writing to disk:":GOSUB 5060:GOTO 4000          '*  3811
5700 '     -----  disclaimer   -----
5710 CLS:PRINT:PRINT:PRINT TAB(25);"Ye Olde Disclaimer Clause:":
     PRINT:PRINT                                                '*  5654
5720 PRINT "This program is for record-keeping only.            '*  4495
5722 PRINT"It is not to be used as an incentive to gamble on the
      stock market."                                            '*  6765
5730 PRINT:PRINT "Although the author has used the program for m
     any years, he doesn't vouch for":PRINT"or guarantee its acc
     uracy.  We further suggest that you frequently check"      '* 15776
5735 PRINT"the program's results against figures generated by a
     sophisticated calculator - or another computer.":PRINT:PRIN
     T "The program is great, but it carries no warranty or guar
     antee of any kind!!"                                       '* 18201
```

Listing continued

Listing continued

```
5750 PRINT:INPUT "<Enter>:";ZQ$:RETURN                                    '*  2690
6000 ' -------------   STOCK SPLIT   ----------------
6010 CLS:PRINT"3. Stock Split:":PRINT:PRINT:PRINT "Most stock sp
     lits are 'two for one', or 2/1. However, a split can be any
     thing":PRINT"that the directors desire.":PRINT:PRINT "For e
     xample, a not-so-common split is 'three for two', or 3/2."   '*  5716
6015 PRINT:PRINT "Splits may contain decimals: i.e. - 1.5 to 1,
     or 2.6 to 1.":PRINT "These are entered just like any other:
      1.5/1 - 2.6/1."                                             '* 10477
6020 PRINT:PRINT "The program will ask for the proportion of the
      split":PRINT "Type two numbers, the larger one first, with
      the two separated by a slash."                              '* 13518
6025 ZQ$="":PRINT:INPUT"<ENTER> to proceed: Enter '@' for menu:"
     ;ZQ$:CLS:IF ZQ$="@" THEN 4000                                '*  6493
6030 PRINT "EXAMPLE:":PRINT:PRINT:PRINT"Suppose your stock has s
     plit 'three for one'.":PRINT "The program will ask: 'Split?
     ' ------------":PRINT:PRINT " --------  Type in:";           '*  5473
6040 PRINT " 3/1 ":PRINT:PRINT                                    '*  1852
6060 PRINT "The per-share price of a stock is adjusted downward
     after any split.":PRINT "Therefore, after you enter the spl
     it, use the adjusted per-share price.":PRINT                 '* 14702
6070 PRINT:PRINT:INPUT "<ENTER>:";ZQ$:CLS                         '*  2759
6080 PRINT "Here is your portfolio.  Remember the number (left s
     ide of page) of the stock":PRINT "which split:":PRINT:GOSUB
      5003:GOSUB 5100                                             '* 11245
6090 PRINT:INPUT"Enter the number of the splitting stock:";SP:CL
     S:GOSUB 5004:PRINT:PRINT TAB(3);S$(SP);TAB(22);TS(SP);TAB(4
     3);BP(SP);TAB(63);DB$(SP):PRINT:PRINT:PRINT:INPUT"SPLIT?";S
     I$                                                           '* 13222
6094 FOR AZ=1 TO 5:IF MID$(SI$,AZ,1)=CHR$(47) THEN 6098           '*  3191
6096 NEXT AZ                                                      '*   751
6098 TN=VAL(LEFT$(SI$,AZ-1)):BN=VAL(RIGHT$(SI$,1)):IF BN=0 THEN
     CLS:PRINT"Divide by zero error. Re-enter split information.
     ":GOSUB 5200:CLS:GOTO 6080                                   '* 10820
6100 TS(SP)=INT(TS(SP)*TN/BN):PRINT:PRINT "       No. of shares
     of ";S$(SP);" changed to ";TS(SP);".":PRINT:PRINT:INPUT "<E
     nter> to store new values to disk:";ZQ$                      '* 11763
6110 GOSUB 5060:GOTO 4000                                         '*  1450
6500 '   ---------     EDIT / UPDATE   ---------
6510 CLS:PRINT TAB(19);"Edit or Update Portfolio:":PRINT:PRINT:P
     RINT "Remember the number (left side of page) of the stock
     to be changed."                                              '* 11273
6520 PRINT:PRINT:INPUT "<Enter> to list portfolio:";ZQ$:CLS:GOSU
     B 5003:GOSUB 5100:PRINT:PRINT:INPUT "Enter number of stock
     to be edited: (0 returns to menu):";SW:IF SW=0 THEN 4000     '* 13747
6524 CLS:PRINT "Here is the data as presently listed:"            '*  4466
6530 PRINT:GOSUB 5003:PRINT SW;TAB(10);S$(SW);TAB(25);TS(SW);TAB
     (41);BP(SW);TAB(60);DB$(SW):PRINT:PRINT:PRINT "Now - enter
     all data, making corrections as you go.":PRINT "<Enter> aft
     er each individual entry."                                   '* 15612
6540 X=SW:GOSUB 5025:PRINT:PRINT:INPUT "OK to store on dis
     k now (Y/N)?";ZQ$:IF ZQ$="Y" OR ZQ$="y" THEN GOSUB 5060 ELS
     E GOTO 4000                                                  '*  9129
6550 GOTO 4000                                                    '*   781
8999 END                                                          '*   474
9000 IF ERR=53 AND EH=4 THEN CLS:PRINT "Stock portfolio not yet
     on disk.  Select #1 on Menu and enter your portfolio.":EH=0
     :GOSUB 5110:RESUME 4000                                      '* 11204
9010 IF ERR=11 THEN CLS:PRINT "Divide by Zero error.":GOSUB 5110
     :CLS:RESUME 4000                                             '*  5585
9012 IF ERR=53 AND EH=3 THEN PRINT "Last week's prices not yet o
     n disk.  Complete the program without them.":PRINT "See doc
     umentation.":EH=0:RESUME 740                                 '* 12094
9999 END                                                          '*   475
10000 DIM S$(NS),BP(NS),BP$(NS),TS(NS),TS$(NS),DP(NS),LW(NS),CP(
     NS),TV(NS),CB(NS),WC(NS),PB(NS),PR(NS),PE(NS),LE(NS),LR(NS)
     ,DB$(NS),C(NS):RETURN                                        '*  8894
```

End

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by Patrick A. Gainer

Free Your Trapped Superscripsit Files

Save your too-large Superscripsit files by splitting them in two.

Many people admire Superscripsit's ability to handle long documents. Superscripsit does, however, have limitations. You may find that after you fill a disk with a document you cannot edit it. I'm going to show you how to get out of that trap without having to retype a whole disk's worth of information.

Normally, there are several techniques to divide Superscripsit documents into smaller files. One obvious way is to do a block-action move or copy parts of the large document to another disk. Unfortunately, when a single Superscripsit document almost fills a disk, this method does not work. Superscripsit requires a space on the source disk (where the document resides) about twice the size of the block that you want to move. It also needs space for Move/CTL on drive zero.

Superscripsit has other peculiarities as well. I once had a 162K document that left only 12K free on the data disk. I tried to divide the document as follows:

- I made two backup copies.
- I deleted half of the document (21 pages, approximately 80K) from one of the copies.
- I tried to copy seven pages with Superscripsit's block-action command to a system disk that had 34.5K of free space. I got the "Disk full" message after Move/CTL had accumulated only 7.5K.
- I tried again with the Move command and got the same result.

Deleting 80K did not free 80K of disk space. I could use neither the deleted text nor the space it had occupied.

The Model 4 Method

You can use the following method to divide a Superscripsit document on a Model 4, even if no space remains on the data disk, as long as you can open the document and print it. You can use this method without Memdisk on 64K machines, and you can move as much text from the data disk as fits in the space you clear on the system disk. Follow these steps, remembering that you must change line spacing by block action:

- Route your printer to Textfile/ASC with the TRSDOS command ROUTE *PR TO TEXTFILE/ASC. The file can be in the space you clear on drive zero or, if you have a 128K machine, on Memdisk.
- Call the Superscripsit document. Perform a global search and replace to substitute a character that you do not use in the document for the paragraph sign, which you enter as @G. Block-adjust the margins to positions 0.0 and 7.9.
- Set the lines per page to 66, the pitch to 10, and the line spacing to 1. Delete headers and footers.
- Print a non-justified block of text starting at column 1. The block is stored in Textfile/ASC and does not go to the printer.
- Exit to TRSDOS.
- Reset your printer with the command RESET *PR (otherwise you cannot read Textfile/ASC and the directory displays it with zero records and zero EOF).

The TRSDOS List command can now list the text in Textfile/ASC. To convert the text back to a Superscripsit document, you must prepare it with the Basic program Breakout (see the Program Listing). Breakout installs and then calls a machine-language program that removes all carriage-return symbols except where you indicated a paragraph (you must enter the character that you used as a paragraph marker).

You can move as much text from the data disk as fits in the space you clear.

When Breakout is finished, drive 1 contains an ASCII file called Textfile/SCR that Superscripsit can convert to a document. You must restore embedded codes such as underlining. You can repeat the conversion process for as many short blocks of the original Superscripsit text as you want.

The Model III Method

Unless there is a way to route the printer to a Model III file, the following method might be the only way Model III users can divide Superscripsit documents:

- Prepare a system disk with as much free space as possible.
- Divide the amount of free space into the amount of space that the original document occupies. The quotient is the number of backups you should make. For example, if 40 granules are available on drive zero, and the document on drive 1 takes up 220 granules, make six backups, deleting all but the first 40 granules from the first backup, all but the second 40 granules from the second, and so on, with block-action deletion.
- Convert the first file to ASCII on drive zero with Superscripsit's conversion function.
- Put a formatted disk in drive 1.
- Convert the ASCII file back to Superscripsit on drive 1.

System Requirements

Models III/4
48/64K RAM
Basic
Superscripsit
Two disk drives

Program Listing. Breakout. See p. 100 for information on using checksums.

```
10 CLS:OPEN"R",1,"SCRIPCON/CMD:1":INPUT"PARAGRAPH SYMBOL:",PS$:P
   %=ASC(PS$)                                                    '*  4771
20 GET 1,1:LSET R$=STRING$(255,"0"):PUT 1,1                      '*  2494
30 N%=VARPTR(#1)                                                 '*   951
40 FOR X=0 TO 34:READ M%                                         '*  1410
50 POKE N%+X,M%:NEXT:POKE N%+12,P%:PUT 1,1:CLOSE                 '*  2973
60 DATA 1,29,0,0,70,35,126,35,102,111,126,254,62,40,6,254        '*  2839
70 DATA 13,40,6,24,6,54,13,24,2,54,32,35,16,236,201,2,2,0,0      '*  2919
80 CLS:OPEN"R",1,"SCRIPCON/CMD":GET 1,1:V%=VARPTR(#1)+4          '*  3386
90 OPEN"I",2,"TEXTFILE/ASC":OPEN"O",3,"TEXTFILE/SCR:1"           '*  3382
100 WHILE NOT EOF(2)                                             '*  1208
110 LINE INPUT#2,A$                                              '*  1136
120 CALL V%(A$):PRINT A$                                         '*  1388
130 PRINT#3,A$;:WEND:CLOSE                                       '*  1659
```

End

● Remove or kill the ASCII file in drive zero.
● Repeat the process with the subsequent backups. Don't crowd the data disk (use two).

You can use the Model III method on a Model 4, but it takes longer than the technique of routing the printer to a file. If you have 128K of RAM, however, you can easily free more than 120K on the disk in drive zero by transferring all Superscripsit control and command files to Memdisk. Then you can divide the document into two ASCII files and convert each file back to Superscripsit on a new disk. You then have plenty of room to move and copy smaller parts of each half of the original document.

ASCII files take up much less room than Superscripsit documents do. Converting to ASCII and back to Superscripsit compresses documents more effectively than does Superscripsit's compression option (provided that your second conversion is onto a newly formatted disk). The disadvantage of this method is that you lose your embedded codes. You can, however, replace them easily with search-and-replace commands. ■

Patrick A. Gainer is a retired aerospace engineer for NASA. Write him at Route 77, Box 1A, Tanner, WV 26179.

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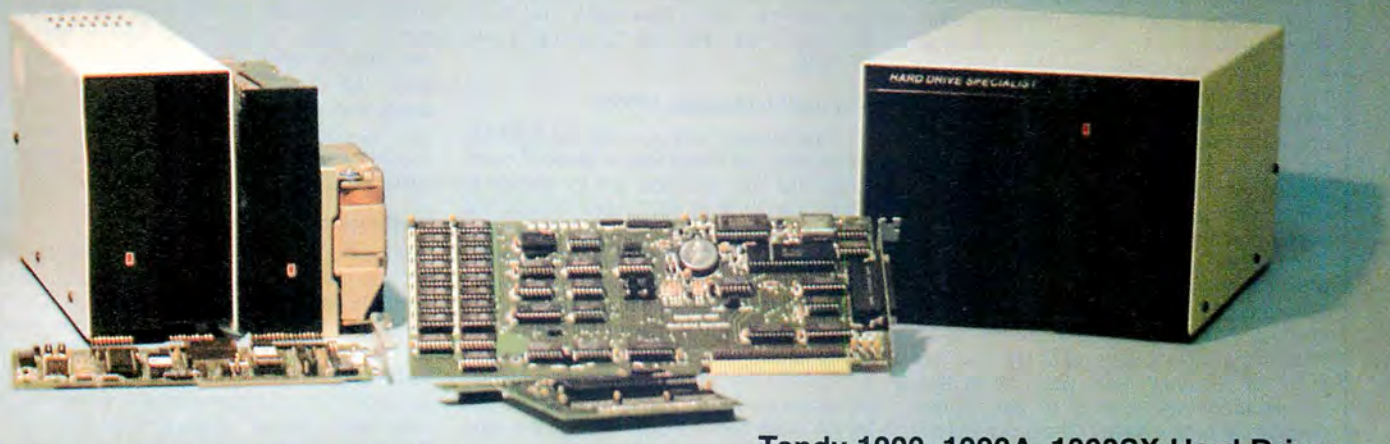

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Can we talk? CP/M vs TRSDOS

By moving to CP/M on your Model 4 you achieve two things. First you open the door to a wealth of existing software. More 8-bit software runs under CP/M than any other operating system. This includes virtually all of the "big name" programs which have set the standards by which all others are measured. Programs like **WordStar, dBASE II, and Turbo Pascal** are available for CP/M, but not TRSDOS. Public domain software, almost unknown under TRSDOS, fills hundreds of megabytes of disk space. Valuable public domain programs like the **Small C Compiler** are just a toll-free phone call away. Most importantly, hundreds of applications programs are available from a multitude of vendors. Many include the source code. Wouldn't you like to be able to choose from scores of Accounts Receivable or General Ledger programs, instead of the meager selection you now have? Circle our special Reader Service number 600 on the Reader Service Card to receive our comprehensive **free listing of suppliers of application programs that run under CP/M.**

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Can I use a hard disk drive?

CP/M hard disk drivers are available for Radio Shack, Aerocomp, and most other popular brands of hard disk drives. These drivers allow the hard drive to be partitioned into one to four logical drives of varying sizes. These drives may all be used by CP/M, or may be divided between CP/M and TRSDOS. A head-parking utility is included on the driver disk to minimize the risk of damage when the hard disk drive is not in use. Also included at no charge is a utility which will copy, compress, list, print, and delete files with ease. There isn't much you can say about a driver. It either works or it doesn't. Ours works supremely and it only costs $30.

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by William McMullan

The No-Nonsense Disk Editor

Handle data—commodities information in this case—in a quick and simple manner.

When I was trying to chart commodities on the Model 4, I realized that I needed a way to edit the downloaded files into a form the computer could use to calculate and create a chart. A disk editor seemed to be the key to take the commodities data from the phone, organize it, and store it. I wanted to be able to fix garbled data or handle data that changes with time.

Not satisfied with complex commercial file editors, I wrote EZ Editor (see Program Listing 1). EZ Editor is self-prompting, simple to use, and easily modified to fit your specific needs. Besides tracking commodities, you could also use it for other data you update frequently, such as telephone and address files.

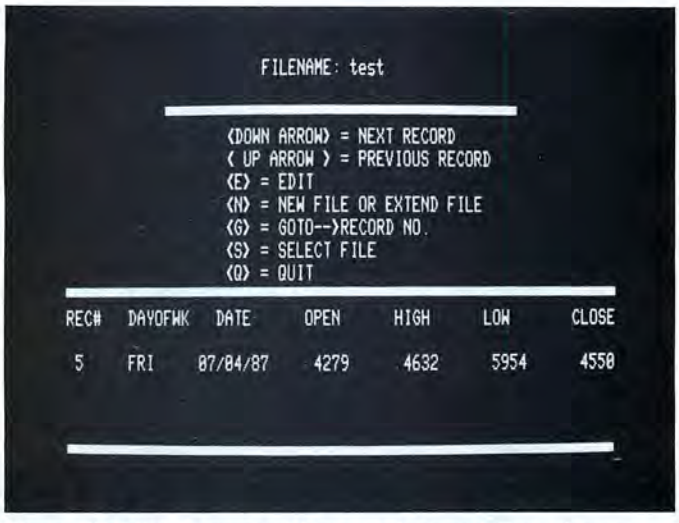

Photo. EZ Editor's menu with a sample record. Records can be displayed one at a time using the arrow keys.

To use EZ Editor, you must have free space on your disk equal to the space that the data file you want to edit occupies. (The program creates a new file to hold the edited data before deleting the original file.)

To test the program, type Listing 1 and Program Listing 2 into Basic. Run Listing 2 to create a file of test data named Test/DAT. The file resembles data downloaded from a commodities BBS. When you run EZ Editor, answer the file-name prompt with TEST.

You can choose to create a new file, extend an old one, edit, or enter new data (see the Photo). If you select "N" to create a new file, EZ Editor kills any existing file that has the name you gave your new file. Be careful what you name your files!

If you select "E" to extend a file, EZ Editor appends the records you designate to the end of that file. When you exit EZ Editor with the Q command, the program asks you whether or not you want to rewrite the file on which you were working.

Customizing EZ Editor

The TRSDOS manual covers all EZ Editor's disk-file routines. Here is a line-by-line description of changes you can make to fit the program to your needs.

- Lines 110–160 change the variable names to suit your needs.
- Lines 290, 310, 1170, and 1500 add drive numbers or letters; change extensions.
- Line 470 adds label fields as needed.
- Line 500 adds variable fields as needed.
- Lines 720–840 accommodate changes in spacing, number, or size of fields.
- Line 970: If you have added fields, include them here so the program can zero them.
- Lines 1060, 1080–1130, 1540–1590, 1430, 1490, and 1510: If you have added fields, include them here.
- Line 1070 checks if the variable in the first field is XXX, and if it is, removes it. You might want to change this line, for example, to check for non-numbers.
- Lines 1490 and 1510 change fielding to your data's format, if necessary.
- Lines 1480 and 1500 change the 31 in these lines to your LRL (LRL = total bytes in all fields).

If your record has only six fields, or if you want to alter only six fields, adapting EZ Editor is easy. If, however, you need to add fields, or significantly increase the size of fields, be prepared to spend some time rearranging the screen.

EZ Editor on the 1000

To run EZ Editor and the test file on the Tandy 1000, make the changes below. For Listing 1:

- Change all Print@ statements to Locate statements. If a Print@ starts at zero, the Locate statement must start at 1. For example:

```
180 CLS:PRINT @(8,25),LI$
```

becomes:

```
180 CLS:LOCATE 8,25:PRINT LI$
```

and:

```
1190 CLS:PRINT @(1,0),K3$;
```

becomes:

```
1190 CLS:LOCATE 1,1:PRINT K3$;
```

- Change all references to FILENAME/EXT to FILENAME.EXT. For example:

```
310 F$ = FILES$ + "/DAT"
```

becomes:

```
310 F$ = FILES$ + ".DAT"
```

and:

```
1170 CLOSE:KILL F$:NAME "TEMP/DAT" AS F$:RETURN
```

becomes:

```
1170 CLOSE:KILL F$:NAME "TEMP.DAT" AS F$:RETURN
```

- Divide all references to LOF(1) by 31 (the number of bytes the program assigns to one record). For example:

```
900 R = R - 2:IF R = - 1 THEN R = LOF(1) - 1
```

System Requirements

Model 4
(Tandy 1000 with changes)
64K RAM
Basic
Available on The Disk Series

Program Listing 1. EZ Editor. See p. 100 for information on using checksums.

```
10 REM ****** EZEDIT/BAS ******    VER 1.0                    '*  2339
20 REM WRITTEN BY WILLIAM MCMULLAN                             '*  2326
25 REM RT 6 BOX 1 BASTROP, LA. 71220                           '*  2111
30 CLEAR                                                       '*   490
40 CLS                                                         '*   358
50 X=1                                                         '*   331
60 K1$="PRESS ANY KEY TO CONTINUE":K2$="
   "                                                           '*  3337
70 LI$=STRING$(30,131)                                         '*  1261
80 K3$=STRING$(80,131)                                         '*  1244
90 GOSUB 1190                                                  '*   756
100 REM ************* ASSIGN FIELD NAMES HERE                  '*  2616
110 FH1$="DAYOFWK"                                             '*  1067
120 FH2$="DATE"                                                '*   822
130 FH3$="OPEN"                                                '*   844
140 FH4$="HIGH"                                                '*   828
150 FH5$="LOW"                                                 '*   784
160 FH6$="CLOSE"                                               '*   918
170 REM***************** ENTER FILE NAME                        '*  2181
180 CLS:PRINT @(8,25),LI$                                      '*  1475
190         PRINT @(9,36),"ENTER"                              '*  1684
200         PRINT @(11,34),"FILE NAME"                         '*  1942
210         PRINT @(12,25),LI$                                 '*  1452
220         PRINT @(16,28),"or ENTER 'B' FOR BASIC";           '*  2866
230         PRINT @(17,28),"    ENTER 'D' DIRECTORY";          '*  2785
240         PRINT @(14,33),"|........|";                       '*  2014
250         PRINT @(14,34),"";                                 '*  1400
260         LINE INPUT FILE$:IF FILE$="" THEN 180              '*  2698
270         IF LEN(FILE$) > 8 THEN PRINT @(14,34),"
    ":GOTO 240                                                 '*  3760
280 IF FILE$="B" OR FILE$="b" THEN END                         '*  2238
290 IF FILE$="D" OR FILE$="d" THEN SYSTEM"CAT /DAT": WHILE INKEY
    $="":WEND:GOTO 180                                         '*  5057
300 REM ******************** MENU                             '*  1694
310 F$=FILE$+"/DAT":REM *** YOU MAY WANT TO ASSIGN DRIVE HERE. '*  3844
320 GOSUB 1470 : REM *** OPEN FILES ***                        '*  2208
330 IF LOF(1)=0 THEN PRINT @(21,33),"FILE NOT FOUND":PRINT @(22,
    21),"DO YOU WANT TO CREATE A FILE <Y>/<N>";:LINE INPUT; QU$:
     IF QU$="Y" OR QU$="y" THEN GOSUB 1310:GOTO 300            '* 10457
340 IF QU$="N" OR QU$="n" THEN CLOSE:KILL F$:GOTO 170          '*  3225
350 GOSUB 370                                                  '*   754
360 GOSUB 990:END: REM *** REMOVE DELETED FILES & GOTO BASIC *** '* 3903
370 CLS:PRINT @(1,30),"FILENAME: "FILE$;                       '*  2398
```

Listing 1 continued

becomes:

```
900 R=R-2:IF R=-1 THEN R=(LOF(1)/31)-1
```

- Change OPEN "D" to OPEN "R" in lines 1480 and 1500.
- Change the THEN SYSTEM"CAT/DAT" command in line 290 to THEN CLS: FILES"*.DAT".
- To use the arrow keys to page through your data file, insert line 525 and change lines 530 and 550 to read as follows:

```
525 K=ASC(RIGHT$(QU$,1))
530 IF K=72 THEN 600
550 IF K=80 THEN GOSUB 900
```

For the test file in Listing 2:

- Change line 60 from OPEN "D", 1, "TEST/DAT",31 to OPEN "R", 1, "TEST.DAT",31.
- Change the random function in lines 130–160. Line 130 should read O=INT (RND(0.1)*6000)+1:IF O < 4000 THEN 130. Change lines 140–160 accordingly.
- Change TESTGEN/BAS to TESTGEN. BAS in lines 10 and 320.
- Change TEST/DAT to TEST.DAT in line 40.■

William McMullan is a self-employed electronics technician, a ham-radio operator, and a computer hacker. Write to him at Route 6, Box 1, Bastrop, LA 71220.

Circle 291 on Reader Service card.

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Listing 1 continued

