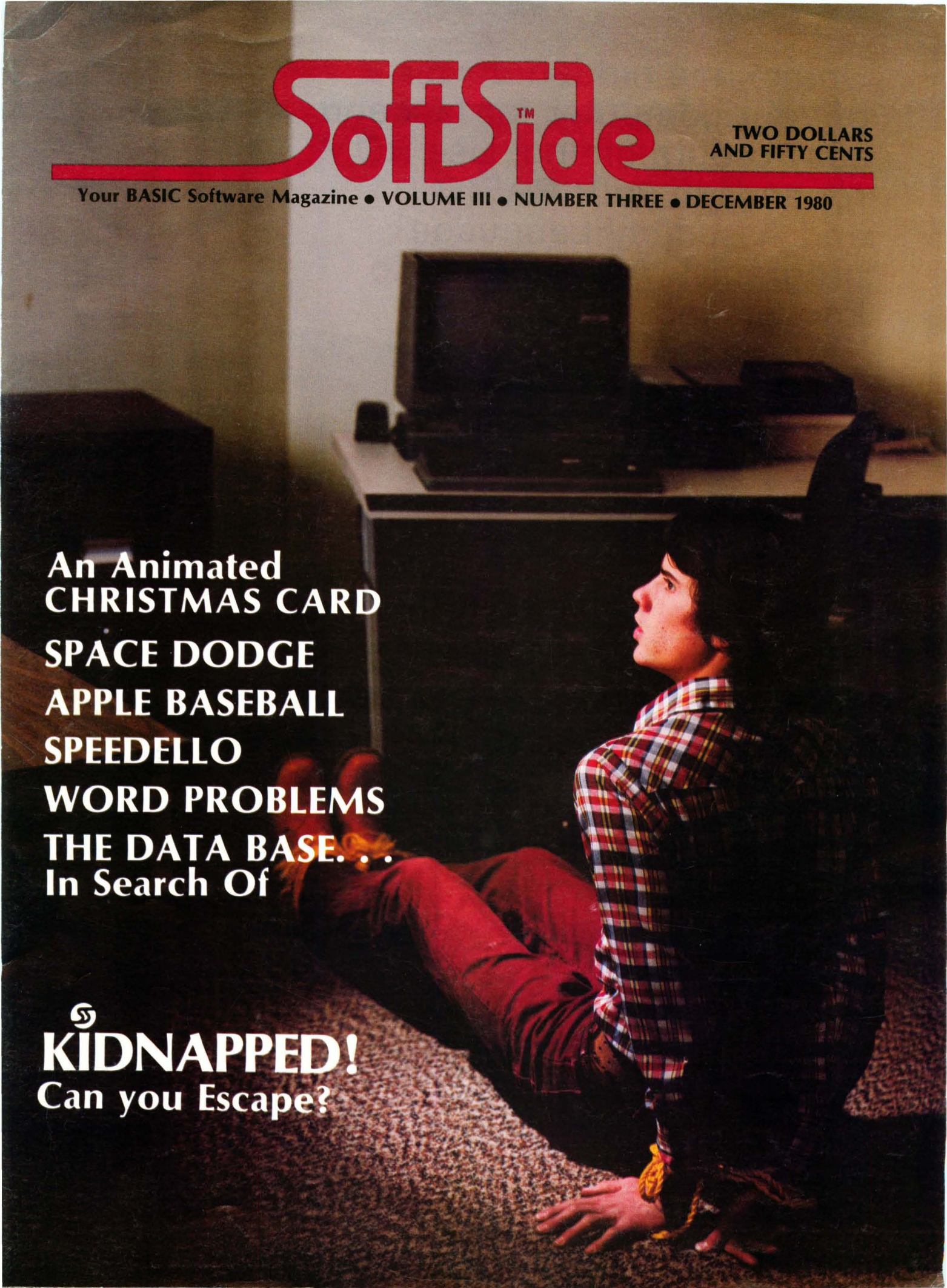



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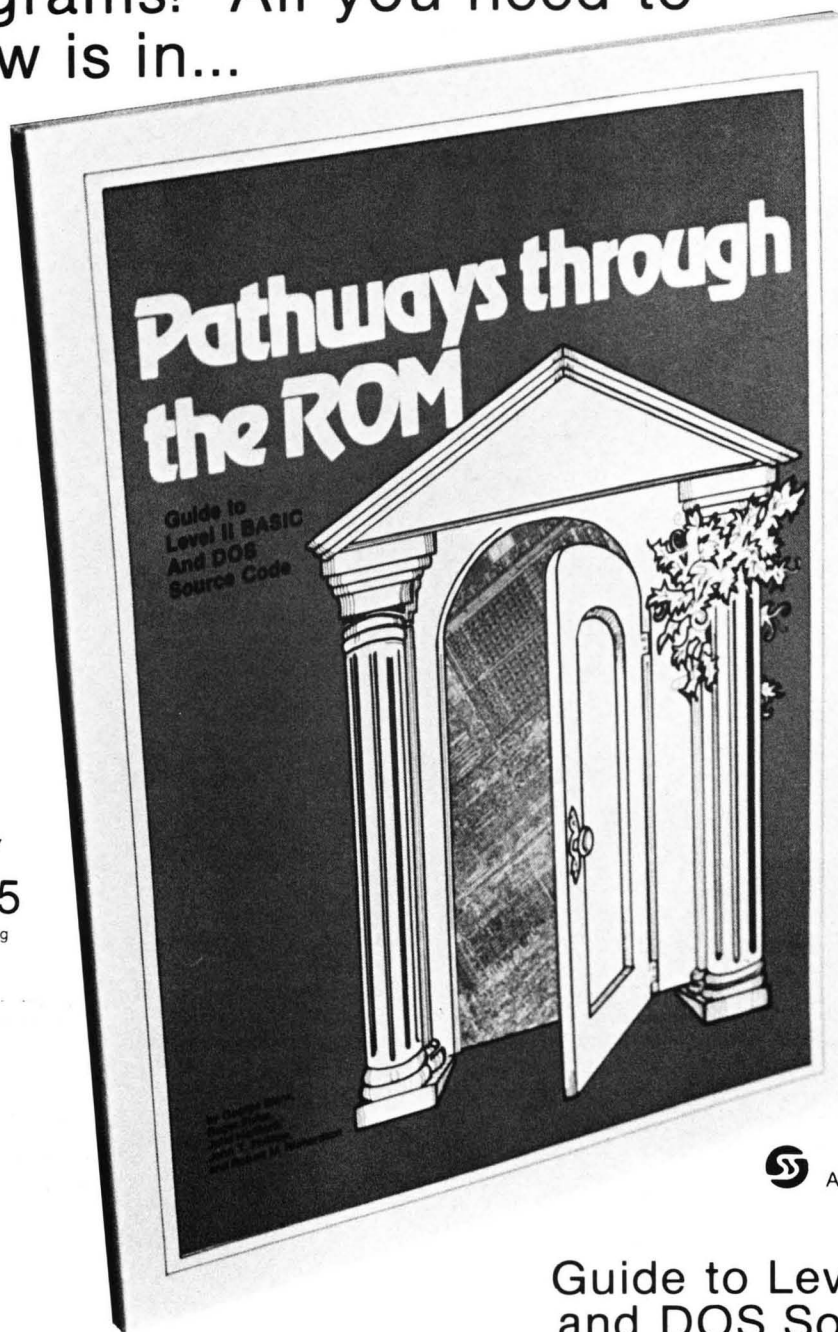
A photograph of a person with long dark hair, wearing a plaid shirt and red pants, sitting on a carpeted floor. They are looking towards a computer monitor on a desk in the background. The person's hands are on the floor, and they appear to be in a state of distress or contemplation.

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TSE explored the 'software' territory in those 'frontier days' carefully . . . scouting out only the very best, leaving the weaker pieces by the roadside. The number of submissions was increasing, and we had all that we could do to provide proper service for our customers. We decided then and there that we would publish only 'the' very finest software available and commit ourselves to a policy of 'selectivity' and strong customer service.

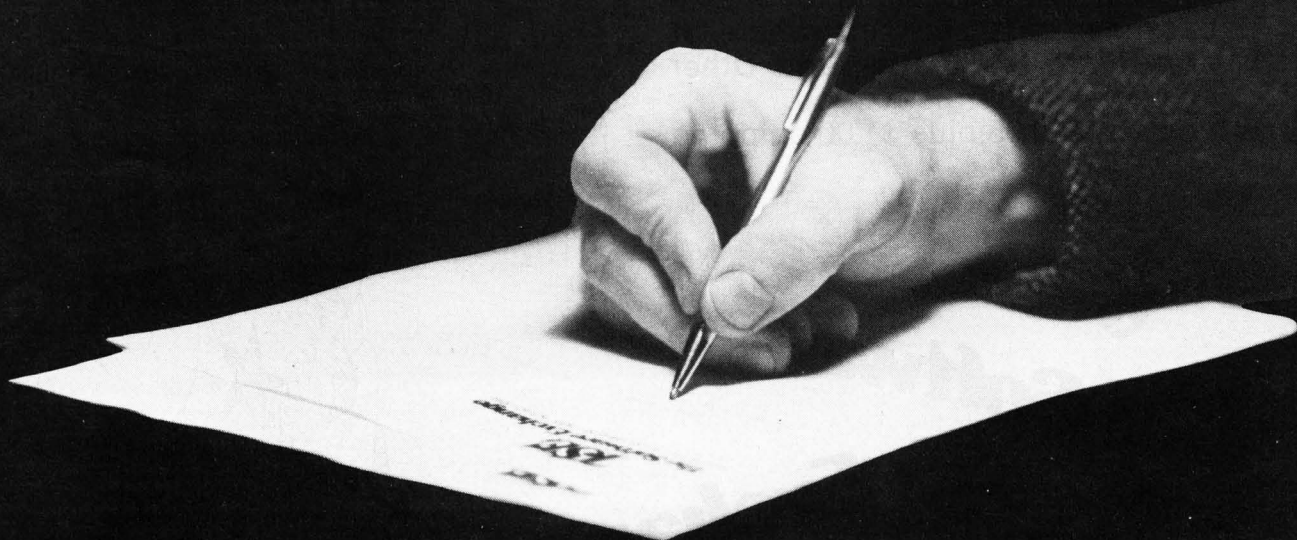
Well, it worked . . . . Since those days in the basement we have grown from a Mom and Pop operation with a dozen software titles to a company with 40 employees and over 500 titles. TSE distributes software for over 50 different vendors. We considered ourselves 'pioneers,' and as such we learned many things about our business and about our customers. We've made mistakes . . . who hasn't, however, the two most important factors in our success have been a keen eye towards selecting good software and a commitment towards strong customer support.

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# EDITORIAL

by Mark Pelczarski

As promised, I've been at some of the recent computer shows. In ways, they haven't changed much. The big attraction now, instead of all the flashy, noisy games (which are commonplace now, I suppose), are radio controlled robots. The one that looked like an R2-D2 in a giant Coke can began to get a little old after a while. You can only take the "Have a Coke and a Smile" song so many times in a four-day weekend. Still, the four or five robots I saw were quite popular with the munchkin crowd and with TV and newspaper crews assigned the wonderful job of finding something interesting to photograph at yet another convention. The robots also provided amusement for the exhibitors, by trying to pick up local lovelies. One in particular would sneak up behind policemen, shout "stick 'em up", flash its lights, and zip off. This robot, of course, was knee-high and not immediately visible.

As I mentioned in a previous column, the last computer show I'd been to before this fall was about three years ago. There wasn't anything startlingly new at the recent ones. Yes, there are always new systems for better prices — that's the way this whole industry will be for a while to come — but there weren't any really new concepts, as seemed the norm a few years ago. It seems that the current efforts are in building better and cheaper mousetraps (sorry, Lance). There even seems to be fewer specialized peripherals. As an example, a few years ago there were several companies featuring speech recognition and synthesis units. At the recent shows I saw none. Not enough sales, I suppose. There's no lack of competition in the printer market.

What I found the most interesting in the shows this fall as compared to a few years ago was the degree to which computers have become real consumer products. Three years ago the whole marketplace was strictly hobbyist. After the Apple,

TRS-80™ and PET came out — the first ready-to-run systems in a package — the hobbyist market grew considerably, but there also came an awareness in business that small computers were viable tools. That market's been growing by leaps and bounds in the past couple years, and it's not slowing down at all. Recently, however, the predictions of there being an actual "home market" seem to be coming true. A lot of people seem to be interested in buying home computers based on an idea that they must be useful, and if not, at least they look like fun, and there's probably something there to be learned. In fact the educational potential seems like one of the greatest hopes of those buying for the home. Overall, it looks like Atari's gamble of there really being a home market will come true. I hope kids don't forget about reading or about the great outdoors (with the possible exception of outdoor Gary, Indiana).

Time to come down off the soapbox and put in a sad note. James Garon has left the great Northern wilderness of New Hampshire to return to that endless suburb in Southern California, just in time to miss a real winter. He's taken a programming job with a company specializing in microcomputer software, and he'll still be writing occasionally for magazines; so don't fret, you'll probably be seeing some of "Garon's Goodies" around here and there. Both James and his wife Catherine are originally from sunny Southern Cal, land of constant weather, so they probably won't miss the blizzards too much. We wish them the best of luck.

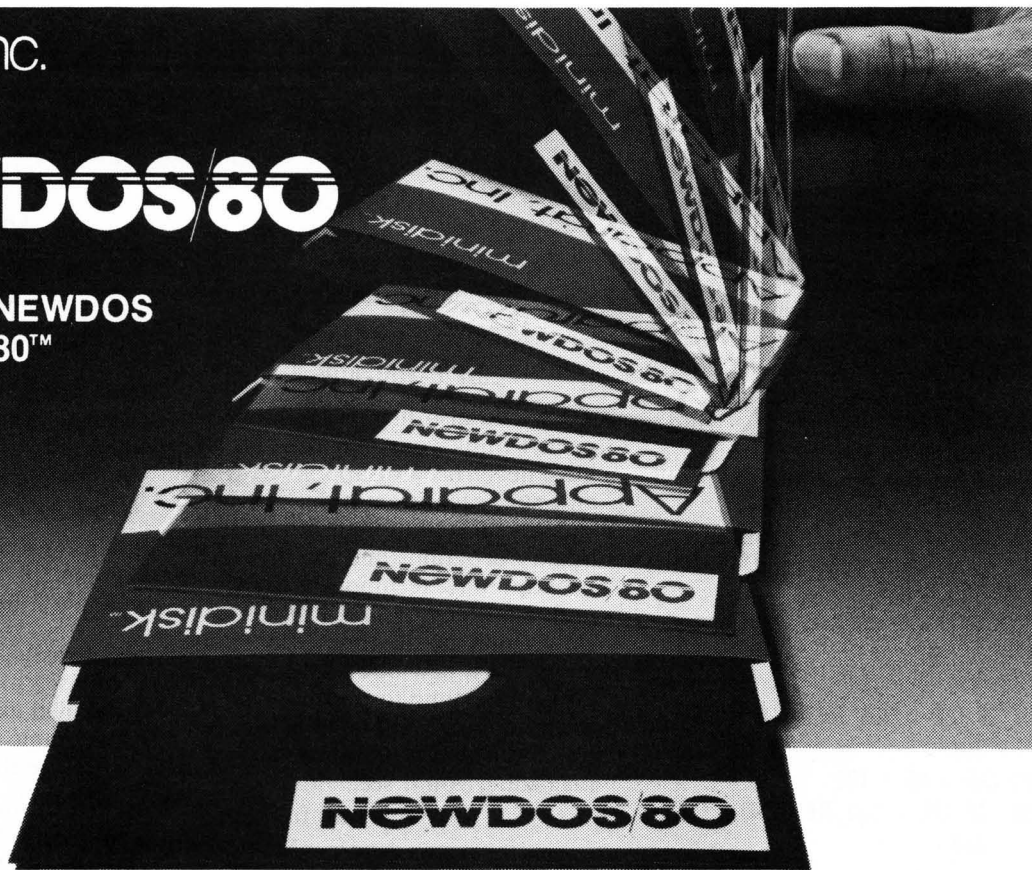
By the way, the White Sox pictures that appeared in October were provided courtesy of Chuck Shriver, Bill Veeck, and the White Sox organization. I've taken a lot of abuse for using those pictures with an article entitled "World Series", but I've got to get my kicks somehow. It was a long summer, with only the Red Sox on TV out here. I was so desperate I would have even watched the Cubs.



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Dear Mark,  
Your Caribbean cruising sailing simulation was neat, but I have the feeling you aren't a sailor. It took me a while to figure out why I had so much trouble moving the boats. You made the wind directions effects 180 degrees out. If a wind is said to be at 45 degrees this means that the simulation wind dir of 45 has the effect on the sailboats of coming in from 225 degrees and going away at 45. This fix works for me.

CWD = corrected wind speed  
ADD:

```
95 CWD = WD + 180
98 IF CWD > 360 THEN CWD = CWD -
   360
155 CWD = WD + 180
158 IF CWD > 360 THEN CWD = CWD -
   360
```

In lines 100 and 160 change WD to CWD.

One last thing: Have you ever been banging away at your keyboard only to discover that you had your fingers off by one key! I put a spot of Elmer's glue on top of my F and J keys. Anytime I begin to type I can feel the knob made by the glue under both forefingers.

Sincerely,  
Dick Gaines  
Lakeland, Florida

**Oops. You're right, I'm not the sailor. I guess I have to blame my cohort and technical adviser, Jim Klink. I probably gave him one PBR too many during our planning and testing evenings. Maybe that's why he takes all summer on his sailing excursions. Of course, I missed the error too; so I'm not totally innocent. Thanks for the correction.**

MP

Dear SoftSide,

I really enjoy soaring in the "Sailplane Derby" simulation but at times found myself wanting to look at the map before the hour was up. The following lines allow the map to be displayed by pressing the "M" key during the control phase of the simulation.

Add:-

```
2057 IF A$="M" THEN Q6=1
2145 IF Q6=1 THEN GOSUB 2390
```

Change 2390 to read

```
2390 E=1:M1=0:Q6=0
```

I would also like to say how great I think your magazine is. I have never been disappointed with an issue; each month you provide us, the TRS-80 users, with high quality programs and insights into programming techniques. My major problem is that I type so slowly that by the time I finish one magazine a new one arrives and I don't have time to do my own programming. Ah! such is life, but one day I'll get published in your magazine, you'll see.

Your faithful reader,  
Andrew M. Dixon

Dear Mark,

I received a copy of September, 1980 *SoftSide* plus your recent note. The quality of your publication has improved a great deal recently. I was very proud to have contributed 'The Stereo Generator' article in your publication. Also thank you for the plug for Dandelion Micro Products. I will recommend your publication to everyone I know.

After proofreading the article, I noticed a few inaccuracies which are listed below:

1. The article on page 18 should state that the program will run on Apple II or Apple II Plus (except revision zero boards). Actually the program will run on any revision one board with 16K, (Integer Basic users would load Applesoft cassette first, etc.). To my knowledge, the program won't work on any Apple II with a zero board (whether he used Applesoft or not).
2. On page 19, first column, about middle of page '(1 and H2)' should be '(H1 and H2)'. This probably won't affect the program.

3. On page 74 locations 353 to 35F are out of context. Again, this wouldn't alter the program.

I hope everything else is all right.

Sincerely yours,

James D. Dwyer  
Mt. Vernon, IL

Dear Mark,

I am writing to you mainly about the July issue of *SoftSide*: Apple Edition.

I really enjoyed the issue. The occasional cartoons and the detailed explanations within the programs (as in *Pork Barrel*) enhance the programs.

Unfortunately since July, I have not really had access to an Apple II, so I haven't been able to run the programs. But I can read through *SoftSide* over and over again and enjoy it more each time!

I have not been able to use an Apple II because I'm a student at Marysville High School in California. Marysville is now "famous" because of an article in *Apple Education News* (May issue). I'll be a sophomore next school year, but I am very advanced in BASIC, and I'm on the threshold of assembly language. I've already submitted a program for *SoftSide*, but during the time it was evaluated, a similar program ("Router") appeared in *SoftSide*.

I have seen the program, *Catalog II*. I haven't entered it into the Apple yet, but I would like to make a suggestion. That is, change line 250 from:

```
250 C = 1: FOR I = 4115 TO
(PEEK. . . . TO:
250 C = 1 FOR I = 4153 TO
(PEEK. . . .
```

This would seem to eliminate the program itself from the menu (if it is used to INIT a disk, being the first program) since the change would make the program ignore the first program on the disk.

I am working on a game using ROM the robot, and a program using more of Apple's HI-RES colors, which I will send when I am finished and have them in working order.

I hope that you enjoy this letter. You may print my comments and suggestions in *SoftSide* if they seem appropriate. Keep up the good work.

Sincerely,  
Daniel Wood  
Oregon House, CA

Dear *SoftSide*,

In response to "Software Pirate": If you bought a computer to write your own programs, how come you're busy copying and not writing? Afraid somebody will copy it?

Sincerely,  
Ken Layton  
Olympia, Wash.

P.S. I like the new *SoftSide* size and format.

Dear *SoftSide*,

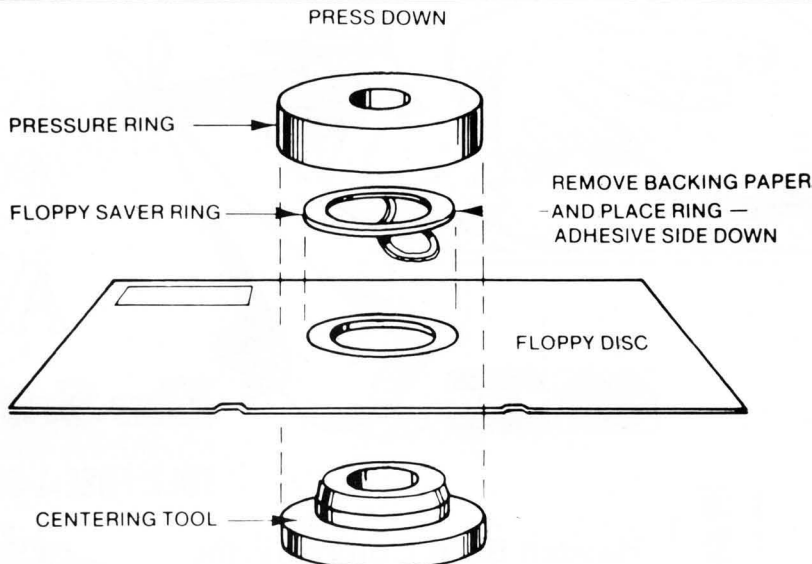
On the Master's Golf Program: We like it a lot, but found a few changes to be most helpful.

The first thing was, of course, Atari's color changes, most buggy during a game. We inserted POKE 77,0 at line 400 right before the POKE 752,1. This set the register back to zero without disturbing the game.

Next was something much more frustrating. Several times we found our game being cancelled by an error 3 at line 596. (The value of B was a minus and Atari could not plot the minus number) we corrected this problem by: 596 color 2: If B < 1 then B = 2. Add line 597 Plot B,G (B12)-1.

Also if your readers are like us, they will want to play the game again without having to run the program and re-entering their names. Simply remove the: END at line 470, add line 471 IF NL = 9 AND STRIG(0) = 0 THEN 200, and add line 472 IF HL = 9 THEN GOTO 471. Doing this if you want to play a different game with different people, you will have to use Break or System Reset but if not, all you'll have to do is fire and you'll have a new game with the same people.

