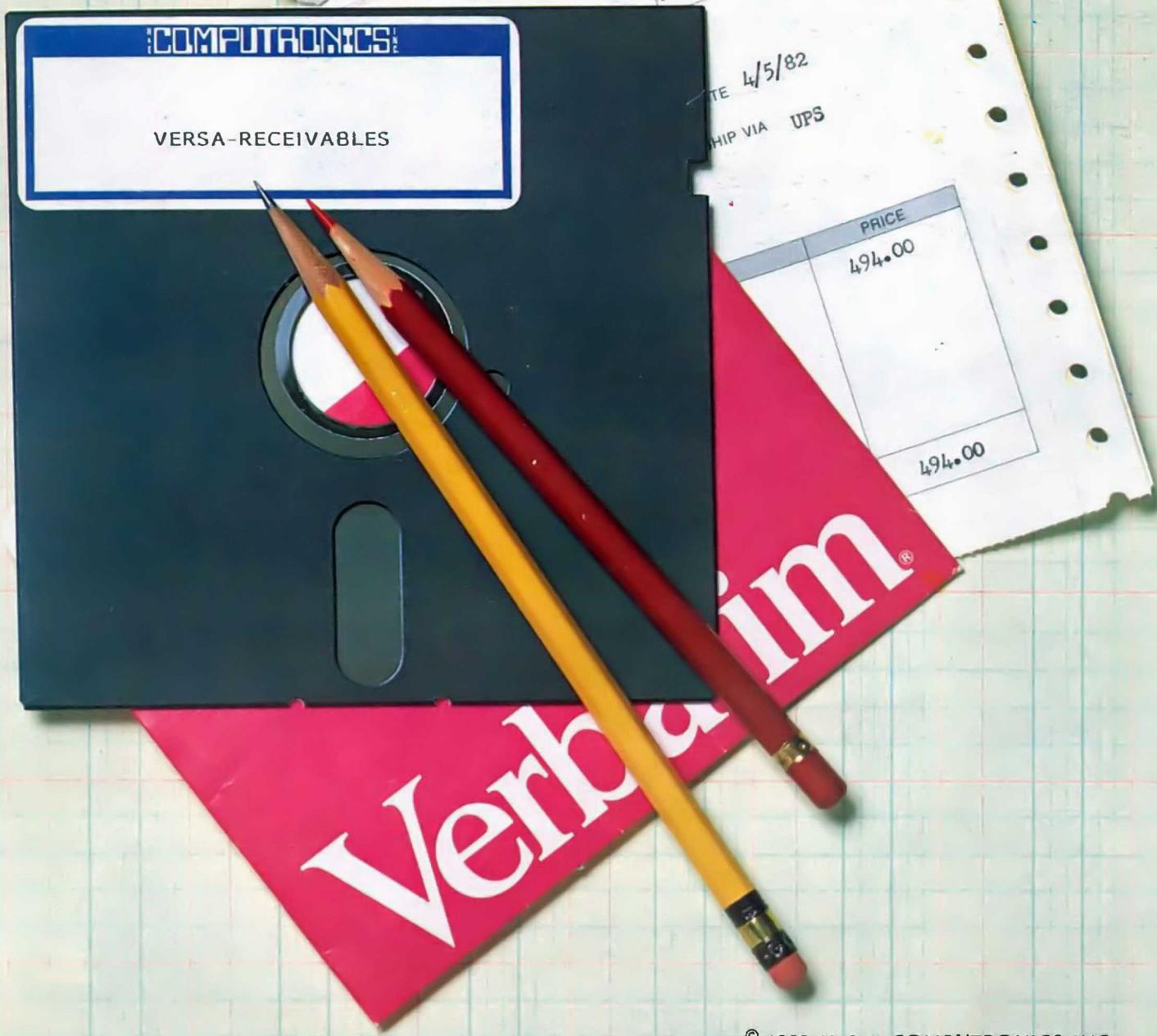


JULY, 1982  
ISSUE NUMBER 47

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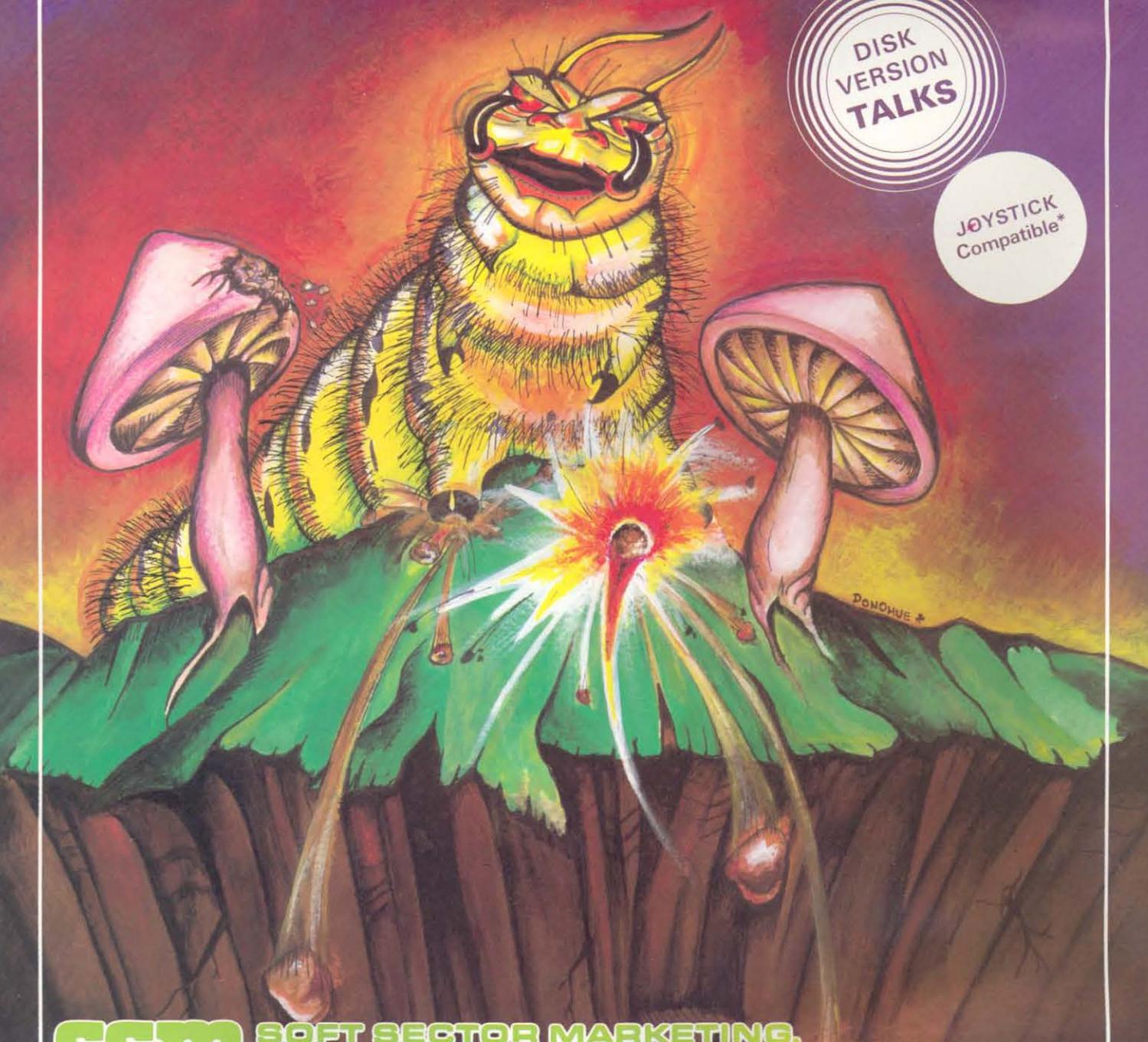


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## BITS AND PIECES

### Howard Y. Gosman

#### TRS-80 NEWSLETTER FOR LAWYERS

A new publication has appeared aimed at lawyers who use TRS-80 computers. THE LAWYER'S MICROCOMPUTER was started by Robert P. Wilkins, a solo practitioner who felt that existing publications on microcomputers were too technical for the busy lawyer. Wilkins was struggling with his own computer education when he realized that there was a need for lawyers to be able to communicate with each other about their successes and failures in using the computer. The result was a newsletter that focuses on the Radio Shack computer's practical applications in the law office. Wilkins comments that lawyers who are not using microcomputers will be "left in the dust" in five years. He explains that the most knowledgeable persons using microcomputers today are teenagers and that in five or ten years from now those teenagers will be

tomorrow's law graduates. Some of the featured items in the first issue are on word processing for the law office, how to choose a computer and peripherals, evaluating software, and how to deal with reluctant staff and partners. Yearly subscriptions (12 issues) are \$28 in the U.S., \$37 in Canada, and \$43 for all other countries. For more information write: Rose T. Wilkins, R.P.W. Publishing Corp., P.O. Box 1046, Lexington, SC 29072; or call (803) 359-2077.

#### NEW EXTENDED CHARACTER SET DAISY WHEEL PRINTER

The new enhanced version of the Model 630 printer from Diablo is the first printer to operate with a printwheel that has 96 more characters than any previous daisy wheel, and can form a total of 192 alphanumeric characters, including special characters for 33 foreign

*continued on page 7*

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*The H & E COMPUTRONICS MONTHLY NEWS MAGAZINE* encourages comments, questions, and suggestions. H & E COMPUTRONICS will pay contributors for articles and programs published in the magazine.

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Subscribe today: Mail the coupon with your check for \$39 for the next 52 weekly issues (sent First Class Mail that's only 75¢ per week.) If for any reason you are not satisfied with the Eighty System Newsletter — we will refund the undelivered portion of your subscription.

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# THE CRYSTAL BALL

## (News and Rumors of Interest to TRS-80™ Owners)

### INVASION OF MICE

For many computer applications, the operator's input to the program is simple enough that no keyboard is really needed, because all the operator has to do is to move the cursor around on the screen and then push one of two or three command keys to signify some action specified by the cursor's position. Many menu-oriented programs operate in just this way. Even the best of keyboards, such as text editors with auto-repeating arrow keys, are inefficient cursor-movers, and to use a moving cursor in graphics programs is very slow and difficult with a standard keyboard.

A new computer device which is gaining in popularity is designed to make fast cursor-movement and selections very fast and efficient. This device is the computer mouse. The mouse is a very small box with several buttons on top and a cord that connects to the computer. When you need to move a cursor on screen, the mouse is placed flat on the table, and then as you roll the mouse around on the table, the cursor moves rapidly around the screen in direct proportion to the mouse's movement, allowing very fast and accurate cursor motion. The buttons allow you to designate some action with respect to the present cursor position (for instance simple editing or graphics commands). The computer mouse will be especially useful for graphics programs, because it has a resolution (ability to sense differences in position) as fine as 200 points to the inch. Drawing an image on screen will be even easier than using a light pen or a graphics tablet (a flat grid with a connected stylus). According to researchers who have worked with mice, they provide the most natural means of interaction between the operator and the computer.

### LASER DISC TECHNOLOGY TO REVOLUTIONIZE DATA STORAGE AND INTERACTIVE SYSTEMS

In the first few years of marketing videodiscs for home entertainment, the outlook has been grim for manufacturers. The disc systems cannot seem

to compete with videotape systems, mainly because of the fact that you can't record and erase videodiscs, which leaves only the option of buying pre-programmed material for playback. But recently experimenters have found new uses for videodiscs that promise a revolution in computer data access that will totally overshadow their use for home entertainment.

Laser disc systems will soon find their true place as one of the densest storage mediums available for computers. The volume of data that can be stored on the optical discs will make ordinary hard disks seem very small in capacity. The quantity of data stored on a laser disc will not be measured in units of "K" (thousand bytes) or even in "M" for Megabytes, but rather in Gigabytes (billions of bytes). The first 2 Gigabyte disc will reportedly be revealed at a computer show in June — that's 2000 Megabytes, or 2,000,000 K on one disc! Future plans include a "jukebox" mass storage system that will automatically select which disc to read from. The random access retrieval of data will also be very fast, a half-second or less to locate and read data anywhere on the disc. At least as important as high-volume storage and fast access is low cost. RCA and Phillips hope that a \$10 disc will someday be available that will store data so densely that the cost would be as little as one one-hundred-millionth of a cent per bit.

For years, it has been possible to go into a library and use a microfilm or microfiche reader to view old copies of periodicals. These mediums of storage involve the reduction, recording and recall of entire pages of print and pictures as photographic images. These methods allowed very large amounts of material to be stored in a very small space, but the computer revolution provided an even more compact means of storing text as data in magnetic form and, in addition, allowed the nearly instant recall of the particular text wanted, including complex computer searching techniques.

continued on page 6

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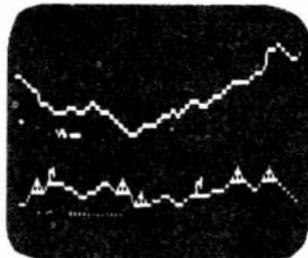
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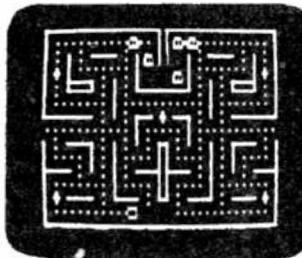
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### SCARFMAN

This incredibly popular game craze now runs on your TRS-80! It's eat or be eaten. You control Scarfman around the maze, gobbling up everything in your path. Try to eat it all before nasty monsters devour you. Excellent high speed machine language action game from the Cornsoft Group. With sound.



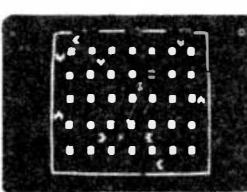
### SUPER NOVA®

Asteroids float ominously around the screen. You must destroy the asteroids before they destroy you! Big asteroids break into little ones! Your ship will respond to thrust, rotate, hyperspace and fire. Watch out for that saucer with the laser! As reviewed by May 1981 Byte Magazine



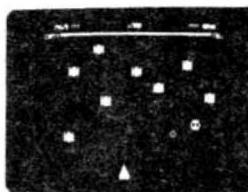
### LUNAR LANDER

As a vast panorama moonscape scrolls by select one of many landing sights. The more perilous the spot, the more points scored — if you can land safely. You control LEM main engines and side thrusters. Absolutely the best use of TRS-80 graphics we have ever seen! From Adventure International. With sound effects!



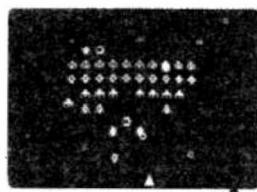
### ATTACK FORCE®

As your ship appears on the bottom of the maze, eight alien ships appear on the top, all traveling directly at you! You move toward them and fire missiles. But the more aliens you destroy, the faster the remaining ones become! If you get too good you must endure the "Flagship"! With sound effects!



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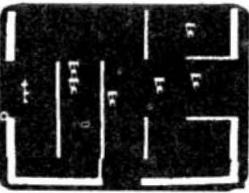
### GALAXY INVASION

The sound of the klaxon is calling you! Invaders have been spotted warping toward Earth. You shift right and left as you fire your lasers. A few brief turns and fly straight at you! You place your finger on the fire button knowing that this shot must connect! With sound effects!



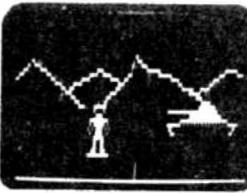
### DEFENSE COMMAND

The invaders are back! Alone, you defend the all important nuclear fuel canisters from thieving aliens who attack repeatedly. An alien passes your guard, snatches up a cannister and flies straight off. Quick! You have one last chance to blast him out of the sky! With sound and voice.



### TALKING ROBOT ATTACK

This game TALKS without a voice synthesizer, through the cassette port. With just a hand laser in a remote section of the space station, you encounter armed robots. Some march towards you, more wait around corners. Careful, the walls are electrified. Zap as many robots as you dare before escaping to a new section. More robots await you.



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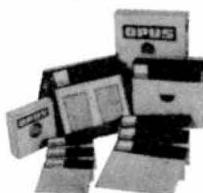
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## CRYSTAL BALL

continued from page 4

But the storage of pictures as data (in digital form) has not yet been fully realized for the typical user, and is still very expensive.

The most amazing capability of computer diskette systems is the instant access to any piece of data you want, wherever it may be on the disk, without reading through the disk to get to it. This is RANDOM ACCESS. Well, it finally dawned on someone that a laser videodisc, with the equivalent of more than 50,000 photographic frames on each side, was perfectly set up for random access of data or complete images. By arranging a computer-controlled system with a videodisc player, it is possible to set up some incredible new applications.

The simplest type of application might be a photographic image-bank for photographers, artists, real estate and talent agents, complete with computer indexing and searching facilities. Even police departments could benefit from a computerized mug-shot searching system that would present a selection of photos in response to descriptions from a witness.

Somewhat more complicated is a "branching" type of program, such as one experiment done with a bicycle repair manual. This experiment involved the use of a touch-sensitive television screen, and operated by first showing a photograph of the whole bicycle. Reach out to the screen and touch the pedals, and the system would show the section detailing the pedal assembly; touch the brakes and it would detail the brake assembly, etc.

More complex than still-picture systems are those designed to use the motion-picture abilities of the videodisc system. One such system developed a few years ago used an automobile simulator with a TV screen in front of it. You could sit in the driver's seat and take a tour through a real town on screen, making right and left turns at any corner — exploring every turn in the entire town. The potential uses for this type of system as a real-time simulator are unlimited — flight simulator training, military target practice, space flight, and more

VENTURE magazine, in its April 1982 issue, details two companies who are marketing interactive videodisc systems.

ALLEN COMMUNICATIONS of Boulder Colorado sells a complete interactive videodisc training system consisting of a microcomputer, commercial videodisc player, TV monitor, interface, amplifier and speakers — at prices ranging from \$3500 to \$8500. A typical system is for training bank tellers. The computer can simulate the reactions of a customer by accessing a huge bank of "film clips" on the videodisc. While showing a customer on screen asking questions to be answered by keyboard, the computer will instantly seek out and assemble scenes to give the customer's reaction to the trainee. ALLEN COMMUNICATIONS ultimately plans to offer generic training packages such as supervisory skills for middle-level managers, interpersonal skills for medical personnel, and music. The main competitor (perhaps the only competitor?) of ALLEN COMMUNICATIONS is WHITNEY EDUCATIONAL SERVICES of Burlingame, California. The main difference in the system offered by WHITNEY is that the interface operates an ordinary PIONEER videodisc player, rather than the microprocessor-equipped commercial models supplied by ALLEN. WHITNEY's interface for the PIONEER sells by itself for about \$795. The complete WHITNEY system sells for about \$6000 and consists of an APPLE computer, interface board, one disk drive, a television monitor, and a PIONEER videodisc player. This system cannot give the speed of access offered by the more expensive systems, because the PIONEER player has no microprocessor instantly to tell the microcomputer where the laser beam is on the surface of the videodisc, but the time difference is only a few seconds, which should make little difference in most training situations. For \$695, WHITNEY offers a program called INSIGHT, which allows the user to set up his own training sequences using scenes stored on the videodisc.

The market for interactive videodisc systems is wide-open, virgin territory. We will be seeing a boom in the technology of these systems, and the possible applications are still to be realized. ■

## BITS AND PIECES

continued from page 2

languages, plus an additional 250 characters for special symbols and graphics. The new Model 630 ECS (Extended Character Set) printer operates at 33 characters per second, and moves its carriage up and down to print from two rows of characters on the daisy wheel. Diablo plans to offer printwheels combining dual type faces, dual pitch, graphics and other combinations of characters as defined by users, and hopes that the new ECS format will become the industry standard. This printer will probably cost a few hundred dollars more than the standard Model 630. If interested, call or write to Diablo Systems Inc., Div. of Xerox, 24500 Industrial Blvd., Hayward, CA 94545; (415) 786-5207.

## NEW SERVICE FOR INVESTORS

TICKERSCREEN is a new stock market bulletin board (from Max Ule & Company, Inc.), available free to investors who own personal computers. This service provides closing New York Stock Exchange prices, closing market indexes, commission computation on any stock or option transaction, and a demonstration of TICKERTEC, the personal stock market monitor. TICKERSCREEN is available from 5:00 pm to 9:00 am weekdays and 24 hours on weekends. The system allows users of personal computers with communication capabilities, or communicating terminals, to access a wide variety of financial information, including the following: closing prices of all NYSE common stocks and selected preferred issues; closing market averages, volume, and advance/declines; a demonstration of TICKERTEC for those who want to watch the NYSE or AMEX tickertape in their home or office without a 15-minute delay (a free brochure for TICKERTEC is available upon request); a brokerage commission computation program—compare what you are paying now with what Max Ule & Co. charges; direct order entry—clients of Max Ule & Co. may leave stock purchase and sale orders on the system after market hours for entry on the NYSE or AMEX prior to the opening the following business day; clients of Max Ule living in more than 150 cities outside New York who have a Touch-Tone phone

may access TICKERSCREEN for the cost of a local call. Entry to the system is simple. Dial (212) 986-1660 and connect your personal computer, Videotex, or communications terminal to your phone. For more information, contact: Max Ule, President, Max Ule & Co., Inc. Outside New York State dial Toll-Free (800) 223-6642. In New York call (212) 687-0705.

## SOURCEBOOK FOR COMPUTER OWNERS

A new directory called the SMALL SYSTEMS SOFTWARE AND SERVICES SOURCEBOOK lists more than 1,300 statistical programs, business applications, legal programs, accounting programs, report generators, program development aids, file managers, word processing programs, etc. Each listing contains: nontechnical description of software; hardware, systems software and languages required; availability, terms, price, number of installations, documentation, training, address, phone and contact name of vendor. An index cross-references each listing by keywords, program or service name, supplier name, hardware and operating system language. A one-year subscription to the SOURCEBOOK costs \$125 and includes the spring 1982 supplement. Contact Information Sources, Inc., 1807 Glenview Road, Glenview, Illinois 60025.

## NEW BOOK HELPS YOU MAKE THE MOST OF VISICALC

Users of the popular spreadsheet program, VISICALC, will be interested in a new book from Osborne/McGraw-Hill, called VISICALC: Home and Office Companion. This book is not a teaching manual, but rather a collection of customized applications for VISICALC owners. Rather than spend the time learning first to use VISICALC, then organizing and setting up your application(s) of the program, you can use this book to start using VISICALC for practical applications immediately. Fifty ready-to-use models for VISICALC applications, along with sample printouts, descriptive narratives, and coordinate listings, are presented, and users may simply enter their own data in place of the sample data, or substitute a label or

continued on page 8

Fast...

## Machine Language Disk Sort

### INSORT-80

- Sorts 3,000 records in 14 minutes ON THE DISK.
- Sorts up to 40 separate combinations of keys.
- Sorts on all hard disks.
- Sorts both ASCII and NUMERIC fields in both ascending and descending order.
- Sorts using all TRS-DOS compatible DOS's.
- Sorts from within the users BASIC program.
- Sorts all logical records up to 256 characters.
- Sorts all data files.

This Machine Language utility comes fully documented. Each step is screen prompted. These prompts are described in detail throughout the manual. INSORT-80 is friendly, fast and easy to use. It's a utility all TRS-80 owners shouldn't be without. Please specify 32K or 48K version.

**TRS-80 Model I Disk . . . . . \$59.95**  
**TRS-80 Model III Disk . . . . . \$59.95**

### INSEQ-80

INSEQ-80's ISAM will reduce the time it takes your programs to write and retrieve the record you want. You'll no longer have to wait countless minutes while your system reads record after record, searching. Users who compared INSEQ-80's file accessing technique to the conventional sequential methods available today found INSEQ-80's state-of-the-art processing methods far superior. The average access time for a search is under 2.1 seconds and the larger the file the more noticeably faster INSEQ-80 runs. INSEQ-80 allows you to deal with the logical record you want . . . NOT THE WHOLE BUFFER. INSEQ-80 will even convert existing random files to INSEQ-80 ordered files with indexes for split second processing.

- Machine Language
- Operates using all TRS-DOS compatible DOS's.
- Operates from within users BASIC program.
- No sub-buffering.
- Variable key processing.
- Multi key definition.

**TRS-80 Model I Disk . . . . . \$59.95**  
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TRS-80 is a registered trademark



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**TRS-80 MODEL I T.M.\* GOLDPLUG - 80**

Eliminate disk re-boots and data loss due to poor contact problems at card edge connectors. The GOLD PLUG - 80 solders to the board card edge. Use your existing cables.

CPU/keyboard to expansion interface . . . . \$18.95

Expansion interface to disk, printer, RS232, screen printer (specify) . . . . . \$9.95 ea

Full set, six connectors . . . \$54.95




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\*TRS-80 is a trademark of Tandy Corp.

## BITS AND PIECES

continued from page 7

list of entries to tailor the models to their specific needs. Algorithms and modeling techniques provide the experienced VISICALC user with the opportunity to custom-design new models. The models provided cover seven areas of application: Loans and Investments, General Business, Inventory Control, Advertising and Sales, Personnel and Departments, Personal Finance, and Household Aids. All models are designed to support most computers and versions of VISICALC, and the models can also be used with SUPERCALC. This book is aimed at the business user who doesn't have time to reinvent commonly used financial and management techniques, and the home user who is looking for new applications for this versatile program. VISICALC: Home and Office Companion costs \$15.99 and can be ordered directly from H & E COMPUTRONICS.

## LANDLORDS TAKE NOTE

A Property Management System for landlords has been released for Models I & III. This system will handle a mixture of property rentals including single family homes, condominiums and multifamily housing. Information for each rental is kept on-line, including up to three renter names or name and address, four phone numbers, date rented, rent amount, deposits, number of returned checks plus two memo lines. This information along with rental income tracking data is stored on diskette and is easily displayed on-screen or printed out, and can be easily updated or corrected. Rental income is easily entered into the system and receipts for cash rent payments can be printed showing the rental unit number, renter names, current month and any balance due. The system will adjust for late fees charged to the renter. Late rents can be displayed for the current month at any time showing names, phone numbers, deposits, date rented and any partial payments, as well as a summary showing total rent. Year-to-date and monthly income for all rentals and a total building income can be displayed on-screen or printed for a permanent record. Expenses are entered into the system by filling in an on-screen form, with corrections made (if necessary).

and checks can be printed on standard NEBS forms (these checks are designed to fit into window envelopes). Operating statements for each building may be printed separately or may be combined to form a consolidated operating statement for all properties owned. The Property Management System is available for \$375 from Realty Software Company, 1116 F 8th Street, Manhattan Beach, CA 90266; (213) 372-9419.

