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# MICROpendium

Covering The TI99/4A Home Computer And Compatibles

Volume 1 Number 12

January 1985

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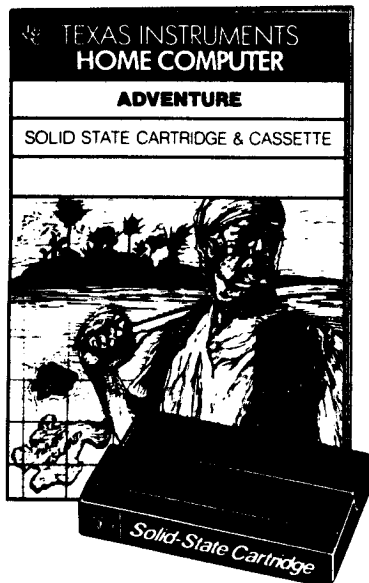
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John Koloen ..... Publisher

Laura Burns ..... Editor

## Coming Next Month

—What a hard disk can do for you (we promise this time)

—Updates on new software releases for 1985

—Our first anniversary, believe it or not

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# Comments

## Looking ahead to 1985

Nineteen eighty-four has come and gone and the TI99/4A remains. In fact, there is more variety in the way of software and hardware available for it than there was some 14 months ago when TI was still producing the machine in Lubbock and other places.

What are the landmarks of 1984 for TI users? Among them I would include the introduction of double-density disk drive controllers, 1200 baud terminal emulators, the Super Sketch drawing board and the easy availability of third-party memory expansions and RS232 interfaces.

Of course, there is far more high quality software available for the TI today than there was a year ago. I'm not going to mention any titles by names because I wouldn't know when to stop. Even better for TI owners, there's more competition in the software and hardware market than there was a year ago, and the prices on many products are coming down as a result. Will these developments continue into 1985?

I think they will.

TI users will continue to see new products from third-party sources, though such large companies as Atari and Milton Bradley are not likely to provide any software support in the future. But that is to be expected from the big boys. The potential for enormous returns on enormous volume has disappeared from the TI market, as it has from much of the home computer market. Still, the major manufacturers will continue to seek out the high, quick return well into 1985, and for many of them it will represent an investment in red ink.

The nature of the TI market has been in transition for at least the past year, but let's not forget that the home computer market itself has been in utter turmoil during the same period. TI is not the only manufacturer to face problems. Where is the Timex-Sinclair? Why is Coleco giving away \$500 scholarships to consumers who pay \$500 for its Adam computer? Commodore continues to profit from its 64, but when was the last time you heard anything nice about a 64 from its owner?

In many ways, TI owners can stand back and say that they've seen what happens when the rug is pulled out from under. Contrary to the laws of physics, the result isn't simply falling on one's head. Sometimes you land on your feet.

I don't pretend to have a crystal ball (can't afford one), but here is what I expect to happen in 1985. For many users the news is good. One item that seems certain for a February debut is the 80-column card from Foundation Computing. Coupled with the company's recently introduced Z80A processor card, a TI user may have a double-density, 80-column CP/M computer for about \$600. Talk about the PEB being the key to the kingdom.

TI users can expect to see a number of highly specialized expansion cards produced in relatively small

numbers, say, 1000-2000. A modem card is likely to be among these. The trick for manufacturers will be maintaining complete compatibility with existing hardware and software.

I'm going out on a limb on this one, but I think there will be another console coming out in 1985 that is compatible with the TI99/4A system. I would expect something that includes some of the features of the 99/8—64K of CPU RAM, 16K of VDP RAM—and a built-in version of Extended BASIC. I would expect it to be considerably faster than the 99/4A. I don't think the keyboard will vary greatly from the 99/4A, though the GROM port may be relocated. I don't think it will come with a co-processor.

I also expect more and more TI users to take the plunge into Forth. It is truly a magnificent language that can grow with the user's mastery of it. My greatest regret is that publishing MICROpendium leaves me no time to learn Forth.

Next month will mark the start of the second year of publication for us. The first year has been very busy, but not as successful as we would have liked. A lot of users who read MICROpendium do not subscribe. I know this because of the number of non-subscribers who have responded to our freeware offers. What they may not realize is that though they are saving a buck a month by reading someone else's copy, they are doing little to encourage us to continue publishing MICROpendium. We need as many subscribers as we can get and urge readers to put in a good word for us with those who borrow their copies rather than subscribing. Failing in that endeavor, if you know of any TI dealers who do not carry MICROpendium let us know their address so we can get in contact with them. The bigger we get, the better we can serve you.

While I am asking for help from readers, I'd also like to offer a little reassurance. A number of our readers have become quite jaded when it comes to magazines. Those who have missed receiving an edition or two have said that they have not contacted us about it because they thought we had gone out of business. I want to make this clear: we fully intend to continue publishing MICROpendium in 1985 on the same schedule as 1984. If the day ever comes when we can no longer afford to put it out, we will let everyone know well in advance in the hope of generating enough support to continue publishing.

Also, a little reminder to those who started their subscriptions with the first edition: this issue will be your last unless you renew.

By the way, we appreciate the response from user groups and others to last month's request for a page of documentation that was missing from our copy of the TI-Forth manual.

—JK



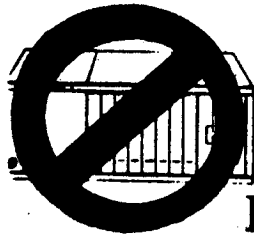
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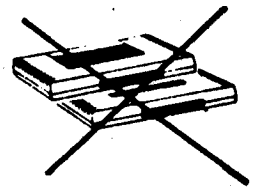
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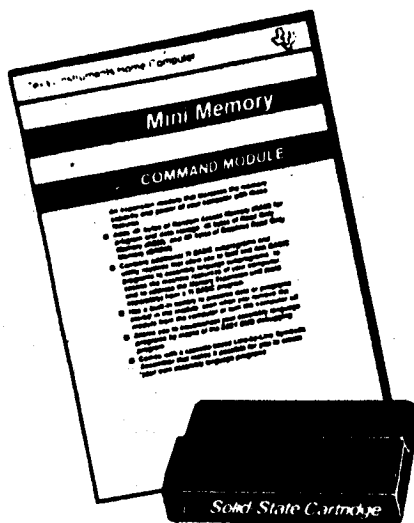


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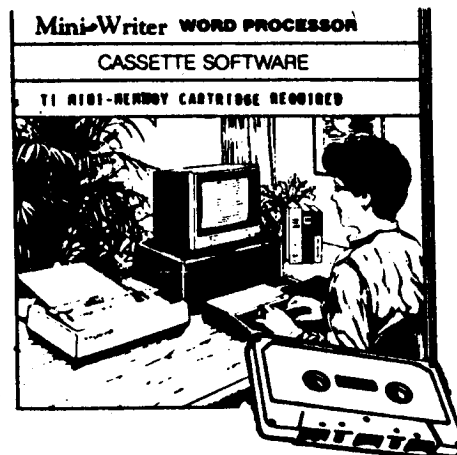
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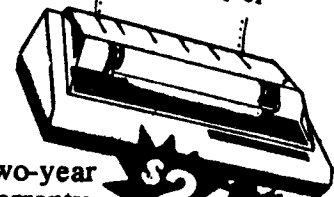
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# Feedback

## Upgrade changes

You might be able to help me with a problem. I recently purchased the TI-Writer/Multiplan upgrade disk enhanced version (PIO). One of the upgrades was a printer default. I have a Smith/Corona TP1 printer with serial output. I need to enter the full description of the printer (RS232/2.BA=1200.BA=8.PA=-E.CR). My question: Is there any way to change the default on the disk to match my printer requirements? I have tried to gain access to the disk with the disk manager, also I have tried to load the disk into the computer and list the program. The program will not load without the TI-Writer module hooked up. I would appreciate any help that you could offer.

**Clyde L. Etter**  
Van Nuys, California

ED: Yes, the default settings can be changed but only by accessing the RS232 file on a sector-by-sector basis. Navarone Industries' Disk Fixer is one tool that can be used to do this. The default that originally came with the TI-Writer file enhancements (RS232.BA=1200.LF) are located in sector 2B of the FORM1 file. The relevant code starts at address 0020. The following code will configure the default for your specifications: 5253 3233 322F 322E 4241 3D31 3220 202E 4441 3D38 2E50 413D 452E 4352.

To make it easy to find this location it is recommended that you copy the FORM1 file to a newly initialized disk, make the changes and then copy them to your TI-Writer program disk. As we are unable to test this code, we cannot guarantee that it will solve your problem but it is worth a try.

Let us know if it works out.

## UG policy

As a user group president it is my responsibility to continue support of the 99/4A. Upon my election the library procedure was revised. We

now have one set of library disks—and one librarian. These disks remain in his possession and are not "rented" or "lent" out. He copies any non-copyright program for a member at \$1 per program. The copyright programs in our possession are available for demonstration only by our librarian either at a meeting or at his residence. We do not as a user group act irresponsibly or in a self-defeating manner. I personally have no respect for those who "pirate" for sale and unfortunately these low-lives exist.

The other side of the coin is pricing. We have all seen the software whose price is far out of line with its value. We have all taken something home only to wonder why. If software producers would lower their sights some they may be surprised. If Plato, for example, was \$20 rather than \$50, it would be less interesting to pirates and more interesting to potential purchasers—and far more profitable to Control Data.

My last feeling is software producers can put user groups on their best behavior by going directly to them, putting the responsibility on the user group to promote the software and control the urge to copy, and the bottom line is cost. User groups with good leadership will be around for a long time. They need more rather than less respect.

**Terrie Masters**  
President  
LA 99ers  
Los Angeles, California

## Right on!

Your Comments column (November) "hit the nail right on the head." A TI owner cannot help being excited about the current action in the TI market. Keep up the good work. Your magazine gives us just what we need.

**Joseph W. Lengyel Jr.**  
Pittsburgh, Pennsylvania

## Suggestions

A few suggestions for future topics: Repair and maintenance of disk drives, sources of service manuals and parts, plans for power supply and parts for a "do-it-yourself" expansion box, adapting other equipment to the 99/4A.

**Gordon B. Fink, MD**  
Philadelphia, Pennsylvania

ED: Readers with the required technical expertise are encouraged to submit articles on these topics. The August edition carried an article about taking care of disk drives. Except for simple repairs, we recommend that qualified technicians with the appropriate testing equipment be used when making major repairs, such as replacing heads, etc.

## Clarification

Two quick observations on the November newsletter. Regarding the last paragraph of the Comments column... We really appreciate your offerings as a "freeware" service, but there are a lot of people out here willing to help you. As you mentioned, the TI enhancements have been made available to user groups. And most of the user groups I bet would be happy to assist you for regional copying. (At least SLaves here in Salt Lake City would.) May I offer a suggestion if you don't think the logistics would be too complicated—in some future issue, would you consider a listing of the known user groups throughout country?

Second, regarding your review of the 9900 Disk Controller Card, the first paragraph in the third column on Page 26 deals with the indirect accessing of cartridges. You mention its use with TEII but didn't clarify its application. If you have a console BASIC program that uses TEII for speech capabilities, an OPEN #1:"SPEECH",OUTPUT statement

(Please turn to Page 10)



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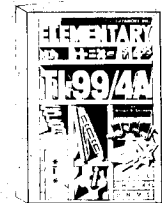
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# Feedback

(Continued from Page 8)

will result in a "Device Not Connected" error unless indirect accessing is used.

**Dwight R. Klettke, MD**  
Salt Lake City, Utah

ED: We encourage everyone to provide free copies of public domain software to users. The logistics of coordinating distribution of the free-ware would overwhelm us. One of these days we will publish a list of user groups in this country.

## Pascal devotee

I would be especially interested in information on how to translate files from one TI programming environment to another. An example would be translating an Extended BASIC data file to a format that Pascal could operate on. Also, going in and out of the Forth environment would be valuable to me.

**Martin J. Biancalana**  
Kettering, Ohio

ED: Readers who have ideas on this subject may be interested in submitting an article.

## Oops!

As an entrant in your software improvement contest, I am somewhat puzzled at the results in the November issue. Maybe you can explain.

I typed in Mr. Winger's program to find out what he had done to improve on the original and was surprised to find out that it takes up more than one kilobyte of RAM. In fact, right after you load it, run the size command and you will find that it takes 1540 bytes with the REM statements and 1423 bytes without them. So the question is, how can Mr. Winger win if his program doesn't even qualify? I took the trouble of making my program take up less than 1000 bytes, since you did stipulate "no more than 1000 bytes" in both the August and September issues of MICROpendium, so I can't see how

Mr. Winger's program even counts as a valid entry. I mean, if you had to be over six feet tall to enter, how could a midget win?