```
380 PRINT @(3,19),STRING$(40,131);                                          '*  1946
390 PRINT @(4,26),"<DOWN ARROW> = NEXT RECORD";                             '*  2917
400 PRINT @(5,26),"< UP ARROW > = PREVIOUS RECORD";                         '*  3145
410 PRINT @(6,26),"<E> = EDIT";                                             '*  1738
420 PRINT @(7,26),"<N> = NEW FILE OR EXTEND FILE";                          '*  3010
430 PRINT @(8,26),"<G> = GOTO-->RECORD NO."                                 '*  2538
440 PRINT @(9,26),"<S> = SELECT FILE"                                       '*  2173
450 PRINT @(10,26),"<Q> = QUIT"                                             '*  1767
460 PRINT @(11,8),STRING$(62,131);                                          '*  1946
470 PRINT @(12,8),"REC#";:PRINT @(12,15),FH1$;:PRINT @(12,25),FH
    2$;:PRINT @(12,35),FH3$;:PRINT @(12,45),FH4$;:PRINT @(12,55)
    ,FH5$;:PRINT @(12,65),FH6$;                                             '*  8656
480 FOR R = X TO LOF(1)                                                     '*  1328
490 GET 1, R                                                                '*   652
500 PRINT @(14,8),R;:PRINT @(14,15),F1$;:PRINT @(14,23),F2$;:PRI
    NT @(14,35),F3$;:PRINT @(14,45),F4$;:PRINT @(14,55),F5$;:PRI
    NT @(14,65),F6$;                                                        '*  7991
510 PRINT @(18,8),STRING$(62,131);                                          '*  1949
520 QU$="":WHILE QU$="":QU$=INKEY$:WEND                                     '*  2413
530 IF QU$=CHR$(10) THEN 600                                                '*  1574
540 IF QU$="E" OR QU$="e" THEN GOSUB 690                                    '*  2359
550 IF QU$=CHR$(11) THEN GOSUB 900                                          '*  1996
560 IF QU$="Q" OR QU$="q" THEN GOSUB 620                                    '*  2378
570 IF QU$="G" OR QU$="g" THEN GOSUB 920                                    '*  2362
580 IF QU$="S" OR QU$="s" THEN GOSUB 960                                    '*  2391
590 IF QU$="N" OR QU$="n" THEN GOSUB 1310:GOTO 300                          '*  2970
600 QU$="":IF R=LOF(1) OR R > LOF(1) THEN R=0                               '*  2590
610 NEXT R                                                                  '*   616
620 PRINT @(22,25),"";:LINE INPUT "DO YOU WANT TO QUIT  <Y> <N>"
    ;QU$                                                                    '*  4158
630 IF QU$="Y" OR QU$="y" THEN 640 ELSE 370                                 '*  2493
640 GOSUB 990                                                               '*   764
650 END                                                                     '*   402
660 PRINT @(22,25),"                                    ";:RETURN           '*  2806
670 CLOSE:PRINT @(22,25),STRING$(30," ");                                   '*  2376
680 GOTO 10                                                                 '*   632
690 ED=1:QU$=""                                                             '*   827
700 PRINT @(22,18),"ENTER 'XXX' UNDER "FH1$" TO CANCELL RECORD";            '*  3878
710 PRINT @(23,18),"PRESS ENTER TO RETAIN VALUE ON LINE ABOVE";             '*  3995
720 PRINT @(16,8),"=NEW=";:PRINT @(16,15),"___";:PRINT @(16,23),
    "________";:PRINT @(16,35),"____";:PRINT @(16,45),"____";:PR
    INT @(16,55),"____";:PRINT @(16,65), "____";                            '* 10411
730 PRINT @(16,14),">";:LINE INPUT F1A$:PRINT @(16,14)," ";                 '*  3362
740 IF F1A$="" THEN F1A$=F1$:PRINT @(16,15),F1$;                            '*  2653
750 PRINT @(16,22),">";:LINE INPUT F2A$:PRINT @(16,22)," ";                 '*  3363
760 IF F2A$="" THEN F2A$=F2$:PRINT @(16,23),F2A$                            '*  2664
770 PRINT @(16,34),">";:LINE INPUT F3A$:PRINT @(16,34)," ";                 '*  3372
780 IF F3A$="" THEN F3A$=F3$:PRINT @(16,35),F3A$                            '*  2673
790 PRINT @(16,44),">";:LINE INPUT F4A$:PRINT @(16,44)," ";                 '*  3377
800 IF F4A$="" THEN F4A$=F4$:PRINT @(16,45),F4A$                            '*  2671
810 PRINT @(16,54),">";:LINE INPUT F5A$:PRINT @(16,54)," ";                 '*  3373
820 IF F5A$="" THEN F5A$=F5$:PRINT @(16,55),F5A$                            '*  2678
830 PRINT @(16,64),">";:LINE INPUT F6A$:PRINT @(16,64)," ";                 '*  3378
840 IF F6A$="" THEN F6A$=F6$:PRINT @(16,65),F6$                             '*  2620
850 GOSUB 1530 : REM ** WRITE TO DISK **                                    '*  2341
860 PRINT @(16,8),STRING$(70," ");                                          '*  1905
870 PRINT @(22,18),STRING$(50," ");                                         '*  1950
880 PRINT @(23,18),STRING$(50," ");                                         '*  1952
890 RETURN                                                                  '*   673
900 R=R-2:IF R=-1 THEN R=LOF(1)-1                                           '*  1934
910 RETURN                                                                  '*   666
920 PRINT @(22,30),"ENTER RECORD NO. --> ";:LINE INPUT RR$                  '*  3505
930 R=VAL(RR$)-1:IF R=-1 THEN R=0                                           '*  1961
940 IF R=> LOF(1) THEN R=LOF(1)-1                                           '*  1915
950 PRINT @(22,30),STRING$(30," ");:RETURN                                  '*  2479
960 QU$="":CLOSE:GOTO 170                                                   '*  1509
970 F1A$="":F2A$="":F3A$="":F4A$="":F5A$="":F6A$=""                         '*  2591
980 GOSUB 850:RETURN                                                        '*  1304
990 REM ************** REMOVE DELETED FILES                                  '*  2474
1000 PRINT @(22,20),"";:LINE INPUT "DO YOU WANT TO DELETE UNUSED
     FILES <Y> <N>";QU$                                                     '*  5177
1010 IF QU$="N" OR QU$="n" THEN CLOSE:RETURN                                '*  2755
1020 CLOSE:GOSUB 1470                                                       '*  1279
1030 X=1:RR=1                                                               '*   758
1040 FOR R = X TO LOF(1)                                                    '*  1369
1050 GET 1, R                                                               '*   693
1060 F1A$=F1$:F2A$=F2$:F3A$=F3$:F4A$=F4$:F5A$=F5$:F6A$=F6$                  '*  3167
1070 IF F1$="XXX" OR F1$="xxx" THEN 1160                                    '*  2391
1080 LSET F1B$ = F1A$                                                       '*  1143
1090 LSET F2B$ = F2A$                                                       '*  1146
1100 LSET F3B$ = F3A$                                                       '*  1140
1110 LSET F4B$ = F4A$                                                       '*  1143
1120 LSET F5B$ = F5A$                                                       '*  1146
1130 LSET F6B$ = F6A$                                                       '*  1149
1140 PUT 2,RR                                                               '*   769
1150 RR=RR+1                                                                '*   712
1160 NEXT R                                                                 '*   665
1170 CLOSE:KILL F$:NAME "TEMP/DAT" AS F$:RETURN                             '*  2980
1180 REM ***************** INTRODUCTION                                      '*  2170
1190 CLS:PRINT @(1,0),K3$;                                                  '*  1499
1200 FOR JJ=1 TO 22:PRINT @(JJ,0),CHR$(191);:PRINT @(JJ,79),CHR$
     (191);:NEXT                                                            '*  4452
1210 PRINT @(22,2),K3$;                                                     '*  1261
1220 PRINT @(4,28),STRING$(21,131);                                         '*  1988
1230 PRINT @(5,31),"E Z     D A T A";                                       '*  1901
1240 PRINT @(6,28),STRING$(21,140);                                         '*  1992
1250 PRINT @(10,28),"D A T A   E D I T I N G";                              '*  2406
1260 PRINT @(12,25),"A N D    C O M P A C T I N G";                         '*  2656
1270 PRINT @(14,31),"S O F T W A R E";                                      '*  2067
1280 PRINT @(19,25),"WRITTEN BY WILLIAM MCMULLAN";                          '*  3169
1290 WHILE INKEY$="":PRINT @(23,25),K1$;:FOR JJ=1 TO 100:NEXT JJ
     :SWAP K1$,K2$:WEND                                                     '*  4975
1300 RETURN                                                                 '*   708
1310 REM ******** CREATE FILE OF BLANKS OR EXTEND FILE                      '*  3270
```

Listing 1 continued

Circle 50 on Reader Service card.

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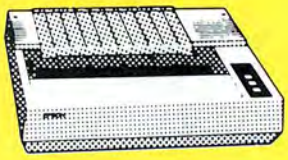

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Listing 1 continued

```
1320 QU$="":CLS:CLOSE                                          '*  1277
1330 PRINT @(12,12),"";:INPUT "DO YOU WANT A
     <N> EW FILE OR <E> XTEND AN OLD ONE";A$                   '*  5074
1340 IF A$="E" OR A$="e" THEN A=0:GOTO 1370                    '*  2409
1350 IF A$="N" OR A$="n" THEN A=1:KILL F$:GOT
     O 1370                                                    '*  2925
1360 GOTO 1330                                                 '*   778
1370 PRINT @(12,12),"                ENTER NU
     MBER OF RECORDS              ";:: INPUT NN               '*  4442
1380 GOSUB 1470                                                '*   856
1390 IF A THEN B=1 ELSE B=LOF(1)+1:NN=NN+LOF(
     1)                                                        '*  2784
1400 FOR R=B TO NN                                             '*  1084
1410 F1A$="XXX"                                                '*   843
1420 F2A$="00/00/00"                                           '*   963
1430 F3A$="00000":F4A$="00000":F5A$="00000":F
     6A$="00000"                                               '*  2776
1440 GOSUB 1530                                                '*   850
1450 NEXT R                                                    '*   667
1460 CLOSE:RETURN                                              '*  1147
1470 '* OPEN FILE AND FIELD *
1480 OPEN "D", 1, F$,31                                        '*  1162
1490 FIELD 1, 3 AS F1$,8 AS F2$,5 AS F3$,5 AS
      F4$,5 AS F5$,5 AS F6$                                    '*  3507
1500 OPEN "D",2,"TEMP/DAT",31                                  '*  1628
1510 FIELD 2, 3 AS F1B$,8 AS F2B$,5 AS F3B$,5
      AS F4B$,5 AS F5B$,5 AS F6B$                              '*  3897
1520 RETURN                                                    '*   712
1530 '* WRITE TO DISK *
1540 LSET F1$ = F1A$                                           '*  1078
1550 LSET F2$ = F2A$                                           '*  1081
1560 LSET F3$ = F3A$                                           '*  1084
1570 LSET F4$ = F4A$                                           '*  1087
1580 LSET F5$ = F5A$                                           '*  1090
1590 LSET F6$ = F6A$                                           '*  1093
1600 PUT 1,R                                                   '*   687
1610 RETURN                                                    '*   712
1620 SAVE"EZEDIT/BAS"                                          '*  1318
```

End

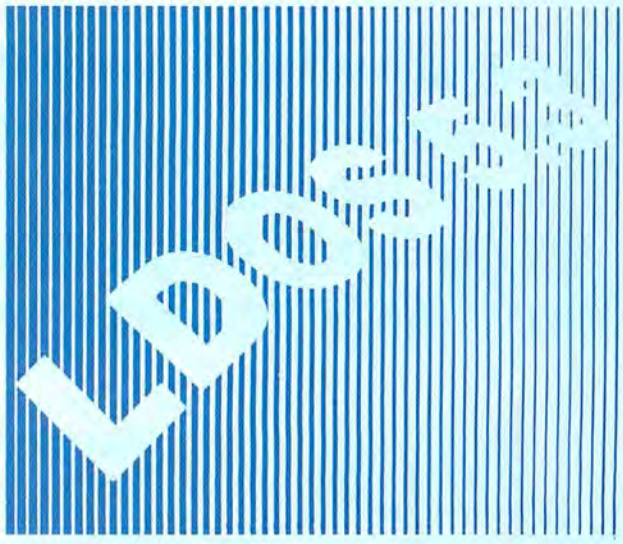
Program Listing 2. Test file.

```
10 ' **** SAVE AS "TESTGEN/BAS"
20 ' **** THIS PROGRAM IS USED TO CREATE DATA
    FOR TEST PURPOSES
30 ' **** THE DATES AND DATA ARE ONLY SIMULAT
   IONS
40 ' **** THIS PROGRAM CREATES A FILE NAMED "
   TEST/DAT"
50 MO$="09"                                                    '*   559
60 OPEN "D", 1, "TEST/DAT",31                                  '*  1605
70 FIELD 1, 3 AS DAYOFWK$,8 AS DAYT$,5 AS O$,
   5 AS H$,5 AS L$,5 AS C$                                     '*  3808
80 FOR W=1 TO 30                                               '*   922
90 DA$=MID$("0102030405060708091011121314151617
   1718192021222324252627282930",(W*2)-1,2)                    '*  4310
100 X=X+1:IF X=6 THEN X=1                                      '*  1507
110 DAYOFWK1$=MID$("MONTUEWEDTHUFRI",(X*3)-2,
    3)                                                         '*  2918
120 DAYT1$=MO$+"/"+DA$+"/86"                                   '*  1461
130 O=RND(6000):IF O < 4000 THEN 130                           '*  1974
140 H=RND(6000):IF H < 4000 THEN 140                           '*  1962
150 L=RND(6000):IF L < 4000 THEN 150                           '*  1972
160 C=RND(6000):IF C < 4000 THEN 160                           '*  1956
170 O1$=STR$(O)                                                '*   854
180 H1$=STR$(H)                                                '*   841
190 L1$=STR$(L)                                                '*   850
200 C1$=STR$(C)                                                '*   824
210 LSET DAYOFWK$ = DAYOFWK1$                                  '*  1835
220 LSET DAYT$ = DAYT1$                                        '*  1382
230 LSET O$ = O1$                                              '*   929
240 LSET H$ = H1$                                              '*   916
250 LSET L$ = L1$                                              '*   925
260 LSET C$ = C1$                                              '*   908
270 PUT 1,W                                                    '*   646
280 PRINT DAYT1$;" ";DAYOFWK1$;" "O1$" "H1$"
    "L1$" "C1$                                                 '*  2935
290 NEXT W                                                     '*   625
300 CLOSE                                                      '*   553
310 END                                                        '*   395
320 SAVE"TESTGEN/BAS"                                          '*  1351
```

End

Hey! Remember to mention that you saw their ad in *80 Micro*

Thanks...



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by David Goben

Jumping Flash Backup

Back up your TRSDOS 6.x or LDOS disks in just one pass.

Making disk backups under TRSDOS 6.x is tedious. You must format a disk using Format/CMD, then back up material onto it with Backup/CMD. If you want to make another backup, you must repeat the entire process, entering commands and answering prompts or appending parameters. This takes a long time even if you use a JCL file to perform the tasks for you.

Due to a backup of frustration, I wrote Onepass, which performs what I feel is a superior method of disk duplication. It does this in a single pass (no separate formatting and copying stages).

Onepass (see the Program Listing) not only backs up the standard double-density, single-sided, 40-cylinder disks that TRSDOS 6.x comes on, but also single-density and double-sided disks of any cylinder count, including the double and single densities that Model III LDOS creates and double-density disks from Model I LDOS. Onepass cannot back up single-density Model I disks because DOS writes their directory cylinders with a data-address mark of FA hexadecimal (hex), which the Model III/4's WD1793 disk controller misinterprets.

I set up the disk-format information that Onepass writes to the destination disk during formatting (the code imprinted on the disks that allows the computer to recognize sectors and cylinders) to be very reliable. It is less prone to cyclic-redundancy-check (CRC) and parity errors than most custom formats are. If you encounter an error with Onepass, it is more likely to be due to a defective disk or drive than to the cylinder information.

Onepass does not do a lot of bouncing between drives. It sets the drive heads and reads data off the source disk's cylinder (if there is any to read). It formats the destination cylinder, writes to it (if there is data to write), and verifies it. Onepass repeats this process for each cylinder.

The Granule Method

Onepass uses a new, efficient approach to duplicating cylinder data. Rather than checking to see if there is any data on a cylinder and then backing it up as a block, Onepass copies the data granule by granule.

A granule is the smallest unit of disk space allocatable to a file. On a double-density, 5¼-inch disk a granule normally consists of six sectors (256-byte blocks of information), which equals 1.5K (1,536 bytes) of memory. A single-density granule normally consists of five sectors, or 1.25K (1,280 bytes) of space. The only TRS-80 disk systems I know of that vary from this, other than CP/M, are DBLDOS and Newdos/80, which use five sectors per granule in their double-density modes, and Model III TRSDOS 1.x and Model I TRSDOS 2.7/2.8, which allocate three sectors per granule.

Onepass copies only granules allocated to a file on a given cylinder instead of copying the entire cylinder like other backup programs.

The granule method allows Onepass to free locked-out cylinders when transferring data. Most backup routines leave them locked out.

Onepass loads the granule-allocation table (GAT) from the first sector of the source disk's directory into a safe area of the computer's memory. The program uses the table to point to important allocation information.

The first 96 bytes of the GAT comprise a table showing free and allocated granules in a cylinder. Each byte of the table represents a cylinder, and DOS assigns each granule on the cylinder to a single bit within the cylinder's byte. DOS assigns the first granule on the cylinder to bit zero, the second to bit 1, and so on.

If the number of bits exceeds the number of granules in the cylinder (TRSDOS 6.x uses only three grans to a cylinder in the double-density mode), DOS sets all the other bits in the byte, thus preallocating them and safely locking them out of the system. The only DOSes I know of that do not do this are Model III TRSDOS 1.x and Model I double-density TRSDOS 2.7/2.8, which leave the extra bits set at zero. These two operating systems never check for more than six granules.

System Requirements

Model 4/4P/4D
64K RAM
Two disk drives
Disk Basic
Available on The Disk Series

Program Listing. Onepass.

```
10 'DATA POKE FORMAT CREATED ON DATAPOKE/BAS
20 CLS:PRINT"BUILDING 'ONEPASS/CMD'":RESTORE
30 OPEN"O",1,"ONEPASS/CMD":L=90
40 CS=0:L=L+10
50 READ A$:IF A$="END"THEN CLOSE:END
60 IF LEFT$(A$,1)="-"THEN IF VAL(MID$(A$,2))=CS THEN 40 ELSE PRINT
   "CHECKSUM ERROR IN LINE"L:END
70 A=VAL(A$):PRINT#1,CHR$(A);:CS=CS+A
80 GOTO 50
90 ''' DATA AREA '''
100 DATA 1,130,36,39,237,115,48,44,205,138,43,28,31,14,79,-1188
110 DATA 78,69,80,65,83,83,32,49,46,48,48,46,48,48,32,-855
120 DATA 45,32,83,105,110,103,108,101,45,80,97,115,115,32,68,-1239
130 DATA 105,115,107,32,70,111,114,109,97,116,32,97,110,100,32,-1347
140 DATA 66,97,99,107,117,112,32,85,116,105,108,105,116,121,10,-1396
150 DATA 67,111,112,121,114,105,103,104,116,32,40,99,41,32,49,-1246
160 DATA 57,56,54,44,32,49,57,56,55,32,98,121,32,68,97,-908
170 DATA 118,105,100,32,71,111,98,101,110,46,32,65,108,108,32,-1237
180 DATA 114,105,103,104,116,115,32,114,101,115,101,114,1,130,164,-1529
190 DATA 39,118,101,100,13,126,254,13,40,53,205,15,43,48,26,-1194
200 DATA 205,138,43,10,10,73,76,76,69,71,65,76,32,80,97,-1121
210 DATA 114,97,109,101,116,101,114,13,195,196,44,50,226,46,71,-1593
220 DATA 126,35,254,32,40,250,43,254,13,40,35,205,15,43,56,-1441
230 DATA 210,24,57,175,50,76,44,205,138,43,10,69,110,116,101,-1428
240 DATA 114,32,83,79,85,82,67,69,0,205,60,43,50,226,46,-1241
250 DATA 71,175,50,76,44,205,138,43,10,69,110,116,101,114,32,-1354
```

Listing continued

Listing continued

```
260 DATA 68,69,83,84,73,78,65,84,73,79,78,0,205,60,43,-1142
270 DATA 50,46,47,184,32,52,60,50,76,1,130,36,40,44,205,-1053
280 DATA 34,43,205,46,43,205,138,43,67,97,110,110,111,116,32,-1400
290 DATA 68,117,112,108,105,99,97,116,101,32,111,110,32,97,32,-1337
300 DATA 115,105,110,103,108,101,32,100,114,105,118,101,46,13,195,-1466
310 DATA 211,43,198,48,50,249,40,205,49,43,175,50,76,44,33,-1514
320 DATA 32,32,34,215,44,205,138,43,77,111,117,110,116,32,68,-1374
330 DATA 105,115,107,115,32,105,110,32,68,114,105,118,101,115,32,-1374
340 DATA 97,110,100,32,112,114,101,115,115,32,91,69,78,84,69,-1319
350 DATA 82,93,32,31,0,205,153,43,254,128,202,164,43,254,13,-1697
360 DATA 32,244,205,46,43,205,1,130,164,40,200,45,40,34,58,-1487
370 DATA 226,46,205,120,43,32,105,115,32,97,110,32,85,78,75,-1401
380 DATA 78,79,87,78,32,100,105,115,107,32,116,121,112,101,0,-1263
390 DATA 195,164,43,205,193,45,253,229,58,46,47,205,255,44,175,-2157
400 DATA 50,81,46,50,86,46,50,185,41,33,49,48,17,1,0,-783
410 DATA 62,49,239,40,5,254,6,194,8,42,205,138,43,68,114,-1467
420 DATA 105,118,101,32,58,48,32,99,111,110,116,97,105,110,115,-1357
430 DATA 32,68,65,84,65,32,45,45,32,0,175,253,203,3,118,-1220
440 DATA 40,1,60,50,198,41,35,126,35,254,254,32,9,86,29,-1250
450 DATA 62,49,239,1,130,36,41,254,6,40,30,205,138,43,85,-1359
460 DATA 78,82,69,65,68,65,66,76,69,32,68,73,82,69,67,-1029
470 DATA 84,79,82,89,0,60,50,185,41,24,65,17,208,0,25,-1009
480 DATA 229,17,100,41,197,1,8,0,237,176,17,112,41,14,8,-1198
490 DATA 237,176,193,225,17,239,255,25,205,138,43,68,73,83,75,-2052
500 DATA 78,65,77,69,32,61,61,32,48,48,47,48,48,47,48,-809
510 DATA 48,0,22,255,20,126,43,60,40,250,62,95,146,50,86,-1303
520 DATA 46,205,138,43,32,45,45,10,10,85,115,101,32,116,104,-1127
530 DATA 105,115,32,100,105,115,107,63,32,0,205,153,43,254,128,-1557
540 DATA 1,130,164,41,202,164,43,230,223,254,78,202,164,43,254,-2193
550 DATA 89,32,237,205,51,43,205,49,43,62,0,183,32,75,175,-1481
560 DATA 253,203,3,118,40,1,60,254,0,32,63,253,227,71,175,-1753
570 DATA 253,203,3,118,40,1,60,253,227,184,32,47,205,138,43,-1807
580 DATA 10,82,101,102,111,114,109,97,116,32,100,105,115,107,63,-1364
590 DATA 32,0,205,153,43,254,128,202,164,43,230,223,254,89,40,-2060
600 DATA 7,254,78,32,238,50,81,46,205,51,43,205,49,43,205,-1587
610 DATA 193,45,221,225,253,126,3,230,7,71,221,126,3,230,248,-2202
620 DATA 176,253,119,3,6,4,253,229,221,126,6,253,1,130,36,-1816
630 DATA 42,119,6,221,35,253,35,16,244,253,225,253,203,3,190,-2098
640 DATA 253,229,62,101,239,253,203,10,134,253,225,22,0,205,148,-2337
650 DATA 46,40,25,58,226,46,205,120,43,32,82,69,65,68,0,-1125
660 DATA 205,138,43,32,69,114,114,111,114,0,195,164,43,205,66,-1613
670 DATA 46,32,5,205,252,46,40,20,254,15,202,242,42,58,46,-1505
680 DATA 47,205,120,43,32,87,82,73,84,69,0,24,213,205,138,-1422
690 DATA 43,29,86,101,114,105,102,121,105,110,103,32,0,205,202,-1458
700 DATA 44,30,0,58,46,47,79,62,50,239,40,18,254,6,40,-1013
710 DATA 14,121,205,120,43,32,86,69,82,1,130,164,42,73,70,-1252
720 DATA 89,0,24,166,28,123,254,18,32,227,122,253,190,6,40,-1572
730 DATA 16,58,46,47,205,187,45,58,226,46,205,187,45,20,195,-1586
740 DATA 63,42,33,0,38,253,86,9,30,0,62,54,239,32,153,-1094
750 DATA 205,138,43,14,10,10,68,117,112,108,105,99,97,116,105,-1347
760 DATA 111,110,32,67,111,109,112,108,101,116,101,46,0,195,164,-1483
770 DATA 43,58,46,47,205,120,43,32,105,115,32,87,82,73,84,-1172
780 DATA 69,45,80,82,79,84,69,67,84,69,68,46,0,24,224,-1090
790 DATA 126,35,254,44,40,250,254,58,32,2,126,35,214,48,216,-1734
800 DATA 254,8,63,201,33,0,1,130,36,43,3,6,3,62,15,-858
810 DATA 239,62,31,24,5,205,49,43,62,10,197,213,79,62,2,-1283
820 DATA 239,209,193,201,205,138,43,32,68,114,105,118,101,58,32,-1856
830 DATA 0,205,153,43,254,128,202,164,43,254,48,56,244,254,56,-2104
840 DATA 48,240,205,51,43,214,48,245,205,153,43,254,128,40,232,-2149
850 DATA 254,13,32,5,205,49,43,241,201,254,8,32,236,205,51,-1829
860 DATA 43,241,24,208,245,205,138,43,10,68,114,105,118,101,32,-1695
870 DATA 0,241,198,48,205,51,43,227,126,35,183,40,7,205,51,-1660
880 DATA 43,254,13,32,244,227,201,62,8,239,40,251,62,8,239,-1923
890 DATA 32,251,201,1,130,164,43,205,138,43,10,10,80,114,101,-1523
900 DATA 115,115,32,91,69,78,84,69,82,93,32,116,111,32,114,-1233
910 DATA 101,112,101,97,116,32,119,105,116,104,32,115,97,109,101,-1457
920 DATA 32,100,114,105,118,101,115,44,0,205,138,43,10,80,114,-1319
930 DATA 101,115,115,32,91,66,82,69,65,75,93,32,116,111,32,-1195
940 DATA 101,120,105,116,32,116,111,32,79,112,101,114,97,116,105,-1457
950 DATA 110,103,32,83,121,115,116,101,109,44,10,80,114,101,115,-1354
960 DATA 115,32,91,78,93,32,116,111,32,114,101,115,116,97,114,-1357
970 DATA 116,32,119,105,116,104,32,78,69,87,32,112,97,114,97,-1310
980 DATA 1,130,36,44,109,101,116,101,114,115,46,46,46,14,0,-1019
990 DATA 49,0,0,205,153,43,254,128,40,29,254,13,40,14,254,-1476
1000 DATA 78,40,4,254,110,32,237,205,34,43,195,226,39,62,0,-1559
1010 DATA 183,32,226,205,34,43,195,93,40,205,34,43,205,138,43,-1719
1020 DATA 77,111,117,110,116,32,97,32,68,79,83,32,100,105,115,-1274
1030 DATA 107,32,105,110,32,68,114,105,118,101,32,48,32,97,110,-1211
1040 DATA 100,32,80,114,101,115,115,32,91,69,78,84,69,82,93,-1255
1050 DATA 32,0,205,153,43,254,13,32,249,205,138,43,10,10,78,-1465
1060 DATA 79,84,69,58,32,82,101,97,108,45,84,105,1,130,164,-1239
1070 DATA 44,109,101,32,67,108,111,99,107,32,105,115,32,110,111,-1283
1080 DATA 32,108,111,110,103,101,114,32,97,99,99,117,114,97,116,-1450
1090 DATA 101,10,13,33,0,0,62,22,239,205,138,43,32,67,121,-1086
1100 DATA 108,105,110,100,101,114,32,48,32,0,201,229,213,106,38,-1537
1110 DATA 0,17,249,44,213,62,97,239,225,17,215,44,126,35,254,-1837
1120 DATA 32,40,250,18,19,183,32,245,209,225,201,49,50,51,52,-1656
1130 DATA 53,0,79,50,163,45,62,40,239,40,19,121,205,120,43,-1279
1140 DATA 32,105,115,32,73,78,65,67,84,73,86,69,0,24,70,-973
1150 DATA 62,81,239,253,203,3,94,40,68,1,130,36,45,121,205,-1581
1160 DATA 120,43,32,105,115,32,97,32,72,65,82,68,68,73,83,-1087
1170 DATA 75,0,205,138,43,46,32,67,97,110,110,111,116,32,100,-1282
1180 DATA 117,112,108,105,99,97,116,101,32,111,110,32,116,104,105,-1465
1190 DATA 115,32,116,121,112,101,32,100,114,105,118,101,46,0,60,-1273
1200 DATA 50,76,44,195,211,43,253,203,4,102,40,16,121,205,120,-1683
1210 DATA 43,32,105,115,32,65,76,73,69,78,0,24,185,62,41,-1000
1220 DATA 239,62,208,211,240,17,0,72,205,152,45,32,251,205,152,-2091
1230 DATA 45,40,251,205,152,45,32,251,201,27,122,179,40,5,219,-1814
1240 DATA 240,203,79,201,62,0,1,130,164,45,205,120,43,32,105,-1630
1250 DATA 115,32,110,111,116,32,77,79,85,78,84,69,68,46,0,-1102
1260 DATA 195,164,43,79,62,45,239,24,6,62,44,239,62,47,239,-1550
1270 DATA 201,58,226,46,205,255,44,62,33,239,56,1,192,253,86,-1957
1280 DATA 9,30,0,33,0,38,62,49,239,254,6,192,253,126,8,-1299
1290 DATA 7,7,7,230,7,60,197,79,253,203,4,110,40,1,135,-1340
```

Listing continued

Onepass looks at a cylinder's allocation byte in the GAT and sees if any of the relevant granule bits are set. If none of the bits are set, Onepass does not transfer them from the source disk. If a bit is set, however, some or all of its granules contain active data, so Onepass looks 96 bytes higher and examines the corresponding cylinder information in the lock-out table. When a cylinder is locked out, the associated allocation bits are also set, indicating that the granules are allocated and preventing the system from assigning them to other files.

Onepass then sets the allocation byte as "free" (in case it is locked out), resetting all possible set bits to zero in the relevant allocation-bit area. Onepass performs an exclusive-or (XOR) function with the lock-out-table byte and the allocation byte.

If the cylinder is locked out, the program sets the Z (zero) status flag within the Z80 CPU and does not transfer any data. An NZ (not-zero) state, however, indicates that the cylinder is not locked out and that granules in it are allocated to files.

The remaining bits from the XOR function tell Onepass which granules are allocated. This information allows the program to map out and transfer the sectors in the cylinder that are within the allocated granules. Most backup programs do not do this and leave the locked-out cylinders locked out on the destination disk.

Using Onepass

Create Onepass by typing the Program Listing into Disk Basic and running it. (Note that Onepass includes its own set of checksums.) Return to DOS and execute Onepass/CMD from TRSDOS Ready by entering ONEPASS. Answer the prompts for the source and destination drives. Press the enter key to continue. Make sure that the disks are in the proper drives and press enter again. No DOS disk is required in drive zero, so you can mount a data disk there if you need to. You can press the break key any time during these prompts to abort the operation and restart.

(Ed. note: Due to space limitations, only the Basic code to create Onepass appears in print. The assembly source code is available on this month's 80 Micro *Disk Series. For more information, see p. 6.)*

If you prefer, you can enter the drive parameters on the command line when you boot Onepass. Entering ONEPASS :0 :1 (the colons [:] are optional) makes drive zero the source drive and drive 1 the destination drive. Onepass still prompts you to press enter and continue.

When you press enter, Onepass looks for a disk in the source drive. If it finds one, it checks to see if the disk is a TRSDOS 6.x or an LDOS disk. Onepass also sets its individual drive-code table (DCT) in the computer's memory to the disk's parameters (including number of

sides, density, and sectors per cylinder). Once the program gathers this information, it sets up flags indicating the total sectors per cylinder, sectors per granule, granules per cylinder, and cylinders per disk. It then moves the drive head to cylinder zero.

Next, Onepass verifies that the destination disk is mounted. If the disk is in place, the program attempts to read a sample sector. If it finds a valid sector, it goes to the directory, reports, and asks you if you want to use the disk. If Onepass can read a sector but cannot find the directory data, it reports "Unreadable directory" and proceeds.

Answer the prompt asking if you want to use the disk with "Y" or "N." If you select "Y," and the density of the disk is equal to the density of the source disk, Onepass asks you if you wish to reformat. Again answer "Y" or "N." If you choose "N" and the cylinder count of the destination disk is less than that of the source disk, the program formats all unformatted cylinders above the drive head when the head reaches them.

Onepass does not format cylinders below the drive head. Once you answer all the prompts, Onepass returns the destination drive's head to cylinder zero.

The program then checks the memory-resident GAT to see if any granules are allocated in the current cylinder. If it finds allocated granules, it reads the corresponding sectors from the source disk into memory. If necessary, it formats the destination cylinder.

If Onepass finds data to write to the cylinder, it writes the sectors to their correct positions on the disk. Then it checks to see if all sectors on the destination cylinder are written correctly. The program does this even if you choose not to reformat, since the cylinder can still contain sector errors. Onepass then advances the drive heads to the next cylinder.

The program repeats the process for each cylinder on the source disk. When finished, it transfers the updated GAT from memory to the GAT position in the destination disk's directory, completing the backup procedure.

When you abort an operation, or when Onepass completes a disk duplication, the program gives you an options menu. Press enter to make another backup with the same parameters, "N" to enter new parameters, or break to return to the operating system. Onepass omits the first option if the last parameters you entered were illegal. If you press break, the program prompts you to insert a DOS disk in drive zero and press enter.■

David Goben is a free-lance programmer who specializes in troubleshooting programs and writing utilites. Write to him at 67 Highland Road, Mansfield Center, CT 06250.

Listing continued