## IN SEARCH OF A GOOD INCOME TAX PROGRAM

Here's a letter that we received recently from Peggy A. Bivins, a general partner at Contract Services Associates (706 S. Euclid, Anaheim CA 92802), describing the trials and tribulations of marketing a successful income tax program for the TRS-80:

"Back in the days of the 4K Level I we were deluged with magazines, newsletters, etc. for the TRS-80. One of them had a certain hard-to-describe quality that we might call 'technical competence' for want of a more distinctive term. That publication was COMPUTRONICS, and we have subscribed to it ever since. Many of the operating and programming techniques that our staff now uses routinely were first made known to us through this publication. It still has the quality that originally attracted us, though, inevitably, diluted somewhat with its currently greater scope and activities.

"Since we not only subscribe to the magazine but also read it, we noticed your comments under the title 'Income Tax Troubles.' The income tax is our business and we were interested. We like the title. It describes our operation well.

"We too have spent some time in the search for a theoretical '\$29.95 Tax Package' that would be of value to the individual taxpayer in his necessary involvement with the intricacies of the federal tax forms, but we had to totally abandon the idea. For us at least, the income tax just would not lend itself to this approach. We found that there must be professional intervention; the tax preparer is a necessary quantity in the equation.

"There is, as you observe, great attrition among vendors of income tax programs. Not only this year but every past year, as the tax season approaches

they spring up as if from dragon seed, then wither, blighted, as the 'three months of truth,' beginning about January 15, approach. Each year we are left, almost alone. This year Apple Computer Corporation itself was among those to try, and then abandon ship.

"Why? Well, that is a good question, not easy to answer in a few well-chosen words. Our operation, compared to other software vendors, is something like this: if you order a program from, say, Microsoft Consumer Products, it may be six weeks before you receive the item, or even an acknowledgement. If you order from one of the many, many ads that tout new and splendid products, it often develops that the item is really still under development. Delivery time may turn out to be infinite. We are not exactly criticizing. We know the problems of advertising lead time, and so forth. Rather, we often sigh enviously for such a relaxed atmosphere.

"Such is not for us. Our deadline comes each year like a juggernaut, relentlessly, gathering speed as January approaches. We simply have no choice but to meet it. Our firm's death is the only alternative. This past tax season the Internal Revenue Service made major changes to every form and schedule in our Tax System; we functioned accordingly but not with ease and comfort.

"Eventually the tax season gets underway, of course, and our thousands of users, all competent people, start to wring our programs out. Also the IRS starts having second thoughts (the Service has its problems too) and changes happen. Perhaps it is January 15, and we discover that we must update our system. Now where are we? This is a real must, remember. Erroneous tax returns cannot be filed, not generated by our system. We refuse it.

"Three to six weeks delivery of updated disks? Not on your life! Clients are coming into those user's offices and the April 15 deadline is upon them. To shorten an already long story, we again function accordingly but not with ease and comfort. We update all systems within three days. To individual problems we react within the hour. To users having problems with their hardware we supply an almost unlimited number of replacement disks if necessary to get them up and running, again, shipped

within the hour.

Come on, somebody, anybody, write a nice little tax program next year and cash in. It's simple, just follow the elementary arithmetic on the forms and you have it made!"

### INTERFACE FOR TRS-80 POCKET COMPUTER

A hardware interface (called the PTR) has been developed that will connect your TRS-80 Pocket Computer (or a Sharp PC-1500) to a desktop TRS-80. The Pocket Computer can be used as a remote data entry terminal (to enter orders, take inventory, or any other application calling for a pocket-sized portable computer) and then the data can be transferred directly into a TRS-80 desktop computer for further processing, screen displays, printed reports, and permanent diskette storage. The complete PTR package is being introduced at \$99.95 plus \$2.50 for shipping and handling. To order or for more information contact Protean Scientific, Route 13, Lincoln, NE 68527.

### WORD PROCESSOR FOR THE COLOR COMPUTER

A new disk-based word processing program for the COLOR COMPUTER has just been released. C.C. WRITER for disk has all of the functions of the cassette version of the same program, with the addition of features made possible by the use of a disk system. Disk CCW gives full control of margin settings, page length, line spacing, centering, justification, and utilizes most features of "smart" printers. Editing features allow overstrikes, insertions, deletions and block moves anywhere in the text. Files can be chained together for extended printing. Disk C.C. WRITER requires 32K, Extended BASIC, and at least one disk drive. The price is only \$40 from TransTek, 194 Lockwood, Bloomingdale, IL 60108. ■

### LETTERS TO THE EDITOR

#### What Happened to Word Processor Series?

First I want to compliment you and your staff for the fine magazine you put out. I have written before to thank you

continued on page 10



The Only Complete Document Proofreading System  
From Aspen Software  
For CP/M, TRS-80 and IBM-PC Word Processors

### PROOFREADER™

Featuring Official Version of Random House®  
Dictionary

- Complete Accuracy—looks up every word; does not use less accurate root word analysis
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### GRAMMATIK™

Beyond Spelling Checking

- Detects typos, punctuation and capitalization errors, misused words and phrases
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### = NO ERRORS

*"The programs together (Proofreader and Grammatik) offer a dynamic tool for comprehensive editing beyond spelling corrections."*

*—Dona Z. Meilach in Interface Age, 5/82*  
*"Grammatik is the perfect complement to a spelling check program."*

*—Dr. Alan R. Miller in Interface Age, 5/82*  
*"If you use a word processor and a spelling checker, then you should investigate the unique capabilities of this program. Grammatik is a surprisingly fast and easy tool for analyzing writing style and punctuation."*

*—Bob Louden in InforWord, 12/81*  
*"For the user who is as tight with his dollar as I, Proofreader is the program of choice."*

*—Stephen Kimmelin Creative Computing, 3/82*

Aspen Software also has its own full featured word processor called Writer's Companion for all these systems. One of the best implementations of Ratfor (Rational Fortran) is available, too, along with an automatic Ratfor pretty printer. Please call or write for more details about these products.

Grammatik and Proofreader are compatible with all CP/M, MS-DOS (incl. IBMPC), and TRS-80 word processors. Current CP/M formats standard 8", Northstar, Omikron, Osborne, Apple. Please call or write for details of minimum system sizes and availability of additional disk and operating system formats. Shipping costs included. Please specify your system configuration when ordering. Dealer inquiries invited.

	Proofreader	Grammatik
CP/M, MS-DOS	\$129.00	\$150.00
TRS-80 Model II	\$99.00	\$99.00
TRS-80 Mod. I/III	\$59.00	\$59.00
Model I/III interactive correction option	- \$30.00	

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### Aspen Software Co.

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**'LABLMAKR'** will be the most useful Utility Program you own. You select from Label Formats to enter and print labels for mailing, marking, routing notes, video/audio cassettes, computer diskettes, book & binder titles, notices, warnings, instructions, emergency Tel/no. reference, bulletin board notices, etc. As useful at home as it is at the office. Whenever you need 1 label in a hurry, or 100, you'll use '**'LABLMAKR'**', knowing the first label will print as perfectly as all the rest.

Four different type styles, including the 3/8" Jumbo type, allow you to design a label best suited for your intended use. As each line is typed in, a preview of the actual printed version is displayed on the screen for your approval. Change it, correct it, print it, save it, or abort. You'll be amazed at the versatility.

'**'LABLMAKR'**' opens up a new world of applications for the standard mailing label. Complete Implementing Instructions allow you to make '**'LABLMAKR'**' a Load-and-Go operation. Written in Fast Basic—just follow the prompts to: Enter, Correct, Save to Disk, Recall, Edit, Delete, Duplicate, Print an Index, Print (1-1000) of any of the 100 labels you can keep on active file. If you need more just insert a new diskette—'**'LABLMAKR'**' will store an infinite number of label entries. You can even use '**'LABLMAKR'**' as a distinctive Mailing List program.

Minimum system: TRS-80 Model 1 or 3, 32K, 1 Disk Drive,  
Epson MX-80 printer, TRSDOS or NEWDOS.

'**'LABLMAKR'**' (on 35-track diskette), Operation Manual, with Starter Supply of Labels . . . . . \$19.50  
Check or money order — Ohio Residents add 5 1/2% sales tax

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## LETTERS TO THE EDITOR

continued from page 9

for the many benefits I have received from it.

The reason for this letter is that back in June of 1981 you authored an article entitled "LET'S WRITE A WORD PROCESSOR". At the time I thought it an excellent idea for many reasons and would be especially valuable to those of us who don't do enough writing to justify the expense of a commercial word processor. Having availed myself of other fine programs that appeared in COMPUTRONICS (In fact this letter is being written with your NEW TEXT EDITOR), I waited anxiously for each future issue to get started on this project, but to date I have not seen the sequels to "LET'S WRITE A WORD PROCESSOR". I was wondering if you could advise me and possibly other readers what, if any, are your plans for this project. I certainly hope it hasn't been cancelled.

Donald P. Buzzurro  
26 Winona Drive  
West Springfield MA 01089

### Dr. Howe replies:

Many thanks for your kind remarks, and thanks also to all the other readers who have expressed interest in this series.

Immediately after I wrote the first installment in this series, word was received that a revised version of the Electric Pencil™ program was going to be released imminently. The pre-publication information seemed to imply that just about all the innovations that I had proposed would be included in this new version.

Since writing such a program would be one of the most difficult projects that could be explained in a series like this, and since there seemed little possibility of this resulting in any salable product for years, during which time all the other commercial word processors would be getting ahead, I decided to abandon the project, at least until the Electric Pencil was released and we had a chance to inspect it.

It has finally appeared, and, as readers can see from Mr. Wicks' review in this month's issue, it is an excellent product. As Mr. Wicks concludes, perhaps it is

not the "ultimate" word processor, but it is just about as good as anything for the TRS-80 could be. In fact, the word processing field has now progressed to a new stage, in which the problems of preparing and editing the text seem to be solved and the interest is now in such items as spelling and grammar checkers.

However, because of the interest expressed by readers, I will consider resuming the series, if only to explain the difficulties involved and methods that can be used to cope with them. If so, it will appear on an irregular basis.

## LemonAid Loader and CTR-41

Purchasers of the LemonAid Loader who use Radio Shack CTR-41 cassette recorders may not be as happy as CTR 80 or 80A owners. Originally I did not recommend the LemonAid for use with 41's. However, even unmodified 41's, and the LemonAid, load many tapes but sometimes won't load tapes with low pulse levels on low density tapes or where the pulse level varies due to flaws in the tape's magnetic coating.

Fortunately, I was able to develop an easy CTR-41 modification. Add just one one-ohm resistor, and the 41 works as well as CTR 80 and 80a recorders which need no modifications.

All LemonAid Loader owners, since early April, have received this information with their order. We will be glad to supply this information to the many early buyers.

Wayne Lemons  
Lemons Tech Services  
Buffalo MO 65622-0429

## Solution to "Beam" Problem

The following program finds the solution to the Beam problem that Gordon Speer proposed in the April issue of Computronics.

```

10 M=1000
20 FOR A = .1 TO 3.1416/2 STEP .01
30 LI= 10/COS(A)
40 L2= (8-(.5/COS(A)))/SIN(A)
50 L= LI + L2
60 PRINT "A="; A, "L="; L
70 IF L>M THEN PRINT "LONGEST POSSIBLE BEAM
LENGTH = "; M : END
80 M=L
90 NEXT

```

I found that the shortest beam (6') that will fit in a corner of a 10' and an 8' hallways is 24.4009 feet. I hope I am right! I own a TRS-80 Model I with 32K, one disk drive.

Congratulations for a very good work at Computronics Magazine! Keep it up!

Ramon Santoyo  
Cerro Encantado 65  
Mexico D.F. (04320) Mexico

### Double Precision Square Roots

The attached program satisfies Gordon Speer's desire for a double precision square root routine ("Electric, Sieve, and Horizon", *Computronics*, March 1982). The program uses an iteration algorithm which usually converges in about three passes. For convenience, the algorithm has been seeded with the single precision square root function, but any positive number would suffice.

DOUBLE PRECISION SQUARE ROOTS  
(TRS-80 MODEL III)

```
0 CLS
1 ON ERROR GOTO 2
2 RESUME 6
6 INPUT "GIVE THE NUMBER WHOSE SQUARE ROOT IS
DESIRED":N#
10 R#=SQR(N=)
20 IF ABS(R#*R#/N#-1)<1D-16 THEN PRINT R#:
GOTO 6
30 R#=(R#+N#/R#)/2
40 GOTO 20
```

L. C. Baird, Ph.D.  
Allegheny General Hospital  
Pittsburgh PA 15212

### Replacement for "Auto-Writer"

A. A. Wicks' review of "Auto-Writer" in the May 1982 issue was a thorough review of a unique information processing system. For your readers' information, a new enhanced system, "Data-Writer", has replaced the system reviewed by Mr. Wicks. Data-Writer adds its own data entry program, file editor, file manager, double-precision math program, two-level sort and mailing label program to the form letter, report generator and selection programs previously included. Data-Writer is written for the TRS-80 Model I/III and is priced at \$125. Further information about Data-Writer, a powerful interface of text processing and data manage-

ment, is available from Software Options at 1-800-221-1624.

J. R. White, President  
Software Options, Inc.  
19 Rector Street  
New York, NY 10006

### Article Continuations

You must not think your articles in the magazine are worth much. It is almost impossible to save an article without a big search to find the last paragraph or sentence somewhere in the magazine. Back to back articles require xeroxing one page in order to have 2 articles for filing. Having 3 plus segments of different articles on one page makes keeping articles very difficult. For \$24.00, I would like to save articles without such a hassle.

William P. Emge  
P.O. Box 9  
APG MD 21005

### Error in "Honest John" Program

In looking over the advance copy of my article (May 1982 issue), I find one error in the program listing: the exclamation point in line 410 should be a number 1 (1st, not !st).

Also, I am not so sure about the program running on the Models 1, 2, and 3. It will probably run on the 3. However, since PRINT @ statements were used in the program, some modifications would be needed for a Model 2.

Robert T. Huff, CLU  
11104 Ridgemeadow Drive  
Dallas, TX 75218

H & E *Computronics* welcomes letters on any subject. If you wish a personal reply, please enclose a self-addressed, stamped envelope.

H & E *Computronics* also welcomes readers to submit programs, articles, or reviews for publication. Please address correspondence to:

The Editor  
H & E *Computronics*  
50 North Pascack Road  
Spring Valley, NY 10977

Please submit programs (and articles, if prepared on a word processor) on media (cassettes or diskettes). Also please indicate the system it was prepared on, and include any necessary instructions. ■

## LIST SYSTEM

for TRS-80®  
(\*Tandy Trademark)  
Model I & III

\$89.95

- Simply to use...even for the novice.
- Maintain virtually an infinite number of disks all in continuous alph. or zip order...essential for large lists.
- Sort 2260 entries (2 full 40 track double density disks) in only 32K or an incredible 4640 entries (2 full 80 track disks) in only 48K!
- Super fast sort by alph. or zip order (8 sec. for 1000 entries)...both orders can exist simultaneously on disk.
- High speed recovery of entries from disk...pulls in over 11 per sec!
- Transfer old files to our system.
- Less than 5 digit zips have leading 0's appended.
- Supports 9 digit zips. Canadian zips.
- Zip order is "sub-alphabetized".
- System adjusts to any DOS.
- Backup data disks are easily updated as entries are created, edited, or sorted..extremely useful!!
- Optional reversal of name about comma
- Permits telephone numbers, etc.
- Prints on envelopes or on labels, 1, 2, 3 or 4 across.
- Test label/envelope printing lets you make adjustments with ease.
- Master printout of your list in several formats.
- Selective printing by specific zips or by zip range.
- Editing is simple and fast...automatic search. Batch transfer of edited entries to backup disks.
- Provides for duplicate labels.
- Deleted entries have "holes" on disk filled automatically.
- Automatic "repeat" feature.
- Load and "scroll" through entries.
- Optional "ATTN:" line.
- Plenty of user defined fields with various options for simultaneously purging and selecting the printout.
- All 0's in address labels are replace by easier to read 0's.
- Continuous display of numbers of labels/envelopes printed.
- Each disk entry automatically "remembers" how many mailings have been made.
- Primarily written in BASIC for easy modification...embedded machine code for those speed sensitive areas.
- Hardware requirements: 32K, printer, and 1 or 2 drives.

### Precision Prototypes

410-F East Roca  
Refugio, Texas 78377  
512-526-4758

# BEGINNER'S CORNER

## Spencer Koenig

Welcome all beginners to my favorite corner. I say that with a sigh of relief. Lately, I've been having trouble with my system (GEE, WHO'D HAVE THOUGHT???), and as usual, the trouble centers around my RS-232-C. Don't worry, though, I'm not going to complain about it now, because I'm in the process of taking care of the difficulty, even as I write, and I want to see how it all turns out in the end (whose end did you say?). Besides, the resulting events are interesting enough to save for another time.

I will, however, give you a clue. It seems that some of the people who work at Radio Shack are human (quick, the oxygen!) and due to this fact, it seems, when the mood is upon them, they can be very nice and extraordinarily magnanimous (do you believe this guy?) when giving succor to a helpless hacker.

Well, I see by the confused looks that I have blurred the lines between the good guys and the bad guys. Now that I have your undivided and complete curiosity, I shall leave this topic for another time and return to the subject from whence we previously discoursed (what'd he say??).

Sorry about that last sentence, I've been reading some classic novellas and some of it seems to have rubbed off (all of the style and none of the class).

The last time we met, the subject was bulletin boards and how to use them. I gave a pretty extensive explanation of the types of commands you would find on a typical BBS. What I didn't talk about was why use them and where are they.

The fact of the matter is, they're all over the country and are as simple to get to as dialing the phone. As for why you should use them, that depends on your intentions as a user and their intentions as a BBS. You can see by listing 1 that the number of bulletin boards is immense (over 300 in this list) and the number is growing. Even as you read this, new boards are literally popping up everywhere as the software becomes available and the hardware gets less expensive.

Listing 1 \*\*\*\*\*  
Coding Information  
Log/On's List of Public  
Bulletin Board Systems

### General Information:

The format for this coding system is:

AA1BCDDD Name of City ST (333)444-5555

### WHERE:

- 1) AA = Type of System Code
- 2) 1 = Serviced by Alternate Phone Co.
- 3) B = Hours of Operation Code
- 4) C = Baud Rate Codes
- 5) DDD = Features/Interests of Board
- 6) Name of City
- 7) ST = State
- 8) Phone Number
- 9) \* = Special log-on or password information needed

This coding system is based on a length of 39 spaces, insuring compatibility with callers with a 40 character video screen limitation.

### 1) Type of System Codes:

Notes: The information within the ( ) = author of software followed by recommended setting in the form word length/stop bit/parity.

AB = ABBS - Apple Bulletin Board System  
(Craig Vaughan) 7/1/E

AC = ACCESS - Automated Computer Communications Electronic Service System  
(Information Intelligence, Inc.) 7/1/N

BU = BULLET-80 - TRS-80 System  
(Joe Simon) 8/1/N

CB = CBBS - Computerized Bulletin Board System (tm)  
(Ward Christensen & Randy Suess) 8/1/N

CO = Connection-80  
(Richard Taylor - Tom Vande-Stouwe) 8/1/N

CP = CP/M - General Category for systems run under CP/M

FR = FORUM-80 (tm) - TRS-80 System  
(Bill Abney) 8/2/n

MS = MESSAGE-80 - TRS-80 System-(Richard Taylor) 7/1/E

NW = Net-WORKS - Apple System  
(Nick Naimo) 8/1/N

PM = PMS - People's Message System  
(Bill BLUE) 8/1/N  
-PS = PSBBS - Program Store Bulletin Board System - TRS-80 System  
(Program Store) 7/1/E

PT = PET - PET System  
(Fred Hambrecht) ??/?

RN = REMOTE NORTH STAR - North Star  
(Les Freed & Bob Strong) 7/2/N

ST = STARR COMMUNICATIONS - Apple System  
(Dave Starr, Tim Binder) ??/?

OA = OTHER, APPLE - Apple Based

OT = OTHER, TRS-80 - TRS-80 Based

# SAVE

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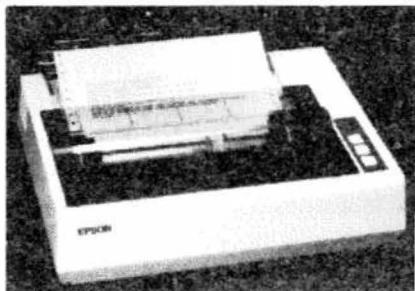
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Software Report Card

### NEWDOS/80 Version 2.0

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Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



# Apparat, Inc.

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OG = OTHER, GENERAL

OU = OTHER, UNKNOWN

2) Alternate Phone Service Codes:

2 = No            3 = Yes, All

4 = MCI Only    5 = SPC Only

6 = ITT Only    9 = Not Coded

3) Hours code:

Notes: The hours code for individual systems is a matter of 'best fit' within the following codes.

Code may or may not reflect actual hours, but will provide the first time user with a period of time that the system is available without creating 50 different codes.

A = 24 Hours

B = Evenings (24 Sat/Sun) - general

C = Evenings (24 Sun) - general

D = Evenings/9 PM to Midnight

E = Days/Noon - 5 PM

F = Evenings - general

G = Midnight - Noon (All Days)

J = 6 PM - 8 AM/24 Hrs SAT-SUN

K = 6 PM - 6 AM/24 Hrs SUN

L = 7 PM - 9 AM/24 Hrs SUN

M = 9 PM - 6 AM/24 Hrs SUN

N = 9 PM - 8 AM/24 Hrs SUN

P = 6 PM - 6 AM (All days)

Q = 6 PM - 8 AM (All days)

R = 9 PM - 9 AM (All days)

S = 10 PM - 8 AM (All days)

T = Weekends Only

U = Weekdays Only

V = Ring Back, 9 PM - Midnight

W = Ring Back, 24 Hours

X = Unknown

Y = Ring Back, 7 PM - 7 AM (All Days)

Z = Ring Back, Noon - 9 PM (All Days)

4) Baud Rate Codes:

A = 300            B = 300/1200(212A)

E = 110/300       F = 110/300/600

G = 300/450/600    H = 300/450

J = 110/300/450/600+

M = 110/300/DEAF TTY

5) Features/Special Interest Codes:

This coding will be expanded as needed, the Three Byte Code is as follows:

First Byte:

A = Apple Msg      C = Commerical

D = Conferencing    G = General Msg

M = CP/M            N = No Msg Function

P = Specialized Msg    S = Sexual (Gay)

T = TRS-80 Msg      X = Not Coded

Second Byte:

A = Amateur Radio    B = Business

C = Commodities     D = Downloading

E = Education        F = Family History

G = Games            H = Handicapped Info

J = Humor            L = Computer Lang'es

M = Medical          N = NASA/Space

P = Photography     R = Modem Info

S = Self Help        U = Video

V = Aviation        W = Astronomy

X = Experimental

Third Byte:

A = Apple            B = BBS #'s List

C = CP/M            E = Elect'ic Buying

F = Forth            T = TRS-80

I = Info Files/Articles/Reviews

Reviews/Articles

6) City - Self Explanatory

7) State - Self Explanatory

CN = Canada

8) Phone Number - Self Explanatory

9) Additional information code:

# = Headquarters or Base System

\* = Additional information needed such as log/on codes or password information. Carried at end of list by phone number.