**Stuart Davison**  
Tucson, Arizona

ED: Right you are. We failed to check the lengths of any entries, assuming wrongly that all entries would be no more than 1000 bytes long. We will not repeat that mistake in the current or future contests. Your observations will serve us well down the line. As for REM statements, they will not be in the length of contest entries since they are provided as a convenience and are not necessary to the operation of the program.

## What we need...

Many thanks for your fine magazine and the service you have provided on new disks for the 99/4A. The lower-case letters are a major improvement to TI-Writer. From the ads and content in your magazine, it is apparent that many of your readers are capable programmers. I am not—I use my computer as a piece of office machinery to do useful work (no games). It seemed to me that if one of these truly capable programmers wanted to make a contribution (and perhaps his fortune) here is a real problem to solve for the 99/4A and other small computers.

Here I am with two disk drives, expansion box, daisy wheel printer and modem. To do anything, I have to plug in one of nine cartridges, find and boot the related two disks, and start repeating commands. What this outfit needs is a memory that will let me select the program I need at that moment and start using it without having to tell it again and again to use RS232 port 2 for the printer.

OK, the invention that will do that is already available—a 10 megabyte hard disk selling for about \$700. What we need is a program that will work with the 99/4A that will drive and utilize a hard disk. The ideal would be a disk that could be used with Editor/Assembler to load all

the programs onto the hard disk and a menu on the screen.

Gentlemen, start your engines.

**Ben Ciscel**  
Round Rock, Texas

ED: A \$700 hard disk for the TI would indeed be useful. We haven't seen one, however.

## Software card

There are two major items of software/hardware that I would encourage you to publicize. One is the need for a Pascal code card, plus accompanying software, at reasonable cost.

The second is a card which would contain Extended BASIC, Editor/Assembler, TI-Writer, Multiplan and Mini-Memory—all of which would be keyboard selectable. This card would fill one of the empty slots in the PEB and end the annoying problem of poor contact alignment when sliding the modules into the console. Any thoughts on who I might write to encourage development of these projects?

**G.J. Gerard**  
Hamden, Connecticut

ED: You could write to any company that develops cards for the PEB, i.e. Foundation Computing, Myarc Inc., CorComp Inc., etc. The problems we see with this is that (1) TI may not be willing to grant a license for this software at an affordable price, (2) the cost, including the voluminous documentation that would be required by this card would be considerable, and (3) most users who would be interested in purchasing such a card probably already own these cartridges. We agree, such a card would be a great convenience to users, all other things being equal.

The Feedback column is for readers. It is a forum to communicate with other readers. The editor will condense excessively lengthy submissions where necessary. Contributors should restrict themselves to one subject for the sake of simplicity. Mail Feedback to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.



## PROGRAMS WANTED

If you have any programs which you have written yourself or have translated from other computers and are interested in having them published - contact us for an "Evaluation Agreement." We will then evaluate your programs to determine their marketing potential. If we determine that they do indeed have marketing potential we will then offer to enter into a marketing agreement with you to publish your programs. We will also work with you to make suggestions for possible improvements or changes and pay you a royalty on each copy sold.

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# Freeware (or nearly so)

Amnion Helpline is offering TI users its Free Access Library of public domain software consisting of 104 floppy diskettes filled with programs for the TI99/4A.

The library is operated as a non-profit entity, according to Dr. Guy-Stefan Romano, director of Amnion Helpline. The Helpline is maintained to provide answers to TI users' questions about products and other aspects of TI home computing. This service is provided free of charge. (See the August edition of MICROpendium for more information.)

The Free Access Library provides users with "volumes" of programs. The library includes 37 single-sided diskettes of entertainment programs, 10 graphics-oriented diskettes, 16 music-oriented diskettes, 14 diskettes consisting of learning materials in many categories, eight diskettes consisting of financial and business programs, seven diskettes consisting of technical, scientific and statistical programs, six diskettes consisting of personal and home use programs and six and one-half diskettes filled with miscellaneous programs ranging from baseball statistics to programming utilities.

There are a limited number of Pascal and Forth programs available on request.

Each diskette is defined as a "volume" and users may order a volume for \$5, which includes a diskette, mailer and postage. Users may opt to send their own diskette and return postage and mailer to the Free Access Library and receive each volume for \$2.50 each.

The volumes are also available on double-sided diskettes. Each double-sided volume includes the contents of two single-sided volumes. These are available for \$8 each, including disk, postage and mailer, or \$4 each if the user sends his own disk with return postage and mailer.

According to Romano, the average price of each program is 15 cents.

"All programs may be copied and distributed freely so long as such

copies are not for sale or profit," Romano notes.

The Amnion Free Access Library also offers to supply particular programs to fit specific purposes to any user who sends an initialized disk with return mailer and postage to the library. Users should enclose a note describing the type of program desired. According to Romano, "I will go through the library and pull out all of the programs from the collection that seem to fit your needs and return the disk to you. Naturally, the more specific the request is, the better I can help."

He warns that unreasonable requests or those seeking more than 3 or 4 programs via this offer will not be filled.

Users may also donate programs to the Free Access Library. A note stating that the program is to be placed in the public domain is required. There is no payment for submissions "except the satisfaction that you receive from sharing with others and strengthening the base of TI99/4A users."

Order forms for software volumes are available from the library. For more information, contact Free Access Library at (415) 753-5581 from 9 a.m. to 4 p.m. (Pacific time) or write to 116 Carl St., San Francisco, CA 94117.

## Software giveaway

Danny Michael, of Route 9 Box 460, Florence, Alabama 35630, has a screen dump program that he wants to give away. Michael wrote the unprotected utility program in assembly language. It requires Extended BASIC and a disk system and works with Epson/Gemini-type printers. The program disk includes instructions and fully commented source code.

"All one has to do to get the program is to send me an initialized disk along with a stamped, self-addressed disk mailer," he writes. Or, users may send \$5 instead and

Michael will provide the program disk, mailer and postage.

Michael says, "Not only are you allowed to give copies to your friends, I request that you do so."

## Freeware

MICROpendium is continuing its offer to provide a selection of software free of charge to subscribers. Currently offered are the file updates for TI-Writer and Microsoft Multiplan and the Super Bugger utility.

To order any of these, readers must enclose an initialized diskette and include a self-addressed, stamped return mailer. The TI-Writer and Multiplan updates require a single-sided, single-density diskette. The Super Bugger utility requires a single-sided, single-density diskette. All three will fit on a double-sided, single-density diskette. (Please, do not send single-sided disks that have been altered to allow files to be written to both sides.)

Allow at least two weeks for delivery. Orders may be mailed to FREEWARE, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

MICROpendium will also provide TI Forth and documentation, if a minimum of 100 readers order it. The Forth program includes two example programs. Because of the cost of reproducing the 232-page manual, there will be a \$20 charge (checks or money orders only). This includes postage and packaging. Readers must also submit two single-sided diskettes. Order TI Forth separately from the freeware. Checks will be held until the minimum number of orders are made. To order write to: FORTH, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

All of these programs were released into the public domain by Texas Instruments Inc. No warranties of usability are implied.

# A Forthright group

By LAURA BURNS

The fourth dimension is said to be time. If you've got enough of that to learn Forth, you might be interested in The Forth Dimension, a service of the California-based Forth Interest Group.

The Forth Dimension is FIG's newsletter. Membership in FIG (\$15 a year domestic, \$27 foreign, provides the newsletter with articles about Forth every two months. In addition there are more than 60 FIG chapters worldwide which hold local meetings, according to Jan Shepherd, administrator for FIG.

She says FIG keeps no comparative figures on the types of computers owned or used by its members, but says that many persons who join write in about what sort of computer

they have, and that there are a number of TI owners in the membership, which encompasses Forth users on all types of computers.

The group began in late 1977, Bill Ragsdale, one of its founders, recalls, when he gave a talk to the Bay Area Microcomputer Users Group on structured programming, using Forth as an example. Two people who came up to talk to him after the meeting were John James and Dave Boulton.

They were present when he gave the same talk later to the Homebrew Computer Club, which Ragsdale describes as the second oldest computer club in the country. Kim Harris and Dave Kilbridge, along with James and Boulton, approached Ragsdale after that meeting and the

five men sat under an oak tree by the Stanford University Student Union to discuss pursuing their common interest in Forth.

"The Forth language was fairly unknown at that time," Ragsdale says.

Forth Inc., the only company in the market, had indicated that it was not going to sell in the home computer market, Ragsdale recalls. Nonetheless, interest was high from the beginning, with 30 persons showing up for the first tutorial session.

The first Forth Dimension was a typewritten newsletter, and the next few were typewritten and pasted up.

"At that time it was free," Ragsdale says. "We had signed up 200 people by then."

After about three issues, the West  
(Please turn to Page 14)

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## FORTH OF PHILOSOPHIC, LINGUISTIC INTEREST—

(Continued from Page 13)

Coast Computer Fair had an exhibit in Los Angeles. Ragsdale wanted to go, but his wife complained that there would be no place to sit down. So FIG decided to rent a booth for \$75 and serve coffee as a hospitality booth, so there would be a place to sit down.

As they were a nonprofit group, they got the booth for free. They demonstrated Forth and sold memberships and got their subscriptions up to 300 or 400 by that event, Ragsdale says.

Ragsdale says he wrote a specification sample system, a Forth language system written in Forth which was "good for vendors, not users." A Forth implementation team, a volunteer group of about 15 persons, held 12 to 15 meetings over six months to take the model Ragsdale developed and translate it into Assembly. This was done for about seven computers.

The 15 experts established standards for the language on these computers. Their version, fig-FORTH, was published in book form, partially, says Ragsdale, "to educate vendors as to what good Forth is like."

FIG began selling the books and "succeeded beyond our fondest dreams," Ragsdale says. The Roy Martens Advertising Agency took

over the business management and publishing end for the group for three years, and when other commercial activity kept them too busy for that, were succeeded by Shepherd Associates.

It is unusual for a computer group to form around a language. For this reason, Ragsdale notes, directory listings are sometimes a problem, as there is no one manufacturer or computer for the group to be listed under.

"Forth is a very unusual language," Ragsdale says. "It has philosophical components allied to human thought process and the fundamental ways people learn and the expression of natural language."

Forth, he says, is organized by words, phrases and "what you would call paragraphs. The words are in memory organized into a dictionary rather like a human dictionary."

He notes, "The Forth system is like a young child with a vocabulary of 100 to 200 words. It can do nothing and yet can do everything. The programmer teaches Forth how to do what he wants it to do, stringing together words into paragraphs. You teach your system what to do. You teach the computer how to solve a problem, learning to solve it yourself at the same time. It's like teaching a child. When I'm programming in BASIC or FORTRAN I don't feel

like I'm teaching."

Ragsdale notes that whenever he is adding to his system he is adding to Forth and that what he writes and what is in the system is "indistinguishable," another difference from other computer languages.

"Intellectual challenge ties together people in Forth," he says. "Many people involved are very linguistic in their background, involved both with computer language and human language."

To contact the Forth Interest Group, write P.O. Box 8231, San Jose, CA 95155.

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INFOSOFT has assembled top professional programmers to deliver the best possible software for your system. Most of the software we offer requires a fully expanded TI99/4A system. If you see what our software can do you'll understand why. INFOSOFT recognizes that a TI99/4A with Extended BASIC, 48K and a Disk Drive is one of the most powerful and convenient systems ever offered on the home market. Unfortunately, most of that power was never tapped. We also recognize that there are many TI99/4A users that need software to utilize the full power of their systems and perform many of the tasks their computers were designed to fulfill. With this in mind, we have concentrated our efforts on delivering useful applications that tap the full power of your system, power that you thus far probably haven't realized is packed inside the state-of-the-art processors that your system is based on. INFOSOFT will continue to design and offer software that justifies your investment by utilizing the entire system you've paid for.

Try our software and see what your system can do.

## Graphics Construction Kit

The "Graphics Construction Kit" is an integrated graphics package. It is also a program generator. It allows you to create your own customized characters, and using these characters, create any type of graphics display. The final product is a stand-alone program, complete with line numbers, character definition statements, and screen formatting statements that will reproduce the screen (or screens) you've created using the "Graphics Construction Kit." Yes, THIS IS A PROGRAM THAT WRITES ANOTHER PROGRAM! It's actually two separate programs in one.

First, there's a full-featured Character Generator that allows you to create, save and edit customized characters for later use in the Screen Generator. Features of the Character Generator are:

- \*ROTATE characters 90 degrees
- \*FLIP characters upside down or sideways
- \*MOVE characters a specified number of pixel locations
- \*see characters with any combination of FOREGROUND and BACKGROUND COLORS
- \*create characters in INVERSE VIDEO
- \*SAVE characters to disk
- \*LOAD characters from disk for editing at any time

All of these tasks are performed with the ease and flexibility of your joystick.

