

## Computer Telecommunications



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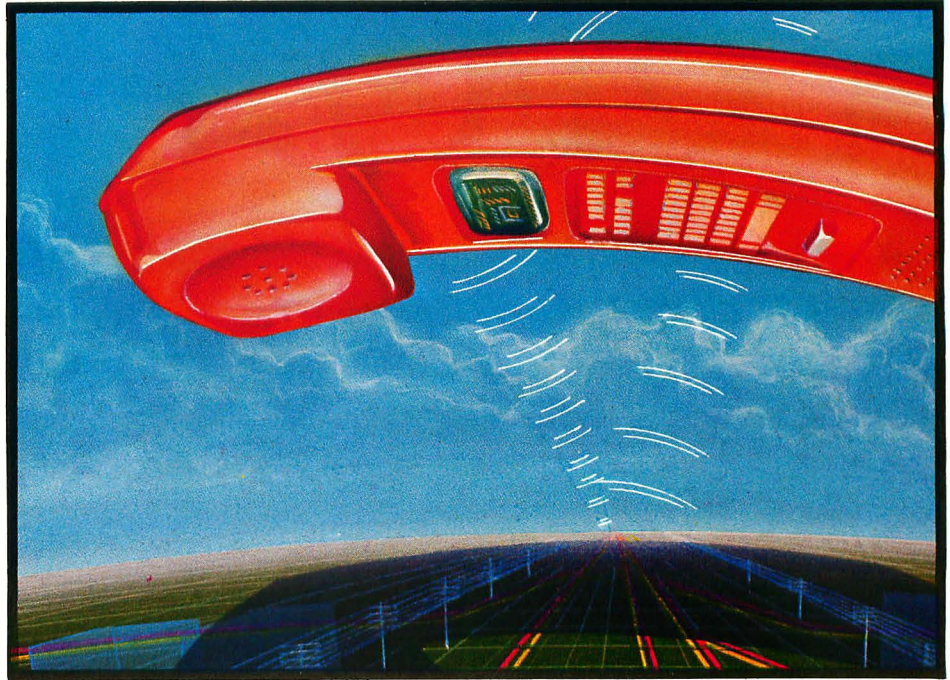
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## FRONT RUNNER

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### Deluxe Personal Finance — The Budget Program

TRS-80® version by Lance Micklus  
Translations and modifications by the  
*SoftSide* Programming Staff.

In the second installment we present a  
budget program to help you manage your  
money more efficiently.

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by Lance Micklus

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Get into the world of computer data  
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by Fred D'Ignazio

Did you ever visit a haunted house? New  
technology, illustrated by the Epcot  
Center, may make the traditional  
attractions pale by comparison.

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by Katherine Ackerman

Someday, in the near future, our offices  
may be our living rooms.

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by Roe R. Adams, III

If you love games, and own a modem,  
you can enjoy this exciting new field.

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by Steve Birchall

With this article, you'll learn how to use  
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## PC/SIDE

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by David W. Durkee  
Translation by Fred Condo  
You'll enjoy matching wits with your computer in this game.

### Review

### **58** TYPE FACES FOR THE IBM® PC

Reviewed by Steven Ringwood

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### Program\*\*

### **61** CONCENTRATION by Glenn Archer

If you enjoyed the television game show, you'll love playing this memory challenging game on your Apple®.

### Enhanced Disk Version\*

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by Jeff Hurlburt  
This fantasy-adventure game takes you into the 23rd century on a quest for the elusive Mega Crown.

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Reviewed by Cary W. Bradley

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### Reviews

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Reviewed by Stuart Hawkinson

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Reviewed by Mark E. Renne

### Program\*\*

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by Sanford Deutsch  
You'll enjoy this challenging computer adaptation of a little puzzle of long ago.

### Enhanced Disk Version\*

### **82** ST80-DUC™ by Lance Micklus

With *ST80-DUC* you can operate a computer in another room, or in another part of the country.

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### Programs\*\*

### **89** POKEY PLAYER III

by Craig Chamberlain and Harry Bratt  
This third and final *Pokey Player* installment offers enhancements to the Editor program and ties up all the loose ends.

### **98** SPACE MINES by Jeff Wilkes

You are the sole defender of Earth against the ruthless Vahrenian spaceliners. To reach and destroy the enemy, you must dodge deadly space mines and space creatures along the way. Good luck!

### Review

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Reviewed by Arlan R. Levitan

### Enhanced Disk Version\*

### **102** HUMAN ERRORS by Doug Tuttle

This set of three utility programs takes the drudgery out of dealing with program errors.

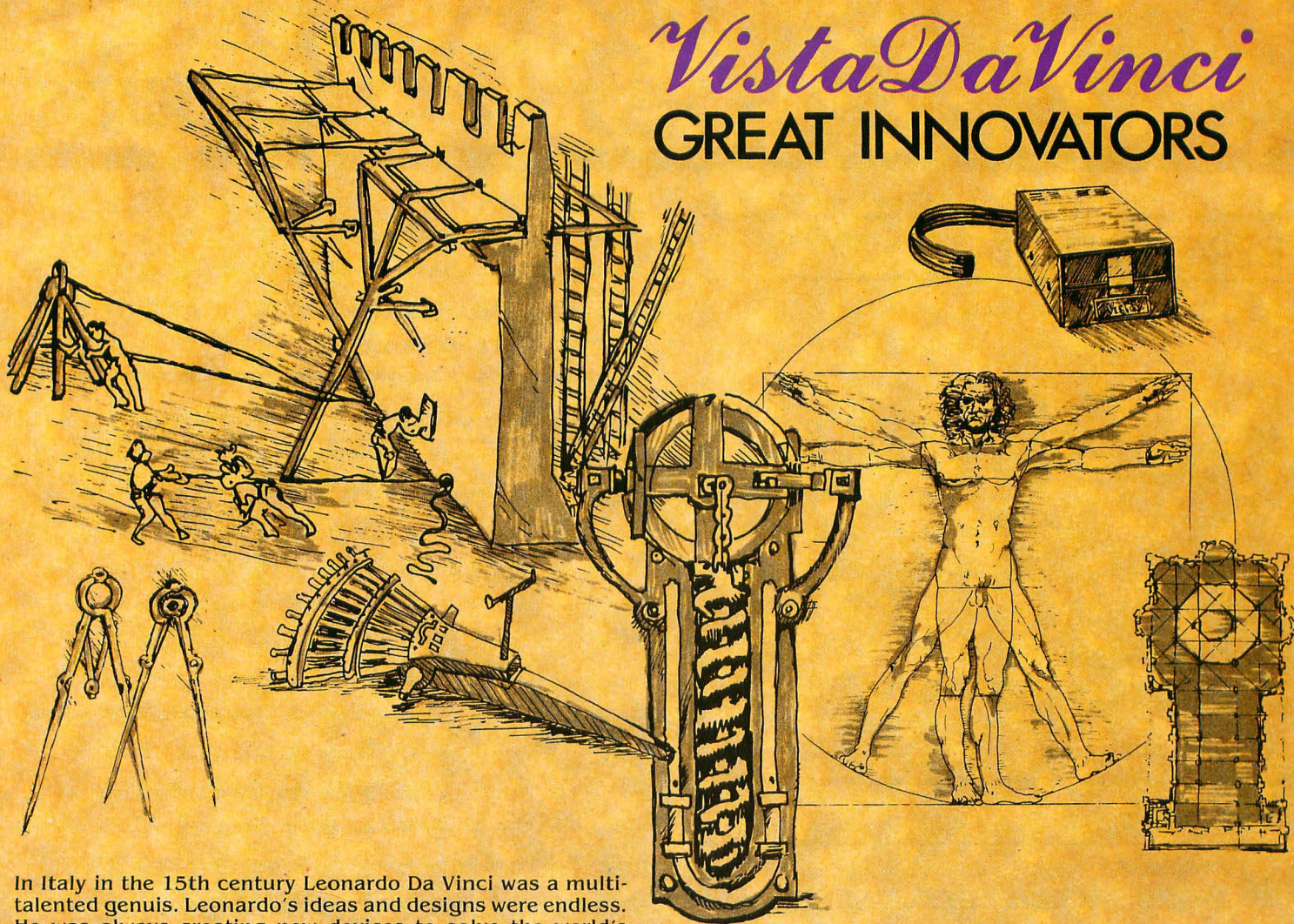
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\*Available on DV — Enhanced Disk Version (See bind-in card to order).

\*\*Available on DV — Enhanced Disk Version and CV — Cassette Version (See bind-in card to order).

# Vista Da Vinci

## GREAT INNOVATORS

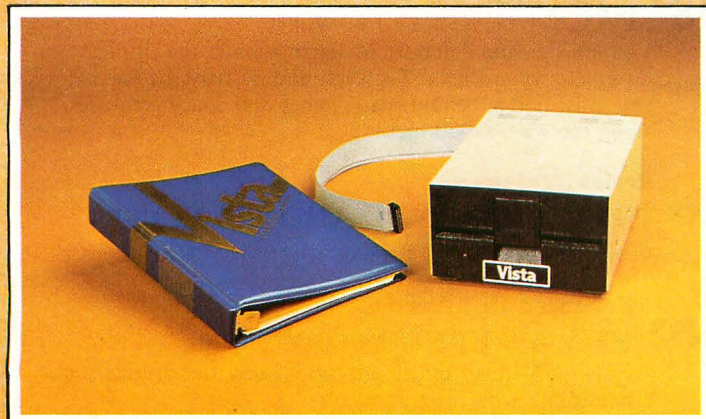


In Italy in the 15th century Leonardo Da Vinci was a multi-talented genius. Leonardo's ideas and designs were endless. He was always creating new devices to solve the world's problems. Pictured here are many studies for military arms and armor and battlements.

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Contact Your Local Vista Dealer or Call our Vista Hotlines.

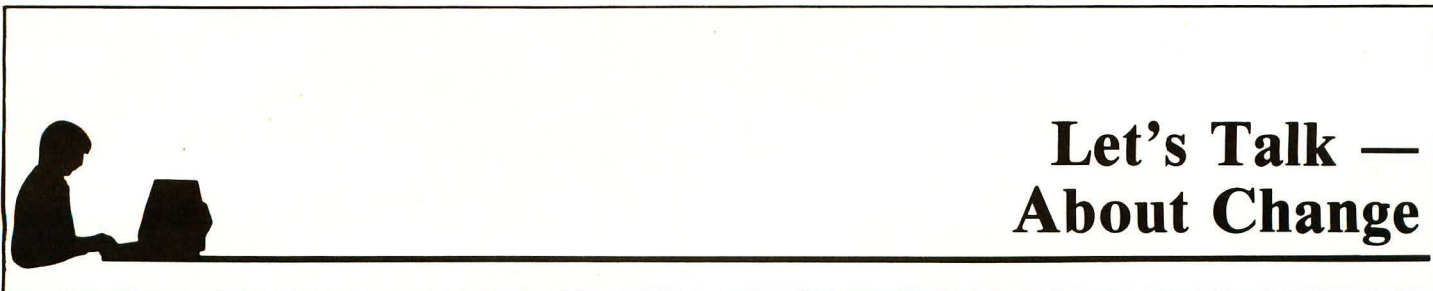
# Vista

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## Let's Talk — About Change

It is impossible to say the word "telephone" to most Americans without bringing the Bell Telephone System to mind. The two entities are becoming less and less synonymous, but the blue bell with the circle around it will undoubtedly surface as a relic of our civilization, centuries from now. Affectionately (and sometimes not so affectionately) referred to as "Ma Bell," the nickname implies that we are all members of her family, like it or not.

This year, our communications "mother" promises to release her first microcomputer. Little is known of this mysterious new product, or what level of the marketplace the telephone giant plans to infiltrate. I assume that the computer(s) will emphasize telecommunications capabilities. It would also make sense that, if aimed at the business market, the computer(s) will utilize the UNIX operating system. It's impossible to assume much else.

One thing is certain — the company is dead serious about entering the computer and data communications markets. They've made some great sacrifices to free themselves from the governmental constraints which previously blocked their participation in the microcomputer industry. The internal organization has been restructured entirely, and they have separated many companies from the original conglomerate.

"Baby Bell" was cloaked in rumors for several years before it gained legitimacy as American Bell. We're starting to see the purpose of this new entity as it takes control of the phone store operations. The most obvious shift in corporate attitude is revealed in the announcement that these stores will now *sell* equipment to their customers as opposed to previous *lease-only* arrangements. American Bell has recently taken a giant step into the retail environment with the installation of "mini-stores" in Sears retail outlets.

Another far-reaching policy shift now not only *permits* you to do your own internal residence-wiring, but *encourages* you to do so. They offer free instruction booklets

on how to accomplish the task. In other words, Ma Bell is loosening its grip on the hardware element of the system it built.

What does all of this mean to the consumer? Will Ma Bell concentrate her efforts on hardware in the expanding data communications field, or will she expand her reach to encompass the supporting software and databases as well? In that restructuring detail lie deep social questions.

Until now, the Bell System's grip on our daily lives was limited to the medium by which we passed great quantities of information. What if Bell (or any vital utility company) exercised an influence on the information itself? Radical opponents of this move fear a "Big Brother" effect on so-



ciety. I seriously doubt any entity, including the government, could attain such an impact. However, now is the time to ask serious questions about how extensively we will allow any entity, corporate or political, to control our information resources.

I worked for one of the Bell System Companies as a customer service representative for almost two years. Two philosophical points from my "employee orientation and training" still ring in my ears: — the "need to know" policy of sharing information, and the importance of accepting and adapting to change.

It is the first point which concerns me here. Ma Bell distributes information on a "need to know" basis. In other words, employees are instructed to determine a

customer's or fellow employee's need to know before sharing a piece of information. Innocuous enough in the majority of its applications, this philosophy has an inherent danger. It implies a decision structure. From the top management down, each employee has the responsibility and the opportunity to decide another's need to know a piece of information. This works very well in operating a company as large as the Bell System, especially with its responsibility to protect the privacy of its many subscribers. However, I question the philosophy's feasibility, and even its morality, when applied to a bank of data which should be considered a natural resource of our culture.

Who will decide what will and will not be presented on databases available as a standard utility in years to come? Who, if anyone, will have the power to censor? Is it wise for our society to entrust the care and maintenance of this utility to single corporate entity, be it Ma Bell or MCA? Should we let the market, and the companies serving it, determine what information is valuable and worth presenting? Or, do we wish to step in as the citizen/consumer of this new utility, and insist that the *right to know* as well as the *need to know* philosophy be applied as data is selected for distribution.

I am speaking here of the right to free speech and its application to a new medium. The ramifications of this communications power will have as much impact on our culture as the telegraph, telephone, radio and television. We've set precedents in the regulations controlling these media, as they've gained popularity. It's time to consider those precedents in molding our burgeoning information utility.

A handwritten signature in black ink that reads "Randal L. Kottwitz". The signature is written in a cursive, flowing style.

Randal L. Kottwitz  
Editor-in-Chief

# INPUT/OUTPUT



## From our readers

### INPUT

#### Time To Debug

Dear *SoftSide*,

When starting to type in a program of any length, make sure you are going to have enough time to sit down and work without interruptions, and **take your time**. This has been my worst "bug," as the hours or minutes I spend at an available terminal are very limited.

Do you know of a book that deals with translations from the TRS-80® form of BASIC into Applesoft? I have made the rounds of bookstores in my area and the usual response from the clerks is a scratching of the head accompanied by "Gee, I dunno."

Terry LaMont  
Houston, TX

**Editor's Reply:** Although the translation of a program from one computer's BASIC to another is a very tedious process, Hayden Book Company has published a book which could be of some use to you. Its title is *The BASIC Conversions Handbook for Apple®, TRS-80 and PET® Users*. Its cover price is \$7.95 and it should be available at your local book store or directly from Hayden.

#### Timex Sinclair® 1000

Dear *SoftSide*,

I commend you for the excellent work you have done. I learned BASIC on someone else's TRS-80® Model I with *SoftSide* as my mentor.

Since then, I have used virtually all of the computers on the market. When it came time to purchase my own computer, I settled on the Timex Sinclair 1000. My roommate and I are in the process of starting a users group. Timex is selling 50,000 computers a month — an indication that it is a stable competitor in the computer market.

Do you plan, in the future, to carry articles on or about TS-1000/ZX-81 programs? I will continue to purchase your

magazine for its high quality and interesting articles/programs, many of which are translatable to Sinclair BASIC.

Ronald R. Gretz  
2332 Ora Drive  
Fayetteville, AR 72701

**Editor's Reply:** At 50,000 units per month, the Timex/Sinclair is taking a respectable place in the market. However, due to the memory limitations of most of the machines being sold, we have no plans to cover the computer in the near future. However, we are happy to include your address should any of our readers be interested in joining your users group.

#### 16K Programs

Dear *SoftSide*,

I subscribe to your magazine and, until the last two issues, have thought very highly of it. In Issues 32 and 33, however, there were no programs for an Atari® with only 16K of memory. I always look forward to your programs, but the last two issues have been disappointing. Please include programs for the Atari with 16K in future issues.

Komron Ostovar  
State College, PA

**Editor's Reply:** We do our best to maintain a "something for everyone" attitude when we are assembling all the pieces of *SoftSide*. However, there are times that it is not possible for us to stay faithful to that philosophy. We will continue to run programs for 16K machines, when possible, but cannot guarantee that there will be one for every system in every issue. With the decreasing cost of memory, we suggest that all of our readers consider upgrading their machines in order to run more sophisticated software.

#### Squish, K-Byters & One-Liners

Dear *SoftSide*,

I think you people at *SoftSide* have been doing a *super* job. Keep up the good work.

*SoftSide*

In Issue #34, I discovered a very interesting IBM® PC program called *Squish*, originally published for the TRS-80® in December, 1980. I am quite interested in a reprint of the TRS-80 version.

I do have one complaint. When I first subscribed, your magazine had at least two programs for every computer, a K-Byter, and a One-Liner. Now you don't always have two programs, and never have K-Byters or One Liners, I am not happy with the change, and would like to know what's going on.

William Trost  
APO, New York

**Editor's Reply:** There are still copies of the December 1980 *SoftSide* available. Although we do not include our older issues in the advertisements for back issues, we have copies of many of them available. They can be ordered through our business office for \$5 each.

We are still publishing at least two programs every month for each of the computers we support. We stopped publishing K-Byters and One Liners several issues ago in order to leave more space for other features. However, we will be changing the format of the magazine with the next issue. Those changes may make it possible for us to again include these features.

### OUTPUT

by Randal L. Kottwitz

"Fred, did you get all of those files transferred over?"

"Yes, but we're having a little trouble with the new word processor. It puts hard carriage returns at the end of every line, and we get garbage when the file goes over to the IBM."

Such is the daily prattle in *SoftSide's* editorial offices as our own intercomputer communications system goes into operation. After months of experimentation, we can now accept articles and documentation on almost any word processor for any of the computers *SoftSide* supports.



## Computerized Editing

The first thing we do when an article arrives in our offices on disk is transfer it from its native computer to the IBM® PC. We pass the file in ASCII to the IBM and then rename it to fit a standardized filespec. Then we generate a paper copy of the article and back up the disk. If the article has been accepted, it goes directly into the editing process. If not, we file it for future review.

Before an article reaches the typesetter, at least three editors review it. We pass it through a proof-reading program and sometimes a programmer checks it. Then the secretary enters the editorial changes on the disk. After a final read-through, the folder with the author's original, edited printouts and a disk containing the final version of the article is passed to the art department, along with any photos or notes on artwork to illustrate it.

In the art department, the file goes through yet another transfer to the memory of the typesetter. A few commands necessary for the typesetter are not available to the editors in the word processor, so an operator reviews the file on the typesetter screen and inserts special commands and characters.

Nowhere in this process does anyone type the file in from a paper manuscript. We create paper copies to assure a backup if all

of the disks fail, and because some of the editing process requires seeing more text than can be displayed on the computer screen. However, for all intents and purposes, the first time an article *must* pass to paper is when we set it in type. This is possible because of the communications system we've constructed between all of our computers. We'll be setting the contents of *SoftSide* in type for some time, but we're about to expand this system to provide another service we feel marks the information distribution medium of the future.

## SoftSide On The Source

What more appropriate place to announce *SoftSide's* entrance into database publishing than here, in our telecommunications issue? We are concluding final negotiations for *SoftSide's* private sector on *The Source*, a dial-up database operated from McLean, Virginia. We hope to be up and running sometime this spring. *The Source* is a subsidiary of the Reader's Digest Association, Inc., and we are proud to join such a prestigious publisher to present our materials for on-line access.

With a subscription to *SoftSide on The Source*, you will be able to select any of our programs and articles from a menu, and

download them to your computer. In addition, you'll be able to communicate with our editors via electronic mail, and receive answers to questions in your own E-mail box. The system currently limits the graphics we can present, so a few articles may be excluded due to their heavy dependence on supporting graphic material. However, these instances will be rare and *The Source* is developing graphic driver software for individual microcomputers so the problem will have an eventual solution. Graphics presented as part of a BASIC program will present no problem as the code will pass as a straight ASCII file to be interpreted by your computer.

These are a few of our initial plans for *SoftSide on The Source*. As we get the service up and operating, many changes and details will be explained. Watch future issues to learn how and when you can join us on *The Source*.

Until then, Happy Hacking! ☺

### Erratum:

The name of the artist who created the cover for issue 37 was inadvertently omitted from the Table of Contents. Tom Tomita produced a brilliant piece of art on very short notice. Our thanks for his contribution. Our apologies for our omission.

# THE VOICE OF THE FUTURE . . . HEAR TODAY

## Echo Speech Synthesizers

Now your computer can talk with an ECHO™ speech synthesizer from Street Electronics!

Our SPEAKEASY™ phoneme system provides unlimited vocabulary while using a minimum of memory. The TEXTALKER™ text-to-speech firmware allows you to simply type in a word or phrase and let the computer do the rest. With nearly 400 grammatical rules contained in the system, your computer can properly pronounce most correctly spelled words. Simple commands allow you to select from:

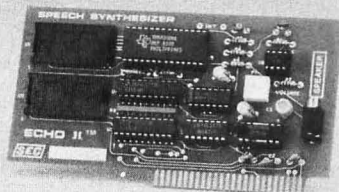
- Entire words pronounced or spelled letter by letter
- Different volumes
- Spoken punctuation if desired
- 63 different pitch levels
- Words spoken monotonically or with intonation
- Fast or slow speech output

The applications of the ECHO speech synthesizer are virtually unlimited, ranging from business and education to games to aiding the handicapped. The ECHO II which plugs into the Apple II is priced at **\$150.00**. The ECHO-GP is a complete stand alone unit which is compatible with most any computer; it sells for **\$300.00**.



### Street Electronics Corporation

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## ANNOUNCING PC '83, THE INTERNATIONAL CONFERENCE AND EXPOSITION FOR PC USERS.

In the last few months, *thousands* of exciting new products have become available to make your IBM Personal Computer work in hundreds of innovative, landmark applications. By adding the right software, plug-in cards, peripherals and accessories, you can make your PC more productive and useful than you ever dreamed possible.

And now there's finally a way to learn about and try out all of these products: PC '83, the first international event *exclusively* for PC users.

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Forums present an inside look at what's happening in the PC-compatible industry and what new developments you can expect in the next few years.

Software and Hardware Spotlights are a PC '83 exclusive. These workshops address one of the biggest problems that virtually all computer users face: how to decide which software and hardware packages are best for your applications. Each Spotlight provides a detailed discussion and demonstration (with large-screen television) of a group of products, covering their features, capabilities and limitations. Experts are on hand at each of these sessions to answer all your questions.

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We've thought of a lot of details to make your visit to PC '83 just a little more pleasant. As with all of our events, the show is fully carpeted, so your feet won't give out before you've seen all the exhibits.

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Let's face it, getting support for your PC is tough. The PC magazines, newsletters, user groups and retailers are certainly helpful. But there are so many different products, services and things to learn about for your PC, what you really need is *one* event that brings everything together in one place in a well-organized format.

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2. All preregistration requests must be received no later than 7 days prior to the event. Telephone or credit card orders cannot be accommodated.
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4. Badges and tickets will either be mailed back or held for pick-up at the Show's preregistration desk. In either case the preregistrant will be notified by mail of our receipt of their order. All preregistrants will receive the Schedule of Conferences Program, a list of exhibitors and hotel reservation forms, prior to the event.
5. It is recommended that attendees preregister in order to receive the advance information which allows them to preplan and schedule their visit to the Show and Conference. However, badges and tickets can be purchased at the Show.

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# HINTS & ENHANCEMENTS



From our readers

## GTIA vs CTIA Color on the Atari®

There is no hard and fast guarantee that a program will produce certain colors on the Atari. The actual colors will vary with the make and model of the TV set or monitor, the setting of the monitor tint control, and the Atari tint control, and the graphics chip in the Atari (GTIA or CTIA).

Follow this general rule to modify programs to produce more pleasing color: add 1 to the X-coordinate in every PLOT statement. This inverts the colors produced by the artifacting. You may also have to experiment with different background colors.

If you have suffered with purple hearts and diamonds in *Solitaire* (May 1982), we offer the following fix. In lines 24,26,28, and 30, the initial value of AZ in the FOR-NEXT loop is 0. Change it to 1. If you have a GTIA machine, change the background color in line 1260 by changing POKE 710,96 to POKE 710,16 or POKE 710,0.

## Keyboard Control for Apple® Blockade

The *Blockade* program by Louis Roy in Issue 35 of *SoftSide* is a great game for two quick thinking players. However, I found that I could not play the game because I needed separate paddles for each player. For anyone who has a joystick, or has no paddles at all, a few simple changes allow the program to work from the keyboard. Delete lines 125-140 and replace them with the following four lines.

```
125 IF PEEK ( - 16384) = 211 THEN
    D(0) = D(0) + 1: POKE - 163
    68,0: IF D(0) = 5 THEN D(0) = 1
128 IF PEEK ( - 16384) = 193 THEN
    D(0) = D(0) - 1: POKE - 163
    68,0: IF D(0) = 0 THEN D(0) = 4
131 IF PEEK ( - 16384) = 204 THEN
    D(1) = D(1) + 1: POKE - 163
    68,0: IF D(1) = 5 THEN D(1) = 1
```

```
134 IF PEEK ( - 16384) = 203 THEN
    D(1) = D(1) - 1: POKE - 163
    68,0: IF D(1) = 0 THEN D(1) = 4
```

The left player now uses the A key to turn left and the S key to turn right. The right player uses K to turn left and L to turn right.

David Marshall  
Urbana, IL

## Speeding Up Apple Blockade

My family and I have immensely enjoyed both *Hopper* and *Blockade*.

I thought an improvement could be made in *Blockade* to reduce the 15 second delay between rounds during the initialization of the next round.

To eliminate the delay that occurs while the playing portion of the screen is cleared by line 350, delete line 360 and change line 350 to read GOTO 30. The program now clears the entire screen via a ROM routine and redraws the border, title and score.

The other part of the delay occurs in line 300, which clears the 1,050 elements of the array XY. Add the following lines to install this Machine Language routine.

```
300 CALL 839,XY
3025 FOR I = 839 TO 905: READ A:
    POKE I,A: NEXT
3150 DATA 32,190,222,32,217,247,
    24,160,2,165,155,113,155,133,
    62,165,156,200,113,155,133,
    63,200,177,155,10,105,5,101,
    155,133,60,169,0,101,156,133,
    61,160,0,152,145,60,230,60,
    208,2,230,61,165,60,197,62,2
    08,241,165,61
3160 DATA 197,63,208,235,32,183,
    0,208,190,96
```

The Machine Language routine clears all of the array elements named in the CALL

*SoftSide*

statement. It is fully relocatable and will clear integer and string arrays as well.

These two changes virtually eliminate the delay between rounds. Thanks again for making this superb software available.

Grant Stevens  
Detroit, MI ☺

## Bugs, Worms, and Other Undesirables



### Missing Lines in Blockade

Lines 75 and 3030 were omitted from the listing of the Apple® program *Blockade* (*SoftSide* Issue 35). They should look like this:

```
75 FOR I = 0 TO 1000: NEXT
3030 RETURN
```

### Atari® Adventure 14

A number of copies of the Atari version of *Robin Hood Adventure* suffered a spontaneous change in one line. Line 699 should read:

```
699 IF X5 = 4 THEN...
instead of
699 CONT X5 = 4 THEN...
```

This causes an unexpected branch to the archery contest when certain commands are given. The problem may be corrected by making the indicated change and resaving the file. On the tape version, it is the second program file. On the disk version, it is the file ROBIN.

### Atari Hopper Inverse Text

The word "congratulations" in line 1100 and the words "HIGH SCORES" should be entered in inverse. The underlining to indicate this was omitted from the printed listing. ☺

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**Dept. S S**

# The Electronic Bulletin Board

by Lance Micklus



Photo by Lance Micklus © copyright 1982.

The author's *MOUSE-NET* BBS system is a TRS-80 Model III with four disk drives. The auto-answer modem sits on top of the computer next to the phone.

Some things are hard to improve. Take the bulletin board, for example. A large square piece of cork material usually mounted on a wall, it makes a great message center. Write a note and tack it up on the board. As people go by, they look at all of the notes on the board and read the interesting ones. They can reply with another note, tacking it up in place of the original.

From this simple idea, Ward Christensen and Randy Sues of Chicago started the first practical electronic mail system in use today. Using a microcomputer in place of the cork board, the first Computer Bulletin Board System — *CBBS* for short — was started. The idea has spread all over the world.

Using a hobby-type microcomputer, Ward and Randy wrote a program allowing the user to review a group of messages. The user then had the option of leaving messages for others to read. Using a device called a Modulator-DEModulator (MODEM for short), the computer was called on the telephone and operated by the person on the other end of the line with a terminal. The entire system was automatic and could run 24 hours a day.

*CBBS* of Chicago began operation in February of 1978. Within a few months it was overloaded and other people began putting their own bulletin board systems on line. Today, several hundred such

systems, now called just *BBS*, dot the United States and the world. *CBBS* is the trademark of the particular system started by Randy and Ward in Chicago.

## Why Waste A Computer?

Usually, when you use somebody else's computer, you pay for the computer time by the hour. Not so with *BBS* systems. They're all free. The only thing you pay for is the phone call. Almost all of these systems use microcomputers costing \$5,000 or more. Why would anybody want to sacrifice an expensive piece of equipment for other people to use?

There are several reasons. It's a hobby and enough people have money to waste on such things. Also, the owner of a *BBS* system may have a computer in use during the day but idle at night. For fun and a little promotion, the owner may activate one of his idle computers as a *BBS* system at night. Almost half of the *BBS* systems operate only during evening hours.

Another reason is that the *BBS* system may serve some purpose which justifies its existence. My own *BBS* system, called *MOUSE-NET*<sup>TM</sup>, is a good example. My company sells microcomputer programs which allow information on one computer to be sent to another computer. The *MOUSE-NET* system is one of these programs. Our *MOUSE-NET* is its own showcase, plus an impressive showcase for our ST80 terminal programs. The real advantage to *MOUSE-NET*, however, is that people can leave questions at any time and I can answer their questions at my leisure. It is an excellent means of providing customer support and promoting products at the same time.

You can use almost any type of computer to run a *BBS* system. My *MOUSE-NET* runs on a TRS-80<sup>®</sup> Model III with four disk drives. The *FORUM-80* system at Small Business Systems Group in Westford, Massachusetts also runs on a TRS-80 Model III, but with a large 20 megabyte hard disk. A large number of *BBS* systems run on Apple<sup>®</sup> computers. Practically all *BBS* systems use disk storage for the information and other data files required to run the system.

## What Can You Do?

The original function of the *BBS* was to collect messages. It was simply an electronic mail system. Over the past five years, the

number of features found on these systems has grown and many features have now become standard.

One popular item is Electronic Shopping. This allows the user to place an order for merchandise. Usually, an on-line catalog offers selections.

Another standard feature is the data base section containing a large selection of disk files. Some of the files contain text material which you can read, or copy on a lineprinter while you read them. You can also acquire donated programs or programs in the public domain. If you have a good terminal program for your computer, you can transfer these programs to your disk drives.

Getting on the *BBS* systems is easy. Give the system your name and location and you're logged on. The *BBS* system will ask for this information so you have to know very little beforehand. Once on, menus let you get to the system features. A help feature is almost always provided to explain how everything works.

---

## Special Interests

Several systems feature interesting articles of general interest. One of the best was the now defunct *Modem Over Manhattan*, *MOM* for short. It used to take me two weeks to get on *MOM*. It ran 24 hours a day and handled 2,000 phone calls a week. Many very good, but unknown, writers contributed articles to it.

A *BBS* system in California called *IF* specializes in video. If this interests you, you might want to look at the messages on the system or leave your own. *BBS* systems with special interests tend to be called by people who share that interest. It's a good way to stay in touch with people you might want to know.

Another system running on a North Star computer specializes in information about the Space Shuttle. On this system you'll find information about launch schedules, and even how to lease space on the Shuttle.

Are you interested in photography or genealogy? A genealogy *BBS* system can locate information about your family or assist you in documenting it. If you like games, there's a system called *NESSY*. Some of the games are pretty good, too.

I don't know how a computer is supposed to know if a caller is over 18 or not. That hasn't stopped another group of *BBS* operators from putting up X-rated systems. They give you fair warning when you sign on that you may find some material on the system offensive. Take the warning seriously.

---

## What You Need To Get Started

First you will need a modem to connect your computer to the telephone. It converts the electronic signals out of your computer to audio tones and then back into electronic computer signals. Since the modem output is audio sound, it can easily be transmitted over any ordinary telephone just like a regular phone call. Some now include the ability to dial the phone for you.

Most modems today are the direct connect type. They plug into a modular wall jack just like your house phone. You must have a private line to use a modem. Not only is it the law, but your connection will go dead if somebody else picks up the line while your computer is talking to another computer. A good modem costs between \$200 and \$300. Among the best is the *Hayes Smart Stack Modem* for \$279. It works with practically any terminal or computer and is a good buy.

Besides the modem, you will need a terminal. If you don't have a terminal but have a microcomputer, you can usually use your computer as a terminal. Before you do this, make sure your computer has the special connections and electronics necessary. If not, some modems include the electronics with the box. The *Lynx* modem by

Emtrol Systems will work with any TRS-80 Model I or Model III even if it doesn't have the RS-232 board normally required.

Next, you will need a special program designed to make your computer operate like a terminal. One of the most useful features of such a program is the ability to send or receive data files from another computer. This is done much more effectively with disk than with tape and most of the better terminal programs are offered only on disk.

My own company sells programs like these for the TRS-80 Model I, Model II, Model III (but not the Color Computer), and the iBEX computer. They are marketed under the trademark of *ST80*. For Apple users, Personal Software markets a similar product called *VisiTerm*. You can get either *ST80* or *VisiTerm* from major computer retailers. Radio Shack also sells terminal programs as part of their CompuServe package. This includes Videotext terminal programs for non-Radio Shack computers too. The CP/M user's group has a couple of free terminal programs that will work on most *BBS* systems. Lifeboat Associates of New York City sells a terminal program called *Crosstalk* for CP/M-based machines. Finally, the manufacturers of most microcomputers usually have a terminal program you can buy directly from them. A few include it with the machine. But don't expect the features in these programs that you'd find in the higher priced software sold separately.

After you have all of this, you will need some phone numbers to call. Most *BBS* systems have a list of phone numbers of other *BBS* systems. My own *BBS* has a list of over 400 numbers. However, most of these lists — my own included — are dependent on user feedback to keep the numbers current.

---

## Want to Start Your Own BBS?

You will need a computer with disk storage and all the memory you can put in it to start your own *BBS* system. You will also need a modem with the auto-answer feature. Be careful when buying these; not all auto-answer modems work on a *BBS* system. Ask before you buy. The third thing you'll need is a private line telephone dedicated only to the *BBS*.

The last item is the bulletin board software. Some people write their own software while others would rather buy it off the shelf. What you should buy depends on what you want to do with your *BBS*. They are sold under a variety of names. The most popular are: *ABBS*, *BULLET-80*, *COMMUNITREE*, *CONNECTION-80*, *FORUM-80*, *MESSAGE-80*, *MOUSE-NET*, *NETWORKS*, and *PMS*. The Apple and TRS-80 Models I and III are the most popular type of *BBS* computers. PET® and Atari® have little to offer at this time. If you can't find a *BBS* system with your special interest, start your own.

---

## Places And Phone Numbers

The phone numbers below are for *BBS* systems selling *BBS* software. You will need a modem and a terminal or a computer running a terminal program to call these:

*FORUM-80* written by Bill Abeney: Requires a TRS-80 Model I or Model III with NEWDOS. *FORUM-80* is marketed by Small Business Systems Group of Westford, MA. Call (617) 692-3973 (modem) or (617) 692-3800 (voice). The system operator at this number is Bill Driscoll. Price: \$350.

*MOUSE-NET* in Burlington, VT, (802) 862-7023 (modem) or (802) 864-5899 (voice): Also available, *ST80-CC BBS* systems and *ST80-PBB* systems. All require a TRS-80 Model I or Model III and

continued on page 14

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## My Side of the Page continued

work with most TRSDOS compatible operating systems. *ST80-PBB* will also run on tape using only a 16K Model I and Model III computer and no disk. Lance Micklus is the system operator. Prices (including *ST80-X10* host program): \$90 (*ST80-PBB*), \$149 (*ST80-CC*), and \$350 (*MOUSE-NET*).

Here are some of the places where you can get computer programs which will let you use your computer as a terminal to call a *BBS* system. All phone numbers are for voice or data as shown:

■ LANCE MICKLUS, Inc., 217 South Union St., Burlington, VT 05401, (802) 864-5899 (voice) or (802) 862-7023 (modem): Sells *ST80-UC*, *ST80-DUC*, *ST80-III* terminal programs for the TRS-80 Model I/II/III and iBEX computers. Price: \$30 to \$350.

■ LINBERGH SYSTEMS, 41 Fairhill Road, Holden, MA 01520, call (617) 852-0233 (voice) for information: *OmniTerm* for the TRS-80 Model I and Model III with disk. Price: \$95.

■ LINK SYSTEMS, 1655 26th Street, Santa Monica, CA 90404: Sells *DataLink* for the Apple II. Requires Pascal 1.1 and one disk drive.

Once you have your terminal program and modem, you might want to try a few other interesting *BBS* systems.

■ PHOTOGRAPHY — Haledon, NJ (201) 790-6795 (modem).

■ VIDEO — Anaheim, CA (714) 772-8868 (modem).

■ X-RATED (Kinky Kumputer) — San Francisco, CA (415) 821-1714 (modem).

■ HEARING IMPAIRED — Silver Springs, MD (301) 593-7033 (modem). NOTE: This *BBS* can also be used with Baudot TTY equipment.

■ SPACE SHUTTLE — Greenbelt, MD (301) 344-9150 (modem).

■ GENEALOGY — Fairfax, VA (703) 978-7561 (modem — nights and week-ends only).

■ GAMES YOU CAN PLAY (NESSY) — Chicago, IL (312) 773-3308 (modem — nights and week-ends only). ☎

Lance Micklus is an old friend of *SoftSide* — he's been involved with the magazine since the first issue rolled off the presses in 1978. He received his formal education at Tri-State University in Angola, Indiana, graduating with a degree in Electrical Engineering. Except for one college course in FORTRAN, Lance is a self-taught programmer. He gained most of his computer experience during the course of his fifteen year career in the field of television and radio broadcasting. In 1979, he started his own company, Lance Micklus, Inc., marketing games and ST80 terminal programs for the TRS-80. He is a widely recognized expert in the field of microcomputer communications.



# Space Saving Storage

At last, Microbyte has created the perfect storage unit for the Apple II. This new data drive slimline out performs any of its competition. This pint-size drive, works 8 times faster than most other drives, saving you space and time. Compare the features of the new ASAP slimline to what you're using now. We're sure you'll agree, this slimline out performs the others.

- 8 times faster than APPLE II Drives.
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- Only 1/2 the size of a regular drive.
- 100% APPLE<sup>1</sup> compatible (including "half track").
- Can be used with IBM PC<sup>2</sup> and other computers by simply disconnecting Interface Board.
- Mechanism and read - write electronics made by TEAC the world leader in Audio recording machines.
- 1 (one) full year warranty at no extra cost!!!!
- The SLIMLINE is a 35/40 track drive and can take advantage of our ENHANCER Diskette which will give the user 15% more storage capacity & up to 163K Bytes.
- Slimline 1/2 height 163K.
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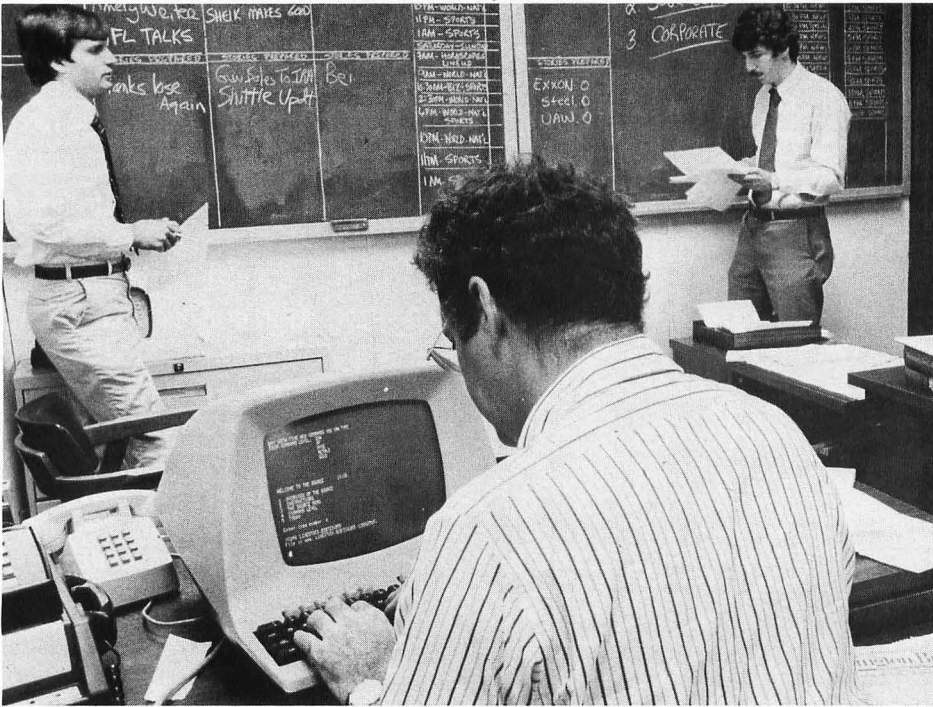
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# News from the Source™

VOL. CXXXI.....No. 45, 135

SOFTSIDE MAGAZINE

35 CENTS



## A NOVEL COMPOSED AND PUBLISHED IN HOURS

MCLEAN, VA — The nation's first electronic novel has been written in two and one-half days, published in three hours and copies are being distributed within sixteen minutes each to a nationwide network of personal computer users.

The novel, *Blind Pharaoh*, was created by writer Burke Campbell at the ArtCulture Resource Centre in Toronto, Canada. Campbell began writing on an Apple III® personal computer, equipped with Apple Writer word processing software, at 9:37 p.m. on November 14, 1982. He completed the novel 6 1/2 hours later, at 11:07 a.m. on November 17.

As Campbell wrote, each chapter was proofread on a second Apple III equipped with a printer, and reformatted for electronic transmission by a representative from Apple Canada. Corrections to the manuscript were made the afternoon of November 17, and at 5:30 p.m. that day the novel was transmitted from Toronto to

Source Telecomputing Corp. in McLean, Virginia.

The transmission occurred using Access III communications software and a Ven-Tel 1200 baud modem with the Apple III computer in Toronto. The novel was carried on the DataPac communications network in Canada, and Tymnet in the United States.

In McLean, the novel was received chapter-by-chapter by members of the STC Editorial Department. Each chapter was proofread a second time, separated into page lengths and assigned the appropriate chapter heading to enable subscribers to STC's service, *The Source*™, to read the novel with ease. The entire nineteen chapters of *Blind Pharaoh* were successfully transmitted, formatted and filed on *The Source* by 8:30 p.m. on November 17, at which point the novel could be received by any subscriber who typed the command NOVEL on the system.

Currently, when any of its 24,000 subscribers request the novel from *The*

*Source*, they are given a menu selection which enables them to select any of the 19 chapters for reading from their terminal, downloading onto a personal computer disk, or printing out onto a printer.

The novel, which is approximately 20,000 words in length, can be downloaded or printed in sixteen minutes using a 1200 baud modem. The only cost to subscribers for receiving the novel is their usage time on *The Source*, which costs \$20.75 per-hour weekdays, \$7.75 evenings and weekends, and \$5.85 after midnight (pro-rated by the minute). If *Blind Pharaoh* were printed out at 1200 baud in the evening, the cost to a subscriber would be \$2.03.

Among the first readers of *Blind Pharaoh* over *The Source* was Henry Kisor, Book Editor of *The Chicago Sun-Times*. In his forthcoming review of the novel, Mr. Kisor writes:

"Writing a 20,000 word novel on a computer in 72 hours is a stunt, but Burke Campbell pulled it off handsomely. The result, *Blind Pharaoh*, is rough-edged as one would expect, but its splendid narrative drive makes up for that. I enjoyed it very much.

"More important, perhaps, is its proof that videotext is a going concern as an alternative to the printed book. The technology is here already; all that is needed is a larger audience. And that will come; the only question is when."

The author, Burke Campbell, is a native of Texas and resident of Toronto, where he writes novels, as well as radio dramas, for the Canadian Broadcasting Corporation.

*Blind Pharaoh* will be made available on *The Source* for several more months.

*The Source* provides nearly 800 information and communication services to its subscribers, including electronic mail and message posting; computer conferencing; the UPI News Service; personal investment services; electronic shopping; and airline schedules and travel arrangements. The services can be received over a personal computer, data terminal or communicating word processor, equipped with a modem and, where needed, communications software.

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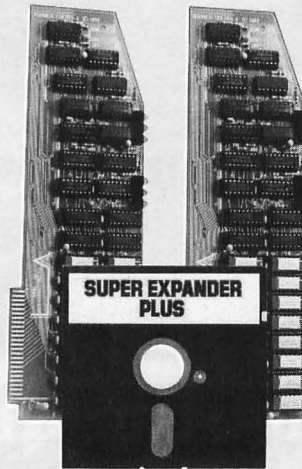
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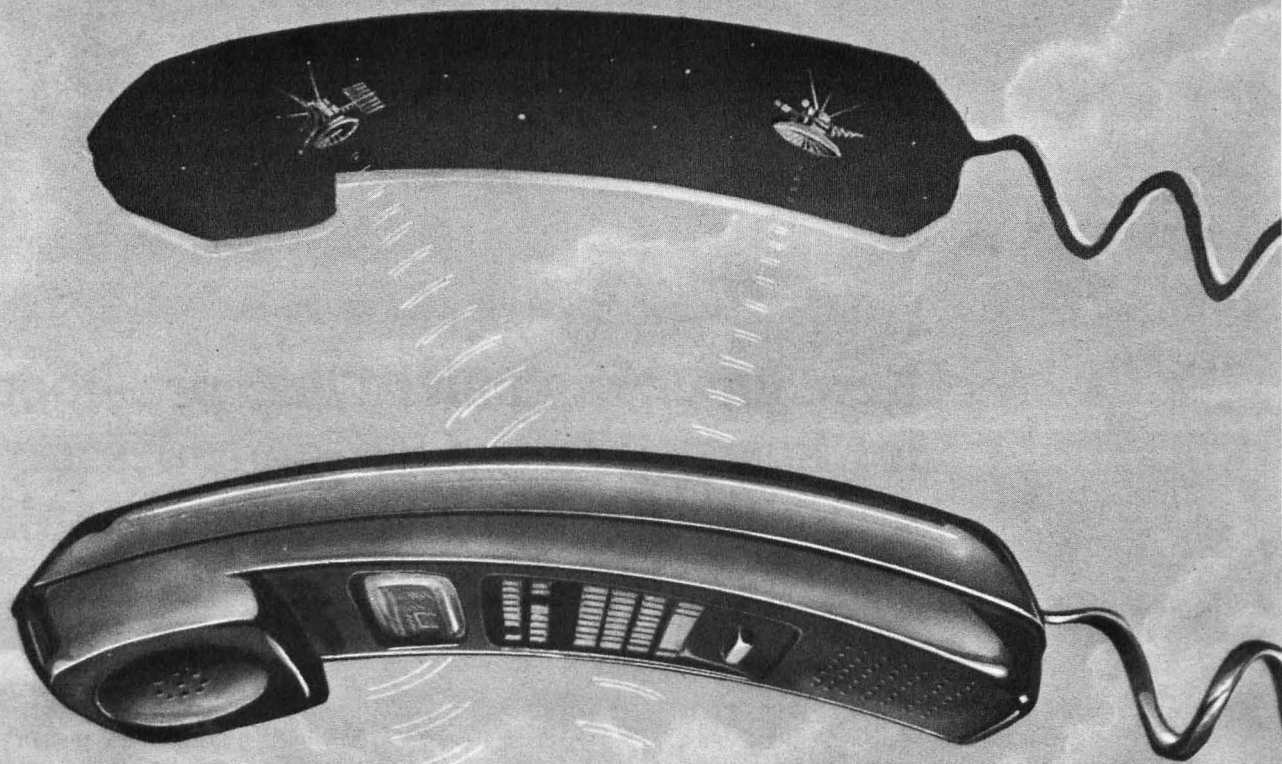
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# The World Connection



**The Modem — Your Computer's Telephone**

**by Tim Knight**

*This issue, SoftSide begins an exciting new column. Tim Knight will tutor novices in the essential elements of computer telecommunications. Address correspondence concerning this column to Tim Knight, c/o SoftSide Publications, Inc.*

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## ***“Personal computers can now exchange data with each other, enabling personal computer owners to enter the exciting world of computer communications...”***

---

Computer data communication is changing the world. A dramatic statement? Yes, but a true one, because computers are taking a giant step which ultimately will affect everyone. Personal computers can now exchange data with each other, enabling personal computer owners to enter the exciting world of computer communications which I call *The World Connection*.

To get involved with *The World Connection*, you must be connected. For this, you will need a MODulator/DEModulator device — a modem. The modem transmits computer language (binary) through existing telephone lines as audio signals. The computer at the other end of the telephone line translates the signals back into computer language. These raspy sounds allow computers to converse with one another.

Chatting computers may not seem so revolutionary, but computers and modems are the medium of data communications. They permit such things as electronic mail and talking with other computers.

---

### **About the Buzz Words**

Before you buy a modem, you need to learn what all those mystifying terms mean. The technical terms describe the available modems, so understanding them is vital to choosing the best modem for your needs.

You may have heard the expression “baud” before, as in “my modem works at 300 baud.” The word baud means bits per second, or the number of bits of computer data sent over the phone line within a second. The higher the baud rate, the faster the transmission of programs or data. A 300 baud modem is standard for home computers, but modems can run at 110, 600, 1,200 and even 19,200 baud!

The term “duplex” has a singular meaning for the home computer user — “now you see it, now you don’t.” In other words, in half duplex what you are typing is sent to the other computer, but you can’t see it as

you type. This can be aggravating since most of us feel more confident if we see what we are typing. With full duplex, you can see what you are typing because it is reflected back.

An RS-232C board (costing about \$100) connects your computer to other devices, such as printers and modems. It is sometimes necessary to have an RS-232C to connect a modem to your computer, but some modems do not require it. Some modems hook up directly to the phone lines. With others, you need to place the phone handset on them. Modems that hook up directly are called DIRECT CONNECT modems; the others are ACOUSTIC modems.

Finally, the terms “auto-answer” and “auto-dial” mean exactly what you think they would. An auto-answer modem will answer the phone if someone calls. It then gives the high-pitched whine which allows the caller to communicate with your computer. Auto-dial modems dial numbers for you. This can be a real convenience, especially if you have a rotary dial phone, or if you call many different computers and don’t want to remember all of those numbers yourself.

---

### **Modems And Money**

A modem, like any peripheral, will cost you some money. You can buy a modem kit or some type of jerry-rigged system for as little as \$40, but you won’t have a quality modem. Of course, at the other extreme, you can plunk a lot of money down for a modem which can send and receive at 19,200 baud, auto-dial, auto-answer, walk the dog, and so on. An average price for a home computer modem, however, is approximately \$250.

If you’re just going to play around with bulletin board services and other small systems, you don’t need the latest super-deluxe modem. However, if you are using a modem for your business and need some-

thing fast and reliable, don’t cut corners — buy a quality product.

There are many modems out there. Some are bad, some are great, and most are adequate. Look for a modem to suit your specific needs. For example, if you are going to open up your own bulletin board service, you will need an auto-answer modem. If you are going to sign up with a large information system like the CompuServe Information Service, you will usually need a 300 baud modem.

One of the most popular modems on the market today is the *Lynx* modem from Emtronic Systems, Inc. The *Lynx* works on the TRS-80® Model I or III, the Apple® computer, or an RS-232C compatible machine. The nice thing about the *Lynx* (for TRS-80 users, at least) is that it requires no RS-232C port, — a savings of about \$100.

The *Lynx* is an auto answer/auto dial modem, and works at 300 baud. This would probably suit most needs. In addition, Emtronic Systems includes a terminal program called EMTERM, though the program could be better. One negative aspect of the *Lynx* is the documentation. It is very brief, and rather poorly written. However, since the *Lynx* has only two main switches, not much documentation is required for the average user.

Another very popular modem is the *Hayes Stack Smartmodem*. It has particularly impressive and extensive features such as auto-answer, auto-dial, full or half duplex, an audio monitor to let you listen to the data transfer, and a two-year warranty. The *Hayes* will work with an RS-232C compatible computer, and the modem itself is quite sophisticated, with seven indicator lights on the front panel alone. It costs around \$300.

Hayes also manufactures the “micro-coupler” for Apple II® and Bell and Howell computers. This is similar to the *Smartmodem*, though not nearly as sophisticated, and fits quite neatly inside the computer.

Of course, Radio Shack has a series of modems. The *Telephone Interface II* is a

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“bare-bones” modem. It doesn’t have all the lights and bells of some others. To use it, you dial a number and push the phone handset into the rubber cups. *The Telephone Interface II* is an acoustic modem. It is usually reliable, but sometimes subject to outside disturbances, such as tripping over the telephone wire, or your dog pawing at the handset. *The Telephone Interface II* costs about \$199 — a bit expensive for an acoustic modem.

The *Direct Connect Modem I* is a little better than *the Telephone Interface II*, and, strange as it may seem, it is \$50 cheaper! The *D.C. I* has full-duplex operation, but unfortunately requires an RS-232C interface. It is very economical, however, and I would recommend it to anyone just starting out.

The top of the Radio Shack line is the *Direct Connect II*. The *D.C. II* has all the features of the *D.C. I*, including auto-answer, auto-dial, programmable operation, test modes, and so on. It is very impressive looking, and is comparable to the *Hayes Stack* in many ways. The *D.C. II* costs \$250, which is a reasonable price for such a fine modem.

There are many other modems on the market. I did not intend to name every modem that ever existed, but only to present a general sampling of modems to suggest what you might want and what it will cost. If you are serious about buying a modem, talk to modem owners, get information from the manufacturer, and shop for a good price. The research will pay off.

## The Last Word

There is no “last word” on modems. Different modems suit different people. Determine your needs, do your research, budget for a modem, then buy it. You will be surprised at its possibilities, and how exciting owning it can be. Of course, you need software to work with....which is what I’ll cover next month. Until then, keep on computing. ☺

Tim Knight, author of *The World Connection*, lives in Moraga, California, and has packed a wealth of computer experience into his sixteen years. A high school junior, he is a seasoned software reviewer, game programmer and author. He is presently working on two books. His first book, also entitled *The World Connection*, is being published by Howard W. Sams & Co., Inc.