The LOG/ON list is sponsored by LOG/ON magazine based in Denver, Colo. The following are subscription rates for LOG/ON magazine:

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VERSION 6.29

CP3AJMDC Cranford

NJ 201-272-1874

AB2AAG-- Mt. Lakes

NJ 201-322-9484

C02AAG-- Bloomfield

NJ 201-429-1097

0G3GBGA- Unknown

NJ 201-444-1522

0G3XAG- Boundbrook

NJ\*201-457-0893

FR2AAGD- Monmouth Co

NJ 201-528-6623

FR3AAGD- Union

NJ 201-688-7117

PM2NAG-- Shrewsbury

NJ 201-747-6768

MS3EBGP- Haledon

NJ 201-790-6795

AB2NAG-- Pompton Plains

NJ 201-835-7228

AB2CAG-- Wyckoff

NJ 201-891-7441

AB3BAG-- Dunellen

NJ 201-968-1074

MS3BAGD- Livingston

NJ 201-992-4847

PS3AJG-- Washington

DC 202-337-4694

0G3BEG-- Washington

DC 202-635-5730

CP3AAM-- Stamford

CT\*203-357-1570

BU2ABGD- Bethel

CT 203-743-9281

BU2ABGDE Danbury

CT#203-744-4644

FR2AAG-- Montgomery

AL 205-272-5069

CP2WJM-- Huntsville

AL 205-895-6749

AB2AAG-- Seattle

WA 206-244-5438

AB2XAG-- Seattle

WA 206-248-2600

MS2ABGDI Everett

WA 206-334-7394

MS2AANG- Everett

WA 206-334-9556

CB2WAG-C Yelm

WA 206-458-3086

AB2AAG-- Seattle

WA 206-524-0203

OU2AAG-- Seattle

WA 206-527-0897

AB2AAGA- Seattle

WA 206-546-6239

FR2AAG-E Seattle

WA 206-723-3282

MS2AAGDI Seattle

WA 206-763-8879

OU2XANG- Redmond

WA 206-883-0403

OA2AAG-- Seattle

WA 206-937-0444

C03ABGDI Manhattan

NY 212-245-4363

C03AAGDE Queens

NY 212-441-3755

CP3AMW- New York

NY 212-787-5520

AB3AAGD- New York City

NY 212-799-9577

OT3AAGD- New York City

NY 212-897-3392

C03ABG-- Bronx

NY 212-933-9459

C02AAG-- Manhattan

NY 212-991-1664

PM3BAG-- New York

NY 212-997-2488

PM3AAG-I Los Angeles

CA 213-291-9314

AB3AAGJ- Los Angeles

CA 213-334-7614

NW3AEGDI Woodland Hills

CA 213-346-1849

AB9RAG-- Los Angeles

CA 213-349-5728

NW3NAG-- Santa Monica

CA 213-394-1505

AB3AAG-- Los Angeles

CA 213-459-6400

NW3AAGG- Los Angeles

CA 213-465-1431

AB3AAG-- Torrance

CA 213-516-7089

CB3AAGDC Pasadena

CA 213-799-1632

OA3AAG-- Los Angeles

CA 213-826-0325

0G3AANRB Los Angeles

CA\*213-881-6880

AB3NAG-- Los Angeles

CA 213-921-2111

OT3AAGD- Dallas

TX 214-235-8784

AB3AAG-- Dallas

TX 214-248-4539

AB3AAG- Dallas

TX 214-327-3585

NW3AAG- Dallas

TX 214-361-1386

AB3AAG- Dallas

TX 214-369-0427

AB3AAG- Dallas

TX 214-530-0858

AB3LAG- Dallas

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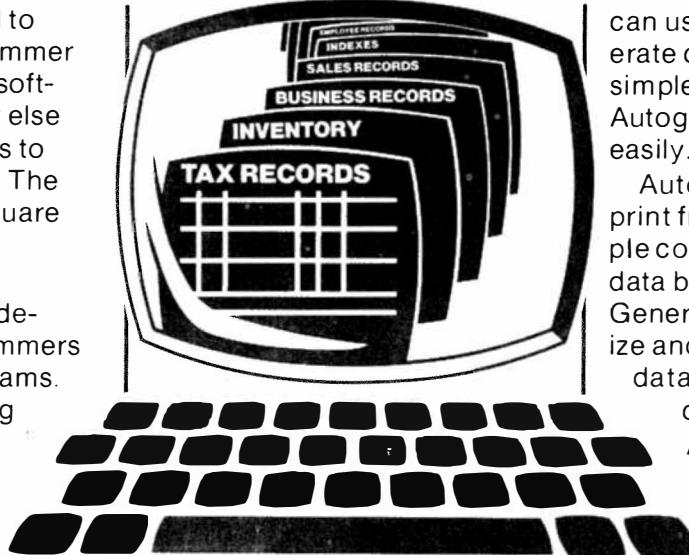
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FR3QBGDB Cleveland	OH 216-486-4176	CP3ZEM-- Detroit	MI 313-584-1044	AB2AAG-- Spokane	WA 509-456-8900
AB3AAG-- Akron	OH 216-644-1965	CP3WJM-- Detroit	MI 313-588-7054	AB2AAG-- Spokane	WA 509-534-2419
MS3AAGD- Akron	OH 216-724-1963	CP3AGM-- Dearborn	MI 313-846-6127	AB2AAG-- San Antonio	TX 512-737-0214
BU3PAGDB Chesterland	OH 216-729-2769	OA3AAG-- St. Louis	MO 314-227-8495	CB2AAG-- Corpus Christi	TX 512-855-1512
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AB3AAG-- Akron	OH 216-867-7463	AB2RAG-- Columbia	MO 314-442-6502	OT3AAGDI Cincinnati	OH 513-244-2983
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AB3NAG-- Columbia	MD 301-730-0922	AB2JAGM- Iowa City	IA 319-353-6528	C03ABGDI New York	NY 516-482-8491
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RN3PAGG- Denver	CO 303-320-6715	AB3XAG-- Atlanta	GA 404-237-6846	CP3RBM- Long Island	NY 516-698-8619
FR3AAGDI Denver	CO 303-341-0636	AB3AAG-- Atlanta	GA 404-256-1549	CB3AAG-- Bethpage	NY 516-938-9043
0A2AAG-- Crested Butte	CO 303-349-7277	CB3AAG-- Atlanta	GA 404-394-4220	C02IAGDE Lansing	MI 517-339-3367
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NW3NAG-- Arlington Hgt	IL 312-255-6489	CB3AFGDC San Leandro	CA 415-357-1130	NW3AAG-- Minneapolis	MN 612-561-6311
NW3AAG-- Streamwood	IL 312-289-1198	CP3QGM-- Mill Valley	CA 415-383-0473	CB3AAG-- Minneapolis*	MN 612-869-5780
PM3AAG-- Lake Forest	IL 312-295-6926	OT3WEMD- Larkspur	CA 415-461-7726	PM3AAG-I Minneapolis	MN 612-929-6699
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RN3AFGG- Palatine	IL 312-359-9450	AB3SAG-- Unknown	CA 415-524-6299	AB2XAG-- Kalamazoo	MI 616-382-0101
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NW3AAG-- Roselle	IL 312-882-9237	AB2XAGX- Bowling Green	OH 419-352-4477	FR2AAG-- Woodbridge	VA 703-670-5881
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FR3JAGB- Pontiac	MI 313-335-8456	AB3AAGA- Portland	OR 503-641-8555	PM3AAG-- Freeport	TX 713-233-7943
AB3AAG-- Southfield	MI 313-357-1422	CB2AJG-- Breverton	OR 503-646-5510	OT3AAG-- Houston	TX 713-331-2599
FR3AAGM- Mt. Clemens	MI 313-465-9531	FR2QAG-B Medford	OR 503-779-6800	AB3SAG-- Houston	TX 713-654-0759
AB3NAG-- Detroit	MI 313-477-4471	CB3AAG-- Baton Rouge	LA 504-273-3116	NW2AAG-- College Stat'n	TX 713-693-3462
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**"I believe Super Utility or Super Utility Plus should be present at every serious TRS-80 disk installation."**

(We didn't say this; Paul Wiener did in 80 Microcomputing, Jan. '81...but we sure agree with him!)

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- Zap
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- Format
- Special Format
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- Mod I & Mod III on Same Disk
- \$49.95  
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AB2XAG-- Laguna Niguel	CA 714-495-6458
OT3GAT-- Fullerton	CA 714-526-3687
OT3AAGD- Garden Grove	CA 714-537-7913
PM3AAG-- San Diego	CA 714-582-9557
AB3XAG-- Santa Fe Spg	CA 714-739-0711
PM3AAGUI Anaheim	CA 714-772-8868
NW3AAG-- Fontana	CA 714-823-1451
ST2DAG-- Westminster	CA 714-895-1166
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OT2AAGDI Burlington	VT 802-862-7023
AB2AAGH- Essex Center	VT 802-879-4981
FR2AAGD- North Augusta	SC 803-279-5392
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RN3AEG-- Virginia Beach	VA 804-340-5246
CP2BEMDB Simi Valley	CA 805-527-9321
RN2XAG-- Santa Barbara	CA 805-682-7876
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OT2AAGD- Largo	FL 813-577-3095
OT2KAGD- Thonotosassa	FL 813-986-3128
FR3ABGD- Kansas City	MO#816-861-7040
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FR2AAGD- Wichita Falls	TX 817-855-3916
FR4AAGD- Memphis	TN 901-276-8196
FR4RBGDE Memphis	TN 901-362-2222
AB4AAG-- Memphis	TN 901-725-5691
AB2JAG-- Ft Walton Bch	FL 904-243-1257
OG2XAX-- Pensacola	FL 904-477-8783
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FR2AAG-- Leavenworth	KS 913-651-3744
CP2YJM-- Petterson	NY 914-279-5693
CP4VJM-- Bearsville	NY 914-679-6559
AB2AAG-- El Paso	TX 915-533-6255
AB2KAG-- El Paso	TX 915-533-7039
FR2AAGDI El Paso	TX 915-545-2934
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CB3AAG-- Sacramento	CA 916-483-8718
FR3AAG-- Tulsa	OK 918-747-1310
FR3AAG-- Tulsa	OK 918-747-1310

#### Additional Information:

201-457-0893 - pswd/HEL-1999, MAIL  
 202-635-5730 - type/HELP WACS  
 202-357-1570 - pswd/MAILD  
 213-881-6880 - logon/CAT  
 803-771-0922 - after bulletins you  
     in NORTH STAR BASIC

listing 2				
a simplified key for listing 1				
AA	I	B	C	D D D
T	T	H	B	F
Y	Y	O	A	E
P	P	U	U	A
E	E	R	D	T
		S		U
O	O		R	R
F	F	O	A	E
		F	T	S
B	P		E	
B	H	O	S	
S	O	P		
N	E		D	D D
E	R		S	V M
		A	Y	A A
S	T		S	R C
E	I		T	I H
R	O		E	E I
V	N		M	D N
I				
C			&	S &
E				U
			D	B L
			O	J A
			S	E N
				C G
				T U
				S A
				G
				E
				S

\*\*\*\*\*

#### LISTING 3

##### Commands:

<R> ... Retrieve a Message	<L> ... Leave a Message
<S> ... Scan Messages	<T> ... Terminate Session
<K> ... Kill a Message	<I> ... System Information
<U> ... User Log Display	<B> ... Bulletin Display
<E> ... Elapsed Time on System	<C> ... Chat with SYSOP
<X> ... Expert User Mode	<D> ... Download Section
<H> ... Help (This Menu)	<O> ... Return to Logon
<A> ... Alter Case	<F> ... Format Screen

Choose function desired --> I

Hit 'S' to Stop, 'P' to Pause

#### S Y S T E M   I N F O R M A T I O N

\*\*\*\*\*

copying a directory program that, before your very eyes, alphabetizes your files. There are dozens of free utilities to choose from (downloading is free) and, if you choose you can order in-stock software or hardware at excellent prices.

The board was set up, in part, for just such a purpose by the owners and partners of a budding computer store called "We are computers" (catchy huh?). These guys are definitely user-friendly and give free advice willingly and patiently. I recommend you give the board a try. The number is 1-914-592-5385.

Oh, by the way, I'm going to be downloading (or is it uploading??) my reviews and comments on software I like and don't like, including those you won't see in any of the issues of

# LYNN'S A/R SYSTEM

## 12 Integrated Accounts Receivable Programs

### Tested In Service For Over 3 Years

User's Comments: • menu driven • increased cash flow • saved over 50 hours a month in secretarial hours • almost completely eliminated billing errors • phone supported-ask for Ron.

#### LYNN'S A/R SYSTEM WILL

- print invoices
- tell you your a/r total, number of invoices outstanding, average per invoice
- tell you at any time how many invoices an individual account has open, the total amount owed, the average per invoice, the invoice date, and then invoice amount
- total sales on account for a given month, number of invoices sent, average sale per invoice
- how much an account purchased during month, how many invoices were sent, average invoice for month

- tell you what percent of sales an account is to total sales by month
- tell you what percent of a/r an account is
- print mailing labels for your accounts
- print statements at any time you want them (either individual or all accounts)
- print alphabetical hardcopy of accounts and account numbers
- print all items sold for month
- alphabetical sort of items sold by month
- this set of programs can be custom modified by you or us
- AND MUCH MORE!!

## -AGING REPORT FOR LYNN'S A/R SYSTEM-

Aging Report 01/31/82 Page 1

Account	Current	30-60 Days	60-90 Days	90+ Days	Total
ABC Inc.	\$ 249.00	\$ 65.20	\$ 00.00	\$ 00.00	\$ 314.20
Old Co. Inc.	00.00	84.40	165.20	00.00	249.60
New Co. Inc.	97.75	00.00	00.00	00.00	97.75
Deadbeat Inc.	00.00	00.00	00.00	345.00	345.00
<b>Totals</b>	<b>\$346.75</b>	<b>\$ 149.60</b>	<b>165.20</b>	<b>345.00</b>	<b>\$ 1,006.55</b>

Aging reports can be compiled on a daily, weekly or monthly bases.

## -LYNN'S CHECKBOOK- DATA BASE MANAGER- LEDGER SYSTEM

• Phone Supported Ask For Ron

- saves hours of posting to general ledger • almost completely eliminates mathematical errors • menu driven • 200 expense fields • will handle 1,000 checks a month • will print checks with option to enter handwritten checks • will do reconciliation statement with hardcopy • will print hardcopy of field totals both by month, year to date and end of year • automatic account numbering • automatic field entry • will print hardcopy of checkbook register • debit and credit memo entry • alphabetical hardcopy of accounts payable and account numbers (machine language sort, very fast) • AND MUCH MORE! •

#### LYNN'S

Account Receivable System	<b>\$49<sup>95</sup></b>
Account Receivable Aging Report	<b>\$20<sup>00</sup></b>
Checkbook Ledger System	<b>\$69<sup>95</sup></b>
Well's Data Base Manager	<b>\$39<sup>95</sup></b>

Add \$2.00 Freight and Handling.

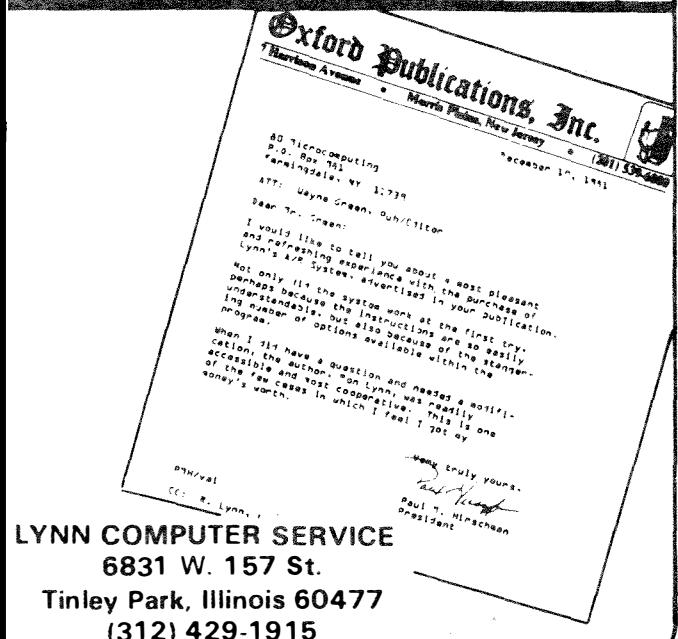
Illinois Residents Add 6% Sales Tax

Send \$10.00 Per System  
For Printouts and Documentation.  
Credit Given on Order

Equipment Needed: 48K Model I or III,  
Lineprinter, 2 Disk Drives.

The above programs will work on TRSDOS 1.2 and  
1.3 for the Model III. NEWDOS, NEWDOS80,  
NEWDOS80 V2.0, LDOS and MULTIDOS for the  
Model I and III.

perfect tool for storing and maintaining mailing list, inventories, menus, collection records, article references, important dates, client records • all functions menu driven • easy to interface to word processors and communication programs • sort in ascending or descending order (fast machine language sort) • compact storage with minimum overhead • go from data base to visicalc and return • sort and select visicalc lines!! • interface to RadioShack's "advanced statistical package".



LYNN COMPUTER SERVICE  
6831 W. 157 St.  
Tinley Park, Illinois 60477  
(312) 429-1915

Computronics (will the fellow in the back stop saying "I told you so"?). If you're interested, why don't you drop me a message on the board. I think it would be great to get an "open letter" type of exchange of information and opinions going. Enough commercials already, let's get on with the nickel tour.

As you can see in listing 3, (on your left, passengers) we have the usual commands at your disposal. Pay no attention to the comment made at the top. It's obviously a system error of some type.

Some advantages can be found for consulting those who have had trouble with software or found it necessary to modify their versions because of bugs or changes in DOS. Listing 3 is a list of zaps for a couple of unknown word processors, probably written by beginners at assembly language. You know how that sort of thing is.

Last but not least, the boards are good for getting information about clubs (listing 4) that deal with all kinds of subject matter, from Artificial intelligence to Z80 machine code, for example. This last topic, I think, is most important. If you're a "computer nerd" looking to meet other "computer nerds" there's no better place to go for the latest info (seems to rhyme doesn't it).

Listing 2 is a condensed version of what appears at the beginning of listing 1. I included it because I find it a little easier to refer to it rather than to keep referring to the several headings in listing 1. Refer to the beginning of listing 1 when you are looking for more specific information.

That about raps up this minor effort towards my ultimate goal of winning the Pulitzer (or is it pullet-zer) for Journalism. I hope you don't have the troubles with your TRS-80 I had, but if you should, please write. Misery loves company, you know. Until next time, happy hacking.

#### LISTING 4

Hit 'S' to Stop, 'P' to Pause

>>>>>>>>>>>>>>>>>>>>>>>>>>>>

G O O D S T U F F

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

THIS FILE IS A COMPILATION OF ASSORTED ZAPS THAT HAVE BEEN DISTRIBUTED OVER THE PAST FEW YEARS, AND DEAL WITH MODIFICATIONS FOR EXISTING PROGRAMS. WHILE MANY OF YOU MAY HAVE THEM, THERE ARE SOME THAT DON'T, AND IF YOU HAVE ANY NEW ONES, THEN LEAVE THEM FOR ME IN A SIGNOFF MESSAGE AND WE WILL ADD THEM TO THIS LIST...

N.B. ZAP NOTATION IS VIA THE 'DFS' COMMAND OF SUPERZAP 3.0 AND THE NEWDOS-80 VERSION...

IF THERE IS A ZAP THAT MUST BE DONE IN CONJUNCTION WITH ANOTHER, IT WILL BE NOTED IN THAT ZAP.

#### ELECTRIC PENCIL:

-----

(1) HAVE SHIFT UP ARROW TAB OVER 4 SPACES RATHER THAN 8  
F0907 FROM C6 08 E6 38 32

TO C6 04 E6 38 32

(2) ON STARTUP, SKIP OVER LOWERCASE QUESTION

F16E6 FROM 6C CD CF 67 21

TO 6C 00 00 00 21

F16F5 FROM 5A CD 79 65 E6  
TO 5A 3E 59\* 00 E6 \*4E IF 'N'

(3) SPEED UP THE AUTO-KEY REPEAT

A) SPEED UP DELAY BEFORE REPEAT  
F1076 FROM 2E FA 18  
TO 2E 50\* 18

B) SPEED UP THE REPEAT INTERVAL

F1069 FROM 2E 28 79  
TO 2E 14\* 79

\*THE LARGER THE VALUE  
THE LONGER THE DELAY

(4) HAVE PENCIL POWER UP IN THE 'SX' MODE

F1329 FROM CD B2 68  
TO CD C0 68

F167B FROM F1 00 18  
TO F1 C8 18

#### SCRIPSIT:

-----

HERE ARE THE ZAPS TO MAKE SCRIPSIT COMPATIBLE WITH THE NEWDOS METHOD OF MAINTAINING THE EOF.

AT F00B76 - CHANGE 00 CD 6E 7A 4F  
(X'5D46') TO 00 3A B9 7C 4F

AT F00BFB - CHANGE B7 C4 EF 5D 79  
(X'5DCB') TO B7 32 B6 7C C4

AT F00C00 - CHANGE 32 B9 7C 11  
(X'5DD0') TO EF 5D 00 11

THE FOLLOWING ZAP CHANGES SCRIPSIT TO USE THE VALUE AT X'4049' FOR THE TOP MEMORY LIMIT OF ITS TEXT BUFFER INSTEAD OF TAKING ALL AVAILABLE RAM IN THE COMPUTER. THE ZAP APPLIES TO TRSDOS AND VTOS AS WELL AS NEWDOS.

AT F00063 - CHANGE 7C 21 FF 00 25 7E 2F 77 AE 20 F9 22  
(X'525F') TO 7C 2A 49 40 00 00 00 00 00 00 00 00 00 00 00 22

IF YOU HAVE ANY OTHER ZAPS THAT I CAN ADD TO THIS LIST, LET ME KNOW. THIS THING IS HERE FOR YOUR REFERENCE, AT THOSE TIMES WHEN YOU SEEM TO NEED THEM MOST.

Enter Selection desired, <H> for list, or <ENTER> to exit

\*\*\*\*\*

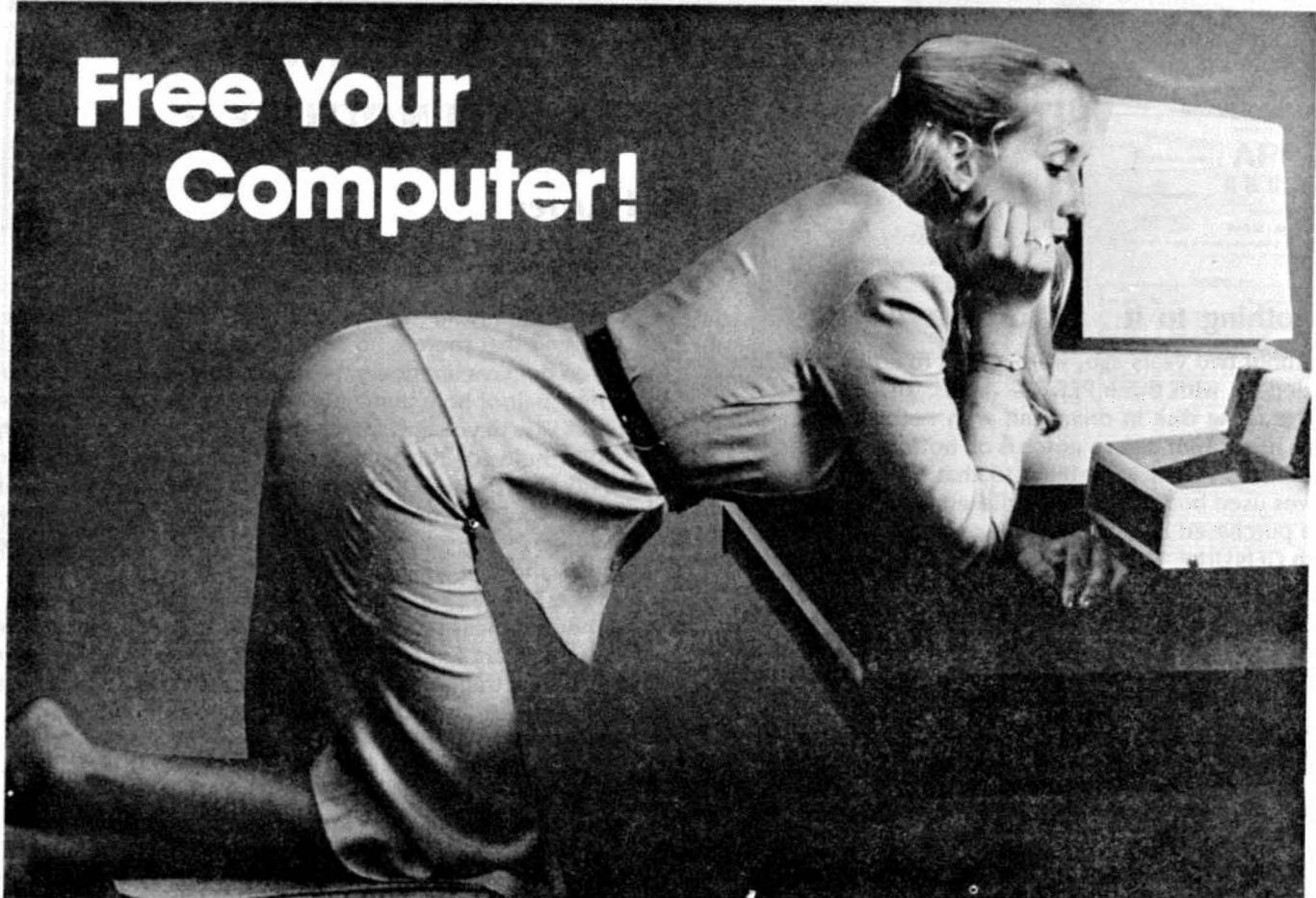
B

Hit 'S' to Stop, 'P' to Pause

Welcome to the Bulletin section of Connection-80 of the Bronx. This is the current list of bulletins and features:

continued on page 62

# Free Your Computer!



## Hardware Spool!

CUE is a communications processor which rapidly accepts from your computer data to be printed and then goes off-line to drive the printer —independent of your computer, which is now free. CUE is better than software spooling since none of your computer's memory, processing power, or disk drives are tied up. CUE is available in parallel, serial, or with both in 2- and 4-port models (connect several printers or computers) with from 16K to 32 K memory. Use as an interface.



**MicroCompatible**

151 6th St., P.O. Box 7624, Atlanta, GA 30357

Prices begin at \$299.

(404) 874-8366

# **WANNA DOUBLE YOUR DISK CAPACITY WITH (NEARLY) NO \$\$\$ EXPENDITURE??**

**Glen M. Harper**

## **Nothing to it . . . Just use the other side**

About two years ago, we decided to add a disk drive and ended up with three PERTEC drives. The instructions were "After using disk in drive unit with notch UP, remove disk from drive, turn disk so notch is on bottom, re-insert disk and continue . . ." or something to that effect. We thought all drives used both sides of the diskette until about a year ago. We purchased another TRS-80, only this one was equipped with GENUINE TRS-80 MINI DRIVES...Oh Well, On with the "How To" bit.

As for the best brand name diskette to use, I honestly do not know. We do find the VERBATIM brand to be dependable and the price is in line. I understand that some diskettes are recordable on one side only. We have only had one of this type during the past year out of about on thousand diskettes.

There are several ways a diskette can be converted so both sides may be used. We shall describe three that seem to work best for us:

1. Use an ordinary paper hole punch to punch out a "half-moon" for the WRITE PROTECT notch and punch out another SECTOR LOCATE hole.

2. Punch out the same half moon as above and use scissors to cut out an inverted "V" to be used as the second SECTOR LOCATE hole.

3. Cut thin slice from back of disk jacket—remove plastic disk—punch half-moon for write protect notch and punch second hole for SECTOR LOCATE hole replace plastic disk in jacket-tape cut end of jacket.

The #1. method is by far the easiest to do, but you are increasing the sector locate hole from 2.5 mm to 6.5 mm in diameter. (I KNOW it's not supposed to work, but please, just before writing me that nasty letter about being so dumb, try it.) So . . . OK already, let's get started.