The Screen Generator displays the characters you've created with the Character Generator and allows you to put them anywhere on the screen using your joystick. You simply position a cursor on the desired character, select it, then move the cursor to the desired screen position and place it there. This is a fast, efficient and organized way to build an entire graphics display. YOU CAN EVEN MIXED TEXT WITH GRAPHICS USING THE KEYBOARD. Screens can then be saved to disk for later editing. When you are satisfied with what you see, the "Graphics Construction Kit" will create a program on your disk that will reproduce the screen display you've created. This program can then run "as is," or be MERGED into an existing program.

IF YOU PROGRAM AT ALL, the "Graphics Construction Kit" is one utility you won't want to be without. It will save you hours of valuable programming time by allowing you to create and modify graphics and text displays in minutes. It will give you the freedom to experiment with many ideas in a fast, efficient, organized manner, and when you're sure you have EXACTLY what you want, the "Graphics Construction Kit" will essentially do the programming for you. You can even use it to add your own customized title screens to someone else's programs—the possibilities are endless. IF YOU DON'T PROGRAM, the "Graphics Construction Kit" can be used by itself for design work (architectural, electronic, etc.), art work, or just plain fun.

We know of no program available for any computer with the capabilities of the "Graphics Construction Kit." INFOSOFT is offering this powerful package at an introductory price of \$29.95.

REQUIRES: TI99/4A computer, Extended BASIC, 32K Memory Expansion, Disk Memory System, and one Joystick Controller.



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# Foundation offers 'clamshell computer' using Z80A chip

Foundation Computing is introducing a "clamshell computer" for the TI99/4A.

Spokesman Bill Hunter says the company is introducing a new card for the peripheral expansion box that includes 64 kilobytes of random access memory, a built-in Western Digital disk controller and a proprietary operation system.

It is priced at about \$350.

The card's CPU is a Zilog Z80A operating at four megahertz. The disk controller operates with double-density drives, and the card includes two RS232 ports. Hunter describes the card as the "classic CP/M compatible" device. The card is designed to use CP/M software in the Kaypro and Cromemco formats.

Hunter describes the card as "a full, stand-alone computer." The can be operated in conjunction with Foundation's soon-to-be-released 80-column card.

Hunter says the 80-column card is being retrofitted to function as a 9600 baud terminal. The main purpose of the card, he notes, is to provide an 80-column display for the Z80A card. Originally, the 80-column card was going to be sold with an 80-column version of Intelpro's Companion word processor. However, that plan has been dropped.

Orders for the Z80A card are being taken and filled within three to six weeks. The 80-column card is expected to be released in January. Orders will not be taken for it until it

is ready to be shipped. It is priced at about \$250.

Another source notes that Foundation's 128K card may soon have software that will allow it to copy diskettes in one pass. Most disk copying programs require several passes to copy a single-sided, single-density diskette. The software for the 128K card is written in TI-Forth. Date of availability is not known, since the prototype of the program was not delivered to Foundation until mid-December. One advantage of writing the program in Forth is that output can be redirected to any device.

For more information about the cards, contact Foundation Computing at 74 Claire Way, Tiburon, California 94920, (415) 388-3840.

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# Bubble sort in Forth

By HOWARD A. ARNOLD

Here is a Forth procedure for doing a bubble sort on a disk resident file. You may incorporate it in your file management or data base programs or use it independently to do an alphabetic sort on a series of entries in order to test your Forth wings. Though written in TI-Forth, it should be easily convertible to other dialects.

In the interest of keeping the procedure on a single Forth screen, I have omitted on-screen comments. These comments and explanations are offered here in case the code isn't entirely self-explanatory.

## Line 1: Variable declaration

FLAG is used to indicate whether a position switch has been made of any records within a given pass through the file.

MAXRECS stores the total number of records to be sorted. It is initialized here to a value if constant, or may be changed by your application program to retain the number of records to be sorted if that number is changed in the parent program.

#RECORD is the number (between 0 and MAXRECS) of the record currently being accessed.

## Lines 2-3: Constant declarations

R-LENGTH is the maximum length of the strings being sorted.

W-LENGTH is the length of the string to be examined for alphabetic sorting.

FILES is the number of the Forth screen on which the first record is stored in the file to be sorted.

REC/BLK is the number of records which will fit on a given screen. This is calculated based on the R-LENGTH declared.

TEMP is a pad set aside for temporarily storing a string whose position is to be switched during the sort. It must be allotted a length at least as great as R-LENGTH.

SCR #88

```
0 ( BUBBLE SORT)
1 1 VARIABLE FLAG 16 VARIABLE MAXRECS 0 VARIABLE #RECORD
2 64 CONSTANT R-LENGTH 30 CONSTANT W-LENGTH 78 CONSTANT FILES
3 1024 R-LENGTH / CONSTANT REC/BLK 0 VARIABLE TEMP 80 ALLOT
4 : 2DUP OVER OVER ; : NOT 0+ ; : MOVE 2 / MOVE ;
5 : -TEXT 2DUP + SWAP DO DROP 2+ DUP 2- @ I @ - DUP IF DUP ABS
6 / LEAVE THEN 2 +LOOP SWAP DROP ;
7 : RECORD
8 #RECORD @ REC/BLK /MOD FILES + BLOCK SWAP R-LENGTH * + ;
9 : SWITCH RECORD DUP -1 #RECORD +! RECORD DUP TEMP R-LENGTH MOVE
10 R-LENGTH MOVE TEMP SWAP R-LENGTH MOVE 1 FLAG ! UPDATE ;
11 : SORT MAXRECS @ 1- 0 DO I #RECORD ! RECORD W-LENGTH 1 #RECORD
12 +! RECORD -TEXT 0 > IF SWITCH ENDIF #RECORD @ . LOOP ;
13 : DOSORT BEGIN FLAG @ IF 0 FLAG ! SORT ENDIF FLAG @ NOT UNTIL 1
14 FLAG ! ;
15 : WRITE #RECORD ! RECORD R-LENGTH EXPECT UPDATE ;
```

## Lines 4-6: Compatibility definitions

These definitions, mostly taken from Leo Brodie's "Starting Forth," provide compatibility between the FIG-Forth standards and the TI-Forth language. Note that the definition for MOVE, since it uses the previously defined word MOVE within its own definition, should be loaded only once. In other words, FORGET FLAG each time you reload this screen to avoid unexpected results.

## Line 7: RECORD definition

This word provides the address of the buffer storing the string currently being accessed.

## Line 9: SWITCH definition

This word switches the position of two strings in adjacent locations in the file. The string from the lower location is stored in TEMP, the next higher string stored in its place and the TEMP string is written to the higher of the two locations. The buffer is then marked with UPDATE so that it can be subsequently FLUSHED to the disk file.

## Line 11: SORT definition

This word examines two adjacent strings of length W-LENGTH using the word -TEXT defined on line 6. If -TEXT returns a 1, indicating that the strings are out of alphabetic order, the word SWITCH defined above is called, inverting the two

positions.

## Line 13: DOSORT definition

This is the final USER WORD which initiates the sort. It keeps track of the status of FLAG and continues calling SORT until a complete examination of the record is accomplished without the necessity for an alphabetical swap.

## Line 15: WRITE definition

In order to build a file to test the program, the word WRITE is provided. Use WRITE like this:

n WRITE (ENTER) xxxxxxxxxxxx (ENTER)

where n is the record of the string to be entered, and xxxxxxxxxxxx is the string itself.

Be sure to change variable MAXRECS to agree with the number of records to be sorted with the command n MAXRECS ! (after loading the screen); n in this case being the total number of records to be sorted.

You'll find this to be a surprisingly fast bubble sort, I suppose because of the inherent speed of Forth.

Enjoy!

Arnold is a retired engineering manager of AT&T Technologies. He now does freelance writing and consulting both in computer programming and manufacturing technology. He can be reached at 210 Beech Valley Rd., Lewisville, NC 27023.

# Fur, splashes and smoke

Good old Bowser may be man's best friend, but he isn't necessarily the computer's.

He's well-trained, you say? Knows better than to touch it?

So far, so good, but only if you are well-trained, too. If you reach down to pet him, you need to ground yourself before using your TI99/4A, warns Richard Wells, a TI customer service representative in Austin, Texas.

Petting an animal, or even just walking across the carpet "you generate an incredible amount of static electricity that breaks down a circuit," Wells says. Other sources of static electricity are such activities as pulling a sweater on and off and picking up and putting down a styrofoam cup.

Your finest Limoges china, or a Japanese ceramic mug from the hardware store for that matter, will not generate as much static electricity as styrofoam, but even if the contents within were brewed by Mrs. Olsen herself, it's best to take your coffee break away from the TI99/4A as spills of liquids won't do it any good whatsoever.

The computer doesn't mind if you smoke, Wells says, but smoking isn't a good idea for the disk drive and diskettes. (And though smoke might not bother the computer, ashes might.)

It is important to keep magnets away from the computer, he says, and to store diskettes at least four feet away. Some television sets, he notes, generate magnetic fields that can

wreak havoc on a diskette.

When setting up a work station, he advises, the power supply for the computer, the peripheral expansion box and the TV monitor should all be on one line. You should try to keep your stereo, calculator and other items on a different power outlet.

"The majority of my repairs are from user abuse," Wells says. He notes that the TI keyboard is responsive to only a slight touch of a finger, "but some people just type away."

The single most important piece of advice he has for a TI99/4A user, he says, is "Keep it clean."

It is a good idea to keep the computer covered when not in use, he says. Dust covers are available,

(Please turn to Page 22)

## Words to the wise on equipment

The standard advice whenever users intend to remove or replace a card in their peripheral expansion box is to unplug it and wait at least two minutes before doing anything. This is to allow electrical charges in the cards to drain off.

Advice when moving equipment during the winter months is to let it sit for at least an hour before turning it on after coming in from the cold. Rapid changes in temperature are accompanied by changes in humidity, which results in condensation. This condensation will screw up the works if not allowed to evaporate before electronic equipment of any kind is turned on. Minimizing temperature extremes is helpful in this regard. If possible, carry your equipment in the passenger compartment of your car rather than in the unheated trunk.

Static electricity also becomes a greater problem during winter months than at any other season. This is due to a number of reasons, including the fact that the atmosphere is drier during cold spells. Also, most home heating systems tend to produce very dry heat, which increases the likelihood of static electricity.

Unless measures are taken to deal with these conditions, computer users are likely to bring a lot of static to their computer stations. Static electricity can create a variety of problems in computer equipment, ranging from temporary loss of memory to permanent damage to computer circuitry.

Solutions to these problems include the use of an anti-static spray on carpets, the use of anti-static mats and the placement of a humidifier near the computer to increase the humidity. Not placing a computer station in a carpeted area is also helpful.

Anti-static mats include a ground wire that is connected to the plate of a grounded electrical outlet. The user then merely touches the mat prior to operating the computer to eliminate static discharges from his body. Touching the mat periodically helps to prevent static electricity from building up. These mats come in a variety of sizes. Console-size mats are priced in the \$30-\$40 range and may be purchased from office supply stores that carry computer supplies. There are also large mats designed to be placed under the computer station.

## DISK FIXER

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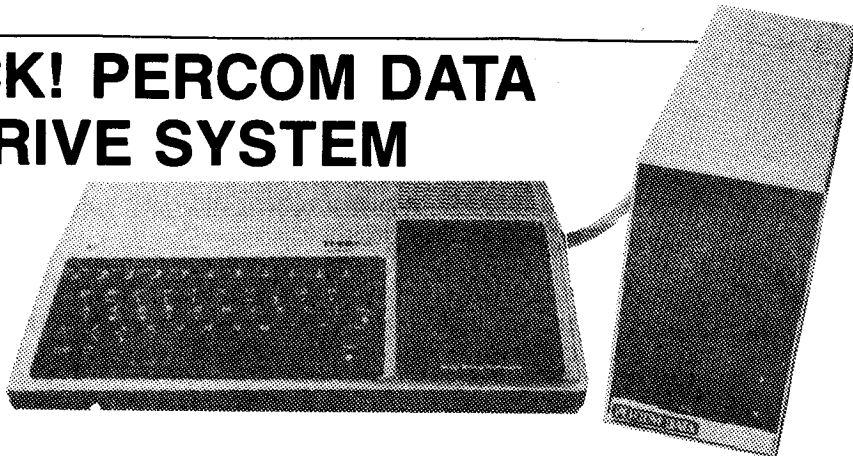
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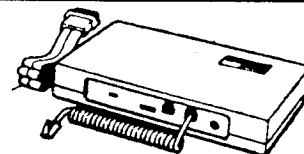
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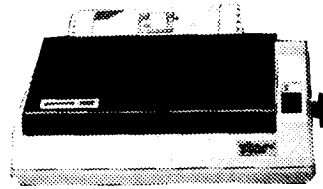
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## BUBBLE, BUBBLE TOIL AND TROUBLE—

(Continued from Page 19)

he notes, but the user can cover the computer with "a nice towel if nothing else."