Four times faster than any 300 bps modem, to be precise. With Hayes Smartmodem 1200, any computer with an RS-232C connection — such as the IBM Personal Computer, TRS-80® or Apple® III — can communicate over telephone lines with other computer terminals or printers. Smartmodem 1200 connects directly to any standard telephone jack in the USA. Dialing can be Touch-Tone,® pulse or both. It can even operate over multiline phone systems (PBX) to dial numbers, receive and transmit data, and disconnect — automatically. An internal speaker lets you hear the call being made and monitor its progress. That way you'll know immediately if the line's busy or you reach a

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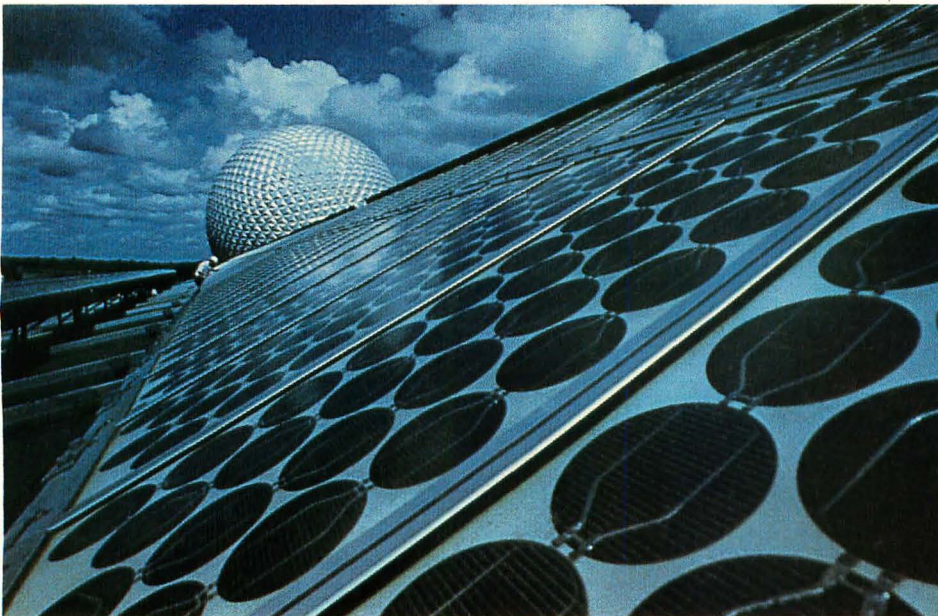
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# The Haunted House

by Fred D'Ignazio

*“Inside Spaceship Earth, a 180-foot geodesic dome, you board a time machine that whisks you back to the cluttered interior of a Cro-Magnon family’s cave...”*



Photos courtesy of Walt Disney Productions

*Riding On Sunshine* becomes reality in the Universe of Energy Center as 80,000 circular photovoltaic cells convert radiant energy of sunlight into electricity for theater-ride vehicles. In the background is Spaceship Earth, an 18-story geosphere housing the story of communication.

**W**hen I was a kid, I looked forward to Halloween — not just because of the treats and candy, but because that was when the kids up the street ran their famous haunted house.

The haunted house was really a haunted basement. And that basement was ten times better than all the so-called haunted houses I'd visited at amusement parks and seashore boardwalks.

Before you could go into the basement, you had to pay a quarter and submit to blindfolding with an old wool sock. You heard grim statistics about all the kids who had preceded you into the basement. “Richie was gored by a three-horned bat. A crazed troll chopped off Sarah’s finger. The thing in the Coal Bin swallowed Jeffrey in a gross, juicy gulp. Martha left here screaming. Harriet never left. She just disappeared.”

The trip through the haunted house sometimes lasted half an hour. It was one carefully engineered thrill after another. It didn't seem to matter if the chopped-up child looked like raw hamburger, or Igor's chains were made of plastic. The kids' special effects were still good enough to give you the willies. Their haunted house





In Epcot's World of Motion, visitors view a hypothetical contest in wheel design. (The round shape took the prize!)

worked. When you somehow escaped, you were glad to be out of the house, but you were equally glad you'd gone in.

## EPCOT's Magic Journeys

Today, horror movies are very popular. But you can't find a good haunted house anywhere. The technology found in haunted houses is old and decrepit — hardly convincing to kids raised on a steady diet of *Star Wars*, *CreepShow*, *Poltergeist*, and *E.T.*

But what if some designers got together to resurrect the old haunted houses? What if they incorporated some of the latest entertainment technology into these houses? What kinds of technology? Technology like you might find at EPCOT.

EPCOT stands for "Experimental Prototype Community of Tomorrow." It is an 800-million-dollar amusement park of the future, a 260-acre adjunct to the immensely popular Disney World in central Florida. It is the largest undertaking in the 56-year lifetime of Walt Disney Productions. Eighteen hundred people spent ten years planning it. Four thousand construction workers, architects, designers, artists, and engineers spent three years building it.

EPCOT is a showplace for entertainment technology of tomorrow. The technology engages all the senses, but it concentrates on your imagination and sense of fantasy.

You spend most of your time at EPCOT making "journeys." For example, you can journey nineteen hundred years into the past to the ancient Roman city of Pompeii. You arrive just in time to see the eruption of Mt. Vesuvius. Molten lava tumbles down the volcano's side and engulfs houses and barns. Buildings topple. The sky turns black. A blizzard of floating ash, cinders, and pumice clogs your lungs.

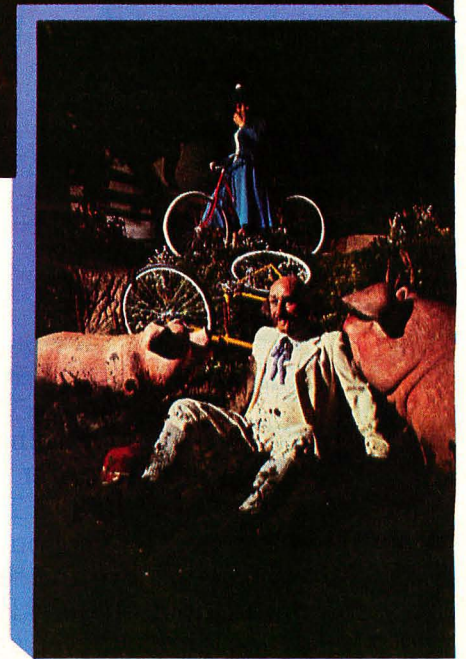
"Can you smell the city burning?" the EPCOT guard asks politely. "Those are our *smellitzer* special effects."

In other parts of EPCOT, the effects are just as realistic, the journeys just as spectacular.

Inside Spaceship Earth, a 180-foot geodesic dome, you board a time machine that whisks you back to the cluttered interior of a Cro-Magnon family's cave, then to an Egyptian sarcophagus, then to a Greek theater, and on, and on.

You eventually end up in outer space.

EPCOT's special effects are achieved using a variety of high-tech materials, including liquid neon, fiber optics, holographic displays, and over 60 robots.



Epcot takes a whimsical look at the history of transportation. A cyclist loses control, and ends up in a sticky situation.

The robots — known as *audio-animatrons* — are really only advanced, special-purpose automatons. Yet their graceful movements, their humanoid bodies and faces, and their voices make them convincingly lifelike and realistic. In one exhibit, a robotic Ben Franklin bids the visitors good-bye and effortlessly climbs a set of stairs.

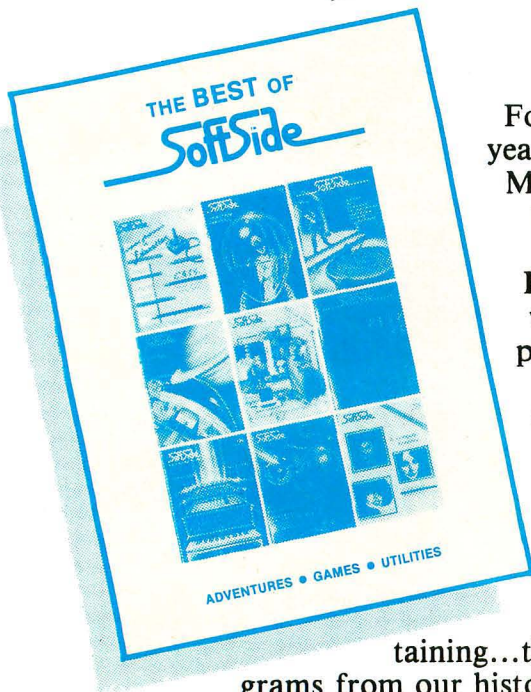
Elsewhere, in the World of Motion, you interact with 73 audio-animatronic animals, including a robotic ostrich. In the Universe of Energy, you backpedal 275 million years to a primeval forest. Watch out! You duck

continued on page 25

# The Best of SoftSide™

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**Entertainment Tomorrow** *continued*

as giant, low-flying dragonflies swoop over your head. In a nearby pond, hulking brontosaurs feast on ancient and exotic flora.

Other hi-tech gimmicks include 3-D movies with high wire artists who seem to walk a tightrope right over your head; laserbeam pens; music-producing bubbles and light sensors; and the Dream-finders School of Drama where you get to star in your own TV show. (In Dream-finders, the Disney *imagineers* have come close to realizing the computerized scenario I set up in my #33 *SoftSide* column, "Home Movies.")

Not all of the technology is homebrew. A big hit with the crowds is the Circle-Vision 360 theaters in the Canadian and Chinese pavilions. In an instant you are carried to remote parts of the Earth to see scenes photographed by sixteen film crews and recorded on thirteen sound tracks. The pavilions' screens are 70 yards wide. In Circle-Vision 360, the screen surrounds you. You are no longer a spectator. Instead, you are part of the action.

You float in a distant northern lake along with thousands of Canadian geese. You soar over the Canadian Rockies and get caught in a Calgary stampede. When you visit China, you don't go as a tourist. Instead you gallop along a chill, central Asian plain with fierce-looking Mongolian tribesmen. You travel to the edge of the Arctic for a chaotic round-up of wild reindeer.

**A Haunted EPCOT**

Throughout EPCOT, the effects are strikingly effective. Your journeys to

faraway times and places feel remarkably real.

Right now, many of the technologies and special effects are too expensive to use except in Hollywood movies, world fairs, and amusement parks of the caliber of EPCOT. But many of the machines that generate these special effects depend on electronic components. These components are shrinking dramatically in size and cost. Perhaps, someday soon, these special effects will be found in "Discovery" museums, local amusement parks, and in haunted houses.

Can you imagine a *haunted EPCOT*? Haunted-house designers could use low-cost electronic components. They wouldn't have to settle for tired, hackneyed images to inspire fear and terror. The ersatz creatures and victims of horror found in today's haunted houses — the mechanical dolls, plastic mannequins, and cloth-stuffed scarecrows — could be tossed forever into the dustbins of entertainment history. In their place, designers could use images pulled from the nightmares of masters of horror like Peter Straub, Steven Spielberg, H.P. Lovecraft, and Stephen King.

Haunted houses of the future could be completely electronic. The houses could have a silicon nervous system — thousands of computer chips embedded in the walls, floors, and ceilings. Dozens more would animate robots and horrific animatronic beings. All of the chips would be under the control of an "intelligent" master computer housed underground in the haunted house basement.

Until recently, most of the billions of ICs — integrated circuits, or chips — produced world-wide were stamped from just a few molds. There were processor chips, RAM memory chips, ROM memory chips, logic

chips, and power-regulation chips. This situation is changing quickly. Due to revolutionary new chip design and fabrication methods, it is becoming cost-effective to create millions of special-purpose chips, each dedicated to a different application. Already, there are graphics chips, sound-synthesis chips, speech-recognition chips, prosthesis chips, locomotion chips, and so on. Soon, the computers in each industry will have their own cluster of special chips for each application. There will also be *entertainment* chips such as you find in the newest electronic games.

So why not *haunted house* chips? The sensor chips hidden behind the floors and walls would tip off the master computer each time a poor, unsuspecting human stumbled across the haunted house's dark threshold. Speech-synthesis chips could create a riot of sound effects, scary voices, and eerie music. Audio-animatrons could take the place of the disreputable "monsters" appearing in today's haunted houses. The animatrons would be radio-controlled by the master computer. Based on information gathered from its sensors, the computer could mobilize the animatrons and point them toward the nearest human.

The master computer could tailor its "creature feature" to its audience. Strain gauges, laser range-finders, ultrasonic transducers, and pressure sensors would gauge the height, age, and size of the humans entering the haunted house. All the information would be relayed to the master computer. It would send out cute muppet-like monsters to scare the toddlers, and fierce monsters to frighten the older kids

*continued on page 26*

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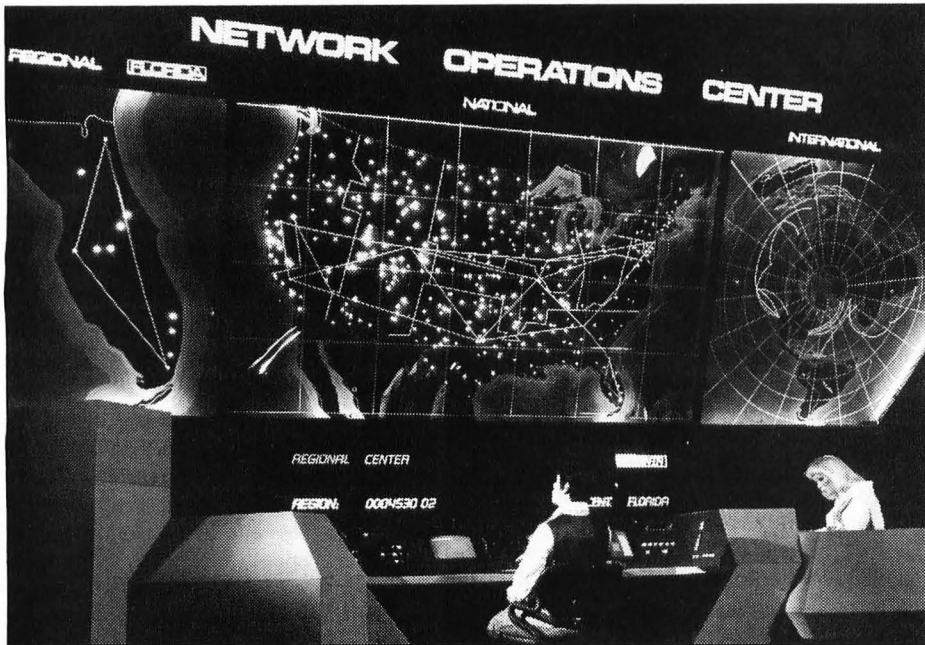
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A scene within Spaceship Earth at Walt Disney World Epcot Center shows lines of telecommunications linking cities, regions and continents.



In the Universe of Energy in Epcot Center's Future World, dinosaurs and special effects such as projected smells, raging storms, earthquakes, and an erupting volcano re-create the violence and beauty of prehistoric earth.

#### Entertainment Tomorrow continued

and adults. It would save its ultimate terrors for the teenagers. Mobs of mobile, marauding monsters would unravel even a teenager's cool skepticism, especially if the monster attack was supported by wall-to-ceiling flat video screen displays. Artfully selected clips from horror movies could be projected on the displays, including: scenes of people falling, morgues full of dismembered dead bodies, cemeteries on foggy, moonless nights, shots of stalkers,

shadows, things half-seen, distorted, and unreal — things to clutch the imagination. The computer's show would be especially powerful if the creatures and scenes appear in 3-D.

If the master computer focuses on individuals, its attack could respond to individual responses. If the individual flees, the soulless creatures of the haunted house would pursue him. If the individual stands her ground, the creatures would surround her, taunt her, and toy with her. Speech-

recognition chips could even respond to her shouts, commands, and queries.

"Who are you?" the frightened person might ask. "The undead," the audio-animatrons might answer. "Where do you come from?" he might cry. "The deepest, most savage recesses of your own mind," the image on the display screen might answer.

The combined impact of the animatrons, the display screens, and all the electronic creature "intelligences" could be amplified by additional special effects. For example, as the person wandered through the haunted house, the master computer could spray corridors and chambers with chemicals — odors of decaying bodies, formaldehyde, and pungent, nose-stinging fumes from erupting volcanoes, exploding bombs, and burning houses.

The computer could further heighten the realism of each effect by vibrating the floor directly under the person, by shaking the walls, and by sending scorching blasts of dragon fire out of nozzles concealed in the dimly lit walls.

A computerized haunted house of the future could frighten, disorient, and overwhelm a person's mind and senses. In short, it would be a thrilling, unforgettable experience. If it became too much, however, the person could immediately escape. A single "HELP!" and the master computer would deactivate all the animatrons, shut down all the screens and speakers, and flash an emergency light on the house manager's control panel. Bright lights would flood the room. The computer would talk to the person in a soft, reassuring voice until the manager and his rescue crew arrived. "There, there" the computer might say. "Nothing is going to hurt you. It was not real. Don't cry."

#### Back to the Haunted Basement

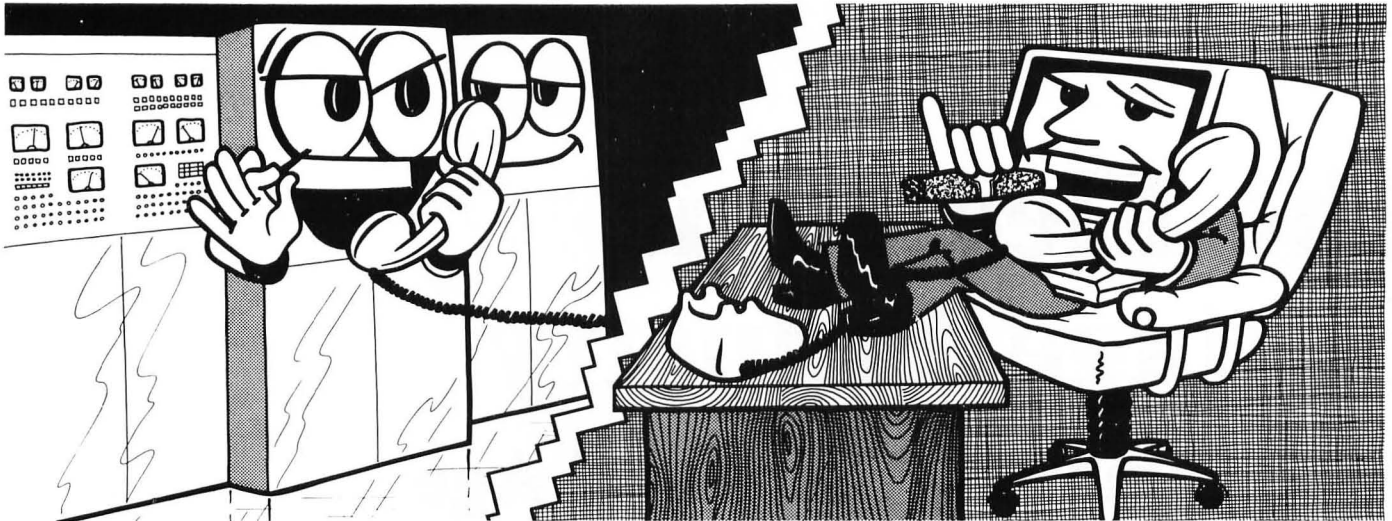
Computerized haunted houses of the future may become a popular form of entertainment. You may even see them tucked between McDonald's and Hickory Farms at shopping malls.

And, if you have the stomach for it, you might spend a whole afternoon going through one. Each time through, the computer would vary its program and treat you to a new experience. It would be like playing an electronic game. The creatures lurking in the haunted house would act unpredictably and constantly surprise you.

Maybe, just maybe, if the special effects are really well done, haunted houses once again will be just as good as the haunted basement I visited when I was a kid. If they are, we are in for a whale of a thrill. ☺

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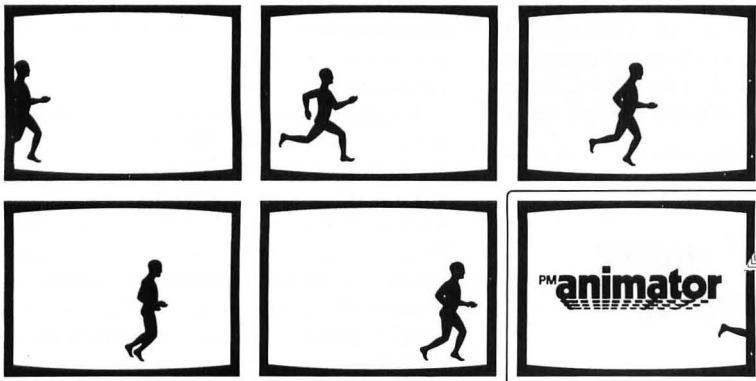


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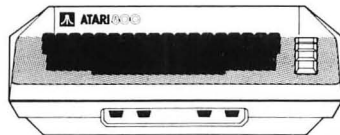


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# The Electronic Cottage Industry

## Telecommuting Comes Of Age

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by Katherine Ackerman

The most antiproduktive thing we do in America is drive back and forth to work every day. So maintains futurist Alvin Toffler, author of *The Third Wave*. He believes that the greatest improvements in productivity can happen by eliminating commuting and shifting the workplace back to the home. Advanced electronic equipment now makes this possible. Experts theorize that "electronic cottages" will be common work sites before the year 2000.

muting is here to stay. That has broad implications for us all.

More and more people are choosing to work from home, and many more would like to than have actually had the opportunity. The National Association for the Cottage Industry was formed this year, and had its first meeting in Chicago last October. Close to one thousand people attended, coming mostly from the Chicago area. This group included people in all

experts predict that as many as fifteen percent of the work force (ten million people) will earn their primary incomes from work done in their homes by the mid-1990s. "Information workers" — writers, programmers, data entry personnel, word processors — will be the most common telecommuters. Nilles predicts that the number of people working at home with computers will double each year.

Employees wish to work from home for a number of reasons. Women with small children find telecommuting allows them to sustain their careers after having children without the worry or expense of day care. Handicapped people find their employment options remarkably expanded by telecommuting. Although many workers like the people-to-people contact of the work place, they are tired of spending two hours or more commuting. Expenses are high — gas and car repairs or public transportation costs, clothing, and lunches out all add up. The telecommuter also receives numerous tax advantages by working from home. The information worker who provides equipment and software can deduct those expenses. House and apartment rental and maintenance expenses directly related to the work done are often deductible. Eliminating the daily commute allows employees to work farther from the city where real estate is less expensive and the lifestyle is often preferred.

The employer realizes advantages as well. Office space is expensive. The decentralized office allows more workers using less space. Regional work centers can be cloned near clusters of employees, allowing all workers

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***“Kern expresses the sentiments of many ...when she says, ‘Working at home is the best of all possible worlds.’ ”***

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“Telecommuting” — a term coined by Jack M. Nilles of the University of Southern California — involves working at a remote location (usually home) on a computer and transmitting information electronically to a central office. This has been technologically possible for a number of years, but two factors account for its increasing popularity: the changing relationship between work and family, and the “telecommunications revolution.” Only recently have companies become receptive to experimenting with telecommuting. The results have evoked both enthusiasm and resistance, but it looks as though telecom-

fields working from home, and those looking for ideas for starting their own home-based businesses. One of the divisions of the association, and one that founder Coralee Kern feels will be especially active is “the electronic cottage.” This division will comprise people working at home on computers — the self-employed as well as those who work for companies and telecommute. Kern expresses the sentiments of many members when she says, “Working at home is the best of all possible worlds.”

Estimates suggest that ten million people are ideally suited for telecommuting, and

to communicate regardless of their individual locations. Nilles and other researchers have found that productivity increases by fifteen percent or more among support level staff who telecommute. Other research indicates that, while more difficult to measure, telecommuting also improves the productivity of programmers, scientists and others whose work does not depend on face-to-face contact with colleagues. A study conducted by Professor Charles McClintock of Cornell University found that employees who work from home may be able to increase the time available to them for complex, nonroutine tasks because they can avoid contact with other workers when necessary.

Another advantage for the employer is that many positions which are most difficult to fill are those best suited for telecommuting. Secretaries are in short supply, and because many are women with children, telecommuting offers many advantages. Programmers are also in short supply, and this type of work is well suited for telecommuting as well. Personnel costs for information workers are increasing at rates generally higher than inflation, but because employees who work from home often receive different benefits from office employees, the employer can save money.

## Experiments

As one might expect, the more progressive companies have begun telecommuting experiments. The number of corporate-sponsored home-work programs for white collar workers is estimated at about 35, involving less than 1000 workers, according to Nilles. International Resource and Development, a market research and technological assessment firm in Norwalk, Connecticut, estimates that about 10,000 people in the U.S. telecommute, but many are probably part-timers. Margarethe Olson of the Graduate School of Business Administration at New York University has studied telecommuting and says it is difficult to count the people who telecommute, because many arrangements are informal agreements between managers and their employees. Sometimes the company personnel department may not even know of the arrangement, she suggests.

At Blue Cross-Blue Shield of South Carolina, women on personal computers process 70 percent of claims reports in their homes. Using Texas Instruments 700 Series Personal Computers, they process 1200 forms each per week, and errors are deducted from their paychecks. Employees can work any time, night or day, and the

company has found that the three employees who telecommute complete the work which formerly required more operators. Blue Shield's major-medical office is planning to set up a telecommuting program as well.

Heights Information Technology Service Inc. is a data processing consulting company located in Tarrytown, New York and Oakland, California. The majority of Heights employees are women with primary childcare responsibilities. Employees work variable hours, depending on the projects

employees on medical leave by allowing them to work from home. Sometimes the work is therapeutic, so everyone benefits. The company has also found that allowing some employees to telecommute results in less use of office space and a reduction in the heating and air conditioning costs.

Arthur D. Little, Inc., a consulting firm in Cambridge, Massachusetts, has four employees working from home on an "office in a briefcase" program. Batterymarch Financial Management Co., a stock brokerage in Boston, has installed terminals

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***"The idea is to allow employees to work at their peak energy periods," says McKinnie. "Some employees take time during the middle of the day to jog or run errands."***

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available. The projects are estimated on the basis of a two-week deadline which may be negotiated to fit the employee's schedule.

This arrangement provides employment for people who otherwise would be unable to work, and it allows the company to draw on a large pool of talented and reliable individuals.

Control Data Corporation is one of the innovators in telecommuting. The computer company began training handicapped employees to work from their homes as programmers in 1978. In 1979, the company began an "Alternate Worksites" program for other employees. Currently, 80 people (computer programmers, managers and administrators) work from home. All were Control Data employees who worked from the office before they began telecommuting, says spokesperson Pat McKinnie. The company found a great improvement in productivity among the employees who telecommute, and estimates that a 200 to 300 percent increase in productivity per individual is possible. Many participants estimated their improvements at between twelve and twenty percent. "The idea is to allow employees to work at their peak energy periods," says McKinnie. "Some employees take time during the middle of the day to jog or run errands."

McKinnie says telecommuting can reduce the high costs of maintaining disabled

in the homes of all 30 of its employees, both professional and secretarial. The computers access the company's two Prime Computer, Inc. 750 computers. These employees regularly use the office. During bad weather or at night, however, they often work from home. Much of the company's processing is done overnight, and telecommuting allows employees to monitor processing without coming into the office.

## Some Problems

Although more and more companies are trying telecommuting, there are some discouraging developments as well. Continental Illinois Bank began a program in 1978, and was frequently featured in articles discussing the success of telecommuting. Both employer and employee found the arrangements beneficial. The program was instituted in two phases. By 1982, four employees, all mothers of small children, worked from home. A Dictaphone central dictation system sent dictation to a recording unit at the operator's home. The operator typed and edited the dictation at a Wang Laboratories word processor that interfaced to the bank's electronic mail system. The text was then edited, printed and returned to the author. In interviews, different employees described the arrangement as "ideal." A spokesperson for the

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bank stated that the pilot program was successful and the company learned to manage employees in remote facilities effectively. The program was discontinued, however, because the company wanted to make it more cost-effective and less labor-intensive. The telecommuting employees were offered, but declined, jobs at the bank.

The types of employees best suited to telecommuting, according to Olson, are self-motivated and self-disciplined. They feel that because of their skills or proven loyalty to the company they have some bargaining power with their employers.

The biggest cause for management resistance stems from the difficulty of

*“...the pilot program was successful and the company learned to manage employees in remote facilities effectively. The program was discontinued, however...”*

## Who Should Telecommute

Some employees find that either their jobs or their personalities are not suited to telecommuting. Individuals interviewed for Olson's study cited problems with motivation and distractions at home. Others cited the difficulties of distinguishing between work and nonwork and some mentioned the stress of balancing work and family care. McKinnie says some employees at Control Data who originally thought telecommuting was a great idea later found that the isolation of remote work was not for them. Some individuals avoid this problem by working from the office a few times each week. Those who work from the home lose the informal teaching that occurs in the office.

## Management Resistance

By far the biggest obstacle to telecommuting is management resistance. Olson cites three major management concerns: what kinds of jobs can be done remotely; what kinds of individuals can work at home; and how are remote workers best monitored and controlled?

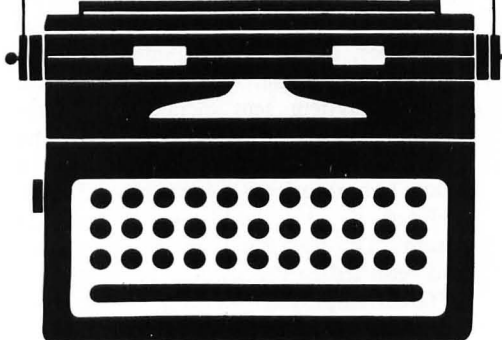
The study found that the types of work best suited to telecommuting shared several characteristics. They had few physical requirements — usually a terminal and telephone hookup were all the work required. The jobs were well defined, and had long-term completion dates rather than short-term deadlines. All of those interviewed, except data entry clerks, said their work required significant concentration at least some of the time. Most did not need frequent contact with the central office.

supervising and compensating employees one cannot see regularly. Some remote workers are paid by output, and this has caused concern that “cottage keyers” may end up in the equivalent of electronic sweatshops. Besides, with most professional positions, this piecemeal approach is not possible. How then are these employees to be evaluated and paid for their work? How may they be compared to their counterparts who work from the office? How will working from home affect one's chances for advancement? In most corporations, visibility is important for promotability.

Trust and communication are most important for telecommuters and their managers. Telecommuters need to know that they are paid the same as other employees doing the same work, and managers need to believe that the employee is actually working. Olson found that it is very important for employers to know they may contact employees during certain times of the day and find them at home.

Telecommuting is an idea whose time has come for some employees, and may soon change the way many of us work and play. It's not for everyone, and the number of programs is still very small. But for those in fields requiring manipulation of information, the office of the future may be in their living rooms. ☺

Katherine Ackerman received her M.A. in Library Science from the University of Chicago. A former librarian with the *Chicago Tribune*, she has extensive experience searching on-line bibliographic databases. She presently runs a computer-based research and information service in Chicago using her IBM® PC.





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## MMG BASIC DEBUGGER

- **TRACE through your BASIC program**
  - Single step — TRACE while
  - TRACE UNTIL — change variables
  - LIST line numbers executed
  - examine variables' values
- **Full screen BASIC editing**
  - scroll up or down by cursor
  - edit your whole program easily
  - no more LIST line number ranges
- **Split screen mode**
  - view two parts of your BASIC program at once, and edit both!
  - scroll each window independently
- **CROSS REFERENCE**
  - provides a list of variables and the line numbers in which they are used in your program
- **SEARCH FOR PHRASE**
  - search your BASIC program for any phrase, command or string of characters; let your computer do the searching for you!

THE TWO MOST POWERFUL AIDS AVAILABLE FOR THE ATARI!!  
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Requires 24K - Disk Only



## FINAL FLIGHT!

Have you ever wanted to pilot your own plane? Now, thanks to FINAL FLIGHT!, you can! This all-machine-language flight simulation is as close to the real thing as possible (below 20,000 feet!). Views are in full color, and are updated on your screen many times per second, for a real-time feeling of flying! Options galore, such as instruments only, instruments and cockpit view, view only, foggy or clear weather approaches and landings, multiple levels of difficulty, and more! In short, FINAL FLIGHT! is by far the most sophisticated and flexible flight simulator available for the ATARI.

Available on tape or disk — \$29.95 Requires 24K.

\*\*\*\*\*

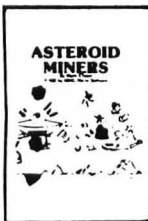


## CHOMPER

This all machine language program will keep you on the edge of your seat. Arcade style action with intelligent monsters make CHOMPER a challenging and addicting game. Requires 1 Joystick and NERVES OF STEEL!

Available on disk or cassette — \$29.95 Requires 16K.

\*\*\*\*\*



## ASTEROID MINERS A Unique Game Tutorial

This 50 page book and program provides for a unique intermediate to advanced tutorial. A 32K BASIC game utilizing over 25 players in player-missile graphics, machine language subroutines, a redefined character set, multiprocessing utilizing the vertical blank interrupt interval, and much more! The 50 page book included with the program documents each part of the entire program and contains the fully documented source code for both the BASIC and assembly language parts of the program. Use these routines in your own programs. These examples make it easy!

Available on disk or cassette — \$34.95 Requires 32K.

\*\*\*\*\*



## RAM TEST II

The fastest and most thorough memory test available for the ATARI has now been further improved! Tests not only all locations, but also tests the memory addressing system. This all machine language program takes 4 minutes to test 48K. It's the only program that tests the cartridge area of RAM. Good for new 400/800 computer owners, for testing new RAM boards and for use in computer stores to test and pinpoint bad memory locations. Bad memory locations are pinpointed so repair is as simple as replacing a chip!

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\*\*\*\*\*



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Available on disk only — \$29.95 Requires 40K.

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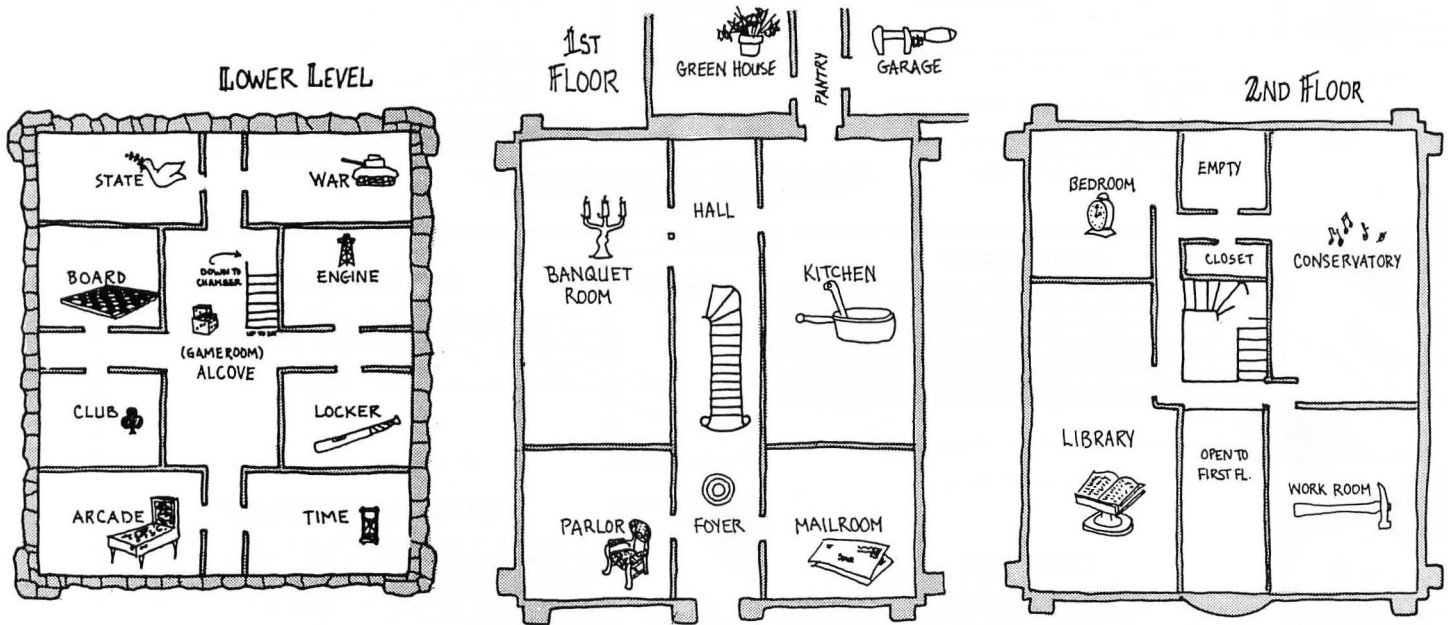
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# MODEM



Within the last year, a new style of game playing has developed, unbeknownst to the majority of personal computer owners. Even those fortunate enough to have added modems to their systems are probably unaware that a dynamic and blossoming field exists on a plane somewhere between the video arcades and Rona Jaffee's "Mazes and Monsters."

Game playing via modem-connected computers is one of the most sophisticated applications of telecommunication. All you need to join this underground movement are a love of games and the ability to interface, via modem, with the other players. Most past gaming efforts have grown out of the desire of vast numbers of fantasy role-playing adventurers to bring their special universes to the personal computer. The large capabilities of the computers allow enhancement to the scope of these adventure games by several orders of magnitude. Also, geographical considerations no longer limit player participation.

At first, large multi-access databases like *The Source* and *Compuserve* provided the arena for modem gaming. With their large main-frame storage blocks and the ability to host many callers simultaneously, fantasy role-playing games like *Blackdragon*, and puzzle-solving adventure games like *Adventure (Colossal Cave)*, both on *The Source*, soon garnered a large cult following. These were passive games, in the sense that single players competed against the

games. They allowed no further playability once you completed your quest. While adventure players love the solitary intellectual challenge of intricate puzzles and conundrums, fantasy role-players thrive on group participation and interaction.

## GameMaster

The first to explore that group interaction was the *GameMaster* system in Chicago. The inspired and dedicated Harlow Stevens created an entire computer mansion complete with multi-level dungeons (see illustrations above and on following page). Members visit this mansion, via modem, twenty-four hours a day. Within are many wonders and each room is dedicated to a different interest. In the parlor, members can sit around a cozy fire and talk.

The illusion is so well maintained, one quickly forgets that perhaps thousands of miles separate the members. The gaming rooms, where many multi-player games are in progress, are in the basement. The real strength of the *GameMaster* system is that it features more than just dungeon games. Imagine a sixteen-wheeler simulation, card games like bridge, board games like *Diplomacy*, and many other group participation games.

Someone posts a message on the cork board, looking for fellow players, and suggesting a convenient time. Then the players

call in at the same time and form a game. While the game is in progress, they are tucked away in a separate part of the computer, isolated from other happenings in the mansion. In the catacombs below lurk hideous monsters and untold treasures.

Recently, Harlow has developed a most important software adjunct to computer gaming — the *Graphic Driver*. While delving into the vast dungeon projected eventually to be fifty levels, the computer in Chicago will turn on the disk drive at your house and access the particular room, monster, and treasure combination for that location in the dungeon.

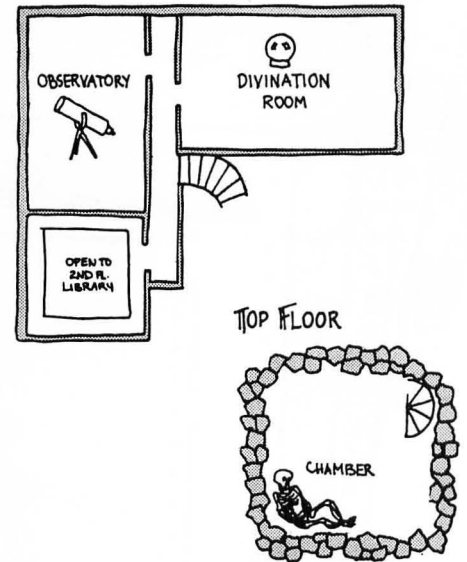
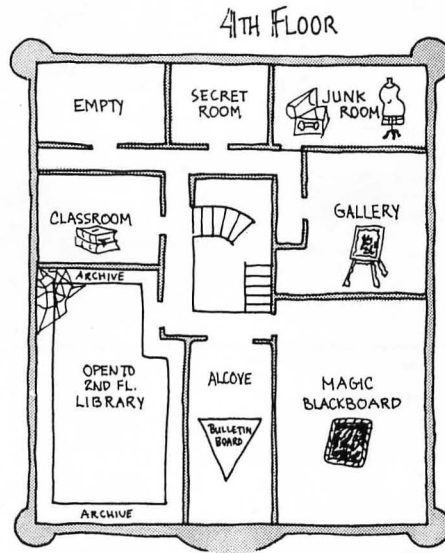
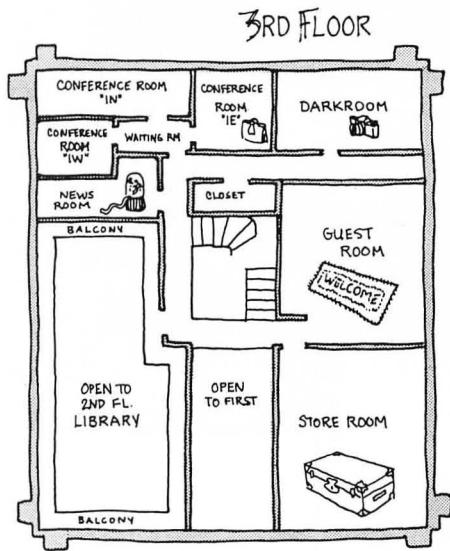
All these items will now appear in hi-res on your screen. Because each item is modular, a large selection can be contained on one disk. Currently, the drivers are only written for the Apple®, but Harlow hopes to complete drivers for the other major micros soon. *GameMaster* membership is only \$10.00 a year, and you get three free hours on the system when you join. The hourly connect rate is only \$3.00 — a lot of game playing for very little cost. *GameMaster* is at 1723 Howard St. #219, Evanston, Illinois, 60202; (312) 328-9009.

## MagFan

In Los Angeles, California, some dedicated fantasy role-players assembled and started *Magnetic Fantasy*, or *MagFan*. This is the largest and most successful of the

# GAMING

by Roe R. Adams, III



bulletin board variety dungeon games. Players log on using their character's name, such as Dreampainter, Starshine, Silver Queen, or Trebor the Terrible. Groups form to explore a dungeon, under the direction of another member who acts as Dungeon Master. The turns and actions of each member of the party are posted on the bulletin board; the Dungeon Master posts what happened to everyone, and their next options. Usually, several turns a week are executed. Since anyone else on the system can read these messages, everyone can follow the progress of each expedition. Sometimes cheering sections develop as people root for favorite characters. The element of the weekly cliff-hanger certainly prevails here.

Taking this a step further, I recently tried an experiment on the Montreal Bulletin Board, run by Glenn Silver. With the gracious permission of Rick Loomis, publisher of Flying Buffalo, Tempe, Arizona (602) 966-4727, we loaded one of the copyrighted *Tunnels and Trolls* scenarios onto a 5-meg hard disk. We could generate characters online, then give actual turns of the game to each player. Glenn would send each turn down to me daily via mail on *The Source*, and I, as Dungeon Master, would resolve all combats, and send back the results via *The Source*. Glenn would now get from memory the next eligible turn. This was the first time a modem game used a professional scenario rather

than the usual home-grown variety. The seventy-five players really enjoyed themselves.

Recently, *Compuserve* has added *Mega Wars*, a science-fiction space battle game, in which up to ten players participate simultaneously via modem. This may be the first of several multi-player games developed on this system.

## GAMESIG

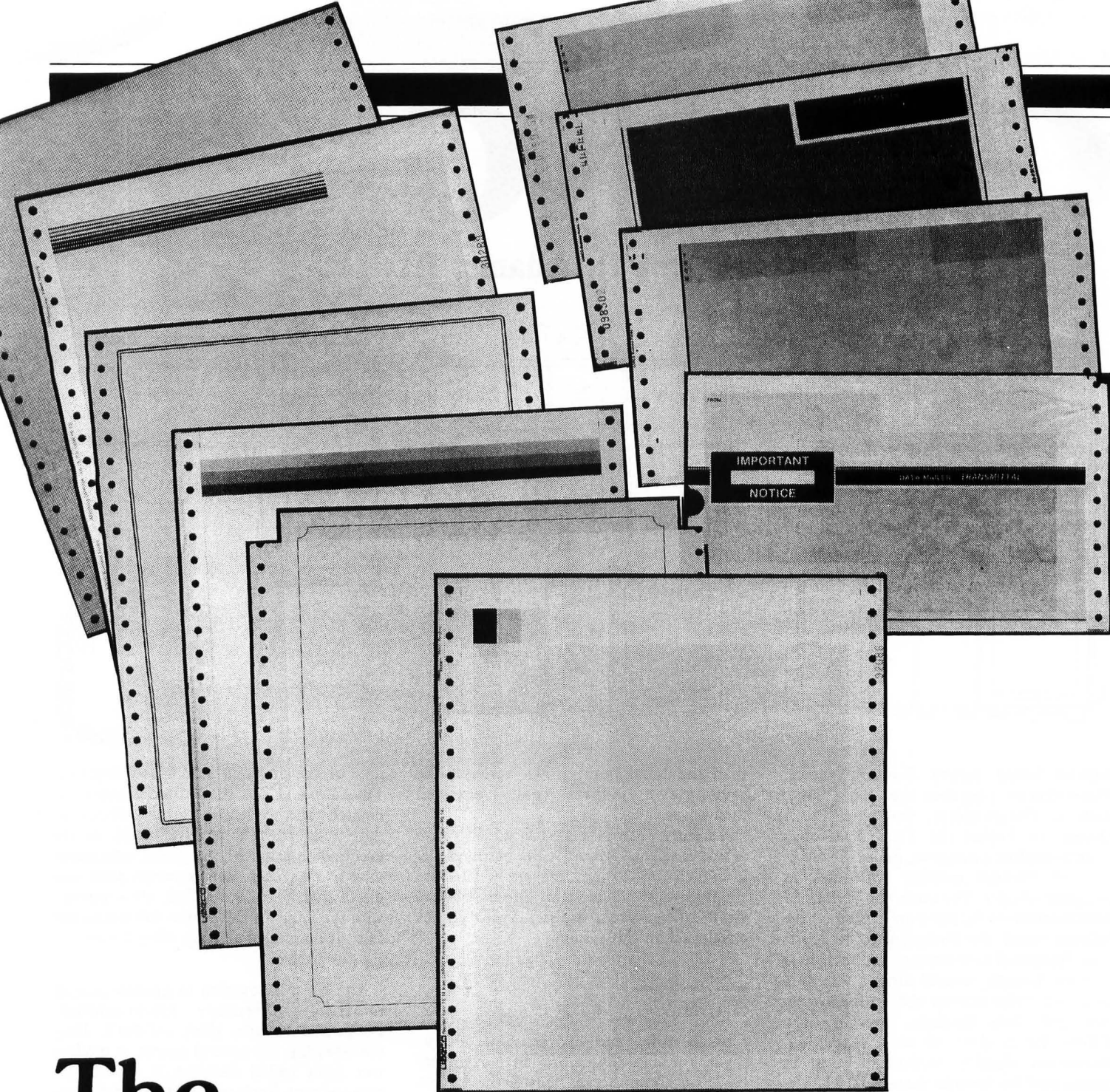
Maria Price and her assistant, Patty, began running *GAMESIG* in November, 1982, on *Compuserve*. This is the largest adventure gaming effort to date. Maria plans to provide solution paths to the approximately 350 computer adventure games in existence. When you are stuck at a particular point in an adventure game, you can access Maria's huge catalog. She plans other features to this SIG (Special Interest Group) such as special topic discussions, and perhaps even a "Dear Hawkwind" column to answer those tough adventure technique problems.

I tried a similar idea this past summer on *The Source*. Realizing that most owners of Sierra On-Line's micro-epic *Time Zone* had no idea how to approach this gigantic twelve disk hi-res adventure, I brought *Vault of Ages* into being on User Publication on *The Source*. The Vault became a large reference library, housing all thirty-

nine of the different scenarios comprising *Time Zone*. I was the Curator, and coordinated the collective group effort of thousands of fellow adventurers in the eventual solution of the game, over many months. As each new solution path was discovered, it was verified, then posted, with the name of the person submitting the find. It resembled a group effort on a giant jig-saw puzzle.

The latest innovation to modem gaming is from Adventure International, Longwood Florida, (305) 862-6917. They are releasing, for several micros, a modem war game called *Combat*. A two player game of tank warfare, *Combat's* players are connected by modem. Each player sees his troops move on the battlefield, and the actions of his opponent. This is like some of the war games the military uses between distant commanders. One innovation is that one player can have a TRS-80®, and the other an Atari®.

As the price of modems drops, more and more game-hungry people will buy these inexpensive modems and join this incredible new frontier of gamesmanship where players are freed from boards, playing pieces, or even physical location. Time, itself, will bow to the convenience and mood of the player. Perhaps the ultimate participation in another fantasy world may be rapidly approaching. Would you like to "Dial-a-Dream" with a good friend? ☞



# The Gripe-a-Gram Machine

by Steve Birchall

**N**ow that you have that personal computer and the initial thrill has faded, what are you going to do with it? Most people overlook their computer's latent possibilities. With a good word processor program and a little imagination, you have in your hands a very powerful communication tool.

Personal correspondence is one activity a microcomputer speeds up and improves. You probably don't print your letters out on greenbar paper, but much computer generated correspondence lacks a personal letterhead. You have the printer, so why not make your personal correspondence look really impressive? Take some time to lay out a design. Use the various letter sizes

your printer has available, and perhaps the asterisk or other punctuation marks for borders, and emphasis. Save this letterhead setup on your current correspondence disk and call it up whenever you write a letter. This produces better looking correspondence and avoids the hassle of starting from scratch every time you want to write a letter. If you want to get really elaborate, use your computer's graphics capability to design your own "logo." Some supply houses sell "Presentation Paper" which is heavier weight, with a border printed around the outside. This adds a touch of class and makes your personal correspondence more distinctive. Most word processors won't mix text and graphics, (although that's changing) but you can print the graphics design in advance on 100 sheets of paper, and later use it as pre-printed tractor feed letterhead.

---

## Quick and Easy

An extension of this idea is what I call my *Gripe-a-Gram Machine*. With it, I type in only the message and watch while the computer produces a finished letter. This is not a form letter, but the *format* of a letter. I have everything set up and stored on my correspondence disk. When the prompts appear on the screen, I use the form letter module to fill in the name and address of the recipient (or select it from my mailing list, which is even easier). Then, while the ideas are still spilling white hot from my mind, I quickly type in a brief message. The computer takes over from there and efficiently prints out a perfectly typed and formatted letter. Even the name and address are correctly positioned to show through a double window envelope, so I don't have to worry about printing labels. If you want to make it even easier, put one hyphen in the margin to show where to fold it. Sign, stamp and send: a painless way to send a message without being inhibited by the letter writing process. All you have to do is write the message.

This system can be used as a form letter, and is especially useful for sending the same message to a group of people, such as your Senators and Congressman. Enter your message to Washington, select the proper subset of your mailing list, and watch while your computer prints out the letters, all properly addressed and ready for mailing.

The *Gripe-a-Gram* also can be used as a *Praise-a-Gram* when you want to let someone know you like what they have done. Usually, these letters never get written because we are all too lazy. Just five

words of praise about a new record, a TV show, book, or magazine article could make all the difference to the people who worked on them. Or maybe you'd like to have that new recipe for *Clams a la Licorice* from the TV chef....

For really intense messages, computer supply houses carry an interesting form that looks something like a mailgram. The top sheet peels off so you have a copy for yourself, and underneath is a sealed envelope (usually bright yellow) with your name and address, and the recipient's, printed out. Inside, through the magic of "carbonless" paper, is your message. These come in tractor feed form and are endlessly useful when you want to get someone's attention. ("Please vote FOR the tax reduction legislation coming up before your committee....".)

---

## Fast Replies Guaranteed

Another useful type of communication is the Quick Response Letter. You've seen these: an original and two carbons, with space at the top for your message, space at the bottom for the recipient to write his message, and instructions to return a copy to you. Computer supply houses have the familiar 9 1/2 x 11 inch tractor feed paper with two carbons attached. Set up the format on your form letter module, and save it along with your other letterheads. Again, because all of the margins and spacing are taken care of, you need only respond to the questions on the screen, type in your message, put it in a double window envelope, and mail. Because it's so easy for the other person to reply, the return rate on these is high. Remember, if he has to sit down and write a letter, he'll put it off. If all he has to do is write his message at the bottom and send you a carbon, keeping one for himself, you're likely to get a quick reply. These are especially useful when you can't figure out the instructions for that new Quasar Gobbler game.

---

## Pre-printed Labels

Mailing labels — ah, what versatile little devils they are. I always keep a supply of them printed with my own name and address to slap on those return envelopes Visa and MasterCard send with their bills, on questionnaires, surveys, and for all those other nuisance forms that require you to fill out your name and address. Put them on books, records — anything you need to identify. Don't overlook the possibilities of

graphics, borders, formatting, just as you used on your letterhead design. Labels don't necessarily have to be boring.

At the first computer show I attended, I was annoyed by the number of times I had to write my name and address to enter the drawings and request more information. (No one seems to have thought that having people type their own name and address into a computer is much cheaper than having a secretary punch it all in from thousands of illegibly written cards.) Now, I simply take a supply of labels along and paste them on the cards at the various booths. Other show visitors look over and mumble jealously, "Gee, why didn't I think of that?"

Mailing labels can contain any information you want to put on them. With that in mind, these self-sticking paper scraps suggest multiple uses for marking things, turning chaos into order. They look better, are easier to read, and will make your friends think you are much better organized than you really are.

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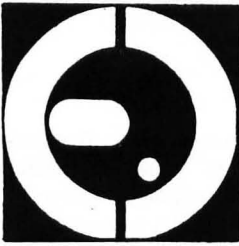
## Home Copy Machine

Employ your computer as a surrogate copy machine. How many times have you typed up a form or some other type of material (perhaps even on the computer) and run to the drugstore to copy it? Let the computer print out as many copies as you need. That includes the 300 copies of your club newsletter you were about to run off on the copy machine.

Just looking through the catalogs of companies which supply computer forms and paper to business will suggest many other uses for your personal computer. The following list of tractor-feed papers shows the variety available and should suggest ways to make your computer work for you.