Find a CLEAN, SMOOTH, FLAT surface (yes Louis, the top of your wooden desk will be great!). Place the diskette to be converted down first with the WRITE PROTECT notch at the TOP-LEFT side, and place another diskette on top with the WRITE PROTECT notch at the TOP-RIGHT side. When the four sides are all even, take your trusty sharp pointed felt tip pen and outline the write protect notch on the top-right side. Next, using the diskette on top, CAREFULLY rotate the plastic disk until you can see the small hole in the sector locate hole (the write protect notch is still in the same position—top right—as before). Put the diskette on top, as before, and place your felt tip pen point in the small hole. Then, using the larger (6.5mm) hole as a guide, draw an outline on the diskette you are converting and rotate the plastic disk until the small hole is approximately in the center of the outline you just made. Punch a hole through both

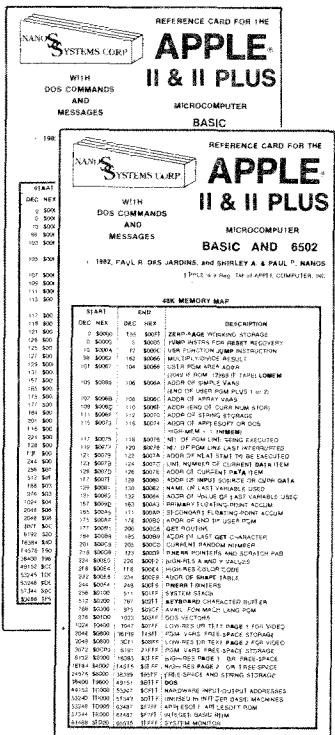
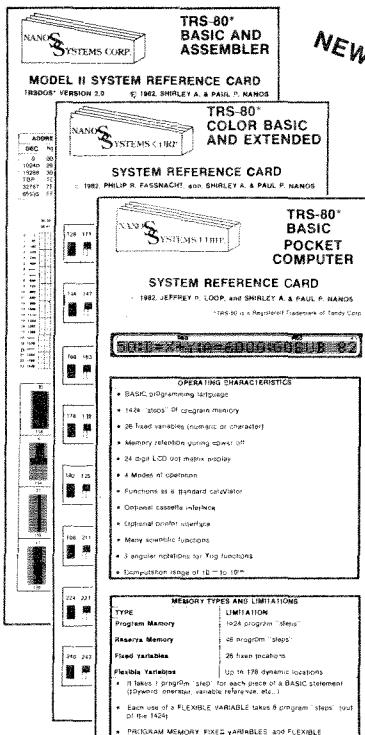
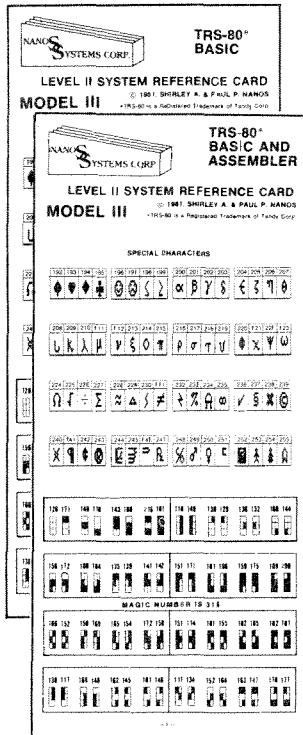
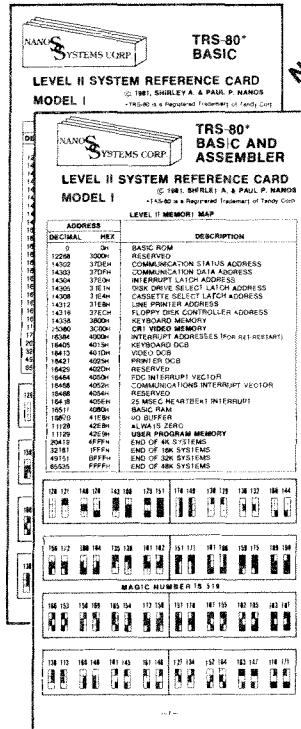
sides of the jacket and plastic disk. Be sure it's a clean cut hole and that there is no lint showing from inside the jacket. If you do have lint fibers visible, I would suggest that you get a new pair of hole punchers—might even be well to take an old disk with you and try out a few pairs. Punch a "large" half-moon hole for the write protect notch, and you are now ready to type in COPY from the "ol NEWDOS+" and let 'er rip! If you are using TRSDOS, it might be well to use your bulk eraser before typing in BACKUP. That hole puncher is metal and just might be magnetized.

The #2 method is for those timid souls that would just rather not mess around with the 2.5 mm sector locator hole. Use the exact same method for this one as #1 above, but do not punch the hole through the jacket sides and plastic disk. Instead, using a new pair of sharp pointed scissors, cut an inverted "V" by making two cuts from inside the large "hub" hole and the sides of the inverted "V" just large enough to almost cut out the round 6.5 mm outline. Center the small sector locator hole in the "V" you just cut—make certain that the plastic hub hole is centered in the jacket hub hole, and stick a needle or pin through the center of the small 2.5 mm hole. Turn the disk jacket over and cut another inverted "V" to match the first one. Be sure no lint fibers are visible in either "V", and you are now ready to go!

The #3 method is very easy, but you MUST be careful not to touch more than the edge of the plastic disk with your fingers, etc. Using a pair of sharp scissors, cut a very thin slice off the backside of the disk jacket. Push plastic disk away from backside of jacket FIRST. (BACKSIDE = side drive door closes on.) Remove plastic disk. Mark new WRITE PROTECT notch and new SECTOR LOCATOR hole. Punch both out as described in Method #1. Replace plastic disk (No Emma, either way is OK to put plastic disk in jacket). Place tape over slit backside, and it's a good idea to place a small piece of paper between tape and jacket where plastic disk will touch, and that's all there is to it. Just be sure your professional taping job didn't "warp" the disk jacket. If it did, loosen the tape from ONE SIDE, lay disk jacket on clean flat surface and re-tape, pulling the tape towards the front so that there is no bulge of tape for the door to push on. Then "fire Up" and have fun.

If you have problems (PROBLEMS = Same problem twice) with any of the above methods, please feel free to mail one or more of the problem diskettes and we'll do our best to give you an answer. (No Myrtle, there will be no charge!) Send to:

G. M. Harper  
P.O. Box 830  
Covington, GA 30209 ■



SAVE TIME!

AT LAST!

THROW AWAY THE BOOK!

Each card is a complete summary of the reference manuals and the microcomputer. Cards are two or more colors, printed on 80 pound Beckett Antique cover stock or a comparable stock, stretch-wrapped in plastic for shipping. They are accordion-foldup cards, in the same style as the traditional IBM reference cards used on the major computers for years. Fold-up size is eight and one-half by three and three-quarter inches, so they will fit easily into the shirt pocket. These cards provide a complete summary of the manuals plus many extras at your fingertips.

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# MATRIX MULTIPLICATION

James J. Gaffney

One of the most error-prone of all mathematical computations is that of matrix multiplication, particularly if the matrices involved are large or of divergent shapes. Many mainframe machines have a library function for this purpose, but the TRS-80 user is not so fortunate.

This program will handle multiplication of two matrices up to 10 x 10 in dimensions and fits very nicely into a 4K machine. The heart of the program is the triple-nested FOR-NEXT loop in lines 370 through 410. The 10 by 10 dimension is adequate for most applications and was chosen because it fits nicely on the video display and most printers. There is, however, no practical limit to the size of the matrix that can be accommodated by increasing the size of the DIM statements in line 40 and the limit checks in lines 105, 115, 125, and 135. The size is limited only by the size of the system, though it was composed on a 48K Model I Level II TRS-80.

If the user does not own a printer, loading time can be saved by deleting lines 80 and 460 through 600.

```
10 REM * INTEGER MATRIX MULTIPLICATION *
20 REM AN ORIGINAL PROGRAM BY J. J. GAFFNEY, MAY 1981
30 REM 10549 SPRINGWOOD, EL PASO, TEXAS 79925
40 CLS : F$="######" : DEFINT A-Z : DIMA(10,10), B(10,10),
C(10,10)
50 PRINT CHR$(23) : PRINT @ 406, "MATRIX" : PRINT @ 526,
"MULTIPLICATION" : FOR T=1 TO 1000 : NEXT T : CLS
60 PRINT : PRINT : PRINT "    THIS PROGRAM PERFORMS INTEGER
MULTIPLICATION OF TWO"
70 PRINT "MATRICES (DESIGNATED A & B) AND COMPUTES THE PRODUCT"
72 PRINT "(DESIGNATED C). ALL MATRICES MAY BE UP TO 10X10
IN SIZE."
80 PRINT "..... A HARDCOPY OPTION IS AVAILABLE."
90 PRINT @ 981, "PRESS ANY KEY TO START";
95 D$=INKEY$ : IF D$="" THEN 95
97 CLS
100 INPUT "HOW MANY ROWS IN MATRIX A"; RA : IF RA<1 GOTO 100
IF RA>10 GOSUB 700 : GOTO 100
105 IF RA>10 GOSUB 700 : GOTO 100
110 INPUT "HOW MANY COLUMNS IN MATRIX A"; CA : IF CA<1 GOTO 110
115 IF CA>10 GOSUB 700 : GOTO 110
120 INPUT "HOW MANY ROWS IN MATRIX B"; RB : IF RB<1 GOTO 100
125 IF RB>10 GOSUB 700 : GOTO 120
130 INPUT "HOM MANY COLUMNS IN MATRIX B"; CB : IF CB<1 GOTO 130
135 IF CB>10 GOSUB 700 : GOTO 130
140 IF CA<>RB GOTO 800
150 CLS : PRINT "MATRIX A"
160 FOR I=1 TO RA : FOR J=1 TO CA
170 PRINT "ROW "; I; " COLUMN "; J; : INPUT A(I,J)
180 NEXT J : NEXT I
190 CLS : PRINT "MATRIX A" : PRINT
200 FOR I=1 TO RA : FOR J=1 TO CA
210 PRINT USING F$; A(I,J); : NEXT J : PRINT
220 NEXT I : Q$=""
230 PRINT @ 986, "IS THIS CORRECT (Y/N)?";
240 Q$=INKEY$ : IF Q$="" GOTO 240
250 IF Q$="N" GOTO 150 : IF Q$="Y" GOTO 260 ELSE 230
260 CLS : PRINT "MATRIX B" : PRINT
270 FOR I=1 TO RB : FOR J=1 TO CB
280 PRINT "ROW "; I; " COLUMN "; J; : INPUT B(I,J)
290 NEXT J : NEXT I
300 CLS : PRINT "MATRIX B" : PRINT
310 FOR I=1 TO RB : FOR J=1 TO CB
320 PRINT USING F$; B(I,J); : NEXT J : PRINT
330 NEXT I : Q$=""
340 PRINT @ 986, "IS THIS CORRECT (Y/N)?";
350 Q$=INKEY$ : IF Q$="" GOTO 350
360 IF Q$="N" GOTO 260 : IF Q$="Y" GOTO 370 ELSE 350
365 PRINT @ 52, "<COMPUTING>";
370 FOR I=1 TO RA : FOR J=1 TO CB
380 C(I,J)=0
390 FOR K=1 TO CA
400 C(I,J)=C(I,J)+A(I,K)*B(K,J)
410 NEXT K : NEXT J : NEXT I
420 CLS : PRINT "MATRIX C" : PRINT
430 FOR I=1 TO RA : FOR J=1 TO CB
440 PRINT USING F$; C(I,J); : NEXT J : PRINT
450 NEXT I : Q$=""
460 PRINT @ 978, "IS HARDCOPY REQUIRED (Y/N)?";
470 Q$=INKEY$ : IF Q$="" THEN 470
480 IF Q$="N" GOTO 610 : IF Q$="Y" GOTO 490 ELSE 460
490 CLS : PRINT @ 404, "READY PRINTER" : PRINT @ 592,
"HIT ANY KEY WHEN READY"
500 Q$=INKEY$ : IF Q$="" THEN 500
510 LPRINT "MATRIX A" : LPRINT
520 FOR I=1 TO RA : FOR J=1 TO CA
530 LPRINT USING F$; A(I,J); : NEXT J : LPRINT : LPRINT : NEXT I
540 LPRINT : LPRINT "MATRIX B" : LPRINT
550 FOR I=1 TO RB : FOR J=1 TO CB
560 LPRINT USING F$; B(I,J); : NEXT J : LPRINT : LPRINT : NEXT I
570 LPRINT : LPRINT "MATRIX C (C = A TIMES B)" : LPRINT
580 FOR I=1 TO RA : FOR J=1 TO CB
590 LPRINT USING F$; C(I,J); : NEXT J : LPRINT : LPRINT : NEXT I
600 LPRINT STRING$(6,CHR$(10))
610 CLS : PRINT @ 406, "DO YOU HAVE ANOTHER" : PRINT @ 533,
"SET OF MATRICES (Y/N)?"
620 Q$=INKEY$ : IF Q$="" GOTO 620
630 IF Q$="Y" GOTO 97
640 IF Q$="N" GOTO 999 ELSE 610
700 PRINT "MAXIMUM MATRIX DIMENSION IS 10 BY 10!!!!"
710 RETURN
800 CLS : PRINT "THE NUMBER OF COLUMNS IN MATRIX A MUST EQUAL
THE NUMBER OF"
810 PRINT "ROWS IN MATRIX B OR THE MATRICES ARE NOT
COMPATABLE FOR"
820 PRINT "MULTIPLICATION."
830 PRINT : PRINT "..... HIT ANY KEY TO START AGAIN ....."
840 Q$=INKEY$ : IF Q$="" THEN 840
850 GOTO 97
999 CLS : PRINT CHR$(23) : PRINT "SO LONG!!!"
1000 END
```

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# PROGRAM PREVIEWS

A. A. Wicks

## This Month: New Electric Pencil

Shortly after the TRS-80 Model I made its presence felt on the public and the microcomputer world in general, an astute programmer, Michael Shrayer, evidently gifted with prescience, released a program called the "Electric Pencil," for the Model I. This program had been around in an informal way and in several different computer versions, but had not been marketed. This program was probably the first word processing program of any consequence for personal computers to reach the then exploding Model I market. Before this, there had been a few mediocre offerings, but for the greater part, these were in BASIC with its inherent slowness, and had few worthwhile features. For that matter, the word processing industry was in its infancy, even with the mainframe manufacturers, and nothing like the offerings of today were available.

Electric Pencil hit the marketplace with almost as much effect as the computer for which it was designed. In fact, a cult of users sprang up, who defended Electric Pencil against all competition with paeans of praise.

The heady success of Electric Pencil and the normal progress of the times bred competition, and new approaches to word processing — Scripsit, Lazy Writer, WordStar, Newsprint and many others. And Electric Pencil, with features that were outstanding in their time, became more obscure, although it still had its adherents, and certainly remained a most useful program.

Recently, Schrayer and H. C. Pennington, author and disk operations expert, have collaborated on a new release of Electric Pencil, called Electric Pencil Version 2.0z. Although I was never an early-version fan of Electric Pencil, I was familiar with it as a friend of mine was one of the cultists, and we sometimes worked mutually on writing projects using the program. I found it somewhat ponderous, and when Scripsit was released I started using it to a great extent. But I recently purchased the "new" Electric Pencil for review and use, because I feel the earlier version users will be interested in knowing about it, and later computer owners will want to have an appraisal if they are considering a word processing program.

I do not plan, in this considerably expanded in-depth review, to discuss the differences between the earlier Electric Pencil and the new release — this would serve no useful purpose. However, I will try to bring out every feature of the program, and older-version owners may make their own comparisons.

The Electric Pencil is what is known as a character-oriented word processor. That is, material typed in is a continuous string to the computer and the program — no matter what it comprises — letters, numbers, spaces, etc. As insertions, deletions and other modifications are made, all of the material is shifted to accommodate it. As with any word processing programs of significance, so-called "carriage returns" (ENTER) are not required at the end of a screen line; and word uncompleted is shifted to the next line intact as a word, even though you may have typed only the first letter of the word before the line end was reached. The shift to the next line is fast — almost quicker than the eye can detect, which is a

welcome feature for the fast typist, who seldom looks at the screen anyway, and does not want the "eye-corner" distraction of a slow transition as the word drops to the next line.

Loading, duplicating and preparations before using Electric Pencil are simple to do, and the explicit instructions insure that no difficulties should be encountered. Information is provided in the manual for all media that may be used with the Model I and Model III — tape, Exatron Stringy Floppy wafer, and disk. The instructions for the latter are given for single- and multiple-drive users. You may use as your system disk any one of NEWDOS 2.1, NEWDOS/80 v. 1.0 or v. 2.0, TRSDOS 2.3 for Model I; or NEWDOS/80 v. 2.0, TRSDOS 1.2 or 1.3 for Model III.

### TEXT ENTRY

When you have loaded any of the above media with a working copy that you will have created, the Electric Pencil "billboard" appears, and any keystroke will immediately place you in text-entry mode. The billboard mentioned is clever — a large graphic pencil with "Electric Pencil" on the side of the pencil, and a "flashing" point — no mistaking this program for another!

From this point on (couldn't resist that!), you can type your material, and you also have access to all the editing, utility, and special purpose functions. The keyboard editing functions (and access to others), is accomplished by the simple pressing of a "control key" and one other key, simultaneously. If a special control key has not been installed, then the key for control will be the "CLEAR" key on the Model I and III. In commercial word processing equipment, and dedicated devices, special additional keys are provided for various functions that are used frequently, such as "delete" and "insert." In microcomputers, probably never originally conceived as becoming sophisticated word processors, combinations of keys, pressed simultaneously or in sequence following a control key touch, substitute for this. The less multiple keys or controls to remember and to press, the better. And Electric Pencil has attempted to keep such actions to an absolute minimum — the two-key requirement is good to have. On the other hand, a touch-typist will find some of these key combinations awkward, delaying and disconcerting. For example, to gain access to the Print Menu (which will be described fully later), the typist must press the control key (we'll assume it's the CLEAR key), and the "P" key — together. Touch-typists will know that they use their "pinkie" for both P and CLEAR, therefore, a compromise of some type is required on their part — using different fingers than normally. Some of the other awkward key actions involve the Y, T, O, and back-arrow.

When in the text entry mode, complete and logical control of the flashing cursor is possible. Incidentally, the "flash" of the cursor is a little too rapid, amounting to a "flickering" of the rectangle. The word "logical" was applied above because all arrow keys are used to control the movement of the cursor

(they also have some other functions, to be mentioned later). But if the up-arrow (alone — no control needed here), is pressed, the cursor moves up, without being sidetracked if it encounters on its journey a previous line or paragraph. The same applies to the down-arrow, and the right- and left-arrows move in those directions, but will drop to the beginning of the next line or move up to the end of the previous line respectively, as the cursor "scans" the copy.

Scrolling of the screen text either up or down can be done if there are more than 16 lines of text. Also, the scrolling speed is adjustable while scrolling, by typing a number from 1 to 5. The fastest speed is 1 and the slowest 5. Pressing the Space Bar will stop the scroll, and continued pressing will scroll one line for each press of the bar. ENTER will resume the scroll and BREAK aborts the scroll at the current position.

When in the text entry mode, the ENTER key is only used to terminate a paragraph, or to otherwise insert a break in the text. This key is used alone, and displays (but will not later print), a small left-pointing arrow symbol. Further spacing may also be done with this key, and it would be used if you were making short display-type sentences, for instance. In this situation, the cursor moves down to the line beginning and skips one line.

There are many other screen editing functions available while still in the entry mode, allowing a great deal of flexibility of copy layout "on-screen." For example, "Shift Down-Arrow" generates a Form Feed. Suppose you have entered a half-page of copy, which ends a chapter in the document you are preparing. You want to start an entirely new page. The above combination inserts a down-arrow symbol on the Model I

screen, and a diamond symbol on the Model III. When the symbol is reached during printing, the Form-Feed command occurs and the paper is moved up to the top of the next sheet.

Underline is another Special function that may be used, by combining Control and O. So-called "hard space" characters can be inserted within text. A hard space character will prevent Electric Pencil from adding spaces between words when printing justified text. This insures that the spacing will be as you desire in such a line, and is particularly valuable on special display layouts, or in situations where a single word might be desired at the extreme right of your printed format, which would not normally appear on the screen. The character for hard space appears on the video as the lower two pixels of a graphics block. Another Special is the concatenate character, which permits screen information that might otherwise be broken when printed, to be printed as a continuous line. The character is inserted at the break in the copy, thus providing that spaces between the insertion will be deleted. It appears as a symbol comprising the two top and two bottom pixels of a graphics block.

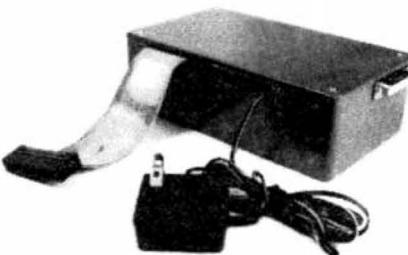
Any time that the user may wish to break a function, whether in text entry or any other mode, the BREAK key is used. What is so unusual about that, you might ask? Well, some word processing programs make it difficult to Break — but Electric Pencil has apparently recognized this problem, and in addition, a Break does not put you back into DOS READY, in which case you might easily lose your text, but instead you return to the point from where you came. But if you accidentally exit to DOS, there are easy recovery procedures so that you can return to your text position. These

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- 4) Allow line feeds
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  - b) Turn off RTS,
  - c) Receive data only from terminal,
  - d) Receive data only from host,
  - e) Send data only to host,
  - f) Send data only to terminal,
  - g) Operate in dumb terminal mode,
  - h) Operate in ST80™ mode,
  - i) Check CTS status. (clear to send)

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instructions are for both Stringy Floppy and disk operation.

As mentioned, keyboard editing functions operate directly while in the text mode. That is, the Control key and one other permit several functions. Typically, we may delete a character by placing the cursor on the character and pressing the Control and D simultaneously. The character disappears and the text moves one position to the left. Because all keys in Electric Pencil are repeating keys, holding the above key positions will result in a continuous "eating" of the characters and spaces and continuous movement to the left of the text (reminds one of a popular arcade game action!). Deleting a line is done similarly, with a different Control and key combination, and the whole line, no matter where the cursor is on the line, will be deleted. The next line moves up to the vacated spot, and of course, the same continuous removal will occur if the keys remain pressed. Should you wish to delete only the text from the cursor to the end of the line, this too may be done. Here, the next line does not move up to the vacated area.

Insertions of character or line are performed similarly. However, the "insert mode" enlarges the cursor vertically, and anything typed moves any material at the right of the cursor to the right as the letters are typed. It should be mentioned that normally Electric Pencil entry is in an overwrite mode, i.e., if the letters are typed while the cursor is over existing text, the text will be replaced by what is being typed. Therefore, the Insert Mode allows additional material to be added without loss of the material already within the text. To exit the Insert Mode, the same Control and key are pressed. Either I or F may be used as the letter key. F may be a concession to touch-typists (see previous remarks), but I (for Irisert), is easier to remember. Although insertions of more than a letter or word may be used as described, it is better to use another Control and key for text of line length or longer. This will immediately open a line space, which greatly assists visual observation of what is being typed. Also, when this mode is active, an open line will continue to be below the text entry line until an exit is made from the Insert Mode.

Electric Pencil also supports Block deletions, insertions, and movements. Blocks are marked, beginning and end, by using Shift Up-Arrow; then, by controlled key use a block of marked text may be deleted. If required, it may be moved by placing the cursor in the position you want the block to be located, and then, as quickly as the Control and key are pressed — the Block is there! Block insertion is also possible. Blocks may be repeated by continuous insertion using the Repeat function.

I would like to mention the almost phenomenal speed of Electric Pencil. The program is in machine language, which of course accounts for this speed; nevertheless, the actual happenings must be seen to be appreciated — they occur in less time than the blink of an eye — no doubt there are some efficient routines at work here as well.

## SYSTEM FUNCTIONS

Electric Pencil offers system functions within the program, and you may gain access to these functions (and return), from the input mode. Pressing the correct Control and key instantly displays the System Menu of the many commands and controls that may be performed while in the System mode. None of this requires the use of the Control key; the standard keys called for is all that is required of the user. As an example,

one function is the ability to change the speed of cursor movement when it is controlled by one of the arrow keys. By default, this is set at 5, with the control range being 1 to 10. Perhaps you find that 5 is too slow for your liking and would like to try 8. On the menus displayed, the word "Command?" awaits your input. You enter "C8" and the statement on the menu "CUR = 5" instantly changes to "CUR = 8" which indicates the cursor speed is now at 8. You may then continue with other system commands or return to text entry by pressing BREAK. Nothing could be simpler, and, by the way, you do not need to follow the manual for guidance in this, or for that matter, for any of the special functions — all instructions appear on screen within the menu display.

There are many other system actions or reports available; too many to list or describe here. Sufficient to say there are a total of 21, and include such capabilities as Disk Directory (of Electric Pencil files or all files — your choice), Select Tape Speed, Save or Load (any media), Display number of words used (note, words — not characters), Free Memory, Kill Disk File, and others. Being able to Kill a disk file is a boon when you suddenly find you are out of space on a disk, because then you can handily kill some non-important file and carry on.

Disk users may configure their own cursor movement speed and tape baud rate default values, and prepare a custom print driver that will become part of Electric Pencil loading and initialization. This is done using a System command not on the menu, called SETUP. The establishment of Print Values for printing is discussed in the following, which is another menu within Electric Pencil called Print Menu. Except for the contents, this menu layout is the same as the System Menu, and, as with the latter, you may go to and from text entry to the Print Menu, change various printing parameters, and return.

The amount of control in the Print Menu is comprehensive and it is somewhat amazing that so much can be done so easily (which is something that I noted throughout all Electric Pencil). The menu shows 20 items on it, together with their default values. If your needs are consistent, it would help to set your values once and have them automatically included with the Electric Pencil start-up. However, you might also have a dummy page layout with differences coded on the sheet so that you could quickly change values via the Print Menu as required for any particular document. A two-letter and numerals entry will set Right Justify, Left Margin, Line Length (up to 255 characters — that's a big printer!), Line Spacing, Page Length, Page Spacing, Print Records, Page Number (to 65536 pages — that's a big document!), Halt on Formfeed, Baud setting, Nulls, UART functions, Stop bits, and Linefeed and Carriage Return off-on. Some of the higher values are cause for the exclamations — but nevertheless it is possible to effect them. Print Format commands are mnemonic, which helps considerably when recalling them. Typically, RJ means Right Justify, PN means Set Starting Page Number, etc.

Three hardware printer interfaces are supported by Electric Pencil: the standard "Centronics-compatible," the RS232-C serial, and the Small Systems Software TRS-232. The last-named is a hardware-software unit that will operate from the TRS-80 cassette port. In the event you are feeding single sheets, the Halt command will stop the printer at the end of each page, when printing. The serial baud rate may be set at any of the standard values between 110 and 9600.

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Before printing, instructions may be inserted that permit pages to be titled repetitively, and pages to be numbered successively. Also, if a printer is capable of doing so, underlines may be initiated. It will appear to be unusual, but when the control and key combination are used for this, the underline appears as an "overline," but will print correctly as an underline. The underline may be continuous under words and spaces, or just under words, as you wish. Underlining justified text may be done, but it appears to be a complex procedure, and the manual text admits as much.

## UTILITY FUNCTIONS

Certain useful Utility functions may be performed with Electric Pencil, directly from text input. For example, you may make a search for a word or words by going into the String Search mode. As soon as this is done, the screen clears and the statement SEARCH FOR: appears. When you enter the string you are looking for, the screen displays REPLACE WITH:. If you want to replace your word you will enter it, and then will be given the opportunity to enter the number of times it is to be replaced. Of course, if you answer the replacement statement with just an ENTER, a search only will be conducted, with the cursor appearing over the first character of the first occurrence of the string. This will also be the top line on the screen.

There is a great deal of flexibility in this search utility. A string may be as long as 38 characters, and you may step from each occurrence onward until it may no longer be found, when the statement "Cannot locate "<string>" appears. As might be expected, searches go forward from the current cursor position, so it is important to place the cursor in the correct position in the text. The number of times a string may be replaced seems ridiculously high, but there it is: 65535. Entering some high figure, though, will insure that all occurrences are covered.