```
1300 DATA 50,204,46,50,27,47,71,175,55,23,16,252,50,160,46,-1272
1310 DATA 50,6,47,47,50,165,46,253,126,7,230,31,50,186,47,-1341
1320 DATA 60,50,182,47,245,111,38,0,253,203,4,110,40,1,135,-1479
1330 DATA 50,173,42,1,130,36,46,241,203,63,50,180,47,62,94,-1418
1340 DATA 239,125,50,202,46,50,25,47,175,253,203,4,110,40,1,-1570
1350 DATA 60,50,118,46,193,175,201,253,229,62,101,239,253,203,10,-2193
1360 DATA 70,253,225,194,164,43,62,0,183,40,7,62,0,186,56,-1545
1370 DATA 2,175,201,205,138,43,29,70,111,114,109,97,116,116,105,-1631
1380 DATA 110,103,0,205,202,44,205,73,47,205,124,46,192,62,0,-1618
1390 DATA 183,200,205,76,47,58,46,47,79,42,134,47,62,41,239,-1506
1400 DATA 62,55,239,201,221,33,0,39,33,49,48,30,0,201,205,-1416
1410 DATA 219,44,205,138,46,229,38,38,106,126,14,7,161,40,14,-1425
1420 DATA 1,130,164,46,6,248,125,198,96,111,126,112,106,174,245,-1888
1430 DATA 176,119,241,225,40,36,79,205,138,43,15,29,82,101,97,-1626
1440 DATA 100,105,110,103,32,32,32,0,205,202,44,6,6,62,3,-1042
1450 DATA 203,57,56,12,245,123,128,95,241,61,32,244,34,134,47,-1712
1460 DATA 201,197,50,247,46,14,0,62,49,239,221,119,0,40,4,-1489
1470 DATA 254,6,32,9,221,35,36,28,16,238,175,62,3,193,192,-1500
1480 DATA 24,218,205,138,46,229,38,38,106,126,225,230,7,200,79,-1909
1490 DATA 205,138,43,29,87,114,105,116,105,110,103,32,32,32,0,-1251
1500 DATA 6,6,62,3,203,57,56,9,245,123,128,95,1,130,36,-1160
1510 DATA 47,241,61,32,244,201,197,50,68,47,14,0,221,126,0,-1549
1520 DATA 214,6,62,53,32,1,60,239,32,9,221,35,36,28,16,-1044
1530 DATA 237,175,62,3,193,192,24,220,175,24,2,62,1,50,174,-1594
1540 DATA 47,197,213,229,245,122,50,171,47,58,46,47,79,62,81,-1694
1550 DATA 239,253,203,3,166,241,183,40,4,253,203,3,230,1,1,-2023
1560 DATA 48,33,229,229,253,203,3,118,40,6,1,22,48,33,182,-1448
1570 DATA 109,237,67,236,47,34,202,47,33,0,0,205,235,47,237,-1736
1580 DATA 83,236,47,253,126,7,230,31,60,71,14,0,58,202,47,-1465
1590 DATA 254,229,32,8,62,6,54,0,35,1,130,164,47,61,32,-1115
1600 DATA 250,54,254,35,54,0,35,54,0,35,113,35,121,198,6,-1244
1610 DATA 254,18,56,2,214,17,79,54,1,35,205,235,47,237,83,-1537
1620 DATA 231,47,197,6,128,17,182,109,114,35,115,35,16,250,205,-1687
1630 DATA 230,47,193,16,192,1,88,2,84,93,19,54,255,237,176,-1687
1640 DATA 225,209,193,201,17,0,0,24,3,17,0,0,197,235,70,-1391
1650 DATA 35,4,5,40,8,126,35,18,19,16,252,24,242,193,235,-1252
1660 DATA 201,1,252,26,255,0,1,247,11,255,6,0,1,251,0,-1507
1670 DATA 1,247,11,255,6,0,0,24,78,12,0,3,245,0,1,-883
1680 DATA 247,22,78,12,0,3,1,15,36,48,245,1,251,0,1,-960
1690 DATA 247,24,78,12,0,3,245,0,2,2,36,39,-688
1700 DATA END
```

End

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by Henry C. Gernhardt Jr.

File Relocation at 9,600 Baud

Transfer files speedily from a Model III or 4 to a Tandy 1000.

I had a bottleneck. Three years of repeatedly accessed files had to be either reentered or somehow transferred with little headache from an aging Model III to the new 1000 SX. Rapid, accurate, and easy-to-do data transfer was a must, and a software solution was both expensive and, to my mind, unproven.

If I was going to have to convert to ASCII anyway to use a transfer utility on larger (100K in my case) files, why not use the RS-232 port? The Model III already had one, so I needed one on the SX. My choices were to order an RS-232 port in short-card format (with a second on-board port available for slightly more) for $19 from an unknown outfit or for $29 from one I had dealt with before and that has been around awhile, or to buy one immediately from a local computer place for $35. I chose the latter and in less than 20 minutes had the port installed and working. The Deskmate program that comes with the 1000 could serve as the software connection. (Note that the following modifications work on the Model 4 as well.)

I was familiar with LDOS, which includes, among other interesting features, a fairly complete communication protocol for the RS-232 port. It even supports x-modem and error checking. The problem was simple: Get it to work!

Remedial Reading

The manual was difficult, especially for one who is a user and not a programmer. But when it comes to programming, I know who's the boss.

Besides, my wife is a systems engineer.

System Requirements

Tandy 1000 with Deskmate
Model III or 4/4P/4D
LDOS 5.1.4 or TRSDOS 6.x
Serial ports and RS-232 cable
Null modem

So I asked the expert. It took her all of 10 minutes to decipher the LDOS manual, plug one RS-232 cable into the SX, the other into the III, and hook the two together with a null modem. Within another minute, she had the two computers talking a blue streak, but only at 300 baud.

Also, I discovered that, even at 300 baud, the longer files were being shortened at the 1000 end every time it did a disk write.

I reread the manual. Again and again. And in a few minutes I watched the files transfer accurately, and completely, from the Model III to the 1000 SX at 9,600 baud! The problem was solved.

Connections

For those of you who need to get your files from the III or 4 to an SX or other IBM-compatible computer, or to any other that has a communications program available, you should be able to use the following directions (with slight modification if you have different equipment) to make the transfers.

- Connect the 1000 SX RS-232 port to the Model III or 4 RS-232 port using appropriate cables. Be sure to use a null modem at some point in the cabling. You may also have to use a gender changer; you'll know if you are unable to get two plugs to fit.
- Once the computers are connected, boot them both. Boot Deskmate on the 1000 and enter Telecom. You should get the Telecom status menu. Press the F1 function key to reset to default settings. Move your cursor over to 9600 on the baud rate line and press enter. Move the cursor down to "Line feed filter" and then "Echo," turning both on. Press the F5 key for terminal mode.
- Press F3, select "Receive," type in a new file name without an extension, and press enter. Deskmate appends the DOC extension automatically. The SX is now ready to receive from the Model III.
- Configuring the III is complicated. Make sure you have saved your Superscripsit, Scripsit, or other file in ASCII format. When you are ready, from the Model III keyboard type in the following exactly:

```
SET *KI TO KI/DVR
SET *CL TO RS232T/DVR (B=9600,W=8,S=
  1,P=OFF)
LCOMM *CL
```

If you have a Model 4 and TRSDOS 6.x, use COM/DVR and Setcom. From TRSDOS Ready type SET *CL TO COM/DVR. To set the parameters type SETCOM (B=9600,W=8,S=1,P=OFF). Now enter COMM *CL and follow the article.

After you enter the LCOMM *CL (or COMM *CL) command, type clear-8. This gets you to the status menu—which isn't much help! At this point, notice the area over the colon/handshake on the right side of the menu. Contrary to what the manual states, now is the time to turn on the handshaking needed to make 9,600-baud transfers. Type clear-shift-asterisk (*), then clear-colon (:), and then clear-8.

Note that clear-8 calls the menu. The area above the colon/handshake should now have some information in it, an asterisk (*) indicating that handshaking is on, and the hexadecimal (hex) numbers 00. If you had pressed enter after the clear-shift-asterisk, which you shouldn't have, the hex number 0D appears. If anything other than 00 appears, redo clear-shift-asterisk and clear-colon. This is one of many LDOS features that allows you to configure communication protocols to meet almost any need. If you set 0D, the transfer would appear to hang—but, in reality, the computer is awaiting permission to send more text. LComm can be instructed to await permission to send on almost any character, including punctuation. You can explore these potentials on your own as they are beyond the scope of this tutorial.

For now type clear-5, then clear-9. At the file-name prompt, type the name of the ASCII file you are going to transfer to the 1000. To send the file press clear-5, then clear-colon.

The file now appears on your 1000 screen. As Deskmate feels the urge, it

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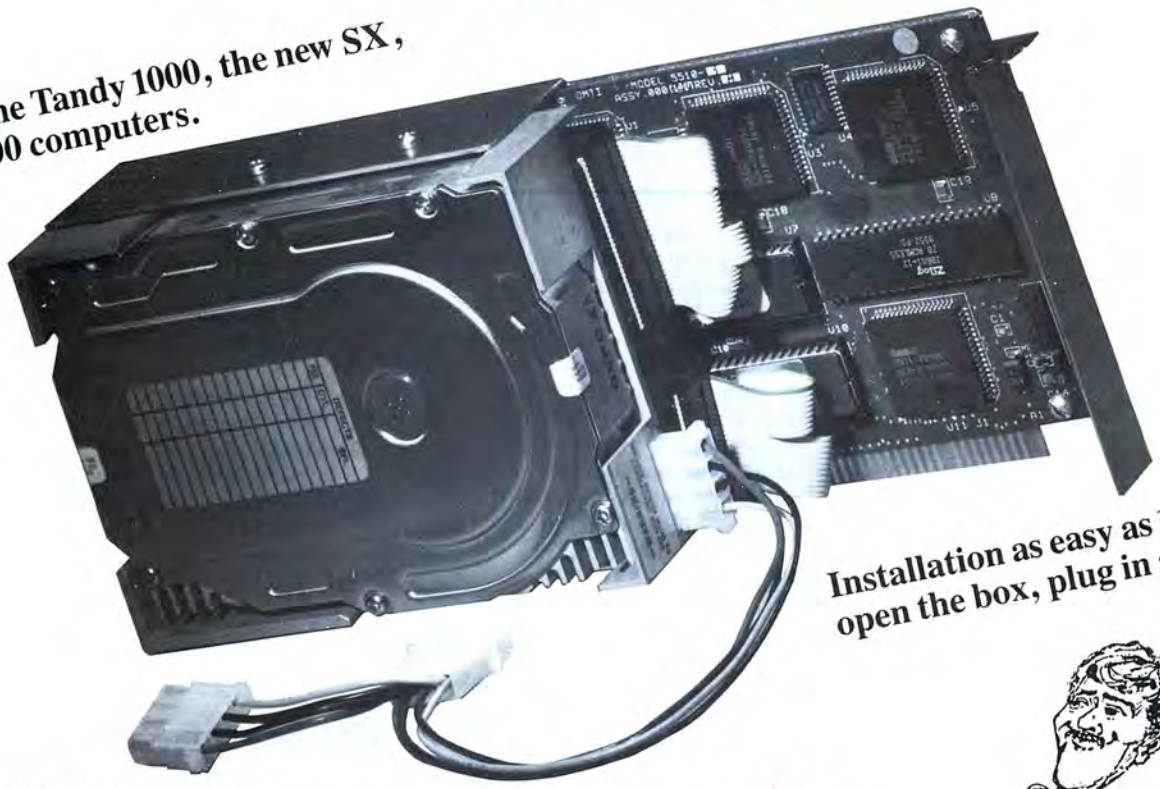

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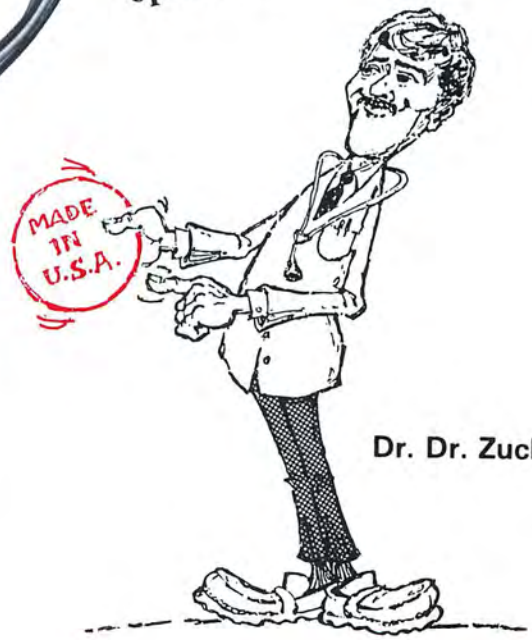

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writes portions to disk without losing any information.

When the transfer stops, press F3 on the 1000 keyboard. This closes the file. If you exit Telecom by pressing F12 twice to get back to the main menu, you will notice your file listed under the Text menu. Some manuals refer to this as a DOS file, but it is, indeed, an ASCII file ready to be loaded into your favorite word-processing program or worked on by the more limited Deskmate Text. But now, type the following from the Model III keyboard: clear-5, then clear-zero to close the file. If ready to exit, type shift-clear-hyphen (-).

The above series of commands has allowed you to transfer a file from the III to the 1000 at 9,600 baud. By reading the LDOS section on LComm and RS-232, you can set LComm to echo the file being sent to the Model III screen so that you see the file on both screens.

View the Transfer

With the settings and commands used above, you may wish to try the following command just after entering the LComm menu: clear-shift-quotation mark ("), then clear-colon. This causes the Model III screen to scroll the transferring file almost faster than the eye can read when you send the file. But on longer files it appears to cause the transfer to require a bit more time.

You may ask, at this point, how to turn off a menu item. Note that after each command to turn something on you have had to strike clear-colon; this is the "on" command. To turn an item off, enter the appropriate command, such as clear-shift-quotation mark, and then strike clear-hyphen; the clear-hyphen is the "off" command.

LDOS includes a fairly complete communication protocol for the RS-232 port.

Generally, I have not found it useful to transfer binary (machine-language) files, or files not convertible to ASCII and that use a non-transportable method of data recording. ASCII file transfers appear to work best cross-model. But binary or other files may be sent from 1000 to 1000 or Model III to Model III with the proper communications settings.

Perfect Transfers

When I am ready to work on the transferred file, I enter Wordperfect and load the ASCII text file with the Text In command (most word processors have a special method to load ASCII files). I have created a macro that automatically searches for each hard return and inserts a tab at the beginning of each paragraph (to indent the first line). Unless special formatting for tables, and so on, is required, the file is complete and ready to save back out to disk or to modify as I see fit. The procedure should be similar for most word processors, though you may have to manually reformat paragraphs with a few.

It also appears possible to configure either computer to control the other. If my two computers were across the office from each other or in different rooms, it would be convenient to type on only one computer to transfer data files. But as they are less than five feet apart, I have not explored this avenue. I would be interested in hearing from anyone who has successfully set their 1000/Model III to do this.■

Henry C. Gernhardt Jr. is a former teacher and world traveler. He currently owns H & F Data Services. You can write him at 922 9th St., Huntington, WV 25701.

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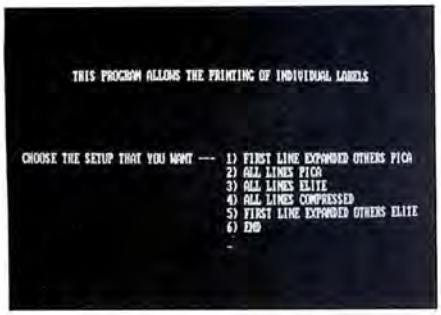

Photo 1. The setup menu showing five print options.

Labeler (see the Program Listing) is a standard Basic program for making labels with the Tandy 1000. I wrote Labeler for the Epson RX-80 printer, but you can easily adapt it to a different printer by changing the printer codes.

To run Labeler on a Model 4, change the Locate statements to Print@ statements. For example:

40 LOCATE 5,10:PRINT "THIS PROGRAM ALLOWS THE PRINTING OF INDIVIDUAL LABELS"

becomes:

40 PRINT@ (5,10), "THIS PROGRAM ALLOWS THE PRINTING OF INDIVIDUAL LABELS"

Labeler provides five different print styles (see Photo 1). Two expanded print choices (1 and 5), let you dress up the first line of your labels. Choices 2, 3, and 4 print all four lines in the same mode—pica, elite, and compressed, respectively.

After you select the style, you enter four lines for the label (Photo 2). Labeler prompts you to choose one of the following options:

- N clears the screen for a new label in the same mode.

System Requirements

Tandy 1000
(Model 4 with changes)
Basic
Printer
Available on The Disk Series

Program Listing. Labeler. See p. 100 for information on using checksums.

```
10 ' LABELER  BY JOHN COLLICOTT
20 '  SET UP TO BE USED WITH THE EPSON RX80
                                                                    '*  357
30 CLS
40 LOCATE 5,10:PRINT "THIS PROGRAM ALLOWS THE PRINTING OF INDIVI
   DUAL LABELS"                                                     '* 5064
50 LOCATE 11,1:PRINT "CHOOSE THE SETUP THAT YOU WANT ---"           '* 3625
60 LOCATE 11,37:PRINT "1) FIRST LINE EXPANDED OTHERS PICA"          '* 3686
70 LOCATE 12,37:PRINT "2) ALL LINES PICA"                           '* 2479
80 LOCATE 13,37:PRINT "3) ALL LINES ELITE "                         '* 2600
90 LOCATE 14,37:PRINT "4) ALL LINES COMPRESSED"                     '* 2957
100 LOCATE 15,37:PRINT "5) FIRST LINE EXPANDED OTHERS ELITE"        '* 3823
110 LOCATE 16,37:PRINT "6) END                                      '* 1766
120 LOCATE 17,37:PRINT "";                                          '* 1519
130 Q$=INKEY$:IF Q$="" THEN 130                                     '* 1772
140 IF VAL(Q$)<1 OR VAL(Q$)>6 THEN 130                              '* 2171
150 IF Q$="6" THEN 1030                                             '* 1220
160 CLS                                                             '*  409
170 PRINT "EXPANDED PICA  > 15"                                     '* 1843
180 PRINT "EXPANDED ELITE > 18"                                     '* 1901
190 PRINT "REGULAR PICA   > 30"                                     '* 1819
200 PRINT "REGULAR ELITE  > 36"                                     '* 1871
210 PRINT "COMPRESSED     > 50"                                     '* 1788
220 LOCATE 8,1:PRINT "                  X  X          P     E
          C"                                                        '* 3284
230 LOCATE 9,1:PRINT "***.........1....:..:.2.........3.....:...
   4.........5"                                                     '* 3845
240 LINE INPUT "1) ";N$(1)                                          '* 1435
250 PRINT                                                           '*  580
260 LINE INPUT "2) ";N$(2)                                          '* 1439
270 PRINT                                                           '*  582
280 LINE INPUT "3) ";N$(3)                                          '* 1443
290 PRINT                                                           '*  584
300 LINE INPUT "4) ";N$(4)                                          '* 1438
310 LOCATE 20,1:PRINT "NEW LABEL--CHANGES--PRINTER--MENU--(N/C/P
   /M) ";                                                           '* 4353
320 C$=INKEY$:IF C$="" THEN 320                                     '* 1746
330 ON INSTR("NCPM",C$) GOTO 350,370,450,30                         '* 2436
340 ON INSTR("ncpm",C$) GOTO 350,370,450,30:GOTO 310                '* 3116
350 FOR TRIP=1 TO 4:N$(TRIP)="":NEXT TRIP                           '* 2584
360 GOTO 160                                                        '*  681
370 '
380 LOCATE 20,1:PRINT "
                    ";                                              '* 3224
390 LOCATE 20,1:PRINT "WHAT LINE DO YOU WANT TO CHANGE (1-4) ";     '* 3851
400 C$=INKEY$:IF C$="" THEN 400                                     '* 1744
410 C=VAL(C$):IF C<1 OR C>4 THEN 400                                '* 2050
420 LOCATE 8+(2*C),4:PRINT "
                    ";                                              '* 3335
430 LOCATE 8+(2*C),4:PRINT "";:LINE INPUT N$(C)                     '* 2784
440 LOCATE 20,1:PRINT "
                    ";:GOTO 310                                     '* 3612
450 LOCATE 20,1:PRINT "
                  ";                                                '* 3062
460 LOCATE 20,1:PRINT "HOW MANY COPIES DO YOU WANT OF THIS LABEL
    ";:INPUT N                                                      '* 4844
470 LOCATE 21,1:PRINT "PRESS ANY KEY WHEN THE PRINTER IS READY "    '* 4132
480 R$=INKEY$:IF R$="" THEN 470                                     '* 1789
490 A=VAL(Q$)                                                       '*  740
500 ON A GOTO 510,610,710,810,910                                   '* 1748
510 LPRINT CHR$(27)"@";                                             '* 1321
520 FOR T=1 TO N                                                    '*  945
530 LPRINT CHR$(27)"G";:LPRINT CHR$(27)"E";:LPRINT CHR$(27)"W1";    '* 3801
540 LPRINT N$(1)                                                    '*  934
550 LPRINT CHR$(27)"@";:LPRINT CHR$(27)"E";:LPRINT CHR$(27)"G";     '* 3731
560 FOR S = 2 TO 4                                                  '*  987
570 LPRINT N$(S)                                                    '*  971
580 NEXT S:LPRINT CHR$(27)"@":LPRINT:NEXT T                         '* 2785
590 LOCATE 20,1:PRINT "

                                                                ";  '* 6523
600 GOTO 310                                                        '*  675
610 LPRINT CHR$(27)"@";                                             '* 1322
620 FOR T=1 TO N                                                    '*  946
630 LPRINT CHR$(27)"E";:LPRINT CHR$(27)"G";                         '* 2533
```

Listing continued

Listing continued

```
640 FOR S=1 TO 4                                                    '*   921
650 LPRINT N$(S)                                                    '*   970
660 NEXT S                                                          '*   622
670 LPRINT CHR$(27)"@":LPRINT                                       '*  1800
680 NEXT T                                                          '*   625
690 LOCATE 20,1:PRINT "                                       ";    '*  6524
700 GOTO 310                                                        '*   676
710 LPRINT CHR$(27)"@";                                             '*  1323
720 FOR T=1 TO N                                                    '*   947
730 LPRINT CHR$(27)"M";:LPRINT CHR$(27)"E";:LPRINT CHR$(27)"G";     '*  3744
740 FOR S=1 TO 4                                                    '*   922
750 LPRINT N$(S)                                                    '*   971
760 NEXT S                                                          '*   623
770 LPRINT CHR$(27)"@":LPRINT                                       '*  1801
780 NEXT T                                                          '*   626
790 PRINT @ 1600,STRING$(160," ");                                  '*  1902
800 GOTO 310                                                        '*   677
810 LPRINT CHR$(27)"@";                                             '*  1324
820 FOR T=1 TO N                                                    '*   948
830 LPRINT CHR$(15);:LPRINT CHR$(27)"G";                            '*  2395
840 FOR S=1 TO 4                                                    '*   923
850 LPRINT N$(S)                                                    '*   972
860 NEXT S                                                          '*   624
870 LPRINT CHR$(27)"@":LPRINT                                       '*  1802
880 NEXT T                                                          '*   627
890 PRINT @ 1600,STRING$(160," ");                                  '*  1903
900 GOTO 310                                                        '*   678
910 LPRINT CHR$(27)"@";                                             '*  1325
920 FOR T=1 TO N                                                    '*   949
930 LPRINT CHR$(27)"M";:LPRINT CHR$(27)"W1";:LPRINT CHR$(27)"E";
    :LPRINT CHR$(27)"G";:LPRINT CHR$(27)"E";                        '*  6217
940 LPRINT N$(1)                                                    '*   938
950 LPRINT CHR$(27)"W0";                                            '*  1400
960 FOR S=2 TO 4                                                    '*   927
970 LPRINT N$(S)                                                    '*   975
980 NEXT S                                                          '*   627
990 LPRINT CHR$(27)"@":LPRINT                                       '*  1805
1000 NEXT T                                                         '*   660
1010 PRINT @ 1600,STRING$(160," ");                                 '*  1936
1020 GOTO 310                                                       '*   720
1030 CLS:LOCATE 10,20:PRINT "Thank you for using this program.":
     LOCATE 22,1:PRINT "";                                          '*  6249
1040 END                                                            '*   444
```

End

Photo 2. The input menu with a sample label.

- C prompts you for the line you want to erase and replace.
- P prompts you for printing information including number of copies. If you want to do a test run, enter 1. Labeler prints a label and returns you to the prompt for the four options (N, C, P, or M) so you can make changes.
- M returns you to the main menu to select a new type style. ■

John Collicott is a self-taught programmer. He worked for Radio Shack as a computer specialist and is currently involved with the Hutchinson Color Computer Club. Address questions and comments to him at 201 East Morgan, Inman, KS 67546.

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by J. Ed Bass

Profile Handler

Merge Profile data files with Superscripsit text files more easily.

Profile 4+ has its limitations. If you have ever tried to merge your Profile data with Superscripsit, you've probably found you needed to have more than one version of the same form letter because your data contained sometimes one name, or sometimes two names, or more.

I wanted to send letters to parents and mention their children individually. Some families only had one child, while others had up to four. I could either have four form letters and four select files or write a program to take care of the problem. Thus, I wrote the Profile Handler (see the Program Listing). The Table explains the variables used in the code.

Profile stores its data in random files, but Superscripsit select files are written sequentially. If you looked at the first two records of my standard select file, listed in the directory as filespec/SRx, you would see something like this:

```
@FIRST NAME@
@LAST NAME@
@ADDRESS@
@CITY@
@ZIP@
@CHILD ONE@
@CHILD TWO@
@CHILD THREE@
@CHILD FOUR@

@John@
@Doe@
@123 Anystreet@
@Ft. Worth@
@76102@
@Johnny@
@Suzie@
@Billy@
@ @
```

This format is fine if your form letter has a place for three children, but how do you handle one or two children? With Profile Handler, you could rewrite the file to look like this:

```
@John@
@Doe@
@123 Anystreet@
@Ft. Worth@
@76102@
@Billy, Suzie, and Johnny@
@Suzie@
@Billy@
@ @
```

Now, if your form letter includes @CHILD ONE@, it will list all the names.

Profile Handler prompts you through writing the file. You can use variations to manipulate data of any type. If you always modify your data a certain way, you can eliminate the prompts and embed the values you need. Just be sure to add 1 to the number of fields in each record to compensate for the blank line between records.

Although I wrote Profile Handler for the Model 4, it should run as is on the Model III, since I tried to avoid special features of the 4. Any modification should be minimal.■

J. Ed Bass is a pastor who does program consulting on the side. Write him at 2502 Leichester, Spring, TX 77386.

System Requirements

Models III/4/4P/4D
Basic
Profile 3 or 4+
Superscripsit
Available on The Disk Series

Table. Alphabetic list of variables in the Program Listing.

A$	answer string
C$	changing string
CON$	connective string
D$	drive number for file name
DL$	drive number for modified file
F$	name of file to be modified
FLAG	flag if changes have been made
ICODE	location of "@@" in M$
L3	length of M$
L4	length of TEMP$
M$	modified string variable
NL	difference between L3 and L4 minus 2
T%	total number of variables to be examined
TEM$	temporary storage
TEMP$	temporary storage
TIMES	record number
VF$(X)	variable file name
V(Y)	variable numbers to be changed
W	variable in For...Next loop
X%	number of variables in a record
Y	variable in For...Next loop
ZZ	variable in For...Next loop

Program Listing. Profile Handler. See p. 100 for information on using checksums.