Also, he says, "It needs to be in one place. The RF modulator that hooks the console up to the TV has very sensitive wiring. The console needs to be left stationary." The disk drive needs to be kept clean also, Wells says. This may be done with a disk drive cleaning kit, which contains a brush and nonresidue alcohol for cleaning the read/write head.

Wells recommends that users steadfastly TI's advice of unplugging the PEB or peripheral device and letting it sit for two minutes before pulling out expansion cards and removing the device. This allows the static electricity to "drain" out.

Never unplug peripherals while the power is on, Wells warns, for fear

of causing damage to the integrated circuits.

Wells also notes that users should not remove peripheral cards as a matter of routine. The contacts can become worn, causing problems later on.

The console needs to be level, "where it can't get knocked off," he says.

There are few problems with printers, he notes, because they are "built so darn tough." Printers, too, need to be kept clean and dust free, and sometimes users do not replace the ribbons often enough.

Children using the computer cause some of the most bizarre problems for Wells, the most memorable being when he pulled out pennies that a child had shoved in through the GROM port. Wells has also had instances of bubble gum inside the

GROM port.

Wells says that children, including his own three-year-old niece, can benefit from using the TI99/4A.

"The 99/4A home computer is a wonderful educational toy," he says. "Like all things of this nature, it should have adult supervision."

It is important, he says, not to confuse the computer with a toy, however.

Toy magnets near a computer, he notes, could cause problems.

Approximately 40 percent of his customers, however, use the 99/4A as a business computer, he says. Though these customers are more sophisticated and generally take better care of their computers, it is hard to say whether their computers have fewer repair problems.

With a customer like this, Wells notes, the computer gets used more.

## They're selling like hot cakes

Once again—but only for a day—the TI99/4A was the best-selling home computer in the country.

Tex-Comp held a one-day warehouse sale in the San Fernando Valley section of Los Angeles Dec. 2 and sold more than 1,000 TI computer packages.

The Los Angeles Times reported in a major feature that many customers had driven more than a hundred miles for a chance to buy the computer.

At the one-day cash and carry event, customers could buy a package consisting of the 99/4A console, a Data Bar Optical Scanner, a Data Bar software library, four Datamost TI99/4A books and 32 games on cassette, all for \$99.95.

Jerry Price of Tex-Comp said the sale was primarily to create a continued awareness and interest in the 99/4A. Price located a large number of consoles left over from a promotion TI did with Dupont Carpeting and was able to have them shipped to California for the sale.

Needing extra space for the sale, Tex-Comp made arrangements to use the warehouse of Head Computer Products, a manufacturer of disk head cleaners which are also carried by Tex-Comp. Head's warehouse and offices are located about a mile from Tex-Comp's warehouse so purchasers could go from the sale to Tex-Comp's warehouse store and purchase additional software and accessories.

Full-page ads in the Dec. 1 and 2 Los Angeles Times and small supporting ads in the area papers for four

days gave notice of the sale.

Representatives from Texas Instruments were present at the sale to assure purchasers of after sale support. Purchasers also received information from CorComp Inc. on expanding the unit. (A MICROpendium flyer was also given to each purchaser.)

The sale exceeded Tex-Comp's wildest expectations, Price said. Prospective customers began lining up at 5 a.m. for the sale, which began at 10 a.m. By 10 a.m., the line was more than two blocks long and growing. However, Price says, the logistics had been worked out so the crowds of anxious purchasers could move through quickly.

When a purchaser reached the building's entrance, he would see the computer running the TI demonstration cartridge from Tex-Comp's archives, along with other discontinued collectibles, such as Terminal Emulator I, Diagnostics and Speech Editor. Tex-Comp installed two telephone lines with credit card reading modems for quick clearance of credit purchases. In the warehouse office, a TI99/4A with a cassette recorder, Gemini 10X printer and Axiom interface generated each invoice using a program based on a program written years ago for Tex-Comp by Peter Cookman of Denali Data. (Cookman invented the bus bar which allowed condensation of the old stand-alone TI system.)

(Please turn to Page 34)

# TOOL BOX

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## Winning entry

## Watch these notes

Michael Christianson of Pekin, Illinois, submitted the winning entry in our second Software Improvement Contest. Entrants were asked to make improvements to a brief program that simulates an organ in BASIC. Entries were limited to 1,500 bytes.

Christianson's entry uses the left side of the keyboard to represent the natural notes and the right side to represent the sharps and flats. The entry includes a screen depicting a piano-like keyboard with white and black keys. When a key on the console is pressed, a musical note appears on the screen keyboard to indicate the location of the key. Also, a red musical note symbol is placed on the screen in a random position. Each time a key is pressed, another note symbol is added to the display.

For his efforts, Christianson received the \$50 first prize.

```
100 REM BY M.CHRISTIANS
ON WITH JIM BOWMAN K
IBITZING DEC 1,1984**
*****
110 CALL CLEAR
120 CALL SCREEN(15)
130 CALL CHAR(65,"FF818
181818181")
140 CALL CHAR(66,"81818
181818181")
150 CALL CHAR(67,"81818
1818181FF")
160 CALL CHAR(80,"FF")
170 CALL CHAR(81,"FF818
181818181")
180 CALL CHAR(133,"0406
05061D3C3C18")
190 CALL COLOR(5,2,16)
200 CALL COLOR(8,2,2)
210 PRINT " QPPPPPPPP
PPPPPPPPPPPPQ"
220 PRINT " Q% sTien
way 99/4a &Q"
```

```
230 PRINT " ZZZZZZZZZ
ZZZZZZZZZZZZZZ"
240 PRINT " ZAAAAAAAAA
AAAAAAAAAAAAAZ"
250 PRINT " ZBBBBBBBBB
BBBBBBBBBBBBBZ"
260 PRINT " ZCCCCCCCC
CCCCCCCCCCCCCZ"
270 PRINT " Zabcdefgha
bcdefgabcdefZ"
280 PRINT " ZAAAAAAAAA
AAAAAAAAAAAAAZ"
290 PRINT " ZBBBBBBBBB
BBBBBBBBBBBBBZ"
300 PRINT " ZCCCCCCCC
CCCCCCCCCCCCCZ"
310 CALL COLOR(5,2,16)
320 OPTION BASE 0
330 DIM NO(20),N(20)
340 FOR A=0 TO 20
350 READ NO(A),N(A)
360 NEXT A
```

(Please turn to Page 26)

# YORK 10

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The **SST EXPANDED BASIC COMPILER** package translates a Basic program into TMS9900 machine language, resulting in a great gain in program execution speed. The compiled commands are up to 160 times faster than the corresponding commands in **TI BASIC** or **EXTENDED BASIC**. For a comparison we used our Compiler to run the benchmark program for making change in the April 1984 MICROpendium. This program takes over 30 minutes in **TI BASIC**. When the program was compiled using the **SST EXPANDED BASIC COMPILER**, the program ran in 37 seconds. In fact, you can compile the program, save it on a disk, recall it, run it and still be considerably faster than **TI BASIC**.

A second benchmark program appeared in the November 1984 issue of the MICROpendium (page 22). This program took:

209.4 seconds in <b>TI BASIC</b>	7.2 seconds in <b>TI FORTH</b>
219.6 seconds in <b>TI EXTENDED BASIC</b>	4.9 seconds in <b>WYCOVE FORTH</b>

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## PLAY IT AGAIN, SAM—

(Continued from Page 24)

370 DATA 40000,30,247,2  
 ,349,6,392,7,440,8,659,  
 12,698,13,784,14,1047,1  
 7,1175,18,1319,19,1397,  
 20,880,15,494,9  
 380 DATA 294,4,262,3,22  
 0,1,330,5,523,10,587,11  
 ,988,16  
 390 CALL KEY(1,K1,S)  
 400 CALL KEY(2,K2,S)

410 K1=K1+1  
 420 K2=K2+1  
 430 CALL HCHAR(19,7,67,  
 20)  
 440 CALL HCHAR(23,7,67,  
 20)  
 450 CALL COLOR(5,2,16)  
 460 CALL SOUND(-4250,NO  
 (K1)\*.5,0,NO(K2),0,N(K1  
 )+200,30)  
 470 GOSUB 490  
 480 GOTO 390

490 IF K1=0 THEN 510  
 500 CALL HCHAR(23,N(K1)  
 +6,133)  
 510 IF K2=0 THEN 580  
 520 CALL HCHAR(19,N(K2)  
 +6,133)  
 530 RANDOMIZE  
 540 A=INT(RND\*12)+1  
 550 B=INT(RND\*32)+1  
 560 CALL HCHAR(A,B,133)  
 570 CALL COLOR(13,7,1)  
 580 RETURN

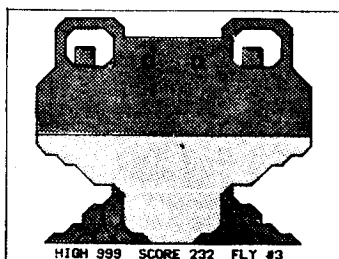
## Reviewed in MICROpendium

Listed below are the products that have been reviewed in MICROpendium and the issues in which the reviews appeared.

B-1 Nuclear Bomber ..... February  
 Tandon TM-100 Disk Drive ..... February  
 Void ..... February  
 Beanstalk Adventure ..... February  
 Microsurgeon ..... February  
 On Gaming ..... February  
 Database 500 ..... February  
 Star Trek ..... March  
 Escape From Balthazar ..... March  
 Gargon's Getaway ..... March  
 Sky Diver ..... March  
 Mail-Call ..... March  
 Prowriter 8510 Printer ..... March  
 Monthly Budget\$ Master ..... April  
 Budget Master ..... April

Home Budget ..... April  
 Thief ..... April  
 Donkey Kong ..... April  
 Khe Sanh ..... April  
 Companion Word Processor ..... May  
 Q\*Bert ..... May  
 Mad-Dog I&II ..... May  
 Programs for the TI Home Computer ..... May  
 Creative Expressions Accounts Receivable/Ac-  
 counts Payable ..... June  
 CDC 9409 Disk Drive ..... June  
 Starship Concord ..... June  
 Lost Treasure of the Aztec ..... June  
 ASW Tactics II ..... June  
 Theon Raiders ..... July  
 Introduction to Assembly Language for the TI  
 Home Computer ..... July  
 Game of Wit ..... July  
 Pole Position ..... July  
 TE-1200 ..... August

Tower ..... August  
 Galactic Battle ..... August  
 Galaxy ..... August  
 Wycove Forth ..... September  
 99/4 Auto Spell-Check ..... September  
 QUICK-COPyer ..... September  
 Wizard's Dominion ..... September  
 Anchor Automation Mk XII Modem ..... September  
 Killer Caterpillar ..... October  
 ZORK I ..... October  
 Defender ..... October  
 9900 Disk Controller Card/Manager ..... November  
 Super Bugger ..... November  
 Transtar 120S Printer ..... November  
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## The New York Times

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DAN FERST  
 Activity Director

May 30, 1984

Mr. James B. Hollander  
 J & K H Software  
 2820 S. Abingdon Street  
 Arlington, Va., 22206

Dear Mr. Hollander:

Having only just received my personal copy of Super Extended Basic (SEB), it would be unfair of me to offer any detailed comments.

However, the raw power and vitality of your unique approach and obvious advanced programming is so obvious that I wanted to take this opportunity to express my deep admiration for this extension of the TI Extended Basic program.

You have taken the TI99/4a to a level which far exceeds the wildest imagination of a Basic programmer. I look forward with eager anticipation for information updates as well as any future enhancements for the TI99/4a that are in preparation.

Please be assured that I shall continue to support your company with personal purchase power as well as word of mouth support.

Keep up the good work!

Very truly yours,  
*Dan Ferst*  
 Dan Ferst

PS: Inasmuch as this letter is unsolicited on your part, you have my permission should you so desire, to quote me.

D.F.  
 Sponsored by T.E.A.L.M.  
 (Times Electronic Association in New York/June 1984)

## Super Sketch

# For high-tech Rembrandts

By CHRIS BOBBITT

For years the TI99/4A has been the subject of a lot of criticism for its graphics. This is despite the fact that the TMS9918 graphics chip, the one in the 4A, allows up to 32 independently moving objects, or sprites. And despite a dazzling array of 16 colors. Other computers are considered "better" graphics machines because they allow the programmer to plot, individually, various sizes of points on the screen. With these machines, each single point, or pixel, on the screen can be turned on or off; and with some, changed from one color to another at a single command.