- Plain white paper
- Carbons and carbonless paper (2, 3 part)
- Presentation paper (blue border, heavy stock)
- Tipon letterhead (blank and preprinted)
- Postcards
- Index Cards
- Mailgram style pre-sealed letters
- Labels (don't forget non-mail uses)
- Blank invoices

Let your computer work for you. A few minutes spent setting up a standard letter form (not the same as a "form letter") will save you tedium and boredom and will give your correspondence an impressive look. Your home computer is a powerful communications tool. Make it work for you. ☺



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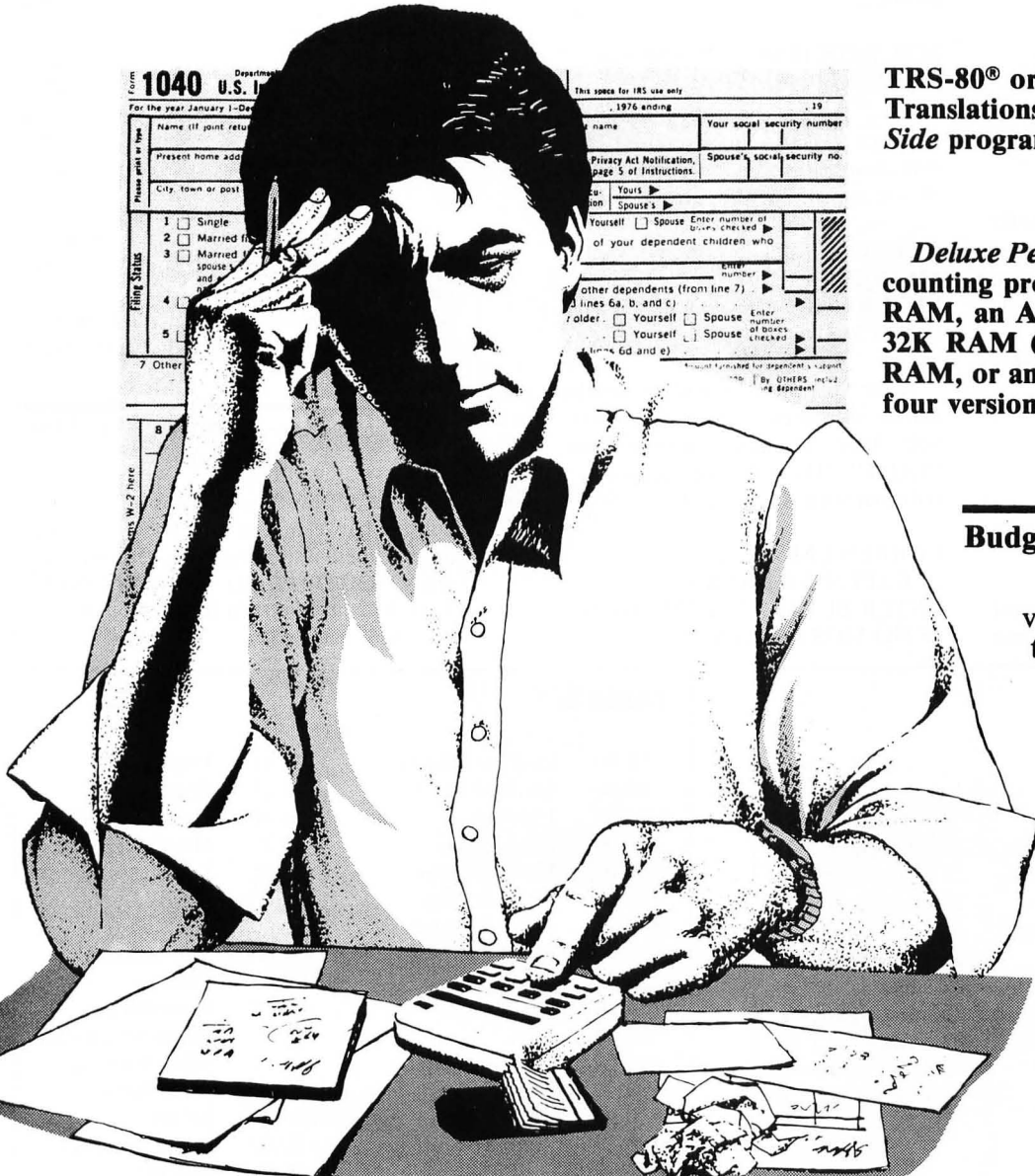
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# Deluxe Personal Finance

## Part II, Budget



Form 1040 U.S. Individual Income Tax Return  
For the year January 1-December 31, 1976 ending in 1976 ending in 19

Name (if joint return, name of first person) \_\_\_\_\_ Your social security number \_\_\_\_\_  
Present home address \_\_\_\_\_ Spouse's social security no. \_\_\_\_\_  
City, town or post office \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Filing Status:  1 Single  2 Married filing jointly  3 Married filing separately  4 Head of household  5 Other  7 Other

Privacy Act Notification, page 5 of instructions

TRS-80® original by Lance Micklus.  
Translations and modifications by the *Soft-Side* programming staff.

*Deluxe Personal Finance* is a personal accounting program for an Apple® with 32K RAM, an Atari® with 24K RAM (DOS 2), 32K RAM (DOS 1), a TRS-80® with 32K RAM, or an IBM® PC with 32K RAM. All four versions require a disk drive.

### Budget Report Program

This program generates various reports using data from the cancelled check file created by Part I of *DPF* and cash expense information you enter directly. The reports help you better understand where the money goes by letting you see patterns of expenses from different angles.

### Formatting

Screen displays in the Apple and Atari versions are different from those of the TRS-80 and IBM PC

versions. This is due to the reduced screen area available. In reports which display all 32 budget categories, the Apple and Atari programs will show 16 at a time and allow you to toggle back and forth between the two partial displays.

## The Tables

The budget program prints information in five basic formats. They appear as Tables 1 through 5. Since space prevents our reproducing full tables each time they occur, we will simply say that a report is "in Table X format," where X is the appropriate Table number.

When you run the program, the message "CALCULATING", will appear while all the data in CANCELCK/DAT file is being read. The main menu will then appear.

In the following discussion, we will cover how to enter cash expenses and income, examine individual reports, and finish by covering combined reports and special options.

### BUDGET REPORT PROGRAM FOR MM/DD/YY

- 0 — END PROGRAM
- 1 — ADD CASH INCOME AND EXPENSES
- 2 — CREATE COMBINED TOTAL AND REPORT (\$, %)
- 3 — FULL REPORT (ALL OF THE BELOW)
- 4 — REPORT BY PERIOD (\$, %)
- 5 — AVERAGE MONTHLY EXPENSE REPORT (\$)
- 6 — REPORT BY BUDGET (\$, %)
- 7 — PROFIT/LOSS REPORT (\$)
- 8 — OUTPUT TO LINE PRINTER
- 9 — SCREEN RESET

### SELECTION?

This program maintains a special database, a summary of all of your income

and spending activities on a month by month basis. Reading files based on your checking account data reveals only half of your financial picture. Cash income and expenses must be included in order to gain an understanding of the complete picture.

**TABLE 1**

1 — January	2 — February
3 — March	4 — April
5 — May	6 — June
7 — July	8 — August
9 — September	10 — October
11 — November	12 — December

### OPTION 1 — Add Cash Income And Expenses

When you select this option, the table of periods (Table 1) will be printed with the prompt:

FOR WHICH MONTH DO YOU WISH TO ENTER DATA?

Select #11 for this exercise. The screen will clear and the budget item table (Table 2) will appear with the prompt:

CURRENT MONTH:  
\*\*\* INCOME DATA \*\*\*  
ENTER BUDGET? TYPE 'QUIT'  
IF NO MORE DATA

After you select a budget number, you will be prompted to enter an amount. When you have no more income data, type "QUIT". The table of categories will be redrawn with the prompt:

CURRENT MONTH:  
::: EXPENSES DATA :::  
ENTER BUDGET? TYPE 'QUIT'  
IF NO MORE DATA

You can now indicate how you spent checks made out to cash. This the magic of account #32. Suppose that checks #111 and #118 have been written to "Cash" and are reflected in the checking program. You may now disburse these checks to the proper budget items through the budget program without a double entry occurring for these checks. You **must not** change Budget Item #32.

Assume you spent check #111 for \$25.00 in the following way:

-Donations #9	\$ 2.00
-Groceries #17	\$ 3.50
-Gasoline #22	\$10.00
-Entertainment #23	\$ 7.00
-Misc. Expenses #27	\$ 2.50

When you enter the Budget Number, the expense field will appear. Similarly, add the disbursement of Check #118, also for \$25.00.

-Pharmacy #2	\$3.95
-Plumbing Fixture #19	\$3.25
-Clothes #24	\$2.79
-Entertainment #23	\$7.00
-Groceries #17	\$3.00
-Donation #9	\$2.00
-Misc. Expenses	\$3.01

When you enter "QUIT" to indicate you have no more expenses to add, the screen message "CALCULATING" will appear while the new data is merged into the database. You will then return to the menu.

### OPTION 8 — Output To Line Printer

This is a "flip-flop" option which toggles output between line printer and screen-only. Type 8 and notice that Option 8 now reads "OUTPUT TO SCREEN ONLY". Type 8 again to return to the original menu option.

**TABLE 2**

0 Dentist/Doctor	11 Educational Exp.	22 Gas/Oil
1 Medical Aides	12 Union Dues, Etc.	23 Vac/Entertn'mt
2 Pharmacy	13 Child Care	24 Clothes
3 Medical Ins.	14 Rent/Mtg Princ.	25 Furnishings
4 Med. Mileage	15 Utilities	26 Household Itm
5 Interest/Mtg	16 Insurance	27 Misc. Expense
6 Interest/Other	17 Groceries	28 Open Item
7 Fixed Taxes	18 Loan Principal	29 Salary
8 Other Taxes	19 Home Repairs	30 Misc. Deposits
9 Donations	20 Savings	31 Interest
10 Loss	21 Auto Repairs	

**TABLE 3**

\$0.00	Dentist/Doctor	\$34.01	Insurance
\$0.00	Medical Aides	\$105.23	Groceries
\$3.95	Pharmacy	\$33.46	Loan Principal
\$0.00	Medical Ins.	\$3.25	Home Repairs
\$0.00	Med. Mileage	\$30.00	Savings
\$9.67	Interest/Mtg	\$0.00	Auto Repairs
\$42.78	Interest/Other	\$10.00	Gas/Oil
\$0.00	Fixed Taxes	\$14.00	Vac/Entertn'mt
\$1.27	Other Taxes	\$2.79	Clothes
\$4.00	Donations	\$0.00	Furnishings
\$0.00	Loss	\$0.00	Household Items
\$0.00	Educat'l Exp.	\$5.51	Misc. Expenses
\$0.00	Union Dues	\$0.00	Open Item
\$30.00	Child Care	-\$1000.00	Salary
\$108.39	Rent/Mtg. Princ.	\$0.00	Misc. Deposits
\$122.90	Utilities	\$0.00	Interest



Menu Options 4 through 7 select the various reports available.

### OPTION 4 — Report By Period (\$, %)

When you select this option, the period table (Table 1) will appear with the prompts:

WHICH PERIOD?  
DOLLAR AMOUNTS OR PERCENTS  
(\$ OR %)?

Select period 11 and \$ format for this exercise. The report will appear on the screen in Table 3 format. Remember that Apple and Atari reports will be displayed in two parts.

*Note:* Only cancelled transactions are summarized. If you have incorrectly entered any items, you can correct them by returning to Option 1 and entering an income to offset an expense or an expense to offset an income.

Hit ENTER to return to the budget menu. Reselect #4 and this time request % values for the report. This report gives percentage values for expenses based on income for that period.

### OPTION 5 — Average Monthly Expense Report (\$).

When you select this option, the period table (Table 1) will appear with the prompt:

DISPLAY AVERAGES FROM  
JANUARY TO THE END OF WHAT  
PERIOD?

Averages can be calculated for the year based on your position in the calendar year. If you were in March, the third month, you would enter a 3 to average your expenses from January through March.

The current total for each budget category will be divided by the number of months to calculate a year-to-date average. Enter 11 to average the expenses through November. The report will be displayed in Table 3 format. Press ENTER or RETURN to return to Budget Menu.

### OPTION 6 — Report By Budget (\$, %)

This option allows you to choose a budget category by Item Number and see how much you spent per month in that category and what percentage of the total you expended in each month. When you select this option, the budget table will appear in Table 2 format with the prompt:

WHICH BUDGET?

Select 15 for a Utilities Budget Report. The report will be printed in Table 4 format. Press ENTER or RETURN to return to the menu.

### OPTION 7 — Profit/Loss Report (\$)

This option prints out a monthly report of expenses vs. income and calculates a profit/loss amount based on these figures. A yearly grand total is also generated. The report format is shown in Table 5. Press ENTER or RETURN to return to the menu.

report to the screen, the program will pause between screens until you press a key. If a particular month or budget has no data, the report will simply print NO DATA AVAILABLE for that report.

### OPTION 2 — Create Combined Total And Report (\$, %)

This program option is a rather special feature. It allows you to make up a special budget by combining data from several different budget categories. For example, you might wish to generate a Summary Report based on budget items over which you have little or no control: medical needs, taxes, mortgage payments, utilities, insurance premium payments and the like. Conversely, you might like to view expenses that are subject to personal control such as the purchase of groceries, gas, furnishings, clothes, household items, savings, entertainment, and so on. When you select this option, the budget table will appear in Table 2 format with the prompt:

TYPE QUIT TO DISPLAY TOTALS  
ENTER BUDGET?

Enter the budgets for which you want a combined report. Enter "QUIT" as the last entry. The report will be printed in Table 4 format. You now have a period report for a subset of the full budget.

### OPTION 0 — End Program

Select this option when you are done using *Budget*. It will close all files and return to BASIC. Always exit the program this way to be sure that files are properly closed and data is saved.

TABLE 4

#### Utilities Budget Report

#### \*\*\*Relative Graph\*\*\*

\$112.45	8.8%	January	████
\$127.38	10.0%	February	████
\$153.68	12.0%	March	██████
\$147.00	11.5%	April	██████
\$97.36	7.6%	May	███
\$123.79	9.7%	June	██████
\$113.90	8.9%	July	██████
\$77.45	6.1%	August	███
\$156.78	12.3%	September	██████
\$45.36	3.5%	October	██
\$122.90	9.6%	November	██████
\$0.00	0.0%	December	
<b>\$1278.05</b>	<b>100.0%</b>	<b>Total</b>	

TABLE 5

Month	Expenses	Income	Profit/Loss
January	\$954.19	\$2,584.23	\$630.04 Profit
February	\$1,364.27	\$1,000.00	\$364.27 Loss
March	\$1,199.36	\$1,060.00	\$139.36 Loss
April	\$1,514.04	\$1,500.00	\$14.04 Loss
May	\$1,003.97	\$1,006.53	\$2.44 Loss
June	\$1,006.36	\$1,055.00	\$48.64 Profit
July	\$1,514.90	\$1,500.00	\$14.90 Loss
August	\$989.47	\$1,051.72	\$62.25 Loss
September	\$1,407.70	\$1,012.43	\$395.27 Loss
October	\$1,257.88	\$1,620.00	\$362.12 Profit
November	\$571.21	\$1,000.00	\$428.79 Profit
December	\$0.00	\$0.00	\$0.00
<b>Total</b>	<b>\$12,783.35</b>	<b>\$13,389.91</b>	<b>\$601.56 Profit</b>

# IBM® PC

```

SS SS SS SS SS SS SS SS SS SS SS
SS  IBM PC BASIC 'BUDGET'  SS
SS  AUTHDR:LANCE MICKLUS  SS
SS  TRANSL:RICH BOUCHARD  SS
SS  COPYRIGHT (C) 1983  SS
SS  SOFTSIDE PUBLICATIONS, INC SS
SS SS SS SS SS SS SS SS SS SS SS

```

**If you don't wish to type this program, it is also included in this month's SoftSide DV.**

```

100 WIDTH 80:KEY OFF:COLOR 7,0
110 DEFINT B,C,E-Z:DEFDBL A,D
120 DEF FNC$(X$)=CHR$(ASC(X$+" ") +32*(ASC(X$+" ")>96))
130 DIM A(33,14):DIM MN$(13):DIM BD$(33)
140 SP$=SPACE$(79):FR=5/1000:G1$=""
150 F1$=" ####,###.## \
"
160 F2$=F1$+F1$
170 F3$=" ####.#! \
"
180 F4$=F3$+" "+F3$
190 F5$="#####,###.## "+F3$
200 F6$="\ \ #####,###.## $$$
#,###.## $$$#,###.## \ \"
210 F7$=F5$+"\
\"
220 CF=0:DF=0:TD=0:FF=2:LP=0:ND=0:F1=0
230 PC$="":RF=0:CN$="CANCELCK.DAT"
240 DN$="BUDGET.DAT":SN$="FINANCE.SCO"
250 CLS:GOSUB 2940
260 LOCATE 6,1:PRINT STRING$(64,"-");
270 PRINT TAB(24)"BUDGET REPORT"
280 PRINT TAB(27)"PROGRAM"
290 PRINT STRING$(64,"-"):PRINT
300 PRINT"This program records all of yo
ur income and expenses, both"
310 PRINT"cash and check. It will also c
reate a summary report of all"
320 PRINT"of your income and expenses. U
sing this information, you can"
330 PRINT"better understand your financi
al posture."
340 EN$=DN$:ON ERROR GOTO 2610
350 OPEN"I",1,DN$:ON ERROR GOTO 0
360 ZB=ASC("):INPUT #1,DT$
370 LOCATE 16,8:PRINT"Last file UPDATE:"
,LEFT$(DT$,8),RIGHT$(DT$,8);
380 IF EOF(1) THEN 450
390 INPUT #1,MO
400 FOR M=1 TO 13:FOR B=0 TO 32
410 INPUT #1,A(B,M):GOSUB 2920
420 NEXT B:NEXT M:INPUT #1,A$
430 IF A$="EOF" THEN 450 ELSE PRINT"DATA
###ERROR###"
440 IF INKEY$<>CHR$(13) THEN 440
450 CLOSE 1:ON ERROR GOTO 2610:EN$=CN$
460 ZB=ASC("+"):OPEN"I",1,CN$
470 GOSUB 2920:ON ERROR GOTO 0

```

```

480 IF EOF(1) THEN CLOSE 1:GOTO 560
490 INPUT #1,M
500 IF M<0 OR M>12 THEN CLOSE 1:GOTO 560
510 IF EOF(1) THEN CLOSE 1:GOTO 970
520 ND=-1:INPUT #1,DT,DA,B:GOSUB 2920
530 IF DT=9999 THEN CLOSE 1:GOTO 970
540 IF B<>32 THEN A(B,M)=A(B,M)-DA
550 GOTO 510
560 CLS:IF RF THEN 2420
570 PRINT"BUDGET REPORT PROGRAM for ";DA
TE$:PRINT
580 IF FF<>2 THEN LPRINT CHR$(12);:FF=2
590 PRINT"0 - END PROGRAM"
600 PRINT"1 - add CASH INCOME & EXPENSES
"
610 PRINT"2 - create COMBINED TOTAL & RE
PORT ($,%)"
620 PRINT"3 - FULL REPORT (all of the be
low)"
630 PRINT"4 - REPORT BY PERIOD ($,%)"
640 PRINT"5 - AVERAGE MONTHLY EXPENSE RE
PORT ($)"
650 PRINT"6 - REPORT BY BUDGET ($,%)"
660 PRINT"7 - PROFIT/LOSS REPORT ($)"
670 IF NOT LP THEN PRINT"8 - OUTPUT TO L
INE PRINTER"
680 IF LP THEN PRINT"8 - OUTPUT TO SCREE
N ONLY"
690 PRINT"9 - SCREEN RESET":PRINT
700 INPUT"Selection";VA$
710 IF FNC$(VA$)<"0" OR FNC$(VA$)>"9" TH
EN S=9 ELSE S=VAL(VA$)
720 ON S+1 GOTO 2070,750,2470,2330,1060,
1440,1590,1870,730
730 IF LP THEN LP=0 ELSE LP=-1
740 GOTO 560
750 CLS:FOR Z=0 TO 11
760 LOCATE 5+INT(Z/2),1-34*(INT(Z/2)<>(Z
/2)):PRINT Z+1;"- ";MN$(Z+1);
770 NEXT Z
780 LOCATE 12,1:GOSUB 3110
790 INPUT"Enter Q to QUIT, or enter MONT
H you wish to enter data for";VA$
800 IF FNC$(VA$)="Q" THEN 560
810 I=VAL(VA$):IF I<1 OR I>12 THEN 780
820 MO=I:T=0
830 GOSUB 2880:PRINT
840 PRINT"Current Month: ";MN$(MO),
850 IF T=0 THEN PRINT"*** INCOME DATA **
*" ELSE PRINT"::: EXPENSES DATA ::"
860 LOCATE 18,1:PRINT SP$;
870 LOCATE 15,1:PRINT"Type D for DONE if
no more data, or"
880 LOCATE 17,1:GOSUB 3110:LINE INPUT"En
ter BUDGET NUMBER: ";A$
890 IF FNC$(A$)="D" THEN 960 ELSE I=VAL(
A$)

```

```

900 IF I<0 OR I>31 THEN 830
910 IF T=1 THEN 940
920 LINE INPUT"Enter INCOME $";VA$:DI=VA
L(VA$)
930 A(I,MO)=A(I,MO)-DI:GOTO 860
940 LINE INPUT"Enter EXPENSES $";VA$:DI=
VAL(VA$)
950 A(I,MO)=A(I,MO)+DI:GOTO 860
960 T=T+1:IF T=1 THEN 830
970 CLS:IF NOT TD THEN CF=-1
980 LOCATE 5,1:PRINT"CALCULATING"
990 ZB=ASC("?"):FOR I=0 TO 31
1000 GOSUB 2920:A(I,13)=0:FOR J=1 TO 12
1010 A(I,13)=A(I,13)+A(I,J)
1020 NEXT J:NEXT I:FOR J=1 TO 13
1030 GOSUB 2920:A(32,J)=0:FOR I=0 TO 31
1040 A(32,J)=A(32,J)+A(I,J)
1050 NEXT I:NEXT J:GOTO 560
1060 GOSUB 3050
1070 LOCATE 13,1:GOSUB 3110:INPUT"Enter
Q to QUIT, or enter PERIOD";VA$
1080 IF FNC$(VA$)="Q" THEN 560
1090 M=VAL(VA$):IF M<1 OR M>13 THEN 1070
1100 LOCATE 14,1:GOSUB 3110:INPUT"DOLLAR
amounts or PER CENTS ($ or %)":H$
1110 H$=FNC$(H$)
1120 IF H$<>"$" AND H$<>%" THEN 1100
1130 CLS:IF NOT LP THEN 1170
1140 GOSUB 3080
1150 LPRINT MN$(M);" REPORT of each BUDG
ET"
1160 LPRINT "
"
1170 PRINT TAB(9);MN$(M);" REPORT by BUD
GET":PRINT:PRINT
1180 IF H$="%" THEN 1320
1190 I=0
1200 PRINT USING F2$;A(I,M),BD$(I),A(I+1
6,M),BD$(I+16),
1210 IF LP THEN LPRINT USING F2$;A(I,M),
BD$(I),A(I+16,M),BD$(I+16)
1220 IF I<15 THEN I=I+1:PRINT:GOTO 1200
1230 LOCATE 3,1:PRINT CHR$(201);STRING$(
31,205);CHR$(203);STRING$(31,205);CHR$(1
87);
1240 FOR I=4 TO 21
1250 LOCATE I,1:PRINT CHR$(186);
1260 LOCATE I,33:PRINT CHR$(186);
1270 LOCATE I,65:PRINT CHR$(186);:NEXT I
1280 LOCATE 22,1:PRINT CHR$(200);STRING$(
31,205);CHR$(202);STRING$(31,205);CHR$(
188);
1290 IF LP THEN 560
1300 LOCATE 24,24:PRINT"Hit SPACE to con
tinue";
1310 IF INKEY$<>" " THEN 1310 ELSE 560
1320 DL=0:DH=0:FOR I=0 TO 31

```

```

1330 IF A(I,M)<0 THEN DL=DL-A(I,M) ELSE
DH=DH+A(I,M)
1340 NEXT I:IF DL<=FR THEN DL=0
1350 IF DH<=FR THEN DH=0
1360 I=0
1370 IF A(I,M)<0 THEN IF DL=0 THEN DJ=0
ELSE DJ=A(I,M)/DL ELSE IF DH=0 THEN DJ=0
ELSE DJ=A(I,M)/DH
1380 IF A(I+16,M)<0 THEN IF DL=0 THEN DK
=0 ELSE DK=A(I+16,M)/DL ELSE IF DH=0 THEN
N DK=0 ELSE DK=A(I+16,M)/DH
1390 DJ=DJ*100:DK=DK*100
1400 PRINT USING F4%;DJ,PC%,BD$(I),DK,PC
%,BD$(I+16),
1410 IF LP THEN LPRINT USING F4%;DJ,PC%,
BD$(I),DK,PC%,BD$(I+16)
1420 IF I<15 THEN PRINT:I=I+1:GOTO 1370
1430 GOTO 1230
1440 CLS:LOCATE 4,1:PRINT"CALCULATING..."
"
1450 J=0:FOR I=1 TO 12
1460 Y=0:FOR K=0 TO 31:IF ABS(A(K,I))>FR
THEN Y=1
1470 NEXT K:J=J+Y:NEXT I
1480 IF J<1 OR J>12 THEN 560
1490 IF NOT LP THEN 1540
1500 GOSUB 3080
1510 LPRINT"JANUARY to the end of ";MN$(
12)
1520 LPRINT"AVERAGES by BUDGET"
1530 LPRINT" "
1540 FOR I=0 TO 31:A(I,14)=0
1550 FOR K=1 TO 12
1560 A(I,14)=A(I,14)+A(I,K):NEXT K
1570 A(I,14)=A(I,14)/J:NEXT I:M=14
1580 CLS:LOCATE 3,1:GOTO 1190
1590 GOSUB 2880:PRINT
1600 LOCATE 15,1:GOSUB 3110:INPUT"Type Q
to QUIT, or enter BUDGET NUMBER:";VA$
1610 IF FNC$(VA$)="Q" THEN RETURN
1620 J=VAL(VA$):IF J<0 OR J>31 THEN 560
1630 CLS:IF NOT LP THEN 1670
1640 GOSUB 3080
1650 LPRINT BD$(J);" BUDGET REPORT";TAB(
45);"*** RELATIVE GRAPH ***"
1660 LPRINT" "
1670 PRINT BD$(J);" BUDGET REPORT";
1680 PRINT TAB(41)"*** RELATIVE GRAPH **
*"
1690 PRINT:IF ABS(A(J,13))>FR THEN 1730
1700 PRINT"No data available"
1710 IF LP THEN LPRINT"No data available
":LPRINT STRING$(16,CHR$(13))
1720 GOTO 1860
1730 FOR I=1 TO 12
1740 PRINT USING F5%;A(J,I),A(J,I)*100/A
(J,13),PC%,MN$(I)
1750 Y=2+I:X=75:Z=ABS(60*A(J,I)/A(J,13))
:GR$=" "

```

```

1760 IF Z>30 THEN Z=30
1770 IF Z=0 THEN 1800
1780 GR$=GR$+STRING$(Z,"-")
1790 LOCATE Y,38:PRINT STRING$(Z,223)
1800 IF LP THEN LPRINT USING F7%;A(J,I),
A(J,I)*100/A(J,13),PC%,MN$(I),GR$
1810 NEXT I
1820 PRINT" -----"
1830 IF LP THEN LPRINT" -----"
1840 PRINT USING F5%;A(J,I),100,PC%,"TOT
AL",
1850 IF LP THEN LPRINT USING F5%;A(J,I),
100,PC%,"TOTAL"
1860 GOTO 1290
1870 CLS:IF LP THEN GOSUB 3080
1880 PRINT"MONTH EXPENSES
INCOME PROFIT/LOSS"
1890 IF LP THEN LPRINT"MONTH
EXPENSES INCOME PROFIT/LO
SS"
1900 PRINT:IF LP THEN LPRINT" "
1910 FOR I=1 TO 13:DI=0:DE=0
1920 FOR J=0 TO 31
1930 IF A(J,I)<0 THEN DI=DI-A(J,I) ELSE
DE=DE+A(J,I)
1940 NEXT J

```

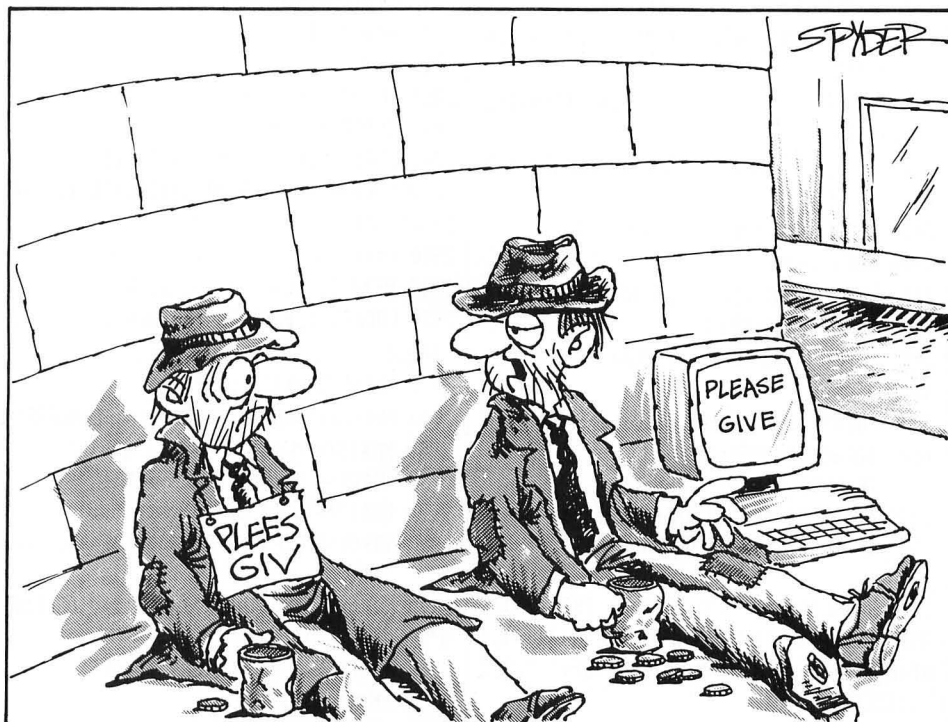
```

1950 IF A(32,I)<0 THEN A$="PROFIT" ELSE
A$="LOSS"
1960 IF ABS(A(32,I))<.01 THEN A$=" "
1970 IF I<13 THEN M$=MN$(I) ELSE M$="TOT
AL"
1980 PRINT USING F6%;M$,DE,DI,ABS(A(32,I
)),A$,
1990 IF LP THEN LPRINT USING F6%;M$,DE,D
I,ABS(A(32,I)),A$
2000 IF I<13 THEN PRINT
2010 IF I=12 THEN PRINT" ----
-----"
2020 IF I=12 AND LP THEN LPRINT"
-----"
2030 NEXT I:IF NOT RF THEN 1290
2040 PRINT"Hit SPACE to continue";
2050 IF INKEY$<>" " THEN 2050
2060 RF=0:GOTO 560:GOTO 1290
2070 CLS:IF TD OR NOT CF THEN 2280
2080 ZB=ASC("#"):DT$=DATE$+" "+TIME$
2090 FO$=SN$
2100 OPEN"D",1,FO$:ON ERROR GOTO 2660
2110 PRINT#1,DT$:PRINT#1,MO
2120 FOR M=1 TO 13:FOR B=0 TO 32
2130 PRINT#1,A(B,M):GOSUB 2920
2140 NEXT B:NEXT M:PRINT#1,"EOF":CLOSE 1

```

continued on page 42

## SoftTakes



"...SO THE SALESMAN SAYS: 'THERE'S NO BUSINESS TOO SMALL FOR A COMPUTER'."

**Personal Finance continued**

```

2150 IF FO$=SN$ THEN FO$=DN$:ZB=ASC("I")
:GOTO 2100
2160 ON ERROR GOTO 0:IF DF THEN 2280
2170 ZB=ASC("V"):OPEN"I",1,DN$
2180 OPEN"I",2,SN$
2190 IF EOF(1) AND EOF(2) THEN 2270
2200 IF EOF(1) OR EOF(2) THEN PRINT"***D
ISK WRITE ERROR***":GOTO 2240
2210 GOSUB 2920:LINE INPUT #1,A$
2220 LINE INPUT #2,B$:IF A$=B$ THEN 2190
2230 PRINT"***DATA ERROR***"
2240 PRINT"Press (RETURN) to retry"
2250 IF INKEY$(<>CHR$(13)) THEN 2250
2260 CLOSE:GOTO 2070
2270 LOCATE 1,1:GOSUB 3110:PRINT"VERIFIE
D"
2280 CLOSE:IF NOT ND THEN 2320
2290 OPEN"D",1,CN$:PRINT#1,9999
2300 PRINT#1,9999;9999;9999
2310 PRINT#1,"EOF":CLOSE
2320 GOTO 3180
2330 CLS:LOCATE 6,1
2340 PRINT"Hit SPACE to generate FULL RE
PORT, any other key to QUIT";
2350 A$=INPUT$(1):IF A$(<> " " THEN 560
2360 CLS:IF LP THEN 2410
2370 LOCATE 6,1
2380 INPUT"OUTPUT to LINEPRINTER (Y or N
)":A$
2390 IF FNC$(A$)="Y" THEN LP=-1
2400 CLS
2410 Z1=0:Z1$="":Z2=-1:RF=-1:Z3=1
2420 IF Z1$=" $" THEN Z1$=" ":M=Z1:H$=Z1$
:GOTO 1130
2430 IF Z1<13 THEN Z1=Z1+1:Z1$=" ":M=Z1:
H$=Z1$:GOTO 1130
2440 IF Z2<31 THEN Z2=Z2+1:J=Z2:GOTO 163
0
2450 IF Z3<>0 THEN Z3=0:GOTO 1440
2460 GOTO 1870
2470 FOR M=1 TO 13:A(33,M)=0:NEXT M
2480 GOSUB 2880:PRINT
2490 PRINT"Enter D to DISPLAY TOTALS, Q
to QUIT, or"
2500 LOCATE 15,1:GOSUB 3110:LINE INPUT"E
nter BUDGET NUMBER: ";A$
2510 IF FNC$(A$)="Q" THEN 560
2520 IF FNC$(A$)="D" THEN 2590
2530 IF FNC$(A$)<"0" OR FNC$(A$)>"9" THE
N 2500
2540 B=VAL(A$):IF B<0 OR B>31 THEN 2500
2550 COLOR 0,7:LOCATE B-INT(B/11)*11+1,I
NT(B/11)*23+2:PRINT MID$(STR$(B)+" ",2,2
);:COLOR 7,0
2560 FOR M=1 TO 12
2570 A(33,M)=A(33,M)+A(B,M):NEXT M
2580 GOTO 2500

```

```

2590 FOR M=1 TO 12:A(33,13)=A(33,13)+A(3
3,M):NEXT M
2600 J=33:GOTO 1630
2610 LOCATE 1,1:PRINT"Load disk with ";E
N$;" file on it."
2620 PRINT"Hit (RETURN) to continue."
2630 IF INKEY$(<>CHR$(13)) THEN 2630
2640 LOCATE 1,1:PRINT SP$:PRINT SP$
2650 RESUME
2660 IF ERR/2+1<>62 THEN ON ERROR GOTO 0
2670 IF FO$=DN$ AND DF THEN 2790
2680 CLS:LOCATE 3,1:PRINT"DISK FULL - CA
N'T VERIFY OUTPUT"
2690 PRINT
2700 PRINT"Press (RETURN) to continue wi
thout VERIFYING."
2710 PRINT
2720 IF INKEY$(<>CHR$(13)) THEN 2720
2730 RESUME 2740
2740 CLOSE:OPEN"D",1,SN$
2750 ON ERROR GOTO 2780:PRINT#1,9999
2760 CLOSE:DF=-1
2770 FO$=SN$:CLS:GOTO 2150
2780 RESUME NEXT
2790 LOCATE 3,1:PRINT"*** E R R O R ***"
2800 PRINT"DISK FULL - DATA FILE DESTROY
ED"
2810 PRINT
2820 PRINT"To try to recover, load anoth
er disk with more"
2830 PRINT"file space on it. Press (RET
URN) to continue."
2840 PRINT"output will then be placed on
the new disk."
2850 PRINT
2860 IF INKEY$(<>CHR$(13)) THEN 2860
2870 CLOSE:RESUME 2770
2880 CLS:Y=1:Y1=1:FOR Z=0 TO 31
2890 LOCATE Y,Y1:PRINT Z;:LOCATE Y,Y1+4:
PRINT BD$(Z);
2900 Y=Y+1:IF Y=12 THEN Y1=Y1+23:Y=1
2910 NEXT Z:LOCATE 12,1:RETURN
2920 LOCATE 1,1:IF BC=ZB THEN BC=32 ELSE
BC=ZB
2930 PRINT CHR$(BC);:RETURN
2940 MN$(1)="JANUARY":MN$(2)="FEBRUARY"
2950 MN$(3)="MARCH":MN$(4)="APRIL"
2960 MN$(5)="MAY":MN$(6)="JUNE"
2970 MN$(7)="JULY":MN$(8)="AUGUST"
2980 MN$(9)="SEPTEMBER":MN$(10)="OCTOBER
"
2990 MN$(11)="NOVEMBER":MN$(12)="DECEMBE
R"
3000 MN$(13)="END OF YEAR TOTALS"
3010 MN$(0)=MN$(13)
3020 BD$(32)="GRAND TOTAL":BD$(33)="COMB
INED TOTAL"
3030 FOR Y%=0 TO 31:READ BD$(Y%):NEXT Y%

```

```

3040 CLOSE 1:RETURN
3050 CLS:FOR Z=0 TO 12
3060 LOCATE 5+INT(Z/2),1-34*(INT(Z/2)<>Z
/2):PRINT Z+1;"- ";MN$(Z+1);
3070 NEXT Z:PRINT:PRINT:RETURN
3080 IF FF=0 THEN LPRINT CHR$(12):FF=2
3090 FOR Z=1 TO 5:LPRINT " ":NEXT Z
3100 FF=FF-1:RETURN
3110 Y%=POS(0):PRINT SPACE$(79-Y%);:LOCA
TE,Y%:RETURN
3120 DATA DENTIST/DOCTOR,MEDICAL AIDS,PH
ARMACY,MEDICAL INS,MED MILEAGE
3130 DATA INTEREST/MTG,INTEREST/OTHER,FI
XED TAXES,OTHER TAXES,DONATIONS
3140 DATA LOSS,EDUCATIONAL EXP,"UNION DU
ES, ETC",CHILD CARE,RENT/MTG PRINC
3150 DATA UTILITIES,INSURANCE,GROCERIES,
LOAN PRINCIPAL,HOME REPAIRS
3160 DATA SAVINGS,AUTO REPAIRS,GAS/OIL,V
AC/ENTERTAINM'T,CLOTHES,FURNISHINGS
3170 DATA HOUSEHOLD ITEM,MISC EXPENSES,O
PEN ITEM,SALARY,MISC DEPOSITS,INTEREST,C
HECKING/CASH
3180 END

```

**IBM® PC SWAT TABLE FOR:  
BUDGET**

LINES	SWAT CODE	LENGTH
100 - 210	RR	422
220 - 330	AA	463
340 - 450	KA	314
460 - 570	RH	285
580 - 690	ZS	442
700 - 810	QM	386
820 - 930	SJ	377
940 - 1050	FZ	321
1060 - 1170	VK	349
1180 - 1290	RQ	355
1300 - 1410	AU	472
1420 - 1530	XV	268
1540 - 1650	BZ	341
1660 - 1770	YT	330
1780 - 1890	VZ	451
1900 - 2010	HK	390
2020 - 2130	BN	323
2140 - 2250	CL	338
2260 - 2370	KT	261
2380 - 2490	XZ	354
2500 - 2610	MS	397
2620 - 2730	FN	280
2740 - 2850	JD	320
2860 - 2970	KN	333
2980 - 3090	QY	365
3100 - 3180	UR	484

```

SS SS SS SS SS SS SS SS SS SS
SS
SS APPLESOFT BASIC SS
SS "BUDGET" SS
SS AUTHOR:LANCE MICKLUS SS
SS TRANSL: KERRY SHETLINE SS
SS
SS
SS COPYRIGHT (C) 1983 SS
SS SOFTSIDE PUBLICATIONS, INC SS
SS
SS SS SS SS SS SS SS SS SS SS

```

If you don't wish to type this program, it is also included in this month's **SoftSide CV and DV**.

```

10 DIM A(33,14),BD$(35),MN$(13),
L$(31):D$ = CHR$(4):G$ = CHR$(
7):FF$ = CHR$(12):ESC$ =
CHR$(27):BB$ = " ":
OP$ = D$ + "OPEN":RD$ = D$ +
"READ":WR$ = D$ + "WRITE":
CL$ = D$ + "CLOSE":DEF FN
H(X) = SGN(X) * INT(ABS
(X) * 100 + .01) / 100
20 TEXT:HOME:FF = 2
30 PS = 1:PL = 58
40 FOR X = 0 TO 33:READ BD$(X):
NEXT X
50 DATA "DENTIST/DOCTOR","MEDICA
L AIDS","PHARMACY","MEDICAL
INS","MED MILEAGE","INTEREST
/MTG","INTEREST/OTHER","FIXE
D TAXES","OTHER TAXES","DONA
TIONS","LOSS"
60 DATA "EDUCAT'L EXP","UNION DU
ES,ETC","CHILD CARE","RENT/M
TG PRINC","UTILITIES","INSUR
ANCE","GROCERIES","LOAN PRIN
CIPAL","HOME REPAIRS","SAVIN
GS","AUTO REPAIRS"
70 DATA "GAS/OIL","VAC/ENTERTN'M
T","CLOTHES","FURNISHINGS","
HOUSEHOLD ITEM","MISC EXP","
OPEN ITEM","SALARY","MISC DE
POSITS","INTEREST","CHECKING
/CASH","COMBINED BUDGET REPO
RT"
80 FOR X = 1 TO 13:READ MN$(X):
NEXT X
90 DATA "JANUARY","FEBRUARY","MA
RCH","APRIL","MAY","JUNE","J
ULY","AUGUST","SEPTEMBER","O
CTOBER","NOVEMBER","DECEMBER
","YEAR-END"
100 FOR X = 768 TO 859:READ N:POKE
X,N:NEXT X:POKE 1013,76:POKE
1014,0:POKE 1015,3

```

```

110 DATA 72,32,177,0,104,166,118
,224,255,208,3,76,11,227,201
,76,240,3,76,192,222,169,73,
32,192,222,169,78,32,192,222
,169,69,32,192,222,169,132,3
2,192,222,32,227,223,32,108,
221,169,128,133,51,32,111,25
3,142,255,2,138,32,213
120 DATA 227,172,255,2,240,11,13
6,185,0,2,41,127,145,158,152
,208,245,165,157,145,131,200
,165,158,145,131,200,165,159
,145,131,96
130 FD$ = "BUDGET/DAT":FC$ = "CAN
CELCK/DAT"
140 PRINT OP$;FD$:PRINT RD$;FD$
:INPUT DT$:INPUT MD:IF NOT
MD THEN 160
150 FOR M = 1 TO 13:FOR B = 0 TO
32:INPUT A(B,M):NEXT B,M

```

```

160 PRINT CL$:HOME:VTAB 7:PRINT
"LAST FILE UPDATE:"DT$:OM =
VAL(LEFT$(DT$,2)):OD = VAL
(MID$(DT$,4,2)):OY = VAL
(RIGHT$(DT$,2))
170 PRINT OP$;FC$:PRINT RD$;FC$
:INPUT M:IF NOT M THEN PRINT
CL$:GOTO 210
180 INPUT DT:IF NOT DT THEN PRINT
CL$:GOSUB 530:GOTO 210
190 ND = 1:INPUT DA:INPUT B:IF
B < > 32 THEN A(B,M) = A(B,
M) - DA
200 GOTO 180
210 VTAB 15:CALL - 958:PRINT
"PLEASE ENTER THE DATE":PRINT
"(MM/DD/YY):";&LINE INPUT
CD$:IF LEN(CD$) < 6 THEN
210

```

continued on page 44

## Convert Your TRS-80\* into a World Class Computer

THAT REDUCES EYE FATIGUE  
AND DOESN'T FLICKER

— with LSIS's new *Soft-View™* Replacement CRT —

The black & white "TV Screen" CRT (picture tube) which came with your TRS-80\* is an inexpensive rapid "P4" Phosphor CRT intended for TV use. The display is actually strobing 60 times a second. No amount of "green plastic" will stop this strobing or eliminate the eye fatigue it causes. But a new *Soft-View* CRT display tube with a slower decaying, colored Phosphor will.

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**Personal Finance continued**

```

220 CM$ = LEFT$(CD$,2): IF MID$(
(CD$,2) < "0" THEN CM$ = "0"
+ LEFT$(CD$,1):CD$ = "0" +
CD$
230 CX$ = MID$(CD$,4,2): IF MID$(
(CD$,5) < "0" THEN CX$ = "0"
+ MID$(CD$,4,1)
240 CD$ = CM$ + "/" + CX$ + "/" +
RIGHT$(CD$,2):CM = VAL(C
M$):CD = VAL(CX$):CY = VAL
(RIGHT$(CD$,2))
250 IF CM = 2 THEN ML = 28 + (INT
(CY / 4) = CY / 4): GOTO 270
260 M = CM - (CM > 7):ML = 30 + M
- INT(M / 2) * 2
270 IF CY < 80 OR CM < 1 OR CM >
12 OR CD < 1 OR CD > ML THEN
210
280 IF CY < OY OR (CY = OY AND C
M < OM) OR (CY = OY AND CM =
OM AND CD < OD) THEN PRINT
: PRINT "THIS DATE IS EARLIE
R THAN THE LAST.": PRINT "DO
YOU WISH TO USE IT (Y/N)?"
: GET A$: PRINT : IF A$ < >
"Y" THEN 210
290 HOME : IF RF THEN 1290
300 PRINT : PRINT "BUDGET REPORT
FOR "CD$: PRINT : IF FF < >
2 THEN PRINT D$"PR#1": PRINT
CHR$(12): PRINT D$"PR#0":F
F = 2
310 PRINT "0) END PROGRAM": PRINT
"1) ADD CASH INCOME & EXPENS
ES": PRINT "2) CREATE COMBIN
ED TOTAL & REPORT ($,%)": PRINT
"3) FULL REPORT (ALL OF THE
BELOW)": PRINT "4) REPORT BY
PERIOD ($,%)
320 PRINT "5) AVERAGE MONTHLY EX
PENSE REPORT": PRINT "6) REP
ORT BY BUDGET ($,%)": PRINT
"7) PROFIT/LOSS REPORT ($)":
PRINT "8) OUTPUT TO "": IF
NOT LP THEN PRINT "PRINTER"
330 IF LP THEN PRINT "SCREEN ON
LY"
340 PRINT : PRINT "ENTER YOUR CH
OICE: ";
350 GET S$: IF ASC(S$) = 3 THEN
STOP : GOTO 290
360 IF S$ < "0" OR S$ > "8" THEN
350
370 PRINT S$:S = VAL(S$): HOME
: ON S + 1 GOTO 1140,390,134
0,1230,560,860,920,1050,380
380 LP = NOT LP: GOTO 290
390 PL = 12: GOSUB 1570

```

```

400 VTAB 9: CALL - 958: PRINT "
ENTER 'Q' TO QUIT OR MONTH F
OR WHICH YOUWISH TO ENTER DA
TA (1-12): "": & LINE INPUT
A$: IF LEFT$(A$,1) = "Q" THEN
290
410 I = INT(VAL(A$)): IF I <
1 OR I > 12 THEN 400
420 MO = 1:I = 0
430 GOSUB 1500: PRINT MN$(MO)":
": IF NOT T THEN PRINT "I
NCOME DATA"
440 IF T THEN PRINT "EXPENSE DA
TA"
450 VTAB 21: CALL - 958: PRINT
"ENTER 'D' WHEN DONE OR": PRINT
"BUDGET NUMBER: "": & LINE INPUT
A$: IF LEFT$(A$,1) = "D" THEN
510
460 I = VAL(A$): IF I < 0 OR I >
31 THEN 450
470 IF A$ < > "0" AND NOT I THEN
450
480 VTAB 23: CALL - 958: PRINT
"ENTER "": IF T THEN PRINT
"EXPENSES": GOTO 500
490 PRINT "INCOME":
500 PRINT ": $": & LINE INPUT A
$:DI = VAL(A$):A(I,MO) = FN
H(A(I,MO) - DI * (1 - T * 2)
): VTAB 2 + I - 16 * (I > 15
): HTAB 1 + 20 * (I > 15):
INVERSE : PRINT SPC(I
< 10);I)": NORMAL
: GOTO 450
510 T = T + 1: IF T = 1 THEN 430
520 GOSUB 530: GOTO 290
530 VTAB 24: HTAB 25: FLASH : PRINT
"CALCULATING...": NORMAL : IF
NOT TD THEN CF = 1
540 FOR I = 0 TO 31:A(I,13) = 0:
FOR J = 1 TO 12:A(I,13) = A
(I,13) + A(I,J): NEXT J:A(I,
13) = FN H(A(I,13)): NEXT I
: FOR J = 1 TO 13:A(32,J) =
0: FOR I = 0 TO 31:A(32,J) =
A(32,J) + A(I,J): NEXT I,J:A
(32,J) = FN H(A(32,J))
550 VTAB 24: HTAB 25: PRINT SPC(
14): VTAB 1: PRINT : RETURN
560 PL = 13: GOSUB 1570
570 VTAB 10: CALL - 958: PRINT
"ENTER 'Q' TO QUIT OR": PRINT
"PERIOD FOR REPORT: "": & LI
NE INPUT A$: IF LEFT$(A$,1
) = "Q" THEN 290
580 M = VAL(A$): IF M < 1 OR M >
13 THEN 570

```

```

590 VTAB 12: CALL - 958: PRINT
"DOLLAR AMOUNTS OR PERCENTAG
ES": PRINT "($ OR %): "": &
LINE INPUT H$:H$ = LEFT$(H
$,1): IF H$ < > "$" AND H$ <
> "%" THEN 590
600 PRINT : HOME : PRINT D$"PR#"
PS * LP
610 IF LP THEN GOSUB 1580
620 IF H$ = "%" THEN 640
630 FW = 10: FOR I = 0 TO 31:DF =
A(I,M): GOSUB 1410:L$(I) = D
F$ + " " + BD$(I): NEXT I: GOTO
710
640 DL = 0:DH = 0: FOR I = 0 TO 3
1: IF A(I,M) < 0 THEN DL = D
L - A(I,M): GOTO 660
650 DH = DH + A(I,M)
660 NEXT I: IF DL < .005 THEN DL
= 1E20
670 IF DH < .005 THEN DH = 1E20
680 FOR I = 0 TO 31: IF A(I,M) <
0 THEN DJ = A(I,M) / DL: GOTO
700
690 DJ = A(I,M) / DH
700 PC = DJ * 100: GOSUB 1540:L$(
I) = PC$ + " " + BD$(I): NEXT I
710 IF NOT LP THEN 750
720 HOME : IF M = 14 THEN PRINT
"AVERAGE MONTHLY EXPENSE REP
ORT": GOTO 740
730 PRINT MN$(M)": REPORT BY BUD
GET"
740 PRINT : FOR X = 0 TO 15: PRINT
L$(X): SPC(30 - LEN(L$(X)
)):L$(X + 16): NEXT X: PRINT
: PRINT D$"PR#0": GOTO 290
750 SC = 0
760 HOME : PRINT : IF M = 14 THEN
PRINT "AVERAGE MONTHLY EXPE
NSE REPORT": GOTO 780
770 PRINT MN$(M)": REPORT BY BUD
GET"
780 PRINT : FOR X = 0 TO 15: PRINT
L$(X + SC * 16): NEXT X: VTAB
21: PRINT "HIT "": IF RF THEN
PRINT "<SPACE> TO CONTINUE,"
790 PRINT "<ESC> TO RETURN TO ME
NU OR": IF SC THEN PRINT "L
EFT": GOTO 810
800 PRINT "RIGHT":
810 PRINT " ARROW TO SEE BUDGETS
"( NOT SC) * 16)-( NOT SC)
* 16 + 15."":AR = 21 - SC *
13
820 GET A$:A = ASC(A$): IF A =
27 THEN RF = 0: GOTO 290
830 IF A = 32 AND RF THEN 1290

```

```

840 IF A < > AR THEN 820
850 PRINT :SC = NOT SC: GOTO 760
860 IF LP THEN PRINT D$"PR#"PS:
    GOSUB 1580
870 VTAB 24: HTAB 25: FLASH : PRINT
    "CALCULATING..."; NORMAL :J
    = 0: FOR I = 1 TO 12:Y = 0:
    FOR K = 0 TO 31: IF ABS (A
    (K,I)) > .005 THEN Y = 1
880 NEXT K:J = J + Y: NEXT I: IF
    NOT J THEN VTAB 24: HTAB 2
    5: PRINT SPC( 14): VTAB 7: PRINT
    "NO DATA AVAILABLE": PRINT D
    $"PR#0": IF NOT LP THEN GOSUB
    1490
890 IF NOT J THEN 290
900 FOR I = 0 TO 31:A(I,14) = 0:
    FOR K = 1 TO 12:A(I,14) = A
    (I,14) + A(I,K): NEXT K:A(I,
    14) = A(I,14) / J: NEXT I
910 M = 14: GOTO 630
920 GOSUB 1500
930 VTAB 21: CALL - 958: PRINT
    "ENTER 'Q' TO QUIT OR": PRINT
    "BUDGET NUMBER: "; & LINE INPUT
    A$: IF LEFT$ (A$,1) = "Q" THEN
    290

```

```

940 J = VAL (A$): IF J < 0 OR J >
    31 OR J = 0 AND A$ < > "0" THEN
    930
950 PRINT D$"PR#"PS * LP: IF LP THEN
    GOSUB 1580
960 HOME : IF ABS (A(J,13)) < .
    005 THEN VTAB 7: PRINT BD$(
    J)":": PRINT : PRINT "NO DAT
    A AVAILABLE": PRINT D$"PR#0"
    : IF NOT LP THEN GOSUB 1490
970 IF ABS (A(J,13)) < .005 THEN
    290
980 MP = 0: FOR I = 1 TO 12: IF ABS
    (A(J,I)) > MP THEN MP = ABS
    (A(J,I))
990 NEXT I:MP = MP * 100 / ABS
    (A(J,13)): PRINT BD$(J): PRINT
1000 FW = 10: FOR I = 1 TO 12:DF =
    A(J,I): GOSUB 1410:PC = A(J,
    I) * 100 / A(J,13): GOSUB 15
    40: PRINT MID$( DF$,2);PC$ "
    " LEFT$( MN$(I),3) " ";
1010 GS = INT (18 * PC / MP + .5
    ): IF GS THEN FOR X = 1 TO
    GS: PRINT "*"": NEXT X

```

```

1020 PRINT : NEXT I:PC = MP: GOSUB
    1540: PRINT "-----
    -----":DF
    = A(J,13): GOSUB 1410: PRINT
    MID$( DF$,2) " 100.0% TOT MA
    X="PN$
1030 IF LP THEN PRINT D$"PR#0":
    GOTO 290
1040 GOSUB 1490: GOTO 290
1050 PRINT D$"PR#"PS * LP: IF LP
    THEN GOSUB 1580
1060 PRINT : PRINT "MON EXPENSE
    S INCOME PROFIT/LOSS": PRINT
    " "
1070 FW = 10: FOR I = 1 TO 13:DI =
    0:DE = 0: FOR J = 0 TO 31:T =
    A(J,I): IF T < 0 THEN DI = D
    I - T: GOTO 1090
1080 DE = DE + T
1090 NEXT J:A$ = "LOSS": IF A(32
    ,I) < = 0 THEN A$ = "PRFT":
    IF NOT A(32,I) THEN A$ = " "
1100 M$ = LEFT$( MN$(I),3): IF I
    = 13 THEN M$ = "TOT": PRINT
    "-----
    -----"

```

continued on page 46

**THERE'S NO DOUBT ABOUT IT.** Arcade games are in. In the tune of millions of dollars each year—most of which are spent in quarters. Now you can sell your customers arcade games. Exciting ones with realistic sounds and brilliant high-resolution color graphics. Tell your customers to save their quarters. For only \$30.00, they can have hours of arcade-style enjoyment with their Apple II Plus computer and with Paul Coletta's new book, "APPLE GRAPHICS GAMES."

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or relaxing games like:

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Actually pretend your Apple II Plus computer is a concert piano. Compose and save your own tunes and play them back to your friends. The tune and keyboard actually appear on the screen to make composing fun and easy!

or educational games like:

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Your customers and their children can test their memory and match wits against the computer. All they have to do is match the hidden shapes. Will they be able to remember where each shape is? Good memorization practice.

or just plain fun games like

#### POKER

The computer shuffles, deals and supplies the chips. The players match their card playing skills against the computer.