```
10 CLS:DIM VF$(25),C$(25),V(25),L1(25)                          '*  2037
20 PRINT @ (11,10),"Enter Name of the ORIGINAL Profile/Superscri
   psit Selection File":                                        '*  6889
30 PRINT @ (12,28),"filename/SRx";:INPUT F$                     '*  2918
40 CLS:PRINT @ (11,10),"Enter Drive Number of ORIGINAL File (1-7
   )";:INPUT D$                                                 '*  5275
50 F$=F$+":"+D$                                                 '*   722
60 PRINT @ (11,10),"Enter Name of the MODIFIED Profile/Superscri
   psit Selection File"                                         '*  6815
70 PRINT @(12,33)," ";:INPUT N$                                 '*  1761
80 CLS:PRINT @ (11,10),"Enter Drive Number of MODIFIED File (1-7
   )";:INPUT DL$                                                '*  5335
90 N$=N$+":"+DL$                                                '*   818
100 CLS:PRINT @ (11,21),"Enter Number of Fields in Each Record P
    lus 1"                                                      '*  5275
110 PRINT @ (12,30),"(9 Fields + 1 = 10)";:INPUT X%             '*  2959
120 CLS:PRINT @ (11,20),"Enter the Number of Fields to be Examin
    ed"                                                         '*  5142
```

Listing continued

Listing continued

```
130 PRINT @ (12,38),"  ";:INPUT T%                                    '* 1850
140 CLS:PRINT @ (11,21),"Enter the Connective Word Desired (and,      '* 5258
      or)"
150 PRINT @ (12,36),"  ";:INPUT CON$                                  '* 1989
160 CLS:PRINT @ (11,11),"Enter the Selection Field Number of Fie      '* 6628
      lds to be Examined"
170 FOR X=1 TO T%                                                     '* 993
180 PRINT @ (12,39),"  ";:INPUT V(X)                                  '* 1990
190 PRINT @ (12,39),"  "                                             '* 1251
200 NEXT X                                                            '* 617
210 CLS:PRINT @ (6,24),"REVIEW OF VARIABLE DATA"                      '* 2956
220 PRINT @(8,24),"The Original Filename : ";F$                       '* 3330
230 PRINT @ (9,24),"The Modified Filename : ";N$                      '* 3352
240 PRINT @ (10,24),"Connective that You Entered : ";CON$             '* 4179
250 PRINT @ (11,24),"Number of Fields per Record : ";X%               '* 3942
260 PRINT @ (12,24),"Number of Fields to be Examined : ";T%           '* 4275
270 PRINT @ (13,24),"the Field Numbers to be Examined :";             '* 4200
280 FOR X=1 TO T%                                                     '* 995
290 PRINT V(X) ;                                                      '* 962
300 NEXT X                                                            '* 618
310 PRINT @ (20,20),"Is the Information Correct ?";                   '* 3777
320 A$=INKEY$                                                         '* 763
330 IF A$="" GOTO 320                                                 '* 1113
340 IF A$="Y" OR A$="y" THEN GOTO 350 ELSE GOTO 20                    '* 2921
350 OPEN "I",1,F$                                                     '* 906
360 OPEN "O",2,N$                                                     '* 922
370 CLS:PRINT @ (11,20),"W O R K I N G . . .";                        '* 2458
380 TIMES=0:GOSUB 410                                                 '* 1305
390 CLS:CLOSE:PRINT @ (11,20),"That's all Folks!":END                 '* 3611
400 '************** ANALYZE FILE ***************************          '* 3484
410 PRINT @ (12,20),"RECORD NUMBER ";TIMES;:FOR Y=1 TO X%             '* 1552
420 IF EOF(1) THEN RETURN                                             '* 1105
430 INPUT# 1,VF$(Y)                                                   '* 1085
440 FOR ZZ=1 TO T%                                                    '* 1920
450 IF Y=V(ZZ) THEN C$(Y)=VF$(Y)                                      '* 2249
460 IF Y=V(ZZ) THEN L1(ZZ)=LEN(C$(Y))                                 '* 718
470 NEXT ZZ                                                           '* 628
480 NEXT Y                                                            '* 1863
490 TIMES=TIMES+1:M$="":FLAG=0                                        '* 1524
500 FOR ZZ=T% TO 1 STEP-1                                             '* 3716
510 IF L1(ZZ)<=3 THEN VF$(V(ZZ))=C$(V(ZZ)) ELSE M$=M$+C$(V(ZZ))      '* 1941
520 IF L1(ZZ)>3 THEN FLAG=FLAG+1                                      '* 3153
530 IF ZZ=1 AND L1(ZZ)<=3 THEN VF$(V(ZZ))=C$(V(ZZ+1))                 '* 716
540 NEXT ZZ                                                           '* 3347
550 IF FLAG=0 OR TIMES=1 THEN GOSUB 750 ELSE GOSUB 590                '* 681
560 GOTO 410                                                          '* 668
570 RETURN
580 '************************ MODIFY ROUTINE ***********************
590 IF FLAG=2 THEN GOTO 690                                           '* 1629
600 IF FLAG=1 THEN VF$(V(1))=M$                                       '* 1779
610 IF FLAG=1 THEN GOSUB 750 ELSE GOTO 630                            '* 2548
620 RETURN                                                            '* 664
630 FOR W=1 TO FLAG-2                                                 '* 1249
640 LET ICODE=INSTR(M$,"@@")                                          '* 1698
650 TEMP$=LEFT$(M$,ICODE-1):L3=LEN(M$):L4=LEN(TEMP$):NL=L3-L4-2:      '* 5040
    TEM$=RIGHT$(M$,NL)                                                '* 1204
660 M$=TEMP$+", "+TEM$                                                '* 627
670 NEXT W                                                            '* 694
680 GOTO 690                                                          '* 1703
690 LET ICODE=INSTR(M$,"@@")
700 TEMP$=LEFT$(M$,ICODE-1):L3=LEN(M$):L4=LEN(TEMP$):NL=L3-L4-2:      '* 5036
    TEM$=RIGHT$(M$,NL)                                                '* 2323
710 M$=TEMP$+" "+CON$+" "+TEM$:VF$(V(1))=M$                           '* 757
720 GOSUB 750                                                         '* 666
730 RETURN
740 '************** WRITE NEW FILE ***************************       '* 1002
750 FOR Y=1 TO X%                                                     '* 1109
760 PRINT# 2,VF$(Y)                                                   '* 630
770 NEXT Y                                                            '* 671
780 RETURN
```

End

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Silicon Heroes

I have what I consider a healthy cynicism toward the suggestion that computers are a panacea for household problems. Computers won't keep your checkbook balanced, tell you what to make for supper, or turn your kids into geniuses. Those jobs are still yours; with a little dedication and know-how, though, you can use a computer to ease the burden.

But you knew that when you bought your machine. The problem is that finding practical solutions isn't always that easy.

With this column, I'll tell you how you can use your computer to real advantage, both practical and recreational, without feeding you pie in the sky. Topics will range from how to buy peripherals to games to financial planning. My aim with each is to start you off on the right foot. The rest is up to you.

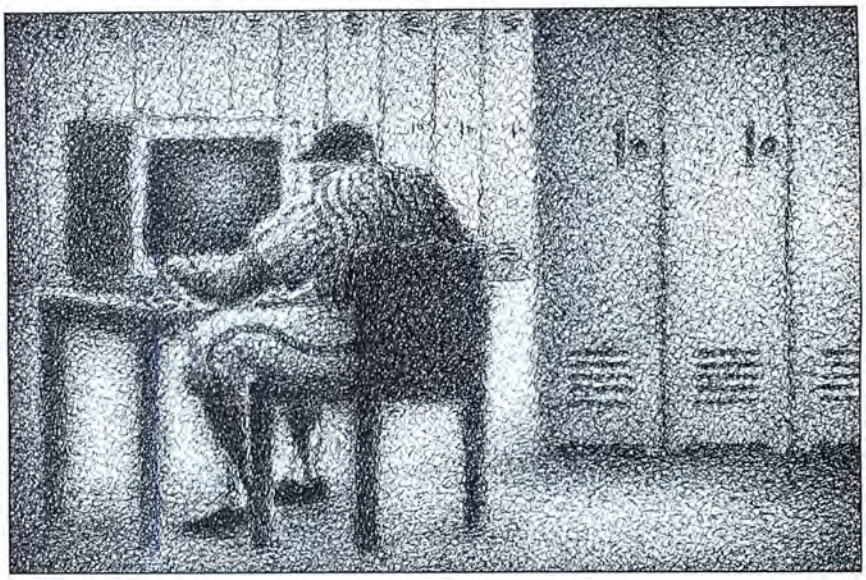

Illustration by Dave Ridley

Not-So-Instant Replay

This month I'm going to relive a bit of sports history: the 1986 World Series.

Last year's playoff season was an emotional roller coaster for a Boston Red Sox fan such as myself. They win the pennant with a spectacular comeback over California and blow the Series after having the Mets on the ropes. Losing the Series the way they did, the contract disputes with Roger Clemens and Rich Gedman, and the mediocre 1987 season as of this writing have dampened my enthusiasm for the Grand Old Game considerably.

I can't change last year, but I can simulate what might have happened under different scenarios. I can replace Bill Buckner with Don Baylor in games without a designated hitter (DH), I can use a healthy Tom Seaver, I can be more aggressive running the bases, and I can keep Bob Stanley out of pressure situations.

Several baseball-simulation/statistics programs are available for MS-DOS computers including Statis Pro Baseball from Avalon Hill Microcomputer Games, Pure-Stat Baseball from Sublogic Corp., and Micro League Baseball (MLB) from Micro League Sports Association. The Table lists prices and company addresses. I arbitrarily chose MLB for the Series reenactment.

Micro League Baseball

No program can possibly provide a true simulation of baseball. The variables are too complex and many. MLB, like other baseball simulations, considers a relatively few major variables such as batting average, earned run average (ERA), runner speed, home runs, and strikeouts. Finer points such as player effectiveness in clutch situations, player fatigue, a pitcher's ability to hold runners on base, and overall aggressiveness of a team are not considered.

On top of this, MLB has a few characteristics and a couple of quirks that affect the accuracy of the simulation. There seems to be a randomness to certain events, defying what the stats say. For instance, players whose yearly home-run production totals in the low single digits sometimes hit them regularly for a few games, and in a few games nearly half the outs were grounders to first base.

Fielding errors seemed totally random. I replayed a few of the 1975 World Series games between the Red Sox and Cincinnati Reds, and Rick Burleson, then one of the best shortstops in either league, committed about two errors per game. Yet in another game, the 1978 Red Sox versus the 1978 Yankees, I deliberately played everyone out of position. Not an error occurred.

The program does not keep track of balls and strikes, though sometimes a count flashes as a pitch is thrown. Usually, the batter hits the ball on the first pitch. When a batter fouls off a pitch, MLB occasionally flashes an incorrect count, such as "3 0," on the next pitch. Also, the computer coach seems to have poor judgment on when to pull a pitcher. In one game, a pitcher allowed 10 earned runs and 18 hits before getting the hook.

I attributed these idiosyncrasies to the programmer compromising to make the simulation work within the limitations of the average computer. Overall, MLB produces a satisfactory illusion of real pro-baseball players playing real pro-baseball games.

MLB defensive options allow visits to the mound; throwing a fastball, curve, slider, change-up, or pitchout; pulling in the corners or the whole infield, walking a batter intentionally; and checking the lineup. Offensive options allow the batter to swing away or bunt with no base runners, and to swing away with aggressive or safe running, to hit with the runners going, and to sacrifice-bunt with runners on base. In addition, the manager can tell the base runners to steal, put in a pinch hitter or runner, and check the lineup.

To replay the 1986 World Series, I needed the MLB Game Disk, the 1986

National League and American League Teams disk, and the Box Score/Stat Compiler Disk. Other available disks include Special Edition Disks with All-Star and World Series teams by decade, Franchise History Disks, and the General Manager/Owner Disk, which lets you change rosters and trade players.

The computer coached the Mets and I coached the Sox. I did not duplicate the Mets lineup actually used in each game of the Series. Call it cheating if you like, but I wanted to leave managing the Mets to the computer.

Let the Games Begin

Rather than bore you with a blow-by-blow account of each game, I'll just review the highlights.

My strategy for non-DH games was to bench Buckner and play Baylor at first. This strategy worked, as Baylor stroked two homers and batted in six runs in the Series. Another move that paid off was replacing Tony Armas in center field with Dave Henderson. Henderson also hit two home runs and drove in six runs.

The first two games took place in New York, where the DH rule did not apply. Boston won them both, 8 to 2 and 5 to 3. Clemens was sharp in game 1, striking out nine. Ron Darling was the losing pitcher. Bruce Hurst struggled in the second game, but still won it. Dwight Gooden was the loser. Gooden pitched much as he did in the real Series—giving up several hits in a row one inning, mowing them down the next.

Games 3 through 5 were in Boston. The DH rule was in effect, and it benefited New York more than Boston. This more or less reflects what actually happened in the Series. New York won game 3, 7 to 4. Dennis "Oil Can" Boyd proved ineffective for Boston, yielding to Al Nipper in the fourth inning. Bobby Ojeda won for New York.

The most exciting game was undoubtedly the fourth. Seaver pitched a five-hit, four-strikeout shutout without walking anyone. The Sox scored the only run of the game in the first inning against Sid Fernandez, who struck out seven. It makes you wonder what might have happened had Seaver been available in the real game 4.

Game 5 was another pitching duel, but with Boston on the losing end. The score: New York 3, Boston 1. Darling won for the Mets. Clemens, the loser, struck out eight and walked two. As the scores show, Boston struggled at the plate in all its home games.

Boston won the sixth game, 3 to 2, and the Series, 4 to 2. My re-enactment was actually closer than the numbers show. The Mets actually hit better than Boston, but they left more runners on base. Pitching was evenly matched. Only two of the games were runaways—one with Boston the winner, the other with New York the winner.

Analysis

The players' performances, compared to both the 1986 season and the 1986 Series, were sometimes what you would expect, sometimes way off the mark, and sometimes uncannily true to form. Gooden's and Henderson's computer performances were remarkably similar to their actual Series performances. Schiraldi looked like the stopper he was in the regular season, but failed to be against the Mets.

Table. List of products mentioned in this column.

Micro League Baseball
Micro League Sports Association
2201 Drummond Plaza
Newark, DE 19711-5711
302-368-9990
Game Disk: $39.95
Season Disks: $19.95 each
Special Edition Disks: $19.95 each
Franchise History Disks: $24.95 each
General Manager/Owner Disk: $29.95
Box Score/Stats Compiler Disk: $24.95

Pure-Stat Baseball
Sublogic Corp.
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Champaign, IL 61820
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$49.95

Statis Pro Baseball
Avalon Hill Microcomputer Games
4517 Harford Road
Baltimore, MD 21214
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$35

Some of the bats on both teams were oddly quiet: Marty Barrett, .167; Buckner, .077; Dwight Evans, .045; Spike Owen, .053; Gary Carter, .130; and Darryl Strawberry, .130. The hot bats were Len Dykstra, .296; Hernandez, .304; Mookie Wilson, .292; Ray Knight, .286; Kevin Mitchell, .333; Wade Boggs, .375; Rice, .292; and Baylor, .304.

The Mets ran, as you would expect them to. They stole 10 bases, compared to three for the Sox. New York also bunted often, with mixed results. Boggs got hits, Rice and Baylor hit home runs, and Clemens struck out batters.

Of the changes I made in the Sox strategy, most paid off. Baylor got the hits and RBIs that Buckner didn't, and he didn't let any balls roll between his legs. Seaver's sterling performance in game 4 put the Sox ahead 3 to 1 in the Series. Although I had a healthy Tony Armas for my replay, I chose to use Henderson in center field—with productive results. And Stanley never got out of the bullpen to walk anyone.

What didn't work was aggressive base running. The Sox runners were dead meat on most steal attempts. The hit-and-run worked once or twice, but several base runners were thrown out when trying to stretch out hits. I should have been tipped off when the teams disk listed Buckner as one of the two fastest Sox players.

The games with the DH at Boston helped the Mets. Boston's DH, Baylor, batted over .300, but Buckner (.077) played when Baylor was the DH. The Mets DH, Mitchell, batted .333.

The Mets were victims of the computer coach. More creativity in the batting lineup could have tipped a couple of games in their favor, as could replacing the pitcher sooner in several situations. Playing against a human coach would, I think, have made for a greater challenge.

I didn't quite get the thrill from my computer victory that the real thing would have given me. After all, I controlled each game. If the Sox got behind in the Series, I could either replay it until I got the desired result or find a way to sabotage the Mets. (For the record, I did neither.) I did get a small measure of satisfaction by having MLB reinforce my second guesses about the '86 Series.

More importantly, I know that if the Sox have a frustrating 1987, I won't have to suffer along with them. I'll just turn on my 1000 EX, boot up the General Manager/Owner disk, and start my own baseball season. Let's see, I'll sign Gedman, trade Stanley, put some young talent at first. . . .

Next Month

I often get calls from readers asking about user groups, or clubs, in their areas. In most cases, no club exists near them. Next month, I'll discuss user groups: how to find them, how to start your own, and how to get the most from them.

I'm open to any questions, suggestions, or criticisms, so feel free to write me. ■

Michael Nadeau is 80 Micro's executive editor. He has been editing computer magazines for six years, using Tandy equipment all the while. Write to him c/o 80 Micro, 80 Elm St., Peterborough, NH 03458.

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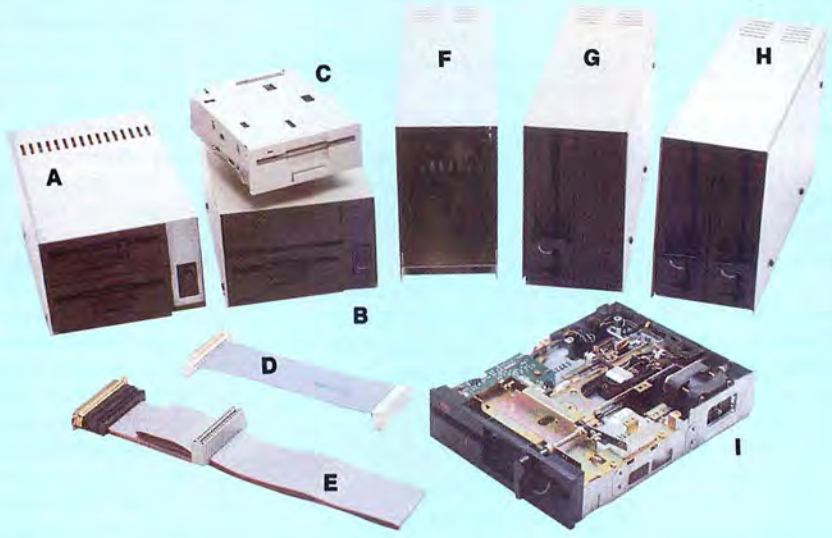

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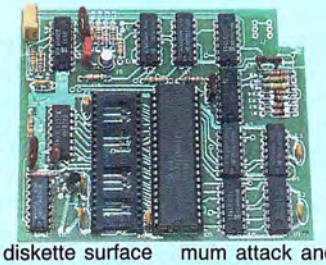

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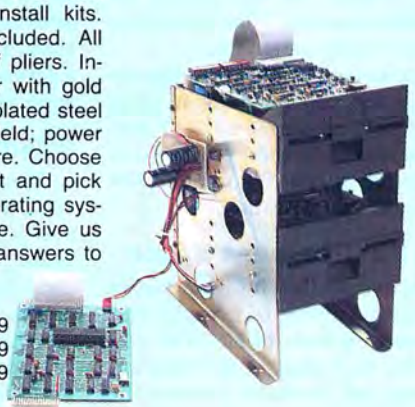

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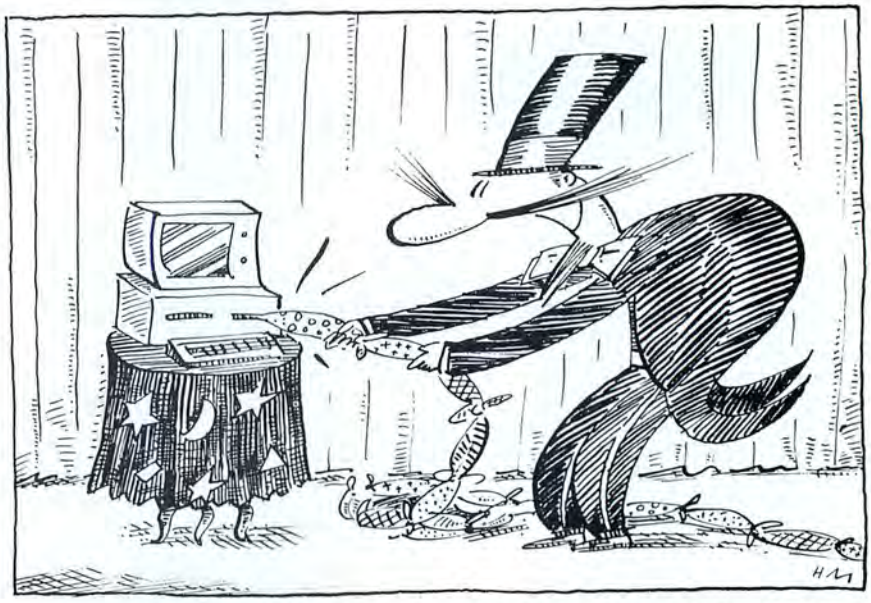
Directory Magic



The secret to using a hard disk efficiently is to organize your files into individual subdirectories. Basically, each application should have its own directory. This is vital as the size of the hard disk grows. For example, my 30-megabyte (MB) hard disk contains some 1,600 files organized into 86 subdirectories. It would be impossible to manage otherwise.

The negative side of this file organization is having to type long path names. I have partially solved this by using a "shell" organizer; many excellent products are on the market for this purpose. I still stumble over typing something like \LANGUAGE\MSC\SOURCE\EGA to reach my source-code files for the Enhanced Graphics Adapter—I wind up toggling between two directories, and this continual typing slows me down.

Changing Working Directories

I wrote CWD (Change Working Directory) to supplement the DOS CHDIR command and aid in this problem. CWD responds just like CHDIR, with some important extensions. First, you can mix backslash (\) and slash (/) characters in the path name. DOS does not care which you use within the DOS functions.

Most importantly, CWD saves the current directory's path name in the master environment block after successfully changing to the new directory. In my May column, I showed that the initial memory configuration consists of a DOS kernel (basic-input/output-system [BIOS] code, the actual DOS functions, and device drivers) followed by a block reserved for the resident part of the command interpreter. The last required block is the master copy of the DOS environment.

This initial configuration could be followed by a batch-control block, terminate-and-stay-resident (TSR) code, and your program. Each of the programs (TSR or application) that DOS loads gets a copy of the master environment prior to beginning execution. Unfortunately, applications normally cannot modify the environment and pass the changes on to another program, so using the environment block as a communications area is wasted, at least until now.

I am going to show you how to change your master environment block by writing a new item into it and later retrieving it for use in the same program. You write into the environment block by using the DOS Set command and the command processor interrupt 2EH to act on this command. This relieves you of ensuring that you do not inadvertently corrupt the memory-block-allocation chain by attempting to use more environment space than is available in this block.

In fact, the protection that DOS offers—the "Out of environment space" message—is also this program's most serious limitation. It depends heavily on how much memory is allocated for the master block when the command interpreter first executes. Normally, only 10 paragraphs (160 bytes) are allocated, but later DOS versions let you change the amount with a command-line parameter used in your configuration file.

If you are having trouble with this error message and you are using an older DOS version (e.g., version 02.11.xx), write to me and I will send you a procedure for changing your Command.COM file to increase this allocation.

Adding Environment Space

You can access this information in several ways. I chose to use another undocumented feature of MS-DOS that points to the beginning of the memory control block (MCB) chain. I locate the block containing the master environment, then process the information in it.

MS-DOS function 52H returns a pointer to a location in the DOS kernel that contains the segment address of the first MCB. Each MCB is a 16-byte paragraph containing a header byte denoting part of the chain (4DH) or the terminal entry (5AH). The next word indicates the program segment prefix (PSP) address of the application that owns this MCB. The following word contains a 16-bit integer denoting the number of paragraphs contained in this block.

DOS stores information in this block in the format of ENVNAME = string, and each environment string ends with a byte of zeros. The final entry in the environment block is followed immediately by another byte containing zeros. After you determine the starting block address using the algorithm demonstrated above, it is simple to determine if a given variable name is present and to copy its contents for your use.

Examining the Source Code

The Program Listing contains the assembly source code prepared for Microsoft's MASM assembler. I will explain some features of the code that are not clear from reading the source and comments.

When DOS loads a COM file, the code is loaded beginning at offset 0100 hexadecimal (hex) of the next available segment. The area from 0000 to 0100 hex

Illustration by Hal Mayforth

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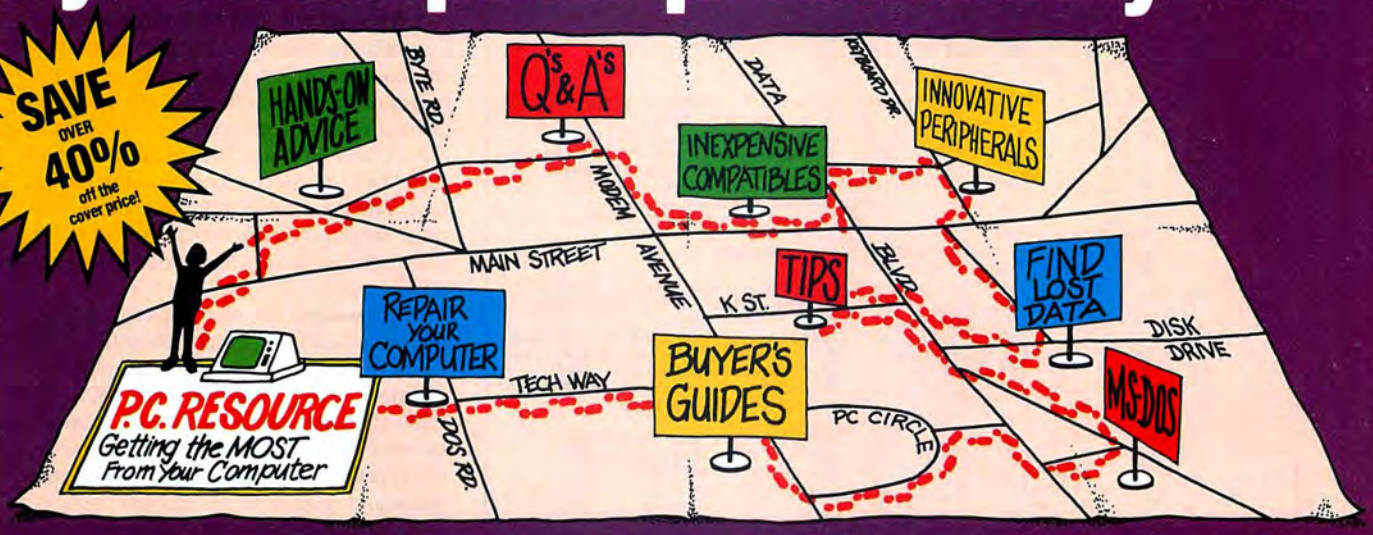

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Program Listing. CWD (Change Working Directory).