A related utility is a "coded" string search, wherein certain so-described "wild card" characters may be included in the search. This allows the preparation of selected mailing lists possibly, expiration dates on subscriptions, upcoming service dates on equipment maintenance, and so forth. A utility such as this is valuable simply because of its manifold possible uses.

It is unusual to find that you may also search for the occurrence of special characters, such as the Form Feed. This is possible with Electric Pencil, and it is controlled by a special two-key combination. Also, although searching and search-and-replace are reasonably ordinary functions for word processing, you may also search-and-delete — by replying to the "Replace With:" statement with a null (nothing) character, which results from a Control Back-arrow combination.

One more utility of value before we go on — the Repeat function. With it, you may delete by number of characters (delete eight characters, for instance), repeat any character any number of times ("Repeat \* 48 Times"), and (this was mentioned), repeat a block of text n times.

There are several Special Purpose functions too, within Electric Pencil. Upper or lower case Lock is one, but of course it would be a poor word processor without this these days. There is another, however, that I have not seen elsewhere; this is what is identified as "Dict-a-matic," whereby cassette tapes dictated earlier may be stopped and started while using

Electric Pencil. Shift-Enter on/off does the trick — which may not be as effective as a foot-control switch, but is undoubtedly useful. Audio output is via the cassette player. I did not have an opportunity to check this out, but admit that it is a distinctly unique feature. Because there is always a small amount of "run-on" and start-stop lag with cassette recorders, I wonder if this might be a little tricky in copying dictation if stops were not made at suitable pauses in the dictation?

## OPERATING MANUAL

Regular readers of this column are probably well aware of my feelings toward the documentation that accompanies programs. Inadequate documentation can render a program virtually useless. Good documentation can enhance an already good program, and improve a mediocre one just by making it appear better than it is. Electric Pencil is an excellent program, and the documentation is good, especially as an expository text — so the user wins both ways.

Every function and operation of Electric Pencil is described, explained and illustrated with excellent examples throughout the manual. The screen simulations are outstanding, and they appear to be more explicit and clear than photographs (from which I suspect they have been derived). Drawings of what the screen displays, versus all material in a file are the best visual description I have ever seen illustrated. This somewhat mysterious phenomenon is clearly visualized. Someone was really thinking when they created this drawing.

In addition, there is a chapter on "Special Techniques, Tricks, and Tips," which has great educational value to neophyte computer owners. It describes how to use Electric Pencil in writing BASIC programs (for disk systems), using Electric Pencil on VisiCalc files, and there is a light dialog between some fictitious computer components that describes very subtly just how a printer is set for characters-per-inch before printing.

An additional chapter that does not have any direct (but certainly an indirect) relationship to Electric Pencil, is titled "Good Computer Practices," and contains many useful hints on handling disks, and making backup disks. Four pages of Electric Pencil Error Messages are listed, with complete explanations for each message. A seven-page Glossary covering far more than Electric Pencil applications, and including slang computer terms is going to prove valuable to any reader, even a learned one.

Another Appendix provides full instructions on the preparation of Print Drivers, for all media. And it looks like the producers of Electric Pencil are ready to help the user. A special "Service Difficulty Report" is provided to help you if you run into operational or mechanical problems with Electric Pencil. The last page of the manual has a double-sided page described as a "card" — a Quick Reference Guide of all Electric Pencil commands, together with a page number reference to the text. It would have been more acceptable if this were really on a removable or loose cardstock material — this would be far more useful.

Notwithstanding the technical excellence of the manual, there are deficiencies. There are many misspelled words and syntax errors, and some of the spelling errors are quite surprising for what would appear to be a first-class manual —

preceding, english, waffer, processer, occurance. There is a monotonous repetition of solicitations throughout the manual for the sale of Harvey Pennington's disk mysteries book. Some sections of the manual have obviously been written by Mr. Pennington — his first-person style, complete with gratuitous expletives is evident. I do not know what type of market the producers of this program are seeking, but I feel that neither a technical manual nor a business guide benefits from this writing approach. Otherwise, the manual is written in good, informal, technical manual style.

The production of the manual is excellent. It has been produced using Electric Pencil naturally, using a TRS-80 Model I with 48K RAM, four disk drives, and an NEC printer. Printing is by offset press. The manual comprises 123 pages on 8-1/2 by 11 inch good quality 20-pound paper, and is Perfect bound (glued spine), and has an attractive full-color wrap-around cover. (Descriptive material on the back cover has the same errors as in the manual.) But for the many errors in this manual it would rate a 10. As it is, it gets an 8.

## SUMMARY

Is Electric Pencil the ultimate word processing program? No — but it is an extremely good one — offering speed and many, many features that everyone can use effectively and easily. What does it not have? A few functions come to mind, and there may be others: you cannot, at a keystroke, delete a word or sentence *per se*. Also, you cannot exchange words, sentences or blocks (at a keystroke, remember). It is not possible to change the video presentation to different column widths, and, in the same sense, "windowing" is not possible (or necessary, here). You must save a file from the cursor position onward, otherwise what precedes will not be saved. No special print layouts are possible by using a short entry, and this includes centering of text material. In the same sense, this program does not support special printer capabilities by using commands. Clearly, however, the deficiencies are few and the operating difficulties minimal for most users.

A point of interest for anyone considering getting a word processing program: be as sure as you can that the word processor that you purchase is one that you will be satisfied to remain with for all of your possible needs. You will benefit in the long run by becoming more and more proficient with one word processor instead of being confused by different commands when attempting to work with more than one. And you will actually enjoy working with a program that you can operate efficiently and comfortably. Electric Pencil is an easy one to learn quickly, and it follows that it will be enjoyable as well as useful. Welcome back, Electric Pencil!

Electric Pencil v. 2.0z — IJG Incorporated, Upland, California Available through various dealers, including H & E Computronics. Model I, Model III: \$79.95 Disk, \$69.95 tape.

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# PROGRAM CONVERSION (PART VI)

Richard Kaplan

This month I will cover some of the more obscure points to consider when converting a BASIC program between the Models I, II, and III. These include operating system functions, memory size limitations, and upper/lower case confusion. First, however, I have one correction.

## CORRECTION

In my discussion of variable record length files in April, I neglected to include a necessary initialization procedure for the Model III. When prompted for "How many files?," if you wish to use variable record length files it is necessary to include a V at the end of your response. For example:

How many files? 3V (ENTER)

The "V" notation is necessitated by TRSDOS. (In fact, it is not necessary on DOSPLUS. It is required on NEWDOS/80.) Using a "V" when you do not plan to use this file structure, however, will waste memory, since a larger file buffer must be allocated.

As an aside, I should point out that on the Model II if you wish to use any files, it is necessary to specify this when you enter BASIC. If you do not, the default number of files is zero, and therefore you will receive an error if you attempt to open any files. To allocate 3 file buffers, for example, you enter:

BASIC-F:3 (ENTER)

Note that on the Model II it is not necessary to use the "V" notation.

## SWAP

A very useful but uncommonly used statement in Model II BASIC is SWAP. SWAP is used to exchange the values of two variables. While this may not seem to be worthy of inclusion in BASIC-80 for the Model II, SWAP is very useful for performing a sorting operation, which always involves innumerable exchanges of variables. SWAP functions faster than the three statements which would otherwise be required to perform a "constructed" SWAP. In addition, it is easier to read and comprehend a program written with SWAP statements than one with dozens of assignment statements. SWAP can be very easily simulated on the Model I or Model III. (In fact, the foregoing technique is applicable to virtually any microcomputer running with BASIC.) A SWAP statement generally takes the form OF "SWAP A,B" or "SWAP A\$,B\$". An equivalent set of statements for a computer without SWAP would be "T=A:A=B:B=T" or "T\$=A\$:A\$=B\$:B\$=T\$".

## ERASE

ERASE is another statement found only on the Model II. This command literally erases an array from memory, thus conserving valuable storage. Let's say, for example, that you dimension array A\$ for 500 elements and you read in a list of names to be sorted. Once the sorting is complete, you may not need this array, but a lot of memory has been allocated for this array which could be used in a more productive manner. The command ERASE A\$ would remove A\$ from

BASIC's "list" of active variables.

Unfortunately, ERASE does not exist in Model I or Model III BASIC, and it is extremely difficult, if not impossible, to simulate. *Basic Faster and Better* (published by IJG, Incorporated), describes a method to POKE memory locations and manually ERASE an array. If it is imperative that you conserve memory, it would be a good idea to purchase this book and read about this technique. Usually, however, it is possible to ignore the ERASE statement, since the Models I and III have much more available memory than the Model II.

## MEMORY SIZE

Speaking of available memory, I should discuss another stumbling block in converting programs, and one which may seem somewhat amusing. The Models I and III each have a maximum memory size of 48K, whereas the Model II has a maximum size of 64K. Therefore, it would be quite logical to assume the Model II has significantly more memory available for a program than either of the other two computers. Right? Wrong. Believe it or not, the Model II actually has about 5K less memory available than do the other computers.

A computer's RAM specifications do not always tell the complete story of available memory. Usable RAM may be quite different from existing RAM. The Models I and III each have approximately 38K of usable RAM. The extra 10K is used to hold BASIC and portions of TRSDOS. (Please note that these memory size figures refer to a disk system only. Model I and Model III cassette systems have more usable RAM. A Model II cassette system is not available). On the Model II, after accounting for TRSDOS and BASIC, only 33K (approximately) remains. This figure may be slightly higher or lower, depending upon the number of files in use.

When converting a program to the Model II, if you must reduce its memory capacity the first step is to remove all comments and spaces from the program. If this does not work, it is necessary to break apart the program into individual modules.

CP/M users on a Model II will find that they are faced with even more stringent memory limitations. Although available memory will vary depending upon the version of CP/M and BASIC in use, most typical CP/M configurations will provide between 26K and 30K of usable memory. To compound this difficulty, the newest version of Microsoft BASIC (MBASIC 5.21), which is rapidly becoming THE industry standard for BASIC programming under CP/M, will not allow spaces to be omitted from a program. In other words, a space is required between every BASIC keyword. The difficulty this causes is that it is more difficult to compress a program.

If you intend to develop a program on the Model II under CP/M and then later run the program on another computer with CP/M and MBASIC, the situation is grimmer. (Software houses, such as H & E Computronics, frequently develop software in this manner. In addition, many businesses own several computers, each with CP/M and MBASIC). The majority of CP/M configurations with MBASIC allow only 22K of memory. Some have as little as 20K.

The bottom line seems to be that if you are writing a program and may at some later point wish to convert it to some other machine, you should play it safe and keep memory requirements to a minimum. The exact memory requirements for systems vary, but virtually any machine available will have at least 20K. Most will have 22K, and some will have 26K or even 30K. Keep in mind, however, that this figure reflects the combined total of program size and string space (memory used to store your variables). An efficient use of ERASE statements (which are available on the Model II and CP/M) may be a lifesaver when it comes to reducing memory requirements.

### PRINT USING - % vs. \

Perhaps the most obscure (and unnecessary, from a software point of view) difference between the Model II TRS-80 and the Models I and III is the character used within a PRINT USING statement to denote a string.

On the Models I and III, the statement PRINT USING "% %";"THIS IS A TEST" would print the characters in quotes, but it would be truncated to the number of spaces between the percentage signs (including the actual signs). In other words, the command PRINT USING "% %";"ABCDEFG" would print only the first three letters of the alphabet, i.e. one letter for each of the %'s and one letter for the space in between the percentage signs.

On the Model II, the \ is used instead of %. (The \ is typed by holding down the CONTROL key and pressing the 9 key at the same time.) \ and % have exactly the same function within a PRINT USING statement.

CTRL 9 is, more or less, the "standard" string delimiter from within a PRINT USING statement. MBASIC running under CP/M, for example, uses this notation. Since the Models I and III do not have control keys, Tandy most likely chose to use a character which is on the keyboard. (Control characters on the Models I and III can be generated only by pressing the SHIFT and DOWN ARROW keys at the same time, as well as the desired control character. This can be quite an inconvenience).

### MOD

MOD is an arithmetic function found only on the Model II. As with SWAP, this function is useful, but it can very easily be duplicated on a computer without this function, such as the Model I or Model III.

MOD signifies the integer remainder when a division operation is performed. An elementary school student learning division would learn that 5 divided by 3 is one remainder 2. Thus, 5 MOD 3 equals 2. In a similar fashion, one could derive that 103 MOD 25 equals 3.

The MOD function on the Model takes the form A MOD B. Its equivalent on the Model I or Model III would be A - INT(A/B) \* B. Thus, the equivalent of 103 MOD 25, as in our previous example, would be 103 - INT(103/25) \* 25, which, as stated above, simplifies to 3.

MOD does not save a significant portion of execution time. It does make code using this function a bit easier to read, but this, I believe, is far outweighed by the incompatibility it causes. Since it is extremely easy to "construct" a MOD function which will work on virtually any version of BASIC, I would strongly advise against using this function unless you are absolutely certain that you will run your program on the Model II only and that you will never have a need to convert it to another "dialect" of BASIC.

### SYSTEM vs. CMD

SYSTEM is the command used on the Model II to exit BASIC and re-enter TRSDOS. On the Model I or Model III, the equivalent command is CMD"S".

SYSTEM and CMD may also be used to execute various TRSDOS functions directly from BASIC. Many of these functions have no equivalents on other TRS-80's. Some, though, do have direct equivalents.

### SYSTEM "I"

I (Just the letter "I") is a command from Model II TRSDOS

continued on page 41

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# PRACTICAL BUSINESS PROGRAMS

## Real Estate Depreciation under the 1981+ Rules

### S. M. Zimmerman, Ph.D. and L. M. Conrad

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Until 1981 there were three traditional methods of depreciation: straight line, sum of the years digits, and declining balance. In 1981 a table look up procedure was added for both personal property and real property. This article and program is about the new method of depreciation as applied to real property.

Real property may be depreciated using straight line or by use of tables which approximate 1.75 declining balance with a 15 year life for most property, or a second table which approximates 2.00 declining, also with a 15 year life for some special classes of property. In all cases an allocation procedure which allocates expenses to the nearest month must be used. The procedure is not quite the rounded off value of what would have been allocated using the equations. We tried various methods of using the equations but could not come up with one which would give a perfect fit.

In the past, depreciation started with the cost of an asset and was reduced to some salvage value. The asset may now be depreciated to zero salvage value. There are a number of rules the investor must consider relative to assets sold before their 15 year life has been completed. Such considerations are beyond our interest. We are interested in the depreciation procedure for real assets only.

### THE NEW TABLES

There is some possibility the Internal Revenue Service will allow the use of the declining balance equations for depreciation purposes in some manner. We have contacted them relative to this possibility but have not received any reply yet. Until we do the only acceptable method, as far as the individuals we spoke with in the IRS, is the table look up approach upon which our program is based.

The Accelerated Cost Recovery System percentages for Real Estate except Low-Income Housing follows:

Recovery Year	The applicable percentage is (Using the month in the first year property is placed in service):											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	12	11	10	9	8	7	6	5	4	3	2	1
2	10	10	11	11	11	11	11	11	11	11	11	12
3	9	9	9	9	10	10	10	10	10	10	10	10
4	8	8	8	8	8	9	9	9	9	9	9	9
5	7	7	7	7	7	8	8	8	8	8	8	8
6	6	6	6	7	7	7	7	7	7	7	7	7
7	6	6	6	6	6	6	6	6	6	6	6	6
8	6	6	6	6	6	5	6	6	6	6	6	6
9	6	6	6	5	6	5	5	5	6	6	6	6
10	5	6	5	5	5	5	5	5	5	6	5	5
11	5	5	5	5	5	5	5	5	5	5	5	5
12	5	5	5	5	5	5	5	5	5	5	5	5
13	5	5	5	5	5	5	5	5	5	5	5	5
14	5	5	5	5	5	5	5	5	5	5	5	5
15	5	5	5	5	5	5	5	5	5	5	5	5
16	..	..	1	1	2	2	3	3	4	4	4	5

The Accelerated Cost Recovery System percentages for Low-Income Housing follows:

Recovery Year	The applicable percentage is (Using the month in the first year property is placed in service):											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	13	12	11	10	9	8	7	6	4	3	2	1
2	12	12	12	12	12	12	12	13	13	13	13	13
3	10	10	10	10	11	11	11	11	11	11	11	11
4	9	9	9	9	9	9	9	9	10	10	10	10
5	8	8	8	8	8	8	8	8	8	8	8	9
6	7	7	7	7	7	7	7	7	7	7	7	7
7	6	6	6	6	6	6	6	6	6	6	6	6
8	5	5	5	5	5	5	5	5	5	5	5	6
9	5	5	5	5	5	5	5	5	5	5	5	5
10	5	5	5	5	5	5	5	5	5	5	5	5
11	4	5	5	5	5	5	5	5	5	5	5	5
12	4	4	4	5	4	5	5	5	5	5	5	5
13	4	4	4	4	4	4	5	4	5	5	5	5
14	4	4	4	4	4	4	4	4	4	4	4	4
15	4	4	4	4	4	4	4	4	4	4	4	4
16	..	..	1	1	2	2	2	3	3	3	3	4

The above tables are reproduced number for number in our program.

### RUNNING THE PROGRAM

RUN 1000 should be the first thing executed. This instruction is designed to check that all depreciation values add up to 100%. It is a method of checking if the input data is correct. RUN 1000 will cause lines 1000 through 1030 to be executed. These lines are needed for no other reason than data checking. If you do not wish to check the data you may leave these lines off.

The program starts with the following on the screen:

```
1981 DEPRECIATION RULES
REAL ESTATE
STEVEN M. ZIMMERMAN, PH.D. &
LEO M. CONRAD
```

HARD COPY (Y/N) ?

Most runs of 15 or 16 years are best produced on a printer. We start with the question relative to what method of output to be used. Assume you answer the above with a Y. The next thing on the screen will be:

FIRST COST?

This refers to the amount of dollars to be depreciated. For our sample run we used 100.

The next question is:

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YEAR (19XX)?

An answer including the 19 is needed due to the manner in which we wrote the program. If the number inputted is not greater than 1981 the computer will not allow you to continue. Input 1982 and hit ENTER.

The next question is:

LIFE OF ASSET 15 YEARS ONLY

MONTH PURCHASED 1, 2, . . . 12?

The 1981 law limits the life of a real estate asset to 15 years when this method of depreciation is being used. There are no options. It also requires you allocate the costs on a month by month basis, depending on the month in which the asset is purchased. Only if the asset is purchased in January for those on a regular tax year may the full yearly depreciation may be taken.

We will assume the asset was purchased in February (Second month in tax year) for our sample run. Type 2 and hit ENTER as the answer to the above question.

The next question is:

LOW-INCOME HOUSING (Y/N)?

There are two sets of tables. The first is for everything except low income housing, and the second is for low income housing only. Both sets of tables are in the program. Assume the asset under consideration is not low income housing. Type N and hit ENTER.

The next thing you will see is:

YEAR	DEPRECIATION	BOOK VALUE
TITLE, DATE, OPERATOR?		

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The title, date, operator question only appears when hard copy is called for. Since we specified such we must answer the question. Input SAMPLE RUN, 01/06/82, LEO and hit the ENTER key.

The computer will now go to work and produce the following results:

SAMPLE RUN

01/06/82

LEO

COST: \$ 100.

MONTH 2

YEAR	DEPRECIATION	BOOK VALUE
1982	11.00	89.00
1983	10.00	79.00
1984	9.00	70.00
1985	8.00	62.00
1986	7.00	55.00
1987	6.00	49.00
1988	6.00	43.00
1989	6.00	37.00
1990	6.00	31.00
1991	6.00	25.00
1992	5.00	20.00
1993	5.00	15.00
1994	5.00	10.00
1995	5.00	5.00
1996	5.00	0.00
1997	0.00	0.00

continued on page 46

# COLOR COMPUTER CORNER

Joseph Rosenman

## This Month: Videotex and Compuserve

This month: a review and discussion of the Radio Shack Videotex program, and the Compuserve network. Radio Shack makes this package available for the TRS-80 Models 1, 2, and 3 as well as for the Color Computer. (They even produce a version for the Apple 2!) While visiting a Radio Shack store, you might have noticed a Color Computer "look-alike", known as the Videotex terminal. The Videotex terminal is a Color Computer body (including the 6809 processor), without the ability to grow or perform other functions. In place of the BASIC ROM, the Videotex terminal has a ROM containing the Videotex program. As soon as you power on, you are in Videotex and are ready to dial up Compuserve (or any other computer network). Videotex terminals are available in either 4K or 16K versions. I don't think they permit cassettes (and I'm pretty sure they don't allow disks). If all you ever plan to do on your computer is time share off of Compuserve, then perhaps the Videotex terminal is a good choice (it even includes its own modem). Consider, though, all of the things you've done all ready on your Color Computer. In coming issues, I plan to review Radio Shack's Scripsit, Visicalc, EDTASM, and many other programs for the Color Computer. Personally, I think that the Color Computer is a far better choice, given the flexibility and growth potential.

When you buy the Videotex package, you get two things: (1) the Vidtex program (a terminal communications program), and (2) a "starting" account on the Compuserve network. I "logged on" (dialed the computer and talked to it with my TRS-80) to Compuserve with both my Model 1 and my Color Computer (I used the Smart Terminal program by Howe Software on the Model 1). Let me make one thing clear from the outset: Smart Terminal is a professional and highly versatile communications package for the Model 1 (and the Models 2 and 3). Vidtex is a functional communications program: it works. Nothing fancy or versatile. Radio Shack claims that Vidtex is a "Smart Terminal" package. They do mention how you might save text prior to "logging on". Unfortunately, they fail to mention how to send it to the host computer (in all fairness, I'm sure that it can be done). The Videotex documentation consists of two pages. If you think that two pages is rather skimpy, well, I agree with you. I wouldn't call this a "smart" terminal package.

How does Vidtex work? It is read off of the cassette tape, and executed. You type the BREAK key (which now produces a Control-C), dial the computer, then answer the various logon questions (see the section on Compuserve below). Is it easy to use? Yes, just make sure that you have all of the information in front of you (and in order) BEFORE you start.

Compuserve is the computer network that you will "connect to". This means that you (and many other users) will be talking to a large "host" computer (I believe it is a group of Digital Equipment Corporation PDP-11 minicomputers). When you buy the Radio Shack Videotex package, you get an account number, a password, and 1 free hour of

time on Compuserve. If you want additional time (on an ongoing basis), you must open an account. This can be done directly on Compuserve. Usually, accounts are set up so your monthly bill will be charged to your Visa or Master Charge credit cards (no additional charge). If you want a direct bill, however, there is a \$3.00 service charge. Normal rates for Compuserve are \$5.00 an hour (charged by the minute). This does not include the "prime time hours" of 8:00 AM to 6:00 PM (You could open a special account for these hours, at a cost of \$22.50 an hour, or \$35.00 an hour at 1200 Baud). When you decide to open an account, you get an additional two free hours! For those interested in hardware, the technical specifications for the communication link is: 300 Baud, Even Parity, 7 bit words, 1 stop bit. 1200 Baud is available at an increased cost (1200 baud is about four times the speed of 300 baud). To use this package, you must have (in addition to the computer) a cassette recorder, a modem, and a telephone.

Compuserve can be called up locally in most metropolitan areas. Your local Radio Shack store will be able to supply you with telephone numbers. In addition, Compuserve provides a toll free 800 number for technical assistance. After you have succeeded in logging on, you will be offered a menu. By selecting a choice from the menu, you will probably be offered a sub-menu. (This type of structure is known as a "tree", since it resembles an upside down tree going from one trunk to many branches.) There are many different levels to this "menu tree". Compuserve is generally helpful in its error handling. When you make a mistake, it simply tells you so and awaits your next command. At any time, you can request some help (with the Help command, of course). You can also enter a "command" (like Help) at any prompt.

Compuserve allows you to select a "terminal type" to use with your specific equipment (I used one type with my TRS-80 Color Computer, and another type with my TRS-80 Model 1). For example, the first menu is:

- Choose one of the following:
  - 0 Explanation of Terminal types
  - 1 Videotex Compatible
  - 2 TRS-80 with MNEXEC
  - 3 Teleray 1061
  - 4 Other

You may override your default when you LOGIN by appending 00;TTY to our USER ID.

### Key Digit:

After this selection, you get about a page of introductory text. Compuserve information service includes: Newspapers, Home services, Business and Financial services, Personal Computing services, and many variants of the above! Some newspapers supported by Compuserve include: *Columbus Dispatch*, *New York Times*, *The Washington Post*, *San Francisco Chronicle*, *Los Angeles Times*, *Minneapolis Star*



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Of special interest is the Computing Services, which include several newsletters: Atari Newsletters, RCA Newsletter, Tandy Newsletter, Microsoft Newsletter, and the Micro Advisor. Compuserve also includes a broad range of software support for its users. Programs and programming languages include:

- AID - Algebraic Interpretive Dialogue
- APL - A Programming Language
- BASIC - Beginner's All-purpose Symbolic Instruction Code (Did you know that this is what BASIC stood for?)
- BLIS10 - PDP-10 expression language.
- Various Cross Assemblers - (includes 8080, Z80, 6502, 1802, 6500, 6800, and 6809 processors).
- FOCAL - Fast on-line calculation language.
- MACRO - PDP-10 assembler language.
- PASCAL - (No Acronym!)
- SNOBOL - (I think there is some acronym; processes strings.)
- XF4 - Type of Fortran, or Formula Translation language.

Text editors include:

- BINED - Edits Binary data files.
- FILGE - File generator and editor.
- SOS - DEC text editor.
- TECO - High level text editor.
- XEDIT - XF4 binary file editor.

What else do you get from Compuserve? You get a certain amount of disk storage. You get 128K free as a Compuserve subscriber. If you need additional storage, the cost is steep: \$4.00 per week for every 64K. You can send printout to the Compuserve Lineprinter (in Ohio). Of course, there is an additional charge for printout (\$1.50 shipping, \$0.10 per page, minimum charge of \$3.50). Compuserve also offers additional services that include a special service charge (MicroQuote, QuickQuote, Value Line 2, Energy, and others). From what I can see, all extra charge services are clearly labeled as such. If you don't want to make use of them, you can easily avoid them (they are, after all, only extra services provided by Compuserve).

Do you want Electronic Mail? Compuserve can serve as a clearing house for electronic messages to other users. In fact, Radio Shack indicates that Compuserve is the best way to send articles, letters, or even small programs to the TRS-80 newsletter. (Of course, we all know how much nicer it is to see your program published in *Computronics!*).