Many who do any BASIC programming realize that with the 4A one must "redefine" an already existing character code and then plot it on the screen before graphics can be displayed. They also know that each character displayed can have only one foreground color, representing the dots or pixels turned on, and one background color, representing the pixels turned off. This is a severe limitation for applications games and other programs that require excellent graphics. This is not to say that good graphics haven't been created with this method. BASIC and Extended BASIC programmers have almost pushed the graphics available to them to the limit, with some appealing results. However, many secretly dream of creating graphics where each pixel may be on or off and may be made one color or another.

In the past several years a variety of assembly language programs have been written which permit the user to draw pictures on the screen with pixel precision. These programs have done much to dispel the belief that the TI99/4A can't produce excellent bitmapped graphics where virtually every pixel can be a different color and plotted independently of every other pixel. The graphics created with these pro-

## Review

### Report Card

Performance: ..... A—  
Ease of Use: ..... A  
Documentation: ..... A  
Value: ..... A  
Final Grade: ..... A

Cost: \$59.95

Manufacturer: Personal Peripherals, 1505 S. Green St., Longview, TX 75602

Requirements: console, monitor or television, cassette recorder

grams are often phenomenal.

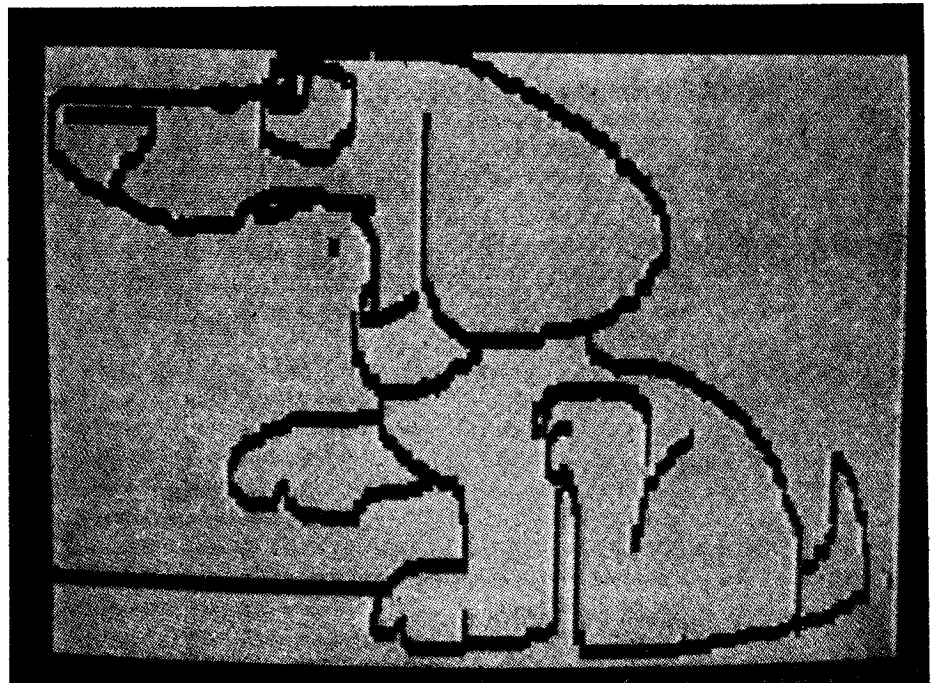
Unfortunately, most if not all of these programs are somewhat difficult for non-programmers to use. Usually, the more powerful the program is, the more difficult it is to use. Some require the user to memorize numerous function and control keys. Others require fancy maneuvers with the joystick. Even the simplest require the user to use a joystick to draw points on the

screen, which may be an inconvenient method for the many TI Joystick owners. Also, without exception, these programs require disk systems and memory expansion devices.

The TI99/4A needed some device, perhaps a graphics tablet or light pen, that would allow its many owners to easily create excellent graphics. The consensus was that such a device should be inexpensive, powerful but easy to use, and not need a galaxy of peripherals to work. Until recently this was simply a pie-in-the-sky dream. That is until a few months ago when Personal Peripherals introduced a graphics drawing device called Super Sketch.

**Performance:** Super Sketch is the first and only graphics tablet for the 99/4A. It requires no more equipment than a console and tape recorder. All the software for the tablet is included in a cartridge, which looks remarkably like a standard TI cartridge.

Super Sketch operates somewhat differently from most graphic tables. Actually, Super Sketch is  
(Please turn to Page 28)



## SUPER SKETCH PAINTS, DRAWS—

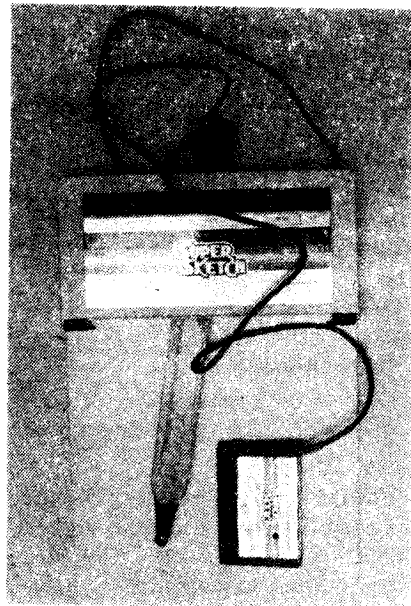
(Continued from Page 27)

more of a drawing board than a tablet. Instead of requiring users to draw on a flat surface with a stylus, Super Sketch has a plastic arm with a point at the end that can be moved to practically any place on the clipboard-sized surface. Where the point is over the board, a dot of one size or another can be drawn. Unlike other graphic tablets, the fact that the arm is touching the drawing surface makes no difference. Other tablets "sense" the contact between the two surfaces and place a dot on the screen at the associated point. With Super Sketch, the dot is drawn where the graphics tablet "believes" the tip of the arm is, so it makes no difference if the arm is touching the surface or not.

The arm is fitted through a large plastic housing at the top of the drawing board. The housing has five buttons on it. The center button functions as a paper release. If it is depressed, the small clips at the base of the housing open up and allow paper to be removed or attached. Of the remaining buttons, two are labeled "Lift" and are located on opposite ends of the housing for lefties and righties, and the remaining two buttons are labeled "Menu" and "Select." Out of the back of the housing is a small black cable that is connected, via a three-foot cord, to a standard-size cartridge which contains the software for the package and the appropriate connections for the pad.

The software that comes with the pad is more than adequate for all but the most sophisticated graphics creation tasks. The program provides the user with nine different "brushes" that can paint anywhere on the screen in any of the 15 available colors. The user may use the "Fill" command to fill in any area on the screen with any of the colors, or with a checkerboard pattern of any of the colors on a background of any other color.

The user may use the "Erase" option to erase pixels on the screen, or the "Clear" option to erase the



entire screen. The "Swap" option allows the user to change the color of all the objects of one color to another color, while the "Show" option erases the cursor and the menu from the screen so that the entire image can be displayed by itself.

Finally, the "Expert" option provides a sub-menu of options that allow the user to draw boxes, rays, lines and save or load screens to or from cassette tape. The software performs flawlessly and very quickly.

The pad is constructed of plastic and seems reasonably sturdy. The pad requires quite a bit of space on a table, since the arm can extend almost completely through the back. It should be placed on a table since even a slight movement of the arm may interfere with the drawing of your masterpiece. Fortunately, the pad has six rubber pads on the bottom so it won't slide around the table.

The clip seems to be the least effective part of the apparatus, since it does not hold the paper very well.

I have only two complaints with the software that I would like to see changed in future versions. First, the fact that disk drives cannot be

used to save and load screens is a serious limitation. Second, the program will not, under any conditions, draw a perfect circle. The latter is a minor flaw in an otherwise perfect program. Overall, everything performs well.

**Ease of Use:** This package is, by far, the easiest to use graphics designing tool for the 99/4A. Ease of use is inherent in the design of Super Sketch. The arm is so easy to use even a pre-schooler can master it. As a matter of fact, this can be a great educational tool. The design of the device is in no way misleading, everything does what it looks like it should do. The software is easy to use, too. The program is operated by using only three keys on the pad itself. The user need only touch the computer keyboard to quit the program.

**Documentation:** The documentation provided with Super Sketch is for both the TI and Colecovision versions of the pad. Therefore, some of the screen photographs are incorrect in terms of the TI. Despite this, both versions are so similar in operation that it really makes little difference. The manual is 24 pages long and contains sections dealing with setting up, using the program, drawing hints, tape storage hints, screen photographing notes and troubleshooting hints for any difficulties which may arise.

The simplicity of the device is reflected in the manual. Each section is relatively light reading, but is crammed with enough facts to make the beginner into an expert in no time. Sections that are applicable to only the TI99/4A, such as saving and loading from tape, are covered in detail. Also, interspersed liberally throughout the text are short passages dealing with the history of graphics and computers, and tidbits on the graphics specific to the TI. This gives the manual a homey style; easy and even interesting to read. The manual is excellent.

**Value:** This peripheral will appeal (Please turn to Page 33)

## Foundation Computing 128K Memory Expansion Card

# Equipment to emulate

By JOHN KOLOEN

Foundation Computing's 128K memory expansion card is a product that has remained unique in the TI marketplace. The card has been out for more than a year, and still there are no imitators.

Since introducing the card, Foundation has made a significant improvement to it by marketing Disk File Emulator firmware that allows users to access the extra memory in a straight-forward manner. Prior to the availability of the Disk File Emulator several months ago, the card was of greatest use to those who used it in programming and could write programs to access the cards 128K of Random Access Memory. The Disk File Emulator chip option changed all that, making three 32K memory banks easily accessible to even casual users.

Purchasers may order the 128K card without the emulator firmware, but I do not know why anyone would want to. For an extra \$35 or so the company will ship the card with firmware implanted, and I recommend the firmware option to any would-be purchasers. It is the brains of the outfit, so to speak.

**Performance:** With the exception of the activity light in the front the card (which is green), once it is installed in the PEB a user is not likely to notice any difference between the Foundation card and the standard TI issue. The card itself is as sturdy as a TI card and fits the PEB like a glove.

The card actually consists of four memory banks. The lower one functions in the same manner as the standard 32K of RAM found in the TI card, and the other three banks have 32, 32 and 24 kilobytes of RAM, respectively. 8K of the last bank is used for the disk emulator software.

The upper three memory banks provide the user with potential not available in any 32K card. Although it is possible to address these banks

## Review

### Report Card

**Performance:** ..... A  
**Ease of Use:** ..... A  
**Documentation:** ..... B+  
**Value:** ..... B  
**Final Grade:** ..... A-

**Cost:** \$269.40 (C.O.D. including Disk File Emulator firmware)

**Manufacturer:** Foundation Computing, 74 Claire Way, Tiburon, CA 94920, (415) 388-3840

**Requirements:** console, monitor or television, peripheral expansion box, disk system, operates with a variety of software cartridges

through user-written Assembly language routines, most users will probably prefer to have the bank switching and accessing done via the Disk File Emulator.

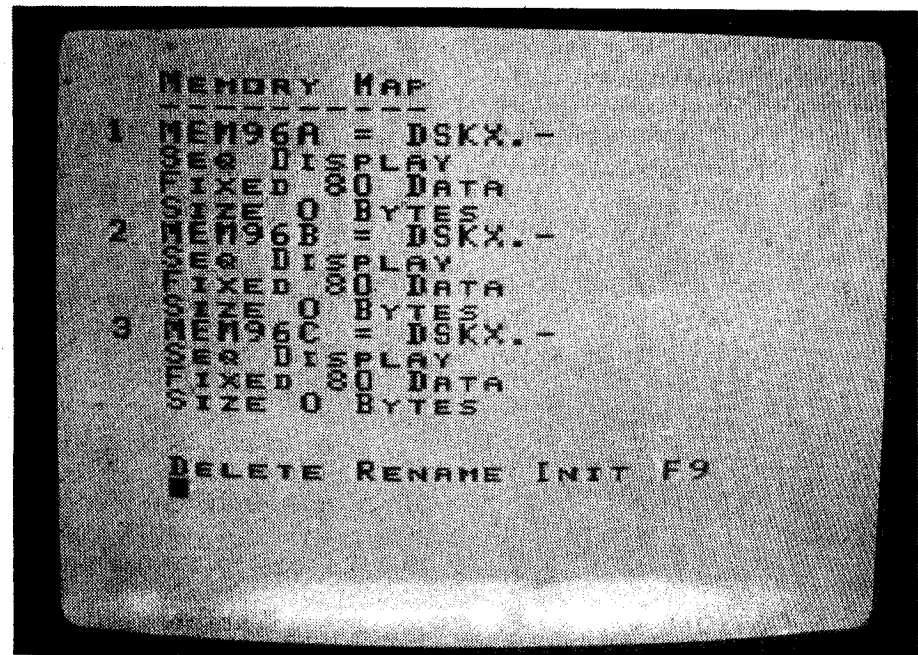
The emulator is the heart of the card, as far as I am concerned. Without it, one would not be able to access the three upper memory banks

through such cartridges as TI-Writer and Microsoft Multiplan.