```
            TITLE   CWD - Change Working Directory
            NAME    CWD

;*                  MASM CWD;                                          *
;*                  LINK CWD;                                          *
;*                  EXE2BIN CWD CWD.COM                                *
;* SYNTAX: CWD [pathname]

WriteString  = 09H                      ;Write string to standard output
ChDir        = 3BH                      ;Change to new directory
GetCurrentDir= 47H                      ;Get path name of current directory
SetBlock     = 4AH                      ;Set memory block to requested size
ExitFunction = 4CH                      ;Terminate a process w/return code
GetMCBPtr    = 52H                      ;Get memory block pointer in DOS
DosCall      = 21H                      ;DOS command function processor
ExecInt      = 2EH                      ;Entry point into primary COMMAND.COM
CODE        SEGMENT PARA 'CODE'
            ASSUME  DS:CODE, CS:CODE, ES:NOTHING, SS:CODE
            ORG     0080H
PSP_Count   DB      ?                           ;Command line character count
PSP_String  DB      127 DUP(?)                  ;Command line "tail" characters
CWD         PROC    NEAR
            CLD                                 ;Clear direction flag for str ops
            MOV     SP,OFFSET StackArea         ;Set stack to internal stack area
            MOV     BX,OFFSET LastByte          ;Get last byte address
            SHR     BX,1                        ;Shrink memory block for CWD
            SHR     BX,1                        ; down to minimal size
            SHR     BX,1
            SHR     BX,1                        ;Divide by 16 for paragraphs
            INC     BX                          ;Add 1 for partial paragraph
            MOV     AH,SetBlock                 ;Function to shrink memory
            INT     DosCall
            JNC     $+5
            JMP     MemError                    ;Fatal memory allocation error
            MOV     AH,GetCurrentDir            ;Get current directory pathname
            MOV     SI,OFFSET DirBuffer         ;Point to storage area
            MOV     DL,0                        ;Set for default drive
            INT     DosCall
            JNC     $+5
            JMP     GetError                    ;Something's really wrong here
            MOV     CX,64                       ;Length of DirBuffer
            MOV     DI,SI                       ;Set up string operation
            XOR     AL,AL                       ;Set comparand
            REPNZ   SCASB                       ;Look for zero termination
            MOV     BYTE PTR [DI-1],0DH         ;Terminate command with CR
            MOV     BL,PSP_Count
            OR      BL,BL                       ;Test for command tail present
            JZ      NoCommandTail               ;Process return to last dir
            XOR     BH,BH                       ;Form index into command tail
            MOV     BYTE PTR [PSP_String+BX],0 ;Terminate ASCIIZ string
            MOV     DI,OFFSET PSP_String        ;Point to beginning of new path
            MOV     CX,127                      ;Count for command buffer
            MOV     AL,' '                      ;Scan for leading blanks
            REPZ    SCASB                       ; leaving ES:DI pointing to path
            DEC     DI
            MOV     DX,DI                       ;DS:DX points to ASCIIZ string
            MOV     AH,ChDir                    ;Change to requested directory
            INT     DosCall
            JC      InvalidDir                  ;Post error message and exit
            CALL    SetEnvironmentVar           ;Set LASTDIR envrionment variable
            MOV     AH,ExitFunction             ;Return to DOS
            XOR     AL,AL                       ;Set error code zero
            INT     DosCall
NoCommandTail:
            MOV     AH,GetMCBPtr                ;Get pointer to first memory
            INT     DosCall                     ; control block from DOS
            MOV     AX,WORD PTR ES:[BX-2]       ;AX = Segment of master MCB
            MOV     ES,AX                       ;Check initial master block for
            XOR     BX,BX                       ; valid header byte
            CMP     BYTE PTR ES:[BX],4DH        ;Test for proper header
            JNZ     MCBError                    ;Not a valid block - memory bad
            CALL    NextMCBSegment              ;AX points to master COMMAND MCB
            CALL    NextMCBSegment              ;AX now points to Environment MCB
            INC     AX                          ;Bump segment to start of block
            MOV     ES,AX                       ;Segment value to ES register
            XOR     DI,DI                       ;ES:DI points to start of Environ
 FindNextVar:
            CMP     BYTE PTR ES:[DI],0          ;Test for end of environment
            JZ      NotFound                    ;Can not find variable
            MOV     CX,OFFSET EnvVarLn          ;Set up string comparison
            MOV     SI,OFFSET EnvName           ;Point to test string
            REPZ    CMPSB                       ;Scan string
            JNZ     NoMatch                     ;String does not match
            CMP     BYTE PTR ES:[DI],'='        ;Test for name ending with "="
            JZ      FoundIt                     ;Got the environment variable
NoMatch:
            MOV     CX,32767                    ;Set CX to big number
            XOR     AL,AL                       ;Look for the end of this string
            REPNZ   SCASB
            JMP     FindNextVar                 ;Process the next string
FoundIt:
            INC     DI                          ;Point to pathname
            PUSH    DS                          ;Swap DS and ES segment regs
            PUSH    ES                          ; so that DS:SI points to the
            POP     DS                          ; new found variable and ES:DI
            POP     ES                          ; points to my target string
            MOV     SI,DI                       ;Set up source string
            MOV     DI,OFFSET LastDir           ;Point to target buffer
FoundIt2:
            LODSB                               ;Get next byte
            STOSB                               ;Store it
```

Listing continued

is the PSP, which is specially formatted by the DOS loader. A formal discussion of this area is contained in the *MS-DOS Programmer's Reference Manual* and several other DOS books.

CWD uses the area beginning at 0080 hex, which contains a representation of the command line following the command name. The byte at 0080 hex contains a count of the characters remaining on the command line, and the text of this "tail" is stored beginning at 0081 hex. The command tail ends with a carriage-return character (0D hex), which is not included in the command character count.

DOS assigns the next segment of 64K for your COM file, establishes the PSP, loads the program, and sets the stack to the upper end of the segment. DOS initially allocates all the remaining memory to your program, and the first steps in CWD set the stack to a more reasonable value and release all the unused memory so some other DOS task can use it.

Processing the Path Name

CWD assumes that the command tail, if present, contains the path name you desire. The DOS function that will process this requires an ASCIIZ string (one terminated with a zero byte) and a non-blank leading character. The code segment used here terminates the string properly and scans the string from the beginning, locating the first non-blank character on the line.

You enter the code beginning at label NoCommandTail when no path name is present (you wish to return to the previous directory). This section of code heavily uses the 80xxx CPU string functions to compare, scan, and move various strings.

These are powerful instructions, and I will explain some features. Instructions that get memory from data assume that the DS:SI register pair properly points to the source. Instructions storing data similarly assume that the ES:DI register points to the target buffer. When these registers are used, the offset register (either SI or DI or both) is automatically incremented to point to the next byte location.

Building CWD.COM

You can also couple these instructions with a prefix that causes the string instruction to repeat the number of times indicated by the contents of the CX register. In some cases, you can use an equality or inequality condition with these prefixes to terminate the loop early. I use these prefixes for the string comparison, scanning for zero bytes, and pointing past the leading blanks on the path names.

Enter the source code as it appears in the Listing into your word processor. Assemble the program using MASM. Follow the commands in the leading comments in the Listing.

Conclusion

I find short utilities like CWD worth their weight in gold. I have verified this program using PC-DOS through version 3.2 and MS-DOS for the Tandy 1000/2000/3000.

I hope you find CWD useful and will let me know what other programs or information you require.■

John B. Harrell III is a naval electronic warfare systems analyst. He programs in Pascal, C, and assembly language. Write to him c/o 80 Micro, *80 Elm St., Peterborough, NH 03458.*

Listing continued

```
                OR      AL,AL                   ;Check for end of ASCIIZ string
                JNZ     FoundIt2                ;Move entire path string
    NotFound:
                PUSH    CS
                POP     DS                      ;Restore DS register contents
                MOV     DX,OFFSET LastDir       ;DS:DX points to ASCIIZ string
                MOV     AH,ChDir                ;Change to requested directory
                INT     DosCall
                JC      InvalidDir              ;Post error message and exit
                CALL    SetEnvironmentVar       ;Set LASTDIR envrionment variable
                MOV     AH,ExitFunction         ;Return to DOS with "errorlevel"
                MOV     AL,0                    ; code set -- exit/do nothing
                INT     DosCall
    MemError:
                MOV     DX,OFFSET Error1Msg     ;Memory allocation error
                JMP     ErrorOut
    InvalidDir:
                MOV     DX,OFFSET Error2Msg     ;Invalid directory name
                JMP     ErrorOut
    GetError:
                MOV     DX,OFFSET Error3Msg     ;Unanticipated error
                JMP     ErrorOut
    MCBError:
                MOV     DX,OFFSET Error4Msg     ;Corrupted memory allocation blk
    ErrorOut:
                MOV     AH,WriteString          ;Set DOS function code
                INT     DosCall
                MOV     AH,ExitFunction         ;Return to DOS with "errorlevel"
                MOV     AL,1                    ;code set
                INT     DosCall
    CWD         ENDP
    SetEnvironmentVar   PROC    NEAR
                MOV     DI,OFFSET SetString+1   ;Find terminal carriage Return
                PUSH    DI
                MOV     CX,32767                ;Large value for CX
                MOV     AL,13                   ;Search argument = Carriage Ret
                REPNZ   SCASB                   ;Find it in string
                MOV     BX,DI
                POP     DI
                SUB     BX,DI                   ;Calculate length of command
                DEC     BX                      ;  string for EXEC
                MOV     BYTE PTR SetString,BL   ;Store length in command line
                MOV     WORD PTR StackPtr,SP    ;Save stack pointer
                MOV     WORD PTR StackSeg,SS    ; and the segment register
                MOV     SI,OFFSET SetString     ;Point to DOS Command string
                INT     ExecInt                 ;Call primary COMMAND.COM
                MOV     SP,WORD PTR CS:StackPtr ;Restore Stack Pointer
                MOV     SS,WORD PTR CS:StackSeg ; and segment register
                RET
    SetEnvironmentVar   ENDP
    NextMCBSegment      PROC    NEAR
                MOV     ES,AX                   ;Block Segment to ES
                XOR     BX,BX                   ;ES:BX points to MCB Header Byte
                INC     AX                      ;Increment starting segment
                MOV     DX,WORD PTR ES:[BX+3]   ;Get size of this block
                ADD     AX,DX                   ;Segment address of next MCB
                MOV     ES,AX                   ;Segment address to ES
                                                ;ES:BX now points to MCB hdr byte
                CMP     BYTE PTR ES:[BX],4DH    ;Test for proper header
                JNZ     MCBError                ;Not a valid block - memory bad
                RET
    NextMCBSegment      ENDP
    Error1Msg   DB      7,7,'CWD: Fatal memory allocation error!',13,10,'$'
    Error2Msg   DB      7,7,'CWD: Invalid path name!',13,10,'$'
    Error3Msg   DB      7,7,'CWD: Unexpected error reading current path name'
                DB      13,10,'$'
    Error4Msg   DB      7,7,'CWD: Potentially corrupted memory allocation block'
                DB      13,10,'$'
    EnvVarLn    EQU     7                       ;Length of Environment Variable
    SetString   DB      ' SET '                 ;String for EXEC
    EnvName     DB      'LASTDIR'
                DB      '=\'
    DirBuffer   DB      64 DUP(?)               ;Buffer for old dir path
    LastDir     DB      '\',0                   ;Default to root dir
                DB      62 DUP(?)               ;Buffer for envir path
    StackSeg    DW      ?
    StackPtr    DW      ?
                DW      128 DUP(?)              ;Reserved for internal program stk
    StackArea   EQU     $
    LastByte    EQU     $                       ;Last byte of program + 1
    CODE        ENDS
                END     CWD
```

End

Fixes and Updates

Two in One

I have tried and revised two programs presented in Loyd Bulmur's "Routine Plays" (*80 Micro*, March 1987, p. 78). I rewrote Tally and Sweep, combining them into a single program called Checker (see the Program Listing on p. 88).

I added a menu to let you use either routine in one session, as many times as you like and with as many files as you need. After choosing which routine, a subroutine asks for the file name, the size of the field you want to change, and the number of characters before and after the field. The program uses the filename variable and these numbers in the Open and Field statements.

In the original Sweep program, lines 90–110 indicated movement of all record fields to variables and back into the same place with LSet. You only need to use LSet for the field being changed, and thus you only need one description for the leading data and one for the trailing data, plus the change field.

I've also amended the program so that you can correct any number of spellings in one session, rather than doing a complete file reading for each change. After you display the listing on the screen with the corresponding counts, you have the option to send output to a printer.

Checker is written for the Tandy 1000. For the Model III and 4, change the Locate statements to Print@s. Since my program is compiled, I have set the pause loop in line 450 to 30,000.

You can also use Checker to build up a file. You could use a short form, such as one or two letters, to stand for a longer phrase when building your data base and later run Checker to expand the abbreviation to the complete words (e.g., "P" for Peterborough).

Donald Dunn
Yarmouth, Nova Scotia

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Program Listing. Checker. See p. 100 for information on using checksums.

```
10 '                          SWEEP.BAS
20 KEY OFF:CLS                                                          '*   898
30 DEFINT A-Z                                                           '*   805
40 DIM G(2000),G$(2000)                                                 '*  1154
50 CLS:LOCATE 8,12:PRINT"M A S T E R  M E N U"                          '*  2700
60 LOCATE 11,12:PRINT"1  Check for incorrect spellings"                 '*  4330
70 LOCATE 13,12:PRINT"2  Correct spelling errors"                       '*  3804
80 LOCATE 15,12:PRINT"3  Finish"                                        '*  2100
90 LOCATE 18,15:PRINT"Enter corresponding number                        '*  3977
100 IN$=INKEY$:IF IN$=""THEN 100 ELSE A=VAL(IN$)                        '*  2856
110 ON A GOTO 140,330,130                                               '*  1344
120 GOTO 50                                                             '*   625
130 END                                                                 '*   395
140 GOSUB 470:CLS:LOCATE 12,20:PRINT"READING RECORD ";:OPEN "R",
    #1,FL$,RS                                                           '*  4515
150 FIELD #1, F AS FE$,C AS CH$,B AS BE$                                '*  2178
160 K=0:GOSUB 580                                                       '*   998
170 K=K+1                                                               '*   487
180 GET 1,K:LOCATE 12,37:PRINT K;                                       '*  2009
190 IF EOF(1) THEN 250                                                  '*  1227
200 FOR K9=1 TO 2000                                                    '*  1104
210 IF G$(K9)=CH$ THEN G(K9)=G(K9)+1:K9=2000:GOTO 230                   '*  2995
220 IF G$(K9)=""THEN G$(K9)=CH$:G(K9)=1:K9=2000                         '*  2592
230 NEXT                                                                '*   500
240 GOTO 170                                                            '*   679
250 CLOSE:LP=0                                                          '*   880
260 CLS:FOR K9=1 TO 2000                                                '*  1394
270 IF G(K9)=0 THEN K9=2000:GOTO 290                                    '*  2065
280 IF LP = 0 THEN PRINT G$(K9);G(K9) ELSE LPRINT G$(K9);G(K9)          '*  3678
290 NEXT                                                                '*   506
300 IF LP=1 THEN 50 ELSE PRINT:PRINT"Do you wish a hard copy? (Y
    /N) ";                                                              '*  4936
310 YN$=INKEY$:IF YN$="" THEN 310 ELSE IF YN$="Y" OR YN$="y" THE
    N LP=1:GOTO 260                                                     '*  4767
320 GOTO 50                                                             '*   627
330 GOSUB 470                                                           '*   753
340 CLS:LOCATE 8,10:PRINT "ENTER 'END' IN WRONG SPELLING TO QUIT
    ":LOCATE 10,10:LINE INPUT "Wrong spelling:      ";WR$               '*  7785
350 IF WR$="END" THEN CLOSE:GOTO 50                                     '*  2153
360 GOSUB 580                                                           '*   758
370 LOCATE 12,10:LINE INPUT "Correct spelling:    ";CR$                 '*  3830
380 OPEN "R",#1,FL$,RS                                                  '*  1238
390 FIELD #1,F AS FE$,C AS CH$,B AS BE$                                 '*  2152
400 K=0:KK=0                                                            '*   681
410 K=K+1                                                               '*   484
420 GET #1,K                                                            '*   641
430 IF EOF(1) THEN 460                                                  '*  1227
440 IF LEFT$(CH$,LEN(WR$))=LEFT$(WR$,LEN(WR$)) THEN LSET CH$=CR$
    :PUT #1,K:KK=KK+1                                                   '*  4923
450 GOTO 410                                                            '*   679
460 CLOSE:PRINT:PRINT TAB(10) "THERE WERE " KK "CHANGES MADE":FO
    R N=1 TO 3000:NEXT:GOTO 340                                         '*  5702
470 CLS:LOCATE 8,12:PRINT"F I L E  D E F I N I T I O N"                 '*  3146
480 LOCATE 11,12:PRINT "File Name:";                                    '*  2374
490 LOCATE 13,12:PRINT "Record Leader Size:";                           '*  3247
500 LOCATE 15,12:PRINT "Change Field Size";                             '*  3053
510 LOCATE 17,12:PRINT "Record Trailer Size:";                          '*  3378
520 LOCATE 11,40:LINE INPUT FL$                                         '*  1897
530 LOCATE 13,40:LINE INPUT A$:F=VAL(A$)                                '*  2417
540 LOCATE 15,40:LINE INPUT A$:C=VAL(A$)                                '*  2417
550 LOCATE 17,40:LINE INPUT A$:B=VAL(A$)                                '*  2419
560 RS=F+C+B                                                            '*   702
570 RETURN                                                              '*   668
580 FOR NN=1 TO 2000                                                    '*  1139
590 G$(NN)="":G(NN)=0:NEXT                                              '*  1515
600 RETURN                                                              '*   662
```

End

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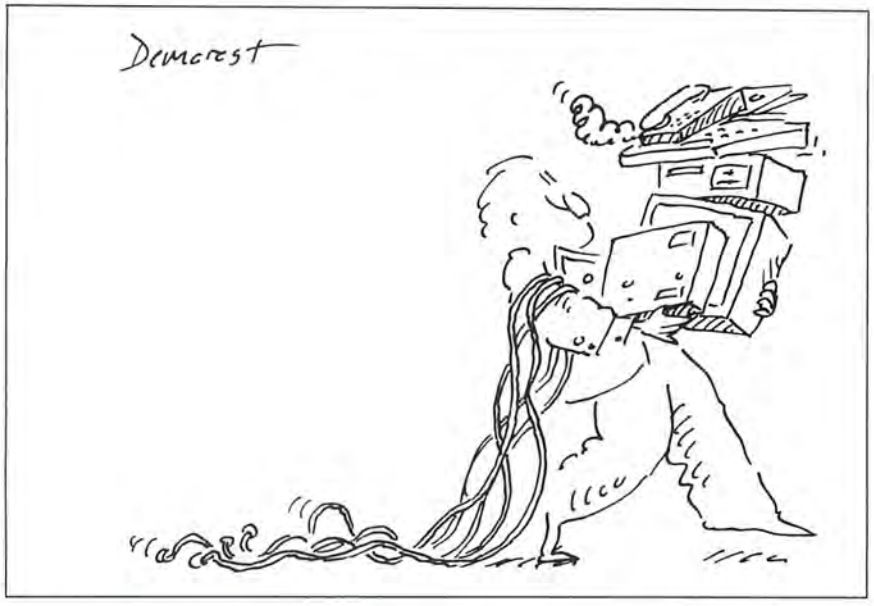
Bulletin Boards 101

Bulletin-board systems (BBSes) are often the easiest and fastest way to obtain public-domain software. This month, I'll tell you what you need in terms of hardware and software to efficiently access BBSes. I'll also describe some public-domain communications programs.

A BBS lets you read or post messages with your computer over the telephone line. Most BBSes also provide data files from which you can download public-domain and shareware software. If you want to share a public-domain program of your own, you can upload it to the BBS.



Equipment Needs

First, you need a telephone line near your computer. Sometimes you cannot conveniently access your phone line without installing another outlet. A disk drive is mandatory, two are preferred. The type of computer you have determines your memory requirements. Good software tends to use most of the practical amount of available memory.

With the Tandy 1000, 128K just won't cut it, even for most commercial software. You should have at least 384K of RAM (like the Tandy 1000 SX), and you might as well increase it to 640K. If you have a TRS-80 Model III or 4, you should have at least 48K of RAM. Some programs can even use the extra 64K memory bank in a 128K Model 4.

The RS-232 Interface and Modem

You need an RS-232 interface and modem. The RS-232 is a standardized interface that lets your computer and modem talk to each other and transfer data between them. Most people refer to the RS-232 as a serial port. If you have that, you have an RS-232.

Some devices for MS-DOS computers have both the RS-232 and modem built as one unit. These are usually internal modems that plug into your computer. I prefer having a separate RS-232 and an external modem.

Life will be easier if your modem has a Hayes-compatible command set. Much like IBM computers have set the de facto standard for computers, Hayes modems have set the de facto standard for the command set in autodial, or smart, modems. Most public-domain communications software provides an easy way to use the Hayes commands.

Tandy marches to a different drummer in the commands it uses with its internal or external modems. Time after time, I've seen messages on BBSes about problems using a Tandy modem with the more popular communications programs. And this applies to both the Model I/III/4 and Tandy MS-DOS computers. Tandy hasn't even standardized the command set within its own modem line. If you use a Tandy modem, you are on your own. Don't ask me how to get it working with your terminal program, because I won't know.

Get at least a 1,200-baud modem; 2,400-baud modems are becoming increasingly popular but are more expensive. The baud rate is the speed at which your modem transfers data over the telephone line. The faster the better, because the quicker you download or upload files, the less you pay for connect or long-distance charges. When you get above 2,400 baud, however, you will have trouble finding someone on the other end with whom you can communicate.

Most modems have multiple baud-rate settings. You may see a specification like 300/1,200/2,400 baud. You, the sysop, and others waiting to access the BBS will appreciate the higher baud rate when you download programs, especially long ones. Some sysops won't let you on their BBS at less than 1,200 baud.

Public-Domain Communications Programs: Model I/III/4

Finally, you need a communications or terminal program. It's easy to recommend a public-domain program for the Model I/III/4. Xterm/CMD and XT4/CMD are heads above the rest. Xterm runs on the Models I and III with nearly any DOS, including TRSDOS, LDOS, Newdos+, Newdos/80, DBLDOS, Dosplus, and VTOS. XT4 1.6.8 runs on the Model 4 with TRSDOS 6.x but not Dosplus.

As a stopgap measure until he can upgrade Xterm from 1.3C to have the same features as XT4, Bill Andrus, the author of these fine programs, has gone to version 1.3Z to correct an incompatibility in the type-ahead buffer created by Misosys's new LDOS 5.3. Xterm also works with the TRS-80 clones: the PMC-80/81 and Max-80 (under LDOS in 64- by 16-character mode). Xterm and XT4 support only a few modems: the Radio Shack Modem II, Hayes Smartmodem or compatible, J-Cat, or Radio Shack Model 4P Internal Modem (XT4 only).

Another program for the Model 4 with either TRSDOS 6.2 or LS-DOS 6.3 is Fastterm by Melvin J. Patrick. While Bill's programs have many more features than Fastterm, Melvin's program is simpler to

Illustration by Chris Demarest

use for downloading and uploading, because it has fewer options. Fastterm, though, is not as easy to set up for your modem. You must know the dialing command for your modem. Fastterm works with most modem dialing commands where Xterm and XT4 do not.

All three programs support at least 300, 1,200, and 2,400 baud. Bill's programs support many more baud rates than Fastterm—useful for transferring files between two computers with a null modem cable. A null modem cable or adapter fools your terminal program into thinking there is a modem attached.

CP/M

For CP/M, I've been told by good authority that IMP 2.44, MEX, and Kermit are the only terminal programs worth looking at. MEX and Kermit are best for mainframe communications. IMP is the best of the general-purpose terminal programs and is good for transferring both programs and text files. Usually with CP/M, you must configure the program for your computer. The only IMP 2.44 program I could find needed special programming modifications to work with a Model 4. IMP's author, Irving Hoff, mentioned an overlay for the Model 4 under CP/M 2.2 from Montezuma Micro. For the novice, Montezuma Micro includes a public-domain terminal program called MDM730.COM on the CP/M 2.2 disk. Irving Hoff developed it also, so the commands are similar to IMP's.

MS-DOS

The MS-DOS world has many good terminal programs. Qmodem and Procomm are the most popular, but both need a large amount of memory to run. Procomm, a shareware program from Datastorm Technologies Inc., is my favorite. It has easy-to-use commands. I've never had to read the instructions to use it, though I would have to read them if I wanted to use some of its advanced features to automatically get on a BBS.

Error-Free File Transfer

With any communications program, x-modem protocol is a must. X-modem is an error-checking utility that provides a special way of transferring programs from the BBS to your home computer. With x-modem and other protocols, the two computers are placed in a "handshaking" mode where the computer sending the program waits for verification from the receiving computer that the block of data has been sent correctly.

The receiving computer sends back a calculated checksum based on the data received in each block. If this data does not match the checksum that the first computer expects, then that block of data is sent again. This guarantees with some degree of accuracy that the data sent is correctly received. A small chance still exists that an error will occur, but these transfer programs reduce this chance significantly. All of the terminal programs discussed above have at least x-modem protocol.

ARC.EXE
Systems Enhancements Inc.
21 New St.
Wayne, NJ 07470

Fastterm
Melvin J. Patrick
13699 70A Ave.
Surrey, B.C., Canada, V3W 2J8

IMP
Irving Hoff
Los Altos Hills, CA
415-948-2166

Procomm
Datastorm Technologies Inc.
P.O. Box 1471
Columbia, MO 65205

Xterm and XT4
Bill Andrus
10021 Commonwealth Blvd.
Fairfax, VA 22032

Public-domain programs mentioned this month.

Archiving and Compression

I hadn't thought of covering the MS-DOS ARC programs or the file-compression and archival utilities for the TRS-DOS and CP/M systems until Al Drehmann of Tryon, NC, reminded me of it. My discussion emphasizes MS-DOS but generally applies to the others.

Most programs are put on BBSes in ARC (archive) format, because it compresses the files leaving more space on the BBS. Equally important, it keeps a group of files together within the archived file. When you unarchive a file, you will many times find that you have a number of files on your disk from the single archived file.

An ARC program should be one of the first programs you download from a BBS. Of the several available, the biggest and most versatile for MS-DOS is ARC.EXE, a shareware program from Systems Enhancements Inc. ARC520.COM is the latest version, and it includes its own decompression program creating ARC.EXE, ARC.DOC, ARC.TXT, and ARCE. ARCE is a shorter version by a different author that just unarchives files. You can also download ARCE separately from many BBSes.

You download archived files and, once you are off the BBS, expand them using ARC or ARCE. Many times you will run out of room on the disk while expanding an archived file, and this is why I recommend two disk drives. For ARC, you would then put a blank data disk in drive B and the disk with the archived file and ARC in drive A. Then you go to drive B and enter the command A:ARC X A:filespec.ARC. The extension ARC is optional. This creates the expanded files on drive B. For ARCE, use the command A:ARCE filespec.ARC B.

You can spot compressed MS-DOS files by the ARC or sometimes the LBR extension, or else a "Q" in the middle letter of the extension. The latter are earlier library and compression files that used programs derived from CP/M squeeze utilities such as USQ (unsqueeze) and LU (library utility). Usually you need both LU and USQ utilities for files with the LBR extension. CP/M files have these same earlier extensions.

Model I/III/4 programs were the last to use compression of files. These will usually have extensions of ARC (ARC4/CMD) or ACH (ARCHIVE4/CMD), though earlier versions of Archive4 used ARC. Many times, the compression techniques used for TRS-80 files are similar to those used for MS-DOS, and USQ, LU, or ARC can uncompress and unarchive files for other systems downloaded on your MS-DOS computer. Unfortunately, other computers cannot decompress most MS-DOS ARC files.

Next Month

In August I'll discuss BBS etiquette and what you can expect when you get on a BBS. I will provide a disk with a terminal program for each system (except CP/M). Send a mailing label and $6 to cover costs for the disk of your choice: Xterm and XT4 for TRSDOS (on a TRS-DOS 1.3 disk), Fastterm for the Model 4, and Procomm for MS-DOS. Most are shareware programs, so support the authors accordingly. These programs plus Qmodem and several of the archival programs mentioned this month are available on the *80 Micro* BBS at 603-924-6985 (300/1,200 baud, 8-bit words, no parity, 1 stop bit). Please send questions separately from disk requests.■

Thomas Quindry has written for 80 Micro *since 1980. Write Tom at 6237 Windward Drive, Burke, VA 22015. Enclose a stamped, self-addressed envelope for a reply.*

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Screening for Help

Early software for the Model I and other computers of the same era rarely provided on-screen help. A question mark would appear on the screen and you were supposed to know what to enter. Sometimes the only ways to understand how to use a program were to list it and look at the remarks (if any) or to experiment until the program did something useful.

Modern software requires less of you and often includes numerous help screens. The most useful help systems are those you can call up at any time, usually by pressing a special key. The best of such systems are "context sensitive," meaning that the information they display pertains only to your current options.

Not many Model 4 programs have context-sensitive interactive help systems. Although several programs make help screens available from various menus, few have help always available at the touch of a key. Adding "Help" as a menu option to most programs is easy, but adding an interactive help system to a program can seem impossible. The help systems in some programs require more programming effort and code space than the programs themselves.

This month's demonstration program grew out of that problem. I wanted a help system for a program I was writing in C, but the help routines were swamping the program. Since one of my design requirements was to have help always available with a single keystroke, I had to write special input routines that constantly checked the keyboard to see if the help key were being pressed.

I realized that the system I was designing would only work with a limited number of C programs. What I really wanted was either a help utility or a set

System Requirements

Model 4/4P/4D
TRSDOS 6.2 or LS-DOS 6.3
Assembly language
Editor/assembler (Pro-Create 4.3a or MRAS)
Basic, C (optional)
Available on The Disk Series

Program Listing 1. The help filter.