E. M. Bigham  
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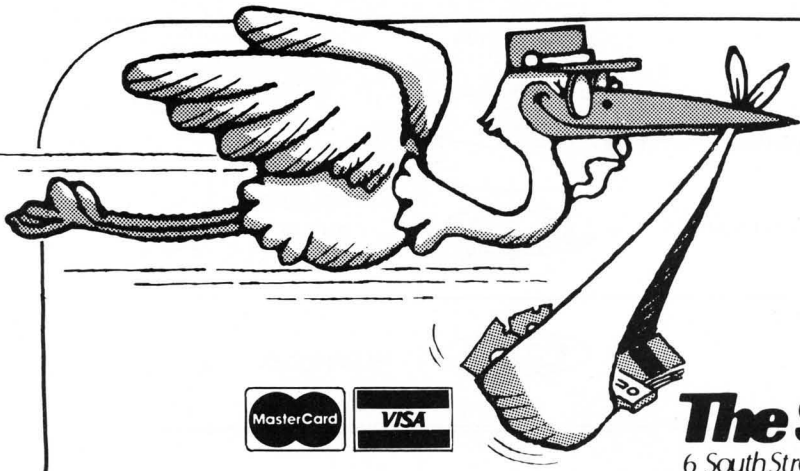
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DOG FIGHT is a one or two player game for your Apple which puts you at the controls of a jet fighter. You have an overview, so you know when someone is on your tail; but avoiding those tracers while gunning down the enemy is a task much easier to conceive than to execute. Your reflexes must be razor-sharp, and your timing near perfect . . . and then it's only tough. Each time you successfully down your enemies, more appear to make your task harder.

Those hardy enough to down a plethora of enemy fighters (10,000 points) will receive a secret message from the computer entitling them to a plaque certifying them as a Dogfight Ace. But be warned: Even if you are half-falcon and the rest turbojet, it won't be easy...just exciting.

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- Double precision transcendental functions. SIN, COS, TAN, ATN, LOG, EXP, SQR are supported as an exclusive feature of BASIC Compiler. Powerful BASIC language features you can use within Disk BASIC include:
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- Four variable types: Integer, String, Single Precision Floating Point (7-digits) and Double Precision Floating Point (16-digits)
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- Direct access to CPU I/O ports with INP and OUT
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- Nested IF/THEN/ELSE
- Boolean operators OR, AND, NOT, XOR, EQV, IMP
- Complete file manipulation statements: OPEN, CLOSE, GET, PUT, KILL, NAME
- PRINT USING for formatted output. Includes asterisk fill,

## The Inside Story

It's the optimization processes that take place while a program is being compiled that make programs run under BASIC Compiler compact and incredibly fast. The optimizations occur:

- Expressions are reordered to minimize temporary storage and to transform floating point division into multiplication wherever possible.
- Constants are folded wherever possible.
- Constant multiplications are distributed to allow more complete constant folding.
- Peephole optimizations are performed, including strength reduction.
- The code generator is template-driven, allowing sequences to be generated for the most commonly used operations.
- String operations and garbage collection are extremely fast.

## System Requirements

BASIC Compiler will operate on a Radio Shack Model I TRS-80™ with one disk and 48K RAM. Programs compiled with the BASIC Compiler may be stored on disk. .... \$195.00 + \$3.00

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**ABOUT THIS ISSUE. . . . .**

Hi. It's us, 'tis we, the editorial munchkins have returned!

We have lots of good stuff this month. Our featured article, with apologies to R.L. Stevenson of course, is entitled "Kidnapped!" Written by Peter Kirsch, not to be confused with the firewater of similar nomenclature, "Kidnapped!" places you in a tall building. You must escape. Sound easy? Each floor contains an adventure in itself. We, of course, wish you the best of luck. But then we aren't in a strange building. . .yet.

And then for all you starship jockeys there's a whole mess of stuff: "Space Dodge" for both the S-80 and the Atari, and "Missile Evasion" for the S-80. In "Space Dodge" you must pilot a craft through the treacherous deep space Triton minefields without hitting one. If you venture off the screen, the twin laser generators will vaporize you. If you succeed, you find out that the Federation can't spell (S-80 version only). "Missile Evasion" seems self-explanatory. Avoid the missile, please.

For you Apple owners, the long-awaited Baseball program, Son of a Son of S-80 Baseball by a whole slew of enterprising programmers is in this month. And you don't even have to wait until next spring to try it out.

Kids having problems with math? Our stocking caps are off to Denslo Hamlin, who has provided us with a "Word Problems" program that poses mathematical brain-twisters for those who like to have their brains, errrr, twisted. We munchkins never bothered with math, really. Could that have anything to do with our single-digit salaries?

The prolific Mr. Bohlke once again has showered us with entertaining programs from the cornfields (soyfields?) of Iowa. Your Atari owes the man a debt of gratitude. This month it's "States & Capitals," a quiz for geography wizards, and "Speedello" a new version of the game Othello, not to be confused with Shakespeare's famous Moor.

And guess what? The SoftSide Continuing Data Base does just that: continues. (This ad courtesy of the Dept. of Redundancy Dept.)

And. . .oh oh, here comes the Editor. A merry (and hasty) munchkin farewell. See you next month.



# The Right Tool for the job.

## STAD RAMWARE

Unlock the power of the Z-80™ with STAD Symbolic Trace and Debug

A powerful monitor for the TRS-80™ with special Debugging. Single Step through the machine language programs or set up to three breakpoints, and look at this display format!

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RSM-2D: 3 MONITORS FOR TRS-80™ disk systems...\$29.95

## Z-80 ZAP/CMD RAMWARE

Powerful disk modification utility in machine language allows you to READ, DISPLAY, MODIFY, WRITE, and COMPARE disk sectors. It will calculate Hash Index Codes for any filespec and tell you where to put it (ever have a HIT read error?). You can recover killed disk files. Search for a byte and have it identified with a flashing cursor.

Convenient to use, with cursor controlled by arrows, paging forward and backward, toggle between same sector on different disks and between Z80ZAP and DEBUG. Do disk backups, apply patches and fixes, and explore your disk.

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**Six Micro Stories** offers a good introduction to Interactive Fiction. Six very short stories involve you, the reader, in a variety of situations: You are an American spy in Hitler's Third Reich, the pilot of a doomed 747, and more.

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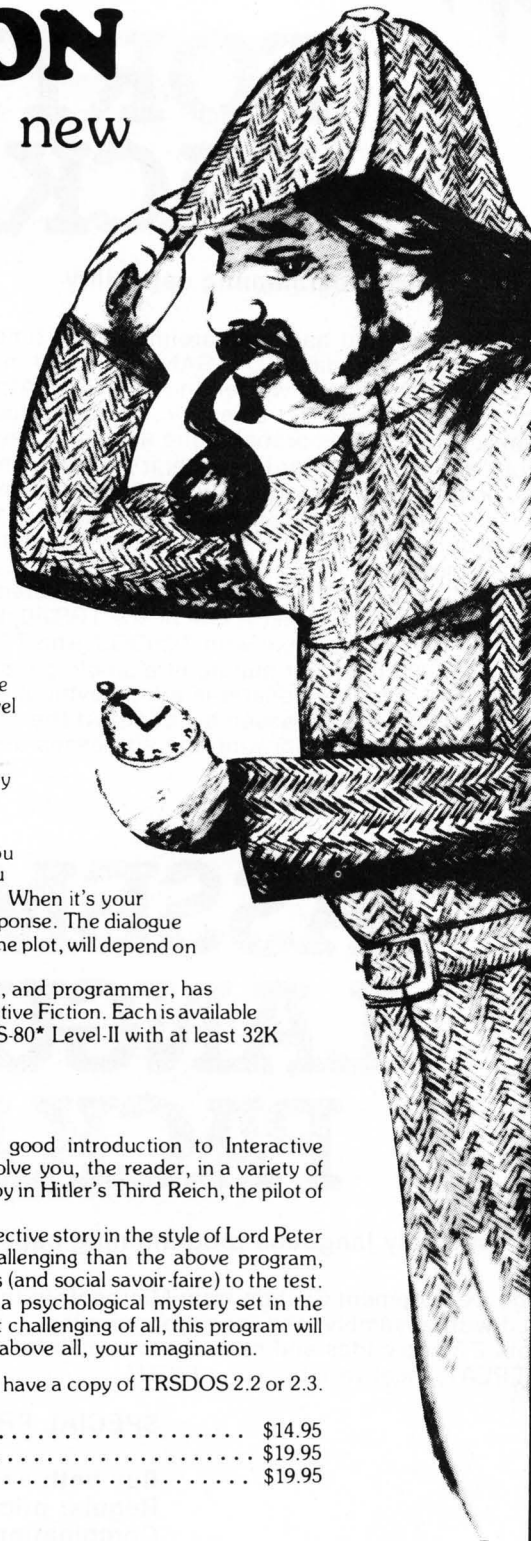
Six Micro Stories . . . . . \$14.95  
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Because FORTRAN is a popular language that has been around a long time, and because Microsoft's TRS-80 FORTRAN is an ANSI Standard FORTRAN, users will instantly have access to the vast number of applications programs already written in FORTRAN. After all, FORTRAN is the standard language used throughout the industry for scientific, mathematical, engineering, statistical and modeling programs. FORTRAN is probably the answer if Level II BASIC has presented any limitations for your applications. For instance; it's easy to interface directly to machine language subroutines, double precision scientific functions are included, FORTRAN can support any I/O device, and because it's a compiler, FORTRAN is faster (3-10 times faster!) than BASIC. Floating point and I/O subroutines from FORTRAN's library may be incorporated in subroutines, plus users can create their own library of the subroutines used most often. Using the text editor and linking loader, data files and FORTRAN files can be created and edited, loaded and linked together—that means much more extensive use of the TRS-80™ disk hardware.

The TRS-80™ FORTRAN Package is fully compatible with TRSDOS. The TRS-80™ FORTRAN compiler can compile approximately 1200 lines per minute in a single pass and requires a minimum 32K TRS-80™ disk system. The compiler generates a fully symbolic listing of the machine language that is generated—a great way to learn assembly code! At the end of the listing, the compiler produces an error summary and tables showing the addresses assigned to labels, variables and constants. . . . . **\$95.00 + \$2.50**

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The TRS-80™ Assembly Language Development System from Microsoft is the perfect, low-cost package to help you get started with assembly language programming.

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# COLUMN CALCULATOR 4.1

by David T. Gray



COLUMN CALCULATOR is a "word processor for numbers," a number processor designed to be used like a desk calculator. It is different than a calculator in that it can handle large blocks of information as if handling one number at a time. The work space can be thought of as a large matrix with rows and columns much like an accountant's spread-sheet. Each column or row can be labelled. The cursor can move around the worksheet. Data can be easily entered into the columns; and the columns can then be moved around. Columns can be overlaid from an existing data file on disk. One column can be added, subtracted, multiplied, divided, or raised to a power of another and the results put in another column. Columns can be

compared to one another (if column A is greater than, less than, equal to, not equal to column B, then put the contents of column C into column D). Columns can be totalled, or set with a constant, and any column can be sorted, carrying the rest of the columns with it. A predefined function (series of computations) can be defined, thereby pre-programming the worksheet. Enter the data, execute the function, and print the results. The COLUMN CALCULATOR is an all-purpose data manipulator.

The statistical section provides analysis of the data. The analysis includes simple statistics (mean, median, mode and standard deviation), linear regression, simple correlation, histogram and the T-test.

The information can be

printed out on the lineprinter in a compressed format at any stage in the development of a data base. Thus, it can be used as a finished report or as a copy of the worksheet to permit the filling in of additional data for later entry into the data base. The data base can be saved on disk and recalled at a later date for modification or for generating a report. Any column in a file on disk can be referenced and added to the current worksheet. This is particularly useful for generating composite reports.

All user communication with COLUMN CALCULATOR uses FLASH, the line

input/editor routine. This enables the user to not only key in his instructions to COLUMN CALCULATOR, but to edit errors or data as well.

By connecting an amplifier and speaker to the cassette aux. output from the computer, the user can hear data entry feedback sounds which enable him to enter information into his worksheet without constantly watching the screen for visual feedback.

Information may be reviewed at will by scrolling up, down, left or right. Everything appears on the video display screen as it occurs, thereby eliminating guesswork.

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Written by an air traffic controller, this realistic fast-paced simulation includes navigational beacons and the requirement that planes take off and land into the wind. The program's continuously variable skill level assures that you won't soon tire of this instructive and absorbing simulation.

In **Air Traffic Controller** you assume responsibility for the safe flow of air traffic within a 15 x 25 mile area up to 5,000 feet in altitude. During your shift as a controller in charge of this airspace 26 aircraft become active and under your control. Jets and prop planes have to be guided to and from the two airports, navigational beacons and ten entry/exit fixes. The aircraft enter the controller's airspace at various altitudes and headings whether or not you are ready.

**Air Traffic Controller** retains the basic realism of air traffic control. This program requires the same steady nerves under pressure and the same instant, almost instinctive, analyses of complex emergencies which are demanded of a professional air traffic controller. But "ATC" adds the excitement and well-defined goals of a game. This is just a simulation, and all passengers left in air traffic limbo by a panicked player will live to fly another day.

**Air Traffic Controller** is <sup>TM</sup> available for the 16K TRS-80, the Apple II, and Apple II plus on cassette for ..... **\$9.95**



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# Elegance and power in a mathematical language.

## APL

by Phelps Gates



Software you can rely on.

Now, a high-level, scientific programming language that doesn't cost \$200 or \$300 for the home computer. This language is perfect for the mathematician, scientist, engineer, or anyone who just wants to learn a new language. The power of this language is in its strong mathematical operations, especially with regard to matrices and vectors. Programs requiring matrix multiplication or other matrix problem solving that would require hours of programming time in BASIC are solved quickly and with minimal effort in APL. Not only is math made easy, but upon gaining proficiency in APL programming various string manipulations become child's play.

To aid in learning APL, lessons are included on the disk. Starting from the basics, you are brought step by step through the various programming techniques involved with APL. These lessons act as a tutor in a "learning by doing" atmosphere which will have you "talking APL" in no time. Also available is the book, **APL: An Interactive Approach**, which reinforces many of the examples given in the lessons. The book also provides additional insight into APL programming.

### LIMITATIONS

Due to the absence of the special APL character set on the TRS-80™, APL-80 uses shifted letters to represent the various APL characters. These shifted letters are identified on the screen by a graphics block before each shifted letter. If you have a modified TRS-80™, a lower case driver is included to display the shifted letters on the screen.

In addition to the keyboard limitations, there are several other limitations. Lamination, domino, and matrix inverse are not implemented but can be derived with user-defined functions.

Multiple specifications must be split into two statements unless the left-hand assignment is to a quad. This also applies to implied multiple specifications.

Reduction and reshape (p) are not permitted for empty arguments; the argument of add/drop may not be scalar; empty indices are not permitted.

A quad (q) can't be typed in response to a quad (nor can the name of a function which itself gets input from a quad). Quote-quad (m) is permitted.

No more than 32 user functions can be defined in a single workspace and a function may not contain more than 255 lines.

A comment (c) must occupy a separate line: a comment can't follow a function statement on the same line.

In the tape version, arrays are limited to five (5) dimensions.

### FEATURES

APL-80 on disk contains the following features: )SAVE and )LOAD workspace on disk; )COPY other workspaces into current ones; Return to DOS for directory or commands without losing your workspace; Send output to lineprinter; Five workspaces of lessons included; Sequential and random files; 15 digit precision; Monadic and dyadic transposition; Easy editing within FUNCTION lines; Latent expression (FUNCTION can "come up running" when loaded); Tracing of function execution; Real-time clock; User-control of random link; Workspace is 25587 bytes (in 48K machine); Arrays may have up to 63 dimensions.

### COMMANDS APL-80

APL-80 supports the following commands: Absolute value, add, and, assign, branch, catenate, ceiling, chr\$/asc, circular, combinatorial, comment, compress, deal, decode, divide, drop, encode, equal, expand, exponential, factorial, floor, format, grade down, grade up, greater, greater/equal, index generator, indexing, index of, inner product, label, less, less/equal, logarithm, maximum, member, minimum, multiply, nand, negate, nor, not, not equal, or, outer product, peek, poke, quad, quote quad, random, ravel, reciprocal, reduction, reshape, residue, reverse, rotate, scan, shape, sign, system, subtract, take, transposition.

### SPECIFICATIONS

Minimum system requirements: 32K disk system (48K recommended) Includes APL-80, Five workshaped of lessons, instruction manual.

Price: .....\$39.95 on disk

Reduced feature: 16K Level II tape version, no lessons.

Transpositions, format, and inner product not implemented. Reduced domain for some functions. 6 digit accuracy.

Price: .....\$14.95 on cassette

**APL: An Interactive Approach**

Price: .....\$16.95 (\$3.00 shipping charge)

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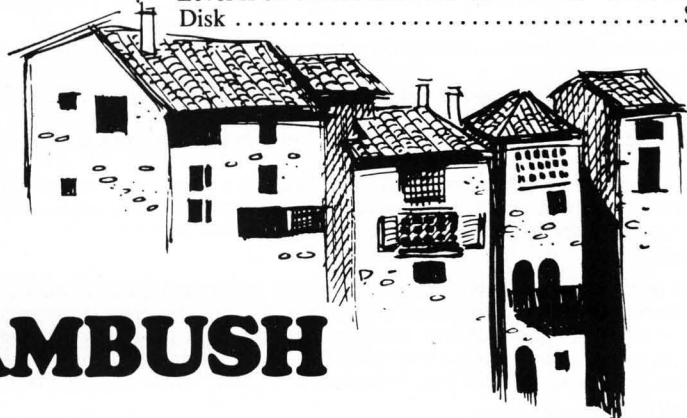
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THE  
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If you've got an Apple II Plus (or an Apple II with Applesoft Firmware ROM Card) with 48K memory and a 5 1/4" mini floppy disk drive, you can be playing Computer Bismarck in a few days. For \$59.95, you can get the game program disk, two mapboard charts (for plotting secret strategies in grease pencil between moves), two ship data charts, two system command cards, a loading instruction sheet, and a rulebook. . . . \$59.95

Computer Bismarck is also available for the S-80  
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Computer controlled mapboard of a typical French village.

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Extensive line of sight rules providing for hidden movement.

Each soldier individually rated for strength, intelligence, dexterity, and marksmanship.

Realistic weapons, characteristics, and explosives.

Sophisticated movement rules permitting running, walking, crawling, dodging, and sneaking.

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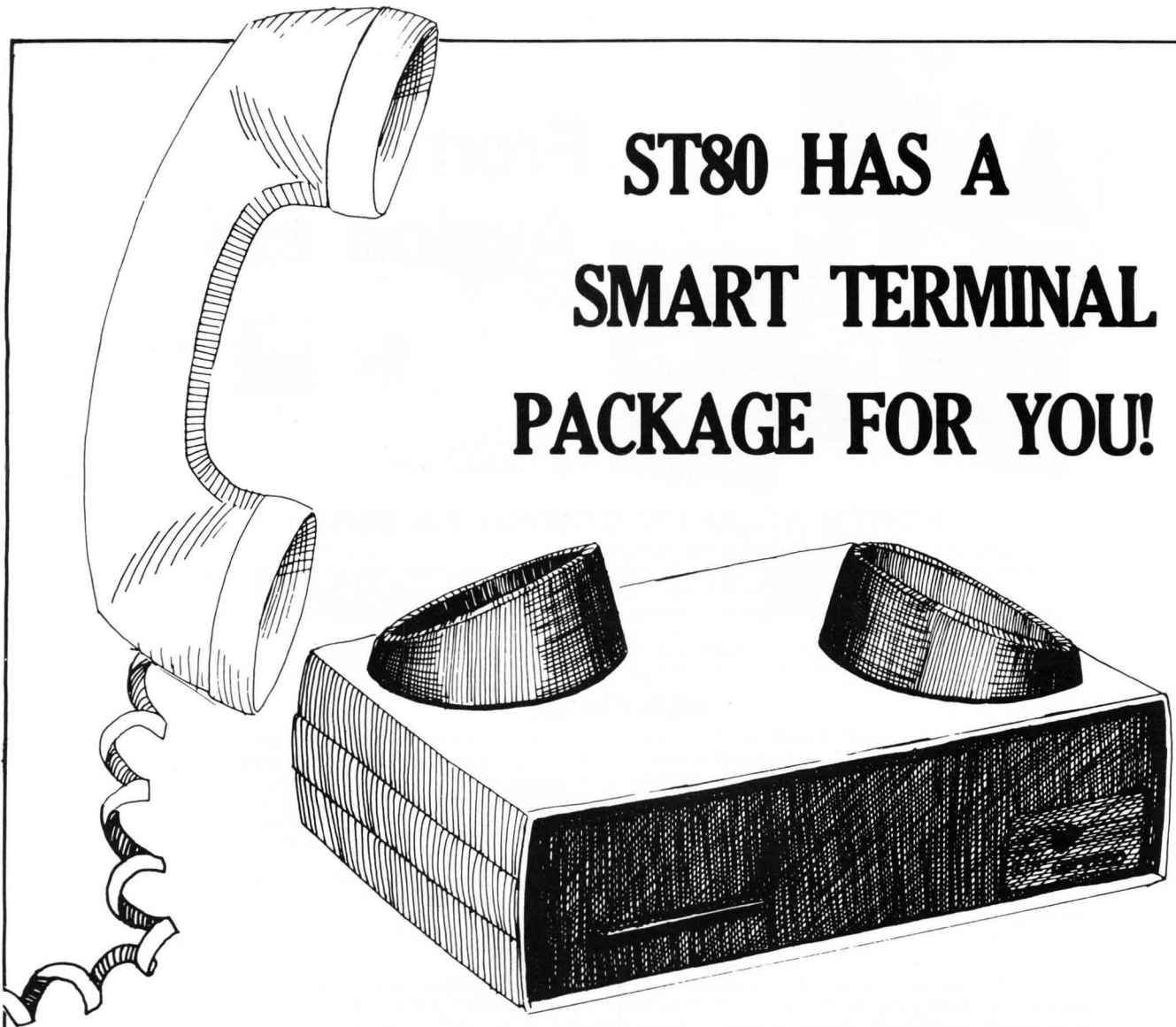
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All four programs include the ability to use an unmodified TRS-80™ keyboard to produce RUB, ESC, and other control characters for time sharing, software control of the RS-232-C board, repeat key, bell, software support for the three most common upper/lower case hardware conversion, and line printer output.

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Preset parity, word length, and baud rate (regardless of switch settings on the RS-232-C board) for THE SOURCE, MICRONET, and FORUM 80, automatic testing of the RS-232-C board, and even spooling of prepared messages on tape directly into FORUM 80 using a basic program supplied as a line listing. 4K Level II cassette, ..... \$24.95

## ST80\*

Reprogram your RS-232-C board from the keyboard, and run at different baud rates. Note: does not have auto testing of the RS-232-C or tape spooling. 4K Level II cassette ..... \$49.95

## ST80\* D

Connection time clock, option of user-created translation tables for keyboard, gathering and pre-formatting data to be sent directly from disk to host computer, spooling of received files to disk or printer, editing of received files, and auto logon. Use it with VTOS 3.1, and get device-driven I/O, job logging, and chaining. 32K disk program, ..... \$79.95

## ST80\* III

ST-80 D with extra utility programs. 32K disk program, ..... \$150.00

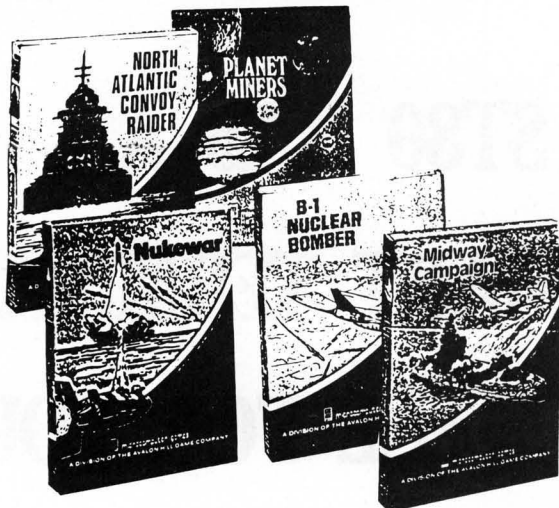
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\$15.00 each

## NORTH ATLANTIC CONVOY RAIDERS

This game is a computer simulation of the Bismarck convoy raid of 1941. The computer controls the British convoys and British battleships. Will the Bismarck sink the Hood, only to be sunk in turn by the Rodney and King George V, as in history? Or, will the Bismarck cripple or sink the British Home Fleet and go rampaging through the convoy lanes? Your decisions will determine the fate of the Bismarck.