# APPLE<sup>®</sup> GRAPHICS GAMES

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**Personal Finance continued**

```

1110 PRINT M$;DF = DE: GOSUB 14
10: PRINT DF$;DF = D1: GOSUB
1410: PRINT DF$;DF = ABS (
A(32,1)): GOSUB 1410: PRINT
DF$ "A$": NEXT I
1120 IF NOT LP THEN GOSUB 1490
1130 PRINT : PRINT D$"PR#0":RF =
0: GOTO 290
1140 IF (TD OR NOT CF) AND NOT
ND THEN END
1150 VTAB 7: PRINT "WRITING TO D
ISK": PRINT : INVERSE : PRINT
"DO NOT DISTURB!": NORMAL : ONERR
GOTO 1210
1160 IF TD OR NOT CF THEN 1180
1170 PRINT OP$;FD$: PRINT WR$;FD
$: PRINT CD$: PRINT MD: FOR
M = 1 TO 13: FOR B = 0 TO 32
: PRINT A(B,M): NEXT B,M: PRINT
CL$
1180 IF NOT ND THEN 1200
1190 PRINT OP$;FC$: PRINT WR$;FC
$: PRINT 0: PRINT CL$
1200 POKE 216,0: HOME : END
1210 POKE 216,0: PRINT : PRINT C
L$: HOME : VTAB 7: FLASH : PRINT
G$;G$"DISK I/O ERROR": NORMAL
: PRINT : PRINT "PRESS ESC T
O EXIT OR ANY": PRINT "OTHER
KEY TO RE-TRY FILE SAVE.":
GET A$: IF A$ < > ESC$ THEN
1110
1220 HOME : END
1230 VTAB 5: PRINT "THE FULL REP
ORT WILL GENERATE OVER 30": PRINT
"PAGES. DO YOU WISH TO CONTI
NUE (Y/N)? "; & LINE INPUT
A$:A$ = LEFT$ (A$,1): IF A$
< > "Y" AND A$ < > "N" THEN
1230
1240 IF A$ = "N" THEN 290
1250 IF LP THEN 1280
1260 VTAB 8: CALL - 958: PRINT
"OUTPUT TO PRINTER (Y/N)? ";
: & LINE INPUT A$: IF A$ < >
"Y" AND A$ < > "N" THEN 1260
1270 IF A$ = "Y" THEN LP = 1
1280 Z1 = 0:Z1$ = "%":Z2 = - 1:Z
3 = 1:RF = 1
1290 IF Z1$ = "$" THEN Z1$ = "%"
:M = Z1:H$ = Z1$: GOTO 600
1300 IF Z1 < 13 THEN Z1 = Z1 + 1

```

```

:Z1$ = "$":M = Z1:H$ = Z1$: GOTO
600
1310 IF Z2 < 31 THEN Z2 = Z2 + 1
:J = Z2: GOTO 950
1320 IF Z3 THEN Z3 = 0: GOTO 860
1330 HOME : PRINT : GOTO 1050
1340 FOR M = 1 TO 13:A(33,M) = 0
: NEXT M: GOSUB 1500: VTAB 1
1350 VTAB 21: CALL - 958: PRINT
"TYPE 'D' TO DISPLAY TOTALS,
'Q' TO QUIT,OR BUDGET NUMBE
R: "; & LINE INPUT A$: IF LEFT$
(A$,1) = "Q" THEN 290
1360 IF LEFT$ (A$,1) = "D" THEN
1400
1370 B = VAL (A$): IF B < 0 OR B
> 31 THEN 1350
1380 VTAB 2 + B - 16 * (B > 15):
HTAB 1 + 20 * (B > 15): INVERSE
: PRINT SPC( B < 10);B)": NORMAL
1390 FOR M = 1 TO 12:A(33,M) = A
(33,M) + A(B,M): NEXT M: GOTO
1350
1400 FOR M = 1 TO 12:A(33,13) =
A(33,13) + A(33,M): NEXT M:J
= 33: GOTO 960
1410 IF NOT DF THEN DF$ = "0.00
": GOTO 1440
1420 UA = INT ( ABS (DF) * 100 +
.5):DF$ = STR$ (UA): IF LEN
(DF$) < 3 THEN DF$ = LEFT$
("00",3 - LEN (DF$)) + DF$
1430 DF$ = LEFT$ (DF$, LEN (DF$)
- 2) + "." + RIGHT$ (DF$,2)
1440 SN$ = "": IF DF < 0 THEN SN$
= "-"
1450 IF NOT FW THEN DF$ = SN$ +
"$" + DF$: RETURN
1460 IF DF > = 0 THEN SN$ = " "
1470 BL = FW - LEN (DF$) - 1: IF
BL < 1 THEN DF$ = "!" + SN$ +
"$" + DF$: RETURN
1480 DF$ = LEFT$ (B8$,BL) + DF$:
DF$ = SN$ + "$" + MID$ (DF$
,2): RETURN
1490 VTAB 23: INVERSE : PRINT "P
RESS ANY KEY TO CONTINUE":
NORMAL : GET A$: PRINT
: RETURN
1500 HOME : PRINT : FOR X = 0 TO
15: PRINT SPC( X < 10);X"
"BD$(X): NEXT X: VTAB 2: FOR
X = 16 TO 31: HTAB 21: PRINT
X" "BD$(X): NEXT X: PRINT :
PRINT : RETURN

```

```

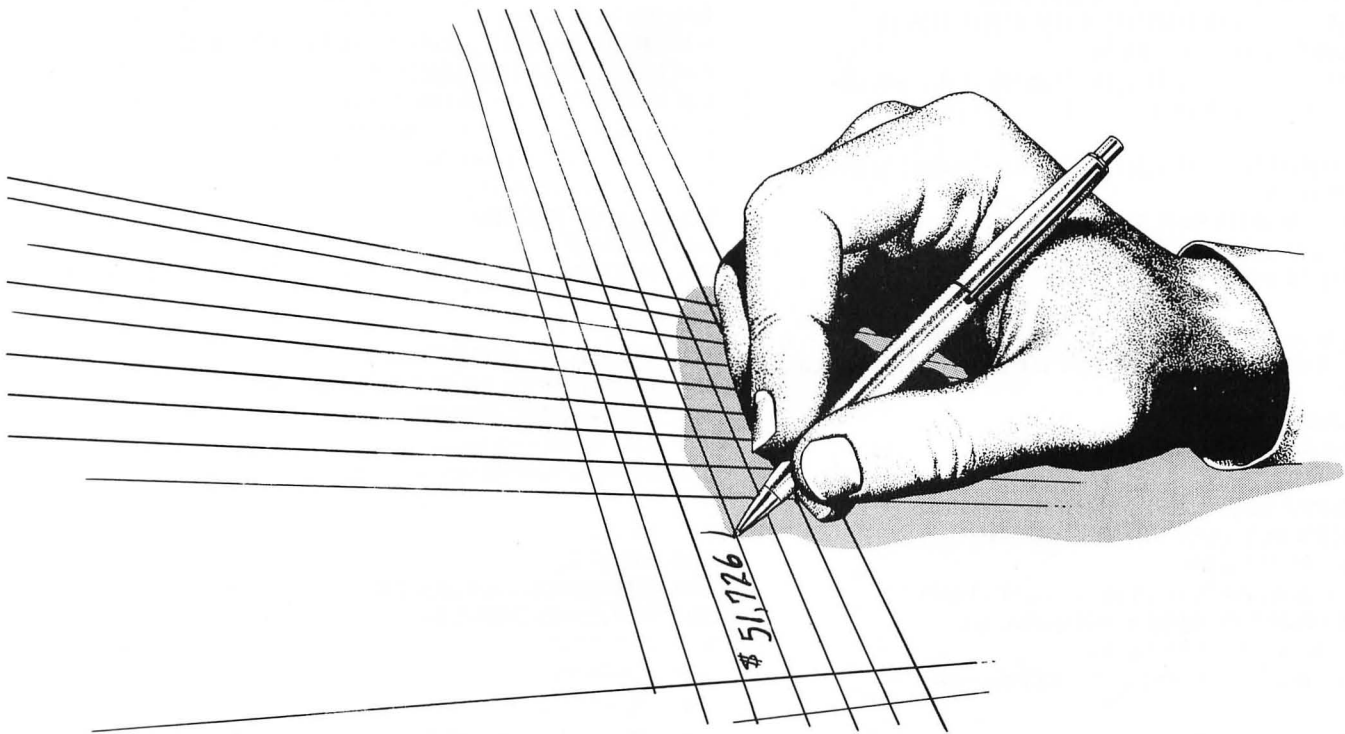
1510 EX = 0: VTAB 7: CALL - 958:
PRINT "ENTER 'Q' TO QUIT OR
": PRINT "TRANSACTION NUMBER
: "; & LINE INPUT VA$: IF LEFT$
(VA$,1) = "Q" THEN EX = 1: RETURN
1520 C = VAL (VA$):C = INT (C *
10 + .01) / 10: IF C < 1 OR
C > 99999.9 THEN 1510
1530 VTAB 8: HTAB 21: PRINT C;: CALL
- 958: PRINT : PRINT : RETURN
1540 IF NOT PC THEN PC$ = " 0
.0%":PN$ = "0.0%": RETURN
1550 PN$ = STR$ ( SGN (PC) * ( INT
( ABS (PC) * 10 + .5) / 10 +
.01)): IF LEFT$ (PN$,1) =
." THEN PN$ = "0" + PN$
1560 PC$ = LEFT$ (B8$,8 - LEN (
PN$)) + LEFT$ (PN$, LEN (PN
$) - 1) + "%":PC$ = MID$ (P
C$,2):PN$ = LEFT$ (PN$, LEN
(PN$) - 1) + "%": RETURN
1570 HOME : PRINT : FOR X = 1 TO
PL: VTAB 2 + INT ((X - 1) /
2): HTAB 1 + 20 * (X / 2 = INT
(X / 2)): PRINT SPC( X < 10
);X" "MN$(X): NEXT X: PRINT
: PRINT : RETURN
1580 IF NOT FF THEN PRINT CHR$
(12):FF = 2
1590 FOR Z = 1 TO 5: PRINT " ": NEXT
Z:FF = FF - 1: RETURN

```

**APPLE™ SWAT TABLE FOR:  
BUDGET**

LINES	SWAT CODE	LENGTH
10 - 60	ZU	548
70 - 110	VR	592
120 - 210	FC	519
220 - 300	DC	512
310 - 400	TZ	604
410 - 520	AQ	445
530 - 620	YK	508
630 - 740	ET	440
750 - 860	RZ	407
870 - 960	ZF	502
970 - 1070	CN	538
1080 - 1190	HL	466
1200 - 1300	GF	525
1310 - 1420	VZ	485
1430 - 1530	WA	502
1540 - 1590	SI	315





## TRS-80®

```

SS SS SS SS SS SS SS SS SS SS
SS                                     SS
SS      TRS-80 BASIC                   SS
SS      'BUDGET'                        SS
SS      AUTHOR:LANCE MICKLUS           SS
SS                                     SS
SS      COPYRIGHT (C) 1983             SS
SS      SOFTSIDE PUBLICATIONS, INC     SS
SS                                     SS
SS SS SS SS SS SS SS SS SS SS
  
```

**If you don't wish to type this program, it is also included in this month's SoftSide CV and DV.**

```

100 CLS:PRINT"INITIALIZING...":CLEAR500
120 DEFINTB,C,E-2:DEFDBLA,D:DEFUSRO=673:DEFUSR1=664
160 DIMA(33,14):DIMN$(13):DIMBD$(33)
280 F1$="####,###.## %                %":F2$=F1$+F1$
320 F3$="####.#! %                    %":F4$=F3$+F3$
360 F5$="#####,###.## "+F3$
380 F6$="% % #####,###.## #####,###.## #####,###.##
% %"
400 F7$=F5$+"%                        %":CF=0:DF=0
520 TD=0:FF=2:LP=0:ND=0:F1=0:PC$="%":RF=0:CN$="CANCELCK/DAT"
700 DN$="BUDGET/DAT":FC$=CN$:FD$=DN$:F5$="FINANCE/SCO"
900 GOSUB9400:POKE15360,41
940 IFPEEK(15360)=1THENA$=CHR$(127)ELSEA$="-"
960 CLS:GOSUB9640:PRINT@256,STRING$(64,A$);
1020 PRINTTAB(24)"BUDGET REPORT":PRINTTAB(27)"PROGRAM"
1060 PRINTSTRING$(64,A$):PRINT
1100 PRINT"THIS PROGRAM RECORDS ALL OF YOUR INCOME AND EXPENSES,
BOTH"
1120 PRINT"CASH AND CHECK. IT WILL ALSO CREATE A SUMMARY REPORT
OF ALL"
  
```

```

1140 PRINT"OF YOUR INCOME AND EXPENSES. USING THIS INFORMATION,
YOU CAN"
1160 PRINT"BETTER UNDERSTAND YOUR FINANCIAL POSTURE."
1180 EN$=DN$:ONERRORGOTO8060:OPEN"1",1,FD$:ONERRORGOTO0
1260 ZB=ASC("):INPUT#1,DT$
1300 PRINT@965,"LAST FILE UPDATE:",LEFT$(DT$,8),RIGHT$(DT$,8);
1320 IFEOF(1)THEN1500
1340 INPUT#1,M0:FORM=1TO13:FORB=0TO32:INPUT#1,A(B,M)
1400 GOSUB9520:NEXTB:NEXTM:INPUT#1,A$
1460 IFA$="EOF"THEN1500ELSEPRINT"DATA ***ERROR***"
1480 IFINKEY$(<>CHR$(13))THEN1480
1500 CLOSE1:ONERRORGOTO8060:EN$=CN$:ZB=ASC("+")
1620 OPEN"1",1,FC$:GOSUB9520:ONERRORGOTO0
1680 IFEOF(1)THENCLOSE1:GOTO2040
1700 INPUT#1,M:IFM<0ORM>12THENCLOSE1:GOTO2040
1740 IFEOF(1)THENCLOSE1:GOSUB9300:GOTO3260
1760 ND=-1:INPUT#1,DT,DA,B:GOSUB9520
1820 IFDT<32THENA(B,M)=A(B,M)-DA
1840 IFB<>32THENA(B,M)=A(B,M)-DA
1860 GOTO1740
2040 CLS:IFRFTHEN7300
2080 GOSUB9400
2100 PRINT"BUDGET REPORT PROGRAM FOR ";LEFT$(TIME$,8):PRINT
2120 IFFF<>2THENLPRINTCHR$(12);:FF=2
2140 PRINT"0 - END PROGRAM"
2160 PRINT"1 - ADD CASH INCOME & EXPENSES"
2180 PRINT"2 - CREATE COMBINED TOTAL & REPORT ($,%)"
2200 PRINT"3 - FULL REPORT (ALL OF THE BELOW)"
2220 PRINT"4 - REPORT BY PERIOD ($,%)"
2240 PRINT"5 - AVERAGE MONTHLY EXPENSE REPORT ($)"
2260 PRINT"6 - REPORT BY BUDGET ($,%)"
2280 PRINT"7 - PROFIT/LOSS REPORT ($)"
2300 IFNOTLPTHENPRINT"8 - OUTPUT TO LINE PRINTER"
  
```

```

2320 IFLPTHEPRINT"8 - OUTPUT TO SCREEN ONLY"
2340 PRINT"9 - SCREEN RESET":PRINT:INPUT"SELECTION";S
2400 GOSUB9300:IFS<0ORS>8THEN2040
2440 ONS+1GOTO6100,2620,7460,7140,3660,4480,4940,5600,2520
2520 IFLPTHELNLP=0ELSELP=-1
2540 GOTO2040
2620 CLS:FORZ=1TO12:PRINT@256+32*(Z-1),Z;"- ";MN$(Z);NEXTZ
2700 PRINT:PRINT
2720 INPUT"FOR WHICH MONTH DO YOU WISH TO ENTER DATA";I
2740 IFI<1OR1>12THEN2620
2760 IFI=13THENMO=0ELSEMO=I
2780 I=0
2800 GOSUB9060:PRINT:PRINT"CURRENT MONTH: ";MN$(MO),
2860 IFI=0THENPRINT"*** INCOME DATA ***"ELSEPRINT": EXPENSES D
ATA :":
2880 PRINT@832,CHR$(31)
2900 PRINT@864,"TYPE 'END' IF NO MORE DATA."
2920 PRINT@832,"";
2940 LINEINPUT"ENTER BUDGET #";A#:IFA#=""THEN2800
2960 ILEFT$(A#,1)="E"THEN3160ELSEI=VAL(A#)
2980 IFI<0OR1>31THEN2800
3000 PRINT@864,CHR$(31):PRINT@864,"";:IFT=1THEN3100
3040 LINEINPUT"ENTER INCOME #";VA#:DI=VAL(VA#)
3060 A(I,MO)=A(I,MO)-DI:GOTO2880
3100 LINEINPUT"ENTER EXPENSES #";VA#:DI=VAL(VA#)
3120 A(I,MO)=A(I,MO)+DI:GOTO2880
3160 T=I+1:IFI=1THEN2800
3260 CLS:IFNOTTDTHENCF=-1
3300 PRINT@384,CHR$(23);"CALCULATING":ZB=ASC("#");FORI=0TO31
3360 GOSUB9520:A(I,13)=0:FORJ=1TO12:A(I,13)=A(I,13)+A(I,J)
3440 NEXTJ:NEXTI:FORJ=1TO13:GOSUB9520:A(32,J)=0:FORI=0TO31
3540 A(32,J)=A(32,J)+A(I,J):NEXTI:NEXTJ:GOTO2040
3660 GOSUB10000:INPUT"WHICH PERIOD";M:IFM<1ORM>13THEN2040
3720 INPUT"DOLLAR AMOUNTS OR PER CENTS ($ OR %)";H#
3740 H#=LEFT$(H#,1)
3760 IFH#<>"%"ANDH#<>"%"INPUT"ENTER EITHER A '%' OR A '%";H#:GO
TO3740
3780 CLS:IFNOTLPTHEN3880
3820 GOSUB10180:LPRINTMN$(M);" REPORT OF EACH BUDGET"
3860 LPRINT" "
3880 IFH#=""%THEN4140
3900 I=0
3920 PRINTUSINGF2#;A(I,M),BD$(I),A(I+16,M),BD$(I+16),
3940 IFLPTHELNPRINTUSINGF2#;A(I,M),BD$(I),A(I+16,M),BD$(I+16)
3960 IFI<15THENLETI=I+1:PRINT:GOTO3920
3980 FORI=0TO47
4000 SET(0,I):SET(1,I):SET(62,I):SET(63,I):SET(126,I):SET(127,I)
4020 NEXTI
4040 IFLPTHEN2040
4060 IFPEEK(14463)=0THEN4060ELSE2040
4140 DL=0:DH=0:FORI=0TO31
4180 IFA(I,M)<0THENDL=DL-A(I,M)ELSEDH=DH+A(I,M)
4200 NEXTI:IFDL<-.005THENDL=1E+20
4240 IFDH<.005THENDH=1E+20
4260 I=0
4280 IFA(I,M)<0THENDJ=A(I,M)/DLELSEDJ=A(I,M)/DH
4300 IFA(I+16,M)<0THENDK=A(I+16,M)/DLELSEDK=A(I+16,M)/DH
4320 DJ=DJ*100:DK=DK*100
4340 PRINTUSINGF4#;DJ,PC#,BD$(I),DK,PC#,BD$(I+16),
4360 IFLPTHELNPRINTUSINGF4#;DJ,PC#,BD$(I),DK,PC#,BD$(I+16)
4380 IFI<15THENPRINT:I=I+1:GOTO4280
4400 GOTO3980
4480 CLS:J=0:FORI=1TO12
4540 Y=0:FORK=0TO31:IFABS(A(K,I))>.005THENY=1

```

```

4560 NEXTK:J=J+Y:NEXTI:IFJ<10RJ>12THEN2040
4600 IFNOTLPTHEN4700
4620 GOSUB10180:LPRINT"JANUARY TO THE END OF ";MN$(12)
4660 LPRINT"AVERAGES BY BUDGET":LPRINT" "
4700 FORI=0TO31:A(I,14)=0:FORK=1TO12:A(I,14)=A(I,14)+A(I,K)
4780 NEXTK:A(I,14)=A(I,14)/J:NEXTI:M=14:GOTO3900
4940 GOSUB9060:PRINT:INPUT"WHICH BUDGET";J
5000 IFJ<0ORJ>31THEN2040
5020 CLS:IFNOTLPTHEN5120
5060 GOSUB10180
5080 LPRINTBD$(J);" BUDGET REPORT";TAB(45);"*** RELATIVE GRAPH *
**"
5100 LPRINT" "
5120 PRINTBD$(J);" BUDGET REPORT";
5140 PRINTTAB(37)"*** RELATIVE GRAPH ***":PRINT
5180 IFABS(A(J,13))>.005THEN5260
5200 PRINT"NO DATA AVAILABLE"
5220 IFLPTHELNPRINT"NO DATA AVAILABLE":LPRINTSTRING$(16,CHR$(13)
)
5240 GOTO5520
5260 FORI=1TO12
5280 PRINTUSINGF5#;A(J,I),A(J,I)*100/A(J,13),PC#,MN$(I)
5300 Y=4+3*I:X=75:Z=ABS(50*A(J,I)/A(J,13)):GR#=""
5320 IFZ>50THENZ=50
5340 IFZ=0THEN5400
5360 GR#=GR#+STRING$(CINT(Z/2),"-")
5380 FORL=XTOX+Z:SET(L,Y):NEXTL
5400 IFLPTHELNPRINTUSINGF7#;A(J,I),A(J,I)*100/A(J,13),PC#,MN$(I)
,GR#
5420 NEXTI:PRINT" -----"
5460 IFLPTHELNPRINT" -----"
5480 PRINTUSINGF5#;A(J,I),100,PC#,"TOTAL",
5500 IFLPTHELNPRINTUSINGF5#;A(J,I),100,PC#,"TOTAL"
5520 GOTO4040
5600 CLS:IFLPTHEGOSUB10180
5640 PRINT"MONTH EXPENSES INCOME PROF
IT/LOSS"
5660 IFLPTHELNPRINT"MONTH EXPENSES INCOME
PROFIT/LOSS"
5680 PRINT:IFLPTHELNPRINT" "
5720 FORI=1TO13:DI=0:DE=0:FORJ=0TO31
5780 IFA(J,I)<0THENDI=DI-A(J,I)ELSEDE=DE+A(J,I)
5800 NEXTJ:IFA(32,I)<0THENA#="PROFIT"ELSEA#="LOSS"
5840 IFABS(A(32,I))<.01THENA#=""
5860 IFI<13THENM#="MN$(I)ELSEM#="TOTAL"
5880 PRINTUSINGF6#;M#,DE,DI,ABS(A(32,I)),A#,
5900 IFLPTHELNPRINTUSINGF6#;M#,DE,DI,ABS(A(32,I)),A#
5920 IFI<13THENPRINT
5940 IFI=12THENPRINT"
-----"
5960 IFI=12ANDLPTHELNPRINT"
-----"
5980 NEXTI:IFRFTHENRF=0:GOTO2040
6020 GOTO4040
6100 CLS:GOSUB9400:IFTDORNOTCFTHEN6800
6160 ZB=ASC("#"):DT#=TIME#:FD#=FS#
6220 OPEN"O",1,FD#:ONERRORGOTO6220:PRINT#1,DT#:PRINT#1,MO
6300 FORM=1TO13:FORB=0TO32:PRINT#1,A(B,M):GOSUB9520
6360 NEXTB:NEXTM:PRINT#1,"EOF":CLOSEI
6420 IFFD#=FS#THENFO#=FD#:ZB=ASC("V"):GOTO6220
6440 ONERRORGOTO0:IFDFTHEN6800
6480 ZB=ASC("V"):OPEN"I",1,FD#:OPEN"I",2,F5#
6540 IFEOF(1)ANDEOF(2)THEN6780
6560 IFEOF(1)OREOF(2)PRINT"***DISK WRITE ERROR***":GOTO6700

```

```

6580 GOSUB9520:LINEINPUT#1,A#:GOSUB9540:LINEINPUT#2,B#
6660 IFA#=#B#THEN6540
6680 PRINT"***DATA ERROR***"
6700 PRINT"PRESS (ENTER) TO RETRY"
6720 IFINKEY#<>CHR$(13)THEN6720
6740 CLOSE:GOTO6100
6780 PRINT@0,CHR$(30);"VERIFIED"
6800 CLOSE:IFNOTNDTHEN6940
6840 OPEN"0",1,FC#:PRINT#1,9999:PRINT#1,9999;9999;9999
6900 PRINT#1,"EOF":CLOSE
6940 EN#=#RT#:CLOSE:CLS:END
7140 CLS:PRINT@320,"HIT 'P' TO PRINT REPORT OR ANY OTHER KEY TO
RETURN TO MENU"
7160 X#=#INKEY#:IFX#=#"THEN7160
7170 IFX#<>"P"THEN2040
7180 IFLP#THEN7280
7200 CLS:PRINT@320,"":INPUT"OUTPUT TO PRINTER (Y OR N)";A#
7240 ILEFT$(A#,1)="#Y"THENLP=-1
7260 CLS
7280 Z1=0:Z1#=#":Z2=-1:RF=-1
7300 IFZ1#=#"THENZ1#=#":M=Z1:H#=#Z1#:GOTO3780
7320 IFZ1<13THENZ1=Z1+1:Z1#=#":M=Z1:H#=#Z1#:GOTO3780
7340 IFZ2<31THENZ2=Z2+1:J=Z2:GOTO5020
7360 IFZ3<>0THEN4480
7380 GOTO5600
7460 FORM=1TO13:A(33,M)=0:NEXTM
7480 GOSUB9060:PRINT:PRINT"TYPE 'END' TO DISPLAY TOTALS"
7540 LINEINPUT"ENTER BUDGET #";A#:IFA#=#"THEN7480
7560 ILEFT$(A#,1)="#E"THEN7680ELSEB=VAL(A#)
7580 IFB<0DRB>31THEN7480
7600 FORM=1TO12:A(33,M)=A(33,M)+A(B,M):NEXTM:GOTO7480
7680 FORM=1TO12:A(33,13)=A(33,13)+A(33,M):NEXTM:J=33
7720 GOTO5020
8060 PRINT@0,"LOAD DISK WITH ";EN#;" FILE ON IT."
8080 PRINT"HIT (ENTER) TO CONTINUE."
8100 IFINKEY#<>CHR$(13)THEN8100
8120 PRINT@0,CHR$(30):PRINTCHR$(30):RESUME
8220 IFERR/2+1<>62THENONERRORGOTO0
8240 IFF0#=#FD#ANDDFTHEN8660
8260 CLS:PRINT@128,"DISK FULL - CAN'T VERIFY OUTPUT"
8280 PRINT
8300 PRINT"PRESS (ENTER) TO CONTINUE WITHOUT VERIFYING."
8320 PRINT
8340 IFINKEY#<>CHR$(13)THEN8340
8360 RESUME8380
8380 CLOSE:OPEN"0",1,FS#:ONERRORGOTO8580:PRINT#1,9999:CLOSE
8480 DF=-1
8500 F0#=#FS#:CLS:GOTO6420
8580 RESUMENEXT
8660 PRINT@128,"*** E R R O R ***"
8680 PRINT"DISK FULL - DATA FILE DESTROYED":PRINT
8720 PRINT"TO TRY TO RECOVER, LOAD A ANOTHER DISK WITH MORE"
8740 PRINT"FILE SPACE ON IT. PRESS (ENTER) TO CONTINUE."
8760 PRINT"OUTPUT WILL THEN BE PLACED ON THE NEW DISK."
8780 PRINT
8800 IFINKEY#<>CHR$(13)THEN8800
8820 CLOSE:RESUME8500
9060 CLS:Y=0:FORZ=0TO31:PRINT@Y,Z,:PRINT@Y+4,BD$(Z);
9140 Y=Y+64:IFY>703THENY=Y-683
9160 NEXTZ:PRINT@704,"":RETURN
9300 IFPEEK(293)=73THENZ=USR0(0)
9340 RETURN

```

```

9400 IFPEEK(293)=73THENZ=USR1(0)
9440 RETURN
9520 IFPEEK(15360)=32THENPOKE15360,ZBELSEPOKE15360,32
9540 IFPEEK(293)<>73THENPRINT@3,"TRACK: ";PEEK(&H37ED);" SECTOR:
";PEEK(&H37EE);
9550 IFPEEK(293)=731HENPRINT@3,"TRACK: ";INP(&HF1);" SECTOR: ";IN
P(&HF2);
9560 RETURN
9640 MN$(1)="JANUARY":MN$(2)="FEBRUARY"
9660 MN$(3)="MARCH":MN$(4)="APRIL"
9680 MN$(5)="MAY":MN$(6)="JUNE"
9700 MN$(7)="JULY":MN$(8)="AUGUST"
9720 MN$(9)="SEPTEMBER":MN$(10)="OCTOBER"
9740 MN$(11)="NOVEMBER":MN$(12)="DECEMBER"
9760 MN$(13)="END OF YEAR TOTALS":MN$(0)=MN$(13)
9800 BD$(32)="GRAND TOTAL":BD$(33)="COMBINED TOTAL"
9900 FORY%=0TO31:READBD$(Y%):NEXTY%:RETURN
10000 CLS:FORZ=1TO13:PRINT@256+32*(Z-1),Z;"- ";MN$(Z);:NEXTZ
10080 PRINT:PRINT:RETURN
10180 IFFF=0THENLPRINTCHR$(12):FF=2
10200 FORZ=1TO5:LPRINT " ";NEXTZ:FF=FF-1:RETURN
11000 DATA DENTIST/DOCTOR,MEDICAL AIDS,PHARMACY,MEDICAL INS,MED
MILEAGE,INTEREST/MTG,INTEREST/OTHER,FIXED TAXES,OTHER TAXES,DONA
TIONS,LOSS,EDUCAT'L EXP,UNION DUES ETC,CHILD CARE
11010 DATA RENT/MTG PRINC,UTILITIES,INSURANCE,GROCERIES,LOAN PRI
NCIPAL,HOME REPAIRS,SAVINGS,AUTO REPAIRS,GAS/OIL,VAC/ENTERTN'MT,
CLOTHES,FURNISHINGS,HOUSEHOLD ITEM,MISC EXP,OPEN ITEM
11020 DATA SALARY,MISC DEPOSITS,INTEREST,CHECKING/CASH,JOE FINAN
CE,123 MAIN STREET,MILFORD NH

```

continued on page 52

### TRS-80® SWAT TABLE FOR: BUDGET

LINES	SWAT CODE	LENGTH
100 - 940	CB	533
960 - 1340	EP	494
1400 - 1860	UU	308
2040 - 2280	TC	396
2300 - 2760	KR	371
2780 - 3060	IT	366
3100 - 3760	TT	451
3780 - 4040	WC	296
4060 - 4380	GA	372
4400 - 5020	HP	342
5060 - 5300	PV	355
5320 - 5640	EF	395
5660 - 5960	LT	478
5980 - 6560	TU	340
6580 - 7140	DD	324
7160 - 7380	RX	299
7460 - 8120	FJ	376
8220 - 8580	UR	253
8660 - 9300	RF	375
9340 - 9720	YA	377
9740 - 11010	EP	627
11020 - 11020	RP	89

# ADVENTURE OF BEC THE SoftSide™

*“In this adventure, I will become your eyes, ears, and hands,” says your computer. You are about to enter a new fantasy world. Starting with this issue, SoftSide DV and CV subscribers join the quests of those who have been receiving the Adventure of the Month.*

## How To Play

Fantasy/adventure games place you in a puzzling situation, usually in a strange, unfamiliar world, but sometimes in a world enough like your own to lull you into a false sense of security. Your first goal is, often, simply to survive. But, success at even this basic task is doubtful. Perplexing situations will certainly test your ingenuity and perseverance, and perhaps you will glean great treasures. However, dragons and desperadoes may oppose you. You never know.

To “win” a fantasy/adventure game, solve the puzzles and overcome the obstacles that confront you. Death is transitory — you can always re-run the program. Aficionados of adventures make careful maps of the locations in the game’s world. If you have an exceptional memory, you may skip this exercise. Now, was the cave with the ruby-encrusted scepter North or East of the beach? Hmmmm...

You act by giving your computer simple, one- or two-word commands, like “LOOK”, or “GET RUBY”. The introduction to each adventure explains this more fully.

To begin the adventure, just RUN the program named “INTRO” or “INTRO.BAS” on your disk, or select the adventure from the DV menu. On cassette, the adventure is the last program, and the INTRO program immediately precedes it. These instructions apply to all systems.

## Hints

Next issue, we will begin publishing encrypted hints for the previous issue’s adventure. The encryption will prevent you from inadvertently seeing the hints, but will be simple enough to permit easy reading if an adventure truly stumps you.

# THE MONTH GAMES

## ADVENTURE SERIES

Now  
Playing

This time — **The Wizard's Sword**. Apple®, Atari®, and TRS-80® versions by Peter Kirsch. IBM® PC translation by Fred Condo.

**Memory requirements** — Apple: 24K tape, 32K disk; Atari: 32K tape, 40K disk; IBM PC: 64K disk; and TRS-80: 16K tape, 32K disk. The **Adventure Series** appears each month on **SoftSide CV and DV**.

In this issue's adventure, **The Wizard's Sword**, you become the apprentice of a dying wizard. On his deathbed, the wizened mage charges you with the quest for his magical sword. You must retrieve it, and restore its magic by finding the enchanted jewels that endow it with power. Once armed with the wizard's sword, you must rid the land of the evil Medusa.

In the course of your quest, you will meet a dragon, a dwarfish child, a menacing condor, and even a famous film celebrity. As the old wizard warned you before he died, you will need to be cunning, clever, and brave to fulfill the daunting tasks set for you.

So pop in your tape or disk, run the **INTRO** program, and go in search of **The Wizard's Sword**.

The  
Wizard's  
Sword



## Personal Finance *continued*

```

55 55 55 55 55 55 55 55 55 55
55
55 ATARI BASIC 55
55 'BUDGET' 55
55 AUTHOR: LANCE MICKLUS 55
55 TRANSL: ALAN J. ZETT 55
55
55 COPYRIGHT (C) 1983 55
55 SOFTSIDE PUBLICATIONS, INC 55
55
55 55 55 55 55 55 55 55 55 55
    
```

If you don't wish to type this program, it is also included in this month's **SoftSide CV** and **DV**.

### Special Note:

#### Atari SWAT Table for Budget

Budget uses so many variables that it is necessary to **SWAT** it in two parts. We chose to divide the program at line 5000. Therefore, when you type in the program, first type and **SWAT** in lines 100 through 4980. Then do the same for lines 5000-12000. When the codes come out right for each half, merge the parts into one program.

```

100 CLR :GRAPHICS 0:POKE 752,1:
110 N0=0:N1=1:N2=2:N3=3:N4=4:N5=5:N6=6
:N7=7:N8=8:N9=9:N10=10:N11=11:N12=12:N
13=13:N14=14:N15=15:N16=16:N17=17
120 N19=19:N21=21:N23=23:N27=27:N31=31
:N32=32:N33=33:N35=35:N36=36:N37=37:N3
9=39:N48=48:N78=78:N88=88:N89=89
130 N100=100:N127=127:N128=128:N155=15
5:N160=160:N256=256:N490=490
140 SET=N0:UP=28:CLS=125:EOL=156:BELL=
253:RESET=255:CRS=752:KEY=764
150 MENU=2040:HELP=6060:IO=8060:TITLES
=9060:WAIT=9360:BLINK=9520:USING=9600:
USING2=9620:MONTHS=10000:TOF=10180
160 CLEAR=33333:SCR=PEEK(N88)+PEEK(N89
)*N256+2:MAX1=99999.99:MAX2=999999.99:
PC=N0
170 CLOSE #N2:OPEN #N2,N4,NO,"K"
200 DIM BD$(N490),A(N33,N14),MN$(130),
DT$(N17),ND$(N17),TF$(N17),DF$(N17)
210 DIM A$(N15),M$(N15),CN$(N15),DN$(N
15),EN$(N15),VA$(N15),UP$(N2)
300 UP%=CHR$(UP):UP$(2)=CHR$(EOL):BD$(
N1)="" :BD$(N490)="" :BD$(N2)=BD$(N1)
310 MN%=BD$:DF%=BD$:TF%=BD$:A%=BD$:CN$
=BD$:DN%=BD$:VA%=BD$
500 CF=N0:DF=N0:TD=N0:FF=N3:LP=N0:ND=N
0:F1=N0:RF=N0
600 CN$="D: CANCELCK.DAT":DN$="D: BUDGET
.DAT":RESTORE 12000:FOR Y=N1 TO N13:RE
AD A$:MN$(Y*N10-N9,Y*N10)=A$:NEXT Y
    
```

```

700 RESTORE 11000:FOR Y=N1 TO N35:READ
A$:BD$(Y*N14-N13,Y*N14)=A$:NEXT Y
1000 COLOR N160:FOR Y=N5 TO N7:PLOT NO
,Y:DRAWTO N39,Y:NEXT Y:COLOR N32:PLOT
NO,N0:POSITION N9,N6
1010 ? "BUDGET REPORT PROGRAM"
1100 POSITION N2,N9:? "THIS PROGRAM RE
CORDS ALL OF YOUR":? "INCOME AND EXPEN
SES, BOTH CASH AND"
1110 ? "CHECK. IT WILL ALSO CREATE A S
UMMARY":? "REPORT OF ALL OF YOUR INCOM
E AND"
1120 ? "EXPENSES. USING THIS INFORMATI
ON,":? "YOU CAN GAIN A BETTER UNDESTAN
DING":? "YOUR FINANCIAL POSTURE."
1130 TRAP 1130:POKE CRS,SET:POSITION N
2,N17:? "ENTER DATE & TIME?MM/DD/YY HH
:MM AM":POSITION N19,N17
1140 INPUT ND$:IF ND$(N1,N6)="MM/DD/"
THEN ND$="00/00/00 00:00 AM"
1150 IF LEN(ND$)<>N17 THEN 1130
1160 TRAP CLEAR:POKE CRS,RESET:?
1200 EN%=DN$
1210 TRAP IO:RESUME=1200
1220 CLOSE #N1:OPEN #N1,N4,NO,DN$
1230 INPUT #N1,DT$:ND=N0
1240 POSITION N2,N17:? "LAST UPDATE ON
":?DT$(N1,N8);" @ ";DT$(N10,N17);
1250 FOR X=N0 TO N33:FOR Y=N0 TO N14:A
(X,Y)=N0:NEXT Y:NEXT X:MD=N0:TRAP 1400
:INPUT #N1,MD
1260 TRAP CLEAR:FOR M=N1 TO N13:FOR B=
N0 TO N32:INPUT #N1,A(B,M)=A:GOSUB B
LINK:NEXT B:NEXT M:INPUT #N1,A$
1270 IF A$="EOF" THEN 1500
1280 POSITION N2,N0
1290 ? "BAD DATA - PRESS RETURN TO CON
TINUE":GOSUB WAIT:TRAP CLEAR
1300 ON ND+N1 GOTO 1500,MENU
1400 TRAP CLEAR:IF PEEK(195)<>136 THEN
1280
1500 CLOSE #N1
1560 EN%=CN$
1570 TRAP IO:RESUME=1560
1580 CLOSE #N1:OPEN #N1,N4,NO,CN$
1590 TRAP CLEAR:INPUT #N1,M:IF M<N0 OR
M>N12 THEN CLOSE #N1:GOTO MENU
1600 TRAP 1280:ND=N1
1610 INPUT #N1,DT,DA,B:GOSUB BLINK
1620 IF DT=9999 THEN CLOSE #N1:TRAP CL
EAR:GOTO 3260
1630 IF B<>N32 THEN A(B,M)=A(B,M)-DA
1640 GOTO 1610
2040 TRAP CLEAR:IF RF THEN 7300
    
```

```

2060 POKE CRS,RESET:? CHR$(CLS);? "PR
OCCESSING DATA FROM ";DT$(N1,N8)?
2090 REM LINE 2100 HAS CONTROL CODES
2100 ? "qrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr
e"
:? " ! BUDGET REPORT MAIN MENU !":? "
arrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrd"
2110 ? " !EXIT BUDGET PROGRAM ! !"
:? " !CASH INCOME & EXPENSES! !":? "
!2!COMBINED TOTAL REPORT !%!"
2120 ? " !3!FULL BUDGET REPORT !%!"
:? " !4!REPORT BY PERIOD !%!"?:? "
!5!AVERAGE MONTHLY REPORT!% !"
2130 ? " !6!REPORT BY BUDGET !%!"
:? " !7!PROFIT/LOSS REPORT !% !"
2140 POSITION N2,N13:IF NOT LP THEN ?
"!8!OUTPUT TO LINE PRINTER; !"
2150 IF LP THEN ? "!8!OUTPUT TO SCREEN
ONLY ! !"
2160 REM LINE 2170 HAS CONTROL CODES
2170 ? "zrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr
c"
:? :?
2380 ? CHR$(UP);"ENTER YOUR CHOICE":GE
T #N2,S:S=S-N48-N128*(S>N127)
2390 IF S<N0 OR S>N8 THEN 2380
2400 ON S+N1 GOTO 6100,2620,7460,7160,
3660,4480,4940,5600
2520 IF LP THEN LP=N0:GOTO 2140
2530 LP=N1:GOTO 2140
2620 POKE CRS,RESET:? CHR$(CLS)
2630 GOSUB MONTHS:? :? :? :AZ=N0
2640 POKE CRS,SET:TRAP 2640:? UP%;"ENT
ER DATA FOR WHICH MONTH":;INPUT VA$:I=
VAL(VA%):IF I=N0 THEN GOTO MENU
2650 IF I<N1 OR I>N12 THEN 2640
2660 MD=I:T=N0:GOSUB TITLES
2670 POSITION N2,N17:? "ADDITIONAL ";;
IF T THEN ? "EXPENSES";
2680 IF NOT T THEN ? "INCOME";
2690 ? " FOR ";MN$(MD*N10-N9,MD*N10):P
OKE CRS,SET:? :?
2700 ? UP%;"ENTER END OR BUDGET #":;TR
AP 2700:INPUT VA$:IF VA$(N1,N1)="E" TH
EN 3160
2710 I=VAL(VA%):IF I<N0 OR I>N31 THEN
2670
2720 IF T THEN 3100
2730 ? UP%;"ENTER INCOME AMOUNT":;TRAP
2730:INPUT VA$:DI=VAL(VA%):A(I,MD)=A(
I,MD)-DI
2740 IF DI<>N0 THEN AZ=N1
2750 GOTO 2700
3100 ? UP%;"ENTER EXPENSES AMOUNT":;TR
AP 3100:INPUT VA$:DI=VAL(VA%):A(I,MD)=
A(I,MD)+DI
    
```

```

3110 IF DI<>NO THEN AZ=N1
3120 GOTO 2700
3160 TRAP CLEAR:T=T+N1:IF T=N1 THEN 2670
3170 IF AZ=NO THEN GOTO MENU
3260 ? CHR$(CLS);:POKE CRS,RESET:IF NOT TD THEN CF=N1
3300 ? "CALCULATING..."
3310 FOR I=NO TO N31:GOSUB BLINK:A(I,N13)=NO:FOR J=N1 TO N12:A(I,N13)=A(I,N13)+A(I,J):NEXT J:NEXT I
3320 FOR J=N1 TO N13:GOSUB BLINK:A(N32,J)=NO:FOR I=NO TO N31:A(N32,J)=A(N32,J)+A(I,J):NEXT I:NEXT J:GOTO MENU
3660 GOSUB MONTHS:? "13. ALL MONTHS":? :? :? :PC=NO
3670 POKE CRS,SET:TRAP 3670:? UP$;"WHICH PERIOD";:INPUT VA$:M=VAL(VA$):IF M<NO OR M>N13 THEN 3670
3680 ? :? :IF M=NO THEN GOTO MENU
3690 POKE CRS,RESET:TRAP CLEAR:? UP$;"DOLLAR OR PERCENT REPORT? (% OR %)":GET #2,H:IF H>N127 THEN H=H-N128
3700 IF H<N36 AND H<N37 THEN 3690
3710 IF M=N14 THEN I=NO:? CHR$(CLS);:GOTO 4050
3720 POKE CRS,RESET:? CHR$(CLS);"BUDGET ITEM REPORT FOR ";MN$(M*N10-N9,M*N10):? :? :? :IF LP=NO THEN 3880
3820 FF=FF-N1:GOSUB TOF:FF=FF-(FF=N2)
3840 LPRINT "BUDGET ITEM REPORT FOR ";MN$(M*N10-N9,M*N10):LPRINT " "
3880 IF H=N37 THEN 4140
3900 I=NO:FW=N10
3920 AZ=I+N1:DF=A(I,M):GOSUB USING:? BD$(AZ*N14-N13,AZ*N14); " ";DF$
3940 IF LP THEN LPRINT BD$(AZ*N14-N13,AZ*N14); " ";DF$
3960 I=I+N1:IF LP AND I<N32 THEN 3920
3970 IF LP=NO AND I=N16 THEN POSITION N2,N23:? "HIT ANY KEY TO CONTINUE";:GOSUB WAIT:? CHR$(CLS);:GOTO 4040
3980 IF I<N32 THEN 3920
3990 IF RF THEN GOTO MENU
4000 IF LP THEN 4030
4010 POSITION N2,N23:? "HIT ANY KEY TO REVIEW, ESC IF DONE";:GET #2,AZ:IF AZ<N27 THEN 3710
4020 GOTO MENU
4030 ? :? "HIT ANY KEY FOR MENU";:GOSUB WAIT:GOTO MENU
4040 IF M<N14 THEN ? "BUDGET ITEM REPORT FOR ";MN$(M*N10-N9,M*N10):? :? :? :GOTO 3920
4050 ? "BUDGET ITEM AVERAGES FOR JAN TO DEC":? :? :? :GOTO 3920

```

```

4140 IF PC=MAX1 THEN 4220
4160 DL=NO:DH=NO:PC=NO:FOR I=NO TO N31:IF A(I,M)<NO THEN DL=DL-A(I,M):GOTO 4200
4180 DH=DH+A(I,M)
4200 NEXT I
4220 IF DL<5.0E-03 THEN DL=1E+20
4240 IF DH<5.0E-03 THEN DH=1E+20
4260 I=NO
4280 IF A(I,M)<NO THEN DJ=A(I,M)/DL:GOTO 4300
4290 DJ=A(I,M)/DH
4300 DJ=DJ*100
4320 AZ=I+N1:DF=DJ:GOSUB USING2:? BD$(AZ*N14-N13,AZ*N14); " ";DF$
4340 IF LP THEN LPRINT BD$(AZ*N14-N13,AZ*N14); " ";DF$
4360 I=I+N1:IF LP AND I<N32 THEN 4280
4370 IF LP=NO AND I=N16 THEN POSITION N2,N23:? "HIT ANY KEY TO CONTINUE";:GOSUB WAIT:? CHR$(CLS);:GOTO 4440
4380 IF I<N32 THEN 4280
4390 IF RF THEN GOTO MENU
4400 IF LP THEN 4430
4410 PC=MAX1:POSITION N2,N23:? "HIT ANY KEY TO REVIEW, ESC IF DONE";:GET #2,AZ:IF AZ<N27 THEN 3710
4420 GOTO MENU
4430 ? :? "HIT ANY KEY FOR MENU";:GOSUB WAIT:GOTO MENU
4440 ? "BUDGET ITEM REPORT FOR ";MN$(M*N10-N9,M*N10):? :? :? :GOTO 4320
4480 POKE CRS,RESET:? CHR$(125);"CALCULATING...";:IF RF=NO THEN ? " (HIT A KEY TO CANCEL)"
4520 J=NO:FOR I=N1 TO N12:Y=NO:FOR K=NO TO N31:IF ABS(A(K,I))>5.0E-03 THEN Y=N1
4540 IF PEEK(KEY)<>RESET AND RF=NO THEN POKE CRS,RESET:GOTO MENU
4560 NEXT K:J=J+Y:GOSUB BLINK:NEXT I
4580 IF NOT J THEN 5220
4600 ? CHR$(CLS);"BUDGET ITEM AVERAGES FOR JAN TO DEC":? :? :?
4700 IF LP THEN FF=FF-N1:GOSUB TOF:FF=FF-(FF=N2):LPRINT "BUDGET ITEM AVERAGES FOR JAN TO DEC":LPRINT " "
4710 FOR I=NO TO N31:A(I,N14)=NO
4740 FOR K=N1 TO N12:A(I,N14)=A(I,N14)+A(I,K):NEXT K
4800 A(I,N14)=A(I,N14)/J:GOSUB BLINK:NEXT I:M=N14:GOTO 3900
4940 GOSUB TITLES
4960 POKE CRS,SET:POSITION N2,N17:TRAP 4960:? CHR$(EOL);"ENTER MENU OR BUDGET #";:INPUT VA$
4980 IF VA$(N1,N1)="M" THEN GOTO MENU

```

**ATARI® SWAT TABLE FOR:  
BUDGET (LINES 100-4980)**

LINES	SWAT CODE	LENGTH
100 - 130	YN	526
140 - 310	IF	503
500 - 1120	KZ	533
1130 - 1270	BS	412
1280 - 1620	AP	274
1630 - 2130	RI	531
2140 - 2640	OI	468
2650 - 3100	BV	426
3110 - 3690	XD	465
3700 - 3980	TN	432
3990 - 4220	EB	410
4240 - 4400	EE	318
4410 - 4700	RQ	521
4710 - 4980	LS	194

```

5000 J=VAL(VA$):AZ=J+N1:IF J<NO OR J>N31 THEN 4960
5020 TRAP CLEAR:IF LP THEN GOSUB TOF:LPRINT "ANNUAL REPORT FOR ";BD$(AZ*N14-N13,AZ*N14):LPRINT " "
5120 POKE CRS,RESET:? CHR$(CLS);"ANNUAL REPORT FOR ";BD$(AZ*N14-N13,AZ*N14):? :? :?
5180 IF ABS(A(J,N13))>5.0E-03 THEN 5260
5200 IF LP THEN LPRINT "NO DATA AVAILABLE":LPRINT
5220 POSITION N2,N5:? "NO DATA AVAILABLE":GOTO 5520
5260 X=NO:FOR I=N1 TO N12:IF ABS(A(J,I))>X THEN X=ABS(A(J,I))
5270 NEXT I:X=X*N100/A(J,N13):POSITION N2,N5:FW=N10:A$="*****":FOR I=N1 TO N12:DF=A(J,I)
5280 GOSUB USING:DF=DF*N100/A(J,N13):VA$=DF$:GOSUB USING2:TF$=MN$(I*N10-N9,I*N10-N7):AZ=VAL(DF$)/X*N10
5290 AZ=ABS(AZ)+N1:IF LP THEN LPRINT VA$;" ";DF$;" ";TF$;" ";A$(N1,AZ)
5300 ? VA$;" ";DF$;" ";TF$;" ";A$(N1,AZ):NEXT I
5440 IF LP THEN LPRINT "-----"
5460 ? "-----"
5480 DF=A(J,I):GOSUB USING:VA$=DF$:DF=X:GOSUB USING2:X=N5-LEN(STR$(INT(UA))) :? VA$;" 100.0% TOT MAX=";DF$(X)
5500 IF LP THEN LPRINT VA$;" 100.0% TOT MAX=";DF$(X)
5520 IF RF THEN GOTO MENU
5530 IF LP=NO THEN POKE CRS,RESET:POSITION N2,N23:? "HIT ANY KEY FOR MENU";:GOSUB WAIT
5540 GOTO MENU

```

```

5600 POKE CRS,RESET: ? CHR$(CLS);
5620 IF LP THEN GOSUB TOF
5640 ? "MON EXPENSES INCOME P/L
STATUS":POSITION N2,N5
5660 IF LP THEN LPRINT "MON EXPENSES
INCOME P/L STATUS":LPRINT " "
5720 FOR J=N1 TO N13
5740 DI=NO:DE=NO
5760 FOR J=NO TO N31:IF A(J,I)<NO THEN
DI=DI-A(J,I):GOTO 5800
5780 DE=DE+A(J,I)
5800 NEXT J:FW=N10:A$=" ":IF A(N32,I)>
5.0E-03 THEN A$="L"
5840 M$="TOT":IF I<N13 THEN M$=MN$(I&N
10-N9,I&N10-N7)
5860 DF=DE:GOSUB USING:VA$=DF$:DF=DI:G
OSUB USING:EN$=DF$:DF=ABS(A(N32,I)):BO
SUB USING
5880 ? M$;" ";VA$;" ";EN$;" ";DF$:CHR$
(ASC(A$)+N128*(A$<" "))
5900 IF LP THEN LPRINT M$;" ";VA$;" ";
EN$;" ";DF$;" ";A$
5920 IF I<N12 THEN 5980
5940 ? "-----"
-----"
5960 IF LP THEN LPRINT "-----"
-----"
5980 NEXT I
6000 IF RF THEN RF=NO
6020 GOTO 5520
6060 RF=NO:LP=NO:FF=N3:GOTO MENU
6100 POKE CRS,RESET: ? CHR$(CLS);:POSIT
ION N2,N5: ? "SURE YOU WANT TO? (Y/N)":
GET #N2,AZ:IF AZ<>N89 THEN GOTO MENU
6110 ? CHR$(CLS): ? "WRITING TO DISK -
DO NOT DISTURB!!":TRAP 7000
6120 IF TO OR NOT CF THEN 6500
6130 CLOSE #N1:OPEN #N1,NB,NO,DN$: ? #N
1;ND$: ? #N1;NO:FOR M=N1 TO N13:FOR B=N
0 TO N32: ? #N1:A(B,M):NEXT B:NEXT M
6150 ? #N1;"EOF":CLOSE #N1
6500 IF NOT ND THEN 7020
6510 CLOSE #N1:OPEN #N1,NB,NO,CN$: ? #N
1;"9999,9999,9999,9999":CLOSE #N1:GOTO
7020
7000 ? CHR$(CLS);CHR$(BELL): ? "### DIS
K I/O ERROR ###": ? "PRESS ESC TO EX
IT, ANY KEY TO RETRY":GET #N1,AZ
7010 IF AZ<>N27 THEN 6110
7020 TRAP CLEAR:FOR X=N1 TO N4:CLOSE #
X:NEXT X:POKE CRS,SET: ? :END
7160 POKE CRS,RESET: ? CHR$(CLS);
7180 POSITION N2,N5: ? "OUTPUT TO PRINT
ER? (Y/N/ESC FOR MENU)":GET #N2,X:IF X
=N27 THEN GOTO MENU
7200 IF X<>N78 AND X<>N89 THEN 7180
7240 LP=NO:IF X=N89 THEN LP=N1