Basically, the emulator allows the user to access the upper three memory banks in much the same way as one would access a disk drive. Only the names are changed. Instead of entering DSK1 to represent disk drive 1, the user enters DSKX to access a memory bank. (Prior to using the expansion memory, it is necessary to enter DELETE "MEMINIT" in BASIC. This initializes the expansion memory as a psuedo device. There is another command, DELETE "MMM" (Memory Management Module) that functions as a catalog/manager for the three upper memory banks. When this command is entered, a display reports the name of the file or program in each bank, the type of file and its size in bytes. (Each bank also has a name: MEM96A, MEM96B and MEM96C.)

Through MMM, the user may delete or rename files or programs or clear all three banks simultaneously. The command options are displayed at the bottom of the screen when DELETE "MMM" is used. MMM

(Please turn to Page 32)





## PTERM-99

By JOHN KOLOEN

My experience with TI third-party products is that pricing does not always bear a relation to value. Generally, this means that a lot of items are, in my opinion, overpriced. It is thus a rare treat to find a piece of software that is, in my view, underpriced. But that is exactly what I think about PTERM-99, an easy-to-use terminal emulator that provides users with 1200 baud capability. Priced at \$14 direct from the programmer, C. Richard Bryant—dealer prices are up to the dealer—this terminal emulator not only operates out of any one of three TI cartridges but also allows the user to determine background and foreground colors.

**Performance:** PTERM-99 is a fully programmable terminal emulator that allows users to send and receive data at 300 or 1200 baud. It has a buffer that stores up to 28K of data that may be dumped to disk or printer at any time. When the buffer is within 1K of being filled, the screen turns red as a reminder to select the dump option. This is done by simply pressing CTRL 6 and entering a device and file name. The user then waits while the data is being dumped. Once the data has been dumped, the cursor returns to the screen and the user may continue his telecommunicating. (The cursor has been redefined as an underline.)

The program loads automatically out of Extended BASIC on powerup. The user is then prompted to enter a printer configuration (PIO or RS232), baud rate (300 or 1200), parity (odd, even or none), RS232 port (1 or 2), stop bits (1 or 2) and data bits (7 or 8).

Once the user has selected these options, the flat cursor appears at the upper left of the screen and one is ready to proceed with telecommunications.

Control codes are issued using the control and function keys. Commands include:

## Review

### Report Card

Performance: ..... A—  
Ease of Use: ..... A  
Documentation: ..... A  
Value: ..... A  
Final Grade: ..... A

Cost: \$14 (diskette)

Manufacturer: C. Richard Bryant,  
417 E. Alpine St., Altamonte  
Springs, FL 32701

Requirements: console, monitor or  
television, disk system, 32K  
memory expansion, RS232 inter-  
face, modem, Extended BASIC,  
Mini-Memory or Editor/Assembler,  
printer optional

CTRL 0: Quit to title screen  
CTRL 1: Toggle printer on and off  
CTRL 2: Load upload buffer  
CTRL 3: Transmit one line at a  
time  
CTRL 4: Transmit upload file  
using X-off, X-on, CAN protocols  
CTRL 5: Resets the download

buffer at the point which the user wants to start saving text or data  
CTRL 6: Begins dump to disk  
drive (user enters drive number  
and filename and closes file when  
completed)

CTRL 7: Restarts program to reset  
transmission parameters

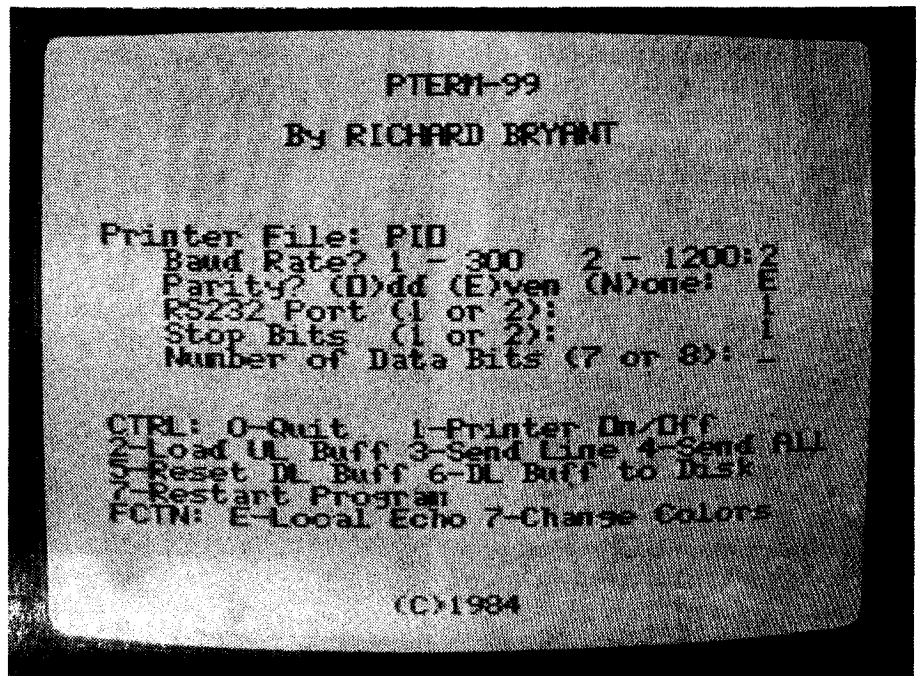
FCTN E: Toggles the local echo  
feature on and off. (Useful for  
bringing Help file to screen)

FCTN 7: Selects background and  
foreground colors

I prefer the PTERM-99 to Terminal Emulator 1200 in terms of the way it operates. Unlike TE-1200, which tends to hold back a number of screens of data before bringing them to the screen in a very rapid fashion, PTERM-99 receives and displays data line for line as it is sent. This is more natural from a user standpoint, requiring no adaptation on the part of the user.

Of course, it does not allow as many baud rate configurations as TE-1200, which offers transmission rates of up to 9600 baud. Nor does it offer auto-logging of data to a disk

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## TI-Runner

# Lucky we have this game

By CHRIS BOBBITT

TI99/4A users have been rather lucky in the past year that the big software companies—Atari, Milton Bradley and others—went ahead with their promises to translate their many fine products. After all, the 4A is a “dead” computer, resigned to the ash heap of history if you will.

That really isn't a fair description though. The tens of thousands (hundreds of thousands?) of remaining active TI owners represent a large, software hungry bunch of individuals, determined to follow their interests no matter what.

As I was saying, many of the better arcade games have been translated for the 99/4A. However, some of the best software is produced by small software companies, among them Sir-Tech, Sierra On-Line, Broderbund and Electronic Arts, to name a few. These companies generally do not have the resources or the incentive to translate their products for TI99/4A owners. So, again, just as we used to have to rely on our own small, third-party manufacturers for versions of games such as Frogger or Centipede, we must depend on the ranks of TI third-party companies to translate or adapt versions of other popular games for us on the TI.

One popular game produced by one of those small software companies is Loderunner. This program, originally a take-off on Donkey Kong, inspired an enthusiastic following among Apple II owners, and later Atari and Commodore owners. It's not hard to see why. Loderunner, as a game, requires the player to use far more strategy than Donkey Kong. Loderunner is much more difficult and considerably more varied. The original Loderunner had virtually an infinite number of screens, since it allowed the player to create his own. Loderunner has a whole different flavor than Donkey Kong—there is no barrel jumping, the game

## Review

### Report Card

Performance: ..... A—  
Ease of Use: ..... A  
Documentation: ..... A  
Value: ..... A  
Final Grade: ..... A

Cost: \$24.95

Manufacturer: EB Software, 12912 Villa Rosa Dr., Santa Ana, CA 92705

Requirements: console, monitor or television, memory expansion, disk system and Editor/Assembler or Mini-Memory

is much more serious, and somewhat more violent. This “Game of the Year” for 1981 has been translated for the TI99/4A by EB Software. It is called, as if to point out its roots, TI-Runner.

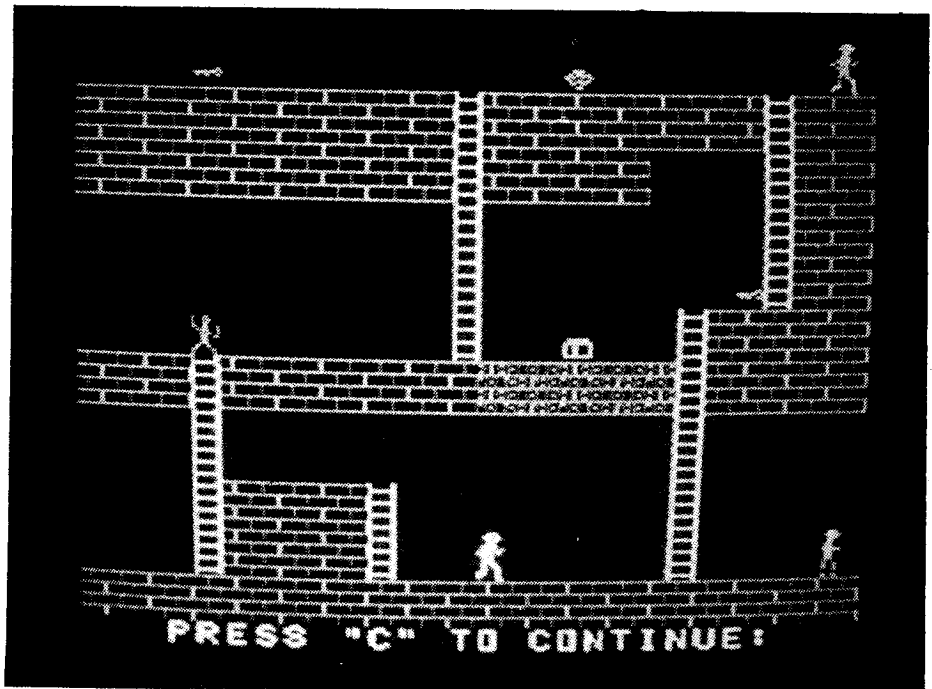
**Performance:** TI-Runner is not exactly a copy of its model, Loderunner. There are some startling

similarities and some differences. First, though, what is TI-Runner?

As mentioned above, TI-Runner is much like Loderunner, or at least it seems intended to be. In both games you start at a place at the bottom of the screen. The character that you move around and his assailants (the character is masculine in appearance) look surprisingly realistic. The characters themselves, both the victim (you) and your four attackers are shaped the same, differentiated only by color. Each character is a single color stick figure. The characters are very well animated and the jumping and running are extremely well done. Much like the original.

In both games you must move your character around on brick platforms connected by ladders. The object here is to pick up a variety of treasures and a number of all-important keys. Once all the keys have been obtained a ladder, apparently going through the roof, appears. Once you have climbed that ladder to the top, you go on to the next level. The object of the

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## SUPER SKETCH—

(Continued from Page 28)

to a wide range of computer owners. The CAI (computer aided instruction) enthusiast will find this to be a very useful educational toy for young children; more fun than blocks and crayons but equally good in teaching spatial relations. The businessman will find that this package is excellent for creating presentation graphics with a minimum of difficulty. The person interested in entertainment will find this a welcome relief from the droves of Donkey Kong and Pacman clones. And the frustrated artist will find this to be an exceptional creative tool that can be used to translate ideas to the screen.

The package is easy to use and works well. It also requires a minimum amount of hardware. At first, it may seem to be little more than a novelty item, but like the computer itself, once you buy it you can think of a thousand uses for it. The next time you are thinking about purchasing a joystick or similar peripheral, consider whether you're going to get as much use out of it as from a device that will let you explore the limits of your creativity. Super Sketch is a tremendous value.

## 128K CARD—

(Continued from Page 29)

is accessed through BASIC.

The three memory banks are very useful with programs such as TI-Writer. One can write files to a memory bank and read them in one-tenth the time or less that it takes to do the same operation with a disk drive. With Extended BASIC, programs can be chained through use of a RUN DSKX.(filename) command. With Terminal Emulator II, entire screens can be sent to a memory bank through use of the output option. When finished receiving data one simply closes the file through the TEII close command.

The 128K card will also facilitate the use of Multiplan files with TI-Writer.

Programmers may incorporate the memory banks in programs via the same input/output routines used with BASIC and Extended BASIC.

Without the Disk File Emulator, the memory beyond the initial 32K is considered to be a single large file for storage of relative records only. The firmware allows the memory to be accessed as three pseudo-devices that may be opened as relative or sequential files.