This SOLITAIRE game includes software and instructions for the following computers: TRS-80\* Level II, 16K Memory Apple II\*, Applesoft, BASIC, 16K Memory beyond BASIC Pet\*, 16K Memory

## NUKEWAR

NUKEWAR is a computer simulation of a nuclear confrontation between two hypothetical countries. You must choose the methods to defend your country: either by massive espionage efforts, or by building jet fighter-bombers, missiles, submarines, and anti-ballistic missiles. Meanwhile, your cold and calculating computer will choose its own strategy to defend its country while also trying to destroy you utterly! NUKEWAR is very fast-paced and easy to learn, and can be enjoyed equally by game players of all ages and levels of experience. Best of all, once the nuclear war is over, you can bring the two countries back to life and try it again!

This SOLITAIRE game includes software and instructions for the following computers: TRS-80\* Level II, 16K Memory. Apple II\*, Applesoft\* BASIC, 16K Memory beyond BASIC Pet\*, 16K Memory.

## PLANET MINERS

PLANET MINERS gives one to four players the chance to compete with each other and the computer to stake valuable mining claims throughout the solar system in the year 2050. Each player must decide which ships to send to which planets and when to try "dirty tricks" like sabotage and claim-jumping. If there are less than four players, the computer takes the other parts. (It can even play all by itself!) Thus, PLANET MINERS can either be played solitaire or with friends.

This 1-4 player game includes software and instructions for the following computers: TRS-80\* Level II, 16K Memory Apple II\*, Applesoft\* BASIC, 16K Memory beyond BASIC Pet 2001\*, 16K Memory.

## B-1 NUCLEAR BOMBER

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# CHRISTMAS CARD

by Fred Pence

**Christmas Card requires 16K and Applesoft. It is also much nicer in color than in black and white.**

Here's a Season's Greetings that hearkens back to the old days of a yuletide in front of a roaring hearth. You can personalize this animated greeting card with your own name (change line 2670). Let the computer do the rest — two familiar carols and a fireside scene that exudes contentment. May all your Christmases be this placid.

## INSTRUCTIONS:

RUN is all that is necessary.

## VARIABLES:

ZL = Upper limit for timing loop of scene.

Z = Timing loop for scene.

I = Pitch for music notes.

J = Timing loop for dog's movement and lights blinking (also for length of note in music subroutine).

K = Timing loop for star on tree.

L = Light number on tree.

T = Timing loop for star on tree.

FH = Height of fire in fireplace.

FW = Width of fire in fireplace.

X, Y = Plotting variables.

ST = Number of snow flake frame.

```
3 REM ** A CHRISTMAS CARD **
```

```
4 REM ** BY **
```

```
5 REM ** FRED PENCE **
```

```
9 GOSUB 10000
```

```
10 GOTO 2500
```

```
90 HOME : GR
```

Set full screen graphics.

```
92 POKE - 16302,0
```

```
95 ZL = 75
```

Draw floor, wall, fireplace, and interior.

```
199 REM ** PICTURE
```

```
200 COLOR= 9: FOR Y = 32 TO 47: HLIN  
0,39 AT Y: NEXT Y
```

```
210 COLOR= 7: FOR Y = 0 TO 31: HLIN  
0,39 AT Y: NEXT Y
```

```
220 COLOR= 5: FOR Y = 22 TO 32: HLIN  
23,33 AT Y: NEXT Y
```

Draw window.

```
225 COLOR= 0: FOR Y = 2 TO 20: HLIN  
2,12 AT Y: NEXT Y
```

```
230 COLOR= 15: HLIN 2,12 AT 2: HLIN  
2,12 AT 21: HLIN 2,12 AT 11:  
VLINE 2,21 AT 7
```

```
240 COLOR= 3: VLINE 2,21 AT 1: VLINE  
2,21 AT 2: VLINE 2,12 AT 3: VLINE  
2,6 AT 4: VLINE 2,6 AT 10: VLINE  
2,12 AT 11: VLINE 2,21 AT 13:  
VLINE 2,21 AT 12
```

Draw the rug.

```
250 COLOR= 2: HLINE 27,34 AT 36: HLINE  
24,34 AT 37: HLINE 21,37 AT 3  
8: HLINE 20,38 AT 39: HLINE 20  
,38 AT 40
```

```
253 HLINE 21,37 AT 42: HLINE 23,36  
AT 43: HLINE 25,34 AT 44: HLINE  
20,37 AT 41: HLINE 28,31 AT 4  
5
```

Draw picture frame.

```
260 COLOR= 8: HLINE 26,31 AT 4: HLINE  
26,31 AT 13: VLINE 4,12 AT 26  
: VLINE 4,12 AT 31
```

Draw Christmas tree.

```
900 COLOR= 4: VLINE 10,39 AT 9
```

```
910 FOR X = - 1 TO 1 STEP 2
```

```
915 VLINE 15,39 AT 9 + X: VLINE 19  
,39 AT 9 + 2 * X: VLINE 23,39  
AT 9 + 3 * X: VLINE 28,39 AT  
9 + 4 * X: VLINE 31,39 AT 9 +  
5 * X: VLINE 34,39 AT 9 + 6 *  
X: VLINE 37,39 AT 9 + 7 * X: NEXT  
X: PLOT 1,39: PLOT 17,39
```

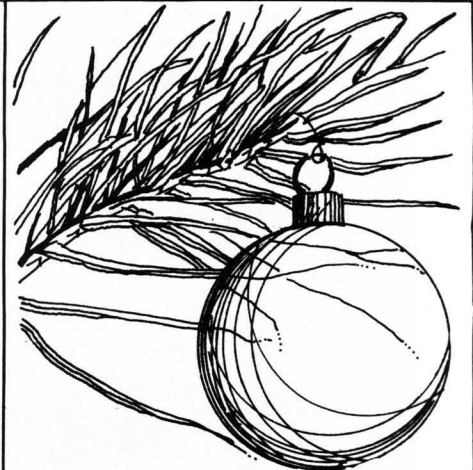
Draw star on top of tree.

```
920 COLOR= 13: PLOT 9,9
```

Draw fireplace.

```
930 COLOR= 1: FOR Y = 18 TO 21: HLINE  
19,37 AT Y: NEXT Y
```

```
935 FOR Y = 22 TO 34: HLINE 19,22  
AT Y: HLINE 34,37 AT Y: NEXT  
Y
```



```
940 COLOR= 9: HLINE 17,38 AT 16: HLINE  
17,38 AT 17
```

```
950 COLOR= 0: HLINE 25,31 AT 32: PLOT  
25,33: PLOT 31,33
```

Draw vases on mantel.

```
960 COLOR= 13: HLINE 19,22 AT 13:  
PLOT 20,14: PLOT 20,15: PLOT  
21,14: PLOT 21,15
```

```
970 COLOR= 3: VLINE 12,15 AT 34: VLINE  
10,15 AT 35: VLINE 12,15 AT 3  
6
```

Draw base of tree.

```
980 COLOR= 8: HLINE 8,10 AT 40: COLOR=  
15: HLINE 7,11 AT 41: HLINE 6,  
12 AT 42: HLINE 6,12 AT 43
```

Draw presents under the tree.

```
990 COLOR= 15: VLINE 43,46 AT 1: VLINE  
43,46 AT 3: VLINE 41,42 AT 14  
: VLINE 41,42 AT 16
```

```
995 COLOR= 11: HLINE 5,9 AT 43: HLINE  
5,9 AT 44: HLINE 5,9 AT 46: HLINE  
5,9 AT 47
```

```
996 COLOR= 6: HLINE 5,9 AT 45: VLINE  
43,47 AT 7
```

```
997 COLOR= 1: VLINE 43,47 AT 2: VLINE  
41,42 AT 15
```

Draw stockings on mantel.

```
1000 COLOR= 2: VLINE 17,23 AT 26:  
VLINE 17,23 AT 25: VLINE 22,2  
3 AT 24
```



```

1005 COLOR= 11: VLIN 17,22 AT 32
      : VLIN 17,22 AT 31: VLIN 21,
      22 AT 30

Draw picture above mantel.

1010 COLOR= 12: HLIN 27,30 AT 12
      : HLIN 27,30 AT 11
1012 COLOR= 3: HLIN 29,30 AT 10:
      PLOT 30,9: COLOR= 15: HLIN
      27,28 AT 5: PLOT 27,6: COLOR=
      13: PLOT 29,7

Draw dog.

1015 COLOR= 0: HLIN 23,33 AT 40:
      HLIN 26,31 AT 41: HLIN 26,2
      7 AT 42: HLIN 26,28 AT 43: PLOT
      31,42: HLIN 31,33 AT 43: HLIN
      26,33 AT 39: HLIN 31,33 AT 3
      8: PLOT 31,37: PLOT 33,37: PLOT
      23,39
1020 COLOR= 13: PLOT 31,39: PLOT
      33,39

Draw package under tree.

1025 COLOR= 1: HLIN 12,18 AT 45:
      HLIN 12,18 AT 46: COLOR= 15
      : PLOT 16,45: PLOT 16,46

Draw log and fire in fireplace.

1030 COLOR= 8: HLIN 26,32 AT 31:
      PLOT 25,30: PLOT 26,30
1035 COLOR= 13: HLIN 25,32 AT 30

Initialize timing loops.

1095 K = 0: J = 0: T = 0

Test random tree lights. If on,
turns it off; if off, turns it on.

1100 K = K + 1: L = 24 * RND (4) +
      1: J = J + 1
1103 REM ** BLINKING LIGHTS
1105 ON L GOTO 1125,1130,1135,11
      40,1145,1150,1155,1160,1165,
      1170,1175,1180,1185,1190,119
      5,1200,1205,1210,1215,1220,1
      225,1230,1235,1240,1245
1125 IF SCRNM( 10,15) = 4 THEN COLOR=
      1: PLOT 10,15: GOTO 1300
1127 COLOR= 4: PLOT 10,15: GOTO
      1300
1130 IF SCRNM( 8,17) = 4 THEN COLOR=
      11: PLOT 8,17: GOTO 1300
1132 COLOR= 4: PLOT 8,17: GOTO 1
      300
1135 IF SCRNM( 10,18) = 4 THEN COLOR=
      13: PLOT 10,18: GOTO 1300
1137 COLOR= 4: PLOT 10,18: GOTO
      1300

1140 IF SCRNM( 9,20) = 4 THEN COLOR=
      13: PLOT 9,20: GOTO 1300
1142 COLOR= 4: PLOT 9,20: GOTO 1
      300
1143 GOTO 1300
1145 IF SCRNM( 11,21) = 4 THEN COLOR=
      9: PLOT 11,21: GOTO 1300
1147 COLOR= 4: PLOT 11,21: GOTO
      1300
1150 IF SCRNM( 8,23) = 4 THEN COLOR=
      2: PLOT 8,23: GOTO 1300
1152 COLOR= 4: PLOT 8,23: GOTO 1
      300
1155 IF SCRNM( 7,25) = 4 THEN COLOR=
      10: PLOT 7,25: GOTO 1300
1157 COLOR= 4: PLOT 7,25: GOTO 1
      300
1160 IF SCRNM( 10,25) = 4 THEN COLOR=
      7: PLOT 10,25: GOTO 1300
1162 COLOR= 4: PLOT 10,25: GOTO
      1300
1165 IF SCRNM( 7,28) = 4 THEN COLOR=
      1: PLOT 7,28: GOTO 1300
1167 COLOR= 4: PLOT 7,28: GOTO 1
      300
1170 IF SCRNM( 12,28) = 4 THEN COLOR=
      11: PLOT 12,28: GOTO 1300
1172 COLOR= 4: PLOT 12,28: GOTO
      1300
1175 IF SCRNM( 10,29) = 4 THEN COLOR=
      2: PLOT 10,29: GOTO 1300
1177 COLOR= 4: PLOT 10,29: GOTO
      1300
1180 IF SCRNM( 6,31) = 4 THEN COLOR=
      7: PLOT 6,31: GOTO 1300
1182 COLOR= 4: PLOT 6,31: GOTO 1
      300
1185 IF SCRNM( 13,31) = 4 THEN COLOR=
      6: PLOT 13,31: GOTO 1300
1187 COLOR= 4: PLOT 13,31: GOTO
      1300

1190 IF SCRNM( 11,32) = 4 THEN COLOR=
      1: PLOT 11,32: GOTO 1300
1192 COLOR= 4: PLOT 11,32: GOTO
      1300
1195 IF SCRNM( 4,32) = 4 THEN COLOR=
      2: PLOT 4,32: GOTO 1300
1197 COLOR= 4: PLOT 4,32: GOTO 1
      300
1200 IF SCRNM( 8,33) = 4 THEN COLOR=
      9: PLOT 4,32: GOTO 1300
1202 COLOR= 4: PLOT 8,33: GOTO 1
      300
1203 GOTO 1300
1205 IF SCRNM( 4,35) = 4 THEN COLOR=
      3: PLOT 4,35: GOTO 1300
1207 COLOR= 4: PLOT 4,35: GOTO 1
      300
1210 IF SCRNM( 10,35) = 4 THEN COLOR=
      2: PLOT 10,35: GOTO 1300
1212 COLOR= 4: PLOT 10,35: GOTO
      1300
1215 IF SCRNM( 15,35) = 4 THEN COLOR=
      13: PLOT 15,35: GOTO 1300

1217 COLOR= 4: PLOT 15,35: GOTO
      1300
1220 IF SCRNM( 6,37) = 4 THEN COLOR=
      9: PLOT 6,37: GOTO 1300
1222 COLOR= 4: PLOT 6,37: GOTO 1
      300
1225 IF SCRNM( 10,37) = 4 THEN COLOR=
      13: PLOT 10,37: GOTO 1300
1227 COLOR= 4: PLOT 10,37: GOTO
      1300
1230 IF SCRNM( 3,38) = 4 THEN COLOR=
      3: PLOT 3,38: GOTO 1300
1232 COLOR= 4: PLOT 3,38: GOTO 1
      300
1235 IF SCRNM( 8,39) = 4 THEN COLOR=
      3: PLOT 8,39: GOTO 1300
1237 COLOR= 4: PLOT 8,39: GOTO 1
      300
1240 IF SCRNM( 12,38) = 4 THEN COLOR=
      1: PLOT 12,38: GOTO 1300
1242 COLOR= 4: PLOT 12,38: GOTO
      1300
1245 IF SCRNM( 15,38) = 4 THEN COLOR=
      9: PLOT 15,38: GOTO 1300
1247 COLOR= 4: PLOT 15,38
1300 IF K > = 25 THEN COLOR= 0
      : PLOT 9,9

Turn star on tree on or off.

1315 IF K = 35 THEN COLOR= 13: PLOT
      9,9: K = 0

Flicker the fire in the fireplace.

1325 FH = 30 - INT (4 * RND (2)
      ): FW = 25 + 8 * RND (2)
1328 IF FW = 25 OR FW = 26 OR FW
      = 31 OR FW = 32 AND FH < 29
      THEN FH = FH + 3: GOTO 1330
1329 IF FW > 26 AND FW < 31 AND
      FH > 28 THEN FH = FH - 4
1330 COLOR= 13: VLIN FH,30 AT FW
      : COLOR= 5: VLIN 24,FH - 1 AT
      FW

Blink dog's eyes.

1350 IF J = 35 THEN COLOR= 0: PLOT
      31,39: PLOT 33,39: GOTO 1390
1355 IF J = 42 THEN COLOR= 13: PLOT
      31,39: PLOT 33,39: GOTO 1390

Move dog's head.

1360 IF J = 58 THEN COLOR= 0: PLOT
      32,37: PLOT 33,39: COLOR= 2:
      PLOT 33,38: PLOT 33,37
1365 IF J = 59 THEN COLOR= 0: PLOT
      31,39: COLOR= 2: PLOT 32,37:
      PLOT 33,37: COLOR= 13: PLOT
      32,39

```

continued on page 50

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# SAY YOHO

by Scott Adams

WHOOPS! I think I goofed. . . In October, you may remember, I promised to discuss how to put my adventures onto Stringy Floppy in the next issue (November). Well, back in September, we were exhibiting at the Washington Personal Computer Show (Boy, that's a story in itself!) and Mark P. of **SoftSide** came up and asked if column #2 of "Say Yoho" was ready. Unfortunately, I hadn't realized that it would be needed before the end of September, so I told Mark I would write it there at the show. (P.S. - This column is being written two days before the Chicago show, so you can leave your knives back in New Hampshire, Mark!)\*The thing was I had forgotten I'd promised to discuss the Stringy Floppy version, and so here it is now.

The Exatron Stringy Floppy is a popular alternative to slow-loading cassette tapes. It uses almost no user RAM in its operation. But since it does use some memory,

I've developed the following procedure to put TRS-80 version 8.2 of my adventures to Stringy Floppy. (Properly done, an adventure tape which takes five minutes to load from a cassette will load in 15 seconds from wafer.)

- 1) Power TRS-80 on.
- 2) Answer "Memory Size" with 22738. This will put the BASIC stack inside the adventure interpreter in a place where it can do no harm. That is inside of a large 255 byte data buffer which is used when the adventure saves a game to cassette. This way we can force the Stringy Floppy to also use this area of memory for its pointers, and not wipe out the adventure!
- 3) Load the adventure tape normally through: SYSTEM  
ADVENT
- 4) Now type /12345 to turn on the Stringy Floppy. This will put the system back into BASIC.
- 5) Put an initialized - 251 or longer - wafer into your Stringy Floppy.

6) Type: @SAVE1,17152,15614 to save your wafer. Note: A verify error will occur, but this is normal due to the fact that Stringy Floppy's data pointers are actually within the area it is saving!

```
To load the wafer, we do the
opposite: MEMORY SIZE? 22738
SYSTEM
*? /12345
@LOAD1
SYSTEM
*? /17232
```

Note: The auto load will not function, but you can easily start adventure as shown. Note also all save games will still require the cassette player, but will only need 15 seconds.

Next month a look at what I think makes a good (or bad) adventure.

YOHO

. . . Suddenly I'm elsewhere. . .

\* (Note - Our astute (hear, hear!) copy editor caught the omission and quickly axed Scott's reference to the Stringy Floppy from the October issue. So there! -MP)

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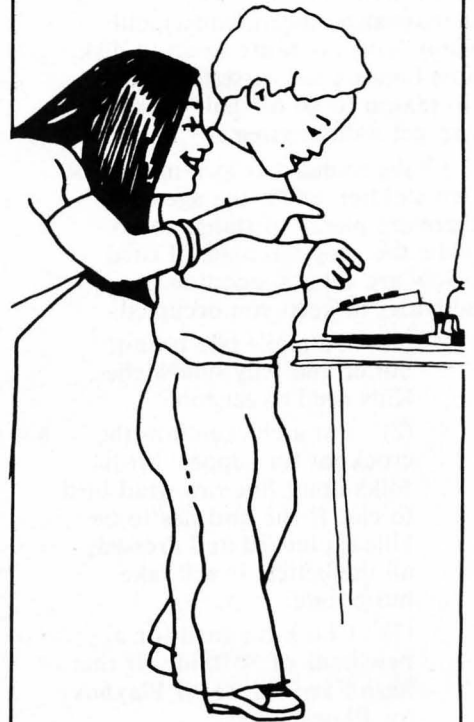
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# What to do While the Program Loads

by Sherry M. Taylor

In the September 1979 issue of **SoftSide** magazine, George Blank said, "For many people the decision to go disk comes when they run out of things to do while the 16K program is loading. . .from tape."

Admittedly, the cassette is s-l-o-w, but unless the TRS-80 is used for a business application where time is money, I just don't see what everyone is so uptight about. I have had wonderful reliability from my CTR-80 (especially since I discovered the demagnetizer/headcleaner) and really have no desire to go to disk. Just because the cassette is slow is no reason to go off half-cocked and get a disk system.

I have found that as a mother of two children under the age of 7, there are plenty of things to do while the program loads. Listed below are some suggestion of activities to keep you occupied:

- (1) Go make two peanut butter and jelly sandwiches. Kids need to eat too.
- (2) Put a chicken into the crockpot for supper. Most folks don't like raw dead bird to eat. If the bird has to be killed, plucked and dressed, all the better. It will take more time.
- (3) Check the mail for a new issue of **SoftSide**. If that hasn't arrived, see if **Playboy** (or **Playgirl**) has.
- (4) Sort the socks for your husband/wife. It will take more time if you are color blind, but this isn't a requirement. (Wish someone would write a computer program to sort socks.)
- (5) Watch the latest episode of **General Hospital**. See if Luke and Laura have been killed yet. If they have been, switch to **Texas!** (For prime time computerists, check out **Dallas**. Who did shoot J. R.?)
- (6) Put the kids into the bathtub for their evening bath.
- (7) Plant a garden in the dirt left after the kids' evening bath.
- (8) Break up the fight between the kids.
- (9) Break up the fight between the kids and your spouse. Explain to your spouse that he/she is too old to play with toy cars.
- (10) Defend yourself from attack for calling your spouse "old."
- (11) Go turn on the lawn sprinkler. The grass is dying. Talk to your grass. Give it encouragement to grow. Curse your weeds. Maybe they'll die.
- (12) Take off your wet clothes you ended up with while turning on the water sprinkler.
- (13) Go to the bathroom. Never pass up an opportunity to go to the bathroom. You never know when you'll get another chance.
- (14) Go get something to eat. If you are on a diet, count the things you can't eat.
- (15) Play a game of "Monopoly."
- (16) Work the new **SoftSide** crossword puzzle.
- (17) Search for the answers

to the crossword puzzle.

- (18) Put a load of laundry in the washing machine. Access to a wringer washer is ideal, but not mandatory.
- (19) Change the baby's diaper. If you're using cloth diapers, all the better. They have to be rinsed out.
- (20) Call the plumber to get the diaper out of the plumbing. You didn't hold it tight enough and flushed it down.
- (21) Type a letter to the charge card computer about the overcharge on your bill. Do not use an electric typewriter or correction tape. Keep it polite.
- (22) Put dishes into the dishwasher. Wash them in the sink first.

As you can see, there are plenty of things to do while the program loads from tape. I'm sure if you'll use your imagination you will come up with more. So, I guess speed is in the eye of the beholder! I just don't know what all the fuss is about.

I HAVE noticed though, that the children who come here to play with the computer are impatient for a program to load. I guess they have run out of things to do. Maybe I should get a disk system for them. . . . .





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# THE DEVELOPING DATA BASE

## Part 4: In search of. . .

by Mark Pelczarski

translations by Rich Bouchard and Phil Case

**This is the fourth part of a tutorial on how to develop your own customized data base program. The series started in the September issue of SoftSide and the programs are written for the Apple, with Applesoft, the S-80 in Level II or Disk BASIC, and the Atari 800.**

### OVERVIEW

As promised, this month we start our quest for a search routine that will make our data base much easier to use. This also may be a place of decision, for some of you may want to use slight modifications of the search routines to suit your own applications. Until now, you always had to provide the record number of any item to change or delete, and the print options consisted of all or nothing. Now, with the search routine we'll be incorporating, all three of those options will first be filtered through a possible search.

The structural set-up of the program will be changed slightly (see Figure 1). If the user chooses to change or delete a record, a switch will first be set, then a jump will be made to the search routine. After the search criteria are specified (record number, name, or whatever. . .) a search will be performed and items meeting those criteria will be passed to the change or delete subroutines, depending on the previously set switches. The print option is a little more tricky. What we did is create three separate print subroutines. One presents the print options (screen or printer) to the user, sets the switch mentioned above, then calls the search routine. The search routine, upon finding records that meet the specified criteria, calls one of two other print routines that will either print one record to the screen or one record to the printer. Which routine is called again depends on

the previously mentioned switch. Each of the latter two print routines print only one record, then return to the search subroutine to find the next.