```
00100 ;-----------------------------------------------------
00110 ;   Interactive HELP Utility for TRSDOS 6.2 & LS-DOS 6.3
00120 ;   Can be used with Basic, C, and assembly-language
00130 ;   programs.  See text for help file descriptions and
00140 ;   invocation procedures.
00160 ;   Assembled with PRO-Create v. 4.3a
00170 ;-----------------------------------------------------
00180 *GET    DEFS/ASM
00200         ORG     3000H           ;Will relocate to high memory
00210 ;----------
00220 ;  TRSDOS/LS-DOS Memory Header
00230 ;----------
00240 BEGIN   JR      START           ;Standard TRSDOS Header
00250 OLDHI   DW      $-$             ;Word for old HIGH$
00260         DB      MODDCB-BEGIN-5  ;Length of module name
00270 MODNAME DB      'HELP'
00280 MODDCB  DW      $-$             ;Word for DCB address
00290         DW      0               ;Reserved word
00300 ;----------
00310 ;  DATA Area
00320 ;----------
00330 DATA$   EQU     $               ;Beginning of data area
00340 HLPKEY  DB      F1              ;Make F1 the default help key
00350 PAGE    EQU     $-DATA$
00360         DB      0               ;Start with no HELP page
00370 FN_PTR  EQU     $-DATA$
00380         DW      $-$             ;Pointer to file name
00390 SCRBUF  EQU     $-DATA$
00400         DW      $-$             ;Pointer to 1920-byte screen buffer
00410 INBUF   EQU     $-DATA$
00420         DW      $-$             ;Line input buffer
00430 SECBUF  EQU     $-DATA$
00440         DW      $-$             ;Sector buffer
00450 CURLOC  EQU     $-DATA$
00460         DW      $-$             ;Word for cursor location
00470 FCB     EQU     $-DATA$
00480         DC      32,32           ;File Control Block
00490 ;----------
00500 ;  Link to *KI chain
00510 ;----------
00520 CHAIN   PUSH    IX              ;Save pointer
00530         LD      IX,(MODDCB)     ;Get our DCB address
00540 RL1     EQU     $-2
00550         SVC     @CHNIO          ;Move down the chain
00560         POP     IX              ;Retrieve our pointer
```

Listing 1 continued

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Listing 1 continued

```
00570          RET
00580 ;----------
00590 ;  Start of Filter Code
00600 ;----------
00610 START    JR       NC,CHAIN          ;Go if not GET request
00620          CALL     CHAIN             ;Else get next character
00630 RL2      EQU      $-2
00640          RET      NZ                ;Go if no key
00650          PUSH     IX                ;Save pointer
00660          LD       IX,DATA$          ;Point to data area
00670 RL3      EQU      $-2
00680          CP       (IX)              ;Is it the help key?
00690          JR       Z,HELP            ;Yes -- go
00700 NOT_NOW  POP      IX                ;Else clear stack
00710          CP       A                 ;Set NZ flag
00720          RET                        ;Move up the chain
00730 NOHELP   LD       A,(IX)            ;This is exit when help isn't avail.
00740          JR       NOT_NOW           ;Get char. in A then leave
00750 HLPOUT   OR       1                 ;This exit returns "no character"
00760          LD       A,0               ;to calling routine
00770          POP      IX                ;Return with A=0, NZ
00780          RET
00790 ;----------
00800 ;  HELP Tests
00810 ;----------
00820 HELP     LD       A,(IX+PAGE)       ;Get page number
00830          OR       A                 ;Is it set?
00840          JR       Z,NOHELP          ;No -- go
00850 ;
00860          PUSH     IX                ;Move pointer
00870          POP      DE                ;  to DE
00880          LD       HL,FCB            ;Offset to File Control Block
00890          ADD      HL,DE             ;HL==> FCB
00900          EX       DE,HL             ;DE has addr. of FCB
00910          LD       L,(IX+FN_PTR)     ;Get LSB of file name pointer
00920          LD       H,(IX+FN_PTR+1)   ;And MSB
00930          SVC      @FSPEC            ;Parse and move filespec to FCB
00940          JR       NZ,HLPOUT         ;Go if not valid file name
00950 ;
00960          PUSH     DE                ;Save DE during @VDCTL calls
00970          LD       B,4               ;Get cursor
00980          SVC      @VDCTL            ;  in HL
00990          LD       (IX+CURLOC),L     ;Save in data area
01000          LD       (IX+CURLOC+1),H   ;   to restore later
01010 ;
01020          LD       L,(IX+SCRBUF)     ;Get buffer address
01030          LD       H,(IX+SCRBUF+1)   ;  in HL
01040          LD       A,H               ;Get MSB of screen buffer pointer
01050          OR       A                 ;Has it been set?
01060          JR       Z,HLPOUT          ;No -- go
01070          CP       0ECH              ;Below border?
01080          JR       NC,SLOWMOV        ;No --do slow capture
01090          LD       B,6               ;Else block transfer
01100          SVC      @VDCTL            ;Save the screen
01110          JR       OPEN              ;Go open file
01120 ;
01130 SLOWMOV  EX       DE,HL             ;Buffer address in DE
01140          LD       HL,0              ;Start at screen loc. 0,0
01150 SLOW1    PUSH     DE                ;Save buffer address
01160          LD       B,1               ;Function: get 1 byte
01170          SVC      @VDCTL            ;Get the byte
01180          POP      DE                ;Recover address
01190          LD       (DE),A            ;Save the byte
01200          INC      DE                ;Point to next
01210          INC      L                 ;Move to next column
01220          LD       A,L               ;Get column number
01230          CP       80                ;End of row
01240          JR       C,SLOW1           ;No -- loop back
01250          INC      H                 ;Else incr. row
01260          LD       L,0               ;Move back to col 1
01270          LD       A,H               ;Get row to test
01280          CP       24                ;End of screen?
01290          JR       C,SLOW1           ;No -- loop back
01300 ;
01310 OPEN     POP      DE                ;Recover FCB pointer
01320          LD       B,0               ;256-byte LRL
01330          LD       L,(IX+SECBUF)     ;Get address of
01340          LD       H,(IX+SECBUF+1)   ;256-byte sector buffer
01350          LD       A,H               ;Get MSB of address
01360          OR       A                 ;Has it been set?
01370          JR       Z,HLPOUT          ;No -- leave
01380          SVC      @OPEN             ;Else open the file
01390          JR       Z,SEARCH          ;No error -- go
01400          CP       2AH               ;Check for LRL error
01410          JR       NZ,HLPOUT         ;Can't open -- leave
01420 ;
01430 SEARCH   LD       L,(IX+INBUF)      ;Set HL ==> input buffer
01440          LD       H,(IX+INBUF+1)
01450 S1       LD       B,80              ;Maximum line length
01460          CALL     LINEIN            ;Read 1 line
01470 RL4      EQU      $-2
01480          JR       NZ,CLOSE          ;Go if error
01490          DEC      B                 ;If page number
01500          DEC      B                 ;  then B=2
01510          JR       NZ,S1             ;Loop back if not
01520          LD       A,(IX+PAGE)       ;Get page number
01530          CP       (HL)              ;Have we found our page?
01540          JR       NZ,S1             ;No -- look some more
```

Listing 1 continued

of algorithms that I could use with any program written in C, assembly language, or Basic.

Instead of trapping every pressed key in an input routine, I needed to use a system-level program to check keyboard input. This program would save the current screen, read a help screen from a disk, display that screen, restore the original screen, and return to the program running when you pressed help. Once I stated the problem that way, the answer was obvious: I needed a keyboard filter.

Interacting with Filters

I've designed numerous Model 4 filters and have written about many of them here. The underlying concept of a filter is that it is part of an input/output (I/O) chain. The filter needs to capture and examine each byte sent through the chain and start its special action when it finds a particular key or byte. The organization of TRSDOS and LS-DOS 6.x makes writing and installing filters especially easy.

The help filter in Program Listing 1 is not very complex. It examines all keystrokes for a designated help key (the F1 function key by default, although the application program can change the help key). When you press the designated key, the filter saves the current screen, opens a file of help screens, and reads through the file until it finds the applicable text. It then clears the screen, displays the text, and waits for you to press the break key. The filter then restores the previous screen and cursor position. The application program never knows that it was interrupted.

The help filter cannot know where you are in an application or which text it should display from the help file. It relies on the calling program to supply that information. A program that wants to use the help utility must tell the filter the name of the help file, which key triggers the help, and which page of text it should display. The calling program must also disable the help utility before returning to TRSDOS or LS-DOS so that the next program you run will not call inappropriate help screens.

The help filter gets all of its information from its own data area. The calling program must place the data there, manipulate it as circumstances warrant, and remove it before ending. Although this process requires extra programming, it should not add much to either the length or the programming time of the calling program.

The help filter installs and protects itself in high memory with its installation routine (more on this later). Because it has a standard TRSDOS memory header, you

can locate it with the @GTMOD supervisory call (SVC). The calling program must find the help filter in memory and place the correct information in the filter's data area. All communication between the filter and the calling program is one way, since the filter does not have to return information to the calling program.

Finding Buffers

The help filter needs four data buffers. The most obvious requirement is a buffer large enough to hold a copy of the screen while the filter displays help information. Since the screen is 80 characters by 24 rows, this buffer must be able to hold 1,920 bytes.

Since the filter has to open a file, a sector buffer (256 bytes) must be available. Since the filter reads data from the file a line at a time, it needs to have a third buffer large enough to hold one line of information and a terminating character (a total of 81 bytes). It must also have a 32-byte file-control block (FCB) so it can open and read a file.

The filter needs at least 2,289 bytes of buffer space, either inside itself or inside the calling program (or perhaps in an alternate memory bank, but that's an entirely different design problem).

I decided that the calling program should provide most of the buffer space for three reasons. First, the help filter, once installed in protected high memory, is available to all programs that need to use it. Normally it stays in high memory after installation, whether or not the foreground program knows it is there. The smaller a filter is, the less impact it has on programs that don't use it. The filter in Listing 1 only uses about 330 bytes of high memory.

Second, since the calling program can turn the help filter on and off, it can decide when to allocate the buffer space and what to use that space for. For example, if a Basic program dimensions an integer array to create the screen buffer, the same program can later turn off the help filter, use the Erase command to release the buffer space, and then use the space for other data.

Finally, the screen buffer should, if possible, begin below 0EC00 hexadecimal (hex). If a screen buffer is below that address, you can use the @VDCTL SVC to save or restore the screen almost instantaneously with a single block move. However, if the screen buffer is higher than 0EC00 hex, you must move information to and from the screen 1 byte at a time. If the screen buffer were in high memory along with the rest of the help filter, all screen transfers would be very slow.

I wrote Listing 1 so that the calling program provides buffer space for the screen, a disk sector, and the input

Listing 1 continued

```
01550 ;
01560 DISPLY  SVC     @CLS            ;Clear the screen
01570 D1      LD      B,80            ;Maximum line length
01580         CALL    LINEIN          ;Read a line
01590 RL5     EQU     $-2
01600         JR      NZ,WAIT         ;Go if EOF
01610         DEC     B               ;Else check for end of page
01620         DEC     B               ;Was B=2 ?
01630         JR      Z,WAIT          ;Yes -- go
01640         PUSH    DE              ;Else save FCB address
01650         SVC     @DSPLY          ;Display the line
01660         POP     DE              ;Recover FCB
01670         JR      D1              ;And display next line
01680 ;
01690 WAIT    PUSH    DE              ;Save FCB address
01700 W1      SVC     @CKBRKC         ;Look for <Break> key
01710         JR      Z,W1            ;Wait for a key
01720 ;
01730         LD      L,(IX+SCRBUF)   ;Now get buffer address
01740         LD      H,(IX+SCRBUF+1) ;   into HL
01750         LD      A,H             ;Get MSB of buffer address
01760         CP      0ECH            ;Over the boundary?
01770         JR      NC,SLOWRP       ;Yes -- do slow replace
01780         LD      B,5             ;And move old screen back
01790         SVC     @VDCTL          ;  into place
01800         JR      SETCURS         ;Then set cursor
01810 ;
01820 SLOWRP  EX      DE,HL           ;Buffer address in DE
01830         LD      HL,0            ;Start at screen loc. 0,0
01840 SLRP1   LD      A,(DE)          ;Get the byte
01850         LD      C,A             ;Put into C register
01860         LD      B,2             ;Function: display one byte
01870         PUSH    DE              ;Save buffer address
01880         SVC     @VDCTL          ;Display the byte
01890         POP     DE              ;Recover address
01900         INC     DE              ;Point to next
01910         INC     L               ;Move to next column
01920         LD      A,L             ;Get column number
01930         CP      80              ;End of row
01940         JR      C,SLRP1         ;No -- loop back
01950         INC     H               ;Else incr. row
01960         LD      L,0             ;Move back to col. 1
01970         LD      A,H             ;Get row to test
01980         CP      24              ;End of screen?
01990         JR      C,SLRP1         ;No -- loop back
02000 ;
02010 SETCURS LD      L,(IX+CURLOC)   ;Get the original cursor
02020         LD      H,(IX+CURLOC+1) ;  location in HL
02030         LD      B,3             ;And set cursor
02040         SVC     @VDCTL          ;  on the screen
02050         POP     DE              ;Recover FCB address
02060 ;
02070 CLOSE   SVC     @CLOSE          ;Close the file
02080         JP      HLPOUT          ;And leave
02090 RL6     EQU     $-2
02100 ;----------
02110 ;  Line input routine
02120 ;----------
02130 LINEIN  PUSH    HL              ;Save the buffer address
02140         LD      C,0             ;Initialize for counting
02150 L1      SVC     @GET            ;Get a character
02160         JR      Z,NOERR         ;Go if no error
02170         OR      A               ;Was a character ready?
02180         JR      Z,ERROR         ;No -- go
02190 NOERR   CP      09H             ;Did we get a TAB?
02200         JR      Z,SAVCHR        ;Yes -- go
02210         CP      0DH             ;Was it a CR?
02220         JR      Z,LIN_END       ;Yes -- go
02230         CP      0AH             ;Was it a line feed?
02240         JR      Z,LIN_END       ;Yes -- go
02250         CP      ' '             ;A control character?
02260         JR      C,EOF           ;Yes -- go
02270 ;
02280 SAVCHR  LD      (HL),A          ;Put character in buffer
02290         INC     HL              ;Bump pointer
02300         INC     C               ;And count
02310         DJNZ    L1              ;And loop back
02320 ;
02330 LIN_END LD      B,C             ;Get count of characters
02340         INC     B               ;Include terminating CR
02350         LD      (HL),0DH        ;Save carriage return
02360         POP     HL              ;Recover buffer address
02370         XOR     A               ;Set Z flag
02380         RET                     ;And leave
02390 ;
02400 EOF     LD      A,C             ;Get count
02410         OR      A               ;Did we get any?
02420         JR      NZ,LIN_END      ;Yes -- end normally
02430         LD      A,1CH           ;Else show EOF error
02440         OR      A               ;Set NZ flag
02450 ;
02460 ERROR   POP     HL              ;Clear the stack
02470         LD      B,0             ;No valid characters
02480         RET
02490 ;
02500 MODEND  EQU     $-1
02510 MODLEN  EQU     $-BEGIN
02520 *GET    INSTALL/ASM
02530         END     INIT
```

End

Program Listing 2. Definitions for the help filter.

```
00100 ;---------------------------------------------------------
00110 ;   Definitions and macros for HELP/ASM
00120 ;
00130 ;   Save this file as DEFS/ASM
00140 ;---------------------------------------------------------
00150 @KEY            EQU     01H
00160 @GET            EQU     03H
00170 @DSPLY          EQU     0AH
00180 @CHNIO          EQU     14H
00190 @EXIT           EQU     16H
00200 @FSPEC          EQU     4EH
00210 @VDCTL          EQU     0FH
00220 @OPEN           EQU     3BH
00230 @CLOSE          EQU     3CH
00240 @GTMOD          EQU     53H
00250 @HIGH$          EQU     64H
00260 @FLAGS          EQU     65H
00270 @CLS            EQU     69H
00280 @CKBRKC         EQU     6AH
00290 ;
00300 CR              EQU     0DH
00310 LF              EQU     0AH
00320 F1              EQU     81H
00330 ;
00340 SVC     MACRO   #NUM
00350         LD      A,#NUM
00360         RST     28H
00370         ENDM
00380 ;
00390 PRINT   MACRO   #STR
00400         LD      HL,#STR
00410         SVC     @DSPLY
00420         ENDM
```

End

Program Listing 3. Installation routine for the help filter.

```
00100 ;---------------------------------------------------------
00110 ;   Installation Routine for the HELP keyboard filter
00120 ;   The program must be installed with SET.  It has no
00130 ;   parameters.
00140 ;
00150 ;   Save this file as INSTALL/ASM
00160 ;---------------------------------------------------------
00170 INIT    PUSH    DE              ;Save DCB pointer
00180         LD      (MODDCB),DE     ;And put into filter
00190         PRINT   SIGNON          ;Say hello
00200         LD      DE,MODNAME      ;DE ==> filter name
00210         SVC     @GTMOD          ;Already installed?
00220         JR      Z,INSTLD        ;Error -- already in memory
00230 ;
00240         SVC     @FLAGS          ;IY ==> flag table
00250         BIT     3,(IY+'C'-'A')  ;Was SET used to run program?
00260         JR      Z,NOSET         ;Error -- must use SET
00270 ;
00280         LD      HL,0            ;Function: get value
00290         LD      B,L             ;B=0: work with HIGH$
00300         SVC     @HIGH$          ;Get current high$
00310         LD      (OLDHI),HL      ;Save current value
00320         JR      NZ,NOHIGH       ;Error -- insufficient memory
00330 ;----------
00340 ;  Change relocatable addresses
00350 ;----------
00360         LD      IY,RELTAB       ;IY ==> relocation table
00370         LD      DE,MODEND       ;DE = end of main program
00380         SBC     HL,DE           ;Calculate relocation distance
00390         PUSH    HL              ;Move distance
00400         POP     BC              ;  to BC
00410 RELOC1  LD      L,(IY+0)        ;Get LSB of next address
00420         LD      H,(IY+1)        ;HL = address of next item
00430         LD      A,H             ;Get copy of MSB
00440         OR      A               ;Is it 0?
00450         JR      Z,MOVE          ;Yes -- go move the filter
00460         LD      E,(HL)          ;Else get present LSB
00470         INC     HL              ;Point to MSB
00480         LD      D,(HL)          ;DE = value to change
00490         EX      DE,HL           ;Put value in HL
00500         ADD     HL,BC           ;Add the offset
00510         EX      DE,HL           ;Put new value in DE
00520         LD      (HL),D          ;Put it back in filter
00530         DEC     HL              ;Point to LSB
00540         LD      (HL),E          ;New value now in place
00550         INC     IY              ;Bump pointer twice
00560         INC     IY              ;  to point to next address
00570         JR      RELOC1          ;And do it again
00580 ;----------
00590 ;  Move and protect
00600 ;----------
00610 MOVE    LD      DE,(OLDHI)      ;DE ==> destination
00620         LD      HL,MODEND       ;HL ==> end of filter
00630         LD      BC,MODLEN       ;BC = bytes to move
00640         LDDR                    ;Move it all
00650         EX      DE,HL           ;New HIGH$ in HL
00660         LD      B,0             ;Function: use HIGH$
```

Listing 3 continued

buffer. However, I placed the space for the FCB inside the filter, because a destroyed FCB can cause major disk problems when you close a file. I decided it was safer to keep the FCB completely under the filter's control.

I decided it was safer to keep the FCB completely under the filter's control to avoid disk problems.

Constructing the Filter

Once you understand the design ideas behind the filter, constructing it is not difficult. Listing 1 is the heart of the filter program, Program Listing 2 contains the definitions of the SVCs that the filter uses and two simple macro commands, and Program Listing 3 is the code that installs the filter into high memory.

Listing 1 begins with a standard TRSDOS memory header, followed by the filter's data area. The definitions of most of the labels in the data area might seem unusual. Instead of representing an absolute address, each label represents an offset from the label DATA$. The filter points the index (IX) register at the DATA$ label and then uses the offsets from the IX register to find each data item. This approach makes the filter easier to relocate and debug but uses a few extra bytes of code.

Once the help filter installs itself in high memory and connects to the keyboard routine with the TRSDOS Filter command, it routes every TRSDOS call for a key from the keyboard through the Start label in Listing 1. The filter checks if a "get" request is being sent to the keyboard routine. If a "control" request is being sent instead, the filter resets the carry flag. Listing 1 reacts by passing all control requests down the I/O chain.

If a get request has been made (and the carry flag is set), Listing 1 calls the next filter or driver in the I/O chain. If no key is present, Listing 1 simply returns. However, if a keystroke is returned from the keyboard driver, Listing 1 compares it to the help key defined in its data area. If the test fails, the program leaves the keystroke in the A register and sends its value back to the calling program.

After detecting the help key, the filter

must perform a number of tests. Each is an attempt to ensure that the calling program has set the values in the data area correctly. The first test is for page number. If there is no page number, the filter immediately returns, sending the help key back as a legitimate keystroke. If any of the other tests fail, the filter "swallows" the help keystroke and returns with zero in the A register and the zero flag set to indicate that no key was available.

The second test determines whether the calling program provided the name of the help file. The filter program assumes that it has and uses the @FSPEC SVC to parse the supplied file name. If the calling program does not supply the file name, @FSPEC reports an error and the filter returns.

Cursor Address

Next, the filter uses the @VDCTL SVC to get the current cursor address. It then loads the address of the screen buffer in the variable HL and tests the value in the variable H to be sure that the calling program supplied an address. If it failed to do so, the filter gives up and returns to the calling program. If the calling program provided the address of a buffer, the filter checks if it can use a fast block move to capture the screen or must capture each byte separately.

After capturing the screen, the filter tries to open the named help file. If it cannot open the file, the filter jumps to its exit routine. If the filter is able to open the file, it reads through the file until it finds the correct page of help information. This search is the last test before the filter can display the help screen.

If the filter finds the correct page in the file, it clears the screen and begins reading and displaying lines of text until it either comes to the end of the file or finds the beginning of the next page of help text. A small loop waits until you press break, then the filter restores the previous screen, closes the file, and returns to the calling program.

The filter reads the file with the Linein routine I presented here in January (p. 106). The routine assumes that the file contains standard ASCII text like that created with the Ted editor in LS-DOS 6.3. The only need for unusual formatting is "numbering" the pages.

The filter assumes that any line of text containing a single character is a page number marking the beginning of a page of the help file. Because the Linein routine treats all control characters as end-of-file markers, you can number pages with any printable characters from ASCII 32 (a space) to ASCII 255. You will probably never need 224 pages of help text for any program, however.

You must be careful when creating

Listing 3 continued

```
00670           SVC     @HIGH$          ;Set new HIGH$
00680           INC     HL              ;HL = filter's entry point
00690 ;----------
00700 ;  Set type and address in DCB
00710 ;----------
00720           POP     IX              ;Recover DCB address from stack
00730           LD      (IX),45H        ;Mark as @GET/@CTL filter
00740           LD      (IX+1),L        ;LSB of entry point
00750           LD      (IX+2),H        ;MSB of entry point
00760           PRINT   SUCCESS         ;Report installation
00770           LD      HL,0            ;Report no error
00780           SVC     @EXIT           ;And leave
00790 ;----------
00800 ;  These are the error exits
00810 ;----------
00820 INSTLD    LD      HL,INSTLD$      ;Point to message
00830           DB      0FDH            ;Skip next byte
00840 NOSET     LD      HL,NOSET$
00850           DB      0FDH
00860 NOHIGH    LD      HL,NOHIGH$
00870           SVC     @DSPLY
00880           PRINT   ABORT
00890           LD      HL,-1           ;Return error code to TRSDOS
00900           SVC     @EXIT           ;And leave
00910 ;----------
00920 ;  Data area
00930 ;----------
00940 RELTAB    IRP     X,<1,2,3,4,5,6>
00950           DW      RLX
00960           ENDM
00970           DW      0               ;Mark end of relocation table
00980 ;
00990 SIGNON    DB      'Model 4 Interactive HELP Untility',CR
01000 INSTLD$   DB      'Program already installed.',CR
01010 NOSET$    DB      'Program must be installed with SET command.',CR
01020 NOHIGH$   DB      'High memory not available for installation.',CR
01030 ABORT     DB      'Installation aborted.',CR
01040 SUCCESS   DB      'Program successfully installed.',LF
01050           DB      'Use the FILTER command to connect to *KI.',CR
```

End

1

This is the first page of the help file. Everything from the page number (1) to the next page number (*) displays when the help filter calls this page.

---

*

This is also a page. Its page number is an asterisk (*). Since none of the demonstration programs ever set the page number to an asterisk, this page should never be displayed.

2

This is the second page of the help file. It appears double-spaced. Be sure that the in-between lines are either carriage returns with no spaces or carriage returns with two spaces. If a line starts with a single space and a carriage return, the filter interprets it as a page number (ASCII 23, a space).

Figure. This is an example of a help file. Save this file as Test/HLP to use with Listings 4, 5, and 6.

Program Listing 4. Demonstration of the help filter using assembly.

```
00100 ;  Using the HELP facility from Assembly Language
00110 ;  This program assumes that there is a 2-page help file
00120 ;  named TEST/HLP available on one of the drives
00130 ;
00140 ;  Assembled with PRO-Create 4.3a
00150 ;
00160 *GET      DEFS/ASM                ;Use same file DEFS file as Listing 1
00170 PAGE      EQU     14              ;Offset to help page number
```

Listing 4 continued

Listing 4 continued

```
00180 ;
00190          ORG     3000H
00200 START    CALL    HLP_INIT        ;Initialize HELP utility
00210          SVC     @CLS
00220          LD      (IX+PAGE),'1'   ;Set HELP to page 1
00230 ;
00240          PRINT   FIRST$
00250          CALL    WAIT            ;Wait for keystroke
00260 ;
00270          SVC     @CLS
00280          LD      (IX+PAGE),'2'   ;Set HELP to page 2
00290          PRINT   SECOND$
00300          CALL    WAIT            ;Wait for keystroke
00310 ;
00320          SVC     @CLS
00330          PRINT   FINAL$
00340          CALL    WAIT            ;Wait for keystroke
00350          LD      (IX+PAGE),0     ;Turn off HELP
00360          LD      HL,0            ;Report "No error"
00370          SVC     @CLS
00380          SVC     @EXIT
00390 ;
00400 HLP_INIT:
00410          LD      DE,MOD_NAM      ;DE ==> help module name
00420          SVC     @GTMOD          ;Get address
00430          JR      Z,INIT1         ;Okay -- go
00440          PRINT   NO_MOD$         ;Help is not installed
00450          LD      HL,-1           ;Report general error
00460          SVC     @EXIT
00470 INIT1    PUSH    HL              ;Move module address
00480          POP     IX              ;   to IX
00490          LD      (IX+13),F1      ;Set help key to F1
00500          LD      HL,HLP_NAM$     ;HL ==> help file name
00510          LD      (IX+15),L       ;Set pointer to name
00520          LD      (IX+16),H       ;  in HELP utility
00530          LD      HL,SCRBUF       ;HL ==> screen buffer
00540          LD      (IX+17),L       ;Set pointer to screen buffer
00550          LD      (IX+18),H       ;  in HELP utility
00560          LD      HL,INPBUF       ;HL ==> input buffer
00570          LD      (IX+19),L       ;Set pointer to input buffer
00580          LD      (IX+20),H       ;  in HELP utility
00590          LD      HL,SECBUF       ;HL ==> sector buffer
00600          LD      (IX+21),L       ;Set pointer to sector buffer
00610          LD      (IX+22),H       ;  in HELP utility
00620          RET
00630 ;
00640 WAIT     PRINT   WAIT$
00650          SVC     @KEY            ;Wait for keystroke
00660          RET
00670 ;----------
00680 ;  Data & buffers for
00690 ;  HELP utility
00700 ;----------
00720 MOD_NAM          DB      'HELP',CR
00730 HLP_NAM$         DB      'TEST/HLP',CR
00740 SCRBUF           DS      1920
00750 INPBUF           DS      81
00760 SECBUF           DS      256
00770 ;----------
00780 ;  Data for this program
00790 ;----------
00800 FIRST$           DB      LF,'Press F1 to see first HELP page',CR
00810 SECOND$          DB      LF,'Press F1 to see second HELP page',CR
00820 FINAL$           DB      LF,'Test program is ending',CR
00830 WAIT$            DB      LF,'Press any key',CR
00840 NO_MOD$          DB      LF,'HELP facility is not in high memory',CR
00850 ;
00860          END     START
```

End

Program Listing 5. Demonstration of the help filter using Basic. See p. 100 for information on using checksums.