```

```

7280 ? CHR$(CLS);:Z1=NO:Z0=N37:Z2=-N1:
RF=N1:PW=NO:Z3=N1:POKE KEY,RESET
7300 IF PW=NO OR LP THEN 7330
7310 POKE CRS,RESET:POSITION N2,N23: ?
"HIT ANY KEY FOR MORE, ESC FOR MENU":
GET #2,AZ:IF AZ<>N27 THEN 7330
7320 RF=NO:GOTO MENU
7330 IF LP AND PEEK(KEY)=28 THEN 7320
7340 POKE 77,NO:PW=N1:IF Z0=N36 THEN Z
0=N37:M=Z1:H=Z0:GOTO 3710
7350 IF Z1<N13 THEN Z1=Z1+N1:Z0=N36:M=
Z1:H=Z0:GOTO 3710
7360 IF Z2=-N1 THEN FF=NO
7370 IF Z2<N31 THEN Z2=Z2+N1:J=Z2:AZ=J
+N1:GOTO 5020
7380 IF Z3 THEN Z3=NO:FF=NO:GOTO 4480
7390 FF=NO:GOTO 5600
7460 GOSUB TITLES:FOR M=N1 TO N13:A(N3
3,M)=NO:NEXT M
7480 POKE CRS,SET:POSITION N2,N17:TRAP
7480: ? CHR$(EOL);"ENTER DONE, MENU OR
BUDGET #":INPUT VA$:POKE CRS,RESET
7490 IF VA$(N1,N1)="M" THEN GOTO MENU
7500 IF VA$(N1,N1)="D" THEN 7680
7520 B=VAL(VA$):IF B<NO OR B>N31 THEN
7480
7600 FOR M=N1 TO N12:A(N33,M)=A(N33,M)
+A(B,M):NEXT M:A$=CHR$(N160):IF B<N10
THEN A$(N2)=CHR$(B+176):GOTO 7640
7620 A$=STR$(B):A$(N1,N1)=CHR$(ASC(A$(
N1,N1))+N128):A$(N2)=CHR$(ASC(A$(N2))+
N128)
7640 POSITION N2+N19*(B>N15),B-N16*(B>
N15): ? A$:GOTO 7480
7680 FOR M=N1 TO N12:A(N33,N13)=A(N33,
N13)+A(N33,M):NEXT M:J=N33:AZ=J+N1:GOT
O 5020
8060 POKE CRS,RESET:POSITION N2,NO: ? "
LOAD DISK WITH FILE ":EN$;"":POSITIO
N N8,N2: ? "HIT RETURN TO CONTINUE"
8070 GOSUB WAIT:COLOR N32:FOR Y=NO TO
N2:PLOT NO,Y:DRAWTO N39,Y:NEXT Y:GOTO
RESUME
9060 POKE CRS,RESET: ? CHR$(CLS);
9070 FOR Z=NO TO N15:POSITION N2+(Z<N1
0),Z: ? Z:POSITION N5,Z: ? BD$((Z+N1)*N1
4-N13,(Z+N1)*N14):NEXT Z
9080 FOR Z=N16 TO N31:POSITION N21,Z-N
16: ? Z:POSITION 24,Z-N16: ? BD$((Z+N1)*
N14-N13,(Z+N1)*N14):NEXT Z:RETURN
9360 POKE KEY,RESET
9370 IF PEEK(KEY)=RESET THEN 9370
9380 POKE KEY,RESET:RETURN
9520 AZ=PEEK(SCR):AZ=AZ+N128*(AZ<N128)
-N128*(AZ>N127):POKE SCR,AZ:RETURN
9600 IF NOT DF THEN DF$="0.00":GOTO 9
604

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```

9602 UA=(INT(ABS(DF)*N100+0.5)/N100)+1
.0E-03:DF$=STR$(UA):DF$=DF$(N1,LEN(DF$
)-N1)
9604 TF$="":IF DF<NO THEN TF$="-"
9606 IF NOT FW THEN TF$(LEN(TF$)+N1)=
"$":TF$(LEN(TF$)+N1)=DF$:DF$=TF$:RETUR
N
9608 IF DF>NO THEN TF$=" "
9610 TF$(N17)=" ":TF$(N2,N3)="$ ":TF$(
N4)=TF$(N3):TF$(FW-LEN(DF$(N2)))=DF$:D
F$=TF$:RETURN
9620 TF$="-":IF NOT DF THEN TF$=" 0.0
":GOTO 9624
9622 UA=(INT(ABS(DF)*N10+0.5)/N10)+0.0
1:TF$(N2)=STR$(UA):TF$=TF$(N1,LEN(TF$)
-N1):IF NO<DF THEN TF$(N1,N1)=" "
9624 DF$=TF$:TF$=" ":TF$(N17)=" ":TF$(
N2)=TF$(N1):TF$(N7-LEN(DF$(N2)))=DF$:D
F$=DF$(LEN(DF$)+N1)="$":RETURN
10000 POKE CRS,RESET: ? CHR$(CLS)
10010 ? " 0. MAIN MENU":FOR Z=N1 TO N1
2: ? CHR$(N27+N5*(Z<N10));Z: ? "MN$(Z*
N10-N9,Z&N10):NEXT Z:RETURN
10180 TRAP 10180:IF FF<N1 THEN LPRINT
CHR$(N12):FF=N3
10200 FOR Z=N1 TO N5:LPRINT " "
10220 NEXT Z:TRAP CLEAR
10240 FF=FF-N1:RETURN
11000 DATA DENTIST/DOCTOR,MEDICAL AIDS
,PHARMACY,MEDICAL INS,MED MILEAGE,INTE
REST/MTG,INTEREST/OTHER,FIXED TAXES
11010 DATA OTHER TAXES,DONATIONS,LOSS,
EDUCAT'L EXP,UNION DUES ETC,CHILD CARE
,RENT/MTG PRINC,UTILITIES,INSURANCE
11020 DATA GROCERIES,LOAN PRINCIPAL,HO
ME REPAIRS,SAVINGS,AUTO REPAIRS,GAS/OI
L,VAC/ENTERTN'MT,CLOTHES,FURNISHINGS
11030 DATA HOUSEHOLD ITEM,MISC EXP,OPE
N ITEM,SALARY,MISC DEPOSITS,INTEREST,G
RAND TOTAL,COMBINED TOTAL
12000 DATA JANUARY,FEBRUARY,MARCH,APRI
L,MAY,JUNE,JULY,AUGUST,SEPTEMBER,OCTO
BER,NOVEMBER,DECEMBER,ALL MONTHS

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**ATARI® SWAT TABLE FOR:  
BUDGET (LINES 5000-12000)**

LINES	SWAT CODE	LENGTH
5000 - 5300	EE	515
5440 - 5720	BJ	428
5740 - 5980	QG	410
6000 - 7010	XP	470
7020 - 7350	WQ	459
7360 - 7640	JP	462
7680 - 9602	HP	500
9604 - 10220	RA	502
10240 - 12000	VQ	531



# GENERAL INFORMATION

## Concerning *SoftSide* line listings, *SWAT* & *Magnetic Media*

Follow these procedures unless otherwise instructed by the documentation in the magazine. Back issues may differ in some details.

### SWAT TABLES

At the conclusion of each line listing of a *SoftSide* program, we include a *SWAT* (*Strategic Weapon Against Typos*) Table. *SWAT* was published in issue #30 of *SoftSide* and is available as a free reprint. Please send a self-addressed, stamped envelope to *SoftSide* Publications, Inc., Dept. *SWAT*, 6 South Street, Milford, NH 03055.

### APPLE®

*Disks* are in 16-sector format, created under DOS 3.3. To use, just boot the disk. A cover/menu program will run automatically.

*Tapes* LOAD in the normal manner. Advance the tape to the beginning of the lead-in tone; stop the tape; insert the plug into the EAR jack; type LOAD; start the tape; and press RETURN. Side two of the tape is a duplicate of side one, unless one or more Integer BASIC programs are included, in which case side two contains the Integer programs.

### ATARI®

*Line Listings* use the following conventions in representing unprintable characters, unless otherwise noted:

Characters (including blank spaces) which are underlined should be typed in inverse video.

When graphics or control characters are to be included in a string (between quotation marks), it will be noted in a nearby REMark. In such cases, graphics characters are represented by the corresponding lower-case letter, and control characters are represented by the corresponding unshifted key symbol. For example: The lower-case letter s represents a graphics cross, entered by holding down the CTRL key and then pressing the S key. The symbol = represents a control-down-arrow, entered by first pressing and releasing the ESC key, then holding down the CTRL key and pressing the = key. (See Appendix F, and the back cover, of the *ATARI® BASIC Reference Manual*.)

*The one exception to the above practice is that a clear-screen character (ESC CTRL- $\backslash$ ) is represented in listings by a right-hand brace, which looks like this: }*

*A shifted = is represented in the listings by a vertical line with a small gap in it: |*

*SWAT* — Before appending *SWAT* to a program in memory, the program to be *SWATed* must first be LISTed to disk or cassette (using LIST "D:FILENAME" for disk or LIST "C:" for tape). Next, turn the computer off, then on again, to clear the system and ENTER the program back into

memory (using ENTER "D:filename" for disk or ENTER "C:" for tape). Because of the unique method in which *ATARI® BASIC* stores variables in a program, the variable table must always be in the same order to produce accurate *SWAT* codes. LISTing and ENTERing the program is the only known way to rebuild the variable table in a specific order so that *SWAT* codes can match.

*Disks* do not contain DOS.SYS files, and are therefore not bootable by themselves. First boot a disk which contains any version of DOS, then insert the *SoftSide* disk and RUN "D:COVER" (*Adventure of the Month* — RUN "D:INTRO").

*Tapes* CLOAD in the normal manner. If you have difficulty, try this procedure:

- (1) Type POKE 54018,54 and press RETURN.
- (2) Turn up the volume on your TV.
- (3) Type CLOAD and press RETURN once.
- (4) Press the PLAY button and listen.
- (5) When you hear a steady lead-in tone, press RETURN again.

Side two of the tape is a duplicate of side one.

### IBM® PC

DV is available by subscription or individual order. There is no CV at this time.

### TRS-80®

*Disks* are available in Model I or Model III format. They contain the DOS PLUS operating system, and a cover program which automatically runs upon booting. Back issues prior to May, 1982, are available only in Model I format, and may be converted using the TRSDOS CONVERT utility on a two-drive Model III. Older back issues (with Model I TRSDOS) require you to enter BASIC and then type RUN "COVER".

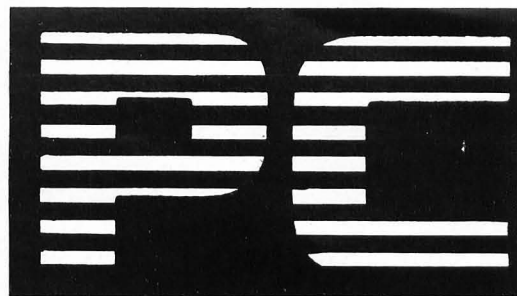
*Tapes* CLOAD in the normal manner on Model I's, and at low speed (500 baud) on Model III's. The first program is a cover/menu program. Side two of the tape is a duplicate of side one.

### NOTES ABOUT MAGNETIC MEDIA

*SoftSide* disks and tapes are duplicated by reliable, professional duplication services; bad copies are very rare. However, the trip through the mail occasionally wreaks havoc with sensitive magnetic media. If, after a reasonable number of tries and a careful check and cleaning of your equipment, you are not able to load a program from a tape or disk, please return it to us with an exact description of the problem. If we cannot duplicate the problem on our systems, we will advise you when we send the replacement copy.

We use no copy-protection on our media. We urge you to make a backup copy of every disk or tape as soon as you receive it (and at the same time resist the urge to give copies to friends). Our replacement policy does not extend beyond 30 days. Ⓢ

*SoftSide*



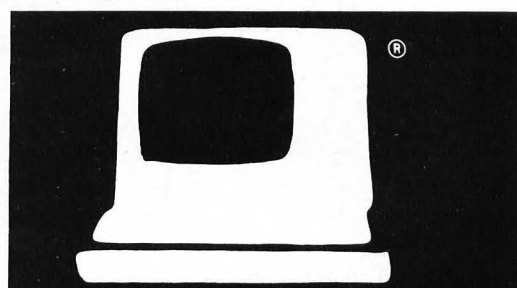
PC/SIDE

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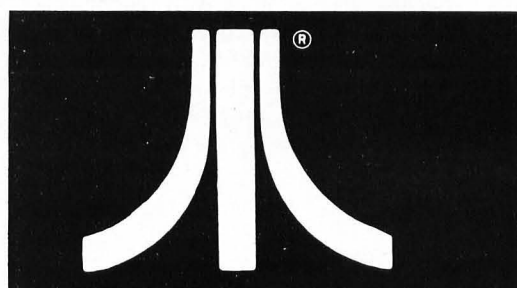
APPLE®/SIDE

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TRS-80®/SIDE

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ATARI®/SIDE

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```

O G a d Y L g N I S z z z v L r T c
m Z w N N P e O e f V O j S x e y d
k e N I b R N c Y A X a z W C R Q I
j d t W O R D p f b A Q W G L v s m
v J w I i O Q s T n H K T R i K l F
Z j E J z D y T E O z R A B U F l R
X u J T S E A R C H c t D g t W N l
V z D h j r D V w t g s T I M E x Q
M C i h l M E S M E R I Z E B Q i B
k N y j i i E M P U Z Z L E h I d S
r S V o t E M o I L p R a W R N w b
n q V V b M n u F L k O A V O A f r
X o R O x G E N E R A T O R z K Y d
f l V c x B o x X g D o K p I T I r
Y J b b F o F m J J D y K X Q Y q S
B C w C a v V L O P V p b L i h O h
n L a d z D B I k Z K e Y m N A a o
    
```

by David W. Durkee  
IBM® Translation by Fred Condo

**Word Search Puzzle Generator** is for an IBM PC with 16K RAM and a printer.

With this program, you can construct word search puzzles consisting of a rectangular array of apparently random letters. In this array, hidden words are arranged either forwards, backwards, or diagonally. The program does the tedious work of fitting the words into the array, generating the random letters to hide the words, alphabetizing the words, and printing the puzzle, answer key, and word list. All you do is think up the words.

When you run the program, you can either see the puzzle being created or leave the screen blank so that you can enjoy solving your puzzle later. Then, simply type your words. When you are done, type the word "stop." The program generates the answer key and a

copy of the puzzle. You may then choose to print another copy of this puzzle, or quit.

These puzzles not only entertain, but have great potential for educational applications. They are an easy way to become familiar with a list of words and their spellings, whatever the subject matter.

### Variables

A%(\*,\*): Array storing the ASCII values of the letters in the puzzle.  
A\$: Input variable.  
B: Counts directions in which the computer may write a word.  
B%(\*,\*): Notes in which directions the computer may write a word, given a random starting location. If B%(X+2,Y+2) is 1, then it is possible to write that direction. If that variable is 2 or more, then the word shares one

or more letters with other words if written that direction.  
BLANK: Determines whether the user chose a blank screen.  
C: Loop-counter.  
CPF: Current printing file — determines whether to print to the screen or the printer.  
D, R: Used to choose a direction in the B% array.  
L, U: Random starting coordinates for a word.  
PTR: Pointer used in the sort routine.  
X, Y: Indicate word direction along the x and y axes; values range from -1 to 1, but both may not be 0 simultaneously. This defines the eight possible directions.  
X1, Y1: Printing coordinates for individual letters; derived from U, L, X, and Y.  
Z7, Z8: Loop variables used in the sort routine.

```

SS SS SS SS SS SS SS SS SS SS
SS                                     SS
SS      PC BASIC                       SS
SS      'Word Search Puzzle'          SS
SS      Author: David W. Durkee       SS
SS      Translator: Fred Condo        SS
SS      Copyright (c) 1983            SS
SS      SoftSide Publications, Inc    SS
SS                                     SS
SS SS SS SS SS SS SS SS SS SS SS
    
```

If you do not wish to type this program, it is also included on this month's *SoftSide DV*.

Initialization and instructions.

```

30 DEF FNU$(A$)=CHR$(ASC(A$+" ") + 32*(A$ >
="a" AND A$(<"z"))
100 KEY OFF:WIDTH 40:CLS:LOCATE 10,9,0:P
RINT"WORD SEARCH PUZZLE GENERATOR":LOCAT
E 12,14,0:PRINT"BY DAVID W. DURKEE":LOCA
TE 14,14,0:PRINT"COPYRIGHT (C) 1981":LOC
ATE 20,11:PRINT"PC Version by Fred Condo
"
110 FOR I=1 TO 2500:NEXT I:LOCATE,,1:OPE
N"SCRN:" FOR OUTPUT AS #1:OPEN"LPT1:" FO
R OUTPUT AS #2:CPF=1
120 CLS:LOCATE 10:PRINT #CPF,"TO CREATE
A PUZZLE, SIMPLY ENTER A WORD YOU WOULD
LIKE TO HAVE IN THE PUZZLE AFTER THE
'?' PROMPT."
130 LOCATE 14:PRINT #CPF,"WHEN YOU'VE EN
TERED ALL THE WORDS YOU WOULD LIKE IN
THE PUZZLE, TYPE 'STOP' AND THE PC WIL
L DO THE REST."
140 LOCATE 18:PRINT #CPF,"IF YOU WOULD L
IKE TO MAKE A PUZZLE FOR YOURSELF (BLAN
K SCREEN), THEN TYPE '1'; OTHERWISE TYPE
'0' TO BEGIN: ";
150 INPUT BLANK:IF BLANK=1 THEN BLANK=-1
ELSE IF BLANK<>0 THEN 140
155 CLS:Z=0
160 DIM W$(200),B$(3,3),A$(40,20)
    
```

Beginning of word-entry loop.

```

170 Z=Z+1
180 LOCATE 22,1:PRINT #CPF,SPACE$(40);:L
OCATE 22,1:PRINT #CPF,"WORD #":STR$(Z);:
LINE INPUT"? ";A$:IF A$="" THEN 180
190 TMP$="":FOR CHAR=1 TO LEN(A$):TMP$=T
MP$+FNU$(MID$(A$,CHAR,1)):NEXT CHAR:IF T
MP$="STOP" THEN 530
200 W$(Z)=A$
    
```

Choose a random starting position, then check each direction to see if the word will fit that way.

```

210 U=INT(RND(1)*20)+1:L=INT(RND(1)*40)+
1:FOR X=-1 TO 1:FOR Y=-1 TO 1:IF X=Y AND
Y=0 THEN 330
240 X1=L:Y1=U:FOR C=1 TO LEN(A$):X1=X1+X
:Y1=Y1+Y:IF X1>40 OR X1<1 OR Y1>20 OR Y1
<1 THEN B$(X+2,Y+2)=0:GOTO 330
280 IF A$(X1,Y1)=0 THEN 310
290 IF A$(X1,Y1)<>ASC(MID$(A$,C,1)) THEN
B$(X+2,Y+2)=0:GOTO 330
300 B$(X+2,Y+2)=B$(X+2,Y+2)+1
310 NEXT C
320 B$(X+2,Y+2)=B$(X+2,Y+2)+1:B=B+1
330 NEXT Y:NEXT X:IF B=0 THEN 210
    
```

Select the direction to write the word; if possible, choose one that intersects another word.

```

350 R=2:D=2:FOR X=1 TO 3:FOR Y=1 TO 3:IF
B$(X,Y)>B$(R,D) THEN R=X:D=Y
380 NEXT Y:NEXT X:X=R-2:Y=D-2:IF X=-1 AN
D Y=-1 AND B$(1,1)=1 THEN 420
410 GOTO 440
420 X=INT(RND(1)*3)-1:Y=INT(RND(1)*3)-1
430 IF(X=0 AND Y=0) OR B$(X+2,Y+2)=0 THE
N 420
    
```

Print the word on the screen, unless the user chose a blank screen.

```

440 X1=L:Y1=U:FOR C=1 TO LEN(A$):X1=X1+X
:Y1=Y1+Y:A$(X1,Y1)=ASC(MID$(A$,C,1)):IF
BLANK THEN 500
490 LOCATE Y1,X1:PRINT #CPF,CHR$(A$(X1,Y
1));
500 NEXT C
510 B=0:FOR X=1 TO 3:FOR Y=1 TO 3:B$(X,Y
)=0:NEXT Y:NEXT X:LOCATE 22,1:PRINT #CPF
,SPC(39);:GOTO 170
    
```

Prepare the answer key.

```

530 FOR X=1 TO 40:FOR Y=1 TO 20:IF A$(X,
Y)<>0 THEN 560
550 A$(X,Y)=45:LOCATE Y,X:PRINT #CPF,"-"
;
560 NEXT Y:NEXT X
570 LOCATE 22:LINE INPUT"READY TO PRINT.
TURN ON PRINTER AND HIT <RETURN>...";A$
:CPF=2:GOSUB 680
    
```

Fill in the blanks with random letters.

```

580 PRINT #CPF,:PRINT #CPF,"WORD PUZZLE
ANSWER KEY":PRINT #CPF,CHR$(12);:CPF=1:P
RINT #CPF,:PRINT #CPF,"PLEASE WAIT A MIN
UTE FOR ME TO CREATE PUZZLE...":CPF=2:
FOR X=1 TO 40:FOR Y=1 TO 20:IF A$(X,Y)<>
45 THEN 640
630 B=INT(RND(1)*26)+65:IF RND(1)<.5 THE
N A$(X,Y)=B ELSE A$(X,Y)=B+32
640 NEXT Y:NEXT X
650 GOSUB 680:PRINT #CPF,:PRINT #CPF,"CD
MPUTER GENERATED WORD PUZZLE"
670 PRINT #CPF,CHR$(12);:GOTO 730
    
```

Subroutine to print the complete puzzle.

```

680 PRINT #CPF,:FOR X=1 TO 40:FOR Y=1 TO
20:PRINT #CPF,CHR$(A$(X,Y));" ";:NEXT Y
:PRINT #CPF,:NEXT X
720 RETURN
    
```

Alphabetize and print out the word list.

```

730 PRINT #CPF,"WORD LIST":PRINT #CPF,:F
OR Z7=1 TO Z-2:PTR=Z7:FOR Z8=Z7+1 TO Z-1
:IF W$(Z8)<W$(PTR) THEN PTR=Z8
750 NEXT Z8:SWAP W$(Z7),W$(PTR):NEXT Z7
760 FOR I=1 TO Z-1:PRINT #CPF,W$(I):NEXT
I
    
```

Another copy? If not, then end.

```

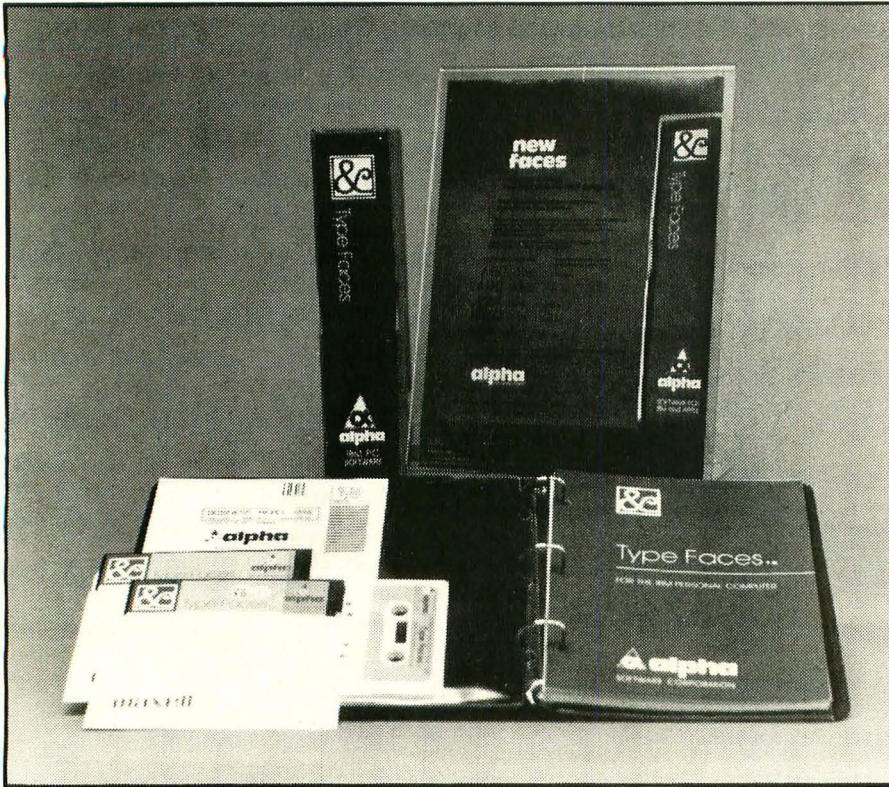
770 CPF=1:PRINT #CPF,:LINE INPUT"WOULD Y
OU LIKE ANOTHER COPY? ";A$:IF FNU$(A$)="
Y" THEN CPF=2:PRINT #CPF,CHR$(12):GOTO 6
50
790 CLOSE:WIDTH 80:KEY ON:END
    
```

### IBM® PC SWAT TABLE FOR: WORD SEARCH PUZZLE GENERATOR

LINES	SWAT CODE	LENGTH
30 -	130 JW	536
140 -	240 WV	588
280 -	440 TB	461
490 -	630 UB	529
640 -	790 DZ	447

## Type Faces For The IBM® PC

Reviewed by Steven Ringwood



*“You can use Type Faces for writing presentations, headers to newsletters, just about anything where large type is appropriate.”*

from Alpha Software Corp., 6 New England Executive Park, Burlington, MA 01803. System requirements: IBM® PC with 64K RAM, a printer and two disk drives. (Also available for a 64K Apple® with two disk drives and a printer.) Suggested retail price: \$125.00.

*Type Faces* is a program which generates type fonts on your printer. You can use *Type Faces* for writing presentations, headers to newsletters, just about anything where large type is

appropriate. The program is menu driven and prints text directly from a file. The input file includes commands which control the printing and plain text printed to the printer in the selected font.

### Documentation

The documentation is extensive, including both a table of contents and an

index, and is an easy tutorial for both the beginner and expert. I have only two comments on the documentation. The lower case L strongly resembles an upper case L, and in a few places this could be misleading. The other comment concerns Appendix II, which covers all formatting commands. Including a table of all of the commands along with their default values could improve this appendix.

### Operation

Before using *Type Faces*, you should back up both the program disk and data disk. The program disk is backed up by its own program which allows only two copies. You back up the program disk on a single drive and this requires that both the program disk and target disk be inserted and removed from the drive several times. Backing up the programming disk would be much simpler (and more foolproof) if it was from drive A to drive B in one pass. You back up the data disk using standard PC-DOS commands and can copy it as many times as you wish.

To run the program, first create a text file, then run *Type Faces*. You progress through several menu pages and then the program starts printing the text on the printer. The two major aspects to the program are the printed output and how it handles formatting.

### The Printed Output

*Type Faces* offers two sizes of printed characters; indexical characters are 3/8 inch tall, the rest are 5/8 inch tall. *Figure 1* shows an example of the output in English Gothic and *Figure 2* shows the same output reduced on a photocopier. Even after reducing the output, it isn't letter quality, but it is clear and easy to read.

Figure 1

Figure 2

The

The

**Formatting**

The formatting ability of *Type Faces* is limited. Formatting commands allow control of the placement and alignment of text, but not all of the commands work. If you type the command name incorrectly, *Type Faces* hangs and you have to reboot the machine. Lines that are too long (cover more than two lines on output) cause the program to hang with an interesting side effect on the video display.

I also had trouble with the commands .pl, page length; .np, non-paddable blank; and .so, join files. The .pl command works some of the time, but at other times is ignored. Whatever I tried, the .np command would not work. The .so command works, but not as the manual suggests. From the manual's example, I used a file name without a disk

prefix. This results in a "File not found" error, along with some other information. The .so command worked using a disk prefix (b:). Either the manual's example is wrong or the command does not work as it should.

The command (C.ra) causes all text to be sent in the printer's normal style until a fancy (.fa) command. No formatting takes place in this mode.

The formatting commands do not have a consistent syntax. While most of the formatting commands take their argument on the same line, the argument for both .cs and .so is on the following line. Remembering the command format would be easier if all commands expected their argument on the same line as the command.

**Conclusions**

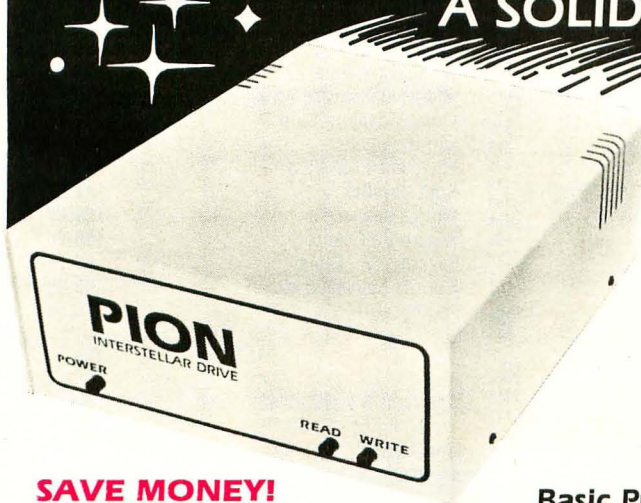
I spoke to ALPHA concerning the troubles I encountered. They are already working on the problem of bad commands hanging the machine and the

question of changing the backup procedure to work with two drives. They are also working on an updated version with 80 fonts and 30 languages. The update will be provided free to current users.

*Type Faces* produces nice output, but it is not letter quality. The program's formatting command problems are major. It is unreasonable to ask the user to worry about the idiosyncrasies of some of the commands. Except for the problems with .np and .pl, however, you can avoid these problems through careful typing. ☺

*Editor's Note: As this review went into production, George Lechter, Product Director for Alpha Software Corporation, informed us that the updated version of Typefaces is now available. The new version, according to Mr. Lechter, is completely bug-free, and offers 100 fonts in several different languages, among them Hebrew, Russian and Greek. Character sizes now range from 1/8 inch to 1 inch tall.*

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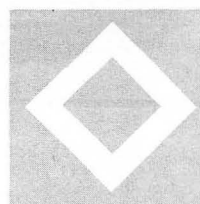
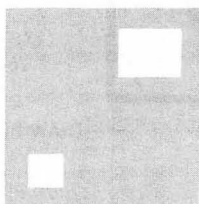
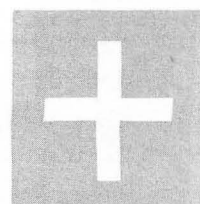
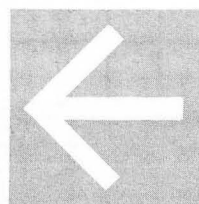
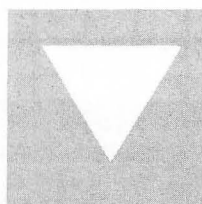
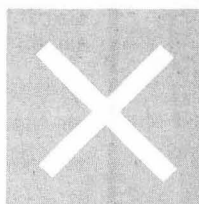
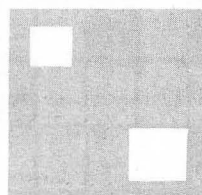
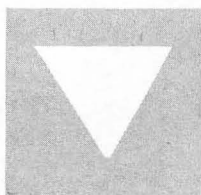
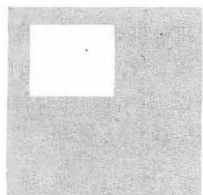
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# Concentration

by Glenn Archer



**Concentration is a game program for an Apple II® or II plus with Applesoft and 32K RAM.**

“Let’s play Concentration!” Remember the television game show? Now, you can play this exciting game on your Apple. You can also challenge and hone your memory since this game, even in Level 1, is more difficult than either the television or the board version.

The object of *Concentration* is to match all of the shapes on the board. The winner (in a two player game) is the player who matches the most shapes.

The game first asks the number of players. In the one-player game, the object is to match all the shapes in the least number of moves. This also applies to the two-player game, but the players are trying to get a better score as well.

After receiving the players’ names, the computer asks for the difficulty level. Of the three levels, Level 1 is the easiest, with a small board and easy shapes to remember; Level 2 is a slightly larger board, with harder shapes; and Level 3 is the largest board, with shapes that look almost the same.

After you choose the difficulty level, the computer randomly mixes and matches the shapes. It then draws the board, numbers, and letters on the screen. These numbers and letters are the coordinates you enter for your guesses. Enter the row (numbers) first, and follow with the column (letters).

You need not press RETURN after entering the letter. The shape in the corresponding square appears and you enter the second shape. If you enter the same coordinate as your first guess or the square entered has already been matched, it rejects the input and you must reenter your guess.

If the two shapes don’t match, they are displayed a little longer and then covered up. Then you guess again or, in case of a two player game, the next player guesses. If the two shapes match, the player is awarded one point.

The game continues until all shapes have been matched. It then prints the winner (two player game) and the number of moves it took to complete the game.

## Programming Notes

The program avoids long, tedious data statements for shape tables because it draws the shapes with HPLLOTs (lines 570-920). The results: more free memory space for extra options such as sound, no worry about SHAPE, ROT, or starting points, and an easy way to modify the shapes.

All the GOSUB statements in lines 780-920 may confuse you. These actually combine two or more other shapes to create a new shape which saves memory

space, but also makes several shapes look almost the same (for Level 3).

## Variables

A\$,B\$,PP\$: Input variables.  
 H\$: Contains letter indicating rightmost column to input.  
 J,J1,K,Q: Loop variables.  
 L: Used in shape mixing routine.  
 LM: Number of columns on game board.  
 LV: Level of difficulty.  
 MV: Number of moves player(s) has taken.  
 N: Number of shapes matched.  
 N\$(2): Array containing players’ names.  
 N1: Shape number of player’s first guess.  
 N2: Shape number of player’s second guess.  
 NU: Shape number of player’s guess.  
 PP: Number of players.  
 SC(2): Scores of player(s).  
 SH(72): Array containing the number of each square’s shape.  
 ST(72): Flag array to test if a shape has already been matched.  
 TG: Number of shapes to match.  
 X,Y: X and Y coordinates of shape guessed.  
 X1,Y1: X and Y coordinates of first shape guessed.  
 X2,Y2: X and Y coordinates of second shape guessed.

Select first hi-res page, draw white border, and fill in large board.

```
170 HGR : HCOLOR= 3: HPL0T 0,0 TO
    279,0 TO 279,159 TO 0,159 TO
    0,0: FOR J = 19 TO 139: HPL0T
    19,J TO 259,J: NEXT
```

Depending on level, shrink the board size. If level 3 chosen, board stays the same.

```
180 IF LV = 1 THEN HCOLOR= 0: FOR
    J = 19 TO 150: HPL0T 161,J TO
    260,J: NEXT : HCOLOR= 3
190 IF LV = 2 THEN HCOLOR= 0: FOR
    J = 19 TO 150: HPL0T 221,J TO
    260,J: NEXT : HCOLOR= 3
```

Draw hi-res numbers.

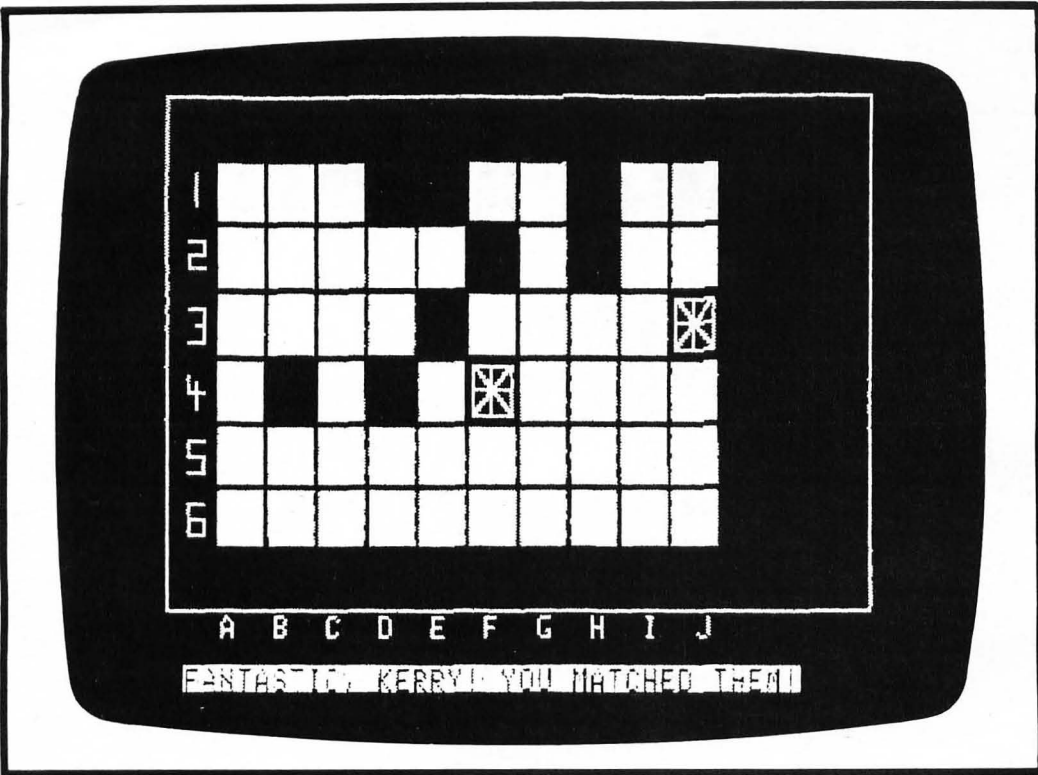
```
200 HPL0T 12,24 TO 12,34: HPL0T
    9,45 TO 15,45 TO 15,49 TO 9,
    49 TO 9,53 TO 15,53
210 HPL0T 9,65 TO 15,65 TO 15,75
    TO 9,75: HPL0T 15,70 TO 12,
    70: HPL0T 9,85 TO 9,90 TO 15
    ,90: HPL0T 12,87 TO 12,95
220 HPL0T 15,105 TO 9,105 TO 9,1
    10 TO 15,110 TO 15,115 TO 9,
    115: HPL0T 15,125 TO 9,125 TO
    9,135 TO 15,135 TO 15,130 TO
    9,130: HCOLOR= 0
```

Separate board into squares.

```
230 FOR J = 19 TO 259 STEP 20: HPL0T
    J,19 TO J,139: HPL0T J + 1,1
    9 TO J + 1,139: NEXT J: FOR
    J = 19 TO 139 STEP 20: HPL0T
    19,J TO 259,J: HPL0T 19,J +
    1 TO 259,J + 1: NEXT
```

Print letters under squares. Line 270 protects the numbers from scrolling.

```
240 IF LV = 1 THEN VTAB 21: PRINT
    " A B C D E F G"
250 IF LV = 2 THEN VTAB 21: PRINT
    " A B C D E F G H
    I J"
260 IF LV = 3 THEN VTAB 21: PRINT
    " A B C D E F G H
    I J K L"
270 POKE 34,21
```



```
SS SS SS SS SS SS SS SS SS SS SS
SS                               SS
SS   Applesoft BASIC           SS
SS   'Concentration'           SS
SS   Author: Glenn Archer      SS
SS   Copyright (c) 1983        SS
SS   SoftSide Publications, Inc SS
SS                               SS
SS SS SS SS SS SS SS SS SS SS SS
```

If you don't wish to type this program, it is also included on this month's **SoftSide DV and CV**.

Set LOMEM, dimension shape arrays, and initialize sound routine.

```
10 LOMEM: 16384: TEXT : HOME : SPEED=
    255: NORMAL : DIM SH(72),ST(
    72): GOSUB 1130
```

Print title.

```
20 INVERSE : HTAB 13: PRINT "CON
    CENTRATION!": NORMAL : PRINT
    : PRINT TAB( 19)"BY": PRINT
    : PRINT TAB( 14)"GLENN ARCH
    ER"
```

Input the number of players.

```
30 VTAB 9: PRINT "HOW MANY PLAYE
    RS (" : INVERSE : PRINT "1";
    : NORMAL : PRINT " OR " : INVERSE
    : PRINT "2" : NORMAL : PRINT
    ") ? " :
40 GET PP#: IF PP# < "1" OR PP# >
    "2" THEN 40
50 PRINT PP#: PP = VAL (PP#)
```

Ask for players' names.

```
60 FOR J = 1 TO PP
70 VTAB 10 + (2 * J): PRINT "WHA
    T IS PLAYER #J": INPUT "S
    NAME ? " : N$(J) : IF LEN (N$(
    J)) < 1 THEN 70
80 IF LEN (N$(J)) < 8 THEN NEXT
    : GOTO 100
90 VTAB 16: INVERSE : PRINT "ONL
    Y ENTER A MAXIMUM OF 7 LETTE
    RS PLEASE": NORMAL : FOR K =
    1 TO 2000: NEXT : VTAB 16: CALL
    - 868: VTAB 10 + (2 * J): CALL
    - 868: GOTO 70
```

Input level of difficulty.

```
100 PRINT : PRINT : PRINT "LEVEL
    OF DIFFICULTY (1-3) ? " :
110 GET A#: IF A# < "1" OR A# >
    "3" THEN 110
120 PRINT A#: LV = VAL (A#)
130 HOME : VTAB 10: HTAB 9: PRINT
    "GENERATING BOARD PIECES"
140 VTAB 12: HTAB 15: INVERSE : PRINT
    "PLEASE WAIT": NORMAL
```

Gosub to routine which randomly picks matched pairs. First GOSUB fills one half of the array. Then GOSUB fills the other half.

```
150 ON LV GOSUB 1060,1070,1080
160 ON LV GOSUB 1060,1070,1080
```



Beginning of loop to handle each player.

```
280 FOR Q = 1 TO PP
```

Print player's score.

```
290 VTAB 22: INVERSE : PRINT N$(
1)"'S SCORE: ";SC(1);: IF PP
= 2 THEN HTAB 21: PRINT N$(
2)"'S SCORE: ";SC(2)
```

Ask player to enter his guess. Check if square has already been matched.

```
300 NORMAL : VTAB 23: HTAB 1: CALL
- 868: VTAB 23: HTAB 1: PRINT
N$(Q)", ENTER GUESS #1: "; GOSUB
420:N1 = NU:X1 = X:Y1 = Y: IF
ST(NU) = - 1 THEN GOSUB 56
0: VTAB 23: HTAB 1: CALL -
868: GOTO 300
```

If input is OK, black out appropriate square and draw shape.

```
310 GOSUB 510
```

Ask player to enter second guess. Check if the guess is the same as the first or if the square has been matched.

```
320 VTAB 23: CALL - 868: VTAB 2
3: PRINT N$(Q)", ENTER GUESS
#2: "; GOSUB 420: IF N1 =
NU THEN 320 TEXT
330 N2 = NU:X2 = X:Y2 = Y: IF ST(
NU) = - 1 THEN GOSUB 560: GOTO
320
340 GOSUB 510
```

Check to see if shapes have matched. If not, wait a few seconds, then cover both shapes. Increment the move counter.

```
350 IF SH(N1) = SH(N2) THEN 380
360 HOME : VTAB 23: PRINT TAB(
12)"SORRY, NO MATCH.": FOR J
= 1 TO 2000: NEXT : GOSUB 5
40
370 MV = MV + 1: NEXT Q: GOTO 280
```

Player has matched two shapes. Make sound, and congratulate player.

```
380 HOME : VTAB 23: FOR K = 255 TO
10 STEP - 3: & TK,5: NEXT :
INVERSE : HTAB 2: PRINT "FA
```

```
NTASTIC, "N$(Q)"! YOU MATCHE
D THEM!": FOR J = 1 TO 2000:
NEXT
```

Increase player's score, flag matched shapes, increment move counter, and black out shapes.

```
390 SC(Q) = SC(Q) + 1:ST(N1) = -
1:ST(N2) = - 1:MV = MV + 1:
Y = Y1:X = X1: GOSUB 550:Y =
Y2:X = X2: GOSUB 550
```

Check to see if all the shapes have been matched. If so, jump to end. If not, same player goes again.

```
400 N = N + 1: IF N = 16 THEN 930
```

```
410 GOTO 290
```

Beginning of routine to accept guesses. Check for a Control-F to end the game.

```
420 GET A$: IF A$ = CHR$(6) THEN
1050
```

Determine whether input is valid. If so, print it, and input letter.

```
430 IF A$ < "1" OR A$ > "6" THEN
420
440 PRINT A$:
450 GET B$: IF B$ = CHR$(6) THEN
1050
```

Check for left arrow.

```
460 IF B$ = CHR$(8) THEN PRINT
CHR$(8);" "; CHR$(8);: GOTO
420
470 IF B$ < "A" OR B$ > "H" THEN
450
480 PRINT B$: IF A$ = "1" THEN N
U = ASC (B$) - 64: GOTO 500
490 NU = (( VAL (A$) - 1) * LM) +
( ASC (B$) - 64)
500 X = ( ASC (B$) - 64) * 20:Y =
VAL (A$) * 20: RETURN
```

Draw routine.

```
510 GOSUB 550
520 FOR J = ( RND (1) + .2) * 10
0 TO 1 STEP - 15: & TJ,9: NEXT
```

```
530 ON SH(NU) GOTO 570,580,590,6
00,610,620,630,640,650,660,6
70,680,690,700,710,720,730,7
40,750,760,770,780,790,800,8
10,820,830,840,850,860,870,8
80,890,900,910,920
```

Fill in square after an incorrect guess.

```
540 HCOLOR= 3: FOR J = Y1 + 1 TO
Y1 + 18: HPLOT X1 + 1,J TO X
1 + 18,J: NEXT : FOR J = Y2 +
1 TO Y2 + 18: HPLOT X2 + 1,J
TO X2 + 18,J: NEXT : RETURN
```

Black out a square.

```
550 HCOLOR= 0: FOR J = Y TO Y +
19: HPLOT X,J TO X + 19,J: NEXT
: HCOLOR= 3: RETURN
```

Tell player that a square has already been matched.

```
560 HOME : VTAB 23: PRINT " THAT
SQUARE HAS ALREADY BEEN MAT
CHED.": FOR J = 1 TO 2000: NEXT
: RETURN
```

Routines to draw the various shapes.

```
570 HPLOT X + 2,Y + 2 TO X + 17,
Y + 2 TO X + 17,Y + 17 TO X +
2,Y + 17 TO X + 2,Y + 2: RETURN
```

```
580 HPLOT X + 9,Y + 2 TO X + 17,
Y + 17 TO X + 2,Y + 17 TO X +
9,Y + 2: RETURN
```

```
590 HPLOT X + 2,Y + 2 TO X + 17,
Y + 2 TO X + 9,Y + 17 TO X +
2,Y + 2: RETURN
```

```
600 HPLOT X + 2,Y + 2 TO X + 17,
Y + 17: HPLOT X + 17,Y + 2 TO
X + 2,Y + 17: RETURN
```

```
610 HPLOT X + 9,Y + 2 TO X + 9,Y
+ 17: HPLOT X + 2,Y + 9 TO
X + 17,Y + 9: RETURN
```

```
620 HPLOT X + 9,Y + 2 TO X + 17,
Y + 9 TO X + 9,Y + 17 TO X +
2,Y + 9 TO X + 9,Y + 2: RETURN
```

```
630 HPLOT X + 6,Y + 6 TO X + 13,
Y + 6 TO X + 13,Y + 13 TO X +
6,Y + 13 TO X + 6,Y + 6: RETURN
```

```

640 H PLOT X + 9, Y + 2 TO X + 9, Y
    + 17: H PLOT X + 4, Y + 7 TO
    X + 9, Y + 2 TO X + 14, Y + 7:
    RETURN
650 H PLOT X + 2, Y + 9 TO X + 17,
    Y + 9: H PLOT X + 7, Y + 4 TO
    X + 2, Y + 9 TO X + 7, Y + 15:
    RETURN
660 H PLOT X + 2, Y + 9 TO X + 17,
    Y + 9: H PLOT X + 11, Y + 4 TO
    X + 17, Y + 9 TO X + 11, Y + 1
    5: RETURN
670 H PLOT X + 9, Y + 2 TO X + 9, Y
    + 17: H PLOT X + 4, Y + 11 TO
    X + 9, Y + 17 TO X + 15, Y + 1
    1: RETURN
680 H PLOT X + 2, Y + 2 TO X + 17,
    Y + 17: RETURN
690 H PLOT X + 17, Y + 2 TO X + 2,
    Y + 17: RETURN
700 GOSUB 570: GOSUB 630: RETURN

710 GOSUB 620: GOSUB 610: RETURN

720 GOSUB 650: GOSUB 660: RETURN

730 GOSUB 690: GOSUB 620: RETURN

740 GOSUB 680: GOSUB 620: RETURN

750 GOSUB 610: GOSUB 720: RETURN

760 H PLOT X + 2, Y + 2 TO X + 13,
    Y + 2 TO X + 13, Y + 13 TO X +
    2, Y + 13 TO X + 2, Y + 2: H PLOT
    X + 17, Y + 17 TO X + 6, Y + 1
    7 TO X + 6, Y + 6 TO X + 17, Y
    + 6 TO X + 17, Y + 17: RETURN

770 FOR J1 = Y + 4 TO Y + 7: H PLOT
    X + 4, J1 TO X + 7, J1: NEXT :
    FOR J1 = Y + 12 TO Y + 15: H PLOT
    X + 12, J1 TO X + 15, J1: NEXT
    : RETURN
780 GOSUB 570: GOSUB 770: RETURN

790 GOSUB 680: GOSUB 570: RETURN

800 GOSUB 690: GOSUB 570: RETURN

810 GOSUB 620: GOSUB 630: RETURN

820 GOSUB 610: GOSUB 600: RETURN

830 GOSUB 570: GOSUB 600: RETURN

840 GOSUB 570: GOSUB 820: RETURN
    
```

```

850 GOSUB 590: GOSUB 580: RETURN

860 GOSUB 850: GOSUB 570: RETURN

870 GOSUB 830: GOSUB 910: RETURN

880 GOSUB 600: GOSUB 620: RETURN

890 GOSUB 880: GOSUB 570: RETURN

900 GOSUB 830: GOSUB 760: RETURN

910 GOSUB 570: GOSUB 710: RETURN

920 GOSUB 640: GOSUB 670: RETURN
    
```

End of game. Print the winner's name in a two-player game. Also print the scores and the number of moves it took.

```

930 TEXT : HOME : HTAB 11: PRINT
    "*** FINAL SCORE ***": NORMAL
    : VTAB 5

940 IF PP = 1 THEN PRINT N$(1)"
    , YOU SCORED "SC(1)" POINTS.
    ": GOTO 1000

950 IF SC(1) = SC(2) THEN A$ = "
    IT'S A TIE!"

960 IF SC(1) < SC(2) THEN A$ = N
    $(2) + " WON!"

970 IF SC(1) > SC(2) THEN A$ = N
    $(1) + " WON!"

980 INVERSE : HTAB (20 - LEN (A
    $) / 2): PRINT A$

990 NORMAL : PRINT : PRINT : PRINT
    N$(1)"'S SCORE WAS "SC(1)".
    : PRINT : PRINT N$(2)"'S SCO
    RE WAS "SC(2)".

1000 PRINT : PRINT "IT TOOK "MV"
    TURNS TO MATCH ALL": PRINT
    : PRINT "OF THE SHAPES."
    
```

Final sound.

```

1010 FOR J = 125 TO 11 STEP - 3
    : FOR K = J TO J - 7 STEP -
    1: & TK, 3: NEXT : NEXT
    
```

Play again?

```

1020 VTAB 22: PRINT "DO YOU WANT
    TO PLAY AGAIN ? ";

1030 GET A$: IF A$ = "Y" THEN RUN

1040 IF A$ < > "N" THEN 1030

1050 TEXT : HOME : END
    
```

Variables for levels of difficulty.

```

1060 TG = 21: LM = 7: H$ = "6": GOTO
    1090
1070 TG = 30: LM = 10: H$ = "J": GOTO
    1090
1080 TG = 36: LM = 12: H$ = "L": GOTO
    1090
    
```

Mix and match shapes.

```

1090 FOR J = 1 TO TG
    1100 K = INT ((TG * 2) * RND (1
        ) + 1): IF SH(K) < > 0 THEN
        1100
    1110 L = INT (TG * RND (1) + 1)
        : IF ST(L) < > 0 THEN 1110
    1120 SH(K) = L: ST(L) = 1: NEXT : FOR
        J = 1 TO TG: ST(J) = 0: NEXT
        : RETURN
    
```

Poke sound routine into memory.

```

1130 FOR J = 1 TO 66: READ J1: POKE
    J + 767, J1: NEXT : POKE 1013
    , 76: POKE 1014, 0: POKE 1015,
    3: RETURN
1140 DATA 201, 84, 208, 15, 32, 177, 0
    , 32, 248, 230, 138, 72, 32, 183, 0,
    201, 44, 240, 3, 76, 201, 222, 32, 1
    77, 0, 32, 248, 230, 104, 134, 3, 13
    4, 1, 133, 0
1150 DATA 170, 160, 1, 132, 2, 173, 48
    , 192, 136, 208, 4, 198, 1, 240, 7, 2
    02, 208, 246, 166, 0, 208, 239, 165
    , 3, 133, 1, 198, 2, 208, 241, 96
    
```

## APPLE® SWAT TABLE FOR: CONCENTRATION

LINES	SWAT CODE	LENGTH
10 - 120	UB	512
130 - 230	MU	560
240 - 350	XH	492
360 - 470	OZ	397
480 - 570	PX	525
580 - 690	IR	525
700 - 810	PZ	326
820 - 930	GI	216
940 - 1050	WJ	438
1060 - 1150	FI	497

# The Arcade Machine

Reviewed by Hartley G. Lesser

by Chris Jochumson and Doug Carlston (Broderbund Software, Inc., 1938 Fourth Street, San Rafael, CA 94901). System requirements: Apple II® or Apple II Plus with 48K RAM, Applesoft and 1 disk drive. Suggested retail price: \$55.00.

"*The Arcade Machine*," screams the cover of the tutorial, with graphic depictions of moons, futuristic tanks, jets and missiles, all seeming to exit an Apple monitor at breakneck speed, bent on the annihilation of an unknown target. "Create your own arcade games. No programming knowledge necessary!" Words to warm the cockles of many a game-player's heart. But, *really*, Broderbund. "No programming knowledge necessary?" Only one action to take — have a look at the material.

A 38-page instruction manual greets us. A quick glance at the final page reveals, in banner print, *The Arcade Machine Contest!* What? \$1,500 worth of hardware and software as the Grand Prize, with \$500 to the runner up? And \$200 each month, for six months, to a monthly entrant? It is certainly worth the initial investment to win some of the prize money.

The tutorial's introduction reinforces the statements that no programming skills are required. Briefly, the introduction also explains that the user will be guided through a step-by-step process to game creation. It also reveals that game development isn't entirely free-form.

As usual, Broderbund presents a graphically pleasing title page. To move onward, any keypress reveals a sample game. This example is continually modified by the user in the tutorial, revealing how to create and modify shapes, build shape paths, and so on. I was presented with a very playable, updated version of an Invader-type game, for one or two players, controlled by keyboard or joystick manipulation.

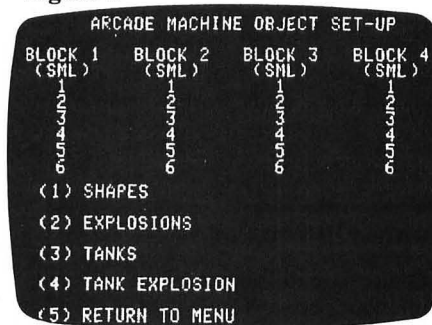
Pressing RETURN takes you to the Main Menu, where eight options are offered. Should you ever get lost in the maze of menus, use of the RETURN key

brings you back to the Main Menu without loss of any developing shapes — an admirable feature.

## Shape Creation

I requested the Shape Creator first. A sub-menu with three options was displayed, the last being a return to the main menu. The tutorial tells you to try the first option. The monitor was refreshed, and an Arcade Machine Object Set-Up screen (Figure 1) was displayed:

Figure 1



***"Create your own arcade games. No programming knowledge necessary!"***  
***Words to warm the cockles of many a game-player's heart."***

Look at the options. Shapes, as used by Broderbund, refer to "enemy" targets. When a destructive device from your side strikes an opposing force, an "explosion" (option two) occurs, which is simply a different shape table called into play. The "tanks" are objects controlled by you (or a second game player), and the tank explosion is self-explanatory.

Each option allows the user to alter the form of, erase, transfer, or otherwise

modify a specific shape table. There may be as many as 24 enemy shapes active on your monitor at one time. They are placed into four blocks for simplicity of use. Six small objects, three medium-sized objects, or two large, may be found in one block. You have the choice of the "enemy" shape's size.

Look at the table presented. Note that each block contains six small objects. By glancing at the sample game, (simply press RETURN repeatedly), you'll count 18 enemy targets. That indicates three blocks in play. But, there are numbers listed under block four on the secondary menu. Block four, states the tutorial, isn't used in this sample game. In order to avoid confusion at this point, there should be an indication of this fact on the screen. As it stands, all the user can do is take the tutorial's word that this condition is true.

To edit a shape, enter a "1" from the secondary menu. Seven numbered images appear. A larger pattern of white dots occupies a rectangle towards the bottom of the screen. By looking at the white dots, you see that they represent the high-resolution images under the numbers on the screen. Why seven images? Seven images are used in shape construction to allow each image to be drawn a little differently than the one preceding it. When accessed, each image is called in succession, giving the shape animated motion. I constructed four animated shapes, and was extremely pleased with the end-results.

The tutorial explains how to obtain differing colors in your shapes, how to erase all or merely one of the images, and how to actually "draw" and save a finished product. The sample game now contains your figure. The die is cast. You're hooked! Pretty soon, each of the sample game's shapes will bear your own personality as you modify and change the look of the entire game.