In summary, Compuserve is an interesting and useful resource for all computer users. It adds a new dimension to

*continued on page 42*

# SOFTWARE REVIEWS

## LABLMAKR by ETS Center

### Reviewed by Joseph Rosenman

LABLMAKR is a utility program for the Epson MX-80 printer (with or without the GRAFTRAX option). It runs on a disk based TRS-80 Model 1 or Model 3 and is written in BASIC language. This program permits the collection and storage of "Labels", in any one of sixteen formats. These labels can then be printed on standard mailing labels (15/16 by 3.5 inches).

#### WHAT DOS CAN BE USED?

LABLMAKR is supplied on a DATA DISK. It creates a storage file on drive 0, which can grow to be as large as 35 granules. The manual recommends that you form a special dedicated diskette for this program. Instructions are given for the Model 1 (TRSDOS 2.3, NEWDOS 2.1, NEWODS80 ver 1.0, and NEWDOS80 ver 2.0), and the Model 3 (TRSDOS 1.3). Operating systems like DOSPLUS and LDOS aren't specifically mentioned, but I'm pretty sure that LABLMAKR will run under other operating systems. Most of the special implementation instructions given for each specific operating system involve the erasing of un-needed files, providing the maximum free space. My own preference is for systems that can run on a drive other than 0 (reserving drive 0 for a full operating system diskette). Nonetheless, the instructions provided are logical and clear.

#### WHAT ABOUT THE EPSON MX-80?

Of course, you will need one. LABLMAKR will run on an Epson MX-80 with or without the high resolution GRAFTRAX option, and with either the Epson printer cable or the TRS-80 printer cable. There are two versions of LABLMAKR provided on the diskette. One version is for a GRAFTRAX MX-80, and the other is for the standard MX-80. Both work in the same way, although the GRAFTRAX MX-80 version is faster. (ETS Center also mentions that certain bugs occasionally occurred with the standard version that have been eliminated in the GRAFTRAX version. The bug mentioned involved the double printing of a given line.)

The manual provides the proper dip switch settings for the Epson MX-80. Unfortunately, they didn't work on mine. Since there are four possible configurations, I suspect that there are four "standard" settings. My MX-80 uses the Epson cable, and has the GRAFTRAX option. My dip switch settings are:

- 1-1: Off (80 characters per line)
- 1-2: Off (CR adds a LF)
- 1-3: Off (Buffer Full causes Print plus LF)
- 1-4: Off (Normal print type, not italics)
- 1-5: Off (Normal print type, not emphasized)
- 1-6: On (Buzzer On)
- 1-7: On (Slashed Zero)
- 1-8: On (Select Fixed)

- 2-1: NC (Not used, setting doesn't matter)
- 2-2: NC (Not used)
- 2-3: Off (LF from computer)
- 2-4: Off (Normal mode, not TRS-80)

These settings are very different from those suggested in the manual. Frankly, I can't figure out what they are talking about! Switches 1-2 and 1-3 would be the ones affected by the use of the Epson printer cable versus the Radio Shack printer cable. The LABLMAKR program is, after all, just a BASIC program. I would use the same dip switch settings as I would normally use (just make sure that the printer is in Normal mode, not TRS-80 mode). If you are getting interested in this business about the GRAFTRAX option, good. I hope I've whetted your appetite! Next month I will write a full-blown review of the GRAFTRAX option.

#### WHAT KIND OF LABELS DOES IT PRINT?

There are four character sizes available:

- |                     |                                       |
|---------------------|---------------------------------------|
| (1) Jumbo size      | 13 characters per line, uses 2 lines. |
| (2) Extra Wide      | 14 characters per line, uses 1 line.  |
| (3) Double Wide     | 25 characters per line, uses 1 line.  |
| (4) Compressed size | 50 characters per line, uses 1 line.  |

These character types are combined into different formats (sixteen in all). One thing I don't understand is why the formats don't also include a "standard" characters per line type (with 36 characters per line). With that one reservation aside, the four available character sizes are combined into useful combinations.

#### HOW ARE THE LABELS COLLECTED, PRINTED, AND STORED?

The data file can store as many as 100 different labels. By creating separate diskettes, additional labels could be stored. Since the program allows you to specify the starting number, you could store a very large file over several diskettes (each diskette must be given a name). First, the program will prompt for a label type number. Once you have entered the type number, the program will prompt each line separately. The lines are entered under a "character length ruler" that is displayed for each line. The "ruler" will change for each line, depending on the character count and field size. As each line is entered, it is added to the sample label that is being displayed at the top of the TRS-80 screen. After the label is entered, you could change label type, or alter any particular line. The label could be printed or saved into the disk file (or both). Of course, the program will allow you to produce as many copies of the label as you desire.

The program will allow you to scan through the data file (either two at a time, or through a list). You can return to the

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### ★ Basic Programming ?

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as well as the process of Master disk generation. The manual also includes a section on centering the labels (with photo examples), and sample labels.

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Joseph Rosenman  
35-91 161 Street  
Flushing, New York 11358 ■

### PROGRAM CONVERSIONS

*continued from page 33*

to signify that you have switched a diskette in one of the drives. This is done because directories of every disk are kept in memory on the Model II, and the I command causes the directories to be re-read into memory. Not performing the I is not an "error", per se, on TRSDOS 2.0, but it is on earlier versions of TRSDOS, and it is still advisable to execute this command. Most TRSDOS (Model II) commands can be executed from BASIC by using the syntax SYSTEM "XXX", where XXX is the TRSDOS command. Thus, SYSTEM "I", for example, would indicate to TRSDOS that you have switched diskettes while in BASIC.

There is no equivalent for SYSTEM "I" for the Models I or III. This type of command is simply not needed. If you encounter a SYSTEM "I" in a Model II program which you are converting for the Model I or III, simply delete it.

Under CP/M, if you are in the actual operating system and you switch disks, you should hit CTRL C. This is known as a "warm boot". If you are running MBASIC under CP/M and you switch disks, you should execute the command RESET. RESET for MBASIC running under CP/M is exactly equivalent to SYSTEM "I" for BASIC-80 running under Model II TRSDOS. CMD "D", FILES, SYSTEM "DIR".

Frequently it is necessary to examine the directory of a disk from BASIC (usually while a BASIC program is executing). This can be performed on most computers, but the technique is different for virtually any computer. With the Model II, the command SYSTEM "DIR" would display a directory of drive 0 (the first drive). SYSTEM "DIR :1" would display a directory of the second drive, etc.

For a Model III, the statement CMD "D:0" would display a directory of drive 0. CMD "D:1" would display a directory of drive 1 (the second drive), etc.

It is not possible to display a disk directory directly from BASIC on a Model I under TRSDOS. With DOSPLUS and NEWDOS/80, however, the command would be CMD "DIR" for a directory of drive 0, CMD "DIR :1" for a directory of drive 1, etc. For MBASIC running under CP/M, the command FILES \*.\* would display a directory of the second drive. FILES C:.\* would display a directory of the third drive, etc.

## CMD "I"

CMD "I" is used to execute a Model III TRSDOS command from BASIC. It is quite similar to the Model II SYSTEM "XXX" command (described above). To run BACKUP from BASIC, for example, you would execute the command CMD "I","BACKUP". In general, the syntax is CMD "I","XXX", where XXX is the desired TRSDOS command. Any TRSDOS command may be executed from BASIC, but many commands erase your BASIC program and thus return to TRSDOS, not to BASIC.

A Model I with TRSDOS cannot execute TRSDOS command from BASIC. However, if you purchase DOSPLUS or NEWDOS/80, it is possible to execute DOS commands directly from BASIC. The syntax would then be CMD "XXX", where XXX is the desired command.

It is not possible, under most implementations of CP/M, to execute a CP/M command directly from MBASIC. It is necessary to either write a BASIC or machine-language utility to accomplish the desired result, or to type SYSTEM and perform the desired command directly from CP/M.

This concludes this month's tips on program conversion. Next month I will cover several more "obscure" and relatively unknown differences between the Models I, II, III. In the meantime, if you have any comments or suggestions, please write and let me know. I would appreciate any feedback you may have. Have you followed the techniques I described? Is there something you would like to see covered? Is there a specific program you cannot translate? If so, please write to Richard Kaplan, C/O H & E Computronics, 50 N. Pascack Rd., Spring Valley, NY 10977. ■

## COLOR COMPUTER CORNER

continued from page 39

personal computer use, that can certainly add to the versatility and enjoyment of your Color Computer.

By the way, I believe you can use the Videotex terminal program to access the various "free" networks around. If you read through Spencer Koenig's Beginners Corner this month, you will find some information about local networks and TRS-80 Users groups.

## A Program to Play Music

We have a program sent in by a reader this month. This program (for Extended BASIC) permits the playing of the notes in a major scale, in one of 5 octaves. The program is by:

Ernest Bontrager  
4125 Prescott St.  
Sarasota, FL 33582

```
10 CLS3:FOR X=10 TO 50:FOR Y=2 TO 16
20 SET(X,Y,8):NEXT Y:NEXT X
30 FOR P=1 TO 17:READ Z,X
40 SOUND Z,X:NEXT P
50 DATA 172,2, 193,2, 204,2
60 DATA 218,2, 218,1, 218,1
70 DATA 218,1, 218,1, 204,2
80 DATA 204,1, 204,1, 204,1
90 DATA 204,1, 193,2, 204,2
100 DATA 193,2, 176,8
110 FOR X=16 TO 46 STEP 4:SET(X,12,5):NEXT X
120 PRINT @ 104;" COMPUTER PIANO ";
130 PRINT @ 200, "A S D F G H J K";
140 FOR Q=201 TO 213 STEP 2:PRINT @ Q,CHR$(128);:NEXT Q
150 PRINT @ 326,"SELECT OCTAVE (1-5)";
160 A$=INKEY$:IF A$="% THEN 160
170 PRINT @ 389,"OCTAVE NOW PLAYING<;0$;>";
180 IF A$="1%" THEN 0$="1":GOTO 330
190 IF A$="2%" THEN 0$="2":GOTO 340
200 IF A$="3%" THEN 0$="3":GOTO 350
210 IF A$="4%" THEN 0$="4":GOTO 360
220 IF A$="5%" THEN 0$="5":GOTO 370
230 IF A$="A%" THEN PLAY "C":N$="C":GOTO 310
240 IF A$="S%" THEN PLAY "D":N$="D":GOTO 310
250 IF A$="D%" THEN PLAY "E":N$="E":GOTO 310
260 IF A$="F%" THEN PLAY "F":N$="F":GOTO 310
270 IF A$="G%" THEN PLAY "G":N$="G":GOTO 310
280 IF A$="H%" THEN PLAY "A":N$="A":GOTO 310
290 IF A$="J%" THEN PLAY "B":N$="B":GOTO 310
300 IF A$="K%" THEN PLAY "C":N$="C":GOTO 310
310 PRINT@450, "MUSICAL NOTE NOW PLAYING <;N$;>";
320 GOTO 160
330 PLAY"01L8":GOTO 160
340 PLAY"02L8":GOTO 160
350 PLAY"03L8":GOTO 160
360 PLAY"04L8":GOTO 160
370 PLAY"05L8":GOTO 160
380 END
```

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# ASSEMBLY LANGUAGE FOR BEGINNERS (PART 5)

Joseph Rosenman

Notice that the title of this article is no longer "Rank Beginners". If you have been plugging along with me, you are no longer a "Rank Beginner". You should have a pretty good idea of what's involved in the functioning of a computer. Now we will start to examine programming in assembly language.

The first step is to become acquainted with the Assembler. While there are various assemblers around, the one Radio Shack selected is the Microsoft Editor/Assembler (known as EDTASM). Why an Editor and an Assembler? The Editor section of the program allows you to construct programs, alter them, and save/retrieve them. EDTASM (as sold by Radio Shack) only allows cassette save/retrieve. The EDTASM supplied by Apparat with their NEWDOS80 operating system is an improved version that includes disk save/retrieve. In order to get the documentation that goes with EDTASM (and to insure that both Radio Shack and Microsoft receive the royalties due them), you must first purchase the EDTASM sold by Radio Shack. The NEWDOS80 version will then replace the Radio Shack program. Apparat only documents its additions to EDTASM. Over the course of this column, I will be presenting most of the sample programs for both the cassette and disk users. The only major differences will be in the use of the ORG statement, and in the way the file is saved. The first step that is in order, is to give some

guidelines to the use of EDTASM. Remember, however, that you will need the EDTASM manual for information on the details and subtleties of this language.

Each statement in EDTASM begins with a single letter command. The basic commands are:

- A Assemble the source code in the buffer.
- B Return to BASIC or DOS.
- D Delete a range of lines.
- E Edit a line of text (similar to the BASIC edit command).
- F Find a specified string of characters.
- H Print the text on the Printer (with line numbers).
- I Insert text at a specified line (and specified increment).
- L Load a source file (from disk or tape).
- N Renumber source lines in the text buffer.
- P Print (to the CRT) the specified lines of text.
- R Replace lines of text (like Insert, but replaced lines are deleted).
- T Type lines (like H except there are no line numbers).
- W Save a source file (to disk or tape).
- Up/down arrow Scroll text up or down.

Whenever a range is specified, it is with a colon (:). If you wanted to list lines 100 to 500, you would type P100:500.



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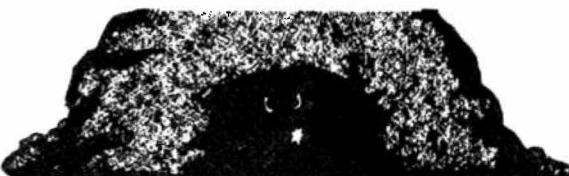
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The number sign (#) represents the first element, and the asterisk (\*) represents the last element. If you wanted to list the entire file (from beginning to end), you would type P#:#.

## LOADING AND WRITING FILES ON A CASSETTE-ONLY SYSTEM

To save a file that has been entered into the text buffer, type: W filename (after preparing the cassette recorder).

To read a file from the cassette, type: L filename.

## LOADING AND WRITING FILES ON A DISK SYSTEM

To save a file that has been entered into the text buffer, type: W D=filename for Disk, or W T=filename for tape.

To read a file from the disk or cassette, type: L D=filename, or L T=filename.

In part 2 of this series, I included a diagram of the Z80 registers. In this issue, I have included a chart of all of the Z80 instructions. It's time to put all of the pieces together! We start by studying the LD instruction. LD stands for Load. To begin with, we will look at the following registers: A, B, C, D, E, H, and L. The A register is special, since all arithmetic, compares, and certain loads can only work with it. Whenever I give an example, I will present it the very same format that you would use in an assembly language program. So, let's say we want to put the number 1 into the A register, we would code:

Label	Command	Argument	Comment
	LD	A,1	;Put a 1 into A.

The command field contains the code (or Mnemonic). The argument field contains the instructions on "how to do it". Generally, the value on the left side of the comma is where the number is going "to", and the right side is where it is coming from. So, since the instruction is an LD, the value on the right (1) is moved into the register (A). Let's say we also want to put a 1 into the C register. Since there is already a 1 in the A register, we can just copy it into the C register.

Label	Command	Argument	Comment
	LD	C,A	;transfer into C.

Now, we will put the largest number possible into H, and then copy it into A.

Label	Command	Argument	Comment
	LD	H,0FFH	;0FFH=255
	LD	A,H	

Now, of course, we all know that 255 is not the largest number; but 255 is the largest number that can be represented in eight bits, and therefore the largest number that can be contained in an eight bit register.

Next, we examine the sixteen bit registers. For the moment, we will just look at the BC, DE, and HL registers. Strange thing about the BC register: it is made out of the B and the C register together. Of course, HL is made out of H and L. What this means is that these registers can be used

together or singly. The largest value that can be contained in a sixteen bit register is 0FFFFH or 65535. There is something very special about 16 bit registers. The addresses of memory are also 16 bits, so each 16 bit register can hold a memory address. Let us put the address 1000H into the HL register:

Label	Command	Argument	Comment
	LD	HL,1000H	

Now let's look at the way memory and the registers can interact. First, a small area of memory starting at 7000H (Total of 20H or 32 bytes):

7000 = 00	7010 = 00
7001 = 30	7011 = 01
7002 = 31	7012 = 02
7003 = 32	7013 = 03
7004 = 33	7014 = 04
7005 = 34	7015 = 05
7006 = 35	7016 = 06
7007 = 36	7017 = 07
7008 = 37	7018 = 08
7009 = 38	7019 = 09
700A = 39	701A = 0A
700B = FF	701B = 0B
700C = A0	701C = 0C
700D = 0A	701D = 0D
700E = 80	701E = 0E
700F = 00	701F = 0F

In general, we will show sections of memory this way:

```
7000 00 30 31 32 33 34 35 36 37 38 39 FF A0 0A 80 00
7010 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F
```

Study the two charts, and make sure you can follow the bottom chart. Of course, everything is in hexadecimal.

Label	Command	Argument	Comment
	LD	HL,7000H	;statement 1
	LD	A,(HL)	;statement 2

First, put the address 7000H into the HL register. Notice that the second part of the argument in statement two is surrounded by parentheses. This means "the contents of". You might translate that statement into: "Move the number pointed to by the HL register into the A register". What number is contained at address 7000? The value contained at 7000 is zero. So, the A register gets a zero put into it. Let's try another example.

Label	Command	Argument	Comment
	LD	HL,7000H	;statement 1
	LD	DE,7001H	;statement 2
	LD	A,(DE)	;statement 3
	LD	(HL),A	;statement 4

Statements one and two get the two addresses 7000 and 7001 and put them into two different 16 bit registers. Statement three gets the value contained at address 7001. What value? The number 30. Statement four will put the value contained in A into the address pointed to by HL. After

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```

8) 1 1100 0100 = 1 1000 1000, 1 0001 0000 (LSL)
    1 1100 0100 = 0 1110 0010, 0 0111 0001 (LSR)
    1 1100 0100 = 1 1000 1000, 1 0001 0000 (ASL)
    1 1100 0100 = 0 1110 0010, 0 1111 0001 (ASR)
    1 1100 0100 = 1 1000 1001, 1 0001 0011 (RL)
    1 1100 0100 = 0 0110 0010, 0 0011 0001 (RR)

```

```

9) 0 1001 1100 = 1 0011 1000, 0 0111 0000 (LSL)
    0 1001 1100 = 0 0100 1110, 0 0010 0111 (LSR)
    0 1001 1100 = 1 0011 1000, 0 0111 0000 (ASL)
    0 1001 1100 = 0 1100 1110, 0 1110 0111 (ASR)
    0 1001 1100 = 1 0011 1001, 0 0111 0010 (RL)
    0 1001 1100 = 0 0100 1110, 0 0010 0111 (RR)

```

```

10) 0 0111 1001 = 0 1111 0010, 1 1110 0100 (LSL)
    0 0111 1001 = 0 0011 1100, 0 0001 1110 (LSR)
    0 0111 1001 = 0 1111 0010, 1 1110 0100 (ASL)
    0 0111 1001 = 1 0011 1100, 0 0001 1110 (ASR)
    0 0111 1001 = 0 1111 0010, 1 1110 0101 (RL)
    0 0111 1001 = 1 1011 1100, 0 0101 1110 (RR)

```

Joseph Rosenman  
35-91 161 Street  
Flushing, NY 11358 ■

## REAL ESTATE DEPRECIATION

*continued from page 37*

When the computer has completed printing the information you will see "ENTER to CONTINUE?" on the screen. If you wish to have another run the program automatically recycles. If you wish to stop, you will have to hit the BREAK key to do so.

## EXAMINING THE PROGRAM

The listing of the program shows the data listing takes up more lines of code than the program. Line 10 and 60 though 130 is designed to input the data. Lines 170-240 combined with the subroutine in lines 20 through 50 read the tables and produce the output specified.

The data in lines 260 through 370 is for regular real estate, while the data in lines 400 through line 520 is for low income housing.

As noted earlier, a checking routine is found in lines 1000 through 1030.

```

10 CLEAR 400 : DIM A(16) : CLS : PRINT CHR$(23): PRINT "1981
DEPRECIATION RULES": PRINT "    R E A L    E S T A T E": GOTO
60: REM    "REALDEP"
20 CLS : PRINT "YEAR           DEPRECIATION
BOOK VALUE": IF P$="Y" THEN INPUT "TITLE,
DATE, OPERATOR";T$,D$,O$: LPRINT " "; LPRINT T$: LPRINT D$:
LPRINT O$: LPRINT " "; LPRINT "COST:$";FC
30 Z$="####      ####,###,##,##,##,##,##
      ##,##,##,##,##,##,##,##": IF P$="Y" THEN LPRINT "MONTH ";L:
IF L$="Y" LPRINT "LOW INCOME HOUSING"
35 IF P$="Y" THEN LPRINT "YEAR           DEPRECIATION
BOOK VALUE"
36 RETURN
40 X=.01*A(I)*FC: Y=X+Y: PRINT USING Z$;YR,X;FC-Y: IF P$="Y"
THEN LPRINT USING Z$;YR,X;FC-Y
50 RETURN
60 PRINT "STEVEN M. ZIMMERMAN,Ph.D. &": PRINT"    LEO M.
CONRAD": PRINT

```

```

70 INPUT "HARD COPY (Y/N)":P$
80 PRINT : INPUT "FIRST COST ";FC
90 INPUT "YEAR (19XX) ";YR:IF YR < 1981 THEN 90
100 PRINT "LIFE OF ASSET 15 YEARS ONLY"
110 INPUT "MONTH PURCHASED 1,2,... 12";L
120 IF L<1 OR L>12 THEN 110
130 INPUT "LOW-INCOME HOUSING (Y/N)":L$
170 GOSUB 20: IF L$="Y" THEN FOR I=1 TO 192: READ V: NEXT I
180 J=0: FOR I=1 TO L^16: J=J+1: READ A(J): IF J=16 THEN J=0
190 NEXT I: RESTORE: Y=0: FOR I=1 TO 16: GOSUB 40: YR=YR+1:
IF I=10 AND P$="N" THEN INPUT"ENTER TO CONTINUE";J$:
200 NEXT I: INPUT "ENTER TO CONTINUE";J$: GOTO 10
240 GOTO 190
260 DATA 12,10,9,8,7,6,6,6,5,5,5,5,5,5,0:REM JANUARY
270 DATA 11,10,9,8,7,6,6,6,6,5,5,5,5,5,5,0:REM FEB
280 DATA 10,11,9,8,7,6,6,6,5,5,5,5,5,5,1:REM MARCH
290 DATA 9,11,9,8,7,6,6,6,6,5,5,5,5,5,5,1:REM APRIL
300 DATA 8,11,10,8,7,7,6,6,5,5,5,5,5,5,2:REM MAY
310 DATA 7,11,10,8,7,7,6,6,5,5,5,5,5,5,2:REM JUNE
320 DATA 6,11,10,9,8,7,6,5,5,5,5,5,5,5,3:REM JULY
330 DATA 5,11,10,9,8,7,6,6,5,5,5,5,5,5,3:REM AUGUST
340 DATA 4,11,10,9,8,7,6,6,5,5,5,5,5,5,4:REM SEPT
350 DATA 3,11,10,9,8,7,6,6,6,5,5,5,5,5,4:REM OCT
360 DATA 2,11,10,9,8,7,6,6,6,5,5,5,5,5,4:REM NOV
370 DATA 1,12,10,9,8,7,6,6,6,5,5,5,5,5,5:REM DEC
400 REM FOR LOW INCOME HOUSING
410 DATA 13,12,10,9,8,7,6,5,5,5,4,4,4,4,4,0:REM JANUARY
420 DATA 12,12,10,9,8,7,6,5,5,5,4,4,4,4,4,0:REM FEB
430 DATA 11,12,10,9,8,7,6,5,5,5,4,4,4,4,1:REM MARCH
440 DATA 10,12,10,9,8,7,6,5,5,5,5,4,4,4,1:REM APRIL
450 DATA 9,12,11,9,8,7,6,5,5,5,5,4,4,4,2:REM MAY
460 DATA 8,12,11,9,8,7,6,5,5,5,5,5,4,4,2:REM JUNE
470 DATA 7,12,11,9,8,7,6,5,5,5,5,5,4,4,2:REM JULY
480 DATA 6,13,11,9,8,7,6,5,5,5,5,5,4,4,3:REM AUGUST
490 DATA 4,13,11,10,8,7,6,5,5,5,5,5,4,4,3:REM SEPT
500 DATA 3,13,11,10,8,7,6,5,5,5,5,5,5,4,3:REM OCT
510 DATA 2,13,11,10,8,7,6,6,5,5,5,5,5,4,4:REM NOV
520 DATA 1,13,11,10,9,7,6,6,5,5,5,5,5,4,4:REM DEC
1000 FOR ST=1 TO 2: PRINT "SET: ";ST: FOR MO= 1 TO 12: SUM=0
1010 FOR YR=1 TO 16: READ X: SUM=SUM + X: NEXT YR
1020 IF SUM=100 PRINT "MONTH: ";MO;" OK" ELSE PRINT "ERROR
MONTH: ";MO;" SUM = ";SUM: END
1030 NEXT MO,ST: END

```

This program is designed to handle the new 1981 real estate depreciation method. Real property may be depreciated using straight line, or by use of tables which approximate 1.75 declining balance with a 15 year life for most property. A second table which approximates 2.00 declining also with a 15 year life for some special classes of property, is an alternate choice. In all cases an allocation procedure requires expenses be allocated to the nearest month.

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University of South Alabama  
Mobile, Alabama 36688

Leo M. Conrad  
Imagineering Concepts  
P.O. Box 9843  
Mobile, Alabama 36691-0843 ■

## MODEL III CORNER

**Hubert S. Howe, Jr.**

This month we would like to pass on some patches for the Model III that have been sent in by a reader, Mr. William John Newman, 38 Rolling Ridge Road, Upper Saddle River, NJ 07458.

The first patch allows DEBUG to view ALL of the memory, not just memory above 5600H:

```
PATCH *5 (ADD=4ED9,FIND=0056,CHG=0000)
PATCH *5 (ADD=4EFF,FIND=0056,CHG=0000)
PATCH *5 (ADD=5068,FIND=0056,CHG=0000)
```

The next patch gives the error message in TRSDOS, not just "Error 20":