```
1 '  Using the HELP facility from Basic
2 '  This program assumes there is a 2-page help file
3 '  named TEST/HLP available on one of the drives
4 '
5 '  Written specifically for LS-DOS 6.3 BASIC
6 '
10 DEFINT A-Z                                                    '*   803
20 DIM ADDR, ADDR$, H.MOD, H.PAGE, HELP.FILE$, MOD.NAME$, X, X$  '*  3733
30 DIM SCRBUF(960), INPBUF(41), SECBUF(128)'Space for HELP       '*  2536
40 DIM AR(5)                              'For USR11 interface   '*   663
50 HELP.FILE$ = "TEST/HLP" + CHR$(13)                            '*  2133
60 MOD.NAME$  = "HELP" + CHR$(13)                                '*  1796
70 GOSUB 1000                             'Initialize HELP faci
   lity                                                          '*   744
80 '
100 CLS                                                          '*   403
110 PRINT "Press F1 to see first HELP page"                      '*  3317
120 POKE H.PAGE, ASC("1")                                        '*  1406
130 GOSUB 2000                            'Wait for a keystroke  '*   790
```

Listing 5 continued

You need to create a help file before testing the filter program.

the file of help text to never have a single-character line except when you mean that line to be a page number. If you need to display a single-character line, simply add a space after the character.

The installation procedure in Listing 3 employs code I have used here several times. It checks that the Set command ran the program, changes absolute references in the filter, moves the entire filter to high memory, protects it there, and sets the TRSDOS device-control block (DCB) to show that the filter can handle both get and control requests (just as the keyboard driver can).

Assemble Listings 1, 2, and 3, and call the program Help/FLT. Install the filter with these two commands from TRSDOS or LS-DOS:

```
SET *HP HELP
FILTER *KI *HP
```

Testing the Filter

You need to create a sample help file before you can test the filter program. The Figure shows the two-page file I used while creating the filter. You might want to copy it. If you are going to try any of the sample programs in Program Listings 4, 5, and 6, be sure that the file you create has at least two pages, numbered "1" and "2," respectively. Save the help file as Test/HLP.

Listing 4 demonstrates how to use the help filter with an assembly-language program. The program in Listing 4 does not do anything useful. It sets up the help filter, asks for page 1, and prints messages on the screen. If you press the F1 key during the first message, the first help screen appears. If you press F1 during the second message, the second help screen appears.

Notice how Listing 4 communicates with the help filter. If the @GTMOD SVC returns an error, Listing 4 knows that the help filter has not been installed and aborts to TRSDOS. If the filter has been installed, Listing 4 sets each of its data areas with the addresses of the help-file name and the three buffers. Listing 4 does not check if the help filter is actually attached to the keyboard I/O chain with the Filter command. If the filter is not attached, the data is set in the correct memory locations, but nothing happens when you press F1.

Listing 5 is the Basic version of the

All sorts of unusual sounds came from the speaker.

sample program. I wrote it to parallel Listing 4 as closely as possible. The way that Basic handles memory requires you to observe the following cautions when using the help filter with a Basic program.

- Be sure that the buffers (which are allocated in integer arrays) do not move after you put their addresses into the filter's data area. Every time a Basic program defines or uses a new scalar (non-array) variable, all other arrays move up in memory to make room. The safest way to avoid the problems this movement can cause is to declare all variables at the beginning of the program with the DIM statement. Once you have written a Basic program, you can use the BREF utility in LS-DOS 6.3 to get a list of the variables. You can then easily add the DIM statements at the beginning of the program.
- The help-file name and the help-module name should be the first two strings that you define in the Basic program. Basic continually moves strings in memory during its garbage collection routines. By defining these strings first, you can ensure that they will be at the top of the string area and that they will not be affected by garbage collection.
- Listing 5 uses the special USR11 routine in LS-DOS 6.3's Basic enhancements to gain access to the @GTMOD SVC. If you use an earlier version of Basic, you must write your own machine-language routine to invoke @GTMOD and return the value in the HL register.

Listing 6 shows how you could write the sample program in C with the MC compiler from Misosys. The code that initializes the filter's data area is easier to understand in the C program (if you know C) than in the other sample programs. This is partly due to C's ability to handle address pointers and partly because of the structure definition near the beginning of the program.

If you are going to use the help filter with your programs, you should observe these cautions:

- Especially with Basic programs, do not move the buffer areas or use them for other purposes without telling the filter. While I was writing and testing the Basic sample program, I forgot about this requirement and was amazed at the unusual things that happened. The disk drive lights began blinking on and off in a regular pattern, all sorts of unusual

Listing 5 continued

```
140 '
150 CLS                                                          '*   408
160 PRINT "Press F1 to see second HELP page"                     '*  3406
170 POKE H.PAGE, ASC("2")                                        '*  1412
180 GOSUB 2000                          'Wait for a keystroke    '*   795
190 '
200 CLS                                                          '*   404
210 PRINT "Test program is ending"                               '*  2797
220 GOSUB 2000                          'Wait for a keystroke    '*   790
230 POKE H.PAGE, 0                      'Turn off the Help fi
    lter                                                         '*  1043
240 END                                                          '*   397
250 '
1000 AR(0) = 83                         'Set SVC# of @GTMOD      '*   733
1010 ADDR = VARPTR(MOD.NAME$)           'Set address of mod n
    ame                                                          '*  1789
1020 AR(2) = CVI(CHR$(PEEK(ADDR+1))+CHR$(PEEK(ADDR+2)))          '*  3155
1030 X=USR11(VARPTR(AR(0)))             'Find module in memor
    y                                                            '*  1642
1040 IF AR(0) AND 64 = 0 THEN PRINT "HELP module not found": END '*  4319
1050 H.MOD = AR(1)                      'Get HELP Module addr
    ess                                                          '*   974
1060 POKE H.MOD+13,&H81                 'Set F1 as Help Key      '*  1310
1070 ADDR = VARPTR(HELP.FILE$)                                   '*  1867
1080 POKE H.MOD+15,PEEK(ADDR+1)         'Set pointer to Help
    file                                                         '*  1848
1090 POKE H.MOD+16,PEEK(ADDR+2)                                  '*  1851
1100 ADDR$ = MKI$(VARPTR(SCRBUF(0)))                             '*  2154
1110 POKE H.MOD+17, ASC(ADDR$)          'Set pointer to scree
    n buffer                                                     '*  1742
1120 POKE H.MOD+18, ASC(RIGHT$(ADDR$,1))                         '*  2336
1130 ADDR$ = MKI$(VARPTR(INPBUF(0)))                             '*  2156
1140 POKE H.MOD+19, ASC(ADDR$)          'Set pointer to input
     buffer                                                      '*  1747
1150 POKE H.MOD+20, ASC(RIGHT$(ADDR$,1))                         '*  2332
1160 ADDR$ = MKI$(VARPTR(SECBUF(0)))                             '*  2147
1170 POKE H.MOD+21, ASC(ADDR$)          'Set pointer to secto
    r buffer                                                     '*  1743
1180 POKE H.MOD+22, ASC(RIGHT$(ADDR$,1))                         '*  2337
1190 H.PAGE = H.MOD + 14                'Set address of help
    page #                                                       '*  1313
1200 RETURN                                                      '*   707
1210 '
2000 PRINT: PRINT "Press any key ..."                            '*  2626
2002 Z$ = INPUT$(1)                                              '*  1045
2004 RETURN                                                      '*   710
```

End

Program Listing 6. Demonstration of the help filter using C.

```
/*  Using the HELP facility from C
 *  This program assumes that there is 2-page help file
 *  named TEST/HLP available on one of the drives.
 *
 *  Written for MC
*/

#include <stdio.h>
#include <z80regs.h>
#option  INLIB

#define  GTMOD 83                    /*Define @GTMOD SVC number          */

struct  {                            /*Structure of help data area       */
    char    h_header[13],
            h_key,
            h_page,
            *h_name,
            *h_scrbuf,
            *h_inbuf,
            *h_secbuf;
        } *help_dat;

char  hlp_nam[] = "TEST/HLP\n";      /* Help file name                    */
char  mod_nam[] = "HELP\n";          /* Help module-name in high memory   */
char  scrbuf[1920],                  /* Room for buffers must be external*/
      inbuf[81],                     /* to all functions                  */
      secbuf[256];

main()
{
    hlp_init();                      /* Initialize Interactive Help       */
    clscrn();                        /* Clear the screen                  */
    help_dat->h_page = '1';          /* Set help to page 1                */

    puts("\nPress F1 to see first HELP page");
    wait();
    clscrn();
```

Listing 6 continued

How to Use *80 Micro* Program Listings

Basic program listings in *80 Micro* include a checksum value at the end of each line. This value is the sum of the ASCII values of all characters and spaces in the line, excluding remarks. You can use these values to test the accuracy of your typing.

- Type in program code *exactly* as listed, omitting the indentations (when program lines continue to a second or third magazine line). The '* characters, checksum values, and comments may be omitted.
- Save the program in ASCII format with the command SAVE "file name",A.
- Load and run Checksum (see Program Listing). (For the Tandy 1000, change line 10 to: 10 CLS:LOCATE 2,25:PRINT "VERIFY CHECKSUMS ON PROGRAM" '* 3544.) The program will prompt you for the name of the file to be verified and give you the option of sending the line numbers and checksum values to the printer or to the screen.

When printing to the screen, Checksum lists 20 lines and then waits for you to press the enter key.

- Compare the displayed line numbers and checksum values with the checksums shown in the listing. Correct errors in lines having checksum values that don't match.

—Beverly Woodbury,
Technical Editor

Program Listing. Checksum.

```
10 CLEAR 1000:CLS:PRINT@140,"VERIFY CHECKSUMS ON PROGRAM"                '*  3713
20 PRINT:PRINT:INPUT "Enter Name of File to verify";F$                   '*  4245
30 PRINT:PRINT:PRINT "List Checksums to:"                                '*  3233
40 PRINT TAB(20) "<P>rinter":PRINT TAB(20) "<S>creen"                    '*  3628
50 PRINT:PRINT:PRINT TAB(30);"? ";                                       '*  2148
60 K$=INKEY$                                                             '*   726
70 IF K$="P" OR K$="p" OR K$="S" OR K$="s" THEN 80 ELSE 60               '*  3269
80 PRINT K$:IF K$="P" OR K$="p" THEN LP=1                                '*  2439
90 OPEN "I",1,F$:B$=CHR$(34)                                             '*  1521
100 IF EOF(1) THEN CLOSE:GOTO 390                                        '*  2000
110 LINE INPUT#1,L$:L=VAL(LEFT$(L$,6))                                   '*  2275
120 IF Z=2 AND L=0 THEN 100 ELSE Z=2                                     '*  2089
130 A=VARPTR(L$):GOSUB 270:Q=PEEK(A)                                     '*  2244
140 LS=PEEK(A+1):MS=PEEK(A+2):A=MS*256+LS:GOSUB 270                      '*  3115
150 IF INSTR(L$,"'") THEN GOSUB 280                                      '*  2038
160 IF RIGHT$(L$,1)=" " THEN IQ=Q:GOSUB 370                              '*  2514
170 FOR K=1 TO Q:P=PEEK(A):CS=CS+P:A=A+1:NEXT K                          '*  2945
180 IF CS=0 THEN 100                                                     '*  1131
190 IF CS<100000! THEN D$="-"                                            '*  1538
200 IF CS<10000 THEN D$="- "                                             '*  1481
210 IF CS<1000 THEN D$="-  "                                             '*  1466
220 IF CS<100 THEN D$="-   "                                             '*  1451
230 IF LP=1 THEN LPRINT "Line";L;D$;CS,:CS=0:GOTO 100                    '*  3370
240 PRINT "Line";L;D$;CS:CS=0:X=X+1                                      '*  2282
250 IF X=20 THEN X=0:PRINT TAB(30) "Press <ENTER> to continue."
    ELSE 100                                                             '*  4924
260 K$=INKEY$:IF K$<>CHR$(13) THEN 260 ELSE 100                          '*  2705
270 IF A>32767 THEN A=(65536!-A)*-1:RETURN:ELSE RETURN                   '*  3275
280 I=INSTR(L$,"'"):IQ=I-1                                               '*  1504
290 IF LEN(L$)=INSTR(L$,"'") THEN 100                                    '*  2095
300 LQ$=STR$(L):LQ=LEN(LQ$):IF LQ+2=>I THEN 100                          '*  2839
310 Q1=INSTR(L$,B$):IF Q1>I OR Q1=0 THEN 370                             '*  2593
320 Q2=INSTR(Q1+1,L$,B$):IF Q2>I THEN I=INSTR(Q2,L$,"'")                 '*  3297
330 IF I=0 THEN RETURN                                                   '*  1386
340 Q3=INSTR(Q2+1,L$,B$):IF Q3>I OR Q3=0 THEN 370                        '*  2869
350 Q4=INSTR(Q3+1,L$,B$):IF Q4>I THEN I=INSTR(Q4,L$,"'")                 '*  3308
360 IF I=0 THEN RETURN                                                   '*  1389
370 FOR I=IQ TO 1 STEP-1:C=ASC(MID$(L$,I,1)):IF C<33 THEN NEXT I         '*  3847
380 RL$=LEFT$(L$,I):Q=LEN(RL$):RETURN                                    '*  2323
390 PRINT:PRINT"CHECKSUM/BAS now in Memory"                              '*  3248
400 PRINT "Reload the PROGRAM that you are working on? (Y/N)";           '*  4890
410 INPUT Q$:IF Q$="Y" OR Q$="y" THEN CLS:LOAD F$                        '*  2967
```

End

80 MICRO'S LIST of ADVERTISERS

JULY 1987

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1. ☐ I own an MS-DOS, IBM compatible system.
2. ☐ I intend to purchase.
3. ☐ I'm interested but have no immediate plans to purchase.
4. ☐ Not interested.

B. Which of the following types of MS-DOS products would you like to see reviewed? Check all that apply.
1. ☐ CAD/CAM software
2. ☐ Personal management software
3. ☐ Games
4. ☐ Small-business software
5. ☐ Add-on boards
6. ☐ Peripherals

C. *Excluding yourself*, how many people read your copy of 80 Micro?
1. ☐ One
2. ☐ Two
3. ☐ Three
4. ☐ Four
5. ☐ Five or more

D. Do you own an MS-DOS computer? If so, check all that apply.
1. ☐ Model 1000
2. ☐ Model 1000 SX
3. ☐ Model 1000 EX
4. ☐ Model 1200
5. ☐ Model 2000
6. ☐ Model 3000 HD
7. ☐ Model 3000 HL
8. ☐ IBM PC or XT
9. ☐ IBM AT
10. ☐ Other XT or AT compatible

E. Do you own a non-MS-DOS Tandy computer? If so, check all that apply.
1. ☐ Model I
2. ☐ Model III
3. ☐ Model 4/4D/4P
4. ☐ Model 100/200
5. ☐ Color Computer

F. Do you subscribe to an information utility, such as Compuserve, Dow Jones News Retrieval, etc.?
1. ☐ Yes
2. ☐ No
3. ☐ Not now, but intend to within 12 months.

G. Do you plan to purchase another TRS-80/Tandy Computer during the next 12 months?
1. ☐ Yes
2. ☐ No
3. ☐ Don't know

H. Where do you use your TRS-80/Tandy Computer? Check all that apply.
1. ☐ At home for pleasure
2. ☐ At home for business
3. ☐ At work
4. ☐ At school
5. ☐ For math/science applications in any location

I. The articles in 80 Micro are:
1. ☐ Too simple
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4. ☐ The Next Step
5. ☐ John's MS-DOS Column
6. ☐ Fine Lines
7. ☐ Reader Forum
8. ☐ Reviews
9. ☐ New Products
10. ☐ The Home Computerist
11. ☐ Public Works

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★ *Who is selling a multifunction board called MASTER/CARD?*

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12.	MEMORY MINDER *(J & M SYSTEMS)*	100
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	TOTAL	$2720

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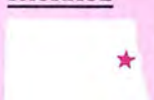

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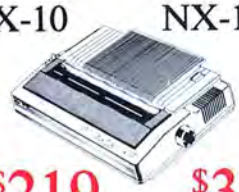

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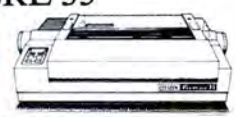

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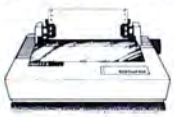

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Listing 6 continued

```
    help_dat->h_page = '2';
    puts("\nPress F1 to see second HELP page");
    wait();
    clscrn();

    puts("Test program is ending");
    wait();

    help_dat->h_page = 0;
    clscrn();
}


hlp_init()                          /* Initialize the HELP facility     */
{
    union REGS reg;
    reg.DE = mod_nam;               /* DE ==> HELP module name          */
    if (call(GTMOD,&reg)) {         /* find module in memory            */
        puts("\nHelp utility is not in high memory");
        exit(-1);
        }
    help_dat = reg.HL;              /* Point to beginning of module     */
    help_dat->h_key    = 0x81;      /* Set F1 as "Hot Key"              */
    help_dat->h_name   = hlp_nam;   /* Pointer to help file name        */
    help_dat->h_scrbuf = scrbuf;    /* Pointer to screen buffer         */
    help_dat->h_inbuf  = inbuf;     /* Pointer to input buffer          */
    help_dat->h_secbuf = secbuf;    /* Pointer to sector buffer         */
}


clscrn()
{
    fputs("\x1c\x1f",stdout);
}


wait()
{
    puts("\nPress any key");
    getchar();
}
```

End

sounds came from the speaker, and the computer began responding to keystrokes selectively.

● Disable the help routine before your program ends. If you forget, the buffer areas will be allocated to other programs and a crash of some sort will occur. If you change the area that the file name uses to bytes that do not constitute a legal file name, you may avoid a complete crash. To disable the filter, just put a zero in the page-number location. Your computer then behaves as if the filter were not there.

I have had the help filter in my Model 4 while using several other programs and have not had any trouble. The filter adds a touch of professionalism to programs that can invoke it. ■

Write Hardin Brothers at 280 N. Campus Ave., Upland, CA 91786. Enclose a stamped, self-addressed envelope for a reply. You can also contact Hardin on Compuserve's WESIG (PCS-117).

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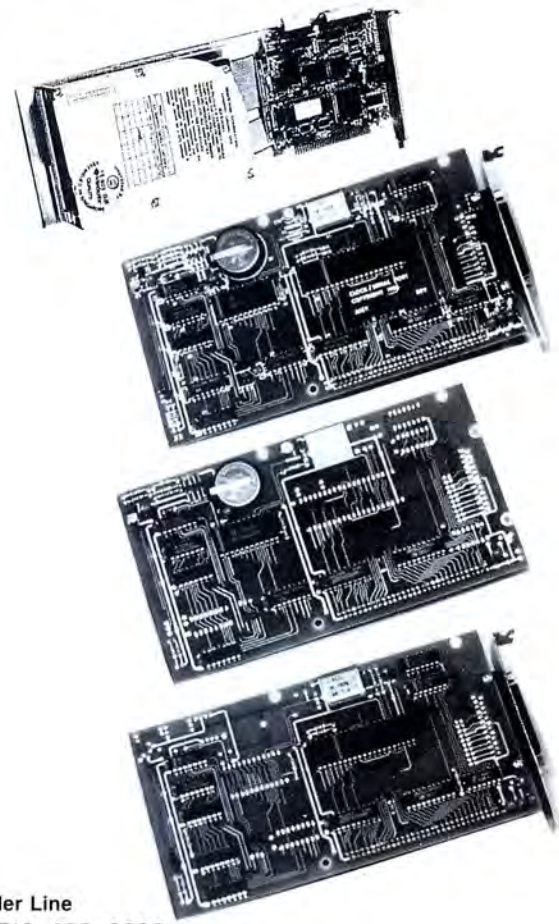

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Features options of both of the above boards on just one board. **$129.**

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Good Day, Sunshine

When I asked for micro-meteorological programs, the snow in my dooryard was 4 feet deep and rising. By the time most of you read this, I'll be eagerly anticipating summer solstice, and none too soon, because I'm writing it at the trailing edge of a much too soggy mud season, on the verge of the season of the dreaded black fly. It's spring; but it's not so much spring's promise as its present uncertainty that has my attention.

What I've been uncertain about is the existence of the sun. Lately it's been raining enough to make Noah nervous. So I'm grateful to E. N. Powell for sending his sunrise, sunset calculator (see Program Listing 1) from Fort Lauderdale, FL, where I assume the sun yet shines. If I can't see it, at least I can figure when it's up and about.

Powell, whose hobby was designing sundials in the golden days of the Model I, credits Harold K. Skramstad's "Sunrise. . .Sunset" article (see the October 1981 issue of *80 Microcomputing*, p. 272) as the basis for his program. Condensed for Fine Lines on a Model 2000, it runs as written in any good Basic. Though Powell had to omit some calculations and simplify others, the program is accurate within minutes. I verified this with an almanac and the local paper. The program is necessarily limited to locales in North America. Enter latitude, longitude, and the initial letter of the time zone. The program prints a year of sunrise and sunset times at weekly intervals.

Thomas Vance of Port Clinton, OH, sent us a whole weather station in two lines of Basic, generic enough to run on most computers (see Program Listing 2). You supply the dry bulb and wet bulb temperatures in Fahrenheit, and the program calculates dew point, relative humidity, heat index, and height of the base of the clouds. The heat index is the temperature you feel as an effect of humidity. Anything above 105 is heatstroke territory.

If you're new to programming, watch the Data statement at the end of line 1. It is restored every time the subroutine in the first half of line 2 wants to read it. The Print Using statement in line 2 is instructive. Everyone can appreciate Tom's use of Gosubs for iterative calculations. Nice job.

We've Moved

Starting this month, Fine Lines is in the middle of the magazine. Much as I liked it in the backyard, the move gives us a couple pages (with the August issue) for our monthly get-together. I'll use the extra room to better highlight and explain techniques you use in your programs. You can use the space to give your programs room to breathe. From now on I won't ask you to shoehorn everything into one line.

Drawing a Blank

If you leave a static image on your screen long enough, it can burn into the phosphor and become a permanent shadow. (The better your monitor, the longer it takes.) To guard against this, some programs sport a safety feature called "screen blanking."

You usually find screen blanking built into an input routine that concurrently monitors the keyboard and a timer. If you don't press a key before the timer expires (10 minutes is standard), the routine assumes you were abducted by inhuman, but not unkind, creatures from a far galaxy. It saves the image on the screen, clears it, and waits. Should you escape and return to press a key, the routine restores the screen and the program continues.

That's your assignment. Show us how to add screen blanking to a Basic program. To help preserve our native serenity while we're testing your solutions, integrate your routine into this generic keystroke grabber:

```
100 I$=INKEY$:IF I$="" " THEN GOSUB
    1000:GOTO 100 ELSE GOSUB 2000:
    RETURN
```

The subroutine at line 1000 has to start the timer and blank the screen after a period of continuous inactivity. The subroutine at 2000 must restore the screen and reset the timer. Add bells and whistles if you like. As a practical matter, your routines shouldn't be so long that they make the keyboard sluggish. And in spite of the new format, our space is still limited.

One more thing. This will be a cinch in GW-Basic, a challenge in Model I/III and similar Basics, and difficult, nigh impossible, on a Model 4. . . .That was three things.

The Rules:

1. Write your solution(s) in any TRS or Tandy Basic, except Pocket Computer Basic.
2. This month's entries must reach us by July 15, 1987. This doesn't give everyone the same amount of time, we know; we apologize to our overseas readers especially.
3. This month's winners will appear in the October 1987 issue.
4. Employees of CW Communications are not eligible.
5. Send your entry to: *80 Micro*, Fine Lines, 80 Elm St., Peterborough, NH 03458. We cannot return entries.
6. Specify your T-shirt size. Bumper size not required. ■

Harry Bee is a freelance writer, puzzle creator, programmer, and dreamer. Contact him at P.O. Box 567, Cornish, ME 04020.

Program Listing 1. E. N. Powell's Sun Schedule.

```
1 DEF FNA(X)=1.5708-ATN(X/SQR(-X*X+1)):P=.017453298#:INPUT"Lt,Lg,Zn(ECMP)";L,A,T
$:F=A-(60+15*INSTR("ECMP",T$)):L=L*P:PRINT,"Rise","Set":FOR X=1 TO 365 STEP 7:T=
P*X:D=(.456-22.915*COS(T)-.43*COS(2*T)-.156*COS(3*T)+3.83*SIN(T)+.06*SIN(2*T)-.0
82*SIN(3*T))*P
2 E=8.000001E-03+.51*COS(T)-3.197*COS(2*T)-.106*COS(3*T)-.15*COS(4*T)-7.317*SIN(
T)-9.47*SIN(2*T)-.391*SIN(3*T)-.242*SIN(4*T):SS=FNA(-TAN(L)*TAN(D))*1/P:SS=SS/15
-E/60+F/15+.07:PRINT X,INT(12-SS)":"((12-SS)-INT(12-SS))*60,INT(SS)":"(SS-INT(SS
))*60:NEXT
```

End

Program Listing 2. Thomas Vance's Weather Station.