The techniques presented for the shapes are equally applicable to the tanks and the explosions, with the latter being basically a flip-flop between two images. Finally, *The Arcade Machine* instructs how to turn blocks, and shapes

```

** GAME OPTIONS **

(1) GAME OPTIONS
(2) SOUND
(3) SET SCORES
(4) PATH POINTER START VALUES
(5) MUTATE OPTION
(6) RETURN TO MAIN MENU
    
```

Figure 2

```

** GAME SOUNDS **

(1) MISSILE BEING FIRED
(2) BOMB BEING RELEASED
(3) TANK EXPLODING
(4) OBJECT EXPLODING
(5) BOMB/MISSILE COLLISION
(6) RETURN TO MENU
    
```

Figure 3

```

(1) NUMBER OF PLAYERS? ONE
(2) NUMBER OF TANKS TO START GAME? 3
(3) TIME LIMIT? NO
(4) BOMB/MISSILE COLLISION SCORE? 0
(5) GAME DELAY? 0
(6) BOUNCING BOMBS? NO
(7) EXPLODING OBJECT OPTION? NO
(8) NUMBER OF BARRIERS? 1
(9) RANDOM OBJECT BOMBING? 0
PLEASE CHOOSE (RETURN TO EXIT)
    
```

Figure 4

within blocks, on or off, and how to transfer a specific object to another block. Very interesting stuff, and impressive, as the shape construction is simple, very effective, and yet not annoyingly time-consuming.

## Making Paths

The Path Creator is the next, and most complex, tutorial I selected from the Main Menu. Here, you determine the "paths" of each shape on the screen. The Path Editor consists of two rectangles, one within the other, with a cross-hair and a tiny alien next to it. The TV screen is represented by the smaller of the rectangles.

By using a group of eight keys, the crosshairs may be moved about the rectangles. The alien moves in like fashion. Text below the rectangle indicates this screen is PATH NUMBER 1. Up to ten paths are possible, each containing a maximum of 254 different instructions. Staggering!

Each move of the crosshairs plots the path of your shape(s). Speed of movement is another choice, as well as when to "drop bombs," change shapes, have your shapes jump to another path table, have an object delay to allow other shapes to complete different commands, transfer all or part of a path table to another path table, and turning off the background graphics to see how your shapes interact with the differing paths.

Due to the complexities involved when working with a large number of shapes, a path table worksheet is included with the tutorial, which may be duplicated.

This graph paper aids in properly coordinating the shapes while constructing their path tables.

I was impressed, and I hadn't even touched the Game Options. So far, I'd created unique, complex shapes. I'd managed to build paths that would perplex many an expert game player, and had viewed my work whenever I'd wished. It was time to proceed.

## Game Options

Figure 2 is displayed when selecting Game Options.

Figure 3 shows how to alter game sounds: missile being fired, bomb being released, tank exploding, object exploding and bomb/missile collision. This is accomplished by modifying duration, pitch, and the number of cycles for each specified sound. Experimentation here is the key to creating the ultimate effects. You then award specific scores for each created shape. The point value can be changed by ordering the shape to mutate into another shape on meeting whatever conditions you set, adding flexibility to your game.

By entering the number of the specification desired, (see Figure 4) you can change that mode of play. From one to nine tanks may be assigned, points scored for the player when shooting down enemy bombs, alien shapes exploding on striking the bottom of the screen, even random enemy bombing.

The next function allows you to designate when a specific shape will begin to take instructions from the path table. This enables shapes to drift from a

main body of enemy targets, perhaps fly around in a confusing pattern, and then dive at the "tank" with bombs and cannon blazing away.

You can also dictate how many levels of play are to be involved (from one to five) from option four of the Main Menu. Each level can have separate values for the conditions presented. Items such as background star movement, speed and density may be edited. The same applies to tank speed, score and accuracy. Missile specifics, as well as bomb speeds and types, are also presented for your determination.

The Miscellaneous coverage includes score increase with levels, free tanks awarded on attainment of certain levels, barriers for the bottom tank, steerable missiles and object speed. The third function deals strictly with editing your path data, which may seem complicated at first. However, using the path graph paper makes this task far easier, and with practice, you'll be able to modify paths without difficulty. The fourth section allows you to move your aliens in whatever manner you desire, according to the level of play.

## Graphic Artistry

The Background and Title Creator is a good graphics utility, wherein either keyboard or joystick may be used to draw whatever background and title you want for your game. Circles, triangles and rectangles, background colors — all are at your command. WHITE1 and WHITE2 have special functions. They

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*“All in all, this is a very powerful package for the would-be game designer or arcade game aficionado. There’s plenty here to keep you occupied for hours, days, weeks, even months.”*

enable bombs to bounce whenever they contact specific shapes that were constructed using these colors. A rather complicated rule is involved here. If you want a vertical wall, it must be extremely thick to work correctly. This necessity might destroy the total graphic desired, and may be very difficult to construct properly.

The final option is LOAD/SAVE GAME and it is critical, to say the least. Your new game, background and title completed last, can be saved to any disk that has been formatted by *The Arcade Machine*. You’ll be given the option of saving your game to one of five files which you name. You may also load one of five sample games that come with *The Arcade Machine*.


Information regarding the sample

games should have been presented at the start of the tutorial. Users would then have had the opportunity of viewing the game possibilities from the beginning, giving them added incentive to try one of their own. As it stands, the only way this option is uncovered is by reading the entire tutorial.

Design flexibility is limited, and the graphics capabilities as shown on the tutorial cover would be hard to realize. But it’s the only arcade game construct to come down the pike. Broderbund has set an example for others to follow. However, what the average user will build to please him or herself will be far from marketable. For those who wish to spend the necessary time to develop something reminiscent of *Choplifter*, however, more power to you. Broder-

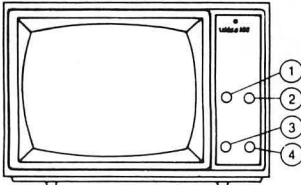
bund will be the first to acknowledge your accomplishment.

Controls for your game disk, as well as a brief glossary, finish the tutorial, along with the contest announcement. All in all, this is a very powerful package for the would-be game designer or arcade game aficionado. There’s plenty here to keep you occupied for hours, days, weeks, even months.

Don’t forget to enter the contest. Your winnings would more than pay for the purchase of *The Arcade Machine*. To the authors, Chris Jochumson and Doug Carlston, my heartiest congratulations. I think you knew what you were doing. As far as questioning the blurbs pronouncing “no programming knowledge necessary,” well, they’re absolutely correct. 

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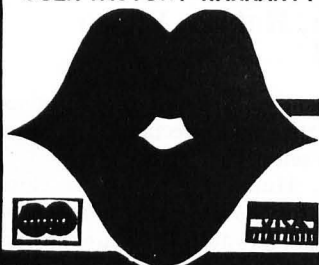
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*Super Quest* is a fantasy-adventure game for the Apple II® or II Plus with 48K RAM. It is included as the bonus program on #38 *SoftSide* DV. See the Bind-in Card elsewhere in the magazine to order this issue's disk.

It is the twenty-third century, and just as eons ago the forces of technology threatened to obliterate magic, so now the situation has reversed. (Even ancient personal computers must rely on moonbeam power!) In *Super Quest*, your objective is to penetrate the thousand-chambered maze of Saladin and procure the fabulous Mega Crown, the one device that can restore the balance of technology and magic.

### The Maze

The maze has more than 1000 numbered rooms divided into four basic configurations.

Throughout the labyrinth are treasure chests containing gold and jewels, as well as weapons, healing elixir, or a magic lamp. Some chests, however, are full of junk or even empty. Monsters guard the treasures and ensure that only a hero of tested mettle obtains the Mega Crown.

The only known entrance is through an underground passage to the middle of the first level. The Mega Crown is said to reside somewhere in the fourth level.

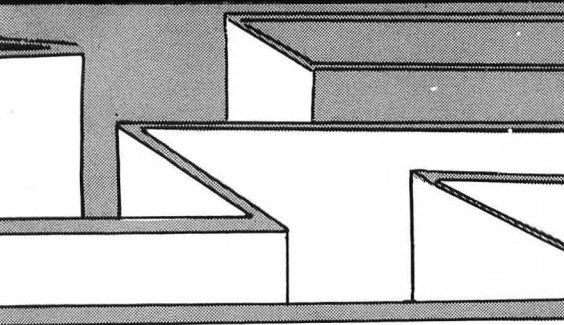
by Jeff Hurlburt

Just outside the maze is a bazaar. Inside the maze are two hospices where you may bargain with greedy merchants for weapons, healing elixir, and strength potion.

### Human, Hobbit, Elf, or Dwarf?

Once you've reviewed the introductory narrative and directions, your first task is to select your hero's race.

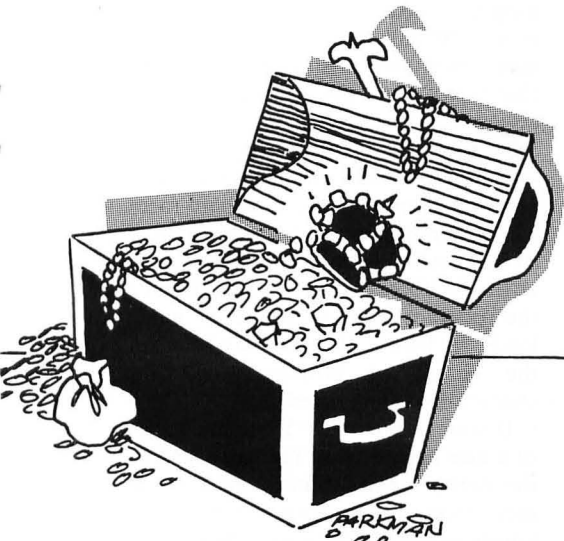
Briefly, Humans are best in close combat; Hobbits are best in the use of magic (Tana powder); Elves are the best archers; and Dwarves are physically the



A weapon's accuracy and hit power depend on the weapon, distance, the attributes of the hero who wields it, and the monster against which it is directed. The longknife is effective only against monsters in an adjacent space; quarrels and Tana powder can work at long distances. Magic quarrels are inherently more accurate and inflict greater damage than iron quarrels. Tana powder has the hit power of the magic quarrel but is effective only against monsters of magical origin.

The light armor supplied each beginning hero is better than no armor at all, but provides minimal protection against dragon fire. Dragon fire armor (fashioned from dragon ears) is much more effective. As soon as you acquire sixty dragon ears and enter the bazaar or a hospice, a coat of dragon fire armor will be fashioned for you. (This is a free service of the empire.)

Healing elixir restores strength. One vial brings your strength to 100% potential. Strength potion increases the absolute level of your strength; it is one of the best investments you can make. Unlike weapons and healing elixir, you never find the strength potion in a treasure chest. You must purchase it at a bazaar or hospice.



toughest. A more detailed breakdown of characteristics is provided in the game program so that you can pick the race best suited to your style of play.

## Weapons, Armor, and Potions

Each hero is initially supplied with light armor, a longknife, a crossbow with a supply of iron quarrels and magic quarrels, a few vials of Tana powder, and some healing elixir. A character's race and strength determine the number of quarrels he may carry into the maze. No such limits exist for Tana powder or healing elixir.

## The Magic Lamp

Normally, to get from one point to another in the maze, you must fight your way through a host of hostile monsters. The Magic Lamp provides the single alternative. One rub and you are transported elsewhere immediately. Regrettably, you don't know where the "elsewhere" may be, except that it is somewhere in the maze. The Magic Lamp may be located in a treasure chest practically anywhere in the maze. Once used, it vanishes back into the labyrinth. The Magic Lamp may not be taken from the maze. If you try to take it into a hospice or the bazaar, it leaves your possession.

## Experience, Strength, and Gold Denars

As you obtain treasure and vanquish monsters, you acquire experience. The more valuable the treasure or the more powerful the monster, the greater the experience acquired. Experience increases

the accuracy and hit power of a hero's attack. It compensates for deficits and accentuates positive attributes. Thus, for equal strengths, an experienced Hobbit may be a better archer than a beginning Elf.

Strength is another major factor in hit power and attack resistance. An Elf who has acquired extra strength can possibly absorb more punishment than a normal strength Dwarf. Both experience and strength are unqualified positive attributes. (Stronger, more experienced heroes do not attract more numerous, more deadly monsters.)

All treasure obtained in the maze (i.e. gold coins, jewels, etc.) is valued in "Gold Denars." The only way to obtain the gold needed to buy supplies and strength potions is to go into the maze and take it.

## Monsters

Thirteen kinds of monsters inhabit the maze. Some (imps, skeletons, vampires, zombies, mummies, and afreets) are magical and may be attacked using Tana powder. Wraiths are slightly susceptible to Tana powder, but the other monsters are totally immune and must be killed with quarrels or in close combat. Table 1, a listing of monsters showing relative strengths and weapons effectiveness, is presented below.

Table 1

Known Monster	Rel STR	Hand CMBT	Iron QRL	MAG QRL	Tana PDR
Imp	12	Yes	No	No	Yes
Skeleton	25	Yes	Yes	Yes	Yes
Goblin	38	Yes	Yes	Yes	No
Zombie	55	Yes	Yes	Yes	Yes
Vampire	77	Yes	Yes	Yes	Yes
Giant Spider	85	NV*	Yes	Yes	No
Mummy	97	Yes	Yes	Yes	Yes
Troll	106	Yes	Yes	Yes	No
Ogre	121	NV*	Yes	Yes	No
Wraith	181	No	No	Yes	NV*
Afreet	250	No	No	No	Yes
Dragon	500	NV*	NV*	Yes	No
Rogue Dragon	1000	NV*	NV*	Yes	No

\*NV = "NOT VERY" EFFECTIVE

Many monsters guard treasure or block a vital passage in a specific room or corridor. Others rove ravenously in search of warmblooded prey. Roving monsters are attracted to the scent of jewels and precious metal. The more treasure you carry, the greater the probability of meeting roving monsters, and the more deadly these are likely to be.

---

## Traps and Random Rooms

Traps of various kinds dot the maze. Most of these are simply feints of the maze itself, though a few are less subtle. In no case, however, is a trap necessarily inescapable.

After a few sessions of play you may notice that a few rooms differ from game to game. The shape is different; entrances are added or deleted. These are random rooms. A random room is a room waiting to be created. Creation generally occurs when the room is first entered and, once formed, the room retains its shape for the duration of a game.

---

## Hero and Monster Displays

A hero appears as a flashing "H". Monsters are identified by the first letter of the monster type (except for giant spiders whose symbol is "#"). In addition, the number and type of attacking monster is always displayed at the bottom of the screen.

---

## Resources and Reminder Displays

As you move through the maze, you normally have continual access to vital information. This includes weapon counts, vials of healing elixir, strength expressed in %, experience, value of treasure carried in Gold Denars, and current room number.

Large rooms, since they fill most of the screen, are an exception. You can still obtain the above resources information, along with a count of dragon ears and a summary of key functions, by pressing "I" (for "Information"). The only requirement is that you not be under attack at the time. Should you come under attack while viewing the display, it will automatically revert to

the room view, so don't press "I" and go out for a cup of coffee!

With a little experience, you will have no trouble remembering which key does what or which weapon to use against a particular monster. To aid beginning players, the I-key information display (discussed above) and the "Weapons Effectiveness" display are available for relaxed perusal just after you exit the bazaar or a hospice and before you actually enter the maze.

---

## In-Maze Key Functions

The key functions described below are operative only while you are in the maze:

- "W" Move up
- "X" Move down
- "D" Move right
- "A" Move left
- "F" Fight monster in an adjacent space (close combat)
- "<" Fire an iron quarrel
- ">" Fire a magic quarrel
- "P" Toss a vial of Tana powder
- "H" Drink a vial of healing elixir
- "O" Open a treasure chest (must be in an adjacent space). The symbol used for treasure chests is "+".
- "R" Rub the Magic Lamp
- "I" Request Information display ("Return" exits this display).

---

## Exiting the Game

There are two ways to end a gaming session. One is to enter the bazaar or a hospice and save your character (described below). The other is to be killed by a monster. If your % strength ever reaches zero, you are dead.

---

## Saving a Character for Future Questing

You can save your character only after entering the bazaar or a hospice. Whenever you select this option, all of the hero's resources and attributes are recorded onto the game disk in an individual text file named for the hero. (The game disk must *not* be write-protected.)

A display of up to 200 heroes (living and dead) ranked in order of experience points is presented next. The display includes each hero's name, race, sponsor initials, and experience points, with the names of still living heroes in inverse text.

---

## Programmer Information

The "Programmer Information" program's function is to assist anyone who wants to try out ideas for game modification and perhaps design his or her own maze.

---

## Getting Started

Each time you boot the game disk the program asks whether you wish to review the introduction and game directions. New players should answer "Y" (for "yes"). At the conclusion of the review (or in case the "N" option is selected), the main game program is run.

Here you have an opportunity to review attributes of the four hero races. The program next asks if the character to be entered is one you have never entered before. If your response is "N", the program requests the hero's name, loads the hero's file, and play begins at the bazaar or hospice where this character was last saved.

If your response is "Y" then creation of a new hero begins. You are asked for the hero's name. Names must be no more than eleven characters in length; longer names are truncated. Next, select the hero's race; the program asks you (as the hero's sponsor) to enter three initials. Since these initials appear along with the hero's name, race, and experience points in the post-play hero rankings, you should use the same three letters whenever you create characters in the future.

Once you enter these initials, the process of creating the new character is completed. You next find yourself (in the role of a hero) at the bazaar. You possess the standard equipment and just enough gold to buy a few extra quarrels and perhaps some Tana powder. Facing you is a grinning merchant whose chief occupation consists of fleecing greenhorn questers.....





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# The Accountant

Reviewed by Cary W. Bradley

from Decision Support Software, 1438 Ironwood Drive, McLean, VA 22101. System requirements: 48K Apple II® with Applesoft in ROM and one or more disk drives (Optional: printer, 16K RAM card or language card). Suggested retail price: Finance Data Base System — \$129.00. Optional VisiCalc® interface (requires VisiCalc) — \$20.00.

Your computer can help you to more complete, accurate bookkeeping and financial management. Even with a growing number of accounting software packages on the market, finding the one that will fully meet your needs is a formidable job. *The Accountant*, by Decision Support Software, is one of the newest entries into the Apple market, and it could be just what you're looking for if a single-entry bookkeeping system won't quite fill the bill.

*The Accountant* features easier double-entry bookkeeping than most single-entry systems, even if you wouldn't recognize a debit if it bit you in the credit. It is one of the few truly user-friendly programs, not only in operation, but also in its unusually complete documentation. It is suitable for both personal and business use.

*The Accountant* is based on a modified double-entry technique. Accounts are classified as assets, liabilities and "reserves," which include equity, income and expenses, making them all balance sheet accounts. The balance sheet is updated with every transaction, and is kept in memory so that you can view it or print it out any time without accessing the disk. In essence, you have a continuous trial balance, yet you can still "close out" income and expense accounts periodically to produce a customary balance sheet.

Alternatively, the system allows you to budget by allocating your resources among reserve accounts. To do this, you transfer portions of the equity balance to the various expense accounts, giving each a positive credit balance. As you incur expenses, these balances decrease, becoming negative if you go over budget. This procedure is recommended for personal use, but has the drawback of making it difficult to produce an income/expense statement. When budgeting is not done, expense balances begin at zero and become negative, while income accounts do the opposite. At the end of the month, closing entries are made into a summary account to bring each account balance back to zero. A simple listing of the summary account transactions serves as the income/expense statement.

If the above discussion is over your head, accounting-wise, don't despair. *The Accountant* manual explains the principles of double-entry bookkeeping, as well as the particulars of its modified system. A complete sample data base is included with the system, and the manual guides you through each of the program's features before you attempt to set up your own data base.

You don't need to learn about debits and credits, because *The Accountant's* transaction entry mode will prompt you for which accounts to increase or decrease. It won't let you enter a transaction unless what you have specified corresponds to a debit

and a credit. This makes it easy for just plain folks, while hard-core accounting types can turn off the prompting and enter debits and credits to their hearts' content.

## Highlights

Perhaps the most important highlight is memory management, designed to minimize disk access time. As much information as possible is always retained in memory (using the language card if you have it). Queries pertaining to recently entered or accessed transactions are answered almost instantaneously.

Menu selection and data entry are designed to minimize the number of keystrokes required. You'll like the system's speed.

My personal favorite feature is a built-in desktop calculator. With my present accounting system, I never sit down at the computer unless I know my pocket calculator is close at hand. *The Accountant's* calculator not only does my arithmetic, it retains the result so that I can go back to it later for further calculations or have it entered automatically for a transaction by typing "D" instead of a dollar amount.

Split transactions use another feature that eliminates the need for a separate calculator. While you enter split portions, *The Accountant* continuously displays the amount left to allocate. It won't finalize the transaction until you achieve a perfect balance between credits and debits.

Hardcopy output is obtained or suppressed by entering "H" from the main menu. This toggles the "Hardcopy" feature. When it is on, output is routed to the system printer. The format of the output always corresponds to the device being used; 40 columns for video, 80 for hardcopy. A similar toggle allows you to select single page displays or continuous scrolling for video output.

In many accounting systems, a large database prolongs the time it takes the program to search all stored transactions for the ones you need. *The Accountant* allows you to produce "inverted files" to trim search times. These files contain pointers to the records containing the transactions in question. Building inverted files takes time, but once built they make retrieval significantly faster.

*The Accountant* is easy to use on one-disk systems. Programs and data can reside on the same disk, which means no disk switching is required until the disk is filled. Data are compressed, so that a single disk will hold 2500-4000 transactions.

*The Accountant* supports up to 63 accounts, 63 codes (which you can define to mark certain types of transactions), and nine sets of automatic transactions. These may be posted at any time, and they may have variable dollar amounts. For example, if your paycheck varies from month to month, you can define a set of automatic transactions for it with zero dollar amounts. When you post the set, you are prompted for amounts which were stored as zeroes. You can then enter an amount or omit the

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transaction if it is not relevant. Finally, up to nine groups of accounts can be defined. These groups do not affect any accounting procedures, but they allow you to query and summarize a group of related accounts with a single command.

The main program disk contains most of what happens in *The Accountant*. Its programs allow you to set up the data base, enter, fix or search transactions, use the desktop calculator, set up automatic transactions and groups of accounts, start new months, display the balance sheet, and so on. A second disk contains four utility programs: *End of Month Balances*, *Monthly Report*, *Year to Date Report* and *Reconcile*.

*End of Month Balances* produces a hardcopy report containing the end of month balances for every account — identical to a balance sheet produced on the last day of a month. *Monthly Report* lists all transactions for a month chronologically, by account, and by code. Beginning balance, ending balance, and change are given for each. *Year to Date Report* lists all transactions to date for inverted accounts.

*Reconcile* reconciles not only your bank accounts, but also any account for which you receive a statement, such as credit cards. This is more flexible than systems that reconcile only a checkbook. Since the system is account-oriented rather than checkbook-oriented, however, it omits features such as automatic check numbering. Transactions are marked as "cleared" by placing an asterisk at the beginning of their descriptions; thus, you can clear or unclear through any program that allows entry or editing of transactions, as well as through the *Reconcile* program itself.

## DBCALC

The optional VisiCalc® interface, DBCALC, transfers account balances to positions you specify on a VisiCalc template. Optionally, it uses the latest entry date to project an account through the end of the year. A sample template to project income taxes is included with the package. Although not essential to the operation of *The Accountant*, DBCALC allows you to produce custom reports which the main system cannot. I would like to see a little more flexibility in what it can extract from the database, but it is still well worth \$20.

*The Accountant* is not copy-protected. Instead, a hardware "key," which plugs into the game paddle port, is used. Without a key, the program will not run. DSS recommends that you purchase a port extender so that you don't have to dissect your Apple every time you want to switch between *The Accountant* and game paddles. As a user, I prefer the key to copy protection, since I can easily make backups or even customize programs. I can also store programs and data on the same disk. From the standpoint of software design, the idea is poorly implemented; the key is simple to defeat. Why not just forget about copy protection?

Regardless of this, I found *The Accountant* to be an excellent package, designed and tested with great care, and with the user in mind. The manual is especially good; it includes everything from an explanation of accounting procedures, to a complete tutorial, to a command reference and index, plus much more. The instructions are complete, without insulting the user. The name of each disk file is given and its purpose explained.

The system itself is easy to use and fast, for BASIC. The high package price must be weighed against the job the system can do. With *The Accountant*, true double-entry bookkeeping is accessible to anyone. There's no longer any excuse — check it out!



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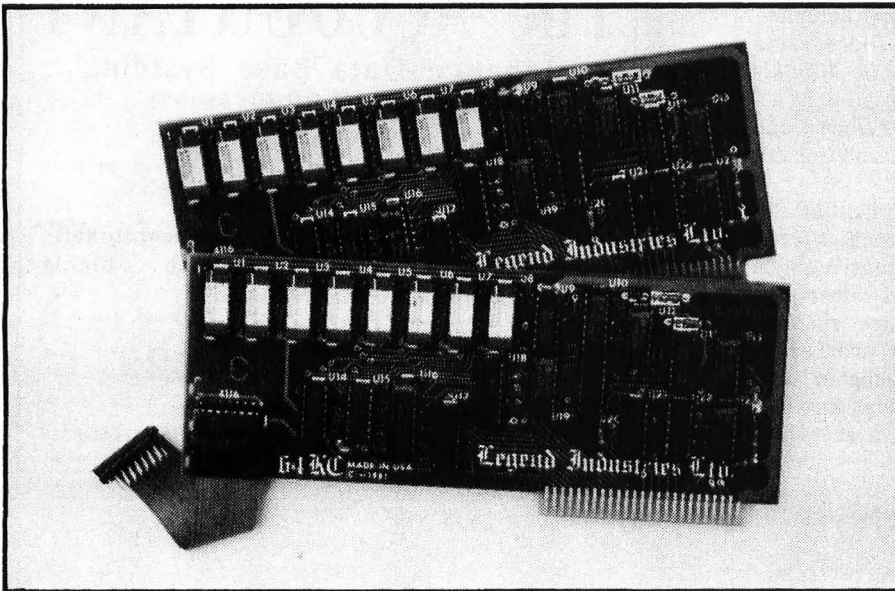
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## Legend 64 KC Memory Card

Reviewed by Fred Condo



from Legend Industries, Ltd., Box 112, Pontiac, MI 48056. System requirements: 48K Apple II® or Apple II plus. Suggested retail price: \$349.00 with manual and support software. 128K version is \$650.00.

The *Legend 64 KC* is a 64K RAM card for the Apple. It is a typical slot card, about the same size as Apple's Language Card and other 16K cards. Normally, you put the *Legend* card in slot 0, where your Language Card or alternate-language card would go.

Previously, large memory cards haven't impressed me because they are not readily useful. The biggest thing Apple had in mind for the Apple II's peripheral slots was 12K of ROM, and even the Language Card and its equivalents require memory-management techniques to squeeze in 16K of RAM. How, then, can you get any use out of more than 16K in a peripheral slot?

All well-constructed hardware is about equal, so the answer lies entirely in the software. The nice thing about the *Legend* product and its 128K twin (which I did not see) is that both the

hardware and the software are well-constructed.

*SoftSide's* review sample of the *64 KC* came with a software array that lets you use the extra memory in various ways. One of the more interesting advantages of large memory cards is that they free most of the motherboard's 48K for BASIC, either Applesoft or Apple Integer BASIC. Legend's Memory Master software can do this. It allows you to move DOS, usually residing in the uppermost 10.7K of motherboard RAM, into a bank of your choice of the *64 KC's* memory. Memory Master also permits you to load your alternate language into another 16K bank of the card. If you do this, you have Applesoft, Integer BASIC, and DOS without sacrificing a byte of motherboard RAM. If a BASIC program requires prodigious amounts of memory, this arrangement may be for you.

Another support program for the *64 KC* is the disk emulator. If you do great amounts of programming, or have another application that requires frequent disk access, this application alone may justify the cost. A *64 KC* emulates a portion of a disk, and a *128 KC* emulates

an entire Apple disk, less the DOS boot tracks. You may use several *Legend* cards in various slots; the disk emulation software will find them regardless of their position. If you already have a 16K card, it will use that, too. You can assign your emulated drive or drives to any phantom slot you wish. The usual choice is slot five.

In extensive testing at *SoftSide*, the disk emulator exhibited few compatibility problems with Apple disk software. For instance, FID works perfectly, except that it will occasionally hang for a minute or two when transferring many files. To my surprise, the emulated drive worked even with a catalog alphabetization program. The only thing that didn't work in my testing was COPYA. *Legend* should better document their zero-page memory usage.

Also in the software package are a hires "slide" program that loads various hi-res pictures into the card, and a program that lets your VisiCalc® program use the card's memory for larger templates.

The documentation for the card is a 44-page booklet. It is well-organized, and fairly complete, including some assembly source code to demonstrate bank selection and other technical aspects of the card. The manual acknowledges that it does not provide enough information to write a memory management system, but because of the quality of *Legend's* own system, this is not a great drawback.

*Legend* promises extensive future support for their memory cards, including a mail-list program and patches for various commercially available programs to allow them to work with the extra memory. They also promise a 24-hour turnaround on repairs. Also planned are fifteen new products for the Apple, available the first quarter of 1983, including a hard disk system with removable media.

I recommend the *Legend* memory cards, without reservations, for applications requiring large amounts of memory or extensive disk operation. ☺

## TRS-80® Data Communication Systems —

### A Guide to the Operation of TRS-80 Microcomputers as Communications Devices

Reviewed by Stuart Hawkinson

by Frank J. Derfler, Jr. (Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1982). 170 pages. Retail price: \$12.95.

Microcomputers as communication devices are catalyzing a revolution. The original information explosion resulted from the invention of movable type. Communications expert Frank Derfler characterizes our present age as the "second great information explosion," and compares it to the "third wave" of the industrial revolution. Against this backdrop comes the easy availability of high-technology computer equipment, in sophisticated communications settings, and in kitchens and dens across the nation.

The personal computerist first needs a friendly introduction and reference on data communications to guide him through the maze of new concepts and jargon. Derfler's book, *TRS-80 Data Communications Systems*, provides a concise but thorough explanation of personal computers as communication devices. It concentrates on the hardware and software for TRS-80 microcomputers.

Frank J. Derfler, Jr., a telecommunications professional working for the federal government, is qualified to write on this subject. An active computer hobbyist, he writes a monthly magazine column about microcomputer-based data communications systems. This paperback is a companion to his earlier book *Microcomputer Data Communication Systems*, a general coverage of other systems (Apple®, Atari®, Zenith®, and so on).

You need no prior knowledge of baud rates or modem hardware to understand the options for constructing a communications terminal. The practical information and straightforward explanation of often difficult topics should benefit both the beginner and the experienced TRS-80 owner. The balanced coverage of data communications makes the book outstanding.

The book is divided into eleven chapters. Topics range from a general discussion of information systems to

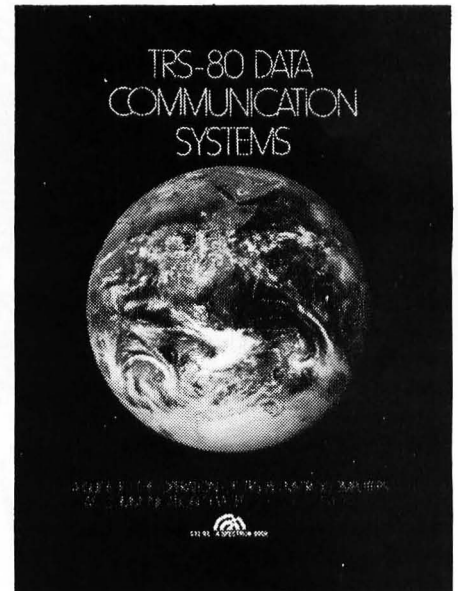
speculations on what the future may bring. Mr. Derfler treats the Models I, II, and III in depth. The organization of the book flows from a general discussion of data communications and the various aspects of information networks, to the specific devices and programs to transform the TRS-80 into a versatile communications terminal or information system. Derfler lists suppliers of TRS-80 communications hardware and software in the appendix, and includes a valuable four page glossary of terms, buzz words and acronyms commonly heard in the communications field. Photographs clarify the concepts and illustrate the many products described.

The book covers the fundamentals of serial data transmission and thoroughly describes the serial board in the Models I and III, including sample Z-80 code. Unfortunately, an assembly language version of a "dumb terminal" program is incomplete, and will not function. This is one of few editorial flaws.

A detailed discussion of modems explains those that connect to the RS-232C serial port as well as those that decode port addresses directly from the TRS-80 expansion bus. A valuable addition is the discussion of the RS-232C equipment pin connections that show the dedicated enthusiast how to construct his own cables.


Derfler describes TRS-80 Models I and III modified as data terminals, along with the software supplied by their manufacturers. He clearly discusses the independent "smart terminal" programs providing for disk file transfers, special character transmission, and user-customized features. He devotes a separate chapter to the special equipment for the Model II, emphasizing software that runs under the CP/M operating system. He also describes the free exchange of public domain CP/M software via the ever expanding bulletin board systems.

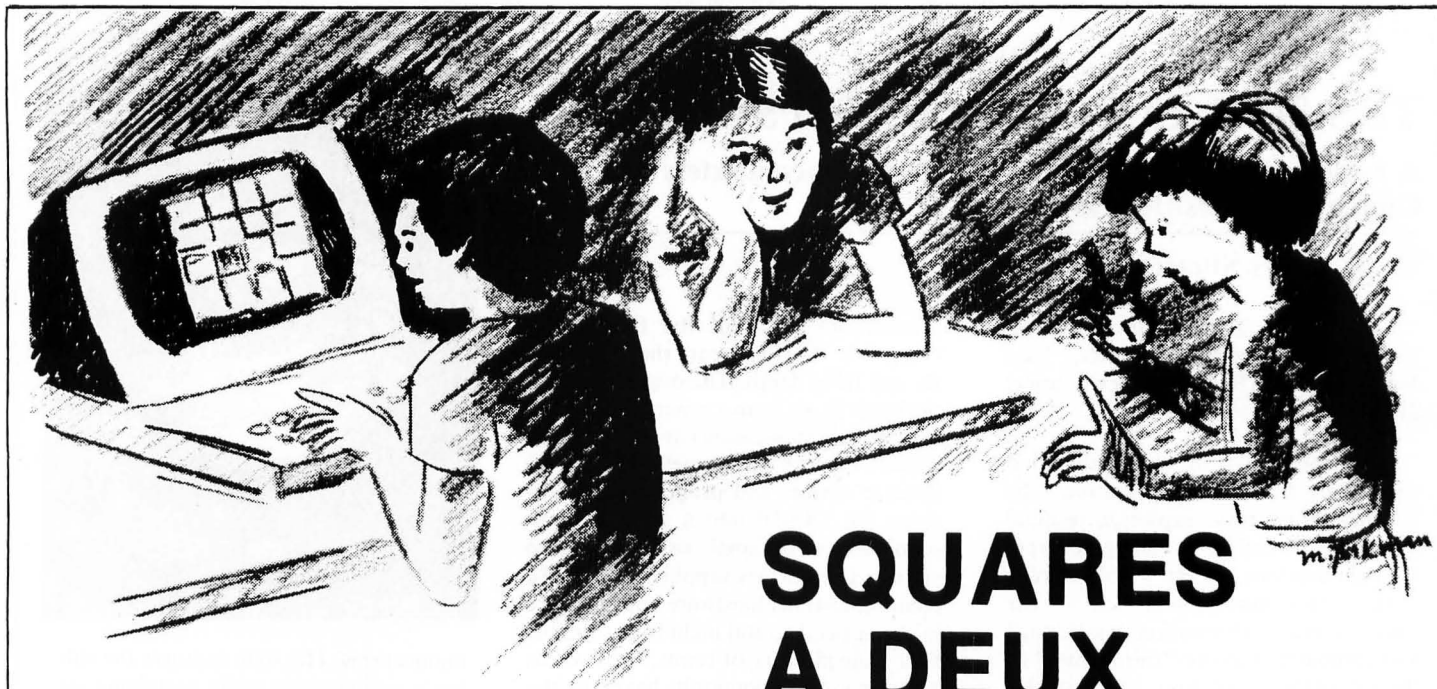
General purpose message systems which run on microcomputers are highlighted. Derfler's discussion of the origin and development of several general purpose message systems heightened my interest in data com-



munications. His style captures the subject's complexities while remaining enjoyable: "Trying to describe sophisticated electronic message systems in detail is somewhat like trying to describe the patterns of flames in a fireplace. You know they are warm and complex and beautiful, but they keep changing." The pioneering spirit of many computer hobbyists is apparent in their fine bulletin board systems (*CBBS*, *ABBS*, and *Forum 80*) providing free service across the country. An outstanding presentation of typical system menus and responses leads the reader through the mysteries of some of the systems' more cryptic messages. If you have wondered how to respond to questions such as "TERMINAL NEED NULLS?" or "NUMBER OF STOP BITS?" this chapter will help.

The final three chapters cover such topics as specialized communications equipment for the deaf, large scale communication network services, and speculations on future developments in data communications. Many of these "future developments" are just around the corner. We eagerly anticipate new products, such as portable terminals and speech synthesized communications for every-day use.

This excellent book on TRS-80 data communications will introduce a new, rapidly expanding subject to many hobbyists and professionals. The capabilities of microcomputers are truly astounding. At the invitation of Derfler, and with the aid of simple peripheral equipment and software, "Your microcomputer can provide the key to open the door of knowledge and adventure. Come join us out on the data network." 



# SQUARES A DEUX

by Sanford Deutsch

*Squares a Deux* is a two-player game for a TRS-80® with 16K RAM.

Nostalgia prompted this program. Back before World War II, when they still made things “right,” a very popular puzzle was going around. This was a puzzle you could put in your back pocket and not worry about breaking when you sat down. As I said, it was made right — cast of good quality metal, not plastic. It even came with its own red leather case.

This puzzle concept was simple. It consisted of fifteen movable, but not removable, numbers (1 through 15) set in a 4 x 4 matrix. Since fifteen numbers were set in sixteen spaces, you could always move a number into a space, leaving a new space, and so on. The idea was to array the numbers into a predetermined sequence, moving them around until you had what you wanted. You decided what you wanted by choosing one of the illustrative arrays shown in the instructions. Of course, the people who wrote the instructions included some arrays that were impossible to match, given the original arrangement number. Naturally, they never bothered to tell us which arrays were “impossible.”

As you would expect, some of us were better at this puzzle than others. If you had “fast fingers” you naturally went around claiming that you could do the puzzle faster than any other kid in the neighborhood. The only problem with “time competition” was that it meant finding a third kid, preferably impartial, who had a watch with a second hand. In an era of Mickey Mouse watches, however, not too many kids were equipped for that kind of precision time-keeping.

If your mind was faster than your fingers, you avoided time competition by proclaiming, instead, that you required fewer moves. “Move competition” also called for a third kid, but now all he needed was pencil and paper for making tally marks

— much easier to come by than a fancy watch with a second hand.

Both kinds of competition, however, had a serious drawback. For the contest to be absolutely fair, the third kid had to record the random starting order of the numbers before the first contestant began. Then, after the first contestant finished, the numbers had to be returned to their original order so that the second player started out with the same arrangement as the first.

## The Third Kid

I have turned the third kid into a computer. No more concern about watches with a second hand, broken pencil points, or kids who are just rotten about returning the numbers to their original positions — we players can get on with the contest. Technology has replaced a reluctant spoilsport, and about time!

Well, by now, you can pretty well guess what *Squares a Deux* does. (I’m calling it that to celebrate the demise of the third kid.) First, it randomizes the positions of the puzzle numbers. Then, it randomly selects the “target array” to match, but doesn’t tell you whether or not a match is possible. (I thought we ought to keep that tradition.) If the first player is smart enough to anticipate an “impossible match” before his 50th move, and so declares, he wins if the second player cannot match the target array — i.e., it’s not a draw. On the other hand, if the first player declares an impossible match, and the second player succeeds in matching the target array, the second player wins regardless of how many moves or how much time he takes to do it. If an impossible match is not declared by the first player, then the player matching the target array in the fewest number of moves, or the shortest amount of time (depending on which form of competition you choose), wins. A draw results if neither player can match the target array.

The program also performs all of the other third kid functions: it keeps score (moves or time), returns the puzzle numbers to their original positions before the second player begins,

# TRS-80®

remembers the names of players (even when they change), announces the winner, and so on. You still have to move the numbers yourself — using the arrow keys — but the third kid never did that anyway.

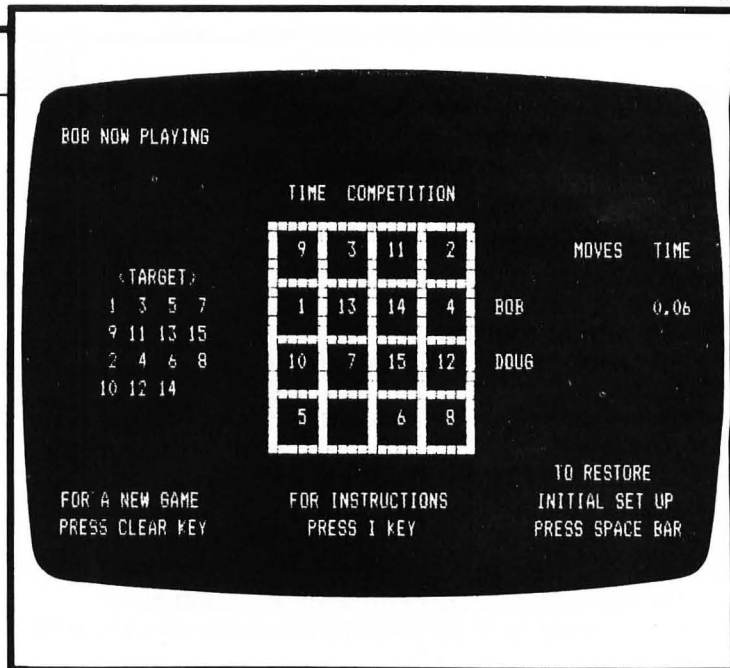
If you want to return the puzzle numbers to their original positions, press the space bar — useful if you are competing against yourself, or if two players want another go at the same puzzle.

To start a new contest, with a new target array, press CLEAR. If you want to review the instructions while a contest is in progress, without disturbing anything, press the I key.

If you were ever the “third kid,” my apologies.

## Variables

A1\$ - A9\$; B1\$ - B4\$: Graphic displays of target arrays.  
 BT: Screen storage array.  
 C!: Time count.  
 C\$: PRINT USING format for time display.  
 C1\$: “Target Match!”.  
 C2\$: Blanks out above message.  
 C3\$: “Squares a Deux”.  
 CF!: Final time count for first player.  
 CS!: Final time count for second player.  
 D\$: “>>> DRAW <<<”.  
 D1\$ - D9\$; E1\$ - E3\$: Target arrays.  
 FP\$: Name of first player.  
 H1 - H9: PRINT@ locations for puzzle box graphic strings.  
 H1\$ - H4\$: Puzzle box graphics.  
 I, J: For/next loop counters.  
 K\$: INKEY\$ variable.  
 K: =USR(0)  
 L1 - L8: PRINT@ locations for text and player scores.  
 LQ: Array storing PRINT@ locations for puzzle box numbers.  
 M\$: PRINT USING format for move count display.  
 M1: Move count.  
 MF: Final move count for first player.  
 MS: Final move count for second player.  
 NS: Data READ variable.  
 P, PI: PEEK variables.  
 P1, P2: Keyboard peek addresses.  
 Q1: Instructions bypass flag.  
 Q2: Player ID flag.  
 Q3: Initialization flag.  
 Q4: Target match flag.  
 Q5: Move/Time competition flag.  
 Q6: Impossible match flag.  
 Q7: Win/Tie flag.  
 Q8: Instruction display during game flag.  
 R1, R2: Random number variables.  
 SP\$: Name of second player.  
 SQ\$: Puzzle numbers array.  
 SR\$: Array for preserving initial locations of SQ\$.  
 T\$: “>>> TIE! <<<”.  
 T1: Loop counter for “target match” announcement.  
 T: Puzzle box number location.  
 TR\$: Array for storing selected target array.  
 V1\$: Video write/restore instruction.  
 V1: Array for storing “USR” values.  
 W\$: “THE WINNER IS”.  
 X1\$: Selected target graphic display.  
 XL: Length of player name.  
 XP\$: Player name storage.  
 Z1: Screen location increment/decrement value.



```

SS SS SS SS SS SS SS SS SS SS SS
SS
SS      TRS-80 BASIC      SS
SS      'Squares a Deux'  SS
SS      Author: Sanford  SS
SS      Deutsch          SS
SS      Copyright (c) 1983 SS
SS      SoftSide Publica, Inc SS
SS                        SS
SS SS SS SS SS SS SS SS SS SS SS
  
```

If you don't wish to type this program, it is also included on #38 SoftSide CV and DV.

```

10 IFPEEK(293)=73THENPOKE16420,0
90 GOTO660
  
```

Move selection routine.

```

100 P=PEEK(P1)
110 IFP=8THEN210ELSEIFP=16THEN250ELSEIFP=32THEN290ELSEIFP=64THEN
330
120 IF(P=1)AND(Q2=1)AND(Q5=1)AND(M1<50)GOSUB530:GOTO1730
130 IFP=2THENL1=452:GOTO1180
140 IFP=128THEN1730
150 IFQ5=1THEN190
160 C!=C!+.01:IFQ2=1PRINT@L5,USINGC$;C!;ELSEPRINT@L6,USINGC$;C!;
170 IFQ2=1THENCF!=C!ELSECS!=C!
180 IF(Q4=1)AND(CS!>CF!)THEN410
190 IFPEEK(P2)AND2THENV1$="W":QB=1:GOSUB630
200 GOTO100
  
```

Move up routine.

```

210 FORJ=1TOZ2:IFSQ$(J)=" "THENT=J:GOTO220ELSENEXT
220 IFT=4ORT=8ORT=12ORT=16THEN150
230 PRINT@LQ(T),SQ$(T+1);PRINT@LQ(T)+12B," ";SQ$(T)=SQ$(T+1):
SQ$(T+1)=" "
240 GOTO370
  
```

Move down routine.

```

250 FORJ=1TOZ2:IFSQ$(J)=" "THENT=J:GOTO260ELSENEXT
260 IFT=1ORT=5ORT=9ORT=13THEN150
270 PRINT@LQ(T),SQ$(T-1);PRINT@LQ(T)-12B," ";SQ$(T)=SQ$(T-1):
SQ$(T-1)=" "
280 GOTO370
  
```

**Move left routine.**

```
290 FORJ=1TOZ2:IFSQ$(J)=" "THENT=J:GOTO300ELSENEXT
300 IFT>12THEN150
310 PRINT@LQ(T),SQ$(T+4);:PRINT@LQ(T)+5," ";:SQ$(T)=SQ$(T+4):SQ
$(T+4)=" "
320 GOTO370
```

**Move right routine.**

```
330 FORJ=1TOZ2:IFSQ$(J)=" "THENT=J:GOTO340ELSENEXT
340 IFT<5THEN150
350 PRINT@LQ(T),SQ$(T-4);:PRINT@LQ(T)-5," ";:SQ$(T)=SQ$(T-4):SQ
$(T-4)=" "
360 GOTO370
```

**Player scoring and checking routines.**

```
370 IFQ5=2THEN410
380 M1=M1+1:IFQ2=1THENMF=M1ELSEMS=M1
390 IFQ2=1PRINT@L7,USINGM$;M1;ELSEPRINT@L8,USINGM$;M1;
400 IF(Q4=1)AND(MS>MF)GOSUB540:PRINT@235,W$;FP$;:Q4=0:Q7=1:GOTO5
60
410 IF(Q4=1)AND(CS!>CF!)GOSUB540:PRINT@235,W$;FP$;:Q4=0:Q7=1:GOT
O560
420 FORJ=1TOZ2:IFTR$(J)=SQ$(J)THENNEXTELSE100
430 IFQ2=1THENQ4=1:GOSUB490:GOTO1760
440 IFQ5=2THEN470
450 IF(Q4=1)AND(MS=MF)GOSUB490:PRINT@244,T$;:Q4=0:Q7=1:GOTO560
460 GOTO480
470 IF(Q4=1)AND(CS!=CF!)GOSUB490:PRINT@244,T$;:Q4=0:Q7=1:GOTO560
480 GOSUB490:GOSUB540:PRINT@235,W$;SP$;:Q4=0:Q7=1:GOTO560
490 PRINT@119,C1$;:FORI=1TO500:NEXT:PRINT@119,C2$;:FORI=1TO250:N
EXT
500 T1=T1+1:IFT1>4THEN510ELSE490
510 IFQ2=1PRINT@L3-1,"*";ELSEPRINT@L4-1,"*";
520 T1=0:RETURN
530 PRINT@L7,"IMPOSSIBLE ";:Q6=1:RETURN
540 PRINT@112,"WINNER!";:FORI=1TO500:NEXT:PRINT@112,CHR$(199);:F
ORI=1TO250:NEXT
550 T1=T1+1:IFT1>4THENT1=0:RETURNELSE540
```

**New game/repeat previous game routine.**

```
560 P=PEEK(P1)
570 PRINT@912,"<=";:PRINT@941," ";:FORI=1TO200:NEXT
580 IFP=2PRINT@912," ";:PRINT@941," ";:GOTO1210
590 PRINT@912," ";:PRINT@941,"=">";:FORI=1TO200:NEXT
600 IFP=12BPRINT@912," ";:PRINT@941," ";:GOTO1760
610 IFPEEK(P2)AND2THENV1$="W":QB=1:GOSUB630
620 GOTO560
```

**Video save and restore routine.**

```
630 X=VARPTR(V1(0)):IFPEEK(16396)<>201THENDEFUSR=X:GOTO638
632 IFX<0THENX=X+65536
634 POKE16526,X-INT(X/256)*256:POKE16527,INT(X/256)
638 V1(5)=1023:V1(6)=-20243:IFV1$="W"THENV1(1)=15360:V1(3)=VARPT
R(BT(512))ELSEV1(1)=VARPTR(BT(512)):V1(3)=15360
640 K=USR(0)
650 IFV1$="W"THEN2080ELSEIFV1$="R"THENRETURN
```

**Variable initialization routines.**

```
660 GOSUB2040:CLEAR1300:RANDOM:DEFINTA-Z:DIMSQ$(16),LQ(16),SR$(1
6),TR$(16)
670 K=0:DIMV1(7):V1(0)=8448:V1(2)=4352:V1(4)=256:V1(7)=201:DIMBT
(1023)
680 DIMD1$(16),D2$(16),D3$(16),D4$(16),D5$(16),D6$(16),D7$(16),D
8$(16),D9$(17),E1$(16),E2$(16),E3$(16)
```

**Graphic string variables for puzzle box.**

```
690 H1$=CHR$(188)+STRING$(4,140)+CHR$(188)+STRING$(4,140)+CHR$(1
88)+STRING$(4,140)+CHR$(188)+STRING$(4,140)+CHR$(188)
700 H2$=CHR$(191)+CHR$(196)+CHR$(191)+CHR$(196)+CHR$(191)+CHR$(1
96)+CHR$(191)+CHR$(196)+CHR$(191)
710 H3$=CHR$(191)+STRING$(4,140)+CHR$(191)+STRING$(4,140)+CHR$(1
91)+STRING$(4,140)+CHR$(191)+STRING$(4,140)+CHR$(191)
720 H4$=CHR$(143)+STRING$(4,140)+CHR$(143)+STRING$(4,140)+CHR$(1
43)+STRING$(4,140)+CHR$(143)+STRING$(4,140)+CHR$(143)
```

**Puzzle box "Print At" locations.**

```
730 Z1=64:H1=277:H2=H1+Z1:H3=H2+Z1:H4=H3+Z1:H5=H4+Z1:H6=H5+Z1:H7
=H6+Z1:H8=H7+Z1:H9=H8+Z1
740 LQ(1)=343:LQ(2)=471:LQ(3)=599:LQ(4)=727:LQ(5)=348:LQ(6)=476:
LQ(7)=604:LQ(8)=732:LQ(9)=353:LQ(10)=481:LQ(11)=609:LQ(12)=737:L
Q(13)=358:LQ(14)=486:LQ(15)=614:LQ(16)=742
750 L1=452:L2=64:L3=492:L4=620:L5=505:L6=633:L7=501:L8=629
```

**Miscellaneous variables.**

```
760 P1=14400:P2=14338
770 Z2=16:Z3=12
780 C$="####.##":M$="###"
790 C1$="TARGET"+CHR$(26)+STRING$(6,24)+"MATCH!"
800 C2$=STRING$(6,193)+CHR$(26)+STRING$(6,24)+STRING$(6,193)
810 D$=">>> DRAW <<<:T$=">>> TIE! <<<:W$="THE WINNER IS "
```

**String data for puzzle and target numbers.**

```
820 DATA " 1"," 2"," 3"," 4"," 5"," 6"," 7"," 8"," 9","10","11",
"12","13","14","15"," ", "0"
830 DATA " 1"," 5"," 9","13"," 2"," 6","10","14"," 3"," 7","11","15"," 4",
" 8","12"," "
840 DATA " 1"," 8"," 9"," ", " 2"," 7","10","15"," 3"," 6","11","14"," 4"
," 5","12","13
850 DATA " 1","12","11","10"," 2","13"," ", " 9"," 3","14","15"," 8"," 4"," 5
"," 6"," 7"
860 DATA 13,12," 5"," 4","14","11"," 6"," 3","15","10"," 7"," 2"," ", " 9
"," 8"," 1"
870 DATA " 1"," 2"," 3"," 4"," 5"," 6"," 7"," 8"," 9","10","11","12","1
3","14","15"," "
880 DATA " 1"," 2"," 3"," 4"," 8"," 7"," 6"," 5"," 9","10","11","12","
",15,14,13
890 DATA " ",15,14,13," 9","10,11,12," 8"," 7"," 6"," 5"," 1"," 2
"," 3"," 4"
900 DATA 13,14,15," ", " 9","10,11,12," 5"," 6"," 7"," 8"," 1"," 2
"," 3"," 4"
910 DATA 13,14,15," ", " 9","10,11,12," 5"," 6"," 7"," 8"," 4"," 3
"," 2"," 1"
920 DATA " ",15,14,13,12,11,10," 9"," 8"," 7"," 6"," 5"," 4"," 3
"," 2"," 1"
930 DATA " 1"," 9"," 2","10," 3","11," 4","12," 5","13," 6","14," 7",
15," 8"," "
940 DATA " ", " 9"," 8"," 1","15,10," 7"," 2","14,11," 6"," 3","13,1
2," 5"," 4"
```

**Target graphic strings.**

```
950 G3$=CHR$(26)+STRING$(11,24):G2$=LEFT$(G3$,11):G1$=LEFT$(G3$,
9):A1$=" 1 2 3 4"+G2$+"5 6 7 8"+G2$+"9 10 11 12"+G3$+"13 1
4 15 "
960 A2$=" 1 2 3 4"+G2$+"8 7 6 5"+G2$+"9 10 11 12"+G1$+"15
14 13"
970 A3$=" 1 2 3 4"+G3$+"12 13 14 5"+G3$+"11 15 6"+G3$+"1
0 9 8 7"
980 A4$="13 14 15 "+G3$+"12 11 10 9"+G2$+"5 6 7 8"+G2$+"4
3 2 1"
```



```

990 A5$=" 1 5 9 13"+G2$+"2 6 10 14"+G2$+"3 7 11 15"+G2$+"4
8 12"
1000 A6$=" 1 8 9 "+G2$+"2 7 10 15"+G2$+"3 6 11 14"+G2$+"4
5 12 13"
1010 A7$=" 9 8 1"+G3$+"15 10 7 2"+G3$+"14 11 6 3"+G3$+"
13 12 5 4"
1020 A8$="13 9 5 1"+G3$+"14 10 6 2"+G3$+"15 11 7 3"+G1$+"
12 8 4"
1030 A9$="13 9 5 4"+G3$+"14 10 6 3"+G3$+"15 11 7 2"+G1$+"
12 8 1"
1040 B1$=" 12 8 4"+G3$+"15 11 7 3"+G3$+"14 10 6 2"+G3$+"
13 9 5 1"
1050 B2$=" 1 3 5 7"+G3$+" 9 11 13 15"+G3$+" 2 4 6 8"+G3$+"
10 12 14 "
1060 B3$=" 15 14 13"+G2$+"9 10 11 12"+G2$+"8 7 6 5"+G2$+"1
2 3 4"
1070 B4$=" " "G3$+" "G3$+" "G3$+"
"