```
PATCH *4 (ADD=4E28,FIND=20,CHG=18)
```

Mr. Newman also says that these are not the results of his efforts, but of others. They are definitely worth passing on to other TRS-80 Model III users!

If you have any similar comments or information about the Model III that you would like to pass on to other readers, please send it to me and I will do so. Also, please let me know if you have any specific questions regarding the Model III.

### TRS-80 MODEL III TECHNICAL REFERENCE MANUAL

We have finally received a copy of Radio Shack's *TRS-80 Model III Technical Reference Manual* (Cat. No. 26-2109). This is the book that we were referred to over a year ago by the 800 number in Fort Worth, when they answered a question by saying that they didn't know but it was answered in this manual. Since that time, every Radio Shack store and Computer Center in this area said that it was on order but unavailable.

It was worth waiting for. This is an excellent book that should be purchased by everyone who is interested in understanding the Model III in a technical way, even if much of it will be over your head (as it is over mine). The book contains the theory of operation and electronic schematics for every major component of the Model III: CPU circuit board, floppy disk interface, RS-232-C circuit board, power supply, video monitor, and disk drive.

At the beginning there is a detailed description of the procedures to use in disassembly and reassembly of the computer. There is also a big disclaimer stating that Radio Shack will not be responsible if you open up the computer and tamper with it. They even reserve the right to refuse

service to the unit in this case, although I do not believe that this will apply to the typical user. Much of this book seems intended for repair persons in general, explaining the proper procedures to them.

The section on the CPU circuit board will be of greatest interest to the general user. This describes many important details of all the components which you will want to keep in mind when programming or using the computer. It contains details about the processor, RAM, video circuits, memory map, I/O ports, keyboard, cassette interface, line printer, real-time clock, I/O bus, and so on that have not been covered in such detail in any other publication.

For the service technician, the book contains a complete list of the parts used in the Model III and circuit diagrams for every component. A qualified person could literally take apart the computer and put it back together again using this book.

In future columns, I will try to present some of the information of interest to the average user taken from this book. ■

The advertisement features a stylized graphic with diagonal lines forming a window-like shape. Inside, the word "colorzap" is written in a large, slanted font, with "Introducing..." above it and "TM" at the top right. To the right, text reads: "A powerful utility that opens a window into the Color Computer's disks." Below this, a paragraph explains the software's capabilities: "COLORZAP uses the power of the Color Computer to provide both rapid scanning and full screen modification capabilities. You can now examine, modify, and copy programs or data while they're stored on disk. Access them by filename or location." Another paragraph describes its performance: "COLORZAP is programmed largely in BASIC so that you can modify it if you'd like, but part of it is in machine language to provide fast response. All accesses to disk are performed with standard interfaces, so any standard Color Computer disk can be examined. You can directly access the disk's directory and control information to examine a clobbered disk, recover a killed file, or find parts of a file when other parts have been lost. With this new window into its disks, the Color Computer sheds its image as a toy. Now you can use this exciting machine like other powerful microcomputers." At the bottom, there is more text about availability and pricing, followed by the Software Options logo.

COLORZAP uses the power of the Color Computer to provide both rapid scanning and full screen modification capabilities. You can now examine, modify, and copy programs or data while they're stored on disk. Access them by filename or location.

COLORZAP is programmed largely in BASIC so that you can modify it if you'd like, but part of it is in machine language to provide fast response. All accesses to disk are performed with standard interfaces, so any standard Color Computer disk can be examined. You can directly access the disk's directory and control information to examine a clobbered disk, recover a killed file, or find parts of a file when other parts have been lost. With this new window into its disks, the Color Computer sheds its image as a toy. Now you can use this exciting machine like other powerful microcomputers.

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**SOFTWARE OPTIONS INC.**

# POCKET COMPUTER CORNER

## Simulating A Cash Register with the Pocket Computer

### S. M. Zimmerman, Ph.D. and L. M. Conrad

Copyright® Zimmerman and Conrad 1982

The objective of this program is to make the pocket computer, combined with its printer, simulate the operation of a cash register for business, volunteer groups, or individuals who are selling out of a cash box. It is a perfect tool for garage sales and similar type activities.

The program produces a sales ticket showing the date, the name of the organization, some identification of the item sold, the price of the item, a subtotal, tax if any, and the sale's total. The ticket may be used as a receipt for the buyer or may be kept as a record of the activity for the day.

It is possible to obtain a summary of the activities for the day at any time during that day. The summary shows the date, the name of the organization, the current transaction number, the total dollar sales, the total tax due, and the number of items sold to that time. The program can be used as a control on the amount of dollars in the cash box as well as keeping track of the business activities.

#### STARTING THE DAY

The program is designed to run in the RUN or DEFinable MODEs of your pocket computer. At the beginning of the day you must run the initialization routine. To do this type the following and hit ENTER.

RUN "START"

The objective of this routine is to set the date, define the name of the company or organization, and to set all the counters equal to zero. The routine starts with the following question:

MONTH?

You may use the month number or its name. The program is designed to work with the month's name. The only limitation is that the name cannot be greater than seven letters. Long months such as DECEMBER result in DECEMBE being printed. This seems like a minor restriction. We used DECEMBER for our sample run.

The next question is the day:

DAY?

In this case the day's number is wanted. We used 20 for our sample run.

The next question is:

YEAR?

You may input 1982 or 82 for the year. We have found inputting 1982 resulted in a very satisfactory output on the printer. We used 1982 for our run.

The next question is:

TITLE?

This question refers to the name of the group conducting

the sale. If it is a company, this should be the company's name. If it is a volunteer organization then it could be the group's name. If an individual is conducting the sale and wants to input a blank, they may do so. We found it convenient to use the SPC key to do this task. For our sample run we used TROOP16.

The last item of input is:

TAX RATE?

If the tax rate is 6% you should input 6 as the answer to this question. The computer will convert the value to a decimal for the use in tax calculations. Our tax rate was 6%.

This completes the input data for the initialization routine.

RUN "DAY"

This routine is designed to produce the information of sales to a point in time. All you need to do is type the RUN instruction as indicated by the title of this section and you will get the following results:

DECEMBE 20, 1982.  
TROOP16 #0.  
TOTAL SALES:\$0.  
SUM TAX:\$0.  
SUM ITEMS: 0.

As you can see all the values are set at zero. This is as expected since no sales have yet occurred. You may now see why we inputted the title as TROOP16 without a space. If we had left one, the six would be lost. Note: the number next to the troop identification is the number of transactions. This value includes a count of both sales and returns. If an individual buys something and then returns it, a transaction is counted both times. We believe this is the best way to handle returns. We will show you how to have the transaction counted once, or if you wish have the transaction deleted, when we review the program.

RUN

To run a transaction through the program you type either RUN or R. in the RUN or DEFinable MODEs. The computer does not have to be left on between transactions, as the low power memory of the pocket computer will retain both program steps as well as values even when it is turned off.

The first thing that happens after you hit the ENTER key is the following will be printed on the printer:

DECEMBE 20, 1982  
TROOP16 #1.

This question then appears on the display:

ID?

This allows you to put some identification into the computer. Assume you are selling an ax. Type Ax and hit the ENTER key. The next question is:

PRICE?

Assume the price was \$5.25. Type 5.25 and hit the ENTER key.

The next question is relative to quantity:

QTY?

Assume you are selling a single ax, type 1 and hit ENTER.

The computer now prints on the printer the transaction information as follows:

AX \$5.25 QTY:1.  
SUB:\$5.25

On the display you see ID? for the next item. If this is the only item being sold, hit the ENTER key to terminate the cycle. The terminating information will be printed:

SUBTOTAL:\$5.25  
TAX \$0.32  
-----  
TOTAL:\$5.57  
=====

The computer now shows a — sign to indicate it has completed its task. Turn the computer off or run another transaction if you wish. To check the summary of information, from the first transaction to the one just completed, RUN "DAY" to see where you stand.

RUN "CAN"

This routine may not be needed by all groups. This is for cancelled orders. If you make an error, or if the customer wishes to return an item, this is a method of taking it out of the totals.

This option operates the same as when inputting a new transaction, except it subtracts from the totals, rather than adding to them.

## REVIEWING THE PROGRAM

The program is structured with the use of line numbers. Line numbers 1 through 7 are for the inputting of a new transaction. Line 10 is a subroutine for printing headings and date information, lines 11 and 12 are a subroutine for eliminating round off errors which may occur when figuring sales tax - both for new transactions and returns.

Lines 20 through 25 are for returns, lines 50 and 51 are to initialize the information at the beginning of a sale, and lines 60 through 62 are to print the summary information.

Line 20 is named "CAN", line 50 "START", and line 60 "DAY". These names are used to find the correct lines for these routines. The individual transaction routine starts in line 1, so no name was necessary when running this routine.

continued on page 55

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# ANGLES, PYRAMIDS, AND HAIR-GROWING?

## C. Brian Honess

I seem to get pretty involved with most of the new pseudo-science fads and such — I read everything I can find on Stonehenge, the Bermuda Triangle, and UFO's. I've gotten into Biorhythms, and carefully followed the "lowered" accident statistics of the Japanese pilots and others using Biorhythms, and I guess when my joints start feeling a little stiffer in the mornings, I'll even try a copper bracelet. I'm assuming you have either purchased one of the commercially-available Biorhythm programs, or possibly used one that has appeared in several of the popular journals devoted to our hobby. Well, there's something new I've been looking into lately, and it goes by the name of "Pyramid Power."

Pyramid Power devotees come in various "degrees" and I guess at one extreme are those that think the Great Pyramid of Giza (also called Cheops Pyramid) was not built between 2686 and 2181 B.C as most Egyptologists agree, but instead is somehow either attached vaguely to UFO's in some way, or, it was left by a highly advanced civilization that was here long before our recorded history even began. These people do make rather convincing arguments, when they talk about the precise measurements of the stones, the tremendous weight of the stones, with no likely method of moving them, and the almost impossible task of constructing something so large without literally using every resource available for just that one task. The psychic Edgar Cayce belongs to this school, because he said that the Great Pyramid was built over 10,000 years ago and it was built by non-Egyptians, and was not built as a tomb, but as a place to store the history of mankind from the time of the first humans to the year 1998. I'll leave Cayce there, and you can read him to find out what will happen in 1998. Entering now, though, is an unknown retired radio engineer in Czechoslovakia, named Karl Drbal. He applied for a patent, in 1949, for what he called a pyramid-regenerator. Basically this was a small pyramid, patterned after the Great Pyramid, and the claim was that he could sharpen razor blades by storing them under the pyramid, and get over 100 shaves per blade! You can imagine his difficulty in "proving" how and why that one works! But, in 1959, the patent was granted!

Since that time there have been many experiments, by many people, and the following is just a small sampling of what is claimed:

- Fruit doesn't spoil nearly so fast, when stored under a pyramid.
- Tarnished jewelry and coins can be polished by placing them under a pyramid.
- Milk won't sour nearly so fast, nor will meat spoil as fast as when it is left out of the pyramid.
- Water can be purified.
- Flowers dry out but retain their shape and color.
- Toothaches, migraine headaches, cuts, burns, bruises, and all sorts of human ailments are relieved by getting into a "people-sized" pyramid.
- Wine, coffee, tea, fruit juice, etc. tastes better when kept under a pyramid for some time.
- Sitting in a pyramid can relax you, ease tensions, and

take off excess weight.

- Garbage doesn't smell when you put it in a pyramid.
- Plants grow better, seeds germinate faster.
- Planes seem to behave "strangely" when flying over the apex of a pyramid.
- and . . . Pyramid Energy is claimed to amplify your thought processes, increase your sexual vitality, and cause all sorts of miracles!

Well, now, I ask you, "Ain't that sumptin'?" The only problem is, how can we get a program written fast enough to get our computers to design one of the things for us!!!! And all it'll take to build one is a little cardboard and gooey tape; or maybe some plywood or plastic for a little larger one that you can get into. It requires no electricity, no maintenance, no nothin'!

Incidentally, if you'd like to read more about Pyramid Power, I'd suggest the following books for starters. They're all paperbacks and all interesting:

Schul, Bill and Ed Pettit, "The Secret Power of Pyramids", Fawcett Publications, Inc., Greenwich, Conn 06830, 1975 (No. X3273)

Toth, Max, and Greg Nielsen, "Pyramid Power", Warner/Destine Books, 377 Park Avenue South, New York, N.Y., 10016, 1976. (No. 82-569; ISBN: 0-446-82569-7)

Stark, Norman, "The First Practical Pyramid Book", Sheed Andrews and McMeerl, Inc., Subsidiary of Universal Press Syndicate, 6700 Squibb Road, Mission, Kansas, 66202, 1977. (ISBN: 0-8362-0691-6)

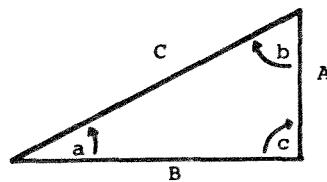
Note: Since writing this article, I've come across another "mind-blowing" book on the subject, that I thought you'd like to know about: "The Great Pyramid Decoded", by Peter Lemesurier. Avon Books, an division of the Hearst Corporation, 959 Eighth Avenue, NY, Y 10019. Library of Congress Catalog Card Number: 76-44857, (ISBN: 0-380-43034-7). 1979 Avon #43034. (\$4.95)

SO... Let's get after the design of the Cheops pyramid with our computers . . . while I'm busy wondering if I design a hat in the shape of a pyramid if I can grow a little hair!!!

One of the interesting things that "pyramid power researchers" are experimenting with is the ratio of the height of a pyramid to the length of the base. Many say that the pyramid you construct has to be an exact replica of the Cheops Pyramid, while others say it doesn't seem to make much difference, as long as it is a pyramid of some sort. We'll therefore code our program so as to design about any square-based pyramid, including a Cheops Pyramid

We'll be needing to work with some Trigonometric relationships and functions to design the pyramids, so maybe this is a good place to review a little:

Assume a right triangle:



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and of course:

$$a + b + c = 180^\circ \quad (c, \text{ of course, } = 90^\circ)$$

and:

$$A^2 + B^2 = C^2$$

The Trigonometric Functions are:

sine	( sin ) of a	= A / C
cosine	( cos ) of a	= B / C
tangent	( tan ) of a	= A / B
cosecant	( csc ) of a	= C / A
secant	( sec ) of a	= C / B
cotangent	( cot ) of a	= B / A

also:

sin a =	cos b	scs a =	sec b
cos a =	sin b	sec a =	csc b
tan a =	cot b	cot e =	tan b

also:

sin a =	1 / csc a	scs a =	1 / sin a
cos a =	1 / sec a	sec a =	1 / cos a
tan a =	1 / cot a	cot a =	1 / tan a

and, of course, we could make the same type of list for angle b.

If we know any two angles we can easily find the third, since they sum to 180 degrees, and if we know any two sides, we can easily find the third by using the fact that the sum of the squares of the two shorter sides equals the square of the hypotenuse. Since I don't work with the Trigonometric Functions often enough to really remember them well, I worked up a handy little table which tells me how to find any unknown, when I know any two values. Its saved me so much time and grief that I'll reproduce it here for you.

Note: "arc" means "the angle whose", so: arc sin means the

"angle whose sin is" and arc tan means "the angle whose tan is" etc.

Most versions of BASIC have several of the Trigonometric Functions, and if any are missing the instruction booklet will list the so-called "Derived Functions" for you, in much the same way as I've listed them on the previous page. My version of BASIC has the following functions: sin, cos, tan, and arc tan, and we'll be able to work very nicely with just these functions.

The one remaining problem is that BASIC usually uses angles expressed in "Radians" instead of degrees, and this can be a minor irritation if you're not used to radians. I like to work in "good ol' degrees" so let's work out some conversion factors:

$$360^\circ = 2\pi \text{ Radians so,}$$

$$\frac{6.2831852 \text{ Rad.}}{360 \text{ deg.}} = \frac{1 \text{ Rad.}}{? \text{ deg.}} \text{ and, } 1 \text{ Radian} = 57.29578 \text{ deg.}$$

and in like manner, we can find that: 1 Degree = 0.0174533 Rad.

In other words, what we'll have to do to find the sine of an angle X, when X is in degrees, is to use:

$$\text{SIN} ( X * 0.0174533 )$$

and to find the cosine of an angle X, when X is in degrees:

$$\text{COS} ( X * 0.0174533 )$$

and to find the tangent of an angle X, when X is in degrees:

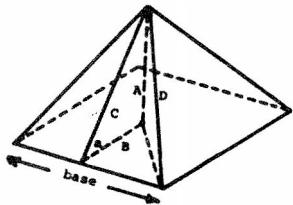
$$\text{TAN} ( X * 0.0174533 )$$

On the other hand, if we want to find the arctangent, it will normally be returned in Radians, and we can simply multiply by the number of degrees in a Radian. Therefore, we have:

$$\text{ATN} ( X ) * 57.29578$$

Let's name some of the angles, sides, etc. on a pyramid, so that we can decide what some of the inputs should be, and what we might want to solve for:

Known:	Want to Know:				
	A	B	C	a	b
A, B	-	-	$\sqrt{A^2 + B^2}$	arc tan A/B	arc tan B/A
B, C	$\sqrt{C^2 - B^2}$	-	-	arc cos B/C	arc sin B/C
B, a	B tan a	-	$B / \cos a$	-	$90^\circ - a$
B, b	$B / \tan b$	-	$B / \sin b$	$90^\circ - b$	-
A, C	-	$\sqrt{C^2 - A^2}$	-	arc sin A/C	arc cos A/C
A, a	-	$A / \tan a$	$A / \sin a$	-	$90^\circ - a$
A, b	-	A tan b	$A / \cos b$	$90^\circ - b$	-
C, a	C sin a	C cos a	-	-	$90^\circ - a$
C, b	C cos b	C sin b	-	$90^\circ - b$	-



If you're going to build a large pyramid out of some material like plywood, you'll probably be interested in knowing how high a pyramid you can get from a given piece of wood, with a known base length — so we'll let that be one possible input. On the other hand, you'll want to be able to design pyramids with a given height, solving for the other dimensions, so the height will be another possible input. And thirdly, you'll want to be able to experiment with different angle "a" pyramids, so that'll be a possible input. In our diagram then, any two of these three inputs will tell us all we need to be able to calculate all other angles and lengths: angle a, height A, and base length 2B.

We'll set up the program with a "menu" up front, so we can input any two of the three inputs:

```

1 REM ****
2 REM *
3 REM * "ANGLES, PYRAMIDS, AND HAIR GROWING?" *
4 REM *
5 REM *      BY:      C. BRIAN HONESS *
6 REM *              22 SHAFESBURY LANE *
7 REM *              COLUMBIA, SC 29209 *
8 REM *
9 REM ****

```

```

19 CLS
20 PRINT
21 PRINT "THE GREAT PYRAMID OF GIZA HAS BASE LENGTHS OF
756.08, 755.43,"
22 PRINT " 755.88, AND 755.77 FEET (N,S,E,W), FOR AN AVERAGE "
OF 755.79"
23 PRINT " FEET. THE HEIGHT IS THOUGHT TO HAVE ORIGINALLY
BEEN ABOUT"
24 PRINT " 481.1 FEET, AND THE ANGLE OF A SIDE TO THE BASE
HAS BEEN"
25 PRINT " MEASURED AT MANY VALUES, BUT MOST ARE BETWEEN 51
DEGREES"
26 PRINT " AND 51 MINUTES .. AND 51 DEGREES AND 52 MINUTES."
30 PRINT
31 PRINT " WHICH OF THE FOLLOWING DO YOU WANT TO SOLVE FOR?"
32 PRINT
33 PRINT " HEIGHT          ( ENTER 1 )"
34 PRINT " BASE LENGTH      2   "
35 PRINT " ANGLE OF SIDE TO BASE 3   "
36 PRINT
37 INPUT N
38 ON N GOTO 100, 200, 300
39 GOTO 37
100 CLS: PRINT
101 PRINT "YOU'VE CHOSEN TO CALCULATE THE HEIGHT, SO YOU'LL
NEED TO ENTER"
102 PRINT " THE LENGTH OF THE BASE, AND THE ANGLE THE SIDES
MAKE WITH THE"
103 PRINT " BASE. NOTE THAT YOU CAN USE ANY MEASURE OF LENGTH
YOU WANT,"
```

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```

104 PRINT " AS LONG AS THE HEIGHT AND BASE LENGTH ARE IN THE
SAME UNITS."
105 PRINT " ALSO, YOU'LL BE ABLE TO SPECIFY THE ANGLE IN
DEGREES,"
106 PRINT " MINUTES, AND SECONDS OF ARC."
108 PRINT
110 INPUT " BASE LENGTH DESIRED "; BL
111 PRINT
115 INPUT " NO. OF DEGREES IN ANGLE "; D
116 INPUT " MINUTES "; M
117 INPUT " SECONDS "; S
120 A = D + ( M / 60 ) + ( S / 3600 )
121 BB = BL / 2
125 AA = BB * TAN ( A * .0174533 )
130 CC = SQR ( AA * AA + BB * BB )
135 DD = SQR ( BB * BB + CC * CC )
140 GOTO 500
200 CLS : PRINT
201 PRINT "YOU'VE CHOSEN TO CALCULATE THE BASE LENGTH, SO
YOU'LL NEED TO"
202 PRINT " ENTER THE HEIGHT, AND THE ANGLE THE SIDES MAKE
WITH THE BASE."
203 PRINT " NOTE THAT YOU CAN USE ANY MEASURE OF LENGTH YOU
WANT FOR"
204 PRINT " THE HEIGHT, SINCE THE BASE LENGTH WILL BE IN THE
SAME UNITS."
205 PRINT " ALSO, YOU'LL BE ABLE TO SPECIFY THE ANGLE IN
DEGREES,"
206 PRINT " MINUTES, AND SECONDS OF ARC."
209 PRINT
210 INPUT " HEIGHT DESIRED "; AA
211 PRINT
215 INPUT " NO. OF DEGREES IN ANGLE "; D
216 INPUT " MINUTES "; M
217 INPUT " SECONDS "; S
220 A = D + ( M / 60 ) + ( S / 3600 )
225 BB = AA / TAN ( A * .0174533 )
230 BL = BB * 2
235 CC = SQR ( AA * AA + BB * BB )
240 DD = SQR ( BB * BB + CC * CC )
250 GOTO 500
300 CLS : PRINT
301 PRINT " YOU'VE CHOSEN TO CALCULATE THE ANGLE THE SIDES
MAKE WITH THE"
302 PRINT " BASE, SO YOU'LL NEED TO ENTER THE HEIGHT AND THE
BASE LENGTH."
303 PRINT " NOTE THAT YOU CAN USE ANY MEASURE OF LENGTH YOU
LIKE, AS"
304 PRINT " LONG AS BOTH INPUTS ARE IN THE SAME UNITS."
307 PRINT
310 INPUT " HEIGHT DESIRED "; AA
315 PRINT
320 INPUT " BASE LENGTH DESIRED "; BL
325 BB = BL / 2
330 CC = SQR ( AA * AA + BB * BB )
335 DD = SQR ( BB * BB + CC * CC )
340 A = ATN ( AA / BB ) * 57.29578
350 D = INT ( A )
355 E = A - D
360 M = INT ( E * 60 )
365 F = E - ( M / 60 )
370 S = F * 3600
500 CLS : PRINT

```

```

505 PRINT "PYRAMID DESIGN:"
506 PRINT
507 PRINT " LENGTH OF BASE = ", BL
508 PRINT " HEIGHT ", AA
509 PRINT " SLANT HEIGHT = ", CC
510 PRINT " CORNER SLANT HEIGHT = ", DD
511 PRINT " ANGLE (DEGREES) BETWEEN "
512 PRINT " SIDES AND BASE = ", A
513 PRINT
514 PRINT " DEGREES = ", D
515 PRINT " MINUTES = ", M
516 PRINT " SECONDS = ", S
517 PRINT
520 INPUT "WANT TO DESIGN ANOTHER (Y/N)"; A$
522 IF A$ = "Y" THEN CLS : GOTO 30
999 END

```

You'll probably want to test all facets of the program with the data delineated in lines 21 through 29. Then, you might want to check the accuracy of Drbal's original razor-blade-sharpening pyramid. He used one 8 cm high with a base of 12.5 cm. In fact, he found that the Cheops Pyramid could be nicely approximated by the equations:

$$\text{Length of base} = \text{Height} \cdot \frac{\pi}{2}$$

which equals about 1.570796 \* height

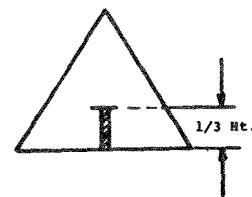
Was he correct?

A couple of additional things, before you start using your pyramids:

1. One of the faces should be perpendicular to TRUE North (not magnetic North!). Find a map that shows the error between True and Magnetic North, and make this adjustment in the placement of your pyramids.



2. Most researchers tend to agree that the object you place in the pyramid will receive maximum "pyramid energy" if it is in the position as the "king's Chamber" is in the Great Pyramid of Giza. In other words, you will need to use a small block, or matchbox, or something, to elevate the razor blade, or whatever, to a point that is 1/3 of the distance up from the base.



I don't think we need to go through this program a line at a time since all of the calculations are fairly straight-forward. You may want to add fancy formatting for the PRINT statements, and "dress it up" a bit. I'd also suggest putting in some "traps" to take care of erroneous inputs. For example, what would happen if the height you entered, and the base length and/or angle, were such that a pyramid couldn't be formed? You might want to "trap out" these possibilities, and call for a data re-entry. ■

## POCKET COMPUTER CORNER

continued from page 49

If you wish to change the name of the "CAN" to "RETURN" or any other name, by typing the name you change into your program.

If you do not want to count a return as a transaction you must place F=F-1 in line 25, or F=F-2 if you wish to eliminate the original transaction.

In the pocket computer all variables have a single name such as A, B, ... Z or A(1), A(2), ...A(202). We have used the letter O for a variable in line 4 and line 23. Be very careful not to mix the letter up with the number zero.

In line 2, as elsewhere in our program, we have used the technique of multiplication by writing two letters next to each other and leaving out the multiplication sign. K=IJ in line 2 means K=I\*J.

## SUMMARY

This program turns your pocket computer and printer into a cash register for those who need a record and are working out of a cash box. It works great for garage sales and similar such activities.

Sales tickets showing the date, the name of the organization, some identification of the item sold, the price of the item, a subtotal, tax if any, and the total amount of the sale are produced by the program. The tickets may be used as a receipt for the buyer or may be kept as records for the seller.

You can produce a summary of the day's activities at any time. The summary shows the date, name of the organization, current transaction number, total dollar sales, total tax due, and the number of items sold to that time. The program can be used to control dollars and keep track of business activities.