Concerning file sizes, I found that the memory banks quite adequately handle very lengthy files generated by TI-Writer and other programs. However, I was unable to retrieve programs longer than about 12K from the memory banks. This apparently has to do with how the TI system interprets lengthy programs. Programs longer than about 12K are not registered as "programs" but are stored as 256 byte internal/variable files. It seems that the Foundation memory banks do not treat long programs as "programs" per se. Although few of my BASIC programs are longer than 12K, I have some financial-oriented programs that incorporate many functions and take up about 60 or so sectors on a disk. Although I was able to load these into a memory bank I could not get them to run after trying to retrieve them from the memory bank.

As a point of clarification, the use of pseudo-devices is Foundation's way of circumventing the limitations built into the TI99/4A. DSKX is a pseudo-device that "fools" the computer into treating the memory banks as I/O devices. MEM96A, B and C are pseudo-devices that are accessed in conjunction with DSKX. MMM, another pseudo-device, can be thought of as a very specialized version of a disk manager cartridge. MEMINIT is a reset switch that deletes all files from DSKX and initializes internal variables.

The DELETE command is used to access MMM and MEMINIT from BASIC. It does not actually delete anything. Foundation used the DELETE command because it is the only I/O command that does not include error checking. It is used simply to transfer control to MMM.

It is not possible to load the MMM through a program such as TI-Writer to review the contents of the three banks of expansion memory.

**Ease of Use:** The 128K card with accompanying firmware is easy to use as a RAM disk. Writing and reading files requires virtually no adjustment for even casual users. About the only caution that I would recommend to users is to not turn the console off until the data stored in the card's memory has been written to disk. Turning the console off causes the files to degrade.

**Documentation:** The 128K card comes with a 12-page manual about the Disk File Emulator and a six-page manual about the 128K card itself. Both manuals go into some detail that will give users a good idea of the potential of the card for a variety of applications. However, most users will probably do a lot of experimenting to learn exactly what they can and can't do with the card.

**Value:** The 128K card sells for about \$230, plus about \$35 for the Disk File Emulator firmware. The card is about double the price of third-party 32K cards, and about the same price as TI's 32K memory expansion card when it was still being marketed.

The only program that I know of that actually maximizes the use of the 128K card is the TIBBS program developed by Ralph Fowler. However, I know of one programmer who has developed a program using Forth that uses the 128K card to copy diskettes in a single pass. This may become available in the near future. Other uses for the card depend more on the ingenuity of the user than third-party marketers. I used it with several terminal emulator programs and found the card a real time saver in terms of dumping data. There are several applications for the card in data transmission. Those who use modems extensively will find the ability to store up to three files in memory a time-saver while sending data. It is also quite convenient for receiving data, which can later be

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## 128K CARD—

(Continued from Page 32)

written to disk.

Getting down to the bottom line, this remains the only 128K card available for the TI. Using the memory banks as a psuedo disk drive, programmers can speed up software development. It provides users with a speedy way of temporarily storing data and programs.

## PTERM-99—

(Continued from Page 30)

drive or printer.

I tried PTERM-99 on The Source, CompuServe and in direct communication with a non-TI computer. I found no eccentricities in either sending or receiving data. I note at this point that when I send a large amount of data with no intention of receiving, I do it through word-processing software after establishing a telecommunications

connection via a terminal emulator, in this case, PTERM-99. Incidentally, PTERM-99 writes files in an 80 display/variable format, the same as TI-Writer.

**Ease of use:** This program will offer no challenge to anyone familiar with a terminal emulator. As I mentioned in reviewing TE-1200, there is no substitute for telecommunications beginners for the manual that comes with TI's Terminal Emulator II.

**Documentation:** The documentation that comes with PTERM-99 is loaded with the program from disk. It can be downloaded to a printer or to the screen. It is brief and assumes that the user knows what he is doing. There is absolutely no help available in terms of defining what "baud rate" means, etc. The instruction file consists of a little more than one printed page of 40-column, single-spaced text.

This program runs so smoothly that it is possible to reset the

download buffer without really knowing it. There is no feedback to let you know that the key was registered. The only visual cue you'll get is when the buffer is nearly full and the screen turns red. But that can take a long time, and it is likely that most downloading will be done with shorter files. I would like to have seen some method of indicating that the buffer reset has been initiated, just to reassure me as a user.

**Value:** As I said in the beginning, I believe PTERM-99 to be underpriced, compared to prices for similar products on the market. Even though I do not give out grades higher than an "A," PTERM-99 deserves an "A+" for value.

## TI-RUNNER—

(Continued from Page 31)

game is to obtain as many points and advance as many points and advance to as many levels as you can while avoiding your pursuers and other hazards. Each level represents a greater challenge than the previous level.

In this game the "fire" button serves a different purpose than in Donkey Kong. In Donkey Kong and its many clones your character jumps whenever the fire button is depressed. In TI-Runner, a hole is created in the platform the character is on, in the opposite direction the character is facing, i.e. behind it. Both the pursuers and the player's character can fall through these holes. The play may use these as a way to go through a platform, dropping to the next platform. Pursuers that happen to fall into one of the holes will remain there until the platform is rebuilt by the program a few seconds later. A neat way to delay your adversaries.

In Donkey Kong, falling off or through a platform generally spells doom to the player's character. In TI-Runner, jumping off a ledge is a very effective means of escape, faster than going down ladders. The

player may also make multiple holes in the brick floor to go through it, while the pursuers will fall into

the floor where the hole was made and remain there until the hole is covered over. If two pursuers fall into the same hole, one will remain to fill the hole, while the other will drop onto the next highest platform. If the player's character accidentally falls into one of his own holes, from he can't escape, or if he is touched by a pursuer, then the character seemingly melts into the ground, forfeiting one "life." For each level you conquer, you obtain 1000 points and an additional life for your character. Any treasures obtained are worth 200 points each.

Almost everything about TI-Runner, from the action down to the graphics, is very much like Loderunner. In both games the screen is gradually destroyed and rebuilt as

you go from one level to the next. The action is fierce in both and both respond perfectly to a joystick. Both the Apple IIe version of Loderunner and TI-Runner optionally allow use of the keys for input. In the Apple IIe Loderunner, the keys used are spaced rather far apart, while TI-Runner uses the arrow keys, ironic since Apple joysticks are three times the price of TI joysticks. The Apple IIe Loderunner has more pursuers than TI-Runner, and allows the user to create his own screens, which cannot be done with TI-Runner. TI-Runner has 50 levels, and I've never reached the top screen. For me, the number seems infinite; but maybe that just says something about my ability.

TI-Runner seems to perform without a hitch. After of play-testing, I didn't find a single error or anything that would qualify as a bug. The motion was so fluid that I had a difficult time telling TI-Runner from Loderunner. Great games are possible on the TI if the programmer tries.

**Ease of Use:** The program is relatively easy to use, however, loading any assembly language program requires some expertise. The program requires a disk system and memory expansion and either the Mini-Memory or Editor/Assembler cartridge. The Load and Run options are used to load the program with

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## LIKE HOT CAKES—

(Continued from Page 22)

Persons waiting in line had the opportunity to talk to TI and Cor-Comp representatives and members of local users groups.

By the end of the day-long sale (which was extended two hours to accommodate the crowds) more than 1,000 TI99/4A computers had been sold. Price says the total would have been greater had not a limit of two per customer been set.

In addition, the regular Tex-Comp warehouse store which remained open

## New 128K card?

Myarc Inc. may introduce a flexible expansion memory card for the TI Peripheral Expansion Box. The card will be available with as little as 32K of RAM. Users may purchase additional memory chips from the company at any time to upgrade it to 128K. The card is also expected to include a 48K spooler. Price is not known at this time.

## TI-RUNNER—

(Continued from Page 33)

either cartridge. The program runs itself when loaded. The diskette must be left in the drive when the game is being played to allow screens to be loaded.

Game play is rather simple, but there are a number of special keys, including, mercifully, a "pause" key. Other special keys allow the user to skip levels, start over, quit or kill the character if he is trapped in a situation he can't get out of.

**Documentation:** The documentation is very complete. The program is covered in detail; everything from loading instructions to descriptions on how the player's character, designated Clyde, can be moved. The special keys are covered well, while the sections dealing with hole-making, or "bombing," and scoring are superior.

**Value:** I must admit I am a bit biased. I have been a big fan of Loderunner since I first saw it on my

to accommodate the new 99/4A owners had a record day, with many complete systems and printers being sold.

Price says 87 percent of the purchasers were first-time buyers while the remainder were buying additional units as backups or gifts. He says that since the sale, the Tex-Comp warehouse has done a brisk business in startup accessories such as joysticks, cassette recorders and popular cartridges. Tex-Comp has had to hire additional help to handle its holiday mail-order business. On several days, Price says, United Parcel Service had to dispatch a special truck just to pick up Tex-Comp's holiday shipments.

Price says the sale "proves that there is still a strong market for a quality home computer that is priced and marketed right.... If TI could have hung in and marketed the 99/4A with a meaningful starting system instead of rebates...the TI would still be the number one selling home computer."

cousin's Apple IIe. I have spent many an hour being destroyed over and over; something very easily done since my cousin doesn't have a joystick. TI-Runner is a very good adaptation for the TI, and is of

higher quality than some translations of popular games. This game proceeds very quickly, and can really wear out a joystick for those who like to play strategy/arcade games.

The graphics are very well done. The animation is almost the best I have ever seen on the TI. Joystick response is instantaneous, and the controls are easily mastered. If you are looking for a great game, after being spoiled by all of those excellent Atarisoft and Milton Bradley cartridges, this is the one.

It's a valuable game indeed to the computer owner seeking some mindless, but very entertaining, recreation.

## TI, IUG offer 99/4A users deal on Pro

The International 99/4 Users Group and Texas Instruments are offering members of the IUG the option of purchasing the TI-Professional computer at what promotional brochures describe as bargain prices.

According to the brochure, owners of TI99/4A home computers may obtain the TI-Pro at these special prices if they agree to submit one program written for the TI-Pro within a year of the purchase to the IUG's software exchange library.

TI99/4A owners are being offered a choice of the TI-Pro desktop or portable computers.

A sample price will allow TI99/4A owners (referred to as "software developers" in the brochure) to buy the TI-Pro with 256K of RAM, a monochrome monitor and dual floppies for \$1,992. A TI 855 printer and cable will be included at no additional charge.

Although the brochure refers to this as "a one-time offer," dealers of TI computers have been offering similar systems for about \$2,000 for months without the requirement of writing software for the IUG.

A variety of configurations is offered, ranging from 128K of RAM and one floppy with monochrome monitor and printer at \$1,622 to a portable unit with 256K of RAM, color monitor, dual floppies and printer at \$2,252.

The IUG indicates that it will provide a software exchange similar to what it has offered for the TI99/4A. It will provide those who take advantage of this offer with a disk-based program that will allow them to transfer programs written for the 99/4A to the Professional computers.

For more information about the promotion, contact Texas Instruments Customer Service at 1-800-531-1001.

# Newsbytes

## Free Software

Ramsoft Enterprises, 1501 E. Chapman Ave., Suite 338, Fullerton, CA 92631, is offering its Computer Craps game free to TI users. The game features a California Layout (craptable), sprite dice, chips, sound and optional speech. Instructions are included on the disk and can be printed out using TI-Writer. Betting options include Pass Line, Come Line, Field, Don't Pass, Big 6, Big 8 and Place bets. The program requires a memory expansion, a disk drive and Extended BASIC. It sold originally for \$14.95.

According to Ramsoft, "Although the program is copyrighted (to prevent it from legally being resold for profit), the user will be granted permission to freely distribute the program as long as it is not distributed for profit, and as long as the dedication screen is not removed. User groups are encouraged to distribute it to their members (on a non-profit basis)."

Included is the program, instructions, and the source code for the assembly language subroutine.

Those who would like to receive a copy must send an initialized disk and \$2 to cover shipping and handling to Ramsoft Enterprises.

## MicroPal X BASIC

Microsphere Inc., a manufacturer and distributor of home computer products, has announced the availability of the MicroPal Extended BASIC cartridge. The company said shipments were to begin in late December.

Microsphere is producing the cartridge under license from Texas Instruments and plans nationwide distribution to wholesalers and retailers. The suggested retail price is \$89.95.

The company guarantees that MicroPal Extended BASIC is 100 percent compatible with all commercial and user-written programs requiring TI Extended BASIC.

For more information, contact Microsphere at 14009 E. Jefferson

Blvd., Mishawaka, IN 46545, 1-800-348-2778 or (1-219-259-7040 in Indiana).

## Resident directory

Myarc Inc., which several months ago introduced a disk controller card capable of handling double-density, double-sided diskettes, is releasing a chip that will allow owners of the card to have a resident disk directory available for use at any time. The directory can be operated without losing the contents of the computer's memory.