```

**Player identification routine.**

```

1080 CLS:Q2=1:PRINT"ENTER NAME OF THE FIRST PLAYER";
1090 INPUTFP$:IFFP$=""THEN1080
1100 IFLEN(FP$)>7CLS:PRINT"PLEASE ENTER A SHORTER NAME ";GOTO10
90
1110 PRINT@64,"ENTER NAME OF SECOND PLAYER";
1120 INPUTSP$:IFSP$=""THEN1110
1130 IFLEN(SP$)>7PRINT@64,CHR$(31);"PLEASE ENTER A SHORTER NAME
";:GOTO1120
1140 GOSUB1860

```

**Puzzle box print routine.**

```

1150 CLS
1160 PRINT@H1,H1$;:PRINT@H2,H2$;:PRINT@H3,H3$;:PRINT@H4,H2$;:PRI
NT@H5,H3$;:PRINT@H6,H2$;:PRINT@H7,H3$;:PRINT@H8,H2$;:PRINT@H9,H4
$;
1170 GOTO1380

```

**New game routine.**

```

1180 IFQ7=1THEN1210
1190 IF(Q2=-1)AND(Q6=1)OR(Q4=1)GOSUB540:PRINT@235,W$;FP$;:GOTO56
0
1200 IF(Q2=-1)AND(Q6=0)AND(Q4=0)PRINT@244,D$;:GOTO560
1210 Q1=0:Q2=1:Q4=0:Q6=0:Q7=0:M1=0:C1=0:CF!=0:CS!=0
1220 FORJ=1TOZ2:PRINT@LQ(J)," ";:NEXT
1230 PRINT@L3-1," ";:PRINT@L4-1," ";:PRINT@64,CHR$(211);:PRINT@0
,"NEW PLAYERS? <Y/N>";
1240 K$=INKEY$:IFK$="Y"DRK$=CHR$(121)THEN1280
1250 IFK$="N"DRK$=CHR$(110)THENPRINT@0,CHR$(210):PRINT@L7,CHR$(2
03);:PRINT@L8,CHR$(203);:GOSUB1860:GOTO1380
1260 PRINT@19,"<=";:FORI=1TO200:NEXT:PRINT@19," ";:FORI=1TO200:
NEXT
1270 GOTO1240
1280 FP$="":SP$=""
1290 PRINT@0,"FIRST NEW PLAYER";
1300 INPUTFP$:IFFP$=""THEN1290
1310 IFLEN(FP$)>7PRINT@0,CHR$(255):PRINT@0,"PLEASE ENTER A SHOR
TER NAME ";:GOTO1300
1320 PRINT@64,"SECOND NEW PLAYER";
1330 INPUTSP$:IFSP$=""THEN1320
1340 IFLEN(SP$)>7PRINT@64,CHR$(255):PRINT@64,"PLEASE ENTER A SHOR
TER NAME ";:GOTO1330
1350 GOSUB1860
1360 PRINT@0,CHR$(230);:PRINT@64,CHR$(230);

```

```

1370 PRINT@L3,CHR$(212);:PRINT@L4,CHR$(212);

```

**Puzzle numbers print routine.**

```

1380 PRINT@L2,CHR$(243);:FORJ=1TOZ2:SQ$(J)="":NEXT
1390 READN$:IFN$="0"THENN$="":GOTO1430
1400 J=RND(ZZ)
1410 IFSQ$(J)="":THENSQ$(J)=N$ELSEGOTO1400
1420 PRINT@LQ(J),N$;:GOTO1390
1430 FORJ=1TOZ2:SR$(J)=SQ$(J):NEXT
1440 IFQ3=1RESTORE:GOTO1490

```

**Text print routine.**

```

1450 PRINT@882,"TO RESTORE";
1460 PRINT@896,"FOR A NEW GAME          FOR INSTRUCTIONS
INITIAL SET UP"
1470 PRINT@960,"PRESS CLEAR KEY          PRESS I KEY
PRESS SPACE BAR";
1480 PRINT@390,"<TARGET>";:PRINT@372,"MOVES  TIME";
1490 PRINT@L3,FP$;:PRINT@L4,SP$;

```

**Target selection and print routine.**

```

1500 IFQ1=1THEN1710
1510 PRINT@L1,B4$;
1520 R1=RND(ZZ):IFR1=R2THEN1520
1530 IFR1=1THENX1$=A1$ELSEIFR1=2THENX1$=A2$ELSEIFR1=3THENX1$=A3$
ELSEIFR1=4THENX1$=A4$ELSEIFR1=5THENX1$=A5$ELSEIFR1=6THENX1$=A6$
1540 IFR1=7THENX1$=A7$ELSEIFR1=8THENX1$=A8$ELSEIFR1=9THENX1$=A9$
ELSEIFR1=10THENX1$=B1$ELSEIFR1=11THENX1$=B2$ELSEIFR1=12THENX1$=B
3$
1550 R2=R1:IFQ3=0THENGOSUB1890
1560 ONR1GOTO1570,1580,1590,1600,1610,1620,1630,1640,1650,1660,1
670,1680
1570 FORJ=1TOZ2:TR$(J)=D1$(J):NEXT:GOTO1690
1580 FORJ=1TOZ2:TR$(J)=D2$(J):NEXT:GOTO1690
1590 FORJ=1TOZ2:TR$(J)=D3$(J):NEXT:GOTO1690
1600 FORJ=1TOZ2:TR$(J)=D4$(J):NEXT:GOTO1690
1610 FORJ=1TOZ2:TR$(J)=D5$(J):NEXT:GOTO1690
1620 FORJ=1TOZ2:TR$(J)=D6$(J):NEXT:GOTO1690
1630 FORJ=1TOZ2:TR$(J)=D7$(J):NEXT:GOTO1690
1640 FORJ=1TOZ2:TR$(J)=D8$(J):NEXT:GOTO1690
1650 FORJ=1TOZ2:TR$(J)=D9$(J):NEXT:GOTO1690
1660 FORJ=1TOZ2:TR$(J)=E1$(J):NEXT:GOTO1690
1670 FORJ=1TOZ2:TR$(J)=E2$(J):NEXT:GOTO1690
1680 FORJ=1TOZ2:TR$(J)=E3$(J):NEXT
1690 PRINT@L1,X1$;:Q2=1
1700 IFQ2=1THENXP$=FP$ELSEIFQ2=-1THENXP$=SP$
1710 PRINT@L2,XP$;" NOW PLAYING";:IFQ5=1PRINT@215,"MOVE  COMPETI
TION";ELSEPRINT@215,"TIME  COMPETITION";
1720 Q1=1:GOTO100

```

**Restore puzzle numbers routine.**

```

1730 IFQ7=1THEN1760
1740 IF(Q2=-1)AND(Q6=1)OR(Q4=1)GOSUB540:PRINT@235,W$;FP$;:FORI=1
TO500:NEXT:Q6=0:Q4=0:Q7=0:GOTO560
1750 IF(Q2=-1)AND(Q6=0)AND(Q4=0)PRINT@244,D$;:P=0:FORI=1TO500:NE
XT:GOTO560
1760 IFQ2=1PRINT@L4+LEN(SP$),CHR$(196);:PRINT@L4-1," ";ELSEPRINT
@L3+LEN(FP$),CHR$(196);:PRINT@L3-1," ";
1770 IFQ2=-1PRINT@L7,CHR$(203);ELSEPRINT@L8,CHR$(203);
1780 PRINT@235,CHR$(30);
1790 FORJ=1TOZ2:SQ$(J)="":NEXT
1800 FORJ=1TOZ2:PRINT@LQ(J),SR$(J);:NEXT

```

```

1810 FORJ=1TOZ2:SQ$(J)=SR$(J):NEXT
1820 FORJ=1TOZ2:IFSQ$(J)=" "THENPRINT@LQ(J)," ";:GOTO1840ELSENE
XT
1830 IFQ2=-1THENQ7=0:Q6=0
1840 M1=0:C1=0:Q2=Q2*-1:XL=LEN(XP$)+12
1850 PRINT@L2,STRING$(XL,193);:GOTO1700
    
```

**Move or time competition selection routine.**

```

1860 PRINT@128,"WILL YOU BE COMPETING ON THE BASIS OF <M>OVES OR
<T>IME?";
1870 K$=INKEY$:IFK$="M"ORK$=CHR$(109)THENQ5=1ELSEIFK$="T"ORK$=CH
R$(116)THENQ5=2ELSE1870
1880 PRINT@128,CHR$(249);:PRINT@215,CHR$(30);:RETURN
    
```

**Target array loading routine.**

```

1890 PRINT@518,"SELECTING";:PRINT@583,"TARGET";
1900 FORJ=1TOZ2:READN$:D1$(J)=N$:NEXT
1910 FORJ=1TOZ2:READN$:D2$(J)=N$:NEXT
1920 FORJ=1TOZ2:READN$:D3$(J)=N$:NEXT
1930 FORJ=1TOZ2:READN$:D4$(J)=N$:NEXT
1940 FORJ=1TOZ2:READN$:D5$(J)=N$:NEXT
1950 FORJ=1TOZ2:READN$:D6$(J)=N$:NEXT
1960 FORJ=1TOZ2:READN$:D7$(J)=N$:NEXT
1970 FORJ=1TOZ2:READN$:D8$(J)=N$:NEXT
1980 FORJ=1TOZ2:READN$:D9$(J)=N$:NEXT
1990 FORJ=1TOZ2:READN$:E1$(J)=N$:NEXT
2000 FORJ=1TOZ2:READN$:E2$(J)=N$:NEXT
2010 FORJ=1TOZ2:READN$:E3$(J)=N$:NEXT
2020 RESTORE:Q3=1:RETURN
    
```

**Instructions.**

```

2030 STOP
2040 CLS
2050 C3$="SQUARES A DEUX"
2060 PRINT@274,CHR$(23)+C3$
2070 PRINT@456,"A PUZZLE FOR TWO PLAYERS":FORI=1TO1200:NEXT
2080 CLS:PRINT:PRINT"EACH PLAYER, IN TURN, ATTEMPTS TO ARRANGE T
HE NUMBERS IN"
2090 PRINT"THE PUZZLE SQUARE SO THAT THEY MATCH THOSE IN THE TAR
GET"
2100 PRINT"SQUARE. USE THE FOUR ARROW KEYS TO MOVE NUMBERS.":PRI
NT
2110 PRINT"THE OBJECTIVE IS TO MATCH THE TARGET ARRAY EITHER IN
THE"
2120 PRINT"FEWEST NUMBER OF MOVES OR THE SHORTEST AMOUNT OF TIME
.":PRINT
2130 PRINT"PLAYERS MUST DECIDE IN ADVANCE OF EACH GAME WHETHER
THEY"
2140 PRINT"WILL BE COMPETING ON THE BASIS OF MOVES OR TIME.":PRI
NT
2150 PRINT"AFTER THE FIRST PLAYER FINISHES, THE NUMBERS IN THE P
UZZLE"
2160 PRINT"SQUARE ARE RESTORED TO THEIR ORIGINAL POSITIONS - I.E
., FOR"
2170 PRINT"THE SECOND PLAYER'S TURN.":PRINT
2180 GOSUB2420
2190 K$=INKEY$:IFK$="/"THEN2200ELSE2190
2200 CLS:PRINT"IF A PLAYER SUCCEEDS IN MATCHING THE TARGET ARRAY
, THE"
2210 PRINT"COMPUTER WILL ANNOUNCE THE FACT AND WILL ALSO PLACE A
N X IN"
2220 PRINT"FRONT OF THAT PLAYER'S NAME. SCORES ARE PRESERVED AS
WELL.":PRINT
    
```

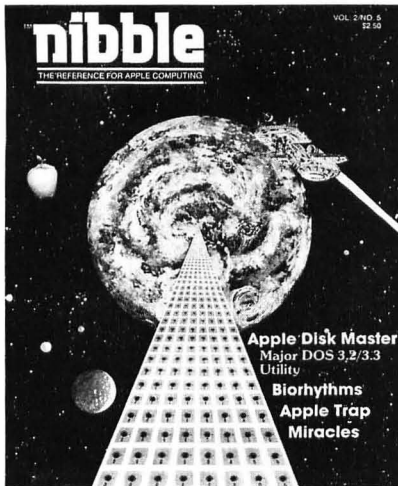
```

2230 PRINT"NOTE: IT IS NOT ALWAYS POSSIBLE TO MATCH THE TARGET A
RRAY."
2240 PRINT"IF THE FIRST PLAYER DECLARES AN 'IMPOSSIBLE' MATCH B
EFORE"
2250 PRINT"MAKING HIS 50TH MOVE (BY PRESSING THE ENTER KEY), THE
N -":PRINT
2260 PRINTTAB(2)"IF THE SECOND PLAYER SUCCEEDS IN MATCHING THE T
ARGET"
2270 PRINTTAB(2)"ARRAY, HE WINS - REGARDLESS OF THE MOVES OR TIM
E TAKEN.":PRINT
2280 PRINTTAB(2)"IF THE SECOND PLAYER CAN NOT MATCH THE TARGET A
RRAY,"
2290 PRINTTAB(2)"THEN THE FIRST PLAYER WINS - HIS REWARD FOR EAR
LY"
2300 PRINTTAB(2)"RECOGNITION OF AN IMPOSSIBLE SOLUTION."
2310 GOSUB2420
2320 K$=INKEY$:IFK$="/"THENIFQ3=16GOTO2380ELSE2340
2330 GOTO2320
2340 CLS:PRINT@326,"TO REVIEW INSTRUCTIONS WITHOUT DISTURBING A
GAME"
2350 PRINTTAB(6)"THAT IS IN PROGRESS, PRESS THE I(STRUCTION) KE
Y."
2360 GOSUB2420
2370 K$=INKEY$:IFK$="/"THEN2380ELSE2370
2380 IFQ8=1THENVI$="R":GOTO630
2390 IFQ3=1THEN1080
2400 CLS:PRINT@338,CHR$(23)+"STANDBY . . . .":PRINT@520,"I N I T
I A L I Z I N G"
2410 RETURN
2420 PRINT@990,"TO CONTINUE ... PRESS /":RETURN
2430 END
    
```

**TRS-80® SWAT TABLE FOR:  
SQUARES A DEUX**

LINES	SWAT CODE	LENGTH
10 - 190	SA	314
200 - 310	MW	407
320 - 430	BW	383
440 - 550	EG	404
560 - 640	QN	416
650 - 720	GU	561
730 - 810	HC	523
820 - 880	VH	528
890 - 950	VF	558
960 - 1020	KU	513
1030 - 1110	ZT	536
1120 - 1230	IG	456
1240 - 1350	BW	425
1360 - 1470	UR	411
1480 - 1590	AG	503
1600 - 1710	UR	442
1720 - 1830	SR	439
1840 - 1950	WD	434
1960 - 2070	CN	287
2080 - 2150	DZ	507
2160 - 2250	ME	537
2260 - 2370	LK	518
2380 - 2430	MU	157

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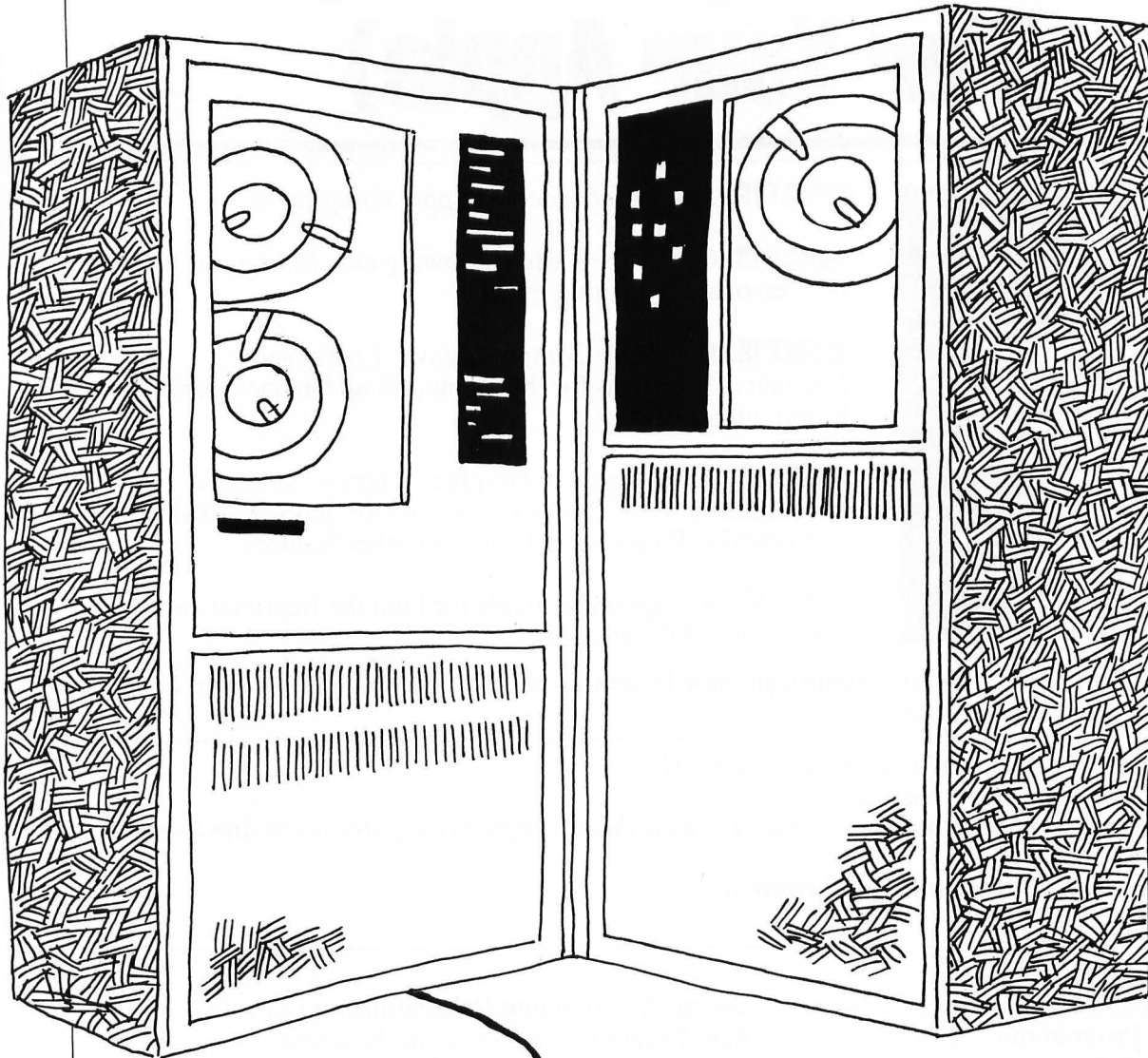
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# • TRS-80® DV BONUS



# ST80-DUC™

by Lance Micklus. System Requirements: TRS-80® with 32K RAM.

*ST80-DUC* is a general purpose terminal program designed for universal communications. It's perfect for the hobbyist who desires to work the public bulletin board systems such as FORUM-80™, and MOUSE-NET™, or commercial systems like The Source™ and MicroNet™. We have done everything possible to make *ST80-DUC* a "load 'n go" program. Unless you have an unusual problem, you'll be logging onto your favorite system, public or commercial, in about an hour from now.

## What Exactly is *ST80-DUC*?

*ST80-DUC* turns your computer into a very powerful terminal. Using a terminal, you can operate a computer in another room or in another part of the country. Forget that your machine is a computer and, instead, think of it only as a keyboard and video display. The computer work is done by the machine at the other end of the connection. A lot of power still resides under the hood of your machine, however, and *ST80-DUC* uses that power to make your machine a very "smart" terminal.

## Modem Connections

The variety of modems on the market makes it impossible to explain how to connect each one. The instruction booklet that came with your modem should give you all the detail you need. If your modem has a FULL/HALF duplex switch, make certain the switch is set to FULL duplex.

### Lynx

The Lynx auto-answer auto-dial modem works on either the Model I or

the Model III, and is totally compatible with *ST80-DUC*.

If your Model I has an RS-232 board in the expansion interface, you must remove it to use a Lynx modem. Make sure that DIP switch 6 on the back of the Lynx is down (FULL duplex). The large ORIGINATE/ANSWER switch must be on ORIGINATE.

The Lynx comes with a special printed circuit board which plugs in back of the Model III on the I/O bus. Some switches on this board set the port address of the Lynx. You must know the port address settings of these switches to use this modem. You will need to know the base address in decimal.

On your DV disk is a BASIC program called LYNX/BAS. Run this program before you use *ST80-DUC* on the Model III. The program will ask you for the base address in decimal. If you ever change the port address switches to some other setting, you must run LYNX/BAS again.

### Microconnection Modems

Microconnection modems with auto-answer and auto-dial are a special problem because the handshake signals do not follow RS-232 standards. You should install the auto-dialer modification for ST80-III into your *ST80-DUC* program. This program is on your disk.

## Terminal Executive Commands (TEC)

The first TEC you should learn is TEC-H. To do a TEC, hold down three keys simultaneously: SHIFT, UP ARROW, and H. The screen will clear, and you should now see a list of all the other

TECs. Press ENTER to return to *ST80-DUC* mode.

TEC-R is the echo toggle, and TEC-D is the RCVR auto line-feed toggle. Use these to turn both functions on. You are now in the standard test configuration for *ST80-DUC*.

This way, you can simulate communication conditions in a controlled environment. Normally, you will have both the ECHO and RCVR AUTO LF turned OFF.

## Control Characters

The computer you'll be calling will probably require you to send control characters at one time or another. Here's how to send them:

Set *ST80-DUC* in the standard test configuration mentioned above. Now, you're going to send a CONTROL-L. To do this, hold down the UP ARROW and L keys. The screen will clear. Don't confuse this with TEC commands. Another special control character is called ESCAPE. To send an ESCAPE, just press the (CLEAR) key.

## Lower-Case Letters

Assuming your computer can display lower-case letters, *ST80-DUC* can send them. Just hold the SHIFT key down, and press the zero key. This will put you in lower-case keyboard mode. It's a toggle, so do it again if you want to go back to the upper-case mode.

## The Moment Of Truth

To use *ST80-DUC*, boot your DV disk while holding down the ENTER Key. Then, at the DOS READY prompt, type "ST80DUC."

## Things That Can Go Wrong

If your attempts to call your host computer fail, here are some suggestions for a few common problems:

- If you don't see what you're typing, turn the ECHO on with TEC-R. This is often true of IBM® computers.
- If you get two of every character you type, make sure the ECHO is off. If it's already off, check your modem and make sure you are in FULL duplex, not HALF.
- If the cursor doesn't skip down a line and keeps typing over previous data, turn the RCVR AUTO LF on and see if that helps.
- If you get double spacing, check to make sure the RCVR AUTO LF is off.

## The TEC Commands

It's important that you understand that TECs themselves transmit nothing to the computer on the other end of the line. Control characters, on the other hand, are transmitted and control that computer — not *ST80-DUC*.

- TEC-C and TEC-Y: Open Memory Buffer

A TEC-C opens the memory buffer, and any incoming data will be displayed on the screen and saved. In normal use, the memory buffer is eventually closed using the TEC-X command and its contents saved on disk with the TEC-F command.

The TEC-C command clears the memory buffer. If you want to add to the data currently stored in your memory buffer, use TEC-Y instead.

- TEC-E: Exit to DOS

This terminates the operation of *ST80-DUC* and returns control to DOS.

TEC-E automatically executes a HOOK off command before returning to DOS. This prevents your modem from being left in the active state.

- TEC-F: File the Memory Buffer

This TEC will prompt for a filespec. Enter the name of the file you want to use. *ST80-DUC* will then save the contents of the memory buffer into that file. Entering a null line for a filespec aborts the TEC-F command. If you start writing the memory buffer to disk and

change your mind, just press the CLEAR key.

- TEC-G: Get File

TEC-G asks for the name of the file you wish to get. Press the ENTER key to halt TEC-G. Otherwise, enter the name of the file you wish to load into the memory buffer. Depressing the CLEAR key while the file is loading stops the operation.

- TEC-H: Help

TEC-H displays all TECs and their functions. After the display appears on the screen, *ST80-DUC* will wait until you press the ENTER key. While waiting, *ST80-DUC* will be inactive. Any incoming data will be lost.

- TEC-J: Screen to Printer

TEC-J dumps the contents of the screen to your printer. It takes less than half a second to execute because everything is dumped into the printer buffer. While the printer is grinding out the lines, you're free to move on.

- TEC-K: Repeat Last Line

*ST80-DUC* remembers up to the last 80 characters of the last line transmitted. When you do a TEC-K, *ST80-DUC* retransmits this line.

- TEC-O: Transmit Buffer

This command transmits the contents of the memory buffer. While in this mode, the keyboard will operate slightly differently. To stop the transmission temporarily, type CONTROL-H. To resume the transmission, enter a CONTROL-R. Neither of these two control characters will be sent to the host computer. To stop the transmission, press the CLEAR key.

- TEC-P: Printer ON/OFF

This TEC is a toggle. When on, all incoming data is also sent to the printer. When off, the printer will ignore all incoming data.

- TEC-R: Echo

This command is also a toggle. When the ECHO is on, *ST80-DUC* runs in the HALF duplex mode and will display its own characters. When off, *ST80-DUC*

will operate in FULL duplex mode. This TEC command is for users who need HALF duplex but who have no HALF duplex switch on their modems.

- TEC-U: Telephone Hook

This is useful only if you're using a direct connect modem. It is a toggle that will put the modem in the on HOOK or off HOOK condition.

- TEC-W: Warm Program Restart

This TEC command restarts *ST80-DUC*.

- TEC-X: Close Memory Buffer

This TEC command closes the memory buffer if it was open. It also displays the current checksum of any data in the memory buffer and the amount of free memory remaining in the memory buffer (in hexadecimal).

- TEC-CLEAR: FORMFEED

This command is not shown in the HELP menu. It sends a FORMFEED character to the printer.

## FILE TRANSFER

### Memory Buffer Limitations

Your *ST80-DUC* memory buffer can store characters with a value of X'01' to X'7F' only. It cannot store nulls, nor can it store any characters with a value above X'7F'.

On the other hand, *ST80-DUC* automatically compresses the spaces out of the data when it stores the characters in the memory buffer. So, the amount of data you store in the buffer can actually be much greater than the amount of memory would indicate.

### Communication Limitations

Some limitations are imposed by things outside the control of *ST80-DUC*. Many host systems forbid or attach special meaning to CONTROL characters. If the data to be transferred is binary, you must almost always convert it to ASCII first, using the BTA utility on your disk. You should also understand that binary data is not mutually compatible from one computer system to another, except under special conditions.

## Downloading Traps

● If the data you receive from the host computer isn't correct, CONTROL characters in the incoming data are probably being filtered out. *ST80-DUC* can only store ASCII data. Except for the RETURN character, all other control characters will be filtered out of the MEMORY BUFFER.

● Sometimes the source and destination files will appear correct but the checksums will differ. When this happens, it is usually because a CONTROL character has been filtered out, just as before. Luckily, the effect is harmless.

## Downloading Large Files

Sometimes you may have to download a file much larger than the capacity of your memory buffer. When this happens, you will have to do a little more work.

Begin downloading the file as before, but after a few minutes, send whatever character string your host requires to cause the host computer to stop sending temporarily. On many systems, a CONTROL-S will stop the transmission. Now close the buffer using TEC-X and note the amount of free memory remaining. Use TEC-F to save the first part of the transmission to disk, and then do a TEC-C. Next, send the character string to your host — such as CONTROL-Q — to resume the transmission and take in another load. Repeat this process until you get the entire file.

## Simple Uploading

Load your *ST80-DUC* program and set *ST80-DUC* up for the test configuration. Do a TEC-G. *ST80-DUC* will ask for the name of the file you want to load into the memory buffer. Type "ASCII/LST" and hit ENTER.

*ST80-DUC* will load the file into the memory buffer and then go back on line. In actual practice, you can do this any time — even before you call your host computer.

To send the file, just do a TEC-O. You should now see the file on your screen. To stop the file temporarily, do a CONTROL-H. This will *not* be sent to your host computer. To resume the transmission, send a CONTROL-R. This, too, will *not* be sent to your host computer. To end the transmission, press CLEAR. To start over again, just do a TEC-O again. You will notice a

TEC COMMANDS = < SHIFT > + **[ ]** + letter

A = not used	B = not used
C = < OPEN > Memory Buffer	D = Receive Auto LF<ON/OFF>
E = Exit to DOS	F = Dump Memory to a File
G = Load a File into Memory	H = Displays TEC Commands
I = not used	J = Screen to Lineprinter
K = Last Line Repeat	L = not used
M = not used	N = not used
O = Transmit Memory Buffer	P = Printer < ON/OFF >
Q = not used	R = Echo < ON/OFF >
S = not used	T = not used
U = Telephone Hook < ON/OFF >	V = not used
W = Warn Program Restart	X = < CLOSE > Memory Buffer
Y = Append to Memory Buffer	Z = not used
Hit < ENTER > to continue.	

pause after each line is sent. This is normal.

## Sending To Your Host

To send a file to your host computer, load the file into your memory buffer using TEC-G. After you've logged on to your host computer, enter the text editor on your host's system. When the editor is ready to accept a line of text, do a TEC-O to send your file instead of typing the text in by hand. Try it first with a very short file as an experiment.

You shouldn't always believe your screen when you do these experiments. Some hosts can't echo the data correctly when it's sent very fast, yet they still receive it correctly. You may end up with a mess on your screen, even if the data you transmitted is good.

Some computers have a hidden control called DC-ON and DC-OFF. These two special control codes will cause *ST80-DUC* to stop sending data (DC-OFF) until the other code (DC-ON) is received.

## Sending BASIC Programs

As pointed out earlier, you can only send ASCII files. Normally, BASIC programs are stored on disk in binary format. BASIC takes all of the keywords in the program — like GOTO, PRINT, INPUT — and converts them to special one-byte characters called tokens. This makes the size of the BASIC program smaller as well as making it load faster.

However, you can have Disk BASIC save the program in ASCII format. Go into Disk BASIC. Type: LOAD "NUMBER/BAS" and hit ENTER. Your computer will now load the program back out to disk in ASCII format. Type: SAVE "TEST/BAS",A in order to do so. The comma followed by the letter A after the file name means you want the program saved in ASCII format.

If your program has Machine Language imbedded in it, or uses

"Super Graphics," the ASCII file will treat these as BASIC tokens and they will lose their original values. Also, your BASIC program must not have excessively long program lines. Otherwise, when you try to load the ASCII version of your program back into BASIC, you will get a DIRECT STATEMENT IN FILE error.

If you cannot save your BASIC program in ASCII format because of long lines or Machine Language subroutines, you will have to treat the program as a binary file and convert it to ASCII using the BTA utility.

## UTILITY PROGRAMS

Your DV disk contains several useful utility programs. The programs extend the capabilities of *ST80-DUC*. Some of the programs are special-purpose and you won't use them often. Others will be used frequently.

## Syntax For The Utility Programs

The utility programs fall into two groups — those written in BASIC and those written in Machine Language. Utilities written in BASIC run like any other BASIC programs. You can run the Machine Language programs in one of two ways. The first method is to enter the entire command line at DOS level. The command line consists of the name of the program file, then the input file, the output file (if required), and the "code word" (if desired, and only on certain commands), all separated by spaces. The utility program will then load and execute the command line, and return to DOS. Here's an example of a command line: BTA INPUT/DAT OUTPUT/DAT.

The second method is to run the Machine Language utility program by typing the program name at DOS level. The program will prompt for a command line, execute it, then prompt for

# • TRS-80 DV BONUS

another command line. You press the BREAK key to return to DOS. If you have only one disk drive, the second method is mandatory.

## CKSUM

This program computes the checksum of a data file. The checksum is a number created by adding the values of all of the characters in a file together. In theory, if two files have the same checksum, they should be identical.

Normally, you use this utility to get the checksum of a file before you transmit it. After receiving the file, the person on the other end can run his checksum program to see if he gets the same number. If his checksum and your checksum agree, the two files are probably identical and the transmission was good. Type CKSUM at the DOS prompt to run the program.

## FTYPE

As pointed out earlier, *ST80-DUC* can only send ASCII files. The function of FTYPE is to help you determine if the file is an ASCII or a binary file.

From DOS, type: "FTYPE" and hit ENTER. After the program loads and begins running, it will prompt for input. Type in the name of the file you're interested in. FTYPE will read the file and report back, telling you whether it is ASCII or BINARY.

If the file is ASCII, you can probably send it with no problems. If FTYPE says the file is binary, you'll have to figure out why and decide what to do from there. FTYPE is conservative, and will call any little thing it doesn't like binary. Still, you *may* be able to send a file that FTYPE considers binary with no problem.

## BTA AND ATB

The BTA (Binary to ASCII) program reads a binary file and creates a second file which is a hex dump of only ASCII characters. The ATB (ASCII to Binary) program reads hex dump files created by BTA and converts them to their original binary form. You can convert a binary file to ASCII, send it, and then convert it back to binary using the ATB program. You can also scramble the file. As such, the file will be meaningless data to anyone who does not know the code word.

You can use the BTA program to transmit any file, even if the file is

ASCII. Common uses of the BTA program are:

1. To send BASIC programs that cannot be converted to ASCII.
2. To send data files created by random access.
3. To send Machine Language programs.
4. To send text files scrambled for security reasons.

Press the BREAK key to return to DOS. Type ATB to convert a hex dump back to binary. ATB will prompt for a line of input. First, type in the name of the HEX file. If no file extension is given, then the extension /HEX is assumed. After the input file name, leave a space and enter the name of the restored version of the file or the output file. When ATB is done, press BREAK to return to DOS.

Optionally you may specify a code word of up to 20 characters as the last part of a command to BTA or ATB. This provides a measure of security to your data transmissions.

## NUMBER/BAS

NUMBER/BAS is a BASIC program which will allow you to edit a text file using the editing features of Disk BASIC. To run the program, enter Disk BASIC and type: RUN "NUMBER/BAS" and hit ENTER.

First, it will ask you for the name of the file. Enter the name of the ASCII file you want to edit. It will ask if you want line numbers added (LN) or the line numbers removed (NLN). Reply with: "LN" and hit ENTER.

NUMBER/BAS will read the file and convert it to a BASIC program in which all of the lines are REMARKS. It will then load this program and return you to BASIC. Now, using BASIC, you can add, delete, or change any of the lines. Make sure that if you add lines, they are in the same format as the ones created by NUMBER/BAS. Save the edited program on disk in ASCII format.

After you have saved the modified program to disk, run NUMBER/BAS again. When it asks for the name of the file, reply with the file name you used when you saved the modified file. When NUMBER/BAS asks if you want line numbers added (LN) or line numbers removed (NLN), reply: "NLN" and hit ENTER to remove the line number. NUMBER/BAS will then read your file and remove the line numbers and REMARKS which it added earlier. The

file should now be back in its original form except for the modifications you made.

## MESSAGE/BAS Utility

This program is in public domain and can be freely copied. It is a BASIC program which allows you to create message text for bulletin board systems.

After you've created your message and saved it on disk, run *ST80-DUC* and load the message into memory using the TEC-G command. Log on the system and manually get into message entry mode. Now press TEC-O and let *ST80-DUC* upload the message to the host system. You can always press CLEAR to quit if you have trouble. After the message has been uploaded, issue the commands necessary to save the message.

MESSAGE/BAS itself is very easy to use. Enter Disk BASIC, then type: RUN "MESSAGE/BAS" and hit ENTER. To modify a message saved earlier, type in the name of the file in which it's saved. Otherwise, reply by hitting the (ENTER) key to enter a new message.

A null line, i.e., a line with nothing in it, terminates the message entry as it usually does with most message systems.

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For \$75.00, and your original *SoftSide DV* disk containing *ST80-DUC*, Lance Micklus, Inc., will send you the advanced terminal program *ST80-III*, which normally retails for \$150.00. This offer is good only for the same machine, i.e. *Model III DV* owners can only receive a *Model III ST80-III*. Please be sure to back up your DV disk before sending it to Lance so that you maintain copies of your other *SoftSide* programs.

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If you have questions regarding this offer, or about *ST80-III*, call Lance Micklus, Inc. at (802) 864-5899.

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# SuperDirectory

Reviewed by Mark E. Renne

by Mark Feldman (Computer Shack, 1691 Eason, Pontiac, Michigan 48054). System Requirements: 48K TRS-80® Model I or III with two disk drives. Suggested Retail Price: \$39.95.

Let's see, where is that copy of Dr. Black's Widget program? It seems you never can find the program you want when you need it. After you have accumulated twenty or more disks, it's time to start thinking about a disk directory program.

*SuperDirectory* is full of features and very versatile. Much of its power comes from the fact that it is written to work under, and is distributed with *MultiDOS*, which can read any current operating system. In other words, with a *MultiDOS* disk in drive zero, you can read the directory of a *MultiDOS*, *NEWDOS*, *DOSPLUS*, *LDOS*, or *TRSDOS* disk in drive one. Since I receive programs written under many different operating systems, this is a feature of tremendous value. Most directory programs, or operating systems for that matter, can only read disks written under the same format. This limits your master list to several lists, each of a different DOS. With *SuperDirectory*, all your disks, no matter what DOS, are contained in one list. The *MultiDOS* contained on *SuperDirectory* is only a kernel or abbreviated version of the system.

*SuperDirectory* is a hybrid version of Machine Language and BASIC. It self boots using the AUTO function of *MultiDOS* and is on an unprotected disk. The program is very easy to use and features a menu oriented approach. On a Model III, the program reads either single or double density disks. *MultiDOS* changes address marks on single density disks. They cannot be used in single density again unless converted back.

The most time-consuming part of beginning a directory program has nothing to do with the directory program. You have to arrange all disks into categories to have a system, i.e. put the games with the games, and so on. The program does not require this, but it certainly makes sense. Once you've accomplished this, assign a three-digit number and a category to each disk. The category is not mandatory, but is a very

Figure 1. Sorted by disk and category.

JOKES.....1111	ERIC.....1111	LAM/LIB.....1111
FIXIT/BAS...1111	TODD.....1111	DDSZAPI/BAS..1111
TRAINER/DOC..1111	DFT/CMD.....1111	NET/LIB.....1111
INS/MES.....1111	TRAINER/CMD..1111	MINE/CMD.....1111
DDS/CMD.....1111	CONVERT/CMD..1111	CRSB/CMD.....1111
F80/LIB.....111G	MISC1/LIB...111G	LIBMAINT/BAS.111G
DEC20/ADD...111G	FORUM1/LIB...111G	DISKTAPE/CMD.111G
KONANE/CMD..111G	GPR/BAS.....111G	GPR/CMD.....111G
KONINST/CMD..111G	NOBUG9/BAS...111U	LAWS/BAS.....111U
SYSCVT/CMD..111U	PANTHER/DL...111U	CATMD/CMD....111U
MISC2/LIB...111Y	DFTII/CMD...111Y	DDSII/CMD....111Y
GAMES.....111Y	POSTER/BAS...111Y	UTII/CMD....111Y

Figure 2. Sorted by name.

CATMD/CMD....111U	CONVERT/CMD..1111	CRSB/CMD.....1111
DDS/CMD.....1111	DDSII/CMD...111Y	DDSZAPI/BAS..1111
DEC20/ADD...111G	DFT/CMD.....1111	DFTII/CMD...111Y
DISKTAPE/CMD.111G	ERIC.....1111	F80/LIB.....111G
FIXIT/BAS...1111	FORUM1/LIB...111G	GAMES.....111Y
GPR/BAS.....111G	GPR/CMD.....111G	INS/MES.....1111
JOKES.....1111	KONANE/CMD..111G	KONINST/CMD..111G
LAM/LIB.....1111	LAWS/BAS.....111U	LIBMAINT/BAS.111G
MINE/CMD....1111	MISC1/LIB...111G	MISC2/LIB...111Y
NET/LIB.....1111	NOBUG9/BAS...111U	PANTHER/DL...111U
POSTER/BAS...111Y	SYSCVT/CMD..111U	TODD.....1111
TRAINER/CMD..1111	TRAINER/DOC..1111	UTII/CMD....111Y

Figure 3. Sorted by name with extensions.

CATMD/CMD....111U	THIS AREA	CONVERT/CMD..1111	IS FOR COMM
CRSB/CMD.....1111	TO DESCRIBE	DDS/CMD.....1111	FILES ON DI
DDSII/CMD...111Y		DDSZAPI/BAS..1111	
DEC20/ADD...111G		DFT/CMD.....1111	
DFTII/CMD...111Y		DISKTAPE/CMD.111G	
ERIC.....1111		F80/LIB.....111G	
FIXIT/BAS...1111		FORUM1/LIB...111G	
GAMES.....111Y		GPR/BAS.....111G	
GPR/CMD.....111G		INS/MES.....1111	
JOKES.....1111		KONANE/CMD..111G	
KONINST/CMD..111G		LAM/LIB.....1111	
LAWS/BAS.....111U		LIBMAINT/BAS.111G	
MINE/CMD....1111		MISC1/LIB...111G	
MISC2/LIB...111Y		NET/LIB.....1111	
NOBUG9/BAS...111U		PANTHER/DL...111U	
POSTER/BAS...111Y		SYSCVT/CMD..111U	
TODD.....1111		TRAINER/CMD..1111	
TRAINER/DOC..1111		UTII/CMD....111Y	

useful addition. Figs. 1, 2, and 3 are sample printouts of *SuperDirectory*.

To load directories, put the disk to be read in drive one, type in the disk number, and press "L". That's it. If the disk has been read before, only the new directory is read into the program, and duplicate names with the same disk number are deleted. For all practical purposes, the program requires two disk drives. If you have one disk drive, you can only read *MultiDOS* disks. That eliminates the best part of the program.

Once the disk directories have been read into *SuperDirectory*, you can sort them by either name or disk number. You can search for them by name, category or even file extension (/BAS, /CMD, etc.). You can add or

delete files quickly and easily. After you finish manipulating the fields, a "W" writes the database out to the disk. Printing of either the screen or entire database is allowed.

A fifteen character "extension," or comment line, is allowed for each file. This makes it easy to comment on various, seemingly identical, files. A screen editor allows you to do multiple changes quickly. For example, you could easily change a number of files from category "G" to "A" with a few keystrokes.

The program works well and sorts quickly, and puts the magic of *MultiDOS* to good use. If you need a directory program that reads any DOS, this is the program for you.

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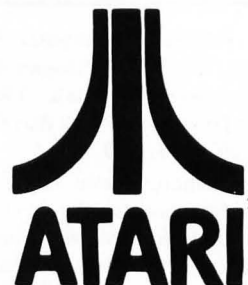
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# POKEY PLAYER III

by Craig Chamberlain and Harry Bratt

*Pokey Player* is a music editing/playing utility for the Atari® 400/800 with 32K and Atari BASIC.

Welcome to Part III of *Pokey Player*, the music editing/playing utility first published in *SoftSide* Issue 34. In that issue we provided three programs which enabled your Atari to produce music of respectable quality. The first program, the *Editor*, allowed note entry and editing using the joystick and the keyboard. The *Compiler*, the second program, processed music source from the *Editor* into a compact form used by the third program, the *Player*.

The *Player* published in that issue was identified as *Player I*. The original intention was that the *Player* would use an advanced feature of the Atari known as

vertical blank interrupt patching which allows music to play while Atari BASIC runs another program. Technical difficulties prevented our including this feature until Jerry White came to the rescue with a solution to our dilemma. This revision to the *Player* was published as *Player II* in Issue 36 of *SoftSide*. *Player II* merges music with programs written in Atari BASIC, with rather awesome potential applications.

This concluding installment includes enhancements for the *Editor* and ties up various loose ends.

## Player II

We effected the vertical blank patch by calling the function USR(1647) from

Atari BASIC. This played the music until one of the voices reached a PPHALT command, one of *Pokey Player's* special options. Although the music stopped at this point, the vertical blank patch was still in effect.

Since the vertical blank patch was stored in a string (PP\$), and Atari BASIC moves strings around in the immediate mode, nasty things such as system crashes happen when either the program ends or you press the break key. Our solution was to end the program with an infinite loop. The only way to sever the vertical blank patch was to press SYSTEM RESET, but we now offer you a second USR function that releases the vertical blank patch and ends these difficulties.

## Player III

When you call the function USR(1657), returning the system to normal order, it will be unnecessary to press SYSTEM RESET or worry about system crashes. Make the following changes to the *Player II* program.

1) Alter line 1500 by changing the number 1656 to a 1666.

2) Add line 2162 DATA 104,160,98,162,228,169,7,76,92,228.

3) Add the function call USR(1657) wherever appropriate to take *Pokey Player* off the vertical blank interrupt.

## “Messing” Around

Incidentally, by altering certain DATA statements of the *Player*, you can alter certain aspects of the sound produced by *Pokey Player* significantly. For example, examine line 2150, a DATA statement. Note the 9,9,9 after 168,168,168. Normally, *Pokey Player* uses a soft decay at the end of each note. Changing the nines to zeroes produces a very smooth, legato effect. On the other hand, changing each nine to the value 255 gives a quick, staccato effect. The

*Scipio* piece included in Part I sounds quite different when played in this way.

## The Compiler

The status report generated by this program occasionally has unlabeled numbers. Unlabeled values only occur when you use a special command, and when you have a difference of more than seven half steps between two notes.

The *Compiler* creates a dotted note by first producing a note of the same duration as the dot, and then tying it to a second note which is equivalent to the specified duration without the dot. The unlabeled number is the "dot."

The two unlabeled numbers after a PPHEAD (repeat head) are a note index correction which realigns *Pokey Player* to the proper notes at the beginning of each pass through the repeat section.

The seven bytes following a PPTEMP (tempo change command) are frame count updates for a duration table *The Player* uses.

Finally, due to the note selection method *Pokey Player* uses, it's impossi-

ble to play a note more than seven half steps away from the preceding note without first changing the octave. The signed numbers appearing in the octave column of the status report indicate this changing of the octave up or down.

## Editor Enhancements

These enhancements take two forms: modifications for a faster program initialization, and additions to provide more special option commands.

The *Editor* is a graphically complex program in that it uses player/missile graphics, a redefined character set, mixed graphics modes, and display list interrupts. As you might expect, it takes time to set up this display. To speed up the process, we have written some machine code routines that significantly reduce the waiting time before the program is ready. These changes are included in the program listing that follows this article.

Now for the exciting part — new commands for the *Editor*. Remember the *Happy Birthday* piece published in the first part of this series? Well, it

demonstrated a couple of features that we didn't tell you about. One was the cute snare drum. The other was a weird frequency effect that sounded like a slightly out-of-tune piano. These two features, plus a third status command, constitute the remaining surprises built into *Pokey Player*.

The snare drum effect was created using noise eight instead of noise ten to produce a quick white noise sound. It is very important that the note be short to get the right effect. The staccato feature described earlier will come in handy here. To change the noise from ten to eight, and then back again, use the new PPPARM command.

The PPPARM (change parameters) command allows you to change three important parameters. The first two are the noise and volume for succeeding notes. You can specify these parameters from the *Editor*. The remaining parameter is the decay value discussed earlier. The *Editor* cannot set this value, however, and you must change it manually.

To select the PPPARM command from the *Editor*, press the P key. A prompt will appear in the top window of the screen. The message reads "ENTER NOISE TYPE:?" Here you type either a ten or an eight, as desired, and then press the RETURN key. The next prompt asks you to "ENTER VOLUME LEVEL:?" Any number from one to fifteen is acceptable here, but we recommend that the total volume for all three voices not exceed 32. On pressing RETURN, the symbol indicating the PPPARM command will appear in the box at the bottom. This symbol consists of an inverse "N" on top of an inverse "V", with numbers after each letter. The numbers correspond to the noise and volume values just entered. This command can be treated just like the others (PPHEAD, PPTAIL, PPTEMP, and PPSTOP). Also, the *Compiler* already supports PPPARM, and will print the command with the two parameters in its status report. All you have to do is decide when you want to use it. Of course, each voice has its own set of parameters, so using PPPARM on one voice will not affect another voice.

One more thing must be said about how the snare drum effect is achieved. The secondary voices only support notes up through F6, but it is possible to select higher notes. The notes from F sharp 6 to C7 are reserved specifically for percussion effects. Although these notes

continued on page 92

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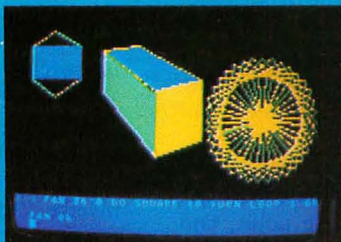
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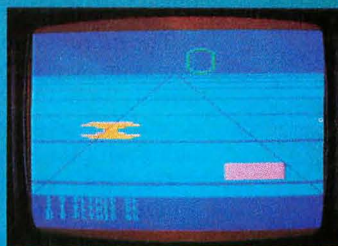
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**Pokey Player III** *continued*

sound incorrect when played in noise ten (B6 is not actually a B), they do select the proper frequency values for special effects when played in noise eight (B6 does sound right for a snare drum). Understand that there is no correspondence between notes above F6 and correct pitches; notes in this range serve only as a means of generating percussion effects like a snare drum. We suggest that you use a secondary voice for the snare drum; save the precious primary voice for the wider octave range.

By using PPPARM to change the volume level, you can accent a voice, cause a phrase to fade away, create echo effects, or do whatever you are inspired to do. One idea is to combine the PPPARM command with repeat loops. For example, a source file could contain a PPPARM command to set the volume to one level, a PPHEAD to start a repeat, the notes to be played, a PPPARM to set the volume level lower, and then a PPTAIL to terminate the repeat loop. The result would be that the same passage of notes would play twice, but at a lower volume the second time. There are many other possibilities.

Whenever the *Compiler* encounters the PPPARM command, it also resets the decay parameter. The decay parameter is set to whatever the new volume is, plus one. Thus, the normal volume level of eight causes the normal decay breaking point to be a nine. If you want to change the decay parameter in order to have fun with the legato/staccato effects, you will have to change the appropriate DATA statement generated by the *Compiler* manually. The number to change is the second byte after the PPPARM command. It is another one of those unlabeled numbers in the *Compiler* status report.

To summarize, the PPPARM command allows volume control and creates a snare drum effect. To make the snare drum noise, set the noise to eight (PPPARM), the decay to 255 (set it manually), and use notes in the range F sharp 6 to C7. A simple blues pattern is included to demonstrate this effect. It would be easy for an ambitious person to add several variations to this main theme. The source code has also been included for this purpose.

**PPOFST**

PPOFST sets a frequency offset. If two voices play the same notes

simultaneously, the result is rather useless. It can be inaudible if the waveforms of the two voices combine in a manner known as destructive interference. If the frequency of one of the voices is always just a little lower or higher than that of the other, however, an eerie effect results. This frequency offset is useful when you need an unusual sound effect.

To select PPOFST, press the O key from the *Editor*. In response to the prompt "ENTER OFFSET AMOUNT:?", type a number from zero to 255 and press RETURN. Usually a small number from one to four is satisfactory. A value of one makes the frequency for that voice just a little lower than what it should be. To select an offset of minus one, enter a value of 255. This elevates the frequency just a little. Choosing a zero turns off the frequency offset.

The *Editor* symbol for the offset function is an inverse "OFS". The *Compiler* already supports PPOFST, and will indicate its use in the compilation report, along with the parameter.

Certain restrictions apply to PPOFST. First, it should only be used on secondary voices. It will not always work properly on the primary voice. This is not a severe restriction because to create the effect requires two voices, and having only one primary voice means that one of the two voices must be a secondary voice. A second restriction is that the offset function only works for notes C3 or higher because secondary voice notes below C3 are generated by noise twelve (even when noise ten is selected by PPPARM). The offset function does not work very well with noise twelve. It is possible, but the offset value may have to change every note (plus one for one note, plus three for the next, and so on).

Remember, to achieve the best results with the offset function, the two voices must play exactly the same notes, and only one of the two voices (not the primary) should have the offset function on.

The PPOFST command can generate frequencies between the normal half steps. Thus by tying together a series of short notes of differing offsets, it is a rather easy matter to create a vibrato effect.

The original intention of *Pokey Player* was to provide a means to merge music with Atari BASIC programs. That became possible with *Player II*. Running

a program while music is playing poses some difficulties, though. For instance, it would be nice for the program to determine what music is played. In other words, it would be useful to have some method to communicate between the program and the vertical, blank-driven play routines.

In Part II of this series we explained the possibility of freezing music processing by storing a zero into location ACTIVE (1536), and reactivating it by storing a nonzero value into the same location. This start/stop function is the only form of communication from the Atari BASIC program to the play routines. By the way, all that the PPSTOP (halt) command does is store a zero into ACTIVE. You can place a PPSTOP command in the middle of a piece of music. When the music processing stops, you can restart it by placing a nonzero value in ACTIVE, causing the program to continue with the music.

To have communication from the play routines to the program, use the new PPSTAT command. This command can be embedded at any location in the music source. The command consists of the command byte followed by one parameter, a flag number. Whenever the play routines come across the PPSTAT command, the flag number is stored into memory location FLAG (1537). By using PPSTAT with a different flag number at the beginning of each new phrase, your program can determine what the play routine is doing at that moment.

The PPSTAT command is called from the *Editor* by pressing the "F" key (for "flag"). The prompt says "ENTER FLAG NUMBER:?". Any number from zero to 255 is legal, and you can use whatever number suits your fancy. When combined with multiple PPSTOP commands, the PPSTAT command can be very useful.

The *Editor* symbol for PPSTAT is an inverse "FLG." Of course, the *Compiler* already supports this command, too.

**Wisdom About The Editor**

Should the *Editor* ever stop accepting commands from the keyboard, you may have accidentally pressed the CAPS/LOWR key or the Atari symbol key, which activates the inverse mode. The *Editor* does not recognize inverse or

**continued on page 94**

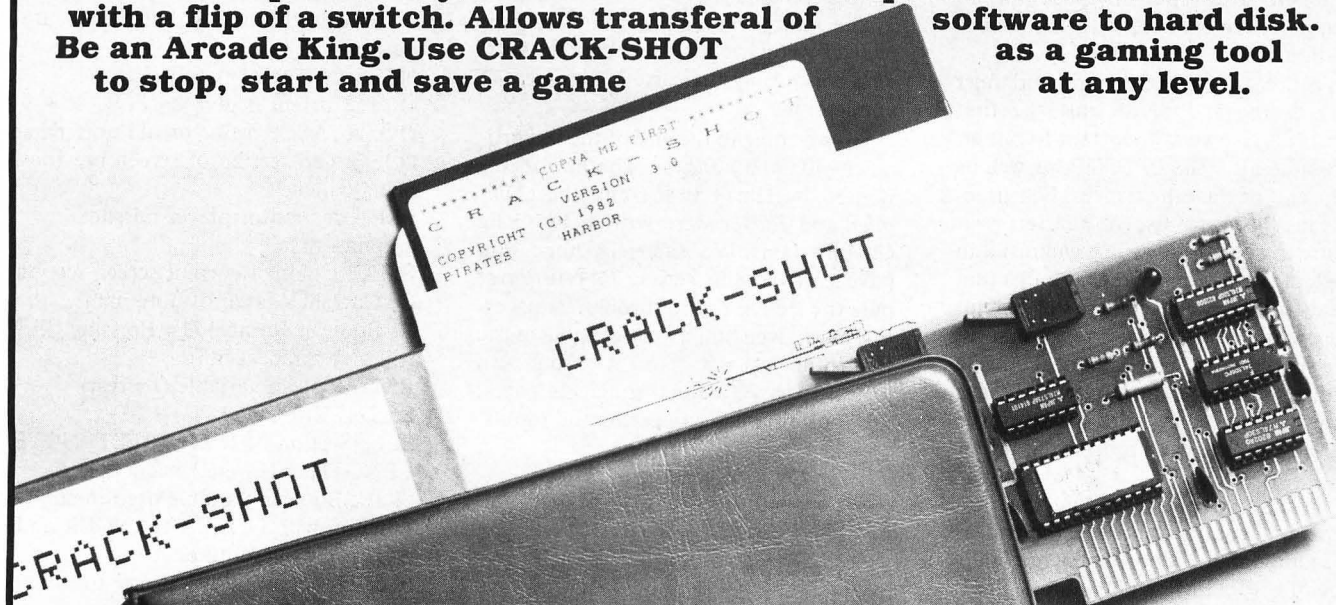
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lower case commands. Also, try to avoid pressing CTRL,3 or the BREAK key, as these are not disabled. We are also not quite sure what happens if you try to enter too many notes on a 32K machine. An excellent method for entering music quickly is to have one person read notes from sheet music ("up to G, down to D") while the other person manipulates the joystick. When you make mistakes someplace in the music source, use the *Compiler* status report to check that all the notes were entered, with the proper durations.