The search subroutine itself first asks for the criteria desired, giving the record number and each heading as the choices for the field to search. Once the field is selected, the user is asked whether the item(s) desired should be less than, equal, or greater than a given value. Then the user is asked to specify the value to match. These choices allow the user to select a search for, as examples, all records numbered 10 and up, all names starting with A to J, every item with an inventory code of PRT, or whose phone number is 859-3661. An additional feature allows you to choose the equal option and follow your value with an asterisk (\*). Suppose you wanted to find the record for PELCZARSKI, but couldn't remember how it was spelled, or just didn't feel like typing the whole thing. You could ask for the name equal to PEL\* and it would search the name field for anything that began with PEL; if there was more than one it would display each.

### USING NUMBERS

At this point there is still a problem with using numbers in this program, as you may have discovered with the sort routine. Suppose you had a field that involved a quantity, such as in an inventory. Suppose that there are three items, and the amounts of each were 12, 4, and 218. A sort or search on this field would yield a somewhat unexpected result: It would treat them, in ascending order, as 12, 218, and 4. This is because we're still using character strings for our data, and when comparisons are made the first characters are compared, then, if necessary, the second characters, and so on. Therefore the sort on these items would compare their first digits: 1, 2, and 4. A search on these items for all quantities less than 200 would only find the value 12. The temporary solution

to this problem is to right-justify each quantity by adding leading zeroes: 004, 012, and 218. If there's the possibility of any of these going over 1000, then another leading zero must be added. Eventually we'll devise a method for distinguishing between character and numeric data; but for now, be cautious.

### THE PROGRAM

Down to the actual programming, the first change occurs in lines 350 and 360. These lines previously called the change and delete routines. The changes made now set a switch (SB, for SuBroutine), then call the search routine, which will start at 8000. It is possible that you may not want your change and delete routines filtered through the search, that referencing by record number with these routines is easier than answering three questions asked for performing a search (field, relation, and value). If the search will be more cumbersome in your application, leave these lines (or either) as they were, and don't make any changes to the change and delete routines.

Although the change and delete subroutines (lines 5000-6150) haven't been totally changed, we've listed the entire routines as they now exist to avoid confusion. Neither routine has to ask for a record number, since the search routine will have found a record before calling the other routines (the record number is contained in 'I'). The change routine has an added option, 'R', which means "keep the remainder of this record." This will save some keystrokes when a search results in more than one record being found, and not all of them require changes. In the delete routine, the printing of the record has been removed. Instead, the "print one record" routine will be performed before the delete routine is called.

The print routine has been changed totally, so that it is now three separate routines: a routine to initialize print options, a routine to print one record on the screen, and a routine to print one record

on the printer. The first routine starts at 3000 and allows the user to choose screen or printer for output (SB is set depending on the choice), then asks if the user wants the entire file printed, or only selected records. If only selected records are to be printed, the search subroutine is called at 8010 (because the check done at 8000 has already been performed). If the entire file is to be printed, the search criteria are preset so that every item will fit (C1, C2, and C\$ are given values that will be interpreted as 'the value under heading 1 must be greater than or equal to empty'), then the search subroutine is called at 8200, which skips the entire section in which the user specifies selection criteria. The other print subroutines start at lines 3300 and 3600, and are taken from their corresponding parts in our original print routine.

The search routine itself does a simple, sequential search. Once it has information about what it's looking for, it checks every time. Faster searches assume that the items are sorted on the same field on which the search is being done; by our provisions we cannot yet assume that. The routine starts by asking the field to search on, and assigns that heading number to variable C1. If the search is to be done on the record number, then C1 is given a value of -1. Line 8060 asks if the comparison should be  $\leq$ ,  $=$ , or  $\geq$ . C2 is given a value of 1, 2, or 3, respectively. Lastly, a value is asked for. If the search is for a record number, a number is input to 'I'; otherwise a character string is input to C\$. (Another possible departure for some of you, if you want a record number quickly and don't think you'll ever need a range of record numbers, is to add line 8055 IF C1 = -1 THEN C2 = 2: GOTO 8080. This will skip the relation choice if a record number is desired.)

The search procedure starts with line 8200. RS is a return switch, set in the 'print to screen' option when the ESC key is pressed to terminate the list. It starts equal to zero, and is set to one if ESC is pressed in the print routine. I1 and I2 are the starting and ending record numbers that the search will include, and usually will be 0 to NI. If the search is done on a record number, however, lines 8205-8230 reset the appropriate endpoints. The search loop goes

from 8250 to 8380. If the search is on the record number (8260), the item is accepted and sent to 8330 for processing. Otherwise, C2 is checked and the program is sent to the proper checks at 8280 ( $\leq$ ), 8290 ( $=$ ), or 8310 ( $\geq$ ). At each check, an accepted value is sent to 8330 to process, or 8380 for the next item. The "equal" check at 8290 is worth mentioning because if the item is not equal, a test is then made to see if the last character of C\$ is "\*". If so, the length of the item is compared to C\$ (minus the "\*"), and if the item is long enough, the first characters are compared to those of C\$. If all those tests are passed, then the item matches and is processed.

The final step is the actual processing of the items in lines 8330 to 8360. SB = 1 means printing to the screen and the item is sent to that subroutine, SB = 2 sends the item to the printer, SB = 3 sends it to the change subroutine, and SB = 4 first calls the screen print subroutine, then calls the delete subroutine. Upon return, RS is checked. If it's one, the loop is stopped. When the loop itself finishes, the search is over and a return is made to the main program.

#### THE ATARI VERSION

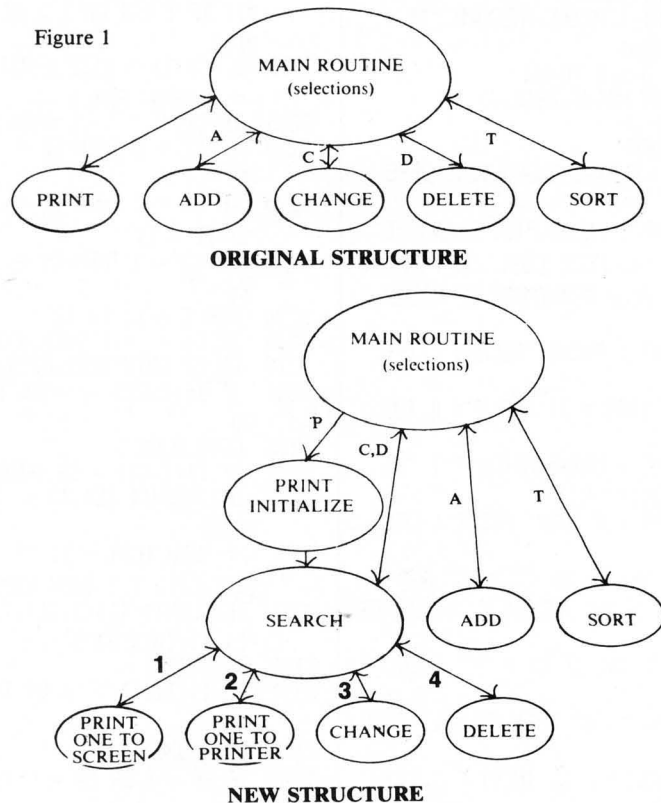
We've come across a couple problems with the Atari version of

the data base, so if you've been pulling your hair out trying to find what you did wrong, here are a few solutions. The main error is in saving large strings to tape or disk. The I/O buffer is only 255 characters, and our single string of data can be much longer. What must be done is to split the string into segments smaller than 255 in length when saving them, then reassemble them when loading. Unfortunately, it takes several lines of additional code, which are included in the Atari listing. The other problem occurred when the last record in the file is deleted. The two lines necessary to correct that are also included in the listing. Sorry about the problems. (To save your present file, if errors have not yet occurred, first load your file, then stop the program and type in the changes from lines 1000 to 2300, then type GOTO 200 and your data should be okay.)

#### IN THE FUTURE

The next couple additions to the data base will be extending the search routine to handle multiple conditions, and print formatting. Please send your data base input to: Mark Pelczarski  
1206 Kings Road  
West Chicago, IL 60185  
We'll devote some space in future issues to your ideas.

Figure 1



continued on next page

### APPLE MODIFICATIONS

```

350 IF A$ = "C" THEN SB = 3: GOSUB
    8000: GOTO 200
360 IF A$ = "D" THEN SB = 4: GOSUB
    8000: GOTO 200
2999 REM PRINT SUBROUTINE VERS.
    3
3000 IF NI = - 1 THEN GOSUB 90
    00: RETURN
3010 PRINT "(S) SCREEN, OR (P) P
    RINTER";: GET A$: PRINT
3020 IF A$ = "P" THEN SB = 2: GOTO
    3050
3030 IF A$ < > "S" THEN 3010
3040 SB = 1: PRINT : PRINT "AFTER
    EACH RECORD <ESC> WILL RETU
    RN TO": PRINT "THE MENU, ANY
    OTHER KEY CONTINUES."
3050 PRINT : PRINT "(A) ALL, OR
    (S) SELECTIVE";: GET A$
3060 IF A$ = "S" THEN GOSUB 801
    0: GOTO 3090
3070 IF A$ < > "A" THEN 3050
3080 PRINT :C1 = 0:C2 = 3:C$ =
    "" : GOSUB 8200
3090 IF SB = 2 THEN PR# 0
3100 RETURN
3299 REM PRINT ONE RECORD TO SC
    RFEN, VERS.3
3300 PRINT : PRINT "RECORD ";I +
    1: PRINT
3310 FOR J = 0 TO NH
3320 PRINT H$(J),I$(I,J)
3330 NEXT J
3340 GET A$: IF A$ = CHR$(27) THEN
    RS = 1
3350 RETURN
3599 REM PRINT ONE RECORD TO PR
    INTER, VERS.3
3600 PRINT : PRINT "RECORD ";I +
    1: PRINT
3610 FOR J = 0 TO NH
3620 PRINT H$(J),I$(I,J)
3630 NEXT J
3640 RETURN
4999 REM CHANGE SUBROUTINE VERS
    .2
5000 PRINT : PRINT "(C) CHANGE I
    TEM, (K) KEEP ITEM, OR": PRINT
    "(R) KEEP REMAINDER OF RECOR
    D"
5030 PRINT : PRINT "RECORD ";I +
    1
5040 CS = 1:RS = 0: FOR J = 0 TO
    NH
5050 PRINT : PRINT H$(J);" : ";I
    $(I,J);" ""
5055 IF RS = 1 THEN PRINT : GOTO
    5090
5060 GET A$: IF A$ < > "C" AND
    A$ < > "K" AND A$ < > "R" THEN
    5060
5070 PRINT A$: IF A$ = "K" THEN
    5090
5075 IF A$ = "R" THEN RS = 1: GOTO
    5090
5080 PRINT H$(J);: INPUT " : ";I
    $(I,J)

```

```

5085 CS = 0
5090 NEXT J
5095 RS = 0
5100 IF CS = 0 THEN SS = 0
5110 RETURN
5999 REM DELETE SUBROUTINE VERS
    .2
6000 PRINT : PRINT "DELETE THIS
    RECORD? ";
6070 GET A$: IF A$ < > "Y" AND
    A$ < > "N" THEN 6070
6080 PRINT A$: IF A$ = "N" THEN
    6150
6100 FOR I1 = I + 1 TO NI
6110 FOR J = 0 TO NH
6120 I$(I1 - 1,J) = I$(I1,J)
6130 NEXT J: NEXT I1
6140 NI = NI - 1:SS = 0
6150 RETURN
7999 REM SEARCH SUBROUTINE, VER
    S.1
8000 IF NI = - 1 THEN GOSUB 90
    00: RETURN
8010 HOME : PRINT "SEARCH CRITER
    IA";: PRINT
8020 PRINT "0) RECORD NUMBER"
8030 FOR I = 0 TO NH: PRINT I +
    1;") ";H$(I); NEXT I
8040 VTAB 21: INPUT "WHICH FIELD
    : ";I: IF I < 0 OR I > NH +
    1 THEN 8040
8050 C1 = I - 1
8060 VTAB 22: INPUT "(1) <=
    (2) = (3) >= ";I:
    IF I < 1 OR I > 3 THEN 8060
8070 C2 = I
8080 VTAB 23: PRINT "VALUE";: IF
    C1 = - 1 THEN 8100
8090 INPUT " ";C$: GOTO 8200
8100 INPUT " ";I:C$ = STR$(I -
    1): IF I < 1 OR I > NI + 1 THEN
    8100
8200 RS = 0:I1 = 0:I2 = NI: IF SB
    = 2 THEN PR# 1
8205 IF C1 < > - 1 THEN 8250
8210 IF C2 = 1 THEN I2 = VAL (C
    $)
8220 IF C2 = 2 THEN I1 = VAL (C
    $):I2 = I1
8230 IF C2 = 3 THEN I1 = VAL (C
    $)
8250 FOR I = I1 TO I2
8260 IF C1 = - 1 THEN 8330
8270 ON C2 GOTO 8280,8290,8310
8280 IF I$(I,C1) < = C$ THEN 83
    30
8285 GOTO 8380
8290 IF I$(I,C1) = C$ THEN 8330
8295 IF RIGHT$(C$,1) < > "*" THEN
    8380
8298 T = LEN (C$) - 1: IF LEN (
    I$(I,C1)) < T THEN 8380
8302 IF LEFT$(I$(I,C1),T) = LEFT$(
    (C$,T) THEN 8330
8305 GOTO 8380
8310 IF I$(I,C1) > = C$ THEN 83
    30
8320 GOTO 8380
8330 IF SB = 1 OR SB = 4 THEN GOSUB
    3300

```

```

8340 IF SB = 2 THEN GOSUB 3600
8350 IF SB = 3 THEN GOSUB 5000
8360 IF SB = 4 THEN GOSUB 6000
8370 IF RS = 1 THEN I = I2
8380 NEXT I
8390 PRINT : PRINT "THAT'S ALL"
    GET A$
8400 RETURN

```

### ATARI MODIFICATIONS

```

10 DIM A$(260):X=FRE(0):S
350 IF CHR$(A)="C" THEN SB=3:GOSUB 8000:
    GOTO 200
360 IF CHR$(A)="D" THEN SB=4:GOSUB 8000:
    GOTO 200
1043 INPUT #1,IL:DIM T$(NH*IL+IL+1),C$(
    NH*IL+IL+10)
1140 SEG=1
1145 INPUT #1,A$
1146 IF LEN(A$)=0 THEN 1200
1150 H$(SEG)=A$
1155 SEG=SEG+250:GOTO 1145
1255 INPUT #1,A$
1260 I$(SEG)=A$
1265 IF LEN(A$)=250 THEN SEG=SEG+250:GOT
    0 1255
2130 SEG=1
2135 IF LEN(H$)*XSEG+249 THEN PRINT #1:H$
    (SEG,LEN(H$)):GOTO 2170
2140 PRINT #1:H$(SEG,SEG+249)
2150 SEG=SEG+250:IF SEG>LEN(H$) THEN 217
    0
2160 GOTO 2135
2170 PRINT #1;" "
2230 SEG=1
2235 IF LEN(I$)*XSEG+249 THEN PRINT #1:I$
    (SEG,LEN(I$)):GOTO 2260
2240 PRINT #1:I$(SEG,SEG+249)
2250 SEG=SEG+250:IF SEG>LEN(I$) THEN 226
    0
2255 GOTO 2235
2260 PRINT #1;" "
2999 REM PRINT SUBROUTINE VERS. 3
3000 IF NI=-1 THEN GOSUB 9000:RETURN
3010 PRINT :PRINT "(S) SCREEN OR (P) PRI
    NTER ?":PRINT
3015 GET #2,A
3020 IF CHR$(A)="P" THEN SB=2:GOTO 3050
3030 IF CHR$(A)>"S" THEN 3015
3040 SB=1:PRINT :PRINT "AFTER EACH RECOO
    <ESC> WILL RETURN TO":PRINT "THE MENU,
    ANY OTHER KEY CONTINUES."
3050 PRINT :PRINT "(A) ALL, OR (S) SELEC
    TIVE";:GET #2,A
3060 IF CHR$(A)="S" THEN GOSUB 8010:GOTO
    3090
3070 IF CHR$(A)>"A" THEN 3050
3080 PRINT :C1=0:C2=3:C$="" "" :GOSUB 8
    200
3090 CLOSE #3
3100 RETURN
3299 REM PRINT ONE RECORD VERS. 3
3300 PRINT :PRINT "RECORD ";I+1:PRINT
3310 FOR J=0 TO NH
3320 PRINT H$(J*IL+1,J*IL+HL),I$(I*IL+1
    +J*IL,I*IL+J*IL+IL)
3330 NEXT J
3340 GET #2,A:IF A=27 THEN RS=1
3350 RETURN
3400 RL=(NH+1)*IL
3410 RL=(NH+1)*IL
3420 FOR I=0 TO NI
3430 LPRINT " "
3435 LPRINT "RECORD ";I+1:LPRINT " "
3440 FOR J=0 TO NH
3450 LPRINT H$(J*IL+1,J*IL+HL),I$(I*IL+1
    +J*IL,I*IL+J*IL+IL)
3460 NEXT J
3470 NEXT I
3490 RETURN
3599 REM PRINT ONE RECORD TO PRINTER, VE
    RS. 3
3600 LPRINT :LPRINT "RECORD ";I+1:LPRINT
3610 FOR J=0 TO NH
3620 LPRINT H$(J*IL+1,J*IL+HL),I$(I*IL+1
    +J*IL,I*IL+J*IL+IL)
3630 NEXT J
3640 RETURN
4009 DIM T$(NH*IL+IL+1),C$(NH*IL+IL+10)
4999 REM CHANGE SUBROUTINE VERS. 2
5000 PRINT :PRINT "(C) CHANGE ITEM, (K)
    KEEP ITEM, OR":PRINT "(R) KEEP REMAINDER
    OF RECORD"
5030 PRINT :PRINT "RECORD ";I+1
5040 CS=1:RS=0:FOR J=0 TO NH

```



13 STOP

```

5050 PRINT :PRINT H$(J%HL+1,J%HL+HL);"
";I$(I%RL+1+J%IL,I%RL+J%IL+IL);"
";
5055 IF RS=1 THEN PRINT :GOTO 5090
5060 GET #2,A:IF CHR$(A)>"C" AND CHR$(A
X)>"K" AND CHR$(A)>"R" THEN 5060
5070 PRINT CHR$(A):IF CHR$(A)="K" THEN 5
090
5075 IF CHR$(A)="R" THEN RS=1:GOTO 5090
5080 PRINT H$(J%HL+1,J%HL+HL);"
";:INP
UT A$
5082 IF LEN(A$)>11 THEN PRINT "TOO LONG
,MAXIMUM SIZE IS ";IL;". REENTER":GOTO 5
080
5083 IF LEN(A$)<11 THEN A$(LEN(A$)+1)="
":GOTO 5083
5084 I$(I%RL+1+J%IL,I%RL+J%IL+IL)=A$
5085 CS=0
5090 NEXT J
5095 RS=0
5100 IF CS=0 THEN SS=0
5110 RETURN
5999:REM DELETE SUBROUTINE VERS. 2
6000 PRINT :PRINT "DELETE THIS RECORD? "
;
6070 GET #2,A:IF CHR$(A)>"Y" AND CHR$(A
X)>"N" THEN 6070
6080 PRINT CHR$(A):IF CHR$(A)="N" THEN 6
160

```

```

6090 I$(LEN(I$)+1)=" "
6100 I$(I%RL+1)=I$(I%RL+1+NH%IL+IL)
6140 NI=NI-1:SS=0
6150 I$=I$(1,LEN(I$)-1)
6160 RETURN
7999:REM SEARCH SUBROUTINE, VERS. 1
8000 IF NI=-1 THEN GOSUB 9000:RETURN
8010 GRAPHICS 0:PRINT "SEARCH CRITERIA:"
:PRINT
8020 PRINT "0) RECORD NUMBER"
8030 FOR I=0 TO NH:PRINT I+1;";"
";H$(I%L
L+1,I%HL+HL):NEXT I
8040 POSITION 2,20:PRINT "WHICH FIELD: "
;:INPUT I:IF I<0 OR I>NH+1 THEN 8040
8050 C1=I-1
8060 POSITION 2,21:PRINT "(1) <= (2
) = (3) >="
";:INPUT I:IF I<1 OR
I>3 THEN 8060
8070 C2=I
8080 POSITION 2,22:PRINT "VALUE:"
;:IF C1
=-1 THEN 8100
8090 PRINT "
";:INPUT C$:GOTO 8200
8100 PRINT "
";:INPUT I:C$=STR$(I-1):IF
I<1 OR I>NI+1 THEN 8080
8200 RS=0:I1=0:I2=NI
8205 IF C1<0 THEN 8250
8210 IF C2=1 THEN I2=VAL(C$)

```

```

8220 IF C2=2 THEN I1=VAL(C$):I2=I1
8230 IF C2=3 THEN I1=VAL(C$)
8250 FOR I=1 TO I2
8260 IF C1=-1 THEN 8330
8270 ON C2 GOTO 8280,8290,8310
8280 IF I$(I%RL+1+C1%IL,I%RL+C1%IL+LEN(C
$))<C$ THEN 8330
8285 GOTO 8330
8290 IF I$(I%RL+1+C1%IL,I%RL+C1%IL+LEN(C
$))=C$ THEN 8330
8295 IF C$(LEN(C$),LEN(C$))<>"*" THEN 83
80
8298 T=LEN(C$)-1:IF I1<T THEN 8300
8302 IF I$(I%RL+1+C1%IL,I%RL+C1%IL+T)=C$(
1,T) THEN 8330
8305 GOTO 8330
8310 IF I$(I%RL+1+C1%IL,I%RL+C1%IL+LEN(C
$))>C$ THEN 8330
8320 GOTO 8330
8330 IF SB=1 OR SB=4 THEN GOSUB 3300
8340 IF SB=2 THEN GOSUB 3600
8350 IF SB=3 THEN GOSUB 5000
8360 IF SB=4 THEN GOSUB 6000
8370 IF RS=1 THEN I=I2
8380 NEXT I
8390 PRINT :PRINT "THAT'S ALL":GET #2,A
8400 RETURN

```

### TRS-80 MODIFICATIONS

```

350 IF A$ = "C" THEN SB=3:GOSUB 8000:GOTO 200
360 IF A$ = "D" THEN SB=4:GOSUB 8000:GOTO 200
2999 / PRINT SUBROUTINE VERSION 3
3000 IF NI=-1 THEN GOSUB 9000:RETURN
3010 PRINT"(S) SCREEN OR (P) PRINTER";:GOSUB 60000:PRINT
3020 IFA$="P" THEN SB=2:GOTO 3050
3030 IFA$="S" THEN 3010
3040 SB=1:PRINT:PRINT"AFTER EACH RECORD (M) WILL RETURN TO MENU,
ANY OTHER KEY CONTINUES."
3050 PRINT:PRINT"(A) ALL, OR (S) SELECTIVE";:GOSUB 60000
3060 IFA$="S" THEN GOSUB 8010:GOTO 3100
3070 IFA$="A" THEN 3050
3080 PRINT:C1=0:C2=3:C$="":GOSUB 8200
3100 RETURN
3299 / PRINT ONE RECORD TO SCREEN, VERSION 3
3300 PRINT:PRINT"RECORD ";I+1:PRINT
3310 FOR J=0 TO NH
3320 PRINTH$(J),I$(I,J)
3330 NEXT J
3340 GOSUB 60000:IFA$="M" THEN RS=1
3350 RETURN
3599 / PRINT ONE RECORD TO PRINTER, VERSION 3
3600 LPRINT"
";LPRINT"RECORD ";I+1:LPRINT" "
3610 FOR J=0 TO NH
3620 LPRINTH$(J),I$(I,J)
3630 NEXT J
3640 RETURN
4999:REM CHANGE SUBROUTINE, VERSION 2
5000 PRINT:PRINT"(C) CHANGE ITEM, (K) KEEP ITEM, OR
(R) KEEP REMAINDER OF RECORD"
5030 PRINT:PRINT"RECORD ";I+1
5040 CS=1:RS=0:FOR J=0 TO NH
5050 PRINT:PRINTH$(J);"
";:I$(I,J);"
";
5055 IFRS=1 THEN PRINT:GOTO 5090
5060 GOSUB 60000:IFA$="C" AND A$="K" AND A$="R" THEN 5060
5065 PRINT A$
5070 IFA$="K" THEN 5090
5075 IFA$="R" THEN RS=1:GOTO 5090
5080 PRINTH$(J);:INPUT "
";:I$(I,J)
5085 CS=0
5090 NEXT J
5095 RS=0
5100 IF CS=0 THEN SS=0
5110 RETURN
5999:REM DELETE SUBROUTINE VERSION 2
6000 PRINT:PRINT"DELETE THIS RECORD? ";
6070 GOSUB 60000:IFA$="Y" AND A$="N" THEN 6070