```
1 INPUT"D,W";D,W:A=1:B=W:GOSUB 2:X=(Y-(.279678*(D-W)*(1+(W-32)/1571))):B=D:GOSUB
 2:H=100*(X+X*(X<0))/Y:C=D:E=D:FOR J=0 TO 1:C=C/2:B=E:GOSUB 2:IF C>1 AND X<>Y TH
EN E=E+SGN(X-Y)*C:J=0:NEXT ELSE  A=0:DATA 3.28082e-8,6.97727e-8,3.12274e-4,8.059
45e-3,.355093
2 IF A THEN B=(B-32)*5/9:RESTORE:Y=0:FOR I=1 TO 5:READ R:Y=(Y+R)*B:NEXT:Y=Y+4.53
817:RETURN ELSE K=-EXP(3.51801+9.58315E-03*D+(-.0138245+2.03247E-04*D)*H)*(D>70)
-D*(D<=70):PRINT USING"### DP  #### RH  ### HI  ##### CH";E,H,K,(D-E)/4.38912E-0
3:GOTO 1
```

End

MS-DOS

Dual-Purpose Video Adapter

The Color/Mono adapter supports the standard IBM color-graphics adapter (CGA) modes and IBM monochrome display adapter (MDA) modes. You can configure the switch-selectable adapter for full-feature CGA display or for high-quality monochrome text display. The adapter also features an IBM-compatible parallel printer port and an optional battery-operated clock/calendar.

The Color/Mono monitor supports graphic resolutions of 640 by 200 pixels in two colors and 320 by 200 pixels in four colors. For color text display, the adapter produces an 8-by-8 character cell and provides flicker-free scrolling.

As a monochrome adapter, the Color/Mono provides 80-column by 25-line text display with a high-resolution 8-by-14 character cell.

The Color/Mono adapter sells for $149, and the clock/calendar option is $29.95. Contact STB Systems Inc., 1651 N. Glenville, Suite 210, Richardson, TX 75081, 214-234-8750.

Circle 566 on Reader Service card.

Two from Microhelp

Mach 2 is a toolbox of more than 90 assembler and Pascal subroutines and functions. It includes a window-management system that lets you add any number of pop-up and pull-down windows, including overlayed, boxed, and exploding windows. It also offers routines for instant data display, read-the-file directory, execution of any program or batch file, controlled data input, quick sort, automatic box drawing, and hidden windows you can write to and move.

Mach 2 requires DOS 2.x and Turbo Pascal 3.x. The package is not copy-protected and sells for $69.

Screen Machine is a screen editor that lets you paint a screen or capture a text screen from your monitor and edit it to use in interactive demos, program prototypes, tutorials, and hard-disk managers. It can also capture graphics screens to binary files to load directly to video memory.

Screen Machine automatically generates source code for Turbo Pascal, Dbase, assembly language, and Basic. It sells for $79.

Contact Microhelp Inc., 2220 Carlyle Drive, Marietta, GA 30062, 800-922-3383 (in GA, 404-973-9272.)

Circle 551 on Reader Service card.

STB's Color/Mono adapter is a 10-inch board that supports CGA and monochrome modes and provides a parallel printer port.

Educational Goalkeeper

Goals and Objectives helps special-education teachers set and manage strategies for their classes. You enter class and student information and then select goals and objectives from one or both of the curriculum disks: CAMEO (computer-assisted management of educational objectives), which has 163 goals and 6,672 objectives, or WSCC (Washington State Cooperative Curriculum), which has 285 goals and 20,717 objectives. You can also add goals and objectives of your own.

The program helps you evaluate your plan for each student and print out log sheets to chart daily progress. You can also print out reports for a complete history on each student.

The program with both CAMEO and WSCC curriculum costs $875, or $695 with one curriculum. Contact Jeff Stewart, 18518 Kenlake Place N.E., Seattle, WA 98155, 206-486-4510.

Circle 552 on Reader Service card.

Long and Loud

Long and Loud 2.0 is a sideways- and banner-printing software package that offers four type sizes in sideways printing mode, five type styles (Times, Sans Serif, Olde English, Script, and Symbols) in banner mode, and a foreign-character set mode.

Long and Loud is a revision of Twist and Shout and sells for $49.95. It runs on all MS-DOS and CP/M machines. Contact Spectre Technologies Inc., 22458 Ventura Blvd., Suite E, Woodland Hills, CA 91364, 818-716-1655.

Circle 571 on Reader Service card.

Half-Size Cards

The Racer 286 is an internal option card that replaces your computer's 8088 microprocessor with an 80286 16-bit microprocessor, which runs at a full 8MHz. The Racer 286 also adds 8K of high-speed, zero-wait-state cache memory and a fast clock speed of 10MHz.

The Racer 286 sells for $415.

The CPI Half Pint is an input/output card that offers a parallel port, two serial ports, a game port, and real-time clock/calendar. It sells for $125.

Contact Computer Peripherals Inc., 2635 Lavery Court #5, Newbury Park, CA 91320, 800-854-7600.

Circle 553 on Reader Service card.

Passive Investment Planner

The Passive Investment Planner is a menu-driven Lotus 1-2-3 template that handles all calculations for the new passive-income section of the 1986 Tax Reform Act. Making a single change in an investment in this recently created class of income requires you to recalculate all investments, and the Passive Investment Planner performs these recalculations instantly.

All you need enter is your income, a description of the investment, and the investment's net earning.

The Passive Investment Planner comes with a Client File Manager that lets you set up files for your clients. The program costs $195 from Spectrum Software, P.O. Box 6746, Silver Spring, MD 20906, 800-835-2246.

Circle 554 on Reader Service card.

Peter Norton's Utilities

Peter Norton Computing has released two new versions of the Norton Utilities—Version 4.0 and the Advanced Edition. Version

4.0 introduces four programs that let you run all the utilities from one program; attach a 65-character description to any file name; display the directory structure tree and change, remove, or make directories; and create interactive batch files.

The Advanced Edition includes all Version 4.0's features, plus a program that rearranges the logical structure of a hard disk for better seek time, speed, and performance; one that recovers data lost from formatting a hard disk; and an enhanced version of the Norton Utilities' main program.

Version 4.0 sells for $99.95, and the Advanced Edition costs $150. Contact Peter Norton Computing, 2210 Wilshire Blvd., Suite 186, Santa Monica, CA 90403-5784, 213-453-2361.

Circle 555 on Reader Service card.

Outline Processor

Kamas Version 2 is an outline processor that lets you classify text into an outline structure and then alter and access the text based on that structure. With it, you can hide details and focus on how your main ideas fit together as you develop your work. You can collapse levels of the outline off screen and then expand them back into view for editing.

Kamas has a built-in text editor, file manager, date and time stamps, and password security. The program requires 256K and sells for $69.95. Contact Kamasoft Inc., 2525 S.W. 224th Ave., P.O. Box 5549, Aloha, OR 97007, 503-649-3765.

Circle 556 on Reader Service card.

Software Data Protection

Bookmark is a memory-resident utility that automatically and periodically "photographs" your system and video RAM and saves it to a reserved and hidden area of the hard-disk subsystem so events like power failure, accidental reset, or system crash won't destroy your work in progress. The program occupies 6K of system RAM and operates transparently within most word processors, spreadsheets, and data bases.

Bookmark saves from 256K to 640K of RAM memory every two minutes or 1,000 keystrokes, although you can change the frequency at which your work is saved. There's no problem if you forget to save your work before you turn off your machine; it will be there, where you left off, when you start up again.

Bookmark costs $69.95 and requires DOS 2.1, a floppy drive and a 10-megabyte (MB) hard disk, and a video-display adapter. Contact Intellisoft International, P.O. Box 5055, Novato, CA 94948, 800-544-6275 (in CA, 800-543-6275).

Circle 557 on Reader Service card.

Origo's Amigocard 21 is a 21-megabyte Winchester hard-disk card.

Hard Card

The Amigocard 21 is a Winchester hard-disk card for the Tandy 1000/1000 SX/3000. It has a 21MB capacity and a 65-millisecond average access time, is 80286 compatible, and operates in both 8- and 16-bit slots.

You don't need special tools to install the unit, and it draws power directly from the bus interface.

The Amigocard comes with hard-disk utilities and format and partition software. It sells for $595 from Origo International, 7921 Canoga Ave., Canoga Park, CA 91304, 818-340-7552.

Circle 559 on Reader Service card.

Photographer's Helper

Photopack—Computer Programs for Photographers is a menu-driven package of tools for the professional and ama-

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teur photographer. It provides data on shutter speed and lens selection, image size, enlarger time and distance, flash exposure, and depth of field.

The program lets you type and print model releases and equipment labels and includes an electronic darkroom timer system that you can customize and a database system to manage your slides and negatives.

Photopack sells for $50 and requires 256K, two disk drives, and color graphics. Contact Wash'n'Ware Software Products, P.O. Box 91016-199, Baton Rouge, LA 70810.

Circle 560 on Reader Service card.

Writing in Tongues

The Ambassador is a menu-driven multilingual word processor that lets you write in French, Spanish, German, English, and Hungarian and features on-screen justification, pagination, and printer selection. You can display the menus in the program's different languages.

The Ambassador also includes mathematical symbols, a glossary of frequently used phrases, and an on-line help function. The program supports underlining, boldface, and italic print.

The Ambassador sells for $150 from Gessler Educational Software, 900 Broadway, New York, NY 10003-1291, 212-673-3113.

Circle 561 on Reader Service card.

Time for You to Reave, Glasshoppa

Master Ninja: Shadow Warrior of Death is an action/adventure game that takes you, master of the secret martial arts, through 25 screens of hand-to-hand and weapon combat. You'll need all your superhuman skills as you try to find the magic sword in the evil warlord's castle with its ninja and samurai guards, black magic curses, and deadly tigers.

The animated characters are over 3½-inches tall, and yours is capable of 20 martial arts moves. Master Ninja costs $34.95 from Microsphere Corp., Plymouth Center, 521 Plymouth St., Greensburg, PA 15601, 800-521-2488 (in PA, 412-838-1166).

Circle 562 on Reader Service card.

Caddylak's Formdesigner can create custom forms, charts, and worksheets.

Instant Paperwork

Formdesigner and Formkits are packages that let you create forms, charts, and worksheets. Formdesigner combines a graphics program with a word processor to let you combine lines, labels, symbols, text, and type sizes to create custom forms.

Formkits works in conjunction with Formdesigner to offer hundreds of predesigned forms, which you can modify. There are three Formkits: Graphs and Charts, Business and Memo Forms, and Time-Management Forms.

Formdesigner sells for $79.95, and each Formkit is $39.95. Formdesigner with all three Formkits is $159.85. Contact Caddylak Systems Inc., Dept. PZ, 60 Shames Drive, Westbury, NY 11590, 516-333-7440.

Circle 564 on Reader Service card.

Statistical Toolbox

Stat 1—A Statistical Toolbox is a menu-driven program that includes a complete data-handling package with a full-screen editor, data import and export facilities, menu-selected and equation-mode data transformations, screening out-of-range values, a codebook and file documentation facility, and a data-entry screen generator for collecting responses from questionnaires or survey instruments.

The program offers several statistical routines, including descriptive statistics, corelation measures for both inter-

val-level and ordinal-level variables, and tests for differences between means for paired or independent experimental groups. A general linear model routine has analysis of variance procedures.

The program also adds beta regression weights, predicted values, and residuals to the regression routine. And the routine computes the Durbin-Watson statistic and the first-order auto-correlation coefficient.

Stat 1 requires two floppy drives and 256K. A student version sells for $29.95, and a professional version sells for $129.95. Contact Sugar Mill Software Corp., 1180 Kika Place, Kailua, HI 96734, 800-367-8047.

Circle 563 on Reader Service card.

Microsoft's Quick Basic 3.0

Microsoft's Quick Basic 3.0 advanced Basic compiler offers improvements over earlier versions in speed and debugging, extends Basic, and supports the 8087 and 80287 math coprocessors.

The integrated debugger lets you move between compiling, editing, and debugging. While your program is running, you can debug it; step through the source code; observe the contents of variables; set, examine, and clear dynamic breakpoints; divide the screen into windows and view the source code, variable contents, and program output; and debug all Basic statements (including those with alphanumeric labels).

Quick Basic 3.0's 8087/80287 coprocessor support lets you generate fast in-line code whenever a coprocessor is present. If your machine doesn't have a coprocessor, the run time can automatically switch to 8087 software emulation routines that offer the same 80-bit IEEE math accuracy. Or you can choose the higher speed of Microsoft binary math routines, which offer 64-bit accuracy.

Quick Basic 3.0 can keep track of all errors found during compilation. It requires 320K and DOS 2.x and sells for $99 from Microsoft Corp., 16011 N.E. 36th Way, Box 97017, Redmond, WA 98073-9717, 800-426-9400 (in AK and WA, 206-882-8080).

Circle 550 on Reader Service card.

Short-Card Modem

The Everex Evercom modem comes on a short card and is Hayes, Bell 103, and Bell 212A compatible. It features autoanswering, -dialing, and -log-on and emulates the DEC VT100, the IBM 3101, and other terminals. It supports 132 columns and has a built-in speaker with software-adjustable volume control and automatic data-to-voice transition.

The modem adjusts itself when receiving at 300 or 1,200 baud and asks you to adjust your software. It comes with a phone cord and menu-driven Bitcom software that supports an extended Hayes command set and keeps a phone directory of up to 32,000 numbers.

The Evercom modem sells for $249 from Everex Systems Inc., 48431 Milmont Drive, Fremont, CA 94538, 415-498-1111.

Circle 567 on Reader Service card.

Only $9.95, and Educational, Too

Amanda's Letter Lotto is an educational game to teach preschoolers about the alphabet, colors, and the computer keyboard. The manual describes 12 games children can play, and the program is flexible enough to let you create games of your own.

Although Amanda's Letter Lotto uses color graphics, it doesn't require a graphics

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Contact us if your printer is not listed. We have many more in stock. We can probably RELOAD your old cartridges.				
C ITOH Prowriter 1550-8510, NEC 8023-8025, APPLE DMP - IMAGEW	1/2 x18	$15/2 $ 42/6 $ 78/12	$7/1 $6 ea 2 or more	$15/3 $54/12 $288/72
IBM PROPRINTER (Standard Paper) (4201)	7/16 x 20	$18/2 $ 51/6 $ 96/12	$8/1 $7 ea 2 or more	$18/3 $66/12 $360/72
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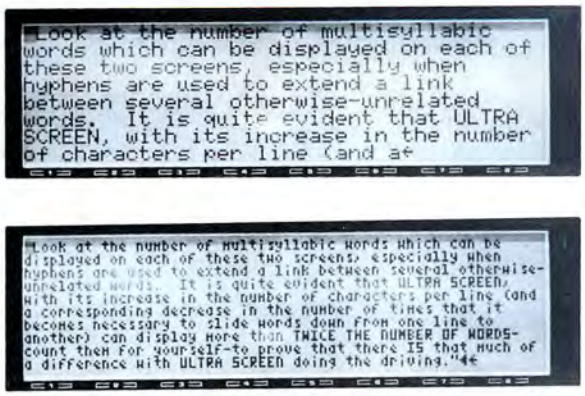

Ultrasoft's Ultrascreen almost doubles the Model 100's text display.

card and also runs on a monochrome monitor. It sells for $9.95 and comes on 5¼-inch or 3½-inch disk. Contact Homecraft Computer Products, P.O. Box 974, Tualatin, OR 97062, 503-692-3732.

Circle 565 on Reader Service card.

TRS-80

Model 100 Screen Enhancement

Ultrascreen replaces your Model 100's original 40- by 8-character screen display with a 60- by 10-character display, nearly doubling the number of characters on screen. This machine-language program comes on tape or disk, occupies 2.6K of RAM, and is relocatable to work with other machine-language programs.

Ultrascreen sells for $29.95 from Ultrasoft Innovations Inc., P.O. Box 247, Champlain, NY 12919, 514-457-9293.

Circle 568 on Reader Service card.

Etc.

Voice Control

The TPC talking process controller uses standard relay contact closures to produce high-quality voice messages, music, or tones. It uses the adaptive delta pulse code modulation (ADPCM) speech-encoding process to produce messages stored on 27256 or 27512 EPROMs. You can select up to 31 inputs (common ground) to trigger messages of various lengths.

Each TPC can store over 200 seconds of messages and includes two sets of dry relay contacts that can key external devices.

The TPC costs $495, and Time Domain Systems will encode the voice from a high-quality cassette tape for you.

The Verbalizer-2M is a solid-state annunciator that replaces magnetic tape annunciators. Its solid-state memory can store up to 6 minutes of speech or music in EPROMs. The unit uses ADPCM technology to reproduce speech and sound, and Time Domain Systems will perform the encoding for you. The Verbalizer costs $295.

Contact Time Domain Systems, 5003 Cowell Blvd., Davis, CA 95616, 916-758-6423.

Circle 573 on Reader Service card.

The Parrot 1200 modem doesn't need batteries or external ac.

Three-Ounce Modem

Novation's Parrot 1200 is a 300/1,200-baud Hayes-compatible external modem that's

Circle 120 on Reader Service card.

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about the size of an audio cassette. The modem plugs into your computer's RS-232 port and draws power from the port when needed, so the Parrot doesn't require batteries or an ac power supply.

The modem's features include Bell 103/212A compatibility; asynchronous data format; full-duplex operation; built-in autoself-test, analog loop-back, local digital loop-back, and remote digital loop-back testing; touch-tone and pulse dialing; automatic answer; a speaker with volume control; and four LED indicators.

The PCB-II is a converter buffer to connect serial RS-232 data to Centronics parallel data.

The Parrot 1200 costs $119 from Novation Inc., 21345 Lassen St., Chatsworth, CA 91311, 818-998-5060.

Circle 569 on Reader Service card.

Peripheral Converter Buffer

The PCB-II is a peripheral converter buffer capable of interconnecting serial asynchronous RS-232 data to Centronics parallel data in serial-to-parallel, parallel-to-serial, serial-to-serial, or parallel-to-parallel conversions. You can select from 15 baud rates, dump data to the PCB-II at high speed, and transmit it to the peripheral at the appropriate speed.

The PCB-II comes with 64K ($269) or 256K ($329). Contact IAM, P.O. Box 2545, Fair Oaks, CA 95628, 916-961-8082.

Circle 572 on Reader Service card.

The Networx A–B (RS-232) Switchbox lets you add more peripherals to your computer.

Multiple Peripheral Switchbox

The Networx A–B (RS-232) Switchbox lets you link several peripherals via their RS-232 ports to your computer. The Switchbox includes one input and two output connectors and a two-position lever that lets you switch lines 2–25. It doesn't switch line 1 (the protective ground), which is common to all connectors.

The A–B (RS-232) Switchbox requires no power and costs $99.95. Contact Networx, 1913 Atlantic Ave., Manasquan, NJ 08736, 201-223-9400.

Circle 570 on Reader Service card.

The *80 Micro* Disk Series 1000/1200/3000

80 Micro has come to the rescue of the Tandy 1000, 1200, and 3000 owners. Now you don't have to type in the MS-DOS program listings that appear in *80 Micro*. They are now available on a quarterly basis. We have two disks covering the first two quarters for 1987.

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January–March 1987

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Checking References, p. 48
  REFLIB.BAS
Hidden Attributes, p. 66
  SECURE.ASM
  SECURE.EXE
February
That Thinking Feeling, p. 42
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Taking Measure, p. 49
  AREA.BAS
Changing of the Guard, p. 60
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  FILEIT.COM
March
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  CLIPART.BAS
  CLIPGEN.BAS
John's MS-DOS Column, p. 93
  SWITCHAR.ASM
  SWITCHAR.COM

CALL FOR ARTICLES

Have you written a program or utility that might be interesting to other *80 Micro* readers? Do you know a DOS or programming technique that you'd like to share? Then how about sending it in to *80 Micro* for possible publication?

We're looking for people with good ideas. In particular, we'd like to see some useful utilities, small-business and personal management programs, tutorials on Basic and Pascal programming for all levels of expertise, and interesting science, math, and hobby applications.

The procedure is simple. Write us a query letter telling us about your proposed article. We'll tell you whether we think your article is appropriate for *80 Micro*. We'll also send you a copy of our author's guidelines, which will give you information on manuscript preparation, style, payment rates, and the like.

Send your letter or proposal to:

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80 Micro
80 Elm St.
Peterborough, NH 03458.

(No phone calls, please.)

AX = A3 nn nn, for example).

The 6809 is not, as Mr. Stanco wrote, an 8/16-bit CPU. The 16-bit registers that it contains are actually concatenated 8-bit registers like the ones in the Z80 and other 8-bit CPUs.

The 68000 is a 16/32-bit CPU. It has a 16-bit data bus, a 32-bit internal data path, and 16-bit instructions. The newer 68020 is a full 32-bit CPU that can execute 68000 object code directly.

The classifications are often misleading. The 8/16-bit 6809 can only access 64K of memory, but the 64180, a Z80 extension that can access 512K of paged memory, is classified as an 8-bit CPU. Both the 8088 and 8086 can access up to 1 megabyte of memory using segment registers but are classified as 8/16- and 16-bit CPUs, respectively.

Comparing CPUs by clock speeds, as Mr. Stanco suggests, has drawbacks as well. Computers with reduced instruction-set chips (RISCs) operate much faster than those with complex instruction-set chips (CISCs) but require many more instructions.

Unfortunately there is not, as manufacturers claim, one "best" CPU. Different applications require different CPUs, and what is best for one may not be best for another.

Gene Kwiecinski
Maspeth, NY

80 Micro's BBS is open 24 hours a day. It offers programs you can download, special-interest groups, and a classified section. You can reach the board at 603-924-6985; UART settings are 300/1,200 baud, 8-bit words, 1 stop bit, no parity.

Out with MS-DOS

I am an original *80 Micro* subscriber and have every back issue. Lately *80 Micro* has been giving increasingly less support to my TRSDOS systems. Please clean MS-DOS out of the magazine and return to TRSDOS. A new system does not make an old system any less capable.

Steven B. Joy
Goleta, CA

We agree; we still use Model IIIs and 4's to produce 80 Micro. *However, over half our readers own or use MS-DOS computers. This reflects the fact that Tandy is selling at least 10 MS-DOS computers for each TRSDOS computer sold. Eliminating MS-DOS coverage from* 80 Micro *is just not in the cards.*
—Eds.

Positive Feedback

Ever since I bought my Microsoft Word programs (version 1.0 from Tandy and the 3.1 update from Microsoft), I have been trying to get them to support my printer. My letters to Microsoft and another magazine brought me only inaccurate answers and continuing frustration.

My first copy of *80 Micro* (March 1987) arrived yesterday, and I found the solution to my problem in Feedback Loop (pp. 14–16). After I followed the instructions to disable line 14 of my printer cable, everything worked perfectly. Now I can underline, double underline, and print in columns.

Thomas L. Johnson
Sacramento, CA

Send your correspondence to Input, 80 Micro, *80 Elm St., Peterborough, NH 03458. We reserve the right to edit letters.*

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Since this is an update to TRSDOS 6.2, all customers are expected to have purchased or received and have in their possession a legitimate copy of the TRSDOS 6.x DOS and documentation.

To provide support only to legitimate owners, all LS-DOS 6.3 master disks contain an individually encoded customer service ID and serial number. This entitles customers to support directly from LSI.

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The Mouse that Roared

80 Micro's April 1987 Input (p. 10) included a letter from James McCord of Fairbanks, AK. Mr. McCord was having problems running three internal boards in his Tandy 1000.

Mr. McCord's mouse board was probably the problem. Tandy has since acknowledged that the original mouse caused problems with serial input/output (I/O) ports and has come out with new mouse-driver software that corrects the problem.

Barry Erick
Dallas, PA

Model 100 vs. Cray

In a special IBM issue in 1985 (vol. 10, no. 11, p. 67), *Byte* magazine printed a benchmark program to compare computers and software. The program causes 2,499 iterations of tangent, arc tangent, exponential-logarithm, and square root-square. Each iteration increases the value of n by 1. Round-off errors cause the difference between a computer's result and the correct answer of 2,500. Comparing execution times and accuracy gives you an idea of the relative merits of various systems.

Sky and Telescope (March 1987, p. 309) ran the benchmark program on the Cray X-MP/24 supercomputer, which came up with 2,499.9999999999 99999999995250577723 in 0.7463 seconds. I thought it would be fun to run the program on my Model 100 laptop.

To my surprise, the Tandy was more accurate than the Cray, coming up with exactly 2,500. It was, however, just a little slower, completing the task in 38 minutes, 18.39 seconds.

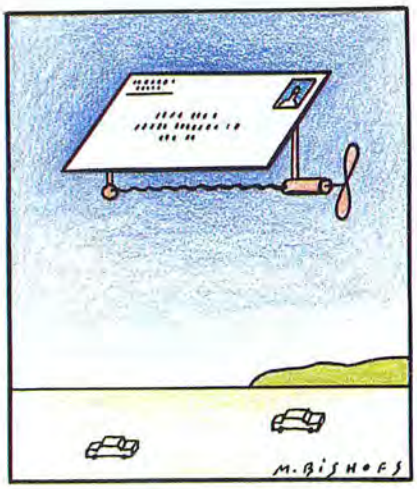
B.W. Slavin
West Covina, CA

Wait until Tandy comes out with its Cray-compatible laptop.—Eds.

Of Edsels and Corvettes

I have been a TRS-80 owner since the Model I. I now own a Model I, a Model 4, a CoCo 2, and a PC's Limited Turbo AT. I do not regret buying any of them and still use them all. Last year the Model I ran one of the most popular BBSes in the area.

People with older machines must realize that buying a computer is an investment much like buying a car. There



is no reason to expect a manufacturer to supercharge an Edsel instead of developing a Corvette. There comes a point when the Edsel simply cannot keep up with new models.

John Ridley
Houghton, MI

Of Edsels and Ferraris

I will not be renewing my subscription to *80 Micro* when it expires this year. I once eagerly looked forward to every issue, but soon the statement "The #1 Magazine for Tandy Users" on the cover will only refer to MS-DOS and CoCo users. Recent issues have left me with the feeling of owning an Edsel that has a Ferrari owner's manual.

Eric Maloney's April 1987 Side Tracks column ("Is Brand Loyalty Dead?" p. 8) appears to be the epitaph of the Model I/III/4 community. Since I am finding fewer and fewer articles supporting my Model 4, I am turning to BBSes, public-domain software, user groups, and the local bookstore's computer section for what *80 Micro* no longer gives me.

Mr. Maloney hit the nail on the head when he wrote, "The more Tandy slavishly pursues PC compatibility, the more its customers' loyalty will dwindle." Tandy had a unique product but is now eyeing a slice of Big Blue's market share. Unfortunately, this will be Tandy's demise.

Tandy will not capture a significant slice of Big Blue's market share for the same reason you would not buy a Picasso print if you could get an original. Tandy's present market share is endangered by the multitude of Model I/III/4 owners who "will become the next-door neighbor to recommend" a manufacturer who provides product support. A consumer burned once is not likely to recommend a product and even more unlikely to repurchase that product.

Nevertheless, I still like my Model 4 and will pursue every avenue to get maximum mileage out of it. Is a complete listing of *80 Micro* back issues available?

Mark Zimmerman
Brooklyn Park, MN

This Edsel stuff has got to stop. The Edsel was a poorly planned, mistimed, badly made financial disaster for Ford Motor Co. The Models I/III/4 deserve better analogies.

We are sorry that Mr. Zimmerman no longer finds 80 Micro *of use, and we wish him luck in his pursuits. A list of available back issues appears elsewhere in this magazine; check the advertisers' index for the page number.*
—Eds.

CPUs

Joe Stanco of Albany, NY, made several excellent points in his letter (Input, January 1987, p. 10) regarding the confusion about computer chips. He was, however, mistaken in several respects. I hope that I can help clarify the issue.

Three attributes distinguish CPUs from each other: the width of the external data bus, the width of the internal data bus, and the length of the smallest machine instruction. In an 8-bit CPU, each of these equals 8 bits.

The 8086 is classified as a 16-bit CPU, since both of its data buses are 16 bits wide. The 8088 (an 8086 with an 8-bit external data bus) is classified as an 8/16-bit CPU. Both chips have instructions that are 8 bits wide (MOV nnnn,

Tell Your Story

What's the best experience you've had with Tandy or its computers? What's the worst experience? *80 Micro* is looking for interesting anecdotes about our readers and their computers to publish in this Input column.

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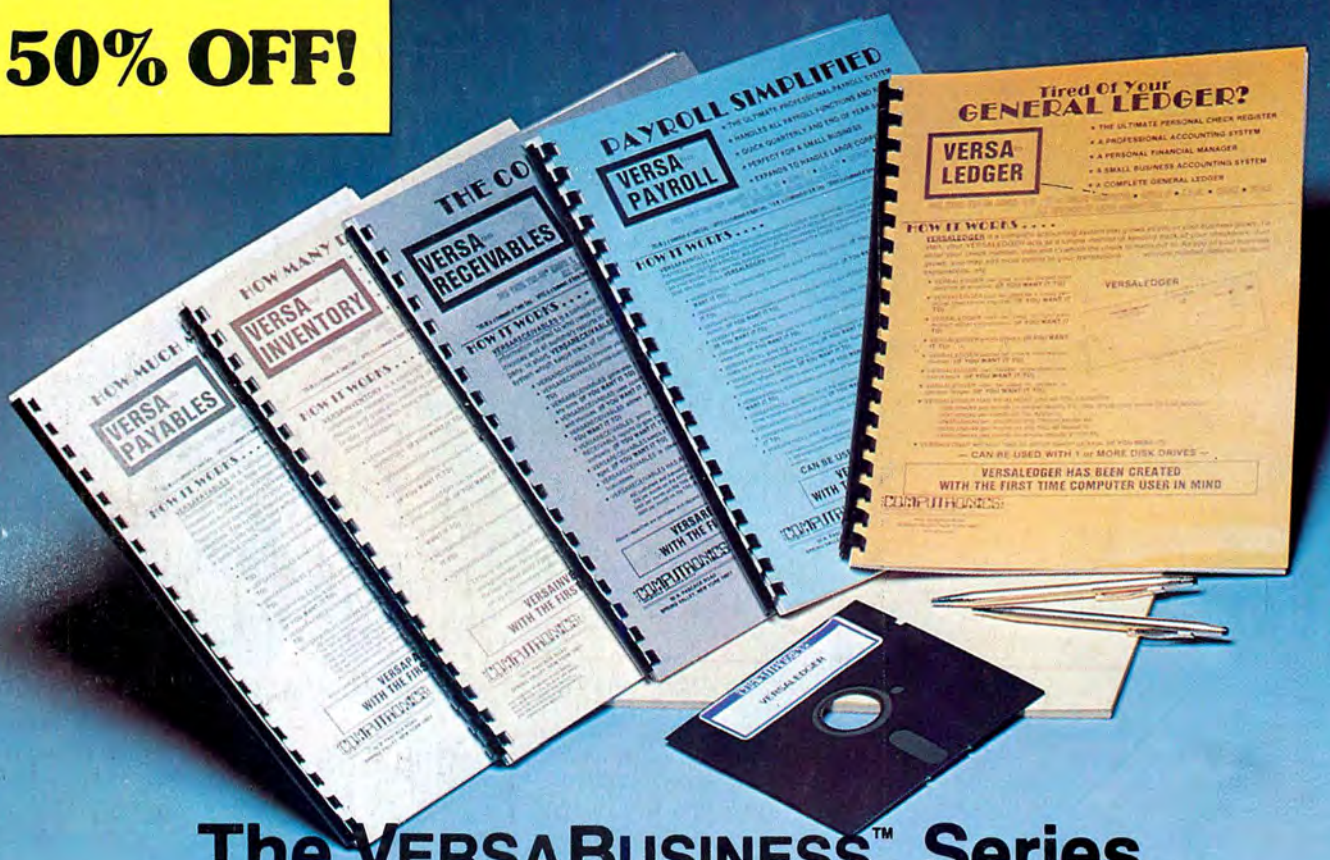

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