In general, a PPSTOP command must occur at the end of at least the first voice. It is also very important to put an extra note after the PPSTOP, as well as at the end of the other voices. Our practice has been to use a quarter rest. Failure to heed this warning can result in a system crash. Empty repeat loops that repeat forever can also crash the system. You cannot nest repeat loops; that is, you should not use a repeat inside another repeat. You should only use tempo changes at a point in the music where all three voices must fetch a new note.

You may have noticed that the running frame counts printed at the end of the compilation reports do not tally when the PPTEMP command is used. This is because, when one voice is compiled, it is not aware of tempo changes in other voices. To correct this, and to make the running frame count number more useful, use the PPTEMP command at the same place in all three voices. Just make sure all three are set to the same tempo at the same instant. The running frame count is a great help when debugging a piece of music. The problem of total frame count discrepancies caused by repeat loops has no solution, however.

To update the *Editor* to include these new revisions, first type in the enhancements, check them with *SWAT* and list them to disk. Example:

```
LIST"D:POKEY.TMP"(LIST"C:"
for tape). Then LOAD Pokey
Player II and ENTER the tem-
porary file you just created. Example:
ENTER "D:POKEY.TMP"
(ENTER"C:" for tape) and SAVE the
complete Pokey Player III.
```

## News

The authors of *Pokey Player* plan to rewrite the entire system in machine

code with various enhancements. These enhancements could include such things as nestable repeat loops, nestable phrase calls, the ability to handle four voices, variable rate attack and decay, and other goodies. The *Editor* display will be completely revised, and the *Compiler* will become a part of the *Editor*. The entire system will be much more interactive, and the features of minimal memory usage and vertical blank processing will be preserved.

The *Pokey Player* programs are protected by copyright. Please contact *SoftSide* concerning their use in commercial applications.

So, we come to the end of the last article about *Pokey Player*. The *Editor* was written by Harry Bratt, and the *Compiler* and *Player* were written by Craig Chamberlain. We sincerely hope you have enjoyed this series. *Pokey Player* puts the POKEY chip through its paces. We have given you a very capable music tool to do just that. Now it is your turn to put *Pokey Player* through its paces. We look forward to hearing the results.

## Variables

A: Counter.  
 B: Counter.  
 C: Temporary variable.  
 CHANGE: Boolean variable (1 = no change in note's position on staff).  
 CIO\$: Machine Language routine to enable/disable DLI's when CIO is used.  
 CN: Points to current note being edited.  
 D\$: Device to save to or load from.  
 DL: Location of display list.  
 DOT: Boolean variable (1 = current note length is dotted).  
 F: Dummy variable.  
 F\$: File to save to or load from.  
 I: Counter.  
 INS: Number of open spaces for CTRL-INSERTed notes.  
 INSS\$: Three line insert characters used for clearing bottom of screen.  
 J: Counter.  
 K: Counter.  
 LNT: Current length.  
 LT: Temporary variable used with length routine.  
 M\$: Machine Language routine to move note on staff (MOVEM).  
 MOVE: How far to move note on staff.  
 MSC\$: All notes and special commands entered by user (2 bytes per note).

N: Current pitch value to be passed to VBI bell routine.  
 N2: Temporary variable.  
 NE: Temporary variable.  
 NHI: High byte of note count (used when saving or loading files).  
 NLO: Low byte of note count.  
 NMAX: Maximum number of notes memory can hold.  
 NN: Number of notes currently entered.  
 NN\$: Names of note pitches.  
 NTE: Current note (C natural = 0, B natural = 12).  
 NTE\$: Names of note lengths.  
 OCT: Current octave.  
 OQ: ATASCII value of old note name.  
 OSEC: Old section of screen previously being edited.  
 PM: Location of player missile graphics data.  
 PSEC: Color of current screen section.  
 Q: Current Atascii of note name.  
 R: Boolean variable (1 = Pressing "R" will give a repeat tail).  
 RST: Boolean variable (1 = rest).  
 S: STICK(0) value.  
 SEC: Section of screen (REST, NOTE, LENGTH, TIE, etc.) being edited.  
 SKIP: Boolean variable used in conjunction with NOTE CHANGER and NOTE *Editor* routines.  
 SL\$: Holds message "saving to" or "load from".  
 T: Temporary Boolean variable (1 = note is tied).  
 T\$: Current note name.  
 TEM\$: Tempo values.  
 TIE: Boolean variable (1 = tie on).  
 TIE\$: Holds messages which tell if "tie" is in effect.  
 TN: Temporary number of note being edited.  
 U: Dummy variable for USR routines.  
 U\$: Machine Language routine to pass note pitch to VBI beep routine.

```
SS SS SS SS SS SS SS SS SS SS SS
SS          ATARI BASIC          SS
SS      'POKEY PLAYER 3'      SS
SS  AUTHOR:CRAIG CHAMBERLAIN  SS
SS          COPYRIGHT (C) 1983    SS
SS  SOFTSIDE PUBLICATIONS, INC  SS
SS SS SS SS SS SS SS SS SS SS SS
```

If you don't wish to type this program, it is also included in this month's *SoftSide CV and DV*.

```
325 IF A=80 THEN 1610
326 IF A=79 THEN 1710
327 IF A=70 THEN 1755
```



```

920 IF I>127 THEN ON I-127 GOSUB 1420,
1370,1370,1580,1660,1790,1745:RETURN
1600 REM PARAMETERS
1610 POKE 1568+OSEC,PSEC:POKE 1568,10
1620 POSITION 4,0:? "ENTER NOISE TYPE:
"
1625 POSITION 11,1:TRAP 1385:INPUT I
1630 POSITION 3,0:? "ENTER VOLUME LEVE
L:"
1635 POSITION 11,1:? "      ":POSITION 1
1,1:INPUT J
1640 MSC$(CN,CN)=CHR$(132):MSC$(CN+1,C
N+1)=CHR$(I#16+J):TRAP 40000:TN=CN
1650 POSITION 20,18:GOSUB 1660:GOSUB 5
80:GOTO 1412
1660 I=ASC(MSC$(TN+1,TN+1)):J=INT(I/16
):K=PEEK(85)? "N":J:CHR$(29):POKE 85
,K? "V":I-J#16:RETURN
1700 REM OFFSET
1710 POKE 1568+OSEC,PSEC:POKE 1568,10
1720 POSITION 4,0:? "ENTER OFFSET AMOU
NT:";
1725 TRAP 1385:INPUT I
1730 MSC$(CN,CN)=CHR$(134):MSC$(CN+1,C
N+1)=CHR$(I):TRAP 40000:TN=CN
1740 POSITION 20,18:GOSUB 1745:GOSUB 5
80:GOTO 1412
1745 ? "OFS";CHR$(29);CHR$(30);CHR$(30
);CHR$(30);
1747 ? ASC(MSC$(TN+1,TN+1));"      ":RETR
RN
1750 REM FLAG
1755 POKE 1568+OSEC,PSEC:POKE 1568,10
1760 POSITION 4,0:? "ENTER FLAG NUMBER
:";
1765 TRAP 1385:INPUT I
1770 MSC$(CN,CN)=CHR$(133):MSC$(CN+1,C
N+1)=CHR$(I):TRAP 40000:TN=CN
1780 POSITION 20,18:GOSUB 1790:GOSUB 5
80:GOTO 1412
1790 ? "FLG";CHR$(29);CHR$(30);CHR$(30
);CHR$(30):GOTO 1747
4940 FOR I=1 TO 58:READ J
4950 U$(I,1)=CHR$(J):NEXT I
4960 FOR I=1595 TO 1788:READ J
4970 POKE I,J:NEXT I
5055 REM
5108 POSITION 8,8:? "by Harry Bratt 10
-20-82"
5130 REM
5200 REM
5215 FOR I=1 TO 15:READ J:M$(I,1)=CHR$(
J):NEXT I:POKE 203,0:POKE 204,A+4:U=U
SR(ADR(M$))
5217 M$="":FOR I=1 TO 19:READ J:M$(I,1
)=CHR$(J):NEXT I

```

```

5220 POKE 204,224:POKE 205,0:POKE 206,
A:U=USR(ADR(M$)):POKE 559,62
5222 POKE 203,32:POKE 204,6:POKE 205,0
:U=USR(ADR(CIO#))
5310 REM
5407 M$=""
5410 FOR I=1 TO 67:READ J
5420 M$(I,1)=CHR$(J):NEXT I
9060 DATA 104,168,162,2,145,203,200,20
8,251,230,204,202,208,246,96
9070 DATA 104,168,162,4,177,203,145,20
5,200,208,249,230,204,230,206,202,208,
242,96
9270 DATA 104,201,1,240,3,76,116,228
9275 DATA 169,3,141,50,2,141,15,210
9280 DATA 169,0,141,1,210,169,80,141
9285 DATA 8,210,173,255,6,41,240,141
9290 DATA 255,6,104,104,170,189,59,6
9295 DATA 141,0,210,189,156,6,141,2
9297 DATA 210,173,255,6,9,15,141,255
9298 DATA 6,96
9310 DATA 209,223,237,251,9,30,44,65
9312 DATA 79,100,121,149,165,189,217,2
45
9314 DATA 17,59,87,129,157,199,241,41
9316 DATA 75,121,177,233,33,117,173,1
9318 DATA 57,141,225,81,165,21,133,245
9320 DATA 101,241,97,9,149,61,229,141
9322 DATA 81,21,245,213,209,205,1,253
9324 DATA 49,101,209,61,165,42,234,170
9326 DATA 162,154,2,250,194,202,162,12
2
9328 DATA 75,84,212,84,68,52,4,244
9330 DATA 196,148,68,244,150,168,168,1
68
9332 DATA 136,104,8,232,136,40,136,232
9334 DATA 72
9350 DATA 0,0,0,0,1,1,1,1
9352 DATA 1,1,1,1,1,1,1,1
9354 DATA 2,2,2,2,2,2,2,3
9356 DATA 3,3,3,3,4,4,4,5
9358 DATA 5,5,5,6,6,7,7,7
9360 DATA 8,8,9,10,10,11,11,12
9362 DATA 13,14,14,15,16,17,19,19
9364 DATA 21,22,23,25,26,28,29,31
9366 DATA 33,35,38,39,42,44,47,50
9368 DATA 53,56,59,63,67,71,76,79
9370 DATA 84,89,95,100,106,112,119,126
9372 DATA 134,142,152,159,169,179,190,
201
9374 DATA 213
9410 DATA 165,128,141,253,6,165,129,14
1
9412 DATA 254,6,169,0,133,128,173,128
9414 DATA 4,133,129,169,0,162,8,172
9416 DATA 40,6,145,128,200,202,208,250

```

```

9418 DATA 104,240,21,104,104,24,109,40
9420 DATA 6,141,40,6,168,189,56,6
9422 DATA 145,128,200,232,224,8,208,24
5
9424 DATA 173,253,6,133,128,173,254,6
9426 DATA 133,129,96

```

### ATARI® SWAT TABLE FOR: POKEY PLAYER 3

LINES	SWAT CODE	LENGTH
325 - 1650	FM	511
1660 - 1760	SW	535
1765 - 5200	IF	358
5215 - 9070	OI	501
9270 - 9316	KM	366
9318 - 9354	YV	340
9356 - 9412	FE	332
9414 - 9426	DU	212

```

SS SS SS SS SS SS SS SS SS SS SS SS
SS
SS      ATARI BASIC      SS
SS      'BLUES'          SS
SS      AUTHOR:CRAIG CHAMBERLAIN SS
SS
SS      COPYRIGHT (C) 1983 SS
SS      SOFTSIDE PUBLICATIONS, INC SS
SS
SS SS SS SS SS SS SS SS SS SS SS

```

```

3100 DATA 37,32,0,5,10,20,40,80,0,16,1
6,64,36,128,43,0,16,16,64,53,27,0,16,1
1,64,56,35,0,75,16,16,64,59,75,0,62
3102 DATA 120,4
3200 DATA 39,8,136,255,16,2,64,36,4,13
4,12,4,68,4,67,68,67,68,0,16,2,64,1,4,
68,0,4,67,67,4,68,4,68,67,68,67,4,68
3202 DATA 6,4
3300 DATA 36,128,44,132,68,44,84,92,68
,68,12,4,20,44,92,84,68,68,20,20,68,44
,84,91,67,67,75,76,68,44,84,92,20,12
3302 DATA 20,22,4

```

### ATARI® SWAT TABLE FOR: BLUES

(Modified Parameters: NU=2, B=500)

LINES	SWAT CODE	LENGTH
3100 - 3102	PS	118
3200 - 3202	YR	117
3300 - 3302	OO	121

## T.H.E. Terminal and Telelink

Reviewed by Arlan R. Levitan

The *T.H.E. Terminal* is from Binary Computer Software, 3237 Woodward Avenue, Berkley, MI 48072. System requirements: Atari® 400/800 with 16K RAM (Version 3.0) or 24K RAM (Version 3.5). Suggested retail price for both versions: \$49.95 (disk or cassette).

The *Telelink* cartridge is from Atari, Inc., 1196 Borregas Avenue, Sunnyvale, CA 94086. System requirements: Atari 400/800 with 16K RAM. Suggested retail prices: *Telelink I* — \$29.95; *Telelink II* — \$79.95.

For the Atari user new to telecommunicating, choosing the right terminal program can be more difficult than selecting a modem. Literally dozens of programs are available, but most of my on-line Atari time depends on either the *T.H.E. Terminal* program from Binary Software or Atari's *Telelink I* cartridge. Although these two programs sit on opposite ends of the spectrum in terms of features and flexibility, each can offer important features to the frequent modem user.

The *Telelink* cartridge is an ideal way to start experimenting with telecommunications. The instruction booklet is clear in content and presentation, offering step by step procedures for the cartridge and hooking up the required hardware (usually an Atari 850 interface module and any compatible modem). Technical jargon is minimal and most issues raised are explained in fairly simple terms.

The only options within the program relate to setting word wrap mode on or off and saving received data in a buffer for dumping to a printer. When word wrap is enabled, normally hyphenated words move to the beginning of the next line.

The *Telelink I* package includes one hour of free access time on three popular information services with instructions for signing your computer onto each of



the three services and materials for subscribing to any or all of them.

Of special interest to Atari owners is the extensive Atari SIG (special interest group) in the computer club area of CompuServe, which you can access by typing "G PCS-132" from the CompuServe main menu. SIG/ATARI features a large electronic message board, an on-line conference area where you can converse via keyboard with other Atari users all over the country and an area called *Access* which contains public domain programs for the Atari.

Atari-based bulletin boards around the country, such as M.A.C.E.'s AMIS (Atari Message and Information System) also offer message systems and programs, albeit on a smaller scale. The problem is how to download those programs to your computer from the computer that you've called. Since *Telelink I* will only dump the information that rolls across your screen to a printer, it's good for downloading programs only if you

really enjoy keying in program listings. I use *Telelink* when I don't need to download anything and am too lazy to boot up my disk drive.

*Telelink's* 2K download buffer poses another problem. It's just too small. Even if you're satisfied with printer output only, transmission of data to your computer must be halted every time the buffer is close to full. Then *Telelink* sends the information stored in the buffer to the printer, waits for the printer to finish and then empties the buffer so transmission can continue. This can cost you a bundle since most information services charge hourly rates based on actual time connected, rather than on the amount of data transmitted. The slower the printer, the more you pay.

In this area, Binary's *T.H.E.* terminal program excels. *T.H.E.'s* download buffer can use all memory not taken up by the program. This translates into about a 32K maximum buffer size on a 48K system. Furthermore, *T.H.E.* can

subdivide available memory into a maximum of ten separate download buffers, dynamically. The large size and number of download buffers permits you to save multiple pieces of information in their own *T.H.E.* pigeonholes without pausing to save each individually. Then you can disconnect from the system and print the buffers, or save the information to disk or tape. Connect time and resulting charges are thus kept to a minimum.

The ability to save the received data to disk or tape is the key to effective telecommunicating. Programs that would take hours to type in from a printed listing may be saved to disk or cassette, then ENTERed from BASIC and run in a matter of minutes.

*T.H.E.* has more bells and whistles than a Mississippi riverboat. This level of technical complexity is both *T.H.E.*'s strong suit and its Achilles' heel. The program comes ready for communicating with most information services and computer based bulletin boards, but the documentation assumes a great deal about the user's familiarity with complex technical terms. The instructions lack clarity in many places. The overall excellence of the program is overshadowed by the manual's failure to deal effectively with the novice user.

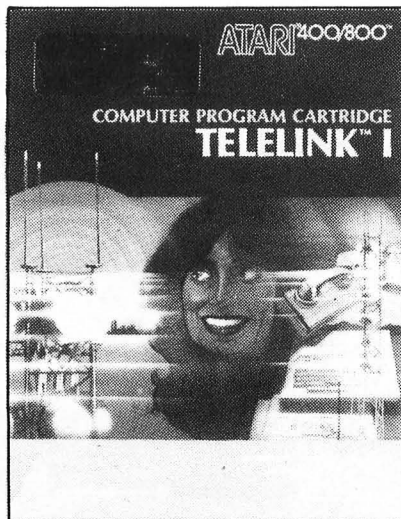
Let's see if I can name all of *T.H.E.*'s other features in one breath...Half/Full duplex switch, upload/download, multiple baud rate support, erase buffer option, on-line editor, echo on/off, user selectable parity, translation modes, interface port selection, smart send mode, XON/XOFF support, and completely redefinable translation tables. Hmm..I think I left out a few. See what I mean about complexity? I have had little trouble due to a gradually acquired knowledge of telecommunications, but this could overwhelm beginners.

I do have two other complaints. Checking just how your options are currently set up within the program is hard. Secondly, and this is purely a matter of aesthetics, the packaging is plain, unattractive and uninformative. People still judge books and software by the cover, and Binary has placed a fine piece of programming art in a crude frame.


## Newest Versions

*T.H.E. Version 3.5* adds word wrap, an improved menu structure for pro-

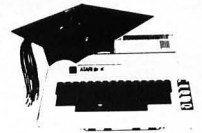
gram parameter options, the ability to check file directories while running *T.H.E.*, support for the Atari Bit 3 80 Column board, a simple way to create customized versions of the program and support for an error checking system referred to as XMODEM protocol on many AMIS and CPM bulletin boards. *T.H.E. Version 3.5* is pretty close to my idea of the perfect terminal program for disk or cassette users. It is well worth the \$49.95 price tag. According to Binary, the new version of *T.H.E.* will be made available to purchasers of the previous version for a \$10 upgrade charge. The purchaser must return the original *T.H.E.* disk or cassette to qualify for an upgrade. Now if only you could check the program's current settings...*T.H.E. 3.6* anyone?



Designed expressly for Atari's new Model 835 direct-connect auto-dial modem, *Telelink II* is another story altogether. Yes, it's technically well executed. Yes, I'll admit the ability to store two often-used telephone numbers and system sign-on sequences in the cartridge's battery supported RAM is nice and the buffer is finally the size of available memory. Yes, I like how *Telelink II* lets you scroll forward and backward through the buffer, but no, the folks in Sunnyvale still won't let you save received data to disk or cassette. In short, it is of limited interest to serious modem users at \$79.95.

My recommendation? Beginners should start with *Telelink I* and buy *T.H.E.* once they feel comfortable with telecommunications. 

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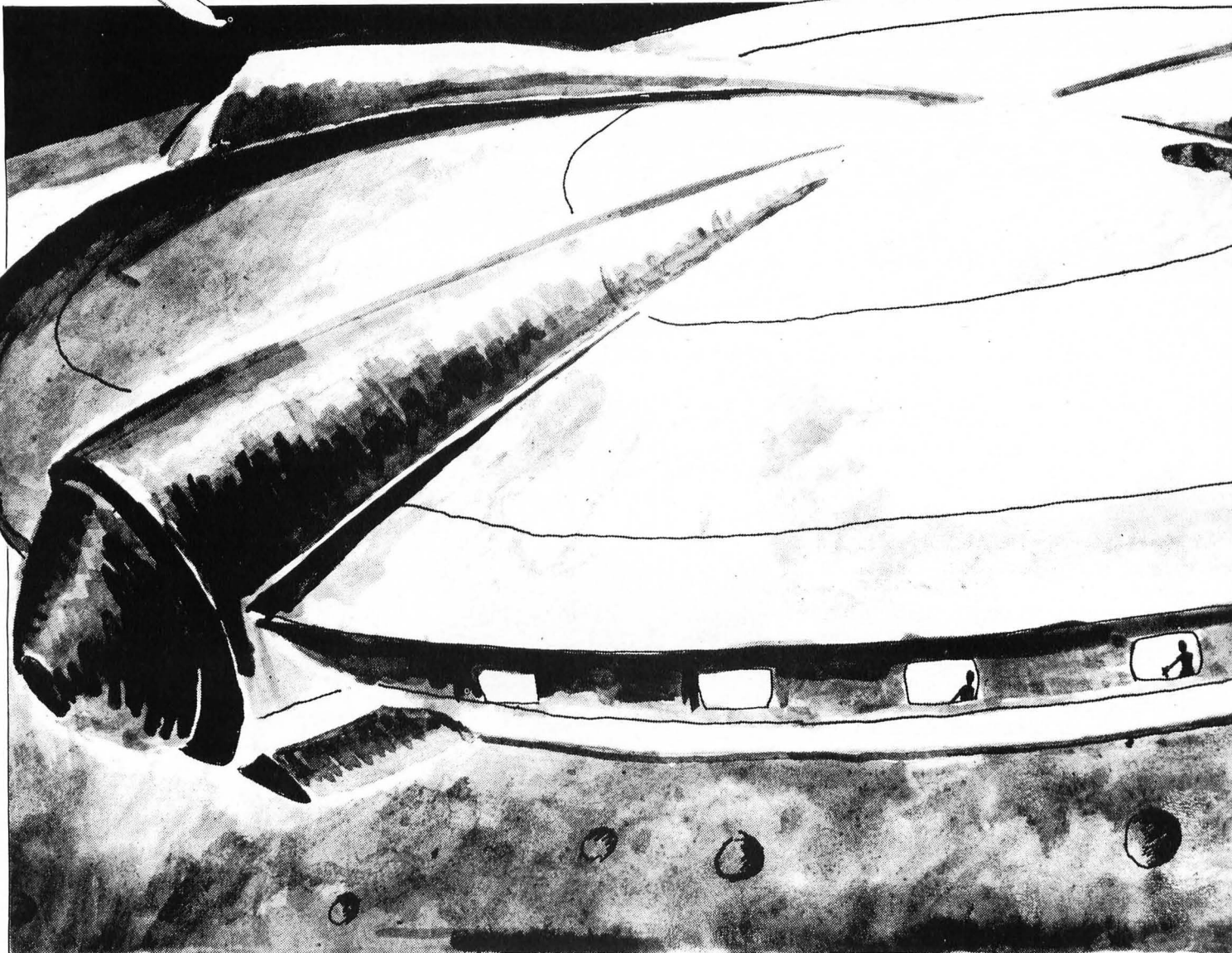
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BINARY CORPORATION



*Space Mines* is an arcade-style game for a 16K Atari® 400/800.

**Note:** Before saving or playing *Space Mines*, you must LIST it to tape or disk, type NEW and CLEAR, and ENTER it again. This is necessary because the program expects to find certain variables at specific locations in memory.

"The Vahrenians are headed for Earth!" comes the warning call on the intercom. Remembering your orders, you rush to your ship, the only survivor at the tiny spaceport.

"If I can destroy enough of their spaceliners, the Earth might have a chance," you think as you strap yourself into the one-man ship.

After you choose a difficulty level, red Vahrenian spaceliners move across the

top of the screen. Near the bottom, safely in its docking bay, is your blue ship. To destroy a spaceliner, move your ship up with the Q key and make contact. If you succeed, you receive 50 points. This angers the remaining Vahrenians and they send out a few more mines.

Before you can destroy another spaceliner, press the A key to return to the docking bay for more ammunition. On your return, you receive 75 points. To stop your ship, press any other key.

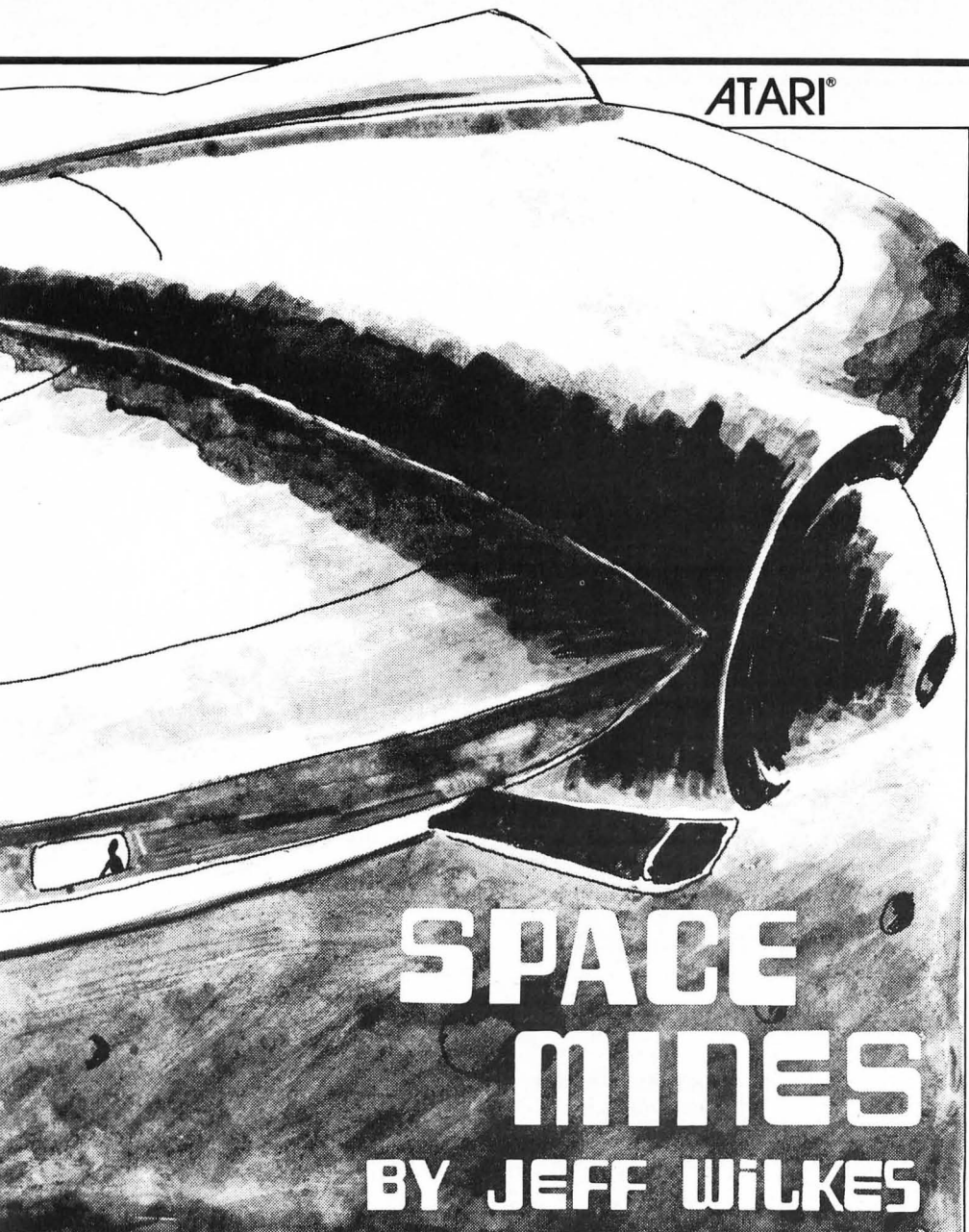
Sound simple? It would be, except for the field of moving spacemines separating your ship and the spaceliners. More dangerous than any asteroid, the mines are radio-controlled by the Vahrenians. The slightest contact with them damages your ship by 5% and catapults it back to the spaceport. When your ship's damage reaches 100%, the game and the Earth are finished. After a given time, the mines change direction. Luck-

ily, your ship has an audio-scanner which beeps before this happens.

Oh, I almost forgot. The section of space you are patrolling also contains two dangerous creatures — the dreaded green Smiley and the fearsome yellow Munchie. When your ship climbs about one third up the screen, the yellow Munchie scoots across after you. About two-thirds up the screen, the Smiley comes after you from the other side. Contact with either creature damages your ship by 10% and causes it to fall. Unfortunately, both creatures are immune to the mines.

If your score reaches 500 or more, you will be rewarded with total ship repair.

The higher the skill level, the more mines you will encounter and the faster the creatures will go. On level 3, you get no audio-scanner so you won't know when the mines are about to change direction.



# SPACE MINES

BY JEFF WILKES

Anyone who reaches 500 on level 3 should consider himself quite skilled (or lucky). Have Fun!

## Variables

A1: Munchie checker flag.  
 A2: Smiley Checker flag.  
 AT: String array storage area pointer.  
 B\$: Player 0 blanking string.  
 C: Mine collision value.  
 C1: Creature collision value.  
 D: Keyboard strobe value.  
 DH,D1: Location of display memory.  
 DR: Ship's damage reduction flag.  
 DS: Ship destroyed flag.  
 D\$: String data for ship.  
 IN: Increment of creatures movement.  
 L: Difficulty level.  
 L\$(x): String difficulty level.  
 MI: Number of mines.  
 NH: Ship not hit flag.

OFF: Distance from string array area to player 0 memory.  
 P0: Position of P/M data.  
 PA: Play again value.  
 PM: Top of RAM (for P/M).  
 P\$: Player 0 movement data string.  
 Q: Mine direction.  
 SC: Score.  
 SD: Ship's damage.  
 V: Volume of opening noise.  
 VT: Variable value table pointer.  
 V2: Most significant byte of OFF.  
 V3: Least significant byte of OFF.  
 X: Ship's x-coordinate.  
 X1: X-coordinate of Spaceliner.  
 X2: X-coordinate of Smiley.  
 X3: X-coordinate of Munchie.  
 Y: Ship's Y-coordinate.  
 Y1: Y-coordinate of Spaceliner.  
 Y2: Y-coordinate of Smiley.  
 Y3: Y-coordinate of Munchie.  
 B,E,I,T and Z: General work variables.

```

SS SS SS SS SS SS SS SS SS SS SS
SS
SS Atari BASIC SS
SS 'Space Mines' SS
SS Author: Jeff Wilkes SS
SS Copyright (c) 1983 SS
SS SoftSide Publications, Inc SS
SS SS
SS SS SS SS SS SS SS SS SS SS SS
    
```

If you don't wish to type this program, it is also included in this month's SoftSide CV and DV.

```

10 DIM P$(1),B$(18),D$(18),L$(1):POKE
53248,0:POKE 53249,0:POKE 53250,0:POKE
53251,0:GOSUB 1400
    
```

Clear screen, remove cursor.

```

20 GRAPHICS 7:SETCOLOR 2,0,0:SETCOLOR
4,0,0:SETCOLOR 0,0,14:POKE 752,1:COLOR
1
    
```

```

30 GOSUB 2000
    
```

```

35 REM TYPE D$ AS CTRL-X CTRL-X $< ESC
-DELETE INVERSE-I CTRL-, CTRL-,
    
```

Initialize variables, set up docking bay and draw mines.

```

40 Y=100:Q=1:SC=0:SD=0:D$="....."
    
```

```

100 POKE 656,0:POKE 657,0:"rrrrrrrrr
rrrrrrrrrd arrrrrrrrrrrrrrrrr":REM CON
TROL CHARACTERS
    
```

```

110 POKE 656,1:POKE 657,18:"a d":PO
KE 656,2:POKE 657,18:"zrrc":REM LOWE
R CASE ARE CONTROL CHARACTERS
    
```

```

120 POKE 656,1:POKE 657,4:" DAMAGE :
":SD:POKE 656,1:POKE 657,25:" SCORE
":":SC:
    
```

```

130 FOR I=1 TO MI:PLOT RND(1)*159,RND(
1)*79:NEXT I
    
```

Locate display memory.

```

140 DH=PEEK(560)+PEEK(561)*256+5:DL=DH
-1
    
```

Set up keyboard strobe and check for player's ship movement.

```

200 D=PEEK(764)
    
```

```

215 REM SEE LINE 35 TO TYPE D$
220 IF D=47 AND Y>12 THEN D$=".....
":Y=Y-2:P$(Y,Y+17)=D$:P$(Y+18,Y+35)=B$
    
```

```

225 REM TYPE D$ AS INVERSE-I ESC-BACKS
PACE (< CTRL-X CTRL-X CTRL-, CTRL-,
230 IF D=63 AND Y<100 THEN D$=".....
.":Y=Y+2:P$(Y-12,Y-1)=B$:P$(Y,Y+17)=D$
    
```

```

.":Y=Y+2:P$(Y-12,Y-1)=B$:P$(Y,Y+17)=D$
    
```

If not level 3, make scanner noise if appropriate.

```

250 IF PEEK(DL)>240 AND L<>3 THEN SOUN
D 0,30,14,12:FOR T=1 TO 20:NEXT T:SOUN
D 0,0,0,0
    
```

```
260 IF PEEK(DL)<15 AND L<>3 THEN SOUND
  0,30,14,12:FOR T=1 TO 20:NEXT T:SOUND
  0,0,0,0
```

Change mine direction if appropriate.

```
280 IF PEEK(DL)>250 THEN Q=-Q
290 IF PEEK(DL)<5 THEN Q=-Q
```

Move mines.

```
300 POKE DL,PEEK(DL)+Q
```

Check for collision with mine.

```
310 C=PEEK(53252):IF C=1 OR C=5 THEN G
  OSUB 1600
```

Move spaceliner.

```
330 X1=X1+10:IF X1>=210 THEN X1=30
340 POKE 53249,X1
```

Smiley movement checker.

```
350 IF Y>=27 AND Y<=53 THEN A1=1
360 IF A1=1 THEN GOSUB 1800
```

Munchie movement checker.

```
370 IF Y>=57 AND Y<=83 THEN A2=1
380 IF A2=1 THEN GOSUB 1900
```

If player hit creature, make noise and add to damage.

```
400 CL=PEEK(53260):IF CL=4 OR CL=6 OR
  CL=8 OR CL=10 THEN SOUND 2,20,14,14:SD
  =SD+5:GOSUB 1600
```

Check if player hit spaceliner.

```
420 IF CL=2 AND DS=0 THEN GOSUB 1700
```

If player returned safely, increment score and make noise.

```
430 IF Y=100 AND DS=1 AND NH=0 THEN SD
  UND 0,20,10,10:DS=0:SC=SC+75:POKE 656,
  1:POKE 657,33:? SC;:SOUND 0,0,0,0:POKE
  53278,0
```

If score is 500 or more, repair ship (damage 0%).

```
440 IF SC>=500 AND DR=0 THEN SOUND 0,1
  0,14,14:SD=0:POKE 656,1:POKE 657,13:?
  SD; "% " :SOUND 0,0,0,0:DR=1
```

```
450 IF Y=100 AND DS=1 AND NH=1 THEN DS
  =0
```

```
800 GOTO 200
```

Print title, make some noise and get difficulty level.

```
1400 GRAPHICS 2:SETCOLOR 2,0,0:SETCOLO
  R 4,0,0
```

```
1410 POSITION 5,4:? #6;"SPACE":POSITIO
  N 10,5:? #6;"mines"
```

```
1420 FOR V=14 TO 0 STEP -1:SOUND 0,60,
  4,V:SOUND 1,80,8,V:FOR T=1 TO 90:NEXT
  T:NEXT V:SOUND 0,0,0,0:SOUND 1,0,0,0
  1430 POKE 656,1:POKE 657,0:? "1=EASY
```

```
2=MEDIUM 3=HARD "?: "Enter difficulty
  level "?:INPUT L#:IF L#="" THEN 1430
  1440 L=VAL(L#)
```

Determine number of mines and creature speed for each level.

```
1450 IF L=1 THEN M1=10:IN=8:RETURN
```

```
1460 IF L=2 THEN M1=25:IN=9:RETURN
```

```
1470 IF L=3 THEN M1=40:IN=10:RETURN
```

```
1480 GOTO 1430
```

End of game. Print level, score and make some noise.

```
1500 POKE 656,1:POKE 657,0:? " S P A
  C E P O D D E S T R O Y E D "
```

```
1510 POKE 656,2:? "LEVEL ";L;" FINAL S
  CORE " :;SC
```

```
1520 FOR V=14 TO 0 STEP -1:SOUND 0,100
  ,2,V:SOUND 1,120,4,V:SETCOLOR 2,V,V:SE
  TCOLOR 4,V,V:FOR T=1 TO 50:NEXT T:NEXT
  V
```

```
1530 SOUND 0,0,0,0:SOUND 1,0,0,0:POKE
  752,0
```

Play again?

```
1540 POKE 656,3:POKE 657,6:? " Press S
  TART to play again. ";
```

```
1550 PA=PEEK(53279):IF PA=6 THEN POKE
  764,255:RUN
```

```
1560 IF PA=7 THEN 1550
```

```
1590 END
```

Ship hit something. Return ship to space port, make some noise and add to the damage.

```
1600 SOUND 0,100,4,14:SOUND 1,80,8,14:
  FOR E=1 TO 5:POKE 704,14:FOR T=1 TO 10
  :NEXT T:POKE 704,54:NEXT E:POKE 704,10
  2
```

```
1610 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND
  2,0,0,0
```

```
1620 FOR B=7 TO 100 STEP 2:P#(B-10,B-1
  )=B#:P#(B,B+17)=D#:NEXT B:Y=100
```

```
1630 POKE 53278,0:POKE 764,255:NH=1
```

```
1640 SD=SD+5:POKE 656,1:POKE 657,13:?
  SD; "% "
```

Check if game is over.

```
1650 IF SD>=100 THEN 1500
```

```
1660 RETURN
```

Player destroyed spaceliner. Make noise increment score and add two mines.

```
1700 SOUND 0,80,2,12:SOUND 0,140,6,12
```

```
1730 SC=SC+50:POKE 656,1:POKE 657,33:?
  SC;
```

```
1740 POKE 764,255:D=0
```

```
1750 POKE 705,14:FOR T=1 TO 50:NEXT T:
  SOUND 0,0,0,0:SOUND 1,0,0,0:POKE 705,5
  4
```

```
1760 X1=25:POKE 53249,X1:DS=1:NH=0
```

```
1770 POKE 53278,0
```

```
1780 FOR M1=1 TO 2:PLOT RND(1)*159,RND
  (1)*79:NEXT M1
```

```
1790 RETURN
```

Move Smiley.

```
1800 X2=X2+IN:IF X2>=225 THEN X2=20
```

```
1820 POKE 53250,X2:IF X2=20 THEN A1=0:
  RETURN
```

```
1850 RETURN
```

Move Munchie.

```
1900 X3=X3-IN:IF X3<=20 THEN X3=225
```

```
1920 POKE 53251,X3:IF X3=225 THEN A2=0
  :RETURN
```

```
1950 RETURN
```

Dimension movement variables, find variable value table and string array storage area.

```
2000 B#=",,,,,,,,,,,,,":REM 18 CT
  RL-
```

```
2040 VT=PEEK(134)+256*PEEK(135)
```

```
2050 AT=PEEK(140)+256*PEEK(141)
```

Set up P/M graphics with 2-line resolution.

```
2080 POKE 559,46:POKE 53277,3
```

```
2090 PM=PEEK(106)-32:POKE 54279,PM
```

Clear, set color and draw play 0 (ship).

```
2100 FOR I=PM*256+512 TO PM*256+640:PO
  KE I,0:NEXT I
```

```
2110 POKE 704,102:X=124:Y=100
```

```
2120 P0=PM*256+512+Y
```

```
2130 FOR I=P0 TO P0+5:READ Z:POKE I,Z:
  NEXT I
```

```
2160 POKE 53248,X
```

Data for player 0.

```
3000 DATA 24,24,36,60,126,219
```

Find distance from AT to player 0 memory.

```
3050 OFF=256*PM+512-AT
```

Find least and most significant byte of OFF.

```
3060 V3=INT(OFF/256)
```

```
3070 V2=OFF-256*V3
```

Put P\$ in player 0 graphics area and poke new length for P\$.

```
3080 POKE V1+2,V2:POKE V1+3,V3
```

```
3090 POKE V1+5,1
```

```
3100 POKE V1+6,20:POKE V1+7,1
```

# ATARI®

Fill D\$ with player 0 data.

3110 D\$(1,18)=P\$(236,253)

Draw player 1 (spaceliner).

3150 FOR I=PM\*256+640 TO PM\*256+768:PO  
KE I,0:NEXT I

3160 POKE 705,54:POKE 53257,1:X1=40:Y1  
=11

3170 PO=PM\*256+640+Y1

3180 FOR I=P0 TO P0+3:READ Z:POKE I,Z:  
NEXT I

3210 POKE 53249,X1

Draw player 2 (Smiley).

3220 FOR I=PM\*256+768 TO PM\*256+896:PO  
KE I,0:NEXT I

3230 POKE 706,198:X2=25:Y2=40

3240 PO=PM\*256+768+Y2

3250 FOR I=P0 TO P0+7:READ Z:POKE I,Z:  
NEXT I

3280 POKE 53250,X2

Draw player 3 (Munchie).

3290 FOR I=PM\*256+896 TO PM\*256+1024:P  
OKE I,0:NEXT I

3300 POKE 707,250:X3=225:Y3=70

3310 PO=PM\*256+896+Y3

3320 FOR I=P0 TO P0+9:READ Z:POKE I,Z:  
NEXT I

3350 POKE 53251,X3

Data for players 1-3.

3400 DATA 224,252,127,62,60,126,219,25  
5,189,195,126,60,40,40,126,223,255,31,  
126,36,36,108

3500 RETURN

## ATARI® SWAT TABLE FOR: SPACE MINES

LINES	SWAT CODE	LENGTH
10 - 110	PQ	629
120 - 230	WX	544
250 - 370	AD	509
380 - 440	US	528
450 - 1430	RC	503
1440 - 1530	EP	520
1540 - 1620	CT	518
1630 - 1770	JE	507
1780 - 2080	XH	392
2090 - 3090	GN	362
3100 - 3280	MX	462
3290 - 3500	ZP	270

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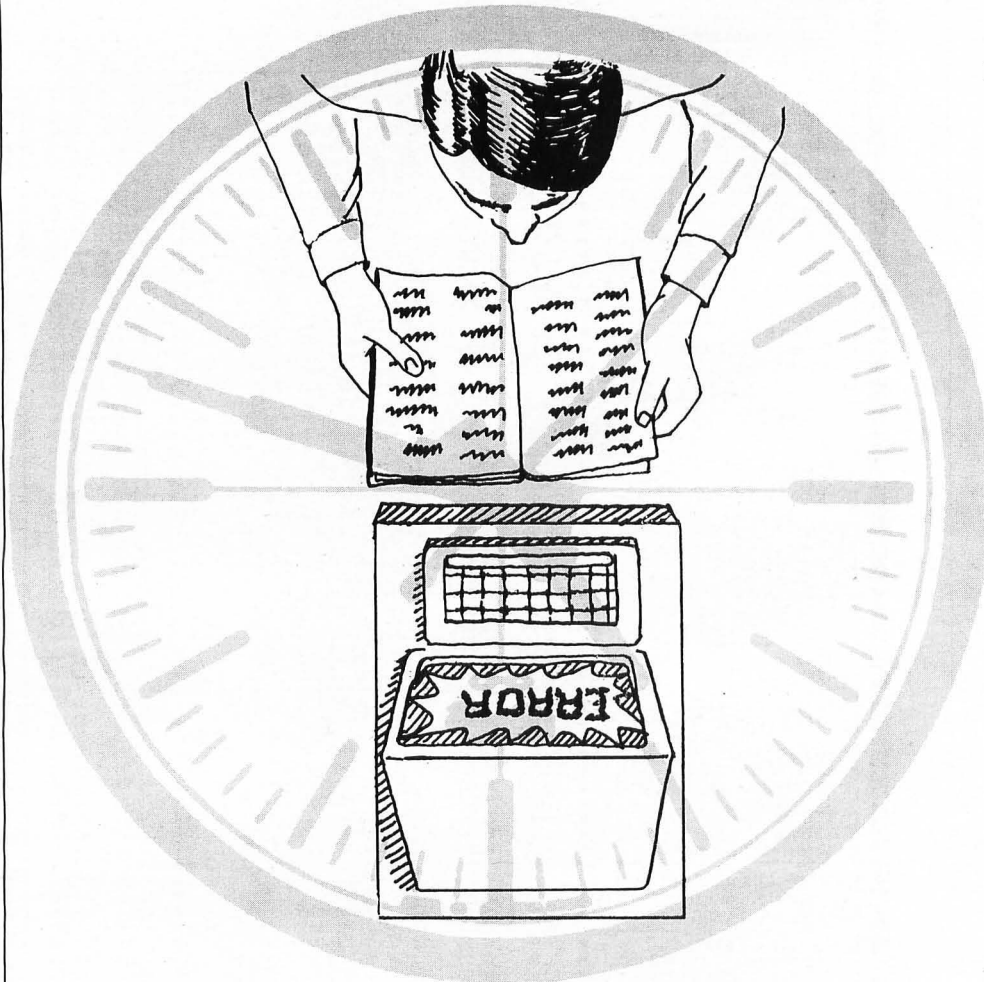
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# Human Errors



by Doug Tuttle

*Human Errors* is a set of three utility programs for an Atari® with 24K RAM and one disk drive. It is included as the bonus program on Issue 38 Atari DV. See the Bind-in Card elsewhere in this magazine to order this issue's disk.

*Human Errors* spells relief for both beginning and advanced programmers. The Atari computer, unfortunately, has no user-oriented error messages. Every time your program generates an error, you have to dig up your manual, look up the error number, and figure out what went wrong. *Human Errors* does all that for you, and a little more. *Human Errors* has three parts: the Human Errors program itself, the Error Message Entry

program, and the Error Message Copy program.

## The Human Errors Program

First LIST *Human Errors* onto disk so you can merge it with your own program. Then, LOAD your program and ENTER *Human Errors*. It starts at line 32000, so your program's lines must all have lower numbers.

ERTRAP is a variable used in place of the TRAP statement. Since the program is TRAPPED to the *Human Errors* routine at line 0, you cannot use TRAP in your program. In its place, let ERTRAP equal the line number you would have used in the TRAP state-

ment. For example, use ERTRAP = 100 instead of TRAP 100.

Whenever your program generates an error, *Human Errors* does three things:

- 1. Prints the error number, and the line number where it occurred.
- 2. Gets the error message from the disk and prints it. If you do not have the error disk in the disk drive, or have no disk drive, it skips this section of the program.
- 3. Prints a list of options.

You have five options at this point:

1. STOP execution.
2. LIST the error line.
3. Continue at the ERTRAP line (same as TRAP statement).
4. Continue at the error line.
5. Continue at the next line (after the error line).

## Error Message Entry Program

This program writes the error messages used by the *Human Errors* program.

To use it, type the error number, hit RETURN, and enter the message. When you finish, just type "QUIT", and the computer locks the data files for you. Be careful not to make any mistakes, because you have no way to correct them once you save the messages to the disk. If you decide to start over after typing "QUIT", you have to unlock the two data files, and reRUN this program. If you did not type "QUIT", just type RUN.

## Error File Copy Program

This program makes a backup copy of the error message data files on another disk. Unfortunately, it requires at least 24K memory because it has to read the entire error message file into memory in order to write it onto the new disk.

This is because of the NOTE/POINT commands. The only disadvantage in using NOTE/POINT commands is that the values generated and used are good only on one particular disk. The values change because the data files are almost always saved in different sectors on different disks. Therefore, you need a program that reads the entire error message file into memory, writes it out to the new disk, and generates the new POINT data file in one operation.





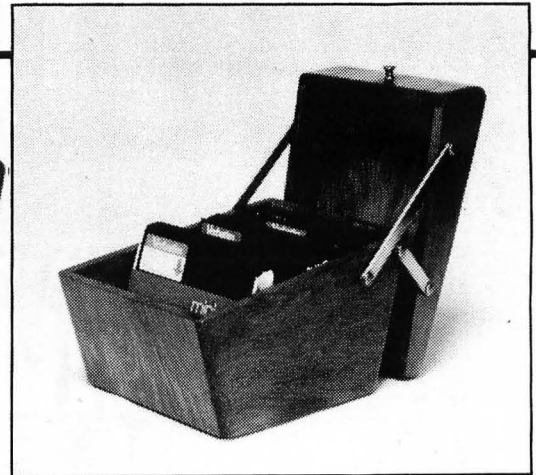
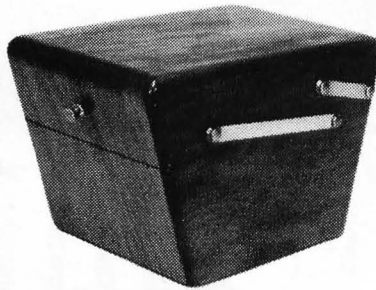
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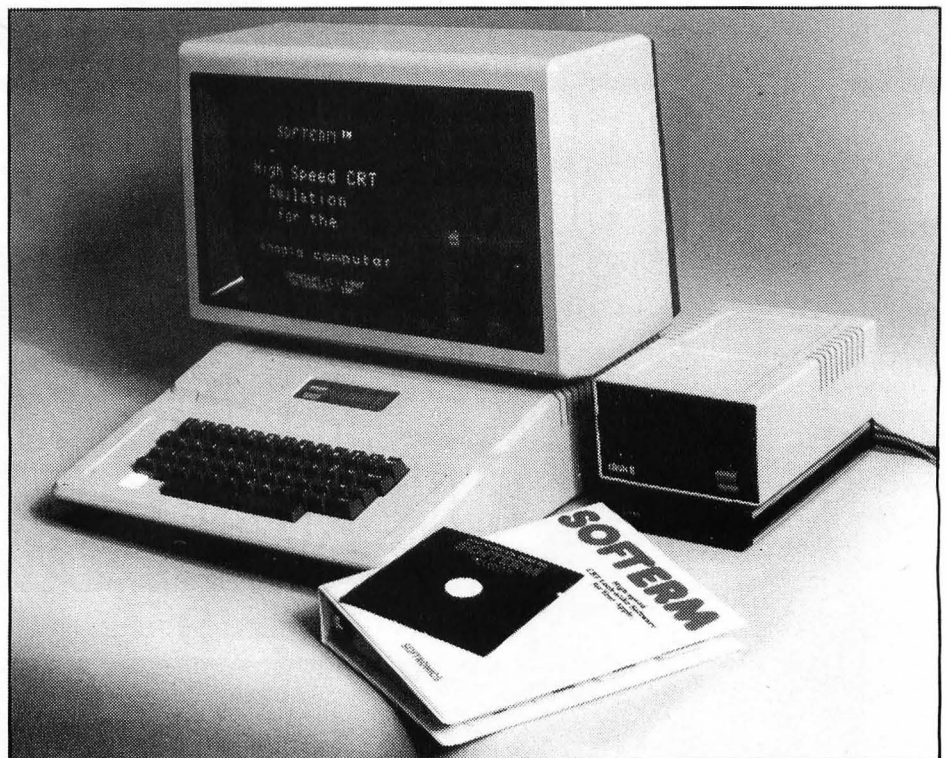
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*Softerm* requires an Apple II with Autostart ROM or Apple II Plus with 48K and one disk drive. An asynchronous serial interface is required for connecting to another computer system or modem. It is available for \$150 from Softronics, Inc.



continued on page 106

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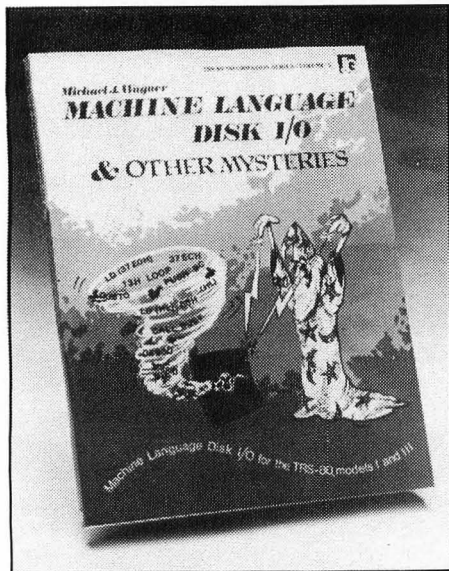
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*Machine Language Disk I/O & Other Mysteries* contains 190 pages of information and discoveries on disk I/O for beginner and expert alike, including information on how to use Z-80 Assembly Language to control the TRS-80® Model I and Model III directly.

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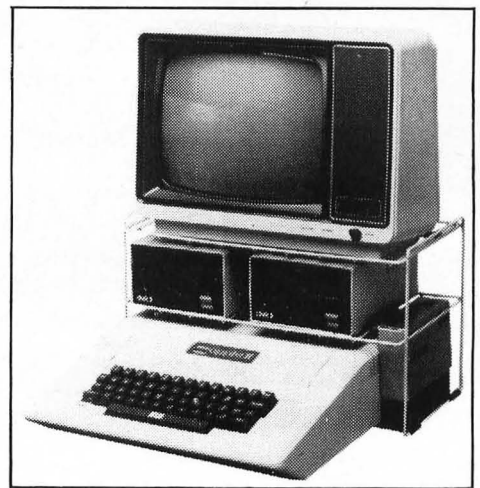
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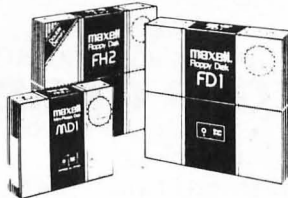
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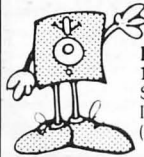
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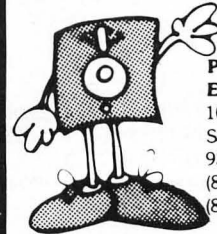
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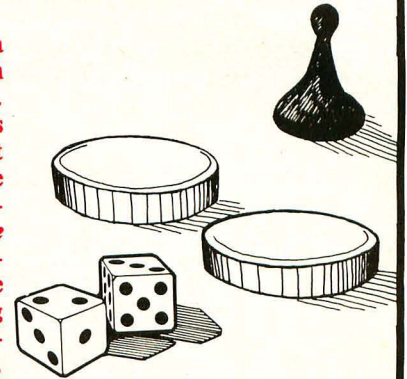


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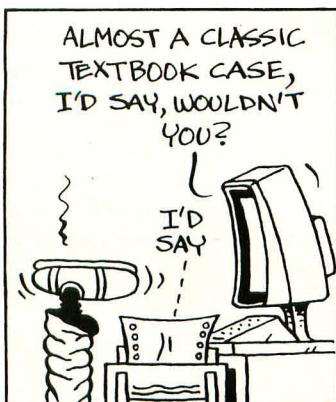
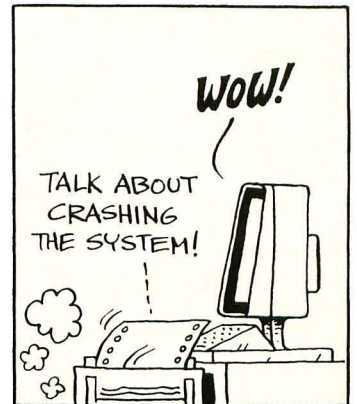
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