```

```

6080 PRINT A$:IFA$="N" THEN 6150
6100 FOR I1=I + 1 TO NI
6110 FOR J=0 TO NH
6120 I$(I1-1,J)=I$(I1,J)
6130 NEXT J:NEXT I1
6140 NI=NI-1:SS=0
6150 RETURN
7999 / SEARCH SUBROUTINE VERSION 1
8000 IF NI=-1 THEN GOSUB 9000:RETURN
8010 CLS:PRINT"SEARCH CRITERIA:"
:PRINT
8020 PRINT "0 ) RECORD NUMBER"
8030 FOR I=0 TO NH:PRINT I+1;";"
";H$(I):NEXT I
8040 PRINT@768,"";:INPUT"WHICH FIELD: ";I:IFI<0ORI>NH+1 THEN 8040
8050 C1=I-1
8060 PRINT@832,"";:INPUT"(1) <= (2) = (3) >="
";:IFI<1
ORI>3 THEN 8060
8070 C2=I
8080 PRINT@896,"";:PRINT"VALUE:"
;:IF C1=-1 THEN 8100
8090 INPUT "
";C$:GOTO 8200
8100 INPUT "
";:I:C$=STR$(I-1):IFI<0ORI>NI+1 THEN 8100
8200 RS=0:I1=0:I2=NI
8205 IF C1<0 THEN 8250
8210 IF C2=1 THEN I2=VAL(C$)
8220 IF C2=2 THEN I1=VAL(C$):I2=I1
8230 IF C2=3 THEN I1=VAL(C$)
8250 FOR I=1 TO I2
8260 IF C1=-1 THEN 8330
8270 ON C2 GOTO 8280,8290,8310
8280 IF I$(I,C1)<C$ THEN 8330
8285 GOTO 8330
8290 IF I$(I,C1)=C$ THEN 8330
8295 IFRIGHT$(C$,1)<"*" THEN 8380
8308 T=LEN(C$)-1:IF LEN(I$(I,C1))<T THEN 8380
8320 IF LEFT$(I$(I,C1),T)=LEFT$(C$,T) THEN 8330
8305 GOTO 8380
8310 IF I$(I,C1)>C$ THEN 8330
8320 GOTO 8380
8330 IF SB=1 OR SB=4 THEN GOSUB 3300
8340 IF SB=2 THEN GOSUB 3600
8350 IF SB=3 THEN GOSUB 5000
8360 IF SB=4 THEN GOSUB 6000
8370 IF RS=1 THEN I=I2
8380 NEXT I
8390 PRINT:PRINT"THAT'S ALL":GOSUB 60000
8400 RETURN
9000 PRINT"THERE'S NO DATA IN MEMORY."
9010 FOR I=1 TO 1000:NEXT:RETURN
60000 A$=INKEY$:IF A$="" THEN 60000 ELSE PRINT:RETURN

```





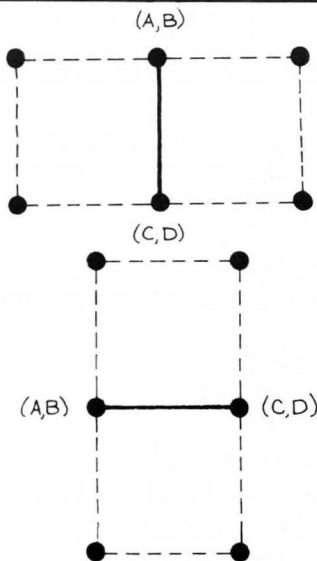


Figure 2

**Possible Squares Completed for each Line Plotted**

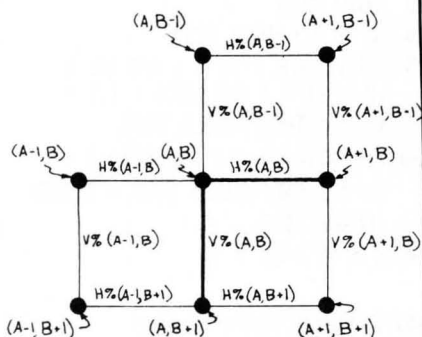


Figure 3

**Line Endpoint Coordinates and Line Matrix Values**

**VARIABLES**

A,B = Player input: Line end-point coordinates.  
C,D

X,Y = Line plotting coordinates (HI-RES).  
V,W

H%(A,B) = Horizontal matrix.  
V%(A,B) = Vertical matrix.

PA\$ = Player's names.  
PB\$

SA = Player's scores.  
SB

ST = Total score.  
S = Score counter.

SJ  
SK = Scores for the squares.  
SL

P = Player identification.

```

1000 REM =====
1001 REM
1002 REM *** CONNECT-A-DOT ***
1003 REM
1004 REM BY---
1005 REM DUANE A. BARTS
1006 REM 208 FLIVA AVE
1007 REM FT. WALTON BEACH, FL
1008 REM JULY 30, 1980
1009 REM =====

```

Dimension the arrays and strings, and set HIMEM to protect the shape table.

```

1010 DIM HZ(9,9),VZ(9,9),PA$(12)
      ,PB$(12): CLEAR
1015 HIMEM: 8061

```

Provide the address and loading of the shape table. The shapes are the numbers 0-9 used around the sides of the game board.

```

1020 POKE 232,126: POKE 233,31: GOSUB 4005: ROT= 1: SCALE= 1

```

Display the game title.

```

1025 HOME : VTAB 10: PRINT TAB(
      10)"*** CONNECT-A-DOT ***": PRINT
      : PRINT TAB( 9)"A GAME FOR
      TWO PLAYERS"
1030 FOR D = 1 TO 2500: NEXT D

```

Display the game board in HI-RES graphics.

```

1035 HGR : HCOLOR= 1: H$PLOT 1,0 TO
      279,0 TO 279,159 TO 1,159 TO
      1,0: GOSUB 3070
1040 N = 1: FOR Y = 5 TO 154 STEP
      149:N = 1: FOR X = 77 TO 203
      STEP 14: DRAW N AT X,Y: FOR
      D = 1 TO 100: NEXT D:N = N +
      1: NEXT X,Y
1045 N = 1: FOR X = 65 TO 215 STEP
      150:N = 1: FOR Y = 16 TO 142
      STEP 14: DRAW N AT X,Y: FOR
      D = 1 TO 100: NEXT D:N = N +
      1: NEXT Y,X

```

Query the players if they want instructions.

```

1050 VTAB 21: PRINT "DO YOU WANT
      INSTRUCTIONS? (Y/N) ";; PRINT
      "";; GET Y$: IF Y$ = "Y" THEN
      GOTO 3090

```

Obtain the player's names.

```

1055 HOME : VTAB 21: PRINT "TYPE
      IN YOUR NAMES (11 LETTERS M
      AXIMUM)"
1060 INPUT "PLAYER 1: ";PA$: IF
      LEN (PA$) > 11 THEN INVERSE
      : PRINT "TOO MANY LETTERS": GOSUB
      2120: POKE 37,21: CALL - 95
      8: GOTO 1060
1065 POKE 37,21: CALL - 958: INPUT
      "PLAYER 2: ";PB$: IF LEN (P
      B$) > 11 THEN INVERSE : PRINT
      "TOO MANY LETTERS": GOSUB 21
      20: POKE 37,21: CALL - 958:
      GOTO 1065

```

Show each player his color.

```

1070 HOME : HCOLOR= 2: FOR X = 2
      7 TO 40: H$PLOT X,73 TO X,84:
      NEXT : HCOLOR= 6: FOR X = 2
      41 TO 254: H$PLOT X,73 TO X,8
      4: NEXT
1075 VTAB 21: PRINT PA$;"S COLO
      R IS ON THE LEFT": PRINT PB$
      ;"S COLOR IS ON THE RIGHT":
      GOSUB 3080

```

Choose the first player.

```

1080 P = INT ( RND (1) * 2) + 1
2000 REM PLAYER MOVE
2005 O = FRE (0): PRINT "" : IF P
      = 1 THEN P = 2: GOTO 2015
2010 P = 1

```

Display each player's cumulative score.

```

2015 HOME : VTAB 21: PRINT "SCOR
      E = ";SA:; PRINT TAB( 28)"S
      CORE = ";SB

```

Display the players' names. The player whose name is flashing has the next move.

```

2020 IF P = 1 THEN FLASH : PRINT
      PA$;; NORMAL : PRINT TAB( 2
      8)PB$: GOTO 2030
2025 PRINT PA$;; FLASH : HTAB (2
      8): PRINT PB$: NORMAL

```

Display prompt for player input and display points plotted as they are typed in. The subroutine at 2055-2070 insures that only the number keys are read. The other

continued on next page



<p>keys will have no effect on the program, with the exception of 'ESC', which will start a new game. The output of these lines is a value for (A,B) and (C,D) -- the endpoints of the desired line.</p> <pre> 2030 PRINT : HTAB (4); PRINT "PL       OT FROM ";; GOSUB 2055:A = P       P: IF A = 10 THEN 3060 2035 PRINT ",,": GOSUB 2055:B =       PP: IF B = 10 THEN 3060 2040 PRINT " TO ";; GOSUB 2055:C       = PP: IF C = 10 THEN 3060 2045 PRINT ",,": GOSUB 2055:D =       PP: IF D = 10 THEN 3060 2050 GOTO 2080 2055 PP = PEEK ( - 16384): IF PP       &lt; 128 THEN 2055 2060 POKE - 16368,0:PP = PP - 1       76: IF PP = - 21 THEN PP =       10: RETURN 2065 IF PP &lt; 0 OR PP &gt; 9 THEN 20       55 2070 PRINT PP;; RETURN </pre> <p>Determine if the player has made a legal move. Lines 2080 to 2085 insure that (A,B) and (C,D) are in the right order prior to the legality test. Lines 2090 to 2105 are the 'legality filter'. If a plotted line makes it through the tests, line 2110 sends it on for further processing. If a test is failed, the reason is displayed and the player is given a chance to replot. Lines 2115 and 2120 format the error message and sound a warning.</p> <pre> 2075 REM LEGAL PLOT? 2080 IF A &gt; C THEN E = A:A = C:C       = E 2085 IF B &gt; D THEN E = B:B = D:D       = E 2090 IF (C - A) &gt; 1 OR (D - B) &gt;       1 THEN GOSUB 2115: PRINT "T       HAT'S TOO LONG -- TRY AGAIN"       : GOSUB 2120: GOTO 2015 2095 IF A = C AND VZ(A,B) = 1 OR       B = D AND HZ(A,B) = 1 THEN GOSUB       2115: PRINT "THAT LINE IS AL       READY ON THE BOARD --": PRINT       "PLOT ANOTHER ONE": GOSUB 21       20: GOTO 2015 2100 IF A &lt; &gt; C AND B &lt; &gt; D THEN       GOSUB 2115: PRINT "THAT WAS       A DIAGONAL LINE --": PRINT </pre>	<pre> "WON'T WORK -- PLOT ANOTHER ONE": GOSUB 2120: GOTO 2015 2105 IF A = C AND B = D THEN GOSUB       2115: PRINT "YOU PLOTTED THE       SAME POINT TWICE --": PRINT       "PAY ATTENTION!!": GOSUB 212       0: GOTO 2015 2110 GOTO 2130 2115 HOME : VTAB 22: INVERSE : RETURN </pre> <p>2120 Z = ( - 16336): FOR D = 1 TO 300:U = PEEK (Z) + PEEK (Z) - PEEK (Z): NEXT : NORMAL : RETURN</p> <p>Display the line plotted by the player. (A,B) and (C,D) are translated to corresponding points on the HI-RES screen.</p> <pre> 2130 HCOLOR= 3:X = (A * 14) + 77       :Y = (B * 14) + 16:V = (C *       14) + 77:W = (D * 14) + 16: HPLOT       X,Y TO V,W </pre> <p>Put a value in the matrix for the plotted line. (See Program Operation for a description of how this works.)</p> <pre> 2135 IF A = C THEN VZ(A,B) = 1 2140 IF B = D THEN HZ(A,B) = 1 </pre> <p>Query the player if the line displayed is what he really wants. If it is, line 2150 sends the line on to the rest of the program. If not, lines 2155-2165 erase the line, zero the line in the matrix, and set up the display for the player to move again.</p> <pre> 2145 REM MOVE OK? 2150 PRINT "   OK? (Y/N) ";; GET       Y\$: IF Y\$ = "Y" THEN 2170 2155 HCOLOR= 0: IF A = C THEN HPLOT       X,(Y + 1) TO V,(W - 1):VZ(A,       B) = 0 2160 IF B = D THEN HPLOT (X + 1       ),Y TO (V - 1),W:HZ(A,B) = 0 2165 GOTO 2015 </pre> <p>Check to see if a square has been completed. 2175-2180 pick the appropriate color for the player. 2185-2190 establish if the line is horizontal or vertical. 2200-2230 determine if a square has been completed (see Program Operation for a description of how this</p>	<p>works). If a square (or squares) has been completed, then the appropriate subroutine is called to fill in the square with the player's color and tally the score. Line 2235 adds up the total score for the move.</p> <pre> 2170 REM SQUARE COMPLETE? 2175 IF P = 2 THEN HCOLOR= 6: GOTO       2185 2180 HCOLOR= 2 2185 IF A = C THEN 2200 2190 GOTO 2220 2200 IF A = 0 THEN 2210 2205 IF HZ(A - 1,B) = 1 AND VZ(A       - 1,B) = 1 AND HZ(A - 1,B +       1) = 1 THEN GOSUB 3020 2210 IF HZ(A,B) = 1 AND VZ(A + 1       ,B) = 1 AND HZ(A,B + 1) = 1 THEN       GOSUB 3035 2215 GOTO 2235 2220 IF B = 0 THEN 2230 2225 IF VZ(A,B - 1) = 1 AND HZ(A       ,B - 1) = 1 AND VZ(A + 1,B -       1) = 1 THEN GOSUB 3005 2230 IF VZ(A,B) = 1 AND HZ(A,B +       1) = 1 AND VZ(A + 1,B) = 1 THEN       GOSUB 3035 2235 S = SJ + SK + SL </pre> <p>Add the move score to the appropriate player's cumulative score.</p> <pre> 2245 IF P = 2 THEN SB = SB + S: GOTO       2255 2250 SA = SA + S </pre> <p>Determine if the game is over (1313 is the total score of all the squares).</p> <pre> 2255 ST = SA + SB: IF ST = 1313 THEN       2270 </pre> <p>If a square was not completed, there is no score, and the play is passed to the other player.</p> <pre> 2260 IF S = 0 THEN 2005 </pre> <p>If there was a square completed, the player gets another turn. Score counters are zeroed for the next move.</p> <pre> 2265 S = 0: SJ = 0: SK = 0: SL = 0: GOTO       2015 </pre> <p style="text-align: right;">continued on next page</p>
--	--	---

<p>Determine who won the game and display the scores with the winner's name and score flashing.</p> <pre> 2270 IF SA &lt; SB THEN 2280 2275 HOME : VTAB 21: FLASH : PRINT PA\$;"'S SCORE = ";SA;" YOU W IN!"; NORMAL : PRINT PB\$;"'S SCORE = ";SB: GOTO 2285 2280 HOME : VTAB 21: PRINT PA\$;" 'S SCORE = ";SA: FLASH : PRINT PB\$;"'S SCORE = ";SB;" YOU W IN!"; NORMAL  Prompt for another game.  2285 PRINT : PRINT "PLAY AGAIN? (Y/N) ";; GET Y\$: IF Y\$ = " Y" THEN 3060  End routine.  2290 HOME : TEXT : CLEAR : PRINT "PLAY AGAIN SOON" 2295 END  Subroutine to color in the completed squares and determine their scores. 3000 REM FILL SQUARES 3005 FOR F = (X + 1) TO (X + 13) : HPLLOT F,(Y - 13) TO F,(Y - 1): NEXT 3010 SJ = (A * (B - 1)); IF SJ = 0 THEN SJ = 1 3015 RETURN 3020 FOR F = (X - 13) TO (X - 1) : HPLLOT F,(Y + 1) TO F,(Y + 13): NEXT 3025 SK = (B * (A - 1)); IF SK = 0 THEN SK = 1 3030 RETURN 3035 FOR F = (X + 1) TO (X + 13) : HPLLOT F,(Y + 1) TO F,(Y + 13): NEXT 3040 SL = (A * B): IF SL = 0 THEN SL = 1 3045 RETURN  Erase the playing board and zero the variables and matrices to set up a new game.  3060 HCOLOR= 0: FOR Y = 16 TO 14 2: HPLLOT 77,Y TO 203,Y: NEXT Y: CLEAR : GOSUB 3070: GOTO 1055  Draw the dots on the game board.</pre>	<pre> 3070 HCOLOR= 3: FOR X = 77 TO 20 3 STEP 14: FOR Y = 16 TO 142 STEP 14: HPLLOT X,Y: NEXT Y, X: RETURN  Program pause, with player initiated continue.  3080 VTAB 24: HTAB 10: INVERSE : PRINT "PRESS ANY KEY TO CON TINUE";: GET Y\$: NORMAL : RETURN  Instructions (can be omitted if line 3090 is RETURN).  3090 HOME : VTAB 21: PRINT "THE OBJECT OF THIS GAME IS TO": PRINT "COMPLETE SQUARES.": GOSUB 3 080 3095 HOME : VTAB 21: PRINT "YOU DO THIS BY DRAWING LINES BET WEEN": PRINT "THE DOTS ON TH E GAME BOARD.": GOSUB 3080  3100 HOME : VTAB 21: PRINT "TO P LOT A LINE, TYPE IN THE COOR DINATES OF ITS END POINTS (T OP NUMBER FIRST,": PRINT "TH EN THE SIDE NUMBER).": GOSUB 3080  3105 HCOLOR= 3: HPLLOT 119,72 TO 133,72: HPLLOT 161,86 TO 161, 100  3110 HOME : VTAB 21: PRINT "FOR EXAMPLE, THE LINES SHOWN ARE  ": PRINT "PLOTTED FROM 3,4 T O 4,4 AND": PRINT "FROM 6,5 TO 6,6": GOSUB 3080  3115 HPLLOT 77,16 TO 91,16 TO 91, 30 TO 77,30 TO 77,16: HPLLOT 189,128 TO 203,128 TO 203,14 2 TO 189,142 TO 189,128: DRAW 2 AT 84,23: DRAW 7 AT 193,13 5: DRAW 5 AT 199,135  3120 HOME : VTAB 21: PRINT "EACH SQUARE HAS A DIFFERENT SCOR E.": PRINT "THE SQUARE'S SCO RES INCREASE FROM": PRINT "U PPER LEFT TO LOWER RIGHT.": GOSUB 3080</pre>	<pre> 3125 HOME : VTAB 21: PRINT "IF A PLAYER SCORES BY": PRINT "C OMPLETING A SQUARE, HE/SHE G ETS": PRINT "ANOTHER TURN.": GOSUB 3080  3130 HCOLOR= 2: X = 77: Y = 16: GOSUB 3035: HCOLOR= 6: X = 189: Y = 128: GOSUB 3035  3135 HOME : VTAB 21: PRINT "THE GAME IS OVER WHEN ALL SQUARE S": PRINT "ARE FILLED IN. HI GH SCORE WINS.": GOSUB 3080  3140 HOME : VTAB 21: PRINT "TO S TOP A GAME AND START OVER": PRINT "PRESS THE 'ESC' KEY. GOOD L UCK.": GOSUB 3080: GOTO 3060  Shape table POKEs.  4000 REM SHAPE TABLE  4005 FOR I = 8062 TO 8191: READ J: POKE I,J: NEXT : RETURN  4010 DATA 10,0,22,0,36,0,44,0,5 4,0,66,0,76,0,88,0,99,0,108, 0,119,0  4015 DATA 12,37,28,63,23,54,46, 30,14,45,5,36,4,0,36,188,150 ,18,45,28,36,0  4020 DATA 101,228,63,23,150,241 ,46,45,37,0,12,12,60,63,183, 146,21,45,12,228,7,0  4025 DATA 58,39,12,12,12,54,174 ,55,62,0,56,39,44,45,245,170 ,54,23,63,28,4,0  4030 DATA 117,246,63,28,36,229, 12,12,45,6,0,12,12,60,63,183 ,82,30,46,0  4035 DATA 231,100,45,21,246,14, 246,63,28,36,0,231,100,45,21 ,54,119,30,30,63,4,0</pre>
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# WORD PROBLEMS

by Denslo Hamlin Jr.

**Word Problems is a program for the S-80 with 16K memory. There are occasional grammatical problems, which are almost inevitable in a program of this kind. However, compared to the majority of educational programs on the market, it is excellent.**

**An Apple conversion hint follows the listing.**

Word Problems can create literally millions of different mathematical word problems that teach and test both mathematical and reading ability.

The many problems are created through the varying of key words in any or seven theme problems. Since this results in problems with random word lengths, a special text printing device was added to print the problems on the screen without splitting words.

## VARIABLES

LV = Level (1-4).

S(I) = Ten different question types.

S = Current question type.

X = First number of problem.

Y = Second number of problem.

Z = Correct answer.

Z1 = Answer given.

A\$ = Entire question.

R\$ = Graphic "That's Right!"

F\$(1)-F\$(5) = Five graphic lines that make up one face.

N = Number to be converted to a string.

N\$ = Converted number as a string.

N1\$ = Half of N\$ for large

number conversions.

V\$ = Usually a verb.

V1\$ = Equal or similar word.

O\$ = Object.

O1\$ = Plural Object.

O2\$ = Group or club.

C\$ = Another object.

C1\$ = Plural of C\$.

S\$ = Subject.

S1\$ = Pronoun for subject.

PI = PI.

C1 = Number of correct answers.

C2 = Number correct last time.

T = Total completed.

E,E3,E2 = Printing variable for neat printing.

A3\$ = Spots, lines, etc.

X1,Y1,X,Y = Design variables.

Line Commentary:

There are four different segments:

1. Selection of problems;
2. Problem Creation;
3. Problem Printing;
4. Graphics.

1. Selection Process:

Lines 400—580 set up selection variables S(0)-S(9). These choose between question types 1 to 7. In each set of ten questions there will be two questions of each type equal to level, level + 1, level + 2, Level + 3. The remaining questions are chosen at random but must be less than the maximum type (level + 3) and no more than three of any one type are in any ten questions.

Lines 600—640 do the picking of question types from the unanswered values (non-zero) of S(I).

2. Question Creation:

This is obviously the largest section by far. Subroutines for insertion of variables extend throughout the program. Locations for each of the seven question types are:

5000 — Question #1

8000 — Question #2

2000 — Question #3

2200 — Question #4

12500 — Question #5

12500 — Question #6

14000 — Question #7

Lines 7000—7530 Create string values of the numbers for insertion within the program.

3. Question Printing:

Lines 10000—10090 Do the printing. Starting at the maximum line length (32), it looks for a convenient spot to end a line, a space or dash. Then it continues on the next line where it left off on the last.

4. Graphics:

The graphic codes are contained in data statements on lines 11200 and 12210 for "THAT'S RIGHT!" and 12220—12260 for the faces.

When the program is run, it first executes lines 11000—11125 where the graphic codes are loaded into R\$ for "THAT'S RIGHT" and F\$(1)—F\$(5) for the face, then later lines 11300—11390 put together as many faces as necessary and print them.

At the end of ten questions, line 5530 decides what sort of comment to make. If fireworks are in order lines 5700—5840 supply them.