## PROGRAM LISTING

```
1:GOSUB 10:L=0
2:INPUT "ID?";H$:INPUT "PRICE?";I:INPUT "QTY?";J:PRINT H$;
  "$";I;" QTY:";J:K=IJ:PRINT " SUB:$";K:GOTO 6
3:PRINT "SUBTOTAL:$";L
4:D=D+L:O=NL:GOSUB 11:PRINT "TAX $";O:M=M+O:L=L+O:PRINT
  "-----":PRINT "TOTAL:$";L:PRINT "====="
5:GOTO 7
6:L=L+K:E=E+J:GOTO 2
7:PRINT " ":";PRINT " ":";END
10:F=F+1:PRINT A$;" ";B$;" ";C$:PRINT G$;" #";F:RETURN
11:P=INT (100)/100:Q=0-P:O=P:IF Q>=.005 LET O=0+.01
12:RETURN
20:"CAN"GOSUB 10:L=0:PRINT "RETURNS **"
21:INPUT "ID?";H$:INPUT "PRICE?";I:INPUT "QTY?";J
  PRINT H$;" $";I;" QTY:";J:K=IJ:PRINT " SUB:$";K:GOTO 25
22:PRINT "SUBTOTAL:$";L
23:D=D-L:O=NL:GOSUB 11:PRINT "TAX $";O:M=M-O:L=L+O
  PRINT "-----":PRINT "TOTAL:$";L:PRINT "====="
24:GOTO 7
25:L=L+K:E=E-J:GOTO 21
50"START":INPUT "MONTH?";A$:INPUT "DAY?";B$:INPUT "YEAR?";C$
  D=0:E=0:F=0:INPUT "TITLE?";G$=M=0
```

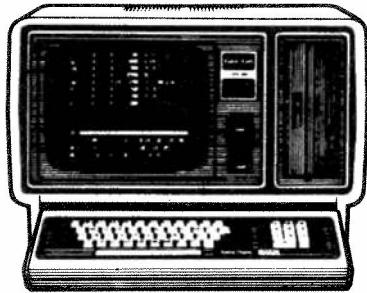
```
51:INPUT "TAX RATE?";N:N=.01N:END
60:"DAY" F=F-1:GOSUB 10
61:PRINT "TOTAL SALES:$";D:PRINT "SUM TAX:$";M
62:PRINT "SUM ITEMS: ";E:END
```

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College of Business  
University of South Alabama  
Mobile, Alabama 36688

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# DOUBLE PRECISION CALCULATOR

Stephen Radin

This program emulates a "standard" calculator with three memory registers, including special functions such as LOG, SIN, etc. It was designed for use by anyone who needs to manipulate considerable amounts of numeric data and who has a TRS-80 microcomputer. It has been used regularly by both my students and myself for this purpose in our classroom.

```

100 CLS
110 DEFINT A-O:DEFDL P-Z
120 PI=3.14159265358979D0
130 ON ERROR GOTO 2170
150 CLS
160 PRINT" DOUBLE PRECISION CALCULATOR"
170 REM *** BY STEPHEN RADIN 751 BARD AVENUE ***
172 REM *** STATEN ISLAND, NEW YORK 10310 ***
174 REM *** WRITTEN JULY 10, 1981 ***
180 PRINT" ====="
190 PRINT:PRINT
192 PRINT:PRINT
194 PRINT:PRINT" VERSION 2.3 JULY 10, 1981"
220 FOR AA=1TO2000:NEXT AA
230 R#=0D0:S#=0D0
240 CLS
250 PRINT @256," YOU HAVE THE FOLLOWING FUNCTION
CHOICES :"
260 PRINT" ADD A SUBTRACT S MULTIPLY X
        DIVIDE D"
270 PRINT" TRIG T LOGS(NAT) N LOGS(DEC) L
        EXPONENTS E"
280 PRINT" - MEMORY M (ADD, SUBT, STORE, RECALL, ETC.)
        FIX SCREEN F"
290 PRINT"WHEN YOU ARE PROMPTED WITH 'FCN' GIVE ME
A FUNCTION CHOICE"
300 PRINT"AND WHEN I WANT A NUMBER I WILL ASK
WITH A '?'";
310 PRINT:PRINT:PRINT
320 GOSUB 970
330 GOSUB 3010
360 GOSUB 3005
390 GOSUB 570:*****GETS FUNCTION NAME
400 IF A$="F" THEN 240
410 IF C$="" THEN 360
420 IF A$="M" THEN GOTO 460
430 GOSUB 610:*****GETS FIRST NUMBER
440 IF A$<>"E" AND A$<>"A" AND A$<>"S" AND A$<>"X" AND
A$<>"D" THEN PRINT @ 768," ";:GOTO 460
450 GOSUB 620:***** GETS SECOND NUMBER
460 GOSUB 630
480 IF A$="M" THEN 250
490 PRINT @995," ";
500 V1$=""
510 PRINT @ 995,"ANSWER ";X#;
520 IF A$="M" THEN 560
530 PRINT @ 768," TYPE M TO ADD ANSWER TO MEMORY BUT JUST ENTER
FOR NEW WORK ";
540 A$=INKEY$:IF A$="" THEN 540
550 IF A$="M" THEN GOSUB 1260
560 R#=0D0:S#=0D0: GOTO250
570 PRINT @ 640,"FCN ":"*****FUNCTION CALL
580 A$=INKEY$:IF A$="" THEN 580
590 IF A$="F" THEN RETURN
600 GOSUB 850:RETURN
610 PRINT @ 660," ";:INPUT R#:RETURN:*****FIRST NUMBER
620 PRINT @ 680," ";:INPUT S#:RETURN:*****SECOND NUMBER
630 IF A$="A" THEN X#=R#+S#:RETURN
640 IF A$="S" THEN X#=R#-S#:RETURN
650 IF A$="X" THEN X#=R#*S#:RETURN
660 IF A$="D" THEN X#=R#/S#:RETURN
670 IF A$="E" THEN X#=EXP(S#*LOG(R#)):RETURN
680 IF A$="M" THEN GOSUB 1350:RETURN
690 B$=""
700 IF A$="N" THEN PRINT @768,"LOG (L) OR ANTILOG (A) - ";
710 IF A$<>"N" THEN GOTO 770
720 B$=INKEY$:IF B$="" THEN 720
730 IF B$<>"A" AND B$<>"L" THEN 700
740 PRINT B$;
750 IF B$="L" THEN X#=LOG(R#):RETURN
760 IF A$="N" THEN X#=EXP(R#):RETURN
770 IF A$="L" THEN PRINT @768,"LOG (L) OR ANTILOG (A) - ";
780 IF A$<>"L" THEN 840
790 B$=INKEY$:IF B$="" THEN 790
800 IF B$<>"A" AND B$<>"L" THEN 770
810 PRINT B$;
820 IF B$="L" THEN X#=LOG(R#)/LOG(10D0):RETURN
830 IF B$="A" THEN X#=EXP(R#*LOG(10D0)):RETURN
840 IF A$="T" THEN GOSUB 1050:RETURN
850 C$="":IF A$="A" THEN C$="ADD"
860 IF A$="S" THEN C$="SUBTRACT"
870 IF A$="X" THEN C$="MULTIPLY"
880 IF A$="D" THEN C$="DIVIDE"
890 IF A$="E" THEN C$="EXPONENT"
900 IF A$="L" THEN C$="LOG. BASE 10"
910 IF A$="T" THEN C$="TRIG. FUNCT."
920 IF A$="N" THEN C$="NATURAL LOG."
930 IF A$="M" THEN C$="MEMORY FCN"
940 IF C$="" THEN PRINT@655,"SORRY BUT "; A$ ; " IS NO GOOD"
950 IF C$="" THEN PRINT" CHOOSE FROM THE LIST ABOVE";:
FOR AA=1 TO 4000:NEXT AA:RETURN
960 PRINT @647," ";
PRINT @ 647,C$;:RETURN
970 PRINT@," MEMORY 1 : ";Q1#;" ";
975 PRINT @64," MEMORY 2 : ";Q2#;" ";
980 PRINT @128," MEMORY 3 : ";Q3#;" ";
990 FOR E=2 TO 126:SET(E,10): NEXT E
1000 FOR E= 0 TO 10:SET(2,E):SET(126,E): NEXT E
1020 FOR E=61 TO 126:SET (E,43):NEXT E
1030 FOR E=43 TO 47: SET(61,E): SET(126,E):NEXT E
1040 RETURN
1050 PRINT @768,"WOULD YOU LIKE TO WORK IN DEGREES(D),
RADIAN(R),OR GRADS(G)";
1060 B$=INKEY$:IF B$="" THEN 1060

```

```

1070 IF B$<>"D" AND B$<>"R" AND B$<>"G" THEN 1050
1080 PRINT @768,"WOULD YOU LIKE A FUNCTION(F) OR AN
ARC FUNCTION(A)      ";
1090 C$=INKEY$:IF C$="" THEN 1090
1100 IF C$<>"F" AND C$<>"A" THEN GOTO 1080
1110 PRINT @768,"WOULD YOU LIKE SINE(S), COSINE(C)
OR TANGENT(T)      ";
1120 D$=INKEY$: IF D$="" THEN 1120
1130 IF D$<>"S" AND D$<>"C" AND D$<>"T" THEN GOTO 1110
1140 IF C$="A" THEN 1200
1150 IF B$="D" THEN R#=(R#*PI/18000)
1160 IF B$="G" THEN R#=(R#*PI/20000)
1170 IF D$="S" THEN X#=SIN(R#):RETURN
1180 IF D$="C" THEN X#=COS(R#):RETURN
1190 IF D$="T" THEN X#=TAN(R#):RETURN
1200 IF D$="T" THEN R#=ATN(R#)
1210 IF D$="S" THEN R#=ATN(R#/SQR(-R#*R#+1D0))
1220 IF D$="C" THEN R#=ATN(R#/SQR(-R#*R#+1))+1.5708D0
1230 IF B$="D" THEN X#=R#*18000/PI:RETURN
1240 IF B$="G" THEN X#=R#*20000/PI:RETURN
1250 X#=R#:RETURN
1260 PRINT @768,"WOULD YOU LIKE TO ADD TO MEMORY
1 2 OR 3      ";
1270 F$=INKEY$:IF F$="" THEN 1270
1280 F=VAL(F$)
1290 IF F<>1 AND F<>2 AND F<>3 THEN GOTO 1260
1300 IF F=1 THEN Q1#=Q1#+X#
1310 IF F=2 THEN Q2#=Q2#+X#
1320 IF F=3 THEN Q3#=Q3#+X#
1330 PRINT@16,Q1#;"      "; :PRINT@80,Q2#;
"      ";:PRINT@144,Q3#;"      ";
1340 RETURN
1350 PRINT @256,"      MEMORY MANAGEMENT
FUNCTION      "
1360 PRINT"YOU HAVE ALL OF THE FOLLOWING CHOICES :"
1370 D$=""
1380 PRINT"ADD TO MEMORY   A      SUBTRACT FROM MEMORY   S"
1390 PRINT"STORE IN MEM    ↑      TRANSFER AMONG MEM    T"
1400 PRINT"RECIPROCAL MEM  R      TRANSFER INTO FUNCTION F"
1400 PRINT"RECIPROCAL MEM  R      TRANSFER INTO FUNCTION F"
1410 PRINT:PRINT
1420 C$=INKEY$:IF C$="" THEN GOTO 1420
1430 IF C$<>"A" AND C$<>"S" AND C$<>"T" AND C$<>"F"
AND C$<>"R" THEN 1420
1440 IF C$="A" THEN PRINT @ 640,"WHICH MEMORY WOULD YOU LIKE
TO ADD TO";
1450 IF C$<>"A" THEN GOTO 1540
1460 AB$=INKEY$: IF AB$="" THEN 1460
1470 AB#=VAL(AB$):IF AB<>1 AND AB<>2 AND AB<>3 THEN 1470
1480 PRINT@ 640, "TYPE IN THE NUMBER YOU WANT TO ADD NOW"
1490 INPUT ZZ#
1500 IF AB=1 THEN Q1#=Q1#+ZZ#
1510 IF AB=2 THEN Q2#=Q2#+ZZ#
1520 IF AB=3 THEN Q3#=Q3#+ZZ#
1530 GOTO 2160
1540 IF C$<>"R" THEN GOTO 1630
1550 PRINT @640,"WHICH MEMORY WOULD YOU LIKE TO RECIPROCAL";
1560 AB$=INKEY$:IF AB$="" THEN 1560
1570 AB#=VAL(AB$)

```

continued on page 62

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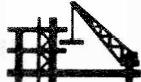
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# FLAG, ROOTER and ROOTLOOP, and STANDARD DEVIATION

## Gordon Speer

### FLAG

Here is a reasonable facsimile of Old Glory for your Model-I or Model-III. This program contains most of the simple graphics techniques of Level-II BASIC.

```
100 ' FLAG
110 CLEAR 1000      'CLEARING SPACE IN MEMORY
120 CLS             'CLEAR THE SCREEN
130 PRINT CHR$(23)   'WIDE CHARACTER FORMAT
140 FOR X=0 TO 125   'LEFT AND RIGHT LIMITS IN WIDE
FORMAT
150 SET(X,1):SET(X,43) 'TOP AND BOTTOM BORDER GRAPHICS
160 NEXT X
170 A$=" * * * * * * " 'ROW OF STARS
180 B$=" * * * * * * " 'ALTERNATE ROW OF STARS
190 FOR L=64 TO 448 STEP 128
200 PRINT @L,A$;
210 NEXT L
220 FOR L=128 TO 384 STEP 128
230 PRINT @L,B$;
240 NEXT L
250 FOR L=158 TO 414 STEP 128
260 PRINT @L,STRING$(17,191); 'SHORT WHITE STRIPES
270 NEXT L
280 FOR L=512 TO 768 STEP 128
290 PRINT @L,STRING$(32,191); 'LONG WHITE STRIPES
300 NEXT L
310 FOR Y=2 TO 42
320 SET(0,Y)          'LEFT BORDER
330 NEXT Y
340 GOTO 340          'LOCK THE SCREEN, PREVENT SCROLLING
```

### ROOTER and ROOTLOOP

Last March, on page 61, we challenged anyone to provide us with a short, simple, double-precision square root routine. As we expected, one of our readers came through, soon after the magazine was distributed. James R. Mills, of Poway, California provided a simple iterative loop which is a modification of Newton's interpolation formula, from the Principia of 1687. (It makes us wonder what Newton could have done with a TRS-80!) The ROOTER program allows you to input any single-precision number and computes a double-precision root of it. ROOTLOOP is a continuous program that computes and displays double-precision roots of all the integers, starting with 1. This is a particularly good demonstration program of double precision numbers.

```
100 ' ROOTER
110 DEFDBL X          'MAKE X A DOUBLE-PRECISION VARIABLE
120 REM: THIS CAN ALSO BE DONE BY USING X# FOR X
130 CLS               'CLEAR THE SCREEN
140 PRINT,"PRECISION SQUARE ROOTS"
150 INPUT Y            'THE NUMBER FOR WHICH YOU WANT THE ROOT
160 X=SQR(Y)           'SINGLE PRECISION ROOT-FIRST APPROXIMATION
170 FOR N=1 TO 3        'NUMBER OF TIMES THROUGH THE ITERATION
LOOP
```

```
180 LET X=X-((X*X-Y)/(2*X))  'NEWTON-RAPHSON ITERATION
190 NEXT N
200 PRINT , "THE SQUARE ROOT OF "Y" IS"X
210 GOTO 150

100 ' ROOTLOOP
110 DEFDBL X
120 CLS
130 FOR Y=1 TO 10000
140 X=SQR(Y)           'SINGLE PRECISION ROOT-FIRST APPROXIMATION
150 FOR N=1 TO 3        'NUMBER OF TIMES THROUGH THE ITERATION
LOOP
160 LET X=X-((X*X-Y)/(2*X))  'NEWTON-RAPHSON ITERATION
170 NEXT N
180 PRINT "THE SQUARE ROOT OF "Y" IS "X
190 NEXT Y
```

### STANDARD DEVIATION

A local business asked for a program to compute standard deviation, and in case any of you might need the same thing, here it is. You insert a series of values, ending with a 999, which serves as the code to end the problem. (If there is any chance of your actually having 999 in your data, you will need to select another code number to cause the problem to end.) The number of items, total, and average are printed, followed by the standard deviation.

```
100 ' STANDARD DEVIATION
110 CLS
120 DIM V(500)          'MAKE ROOM FOR UP TO 500 VALUES
130 FOR N=1 TO 500
140 INPUT "ENTER A NUMBER (999 TO EXIT)";V(N)
150 IF V(N)=999 THEN 180 'EXIT TO CALCULATION
160 LET T=T+V(N)          'KEEP A RUNNING TOTAL OF VALUES
170 NEXT N
180 LET N=N-1              'CORRECT THE COUNT OF VALUES INPUT
190 PRINT " NUMBER OF VALUES INPUT="N
200 PRINT " TOTAL OF VALUES INPUT="T
210 LET A=T/N              'AVERAGE
220 PRINT "AVERAGE OF VALUES INPUT="A
230 FOR J=1 TO N
240 LET S=S+(A-V(J))^2    'SUM OF THE SQUARES OF DEVIATIONS
250 NEXT J
260 PRINT " STANDARD DEVIATION =";SQR(S/N)
270 PRINT
280 CLEAR
290 GOTO 120
```

Gordon Speer  
3304 Woodlawn Road  
Sterling, IL 61081 ■



# A SOFTWARE LOWER CASE MODIFICATION FOR SCRIPSIT™ FILES

## January Smith

The purpose of this program is to make full use of the upper and lower case capabilities of a printer even though the TRS-80 Model 1 cannot display the lowercase characters on the screen. This is accomplished by following a series of rules to achieve capital letters where you wish. The first rule is that the forcing of capitals such as titles can be accomplished by typing a greater than sign (">") in the text you are preparing to print before and after the text you wish to appear in uppercase. This could be done using SCRIPSIT or any other word processor. The other rules handled by the computer are as follows:

(1) The first alphabetic character following a period will be capitalized.

(2) The first alphabetic character following a carriage return will be capitalized.

(3) Characters following a ">" will be capitalized until the next ">".

After the text is prepared and saved to disk, exit the word processor and enter BASIC. Then run the CONVERT program listed below, answering input and output file prompts with the file you saved from the word processor as input and a new lowercase version as output. After the program has completed successfully, you once again enter the word processor, where you load the new lowercase version you named as the output file in the previous step and proceed to print it as you would any other document.

With a few minor changes this program could be used with cassettes as well as with disks. These modifications would include reading the uppercase version into an array, running the same conversion process, and then writing the new document out to cassette. Other improvements might involve the addition of further rules to the three listed above to provide capitalization. For example, the word "I" needs to be included between greater than signs to be capitalized in the present version.

```
1 ****SCRIPSIT FILE LOWER CASE CONVERTER*****
2 /* VARIABLE DEFINITIONS:
3  * A1$-SEQUENTIAL INPUT FIELD
4  * B1$,B2$-RANDOM OUTPUT FIELDS
5  * A$-INPUT FILE NAME
6  * B$-OUTPUT FILE NAME
7  * LE-LENGTH OF INPUT FIELD
8  * C-COUNTER FOR READ NEXT CHARACTER LOOP
9  * W$-CHARACTER FROM INPUT STRING BEING OPERATED ON
10 /* G-GREATER THAN SIGN FLAG, FLAGS A CAPITAL UNTIL NEXT
11 /* >" SIGN OR CARRIAGE RETURN
12 /* CR- CARRIAGE RETURN FLAG, FLAGS NEXT CAPITAL TO BE CAP*
13 /* P- PERIOD FLAG, NEXT ALPHA WILL BE CAPITAL
14 /* OT$, OUS- INTERMEDIATE VARIABLES FOR OUTPUT RECORD
15 /* N- COUNTS WHICH RANDOM RECORD IS BEING WRITTEN
16 /* W- HOLDS VALUE OF W$ THAT WILL BE INCREASED BY 32 FOR *
17 /* CONVERSION TO LOWER CASE
18 /* ****
```

```
100 CLEAR 5000: CLS
200 PRINT " LOWER CASE CONVERTER"
300 PRINT: PRINT: INPUT "WHAT FILE WOULD YOU LIKE TO
CONVERT";A$
400 PRINT : INPUT "WHAT WOULD YOU LIKE TO NAME THE OUTPUT
FILE";B$
500 OPEN "I",1,A$
600 OPEN "R",2,B$
625 CLS
650 FIELD 2,201 AS B1$,55 AS B2$
675 ***** READ INPUT RECORD *****
700 LINE INPUT #1,A1$
900 LE=LEN(A1$)
950 IF LE=0 THEN 2010
1000 FOR C=1 TO LE
1100 W$=MID$(A1$,C,1)
1104 IF ASC(W$)=141 THEN CR=1: G=0: GOTO 1900 'IF <CR> SET
FLAG
1105 IF ASC(W$)=32 THEN 1900 'IF SPACE SKIP
1106 IF ASC(W$)=62 THEN IF G=1 THEN G=0 ELSE G=1
1112 IF ASC(W$)=62 THEN 2000 'IF ">" SET
FLAG
1130 IF ASC(W$)=46 THEN P=1: GOTO 1900 'IF "." SET
FLAG
1300 IF NOT(ASC(W$)>64 AND ASC(W$)<91) THEN 1900
1303 ***** IF ASCII UPPER CHECK FLAGS *****
1305 IF P=1 THEN P=0: CR=0: GOTO 1900
1310 IF CR=1 THEN CR=0: P=0: GOTO 1900
1315 IF G=1 THEN 1900
1800 GOSUB 2600 'LOWER CASE SUB
1900 IF LEN(OT$)+LEN(OU$)>200 THEN OU$=OU$+W$ ELSE OT$=OT$+W$
1925 IF LEN(OT$)+LEN(OU$)=256 GOSUB 2150
1950 PRINT W$;
1955 IF ASC(W$)=141 THEN PRINT CHR$(13)
2000 NEXT C
2010 IF EOF(1) GOTO 2500
2025 IF LE<255 THEN IF LEN(OT$)+LEN(OU$)>200 THEN
OU$=OU$+CHR$(141) ELSE OT$=OT$+CHR$(141)
2027 IF LE<255 THEN CR=1: G=0: PRINT CHR$(141);CHR$(13)
2050 GOTO 700
2150 N=N+1
2155 LSET B1$=OT$: LSET B2$=OU$
2200 PUT 2,N
2300 OT$=""
2350 OU$=""
2400 RETURN
2500 GOSUB 2150
2510 CLOSE 1,2
2550 END
2600 ***** CONVERT ASCII TO LOWER CASE *****
2700 W=ASC(W$)
2800 W=W+32
2900 W$=CHR$(W)
3000 RETURN
```

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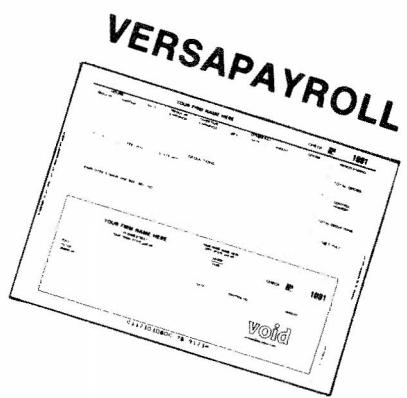
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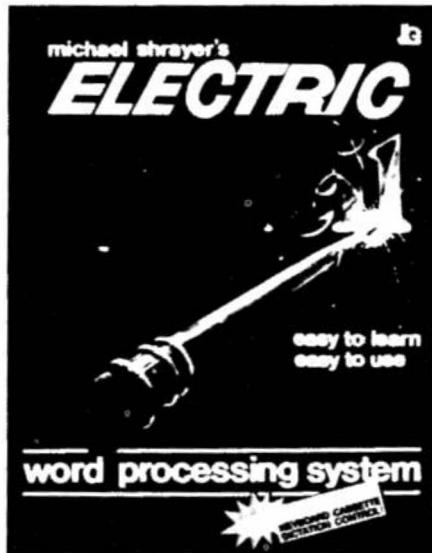
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- Backspace and erase characters
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- Replace from 1 to 38 characters at one time
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- 'Conditional' search and replace
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- Selective (wild card) search and replace
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- Optional print length may be set to print partial files
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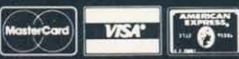
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PRINTING					
Print continuous-form checks?	No	Yes	Yes	Yes	Yes
Print single checks?	No	Yes	Yes	Yes	Yes
Check alignment test?	No	Yes	Yes	No	
Print check stubs?	No	No	Yes	Yes with limited information	
Print check register statement?	Yes	Yes	Yes	Yes	Yes
Print bank statement reconciliation?	Yes	Yes	Yes	Yes	Yes
Print income and expense sub-totals?	Expense only	No	Yes	No	
Print individual account statements?	Yes	No	Yes	Yes	Yes
Print check register notes?	No	No	Yes	No	
Print account distribution statement?	No	No	Yes	No	
Payee Address file (for automatic printing of address on checks)?	No	Yes	Yes	No	
Number of payees	N/A	75	40 Mod I 75 Mod III	N/A	
Number of lines in payee address	N/A	3	4	N/A	
TRANSACTION ENTRY					
Check "In Pay off" file (for automatic printing of what check is on for checks)?	No	Payee only	Yes	No	
Number of payees/payers in file	N/A	75	40 Mod I 75 Mod III	N/A	
Distribute transactions over multiple accounts	Difficult	Difficult	Easy	Easy	
Flag tax deductible items in any account?	Yes	No	Yes	Yes	
User-friendliness	Good	Excellent	Excellent	Fair	
Protection against user error	Good	Excellent	Excellent	Fair	
Allow entry of manually-written checks?	Yes	Yes	Yes	Yes	
Ease of finding checkbook balance	Easy	Difficult	Easy	Easy	
MISCELLANEOUS					
Supplied with DOS?	No	TRS-DOS	TDOS	Mod I TDOS Mod III No	
System	Mod I and Mod III	Mod III only	Mod I and Mod III	Separate Mod I or Mod III	
Accept lower-case commands?	No	No	Yes	No	
Accept lower-case text?	No	Yes	Yes	Yes	
Self-prompting?	Yes	Mostly	Yes	Mostly	
Swapping of program diskettes required?	Yes	No	Mod I Yes Mod III No	No	
VI\$ICALC(TM)-compatible data?	No	No	Yes	No	
Documentation quality	Fair	Excellent	Excellent	Fair	
CAPACITIES					
Maximum amount per transaction	99999.99	99999.99	99999.99	Not listed (in manufacturer's documentation)	
Maximum balance	99999.99	99999.99	99999.99	Not listed (in manufacturer's documentation)	
Limit on deposits per day?	No	Yes - 1	No	No	
Number of income accounts	1	1	Up to 223 total income and expense	Not listed (in manufacturer's documentation)	
Number of expense accounts	Up to 99	Up to 30	Up to 223 total income and expense	Not listed (in manufacturer's documentation)	
Limits on transactions	Mod I 100/mo Mod III 250/mo	2500/yr	Unlimited	Mod I 300/mo Mod III 2400/mo	
Number of bank accounts	Unlimited no interaction	9 - with interaction	Unlimited no interaction	Unlimited no interaction	

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