According to spokesman Lou Phillips, the directory can be called at any time and takes up about one kilobyte of the card's memory. There remains another kilobyte which the company expects to utilize with a future enhancement. Under consideration is a routine similar to the "Load and Run" option of the Editor/Assembler cartridge.

Phillips notes that Myarc has been very busy lately. "We're cranking out the RS232 and disk controller cards by the thousands," he says. "Everybody is calling Myarc now."

Myarc peripheral cards are available through a number of dealers. The company can be reached at P.O. Box 140, Basking Ridge, NY 07920, (201) 766-1700.

## Compiler advice

SST Software Inc., P.O. Box 26, Cedarburg, Wisconsin 53012, (414) 771-8415, has sent out a newsletter offering programming advice to purchasers of its BASIC and Expanded BASIC compilers. The newsletter also contains manual updates and information about new products to enhance the compilers.

## E-Files 99

E-Files 99 is a new product being marketed by VMC Software, P.O. Box 326, Cambria Heights, New York 11411. The program is described by VMC as an easy-to-use database with picture-driven

menus. The program will sort and search by user-defined fields and will store up to 200 items per file with three files per diskette. The program includes a mail list and label option. It requires Extended BASIC, expansion memory and a disk system. The program is priced at \$21.95, including shipping.

## Price changes

Morning Star Software has announced a price reduction on its CP/M processor card for the peripheral expansion box. Originally priced at \$595, the company has reduced the cost to \$495.

The card operates in the Osborne I single-density, single-sided format. Osborne is a 50-column computer, and the Morning Star card offers a 40-column display. Both the Osborne and Morning Star systems use scrolling and windowing to utilize 80-column CP/M software.

For more information, contact Morning Star Software at 4325 SW 109th Ave., Beaverton, Oregon 97005.

## Gemini Tickler

Gembar Graphics, 455 Amherst Circle East, Satellite Beach, FL 32937, has introduced a program called Gemini Tickler for use with Gemini-10X/15X printers. The menu-driven utility enables users to put the printer into several of its many modes of operation. Extended BASIC, expansion memory and a disk system are required. The price is \$11.95 plus \$1 postage and handling. Floridians must add the 5 percent state sales tax when ordering.

Newsbytes is a column of general information for TI99/4A users. It includes product announcements and other items of interest. The publisher does not necessarily endorse products listed in this column. Vendors and others are encouraged to submit items for consideration. Items submitted will be verified by the staff before inclusion and edited to fit the Newsbytes format. Mail items to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

# User Notes

## Descenders

The November edition of MICROpendium carried a User Note about how to provide true lower-case letters in BASIC and Extended BASIC programs. BASIC and X BASIC, of course, have small letters, but they are simply small-scale upper-case letters. Now R.W. Walter of Wheaton, Illinois, has submitted a series of program lines that use CALL CHAR statements to create lower-case letters with descenders. Of such small improvements is progress measured.

Enter the following lines into your BASIC or X BASIC program, numbering them as required.

```
100 CALL CLEAR
110 FOR I=1 TO 5000
120 CALL CHAR(97,"00003
8043C243C")
122 CALL CHAR(98,"20203
824242438")
124 CALL CHAR(99,"00001
824202418")
128 CALL CHAR(100,"0404
1C2424241C")
132 CALL CHAR(101,"0000
3C243C203C")
134 CALL CHAR(102,"0814
10103C101")
136 CALL CHAR(103,"0000
1C24241C0418")
138 CALL CHAR(104,"2020
3824242424")
142 CALL CHAR(105,"0010
001010101")
144 CALL CHAR(106,"0008
00080808083")
146 CALL CHAR(107,"2020
2428302824")
148 CALL CHAR(108,"3010
101010101")
152 CALL CHAR(109,"0000
7854545454")
154 CALL CHAR(110,"0000
3824242424")
156 CALL CHAR(111,"0000
1824242418")
158 CALL CHAR(112,"0000
382424382020")
162 CALL CHAR(113,"0000
1C24241C0404")
```

```
164 CALL CHAR(114,"0000
3C2420202")
166 CALL CHAR(115,"0000
3C203C043C")
168 CALL CHAR(116,"0010
3810101018")
172 CALL CHAR(117,"0000
242424241C")
174 CALL CHAR(118,"0000
242424181")
176 CALL CHAR(119,"0000
5454545428")
178 CALL CHAR(120,"0000
4428102844")
182 CALL CHAR(121,"0000
24241408102")
184 CALL CHAR(122,"0000
3C0810203C")
200 PRINT "abcdefghijk
lmnopqrstuvwxyz"
210 NEXT I
220 REM GOTO 110
```

## Space Saver

Joseph Kline of New York writes: "Here's a tip for you User Notes section.

"Add the following line to your program:

```
1 @=1
```

"Then substitute the @ (at symbol) for each occurrence of '1' in your program (except when used for display) to save 2 bytes per occurrence."

## Parsec heaven

Have you ever taken Parsec to the limit? Apparently Sean Sands has. Sands, of North Kingstown, Rhode Island, offers a tip he calls the Fry Method that he and a friend have used to score more than a million points and cause the counter to be reset to zero. Be warned, this method may cause your hands to lockup with the dreaded "joystick syndrome."

Sands writes: "Me and my friend have discovered what could possibly be a test mode for Parsec. We found that if the fire buttons on both joysticks are pressed simultaneously,

the lasers will not overheat! But there is one drawback to this: funny (horizontal) lines appear on the screen. Still, this does not hinder us; as a matter of fact, it allows us to see the Bynites when they turn invisible.

"Dubbing this method the 'Fry Method' because it literally fries everything in its path, we practiced coordinating our firing with each wave of aliens. Next, we realized we had to answer a question. Does the game end at level 16? No. After experiencing the wrath of the killer satellites for 21 levels, we did something no one else has done. We reset the score to zero! After gaining a total of 1,001,026 points, we quit."

## Disk labels

The following program by James Shregardus of Randolph, Wisconsin, will be of use to anyone who has a printer and wants to keep track of what programs are on his disks.

The program requires Extended BASIC to operate and prints out the disk catalog in condensed type in two-wide format on 3-inch by 15/16 inch mailing labels.

The program is designed to be used with Gemini printers but users may modify the CHR\$ statements for use with other printers. The statements in line 210 are used to define the condensed printing mode of the Gemini.

The program is written to be used with a parallel port but users may modify the OPEN statement in line 210 for use with an RS232 port.

```
100 CALL CLEAR
110 DISPLAY AT(12,6): "D
ISK LABELS"
120 DISPLAY AT(16,2): "T
ODAY'S DATE -"; DATE$
130 ACCEPT AT(16,16) SI
ZE(-8) BEEP: DATE$
140 Z=0
150 DIM TYPE$(5), B$(2)
160 DIM A(2), B(2), C(2)
170 TYPE$(1) = "DIS/FIX"
:: TYPE$(2) = "DIS/VAR" :
```

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```
: TYPE$(3)="INT/FIX" ::
TYPE$(4)="INT/VAR" ::
TYPE$(5)="PROGRAM"
180 IMAGE "DSK - 1 -
DISKNAME - #####
DATE PRINTED"
190 IMAGE "AVAILABLE =
### USED = ###
#####"
200 IMAGE "##### #
### #####
### #####"
210 OPEN #2:"PIO" :: PR
INT #2:CHR$(27);CHR$(48
);CHR$(15);
220 OPEN #1:"DSK1.",INP
UT,RELATIVE,INTERNAL
230 INPUT #1:A$,J,J,K
240 PRINT #2,USING 180:
A$ :: PRINT #2,USING 19
0:K,J-K,DATE$
250 PRINT #2,USING 200:
"Filename","Size","Type
","Filename","Type","Si
ze"
260 Z=3
270 FOR X=1 TO 2
280 INPUT #1:B$(X),A(X
),B(X),C(X)
290 NEXT X
300 Z=Z+1
310 IF LEN(B$(1))=0 THE
N 360
320 PRINT #2,USING 200:
B$(1),B(1),TYPE$(ABS(A(
1))),B$(2),B(2),TYPE$(A
BS(A(1)))
330 IF Z<7 THEN 350
340 PRINT #2:" " :: Z=0
350 GOTO 270
360 CLOSE #1
370 IF Z=9 THEN 380 ::
PRINT #2:" " :: Z=Z+1 :
: GOTO 370
380 DISPLAY AT(20,2):"A
nother Copy or Disk ? Y
"
390 ACCEPT AT(20,25)SIZ
E(-1)BEEP:Y$
400 IF Y$<>"Y" THEN 430
410 DISPLAY AT(20,2)SIZ
E(25):"INSERT DISK INTO
DRIVE" :: CALL KEY(0,X,
Y):: DISPLAY AT(20,2):"
```

```
" :: IF Y=0 THEN 410
420 GOTO 220
430 PRINT #2:CHR$(27);"
@" :: CLOSE #2 :: STOP
```

## SBUG in X BASIC

Tom Knight of Jacksonville, Florida, writes: "SBUG comes in a format that can be loaded by Extended BASIC. However, some may have encountered problems in getting this to run. Take heart, though, because it can be done! Here's how:

- Step 1: Select X BASIC
- Step 2: Type CALL INIT
- Step 3: Type CALL LOAD ("DSK1.SBUG")
- Step 4: Type CALL LINK("SBUG")
- Step 5: If you want Bit Map Mode type 'Y', otherwise type 'N'. (You won't see anything on the screen.)
- Step 6: Enter the output device (i.e. PIO), press ENTER (still nothing on the screen).
- Step 7: Press 'U' and, presto, it is working.

## 128K and TE

Michael Christianson recently received his disk emulator software from Foundation Computing for use with the company's 128K memory card. Christianson, of Pekin, Illinois, says he finds it particularly useful with Terminal Emulator II because it allows users "to save screens at memory speed from BBBs. I just started using my modem recently but find the DSKX really cuts down on my on-line time." DSKX is similar in use to DSK1 when referring to a disk drive except that programs or files written to DSKX are actually written to or read from one of three memory banks in the 128K card.

Christianson submitted the following program to transfer TEII data between devices. "I wrote it for the DSKX, but it can be used for other devices, including RS232 if you want to upload to another TI," he writes.

```
100 REM TETRANSFER/TERM
INAL EMULATOR DATA TRAN
SFER PROGRAM
110 CALL CLEAR
120 INPUT "device, file
name to transfer from:
":DEV1$
130 PRINT
140 INPUT "device, file
name to transfer to: ":
DEV2$
145 IF DEV2$="SCREEN" T
HEN 360
150 PRINT ::
160 PRINT "press any ke
y to INIT X-FER of: "
170 PRINT DEV1$
180 PRINT "TO"
190 PRINT DEV2$
200 PRINT
210 CALL KEY(0,K,S)
220 IF S=0 THEN 210
230 PRINT "please be pa
tient, transfer NOW in
progress"
240 OPEN #1:DEV1$,INPUT
,DISPLAY,VARIABLE 80
250 OPEN #2:DEV2$,OUTPU
T,DISPLAY,VARIABLE 80
260 LINPUT #1:A$
270 PRINT #2:A$
280 IF EOF(1)THEN 300
290 GOTO 260
300 CALL CLEAR
310 PRINT "transfer com
pleted"
320 CLOSE #1
330 CLOSE #2
340 INPUT "more transfe
rs?":ANS$
350 IF ANS$="Y" THEN 11
0 ELSE STOP
360 OPEN #1:DEV1$,INPUT
,DISPLAY,VARIABLE 80
370 LINPUT #1:A$
380 PRINT A$
390 CALL KEY(0,K,S)
400 IF S=0 THEN 390
410 IF EOF(1)THEN 430
420 GOTO 370
430 CLOSE #1
440 CALL CLEAR
450 GOTO 340
```

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This program can be used to write to virtually any device, including the screen. It requires Extended BASIC and a disk system to operate. Although it is designed to be used with the 128K card, it will operate without it.

## A slight problem

A number of those who responded to MICROpendium's freeware offer have noticed a problem with the Microsoft Multiplan file enhance-

ments. Specifically, they can't get the overlay to load. This is because the overlay file was protected using the Disk Manager II protection utility. Users may simply unprotect the overlay to be able to load it. This problem affected only those files that were sent out on single-sided disks before December.

## Regulator update

Here's some advice on peripheral expansion box regulators:

Dan Davenport recommends that bad regulators be replaced with a Sylvania ECG933 regulator. He says that they are rated at five amps. He notes that RCA has a one amp regulator that can be used. However, he says, the box "can surge over that easily." For more information about regulators, refer to the November User Notes column.

User Notes is a column of tips and ideas designed to help readers put their home computers to better use.

The information provided here comes from many sources, including TI home computer user group newsletters. MICROpendium will pay \$10 for any item sent in by readers that appears in this column. Mail tips to: MICROpendium, P.O. Box 1343, Round Rock, TX78680.

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