<pre> 2 'WORD PROBLEMS 4 'By Denslo Hamlin, Jr. 6 '41 Walnut Ave., E.Farmingdale, N.Y. 11735 8 'COPYRIGHT 1979 30 CLS 100 CLEAR 1000:DEFINT E:RANDOM 110 GOTO 11000 400 INPUT"WHAT IS YOUR DESIRED LEVEL OF QUESTIONS (1-4)";LV 410 IF LV&lt;1 OR LV&gt;4 GOTO 400 500 FOR I=0TO7 510 S(I)=LV+INT(I/2) 520 NEXT I 530 X=RND(5) 540 S(8)=LV+X-2 550 IF S(8)&lt;1 GOTO 530 560 X=RND(5) 570 S(9)=LV+X-2 </pre>	<pre> 580 IF S(9)=S(8) OR S(9)&lt;1 GOTO 560 590 'SELECTION ROUTINE 600 I=RND(10) 610 S=S(I-1) 620 IF S=0 GOTO 600 630 S(I-1)=0 640 ON S GOTO 5000,8000,2000,2200,12000,12500,14000,14500 650 STOP 2000 I=RND(3) 2002 IF I&gt;2 GOTO 2007 2004 Z=RND(6*LV+2)-1;Y=RND(5*LV+2);X=Z+Y 2005 O1\$=O\$:IF Y&lt;1 O1\$=O1\$+"S" 2006 ON I GOSUB 9090,9100:GOTO 2008 2007 X=RND(5*LV+3);Y=RND(4*LV)+2;Z=Y+X:GOSUB 9110 2008 S=RND(12);ON S GOSUB 6000,6010,6020,6030,6040,6050,6060,6070,6080,6090,6095,6098 2009 S3\$=S\$ </pre>
--	---



```

2010 I=RND(12)
2020 IF I=S GOTO2010
2030 ON I GOSUB 6000,6010,6020,6030,6040,6050,6060,6070,6080,608
0,6090,6095,6098
2040 I=RND(9)
2050 ON I GOSUB 9000,9010,9020,9030,9040,9050,9060,9070,9080
2060 O1%=0%;IF X<>1 THEN O1%=0%+"S"
2070 N=X:GOSUB 7000
2075 O1%=0%;IFX>1THENO1%=0%+"S"
2080 A$="A "+S3$+" HAS "+N%+O1$+", A "+S$+" HAS "
2090 N=Y:GOSUB 7000
2100 A$=A$+N%+V$+" "+O1$+", HOW MANY "+O1$+" DOES THE "
2110 A$=A$+S$+" HAVE"
2120 GOSUB 10000
2130 INPUT Z1:C%=0%;C1%=O1$
2140 GOTO 5300
2200 Z=RND(4*LV+3)+1;Y=RND(4*LV+2)
2210 X=Z+Y
2220 E=RND(3)
2230 ON E GOSUB 9120,9130,9140
2240 S=RND(6)
2250 ON S GOSUB 9000,9010,9020,9030,9050,9060
2260 S=RND(12)
2270 ON S GOSUB 6000,6010,6020,6030,6040,6050,6060,6070,6080,609
0,6095,6098
2310 A$="A "+S$+" HAD "
2320 N=X:GOSUB 7000
2330 O1%=0%;IF X<>1 O1%=0%+"S"
2340 A$=A$+N%+"RED "+O1$+", "+V$+" "
2350 N=Y:GOSUB 7000
2360 A$=A$+N%
2370 O1%=0%;IFY>1THENO1%=0%+"S"
2380 A$=A$+O1$
2390 IF (Y=1) OR (E=3) THEN A1$="HAS" ELSE A1$="HAVE"
2391 A$=A$+" "+A1$+" "
2392 S=RND(4);ON S GOSUB 2830,2840,2850,2860
2394 A$=A$+" ON THEM. HOW MANY "+O$+"S DOES THE "+S$+" HAVE"
2400 REM
2401 IF LV>1 AND RND(0)<.18 THEN 2800
2402 IF E=2 THEN A$=A$+" WITHOUT "ELSE A$=A$+" WITH "
2404 A$=A$+A3$
2410 GOSUB 10000
2420 INPUT Z1:C%=0%;C1%=O$+"S"
2430 GOTO 5300
2800 Z=Y
2810 IF E=2 THEN A$=A$+" WITH " ELSE A$=A$+" WITHOUT "
2820 GOTO 2404
2830 A3$="WHITE SPOTS":A$=A$+"LITTLE "+A3$:RETURN
2840 A3$="GREEN FUNGUS":A$=A$+A3$:RETURN
2850 A3$="WHITE MARKS":A$=A$+"LONG "+A3$:RETURN
2860 A3$="MUD SPOTS":A$=A$+"DIRTY "+A3$:RETURN
5000 S=RND(12)
5010 ON S GOSUB 6000,6010,6020,6030,6040,6050,6060,6070,6080,609
0,6095,6098
5020 X=RND(3*LV+6)
5030 C=RND(3)
5040 ON C GOSUB 6100,6110,6120
5050 I=RND(4)
5060 ON I GOSUB 6130,6140,6150,6160
5070 Y=RND(4*LV+5)
5080 Z=X+Y
5090 CLS
5100 PRINTCHR$(23):A$="A "+S$+" HAD "
5110 N=X: GOSUB 7000
5120 A$=A$+N%
5130 IF X=1 THEN LET A$=A$+C$ ELSE LET A$=A$+C1$
5140 A$=A$+" , "
5150 IF RND(0)<.3 GOTO 5200
5160 A$=A$+S1$+" "

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5170 A$=A$+"THEN "+V$+" "
5180 N=Y:GOSUB 7000
5190 A$=A$+N%
5192 IF Y=1 THEN LET A$=A$+C$ ELSE LET A$=A$+C1$
5194 A$=A$+" , "
5196 A$=A$+"HOW MANY "+C1$+" DOES THE "
5198 A$=A$+ S$+" NOW HAVE":GOSUB 10000
5199 INPUT Z1:GOTO 5300
5200 IF S<>6 THEN LET A$=A$+"THE "+S$+" " ELSE GOTO 5160
5210 GOTO 5170
5300 IF Z1=Z GOTO 11300
5310 PRINT:PRINT"NO ";
5320 PRINTS1$;
5330 PRINT " DOESN'T HAVE";Z1;
5340 IF Z1=1 THEN PRINTC$;ELSEPRINTC1$;
5350 PRINT " ";PRINTS1$;
5360 PRINT " HAS ";Z;" ";O$=""
5370 O$=INKEY$:IF O$="" GOTO 5370
5375 T=T+1
5378 IF T=10 GOTO 5500
5380 GOTO 600
5500 CLS
5510 PRINT CHR$(23)
5520 IF C1=0 GOTO 5540
5530 ON C1 GOTO 5540,5540,5600,5600,5600,5610,5610,5700,5700,580
0
5540 PRINT"OUT OF THE LAST TEN
PROBLEMS YOUR SCORE IS:"
5550 PRINTC1;" RIGHT OUT OF "T;"PROBLEMS"
5560 INPUT"DO YOU WANT TO TRY
AGAIN";O$
5565 IF LEFT$(O$,1)="N"END
5570 C2=C1:C1=0:T=0:GOTO 400
5600 PRINT"NOT BAD"
5602 IF C2<>0:IFC1>C2 PRINT"BETTER THAN LAST TIME"
5605 GOTO 5540
5610 PRINT"VERY GOOD!";GOTO 5540
5700 CLS:FOR I =0 TO 64
5710 X=64+I*SIN(I/4)
5720 Y=24+.33*I*COS(I/4)
5725 X1=64-I*SIN(I/4)
5728 Y1=24-.33*I*COS(I/4)
5730 SET(X,Y)
5732 SET(X1,Y1):SET(X,Y1):SET(X1,Y)
5740 NEXT
5750 PRINT@475,"*SUPER*";
5760 FOR I=1 TO 1500 :NEXT
5770 CLS:PRINTCHR$(23):GOTO 5540
5800 CLS:FOR I=0 TO 64
5810 X=64+I*SIN(I)
5820 Y=24+.33*I*COS(I)
5830 SET(X,Y)
5840 NEXT
5850 FOR I=1 TO 500:NEXT:PRINT@542,"*10*";
5860 FOR I=1 TO 1000:NEXT:GOTO 5700
6000 S$="BAD WITCH":S1$="SHE":RETURN
6010 S$="WOMAN":S1$="SHE":RETURN
6020 S$="QUEEN":S1$="SHE":RETURN
6030 S$="GIRL":S1$="SHE":RETURN
6040 S$="LADY":S1$="SHE":RETURN
6050 S$="PRETTY YOUNG GIRL":S1$="SHE":RETURN
6060 S$="PRINCESS":S1$="SHE":RETURN
6070 S$="MAN":S1$="HE":RETURN
6080 S$="SMALL BOY":S1$="HE":RETURN
6090 S$="KING":S1$="HE":RETURN
6095 S$="PRINCE":S1$="HE":RETURN
6098 S$="COMBOY":S1$="HE":RETURN
6100 C$="PENNY":C1$="PENNIES":RETURN
6110 C$="CENT":C1$=C$+"S":RETURN

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6120 C$="DOLLAR";C1$=C$+"$";RETURN
6130 V$="FOUND";RETURN
6140 V$="WAS GIVEN";RETURN
6150 V$="EARNED";RETURN
6160 V$="PICKED UP";RETURN
6170 V$="LOST";RETURN
6172 V$="DROPPED";RETURN
6174 V$="LEFT BEHIND";RETURN
6176 V$="WASTED";RETURN
6178 V$="SPENT";RETURN
6180 V$=STR$(RND(5)+1);V$="BOUGHT"+V$+" APPLES FOR";RETURN
6182 V$="GAVE AWAY";RETURN
6184 V$="DONATED TO CHARITY";RETURN
7000 RESTORE;IF N=0 LET N$="ZERO ";RETURN
7002 IF RND(0)>.93THEN N1$=STR$(N);N$=RIGHT$(N1$,LEN(N1$)-1)+" ";RETURN
7003 IF LV>1 GOTO 7500
7005 IF N>19 GOTO 7200
7010 FOR I=1 TO N
7020 READ N$
7030 NEXT
7040 RESTORE;RETURN
7100 DATA ONE ,TWO ,THREE ,FOUR ,FIVE ,SIX ,SEVEN ,EIGHT ,NINE ,
TEN ,ELEVEN ,TWELVE ,THIRTEEN ,FOURTEEN ,FIFTEEN
7110 DATA SIXTEEN ,SEVENTEEN ,EIGHTEEN ,NINETEEN ,TWENTY ,THIRTY
,FORTY ,FIFTY ,SIXTY ,SEVENTY ,EIGHTY ,NINETY ,ONE HUNDRED
7200 FOR I=2TO 10
7210 I1=10*I
7220 IF N-I1<10 GOTO 7250
7230 NEXTI
7235 IF N<119 GOTO7250
7240 N$=STR$(N)+" ";RETURN
7250 RESTORE;FOR J=1 TO 19
7260 READ N$
7270 NEXT J
7280 FOR J=2TOI1/10
7290 READ N$
7300 NEXT J
7310 RESTORE
7320 IF N-I1=0:N$=N$+" ";RETURN
7330 FOR J=1TON-I1
7340 READN1$
7350 NEXT J
7355 IF N>100 THEN N$=N$+" AND "+N1$;RETURN
7360 N$=N$+"-"+N1$
7370 RETURN
7500 IF N=12 AND RND(0)>.3 N$="A DOZEN ";RETURN
7510 IF N=6 AND (RND(0)>.8 AND LV>3) THEN N$="A HALF OF A DOZEN
";RETURN
7520 IF N=24 AND LV>3 THEN IF RND(0)>.8 N$="TWO DOZEN ";RETURN
7530 GOTO 7005
8000 S=RND(12)
8010 ON S GOSUB 6000,6010,6020,6030,6040,6050,6060,6070,6080,609
0,6095,6098
8020 C=RND(3)
8030 ON C GOSUB 6100,6110,6120
8040 I=RND(0)
8050 IF I<.1 GOTO 8200
8060 I=RND(8)
8070 ON I GOSUB 6170,6172,6174,6176,6178,6180,6182,6184
8080 X=RND(3*LV+6)
8090 Z=RND(4*LV+3)
8100 Y=Z+X
8105 CLS;PRINTCHR$(23);
8110 A$="A "+S$+" OWNED "
8120 N=Y;GOSUB 7000
8130 A$=A$+N$+C1$+" , "
8140 A$=A$+S1$+" "+V$+" "
8150 N=X; GOSUB 7000
8160 A$=A$+N$
8170 IF N<2 THEN LET A$=A$+C$ ELSE LET A$=A$+C1$
8180 A$=A$+" , "
8190 A$=A$+"HOW MANY "+C1$+" DOES THE "+S$
8192 A$=A$+" NOW HAVE";GOSUB 10000
8193 INPUT Z1
8194 GOTO 5300
8200 GOTO 5000
9000 O$="APPLE";RETURN
9010 O$="FRUIT";RETURN
9020 O$="BANANA";RETURN
9030 O$="WART";RETURN
9040 O$="FROG";RETURN
9050 O$="GAME";RETURN
9060 O$="TOY";RETURN
9070 O$="CAT";RETURN
9080 O$="DOG";RETURN
9090 V$="LESS";RETURN
9100 V$="FEWER";RETURN
9110 V$="MORE";RETURN
9120 V$="ALL BUT";RETURN
9130 V$="ONLY";RETURN
9140 V$="EVERY ONE EXCEPT";RETURN
9999 'TEXT PRINTING ROUTINE
10000 CLS:E1=1;PRINTCHR$(23);
10010 E=LEN(A$)
10020 PRINT:E3=E1+30
10030 IF E3>E LET E2=E;GOTO10070
10040 FOR E2=E3 TOE1 STEP-1
10050 A1$=MID$(A$,E2,1);IF A1$=" " OR A1$="-" GOTO 10070
10060 NEXT E2
10070 PRINT MID$(A$,E1,E2+1-E1);
10080 E1=E2+1;IF E2<=E GOTO 10020
10090 RETURN
11000 'THAT'S RIGHT ROUTINE
11010 FOR I5=1 TO 28
11020 READ X$
11030 NEXT I5
11040 FOR I5=1 TO 71
11050 READ X
11060 R$=R$+CHR$(X)
11070 NEXT I5
11080 FOR I=1 TO 5
11090 FOR I5=1 TO 11
11100 READ X
11110 F$(I)=F$(I)+CHR$(X)
11120 NEXT I5;NEXTI
11122 RESTORE
11125 GOTO 400
11130 N=2; GOTO 11300
11200 DATA 196,131,131,151,131,129,128,149,200,176,181,144,128,1
36,129,160,140,198,191,179,187,132,128,144,196,170,195,176,181,1
44,197,191,10
11210 DATA 198,149,195,151,131,188,128,136,179,153,144,194,149,1
96,160,153,198,191,128,137,144,128,148,128,166,185,128,170,131,1
69,194,149,198,179,10
11215 DATA 232,164,154
11220 DATA 128,176,188,191,191,191,191,191,188,176,128
11230 DATA 188,191,191,188,159,131,175,188,191,191,188
11240 DATA 131,143,183,155,143,143,143,167,187,143,131
11250 DATA 128,128,131,131,143,143,143,131,131,128,128
11260 DATA 191,191,191,191,191,191,191,191,191,191,191,191
11300 CLS:T=T+1:C1=C1+1
11303 N=C1:I=1
11305 IF C1>5 THEN I=2:N=5
11308 FOR I1=1 TO I
11310 FOR J=1 TO 4
11320 FOR K1=1 TO N
11330 PRINTF$(J);" ";

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11340 NEXT K1
11350 PRINT
11360 NEXT J:N=C1-5
11365 PRINT:NEXT I1
11370 PRINT:PRINTR$
11380 FOR I=1 TO 2000 :NEXT
11390 IF T=10 THEN 5500 ELSE 600
11999 'QUESTIONS 6 A&B FOLLOW
12000 I=RND(3)
12010 ON I GOSUB 13090,13100,13110
12020 A$=A$+" OF THE "
12030 X=RND(3*LV+2):IFX<2GOTO12030
12040 N=X:GOSUB7000
12050 A$=A$+N$
12060 I=RND(9)
12070 ONI GOSUB 13000,13010,13020,13030,13040,13050,13060,13070,
13080
12080 A$=A$+S$
12090 IF O2$="PARTY"THENA$=A$+" AT THE "+O2$:S3$="CHILD":GOTO121
10
12100 S3$=LEFT$(S$,LEN(S$)-1)
12102 IFRIGHT$(O2$,4)="TEAM"THEN A$=A$+" ON"ELSE A$=A$+" IN"
12104 A$=A$+" THE "+O2$
12110 I=RND(3)
12120 ON I GOSUB 13120,13130,13140
12130 I=RND(2)
12140 ON I GOSUB 13142,13144
12150 O1$=""
12160 I=RND(12)
12170 ON I GOSUB 13150,13160,13170,13180,13190,13200,9000,9010,9
020,9040,9050,9060
12180 O1$=O1$+"s"
12185 ILEFT$(A$,3)="ALL"THEN A$=A$+" HAVE "ELSE A$=A$+" HAS "
12190 A$=A$+V1$+V2$+" OF "+O1$+", "
12200 IF RND(0)>.499 GOTO 12300
12210 Y=RND(LV*3)+2
12220 Z=X*Y
12230 N=Y:GOSUB 7000
12240 I=RND(5)
12250 ONIGOSUB13210,13220,13230,13240,13240
12260 A$=A$+" HAS "+N$
12262 IF Y>1 THEN A$=A$+O1$+", "ELSE A$=A$+O1$+", "
12270 A$=A$+"HOW MANY "+O1$+" DO "
12280 I=RND(2)
12290 ONIGOSUB13260,13250
12292 A$=A$+" HAVE"
12294 GOSUB 10000:INPUTZ1:GOTO 12800
12300 A$=A$+"THEY HAD A TOTAL OF "
12310 Z=RND(LV*3+2)+1
12320 Y=Z*X:N=Y
12330 GOSUB7000
12340 A$=A$+N$+O1$+", "
12350 A$=A$+"HOW MANY "+O1$+" DOES "
12360 I=RND(3):ON I GOSUB 13270,13280,13290
12370 A$=A$+" HAVE"
12380 GOTO 12294
12499 'QUESTION 5A FOLLOWS
12500 I=RND(6)
12510 ON I GOSUB 13300,13310,13320,13330,13340,13350
12520 RANDOM
12530 I=RND(8)
12540 ON I GOSUB 13150,13160,13170,13180,13190,13200,9000,9020
12570 O1$=O1$+"s"
12580 A$=S$+" IS SETTING UP A "
12590 I=RND(3)
12600 ON I GOSUB 13450,13440,13430
12610 A$=A$+O2$+" OF "+O1$+", "
12620 IF RND(0)>.32 THEN A$=A$+S1$+" " ELSE A$=A$+S$+" "
12630 I=RND(3)

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12640 ON I GOSUB 13460,13470,13480
12650 I=RND(3)
12660 ON I GOSUB 13490,13500,13510
12670 A$=A$+" THE "+O1$+" INTO "+O2$+", "
12680 IF RND(0)>.45 THEN A$=A$+"WHEN " ELSE A$=A$+"AFTER "
12690 IF RND(0)>.3 THEN A$=A$+S1$ ELSE A$=A$+S$
12700 A$=A$+" WAS DONE, "+S1$+" NOTICED THAT THERE WERE "
12710 X=RND(LV*3)+1
12720 N=X:GOSUB 7000
12730 A$=A$+N$+O2$+" EACH WITH "
12740 IF RND(0)>.5 THEN A$=A$+"PRECISELY" ELSE A$=A$+"EXACTLY"
12750 Y=RND(2*LV)+1
12760 N=Y:GOSUB 7000
12770 A$=A$+" "+N$+O1$+", HOW MANY TOTAL "+O1$+" WERE THERE"
12774 IF ER=1 THEN ER=0:GOSUB 10010:GOTO 12780
12778 GOSUB 10000
12780 Z=X*Y
12790 INPUTZ1
12800 IF Z1=Z GOTO11300
12810 PRINT:PRINT"NO, THERE AREN'T ";Z1;
12820 IF Z1<2THEN PRINTO1$; ELSE PRINTO1$;
12830 PRINT",";PRINT"THESE ARE ";Z;" ";
12840 IF Z<2 THEN PRINTO1$; ELSEPRINT O1$;
12850 PRINT",";O1$=INKEY$:O1$=""
12860 GOTO5370
13000 S$="BASEBALL PLAYERS":O2$="TEAM":RETURN
13010 S$="SOCCER PLAYERS":O2$="TEAM":RETURN
13020 S$="BOYS":O2$="BASEBALL TEAM":RETURN
13030 S$="GIRLS":O2$="SOFTBALL TEAM":RETURN
13040 S$="BOYSCOUTS":O2$="TROUP":RETURN
13050 S$="GIRLSOUTS":O2$="TROUP":RETURN
13060 S$="RUNNERS":O2$="TRACK TEAM":RETURN
13070 S$="STUDENTS":O2$="CLASS":RETURN
13080 S$="CHILDREN":O2$="PARTY":RETURN
13090 A$="EVERY ONE":RETURN
13100 A$="EACH ONE":RETURN
13110 A$="ALL":RETURN
13120 V$="NUMBER":RETURN
13130 V$="AMOUNT":RETURN
13140 V$="QUANTITY":RETURN
13142 V1$="AN EQUAL ":RETURN
13144 V1$="THE SAME ":RETURN
13150 IF S$<>"SOCCER": IF S$<>"GIRLS"THEN O1$="BASEBALL" ELSEO1$="
SOFTBALL":RETURN
13152 IF S$="SOCCER" O1$="SOCCER BALL"
13154 RETURN
13160 O1$="KITE":RETURN
13170 O1$="SOCK":RETURN
13180 O1$="RUBBER BAND":RETURN
13190 O1$="CANDY BAR":RETURN
13200 O1$="PENCIL":RETURN
13210 A$=A$+"ONE OF THE "+S$;RETURN
13220 A$=A$+"ONE "+S3$;RETURN
13230 A$=A$+"A "+S3$;RETURN
13240 S2$=S$:IF LEFT$(S$,4)<>"GIRL" THEN I=RND(3):ON IGOSUB 1330
0,13310,13320:GOTO 13242
13241 I=RND(3):ONIGOSUB 13330,13340,13350
13242 IF O2$<>"PARTY"THENA$=A$+S$+" IS A MEMBER OF THE "+O2$+",
"+S1$ ELSE A$=A$+S$+" IS AT THE PARTY. HE"
13244 S$=S2$:RETURN
13250 A$=A$+"THEY ALL":RETURN
13260 A$=A$+"ALL OF THEM":RETURN
13270 A$=A$+"ONE OF THE "+S$;RETURN
13280 A$=A$+"EACH OF THE "+S$;RETURN
13290 A$=A$+"ONE "+S3$;RETURN
13300 S$="JOHN":S1$="HE":RETURN
13310 S$="BILL":S1$="HE":RETURN
13320 S$="DENNY":S1$="HE":RETURN
13330 S$="JOAN":S1$="SHE":RETURN

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13340 S$="ELIZABETH";S1$="SHE";RETURN
13350 S$="ALLISON";S1$="SHE";RETURN
13430 O2$="COUNTER";RETURN
13440 O2$="DISPLAY";RETURN
13450 O2$="STAND";RETURN
13460 O2$="COLUMNS";RETURN
13470 O2$="ROWS";RETURN
13480 O2$="LINES";RETURN
13490 A$=A$+"ARRANGES";RETURN
13500 A$=A$+"LINES UP";RETURN
13510 A$=A$+"SETS UP";RETURN
13990 'QUESTION 7 BEGINS HERE
14000 X=RND(6);ONXGOSUB 13300,13310,13320,13330,13340,13350
14010 I=RND(8);ONIGOSUB 14500,14510,14520,14530,14540,14550,14560,14570
14020 A$=S$+" CAN "+V$
14030 IF V$="DRIVE" THEN 14620
14040 IF V$="EAT" THEN I=RND(5);ONIGOSUB 9000,9010,9020,9040,13190;GOTO 14060
14050 I=RND(7);ONI GOSUB 9050,9060,13160,14580,14590,14600,14610
14060 X=RND(5*(LV-5));N=X;GOSUB 7000
14062 IF X<3 THEN 14060
14070 A$=A$+" "+N$+O$+"S "
14080 I=RND(3);ONIGOSUB 14630,14640,14650
14090 I=RND(7);ONIGOSUB 14660,14670,14680,14690,14700,14710,14660
14100 A$=A$+V1$+O1$+" , "
14110 IF RND(0)>.5 THEN 14200
14120 Y=RND(LV*4);N=Y;GOSUB 7000
14130 Z=XY;A$=A$+"HOW MANY "+O$+"S CAN "+S$+" "+V$+" IN "+N$+O1$
14135 IF Y>1 THEN A$=A$+"S"
14140 GOSUB 10000;INPUT Z1
14150 IF Z1=Z THEN 11300
14160 PRINT"NO, ";S$;" CAN ";V$;Z;O$;
14170 IF Z>1 THEN PRINT"S";
14180 PRINT","

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14190 O$=INKEY$;O$="" ;GOTO 5370
14200 Z=RND(12)
14210 Y=Z*X;N=Y;GOSUB 7000
14220 A$=A$+"HOW MANY "+O1$+"S WILL IT TAKE "+S$+" TO "+V$+" "+N$+O$
14230 IF Y>1 THEN A$=A$+"S"
14240 GOSUB 10000;INPUT Z1
14250 IF Z1=Z THEN 11300
14260 PRINT"NO, IT WILL TAKE";Z;O1$;
14270 IF Z>1 THEN PRINT"S";
14280 GOTO 14180
14500 V$="EAT";RETURN
14510 V$="BREAK";RETURN
14520 V$="MAKE";RETURN
14530 V$="BUILD";RETURN
14540 V$="CONSTRUCT";RETURN
14550 V$="FIND";RETURN
14560 V$="PAINT";RETURN
14570 V$="DRIVE";RETURN
14580 O$="HOME";RETURN
14590 O$="CAR";RETURN
14600 O$="TABLE";RETURN
14610 O$="CHAIR";RETURN
14620 IF RND(0)>.5 THEN O$="MILE" ELSE O$="KILOMETER"
14625 GOTO 14060
14630 V1$="EACH ";RETURN
14640 V1$="EVERY ";RETURN
14650 V1$="PER ";RETURN
14660 O1$="HOUR";RETURN
14670 O1$="SECOND";RETURN
14680 O1$="MINUTE";RETURN
14690 O1$="DAY";RETURN
14700 O1$="WEEK";RETURN
14710 O1$="YEAR";RETURN
64000 'LAST MODIFIED 8/4/80

```



## Word Problems Apple Conversion

Word problems can be converted to the Apple more easily than most S-80 programs. The changes to watch for are with the RND function, the ELSE clause, and the graphics. The RND function on the S-80, if written RND(N), will give a random integer from 1 to N. Since it's used a lot in this program, the best solution to converting it may be to use line:

```
100 DEF FNR(X)=INT(RND(1)*X)+1
```

and substitute FNR for RND wherever RND appears. The only exception would be when RND(0) is used, which does the same thing as RND(1) on the Apple. It's also not too difficult to deal with the ELSE clause in an IF statement. Suppose the following sequence occurs:

```
10 IF X=1 THEN PRINT "A" ELSE PRINT "B"
20 PRINT "C"
```

To get around the ELSE clause, use:

```
10 IF X=1 THEN PRINT "A" ; GOTO 20
15 PRINT "B"
20 PRINT "C"
```

The graphics will involve a little more work to convert. The SET commands used draw a smiling face for each problem that was answered correctly. They also display the words "That's right!" in large letters. Use your imagination for displaying anything you want in its place.

The other commands to watch are CLS, which is the same as HOME, PRINT CHR\$(23), which switches to large characters and can be omitted, PRINT@, which positions the output as HTAB and VTAB do, and INKEY\$, which is basically the same as GET. ' is also a shorthand for REM.



# MISSILE EVASION

by Thomas Harleman

**Missile Evasion is a 16K S-80 program.**

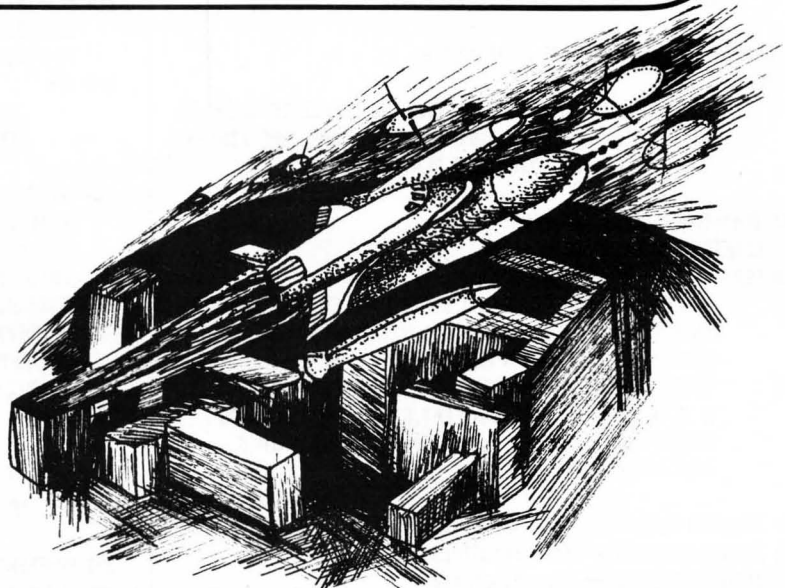
How many times have you left a pinball arcade wishing your TRS-80 could be more exciting? There are a few games that could be exciting on a Level II computer and *this is one*.

A maze appears and is filled with plutonium pellets, each worth ten points. The object of the game is to gather all of the pellets from the maze into a space vehicle. Having only a limited fuel supply urges the player to concentrate on scooping up the pellets and wasting little time. A missile appears at the top of the maze and quickly begins guarding the pellets by patrolling the maze. If no wall separates the missile and spacecraft, the missile can "see" the ship and immediately moves in for the kill. Should the player successfully complete his mission, he is rewarded with an extra thirty points added to his total. The maze is again filled with pellets, now worth twenty points each. However, the increased value of the pellets brings two missiles out to patrol the maze. The game is over when one of two things happens:

- 1) Both sets of pellets are successfully retrieved; or
- 2) The missile terminates the mission by destroying the spaceship.

The Level II TRS-80 uses a BASIC interpreter. BASIC interpreters are slow. Poor programming habits also slow down the execution of a program. Level II is here to stay, so programming style is very important. Here are some techniques we used to keep the game moving:

- 1) The main body of the program is at the beginning. When the interpreter encounters a GOTO or a GOSUB, it begins its search for the line number with the first line of the program.
- 2) Multiple statement lines reduce the number of lines the interpreter must search for a GOTO or GOSUB.



- 3) Boolean algebra - Comparing the value of the variable C with the integer 8 (C AND 8) takes less time than figuring out whether C equals 8.
- 4) Defining all numeric variables as integers reduces the precision the computer will have to work with.
- 5) Building strings of graphic characters and then printing them is much faster than SET and even faster than POKE. This is because the BASIC interpreter has to do its work for each SET or POKE. On the other hand, the interpreter has only one job to do with a character string: Print it.

It takes good timing to turn at just the right moment to get

through a doorway. Don't get discouraged if you have trouble turning in time. That is what makes the game exciting. Besides, you will master that ability quickly. Missing a turn does use up valuable fuel. And if a missile is hot on your trail, the game could end prematurely.

There are three levels of difficulty to allow beginners the opportunity to experience the thrill of victory. Nonetheless, an experienced player will not want to deprive himself of the game's challenge by playing less than the most difficult level. That mode, HOT SHOT, allows just enough fuel to pick up all the pellets.

```
10 REM      MISSILE EVASION GAME - VER 1.1    05/10/80
20 REM      HARLEMAN BROS. SOFTWARE SEYMOUR, IN 47274
29 REM      940 INTRODUCES THE PROGRAM.  IT IS OUT OF THE WAY
          THERE.  THIS WILL MAKE THE PROGRAM OPERATE FASTER
          BECAUSE EVERY GOTO OR GOSUB BEGINS SEARCHING AT THE
          BEGINNING OF THE PROGRAM.
          LEAVE OUT REMARKS TO SPEED UP GAME.
30 GOTO 940
40 FOR TURN =1TOPL
50 CLS:SL=858:ML=91:M=-1:L1=0
59 REM
          660 IS WHERE THE MAZE GRAPHICS ARE.  THEY ARE OUT OF
          THE WAY TOO.  VARIABLE M IS MISSILE MOVEMENT (3=RIGHT,
          -3=LEFT, 64=DOWN, -64=UP).  M IS WHICH MISSILE (J^V).
          PB IS WHAT I WANT TO PUT BACK WHERE THE MISSILE WAS.
60 GOSUB660 :M=0:M=RND(4)-1:PB=32:Y=8:
          PRINT@960,"PLAYER #";TURN;;GOTO310
69 REM
          TS IS TOTAL SCORE.  FOR THE FIRST GAME 970 IS THE MOST
          POINTS POSSIBLE.  THE PLAYER FINISHING THE FIRST SET OF
          PELLETS GETS A BONUS OF 30 POINTS OR A TOTAL OF 1000.
          THE BONUS FOR THE SECOND GAME IS 80, A TOTAL OF 3000.
```

continued on next page

```

70 IFTS=970THENTS=1000
80 IFTS=2920THENTS=3000
89 REM
    PEEK(14400) GIVES C A NUMBER FROM THE KEYBOARD IF ONE
    OF THE ARROW KEYS ARE PUSHED DOWN.

90 C=PEEK(14400);PRINT@185,USINGSC$;TS;
99 REM
    NT MEANS NEXT TIME. IF ONE GAME IS COMPLETED GOING TO
    1170 STARTS THE SECOND GAME. IF TWO GAMES ARE FINISHED
    SUCCESSFULLY 1240 CONCLUDES PLAYERS TURN.

100 IFNT=0ANDTS=1000THEN1170
    ELSEIFNT=1ANDTS=3000THEN1240
108 REM
    BOOLEAN ALGEBRA (IF C AND 8) IS HANDLED MORE QUICKLY
    THAN STANDARD ALGEBRA (IF C = 8). CONSEQUENTLY THE
    GAME MOVES ALONG AT A FASTER PACE, AND IF THE TEST IS
109 ' TRUE, THE GOTO150 BYPASSES THE UNNECESSARY TESTS.
    S IS WHICH SHIP (UP,DOWN,LEFT,RIGHT); M IS SHIP'S
    MOTION (3=RT,-3=LFT,64=DN,-64=UP); L IS SHIP'S
    LOOK AHEAD.

110 IFCAND8THENS=0;M=-64;L=M+1;GOTO150
120 IFCAND16THENS=1;M=64;L=M+1;GOTO150
130 IFCAND32THENS=2;M=-3;L=-2;GOTO150
140 IFCAND64THENS=3;M=3;L=4
149 REM
    STRING$(3,32) ERASES THE OLD SHIP FROM THE SCREEN

150 PRINT@SL,STRING$(3,32);
159 REM
    THESE PEEKS LOOK AHEAD OF THE SHIP. IS IT CLEAR (32)?
    IS THERE A PELLET (46)? IF SO TS IS INCREMENTED BY V.

160 IFPEEK(ME+SL+L)=32THENS=SL+M;GOTO180
170 IFPEEK(ME+SL+L)=46THENTS=TS+V;SL=SL+M
179 REM
    THIS PEEK CHECKS TO SEE IF THE SHIP HIT A MISSILE.

180 PRINT@SL,S$(S);;PK=PEEK(ME+SL+L);IFPK>90ANDPK<95THEN1090
189 REM
    THIS CHECKS TO SEE IF THE SHIP IS ON A MISSILE, JUST
    IN CASE IT SLIPPED BY THE OTHER TEST.

190 IFSL+1=M1THEN1090
200 IFSL+1=M1THEN1090
209 REM
    THE MISSILE'S LOGIC FOLLOWS....
    IF THE MISSILE JUST TURNED A CORNER, NA (NOT AGAIN!?)
    IS SET TO ONE TO KEEP IT FROM GOING IN CIRCLES.
    LINE 300 GETS IT MOVING AGAIN.

210 IFNA=1THENNA=0;GOTO300
219 REM
    Z COMPARES THE SHIP'S LOCATION (SL) WITH THE MISSILE'S
    LOCATION (ML). IF THEY ARE NEAR ONE ANOTHER THEN Z
    WILL EITHER BE LESS THAN 50 OR GREATER THAN -50.
    (IF SO THEY COULD BE ON THE SAME LINE)

220 Z=SL-ML+1
230 IFZ>0ANDZ<50THENPK=PEEK(ME+ML+3);
    IFPK>31ANDPK<100THENPRINT@ML,CHR$(PB);;D=3;W=3;ML=ML+D;
    PB=PK;GOTO410
240 IFZ<-50ANDZ<0THENPK=PEEK(ME+ML-3);
    IFPK>31ANDPK<100THENPRINT@ML,CHR$(PB);;D=-3;W=2;ML=ML+D;
    PB=PK;GOTO410
249 REM
    Z/64 WILL RETURN AN INTEGER EQUAL TO Z IF THE SHIP
    AND MISSILE ARE IN THE SAME COLUMN.

```

```

250 Z=Z/64
260 IFZ=INT(Z)THENIFZ<0ANDZ<13THENPK=PEEK(ME+ML+64);
    IFPK>31ANDPK<100THENPRINT@ML,CHR$(PB);;D=64;W=1;ML=ML+D;
    PB=PK;GOTO410
270 IFZ=INT(Z)THENIFZ<0ANDZ>-13THENPK=PEEK(ME+ML-64);
    IFPK>31ANDPK<100THENPRINT@ML,CHR$(PB);;D=-64;W=0;ML=ML+D;
    PB=PK;GOTO410
279 REM
    280 & 290 CHANGE THE MISSILE FROM UP AND DOWN TO
    LEFT AND RIGHT IF THERE IS AN OPENING OR CORNER.

280 IFABS(D)=3THENPK=PEEK(ME+ML+64);IFPK>31ANDPK<100THENNA=1;
    ONRND(2)GOTO310 ,300
    ELSEPK=PEEK(ME+ML-64);IFPK>31ANDPK<100THENNA=1;
    ONRND(2)GOTO330 ,300
290 IFABS(D)=64THENPK=PEEK(ME+ML+3);IFPK>31ANDPK<100THENNA=1;
    ONRND(2)GOTO360 ,300
    ELSEPK=PEEK(ME+ML-3);IFPK>31ANDPK<100THENNA=1;
    ONRND(2)GOTO350 ,300
299 REM
    IF THE MISSILE GOES ON THEN WHATEVER WAS UNDERNEATH
    IT NEEDS TO BE PUT BACK (PB) AND WHATEVER IS IN FRONT
    OF IT NEEDS TO BE REMEMBERED.

300 PK=PEEK(ME+ML+D);IFPK>31ANDPK<47THENPK=ME+ML,PB=ML=ML+D;PB
    =PK;GOTO410
309 REM
    THESE TESTS CAUSE THE MISSILE TO CHANGE DIRECTION IF
    THE SHIP IS NOT IN SIGHT.

310 IFW=3ANDML<512THEND=64;W=1;GOTO410
320 IFW=2ANDML<512THEND=64;W=1;GOTO410
330 IFW=2ANDML>384THEND=-64;W=0;GOTO410
340 IFW=3ANDML>384THEND=-64;W=0;GOTO410
350 IFW=1THEND=-3;W=2;GOTO410
360 IFW=0THEND=3;W=3;GOTO410
370 IFW=0THEND=64;W=1;GOTO410
380 IFW=1THEND=-64;W=0;GOTO410
390 IFW=2THEND=3;W=3;GOTO410
400 IFW=3THEND=-3;W=2;GOTO410
410 IFNT=0THENL1=ML
419 REM
    DISPLAY THE MISSILE.
    CHECK FOR CONTACT WITH SHIP, IF SO GOTO 1090
    WHICH IS THE DISINTEGRATION OF THE SHIP AND THE END.

420 PRINT@ML,M$(W);;IFML+D=SL+1THEN1090
429 REM
    CHECK WHETHER THIS IS THE FIRST SET OF PELLETS OR THE
    NEXT TIME (NT). A SECOND MISSILE BEGINS ITS CHASE IF
    THIS IS THE NEXT TIME.

430 IFNT<1THEN640 ELSEIFN1=1THENN1=0;GOTO520
439 REM
    THIS IS THE SECOND MISSILE.
    THE LOGIC FOLLOWS THE SAME PATTERN AS THE FIRST
    MISSILE.

440 Z=SL-L1+1
450 IFZ>0ANDZ<50THENPK=PEEK(ME+L1+3);
    IFPK>31ANDPK<100THENPRINT@L1,CHR$(P1);;D1=3;W1=3;L1=L1+D1;
    P1=PK;GOTO630
460 IFZ<-50ANDZ<0THENPK=PEEK(ME+L1-3);
    IFPK>31ANDPK<100THENPRINT@L1,CHR$(P1);;D1=-3;W1=2;L1=L1+D1;
    P1=PK;GOTO630
470 Z=Z/64
480 IFZ=INT(Z)THENIFZ>0ANDZ<13THENPK=PEEK(ME+L1+64);
    IFPK>31ANDPK<100THENPRINT@L1,CHR$(P1);;D1=64;W1=1;L1=L1+D1;
    P1=PK;GOTO630

```



```

490 IFZ=INT(Z) THEN IFZ<0 AND Z>-13 THEN PK=PEEK(ME+L1-64);
      IFPK>31 AND PK<100 THEN PRINT@L1,CHR$(P1);:D1=-64;W1=0;L1=L1+D1;
      P1=PK;GOTO630
500 IFABS(D1)=3 THEN PK=PEEK(ME+L1+64);IFPK>31 AND PK<47 THEN N1=1;
      ONRND(2)GOTO530 ,520
      ELSE PK=PEEK(ME+L1-64);IFPK>31 AND PK<47 THEN N1=1;
      ONRND(2)GOTO550 ,520
510 IFABS(D1)=64 THEN PK=PEEK(ME+L1+3);IFPK>31 AND PK<47 THEN N1=1;
      ONRND(2)GOTO580 ,520
      ELSE PK=PEEK(ME+L1-3);IFPK>31 AND PK<47 THEN N1=1;
      ONRND(2)GOTO570 ,520
520 PK=PEEK(ME+L1+D1);IFPK>31 AND PK<47 THEN POKEME+L1,P1;L1=L1+D1;
      P1=PK;GOTO630
530 IFW1=3 AND L1<512 THEN D1=64;W1=1;GOTO630
540 IFW1=2 AND L1<512 THEN D1=64;W1=1;GOTO630
550 IFW1=2 AND L1>384 THEN D1=-64;W1=0;GOTO630
560 IFW1=3 AND L1>384 THEN D1=-64;W1=0;GOTO630
570 IFW1=1 THEN D1=-3;W1=2;GOTO630
580 IFW1=0 THEN D1=3;W1=3;GOTO630
590 IFW1=0 THEN D1=64;W1=1;GOTO630
600 IFW1=1 THEN D1=-64;W1=0;GOTO630
610 IFW1=2 THEN D1=3;W1=3;GOTO630
620 IFW1=3 THEN D1=-3;W1=2;GOTO630
630 PRINT@L1,M$(W1);:IFL1+D=SL+1 THEN I090
639 REM
      BURN SOME FUEL, MAKE THE HUMAN SWEAT!
      FU IS FUEL USAGE. IT IS INCREMENTED UNTIL IT EQUALS
      THE LEVEL OF DIFFICULTY (LD). IF SO, THE FUEL GAUGE
      GOES DOWN ONE LINE.

640 FU=FU+1;IFFU=LD THEN Y=Y+1;FORX=114 TO 117;RES
      ET(X,Y);NEXTX;FU=0
650 IFY=41 THEN PRINT@825,"OUT";CHR$(26);STRING$(2,8);"OF";:GOTO11
      20 ELSE 70
660 CLS;REM
      DRAW MAZE ONTO SCREEN

670 PRINT@980,"MISSILE EVASION";
679 REM
      TB$ IS A STRING OF THE CENTER TWO POINTS OF THE
      GRAPHICS BLOCK.
      DN$ IS A VERTICAL LINE OF GRAPHICS BLOCKS (CHR$(191)).
      CHR$(26) MOVES THE CURSOR DOWN AND CHR$(8) MOVES THE
      IT UNDER 191.

680 TB$=STRING$(53,140);DN$=""
690 FORD=1 TO 13;DN$=DN$+CHR$(191)+CHR$(26)+CHR$(8);NEXTD
700 PRINT@0,CHR$(188);TB$;CHR$(188);:PRINT@64,DN$;
710 PRINT@118,DN$;
720 PRINT@896,CHR$(143);TB$;CHR$(143);
729 REM
      NOW MAKE SOME SMALLER ONES FOR THE INSIDE OF THE MAZE.

730 DN$="" ;FORD=1 TO 3;DN$=DN$+CHR$(191)+CHR$(26)+CHR$(8);NEXTD
740 DN$=CHR$(188)+CHR$(26)+CHR$(8)+DN$+CHR$(143)
750 TB$=STRING$(18,140)
760 PRINT@135,TB$;TAB(30)TB$;
770 PRINT@134,DN$;:PRINT@176,DN$;
780 PRINT@518,DN$;:PRINT@560,DN$;
790 PRINT@775,TB$;TAB(30)TB$;
800 DN$=CHR$(188)+CHR$(26)+CHR$(8)+CHR$(191)+CHR$(26)+CHR$(8)+CH
      R$(143)
809 REM
      FU$ IS THE VERTICAL LINE FOR THE FUEL GAUGE.

810 TB$=STRING$(12,140);FORFU=0 TO 10;
      FU$=FU$+STRING$(2,191)+CHR$(26)+STRING$(2,8);NEXTFU;FU=0
820 PRINT@268,DN$;:PRINT@269,TB$;TAB(30)TB$;:PRINT@298,DN$;
830 PRINT@524,DN$;:PRINT@554,DN$;

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840 PRINT@653,TB$;TAB(30)TB$;
850 PRINT@402,DN$;:PRINT@408,DN$;:PRINT@414,DN$;:PRINT@420,DN$;
859 REM
      THESE ARE THE SHIP GRAPHICS POINTING
      IN DIFFERENT DIRECTIONS.

860 S$(0)=CHR$(140)+CHR$(131)+CHR$(140)
870 S$(1)=CHR$(140)+CHR$(176)+CHR$(140)
880 S$(2)=CHR$(140)+CHR$(179)+CHR$(128)
890 S$(3)=CHR$(128)+CHR$(179)+CHR$(140)
899 REM
      AND THESE ARE THE MISSILE GRAPHICS
      POINTING IN THEIR DIRECTIONS.

900 FORP=0 TO 3;M$(P)=CHR$(91+P);NEXTP;GOSUB1010
909 REM
      THIS TELLS WHERE THE SCORE AND FUEL GAUGE WILL BE.

910 PRINT@121,"SCORE";:PRINT@249,FU$;"FUEL";
920 PRINT@251,"F";:PRINT@571,"1/2";:PRINT@891,"E";
930 RETURN
939 REM
      INITIALIZE AND INTRODUCE THE GAME TO THE HUMAN.

940 CLEAR700;DEFINTA-Y;DEFSNGZ
950 SL=858;ML=91;ME=15360;M=-1;V=10;SC$="####"
960 CLS;PRINT@470,"MISSILE EVASION

      DO YOU NEED INSTRUCTIONS?";

969 REM
      WAIT UNTIL A KEY IS HIT. THIS LINE IS USED TWICE.
      FIRST FOR A YES OR NO AND THEN FOR THE NUMBER OF
      PLAYERS.

970 A$=INKEY$;IFA$="" THEN 970 ELSE IFA$="Y" OR A$="N" THEN 1400
      ELSE PL=VAL(A$);IFPL<1 THEN 970 ELSE PRINTPL
980 PRINT:PRINT"          LEVEL OF DIFFICULTY
      1>HOT SHOT 2>VET 3>ROOKIE?";
989 REM
      ANOTHER WAIT FOR INPUT. THESE ARE NICE BECAUSE
      THE ENTER KEY IS NEVER PRESSED.

990 A$=INKEY$;IFA$="" THEN 990 ELSE LD=VAL(A$);
      IFLD<1 OR LD>3 THEN 990 ELSE PRINTLD;LD=LD*2+2
1000 GOTO40
1009 REM
      THE PELLETS HAVE TO BE PLACED EXACTLY, SO THE DATA
      STATEMENTS TELL EXACTLY WHERE.

1010 READF,T,S;IFF=0 THEN RETURN
1020 FORP=0 TO 3;STEPS:PRINT@P,"";NEXTP;GOTO1010
1030 DATA 67,88,3,94,115,3,201,216,3,222,237,3,713,728,3
1040 DATA 734,749,3,835,856,3,862,883,3,131,387,64,179,435,64
1050 DATA 265,393,64,301,435,64,307,435,64,515,773,64
1060 DATA 521,649,64,557,685,64,563,819,64
1070 DATA 405,533,64,411,539,64,417,545,64,0,0,2
1080 RETURN
1089 REM
      IF YOU LOSE, WE CAN MAKE NICE LITTLE EXPLOSIONS
      WITHOUT MESSING THE SCREEN UP BY PRINTING RANDOM
      GRAPHICS BLOCKS WHERE THE SHIP WAS.

1090 PRINT@999,"DISINTEGRATING....";:FORP=1 TO 25;PRINT@SL,CHR$(
      RND(62)+128);CHR$(RND(62)+128);CHR$(RND(62)+128);
1099 REM
      AND THE MISSILE, TOO.

1100 PRINT@SL,CHR$(RND(62)+128);CHR$(RND(62)+128);

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```

CHR$(RND(62)+128);:PRINT@ML,CHR$(RND(62)+128);:
PRINT@L1,CHR$(RND(62)+128);
1110 NEXTP:PRINT@SL,STRING$(3,32);:PRINT@ML,CHR$(32);:
PRINT@L1,CHR$(32);:
PRINT@999,"DISINTEGRATION COMPLETE!";:PRINT@512,"";
1120 FORP=1T010:PRINT@960,"GAME OVER ";
1130 FORT=1T0100:NEXTT:PRINT@960,"PLAYER #";TURN;
1140 FORT=1T0100:NEXTT,P
1150 PRINT@512,"";
1160 GOTO1290
1169 REM
      IF YOU WIN, A LITTLE COMMENDATION IS ALWAYS IN ORDER.

1170 FORP=1T050:PRINT@999,"MISSILE SELF-DESTRUCTS";:FORT=1T010
1180 NEXTT:PRINT@999,STRING$(22,32);:PRINT@ML,CHR$(RND(62)+128);
:NEXTP
1190 PRINT@ML,CHR$(32);:PRINT@999,"VERY NICE, CAPTAIN!";
1200 FORT=1T0500:NEXTT
1209 REM
      THE PLAYER GETS TO PLAY AGAIN, ONLY WITH TWO MISSILES
      THIS TIME. 1210 PUTS MORE PELLETS ON THE SCREEN.
      THE MISSILES ARE LOCATED (ML & L1) AND THE VALUE (V)
      OF THE PELLETS IS INCREASED TO 20.

1210 M=0:RESTORE;GOSUB1010
1220 ML=451:L1=499:M=RND(4)-1;W1=RND(4)-1;NT=1;PB=32;P1=32;V=20
1230 PRINT@249,FU$;"FU";FU=0;Y=8:GOTO310
1239 REM
      IF THE SECOND SET OF PELLETS IS COMPLETED THE MISSILES
      ARE DESTROYED AND THE PLAYER RECEIVES A PAT ON THE
      BACK.

1240 FORP=1T050:PRINT@999,"SUCCESSFUL MISSION";:FORT=1T010
1250 NEXTT:PRINT@999,STRING$(19,32);:PRINT@ML,CHR$(RND(62)+128);

```

```

1260 PRINT@L1,CHR$(RND(62)+128);:NEXTP:PRINT@ML,CHR$(32);
1270 PRINT@L1,CHR$(32);:PRINT@999,"MISSION ACCOMPLISHED!";
1280 FORT=1T0500:NEXTT
1290 CLS:REM
      DISPLAY THE SCORING

1300 SC(TURN)=SC(TURN)+TS
1310 FORTS=1TOPL
1320 PRINT"PLAYER #";TS,SC(TS)
1330 NEXTTS
1340 FORT=1T01000:NEXTT
1350 V=10;NT=0;TS=0;FU$="";RESTORE:CLS:NEXTTURN
1360 FORTS=1TOPL:PRINT"PLAYER #";TS,SC(TS):NEXTTS
1370 PRINT@530,"CARE FOR ANOTHER GAME?";A$=INKEY$:A$=""
1380 A$=INKEY$:IFA$=""THEN1380 ELSEIFA$="Y"THENRUN
1390 END
1399 REM

```

INSTRUCTIONS - YOU ALWAYS NEED THEM FOR ROOKIES.

```

1400 IFA$="N"THEN1490
1410 CLS:PRINT"YOU WILL GUIDE A SHIP: ";CHR$(140);CHR$(179);
1420 PRINT" THROUGH A SPACE MAZE TRYING TO SCOOP"

```

```

1430 PRINT"UP PLUTONIUM PELLETS . . . . .";
1440 PRINT:PRINT"AN ENEMY MISSILE: ";CHR$(91);" WILL BE TRYING";
1450 PRINT" TO INTERCEPT YOUR SHIP IN AN ATTEMPT TO STOP YOU,"
1460 PRINT:PRINT"TO MOVE THE SHIP UP PRESS THE ";CHR$(91);
1470 PRINT" ARROW, DOWN THE ";CHR$(92);" ARROW, RIGHT"
1480 PRINT"THE ";CHR$(94);" ARROW, LEFT THE ";CHR$(93);" ARROW."
1490 PRINT:PRINT"          HOW MANY PLAYERS? (1-9)";:
      GOTO970

```



\*\*\*\* BY JAMES TALLEY \*\*\*\*

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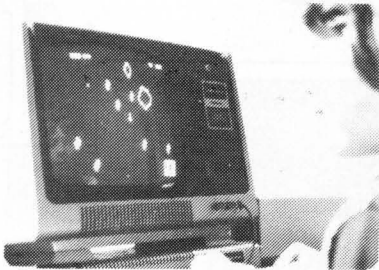
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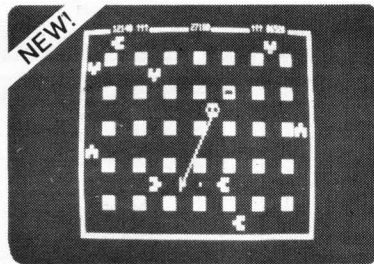
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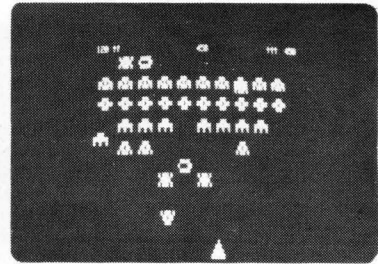
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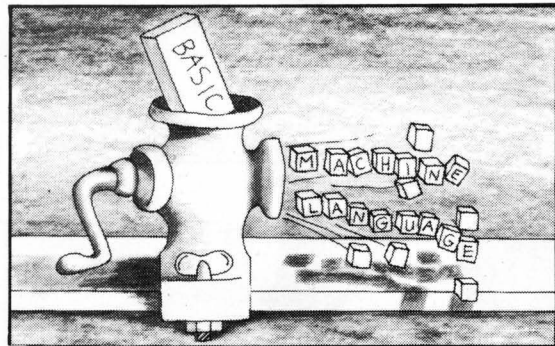
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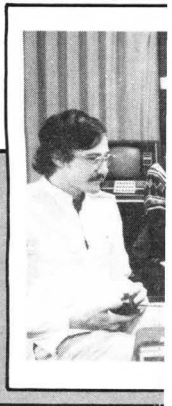
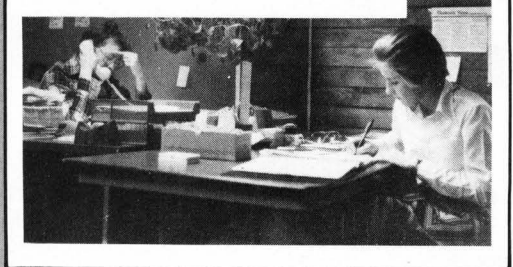
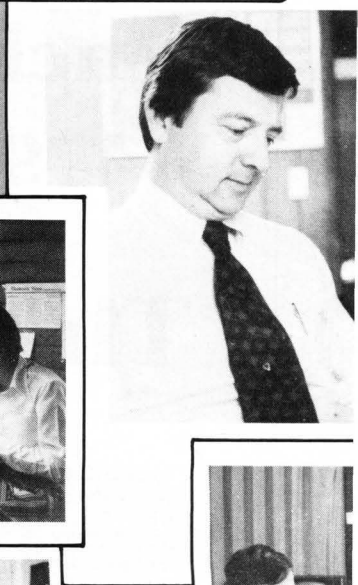
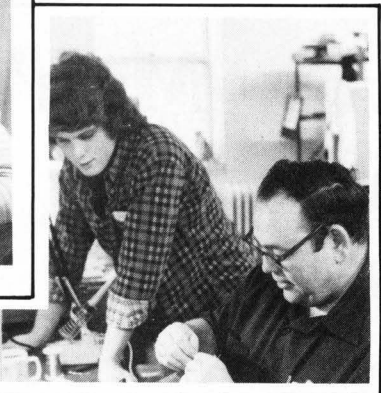
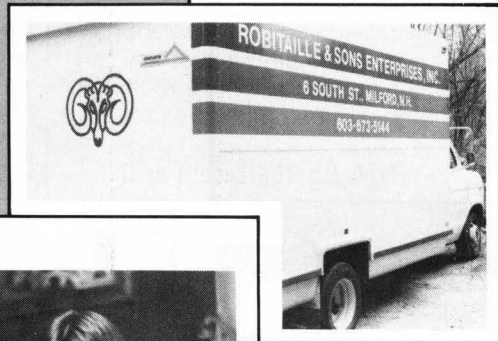
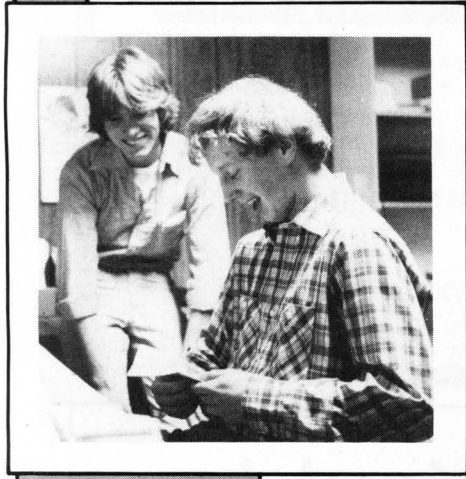
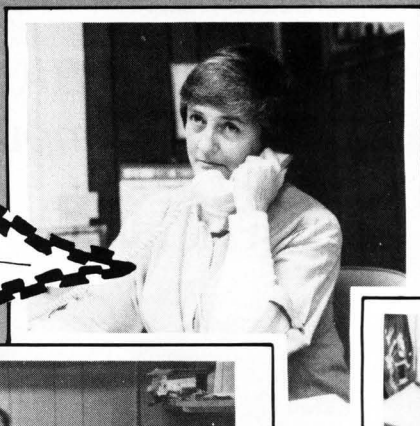
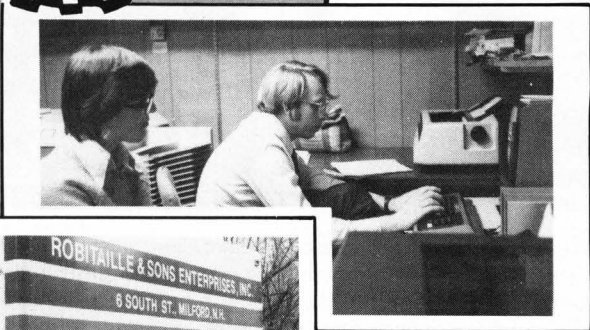
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# Season's Greetings

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```

1370 IF J = 68 THEN COLOR= 0: PLOT
32,39: PLOT 32,37: COLOR= 13
: PLOT 31,39: COLOR= 2
1375 IF J = 69 THEN COLOR= 0: PLOT
33,37: PLOT 33,38: COLOR= 13
: PLOT 33,39: COLOR= 2: PLOT
32,37: J = 0

```

Wag dog's tail.

```

1390 IF T = 5 THEN COLOR= 0: PLOT
25,39: PLOT 24,38: PLOT 23,3
7: COLOR= 2: PLOT 23,39: HLIN
23,25 AT 40: GOTO 1990
1395 IF T = 10 THEN COLOR= 0: PLOT
23,39: HLIN 23,25 AT 40: COLOR=
2: PLOT 24,37: PLOT 24,38: PLOT
23,37: PLOT 24,37: PLOT 25,3
9: GOTO 1990
1400 IF T = 15 THEN COLOR= 0: PLOT
25,41: PLOT 24,42: PLOT 23,4
3: COLOR= 2: PLOT 23,39: HLIN
23,25 AT 40: GOTO 1990
1410 IF T = 20 THEN COLOR= 0: PLOT
23,39: HLIN 23,25 AT 40: COLOR=
2: HLIN 23,25 AT 41: HLIN 22
,25 AT 42: PLOT 23,43: T = 0

```

Control the falling snow flakes in the window.

```

1490 ST = ST + 1: ON ST GOTO 1500
,1505,1510,1515,1520,1525,15
30
1500 COLOR= 15: PLOT 6,4: PLOT 8
,5: PLOT 5,8: PLOT 10,9: PLOT
4,14: PLOT 11,14: PLOT 6,17:
PLOT 3,18: COLOR= 0: PLOT 6
,10: PLOT 5,14: PLOT 4,20: PLOT
11,19: PLOT 6,5: PLOT 4,10
1502 GOTO 1990
1505 COLOR= 15: PLOT 6,5: PLOT 8
,6: PLOT 5,9: PLOT 10,10: PLOT
4,15: PLOT 11,14: PLOT 6,18:
PLOT 3,19: COLOR= 0: PLOT 6
,4: PLOT 8,5: PLOT 5,8: PLOT
10,9: PLOT 4,14: PLOT 11,14:
PLOT 6,17: PLOT 3,18
1507 GOTO 1990
1510 COLOR= 15: PLOT 6,6: PLOT 8
,7: PLOT 5,10: PLOT 10,11: PLOT
4,16: PLOT 11,15: PLOT 6,19:
PLOT 3,20: COLOR= 0: PLOT
6,5: PLOT 8,6: PLOT 5,9: PLOT
10,10: PLOT 4,15: PLOT 11,14
: PLOT 6,18: PLOT 3,19
1512 GOTO 1990
1515 COLOR= 15: PLOT 6,7: PLOT 8
,8: PLOT 10,12: PLOT 4,17: PLOT
11,16: PLOT 6,20: PLOT 3,14:
PLOT 6,6: COLOR= 0: PLOT 6,
6: PLOT 8,7: PLOT 5,10: PLOT
4,16: PLOT 11,15: PLOT 6,19:
PLOT 3,20

```

```

1517 GOTO 1990
1520 COLOR= 15: PLOT 6,8: PLOT 8
,9: PLOT 5,12: PLOT 10,13: PLOT
4,18: PLOT 11,17: PLOT 6,3: PLOT
4,8: COLOR= 0: PLOT 6,7: PLOT
8,8: PLOT 10,12: PLOT 4,17: PLOT
11,16: PLOT 6,20: PLOT 3,14:
PLOT 6,6
1522 GOTO 1990
1525 COLOR= 15: PLOT 6,9: PLOT 8
,10: PLOT 5,13: PLOT 10,14: PLOT
4,19: PLOT 11,18: PLOT 6,4: PLOT
4,9: COLOR= 0: PLOT 6,8: PLOT
8,9: PLOT 5,12: PLOT 10,13: PLOT
4,18: PLOT 11,17: PLOT 6,3: PLOT
4,8
1527 ST = 0
1530 COLOR= 15: PLOT 6,10: PLOT
5,14: PLOT 4,20: PLOT 11,19:
PLOT 6,5: PLOT 4,10: COLOR=
0: PLOT 6,9: PLOT 8,10: PLOT
5,13: PLOT 10,14: PLOT 4,19:
PLOT 11,18: PLOT 6,4: PLOT
4,9

```

Test to go to the musical portion.

```

1990 T = T + 1
1992 Z = Z + 1: IF Z = ZL THEN Z =
0: GOTO 2500

```

Test to end the program.

```

2000 P = PEEK ( - 16384): IF P >
127 THEN POKE - 16368,0: GOTO
2005
2002 GOTO 1100
2005 POKE - 16301,0: TEXT : CALL
- 936
2010 VTAB 10: HTAB 9: PRINT "HAV
E A HAPPY HOLIDAY!": VTAB 22
: END

```

Print 'A Merry Christmas' background.

```

2500 HOME : GR : REM ** TITLE *
*
2560 COLOR= 15: VLIN 3,7 AT 14: VLIN
2,7 AT 15: VLIN 1,5 AT 16: VLIN
1,5 AT 23: VLIN 2,7 AT 24: VLIN
3,7 AT 25: HLIN 18,21 AT 0: HLIN
16,23 AT 1: HLIN 16,24 AT 2:
HLIN 15,24 AT 4: HLIN 15,24
AT 5: COLOR= 0: PLOT 19,2: PLOT
20,2
2570 COLOR= 1: VLIN 11,20 AT 3: VLIN
11,20 AT 4: VLIN 12,15 AT 5:
VLIN 14,16 AT 6: VLIN 12,15
AT 7: VLIN 11,20 AT 8: VLIN
11,20 AT 9

```

```

2575 VLIN 11,20 AT 11: VLIN 11,2
0 AT 12: HLIN 13,14 AT 11: HLIN
13,14 AT 12: VLIN 15,16 AT 1
3: HLIN 13,14 AT 19: HLIN 13
,14 AT 20
2580 VLIN 11,20 AT 16: VLIN 11,2
0 AT 17: HLIN 18,19 AT 11: HLIN
18,20 AT 12: HLIN 18,20 AT 1
5: HLIN 18,19 AT 16: HLIN 18
,19 AT 17: HLIN 19,20 AT 18:
HLIN 20,21 AT 19: HLIN 20,2
1 AT 20: HLIN 19,20 AT 13: HLIN
19,20 AT 14
2590 VLIN 11,20 AT 23: VLIN 11,2
0 AT 24: HLIN 25,26 AT 11: HLIN
25,27 AT 12: HLIN 25,27 AT 1
5: HLIN 25,26 AT 16: HLIN 25
,26 AT 17: HLIN 26,27 AT 18:
HLIN 27,28 AT 19: HLIN 27,2
8 AT 20: HLIN 26,27 AT 13: HLIN
26,27 AT 14
2600 VLIN 11,14 AT 30: VLIN 11,1
5 AT 31: VLIN 14,20 AT 32: VLIN
14,20 AT 33: VLIN 11,15 AT 3
4: VLIN 11,14 AT 35
2630 COLOR= 4: VLIN 25,38 AT 0: HLIN
0,3 AT 25: HLIN 0,3 AT 38
2635 VLIN 25,38 AT 5: VLIN 25,38
AT 8: HLIN 6,7 AT 31: HLIN
6,7 AT 32
2640 VLIN 25,38 AT 10: HLIN 11,1
2 AT 25: HLIN 12,13 AT 26: VLIN
26,30 AT 13: VLIN 30,35 AT 1
2: VLIN 34,38 AT 13: VLIN 31
,32 AT 11
2645 VLIN 25,38 AT 15: VLIN 25,3
2 AT 17: VLIN 31,38 AT 19: HLIN
18,19 AT 25: HLIN 17,19 AT 3
8: VLIN 31,32 AT 18
2648 VLIN 25,38 AT 22: HLIN 21,2
3 AT 25
2650 VLIN 25,38 AT 25: VLIN 25,3
8 AT 29: VLIN 27,30 AT 26: VLIN
27,30 AT 28: VLIN 30,33 AT 2
7
2655 VLIN 30,38 AT 31: VLIN 30,3
8 AT 35: VLIN 27,30 AT 32: VLIN
27,30 AT 34: VLIN 25,27 AT 3
3: HLIN 32,35 AT 32: HLIN 32
,35 AT 33
2660 VLIN 25,32 AT 37: VLIN 31,3
8 AT 39: VLIN 31,32 AT 38: HLIN
37,39 AT 25: HLIN 37,39 AT 3
8
2670 PRINT : PRINT : PRINT "
FROM FRE
D"
Read data for music.
2710 READ I,J

```

continued on next page



Test for end of first musical selection.

2720 IF I = 0 THEN 90

Execute delay before the next musical note.

2722 IF I = - 1 THEN 9000

Test for the end of the second musical selection.

2725 IF I < - 1 THEN RESTORE : GOTO 90

Play a musical note.

2730 POKE 768,I: POKE 769,J: CALL 770

Direct to next note.

2780 GOTO 2710

Data for the music.

3000 DATA 171,150,128,150,128,75,114,75,128,75,136,75,152,150,152,150,114,150,114,75,102,75,114,75,128,75,136,150,171,150,171,150

3010 DATA 102,150,102,75,96,75,102,75,114,75,128,150,152,150,171,75,171,75,152,150,114,150,136,150,128,255,0,0

3100 DATA 102, 90,102, 90,102, 180,102, 90,102, 90,102,180, 102, 90,86, 90,128,135,114,45,102,255,-1,-1

3150 DATA 96, 90,96, 90,96,135,96,45,96, 90,102, 90,102, 90,102,45,102,45,102, 90,114, 90,114, 90,102, 90,114,180,86,180

3200 DATA 102, 90,102, 90,102, 180,102, 90,102, 90,102,180, 102, 90,86, 90,128,135,114,45,102,255,-1,-1

3250 DATA 96, 90,96, 90,96,135,96,45,96, 90,102, 90,102, 90,102,45,102,45,86, 90,86, 90,96, 90,114,90,128,255,-2,-2

3500 END

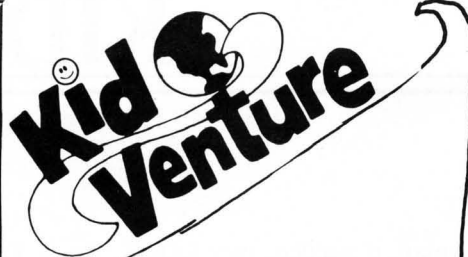
Execute delay between the notes.

9000 FOR AQ = 1 TO 15: NEXT AQ: GOTO 2710

Poke in the machine language tone subroutine.

10000 POKE 770,173: POKE 771,48: POKE 772,192: POKE 773,136: POKE 774,208: POKE 775,5: POKE 776,206: POKE 777,1: POKE 778,3: POKE 779,240: POKE 780,9: POKE 781,202

10010 POKE 782,208: POKE 783,245: POKE 784,174: POKE 785,0: POKE 786,3: POKE 787,76: POKE 788,2: POKE 789,3: POKE 790,96: POKE 791,0: POKE 792,0: RETURN



# 'T WAS THE NIGHT BEFORE CHRISTMAS

At last, an educational adventure for the tykes hovering about your microcomputer. The folks at Adventure International have decided that Adventure for adults are just not enough, so they have begun producing Kid Ventures. Kid Ventures differ from adult adventures in that they include both sound effects and graphics, as well as both story and quiz modes.

The first such Kid Venture, designed for children between the ages of four and ten years, is based on a holiday theme and is entitled "Twas the Night before Christmas." It sure beats a lump of coal in the stocking!

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### ONE-LINERS

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#### An Applesoft One-Liner by Dennis Ward

This is an interactive one-liner, written in Applesoft, that uses paddle input.

```
1 HOME : HGR : POKE - 16302,0: HPLOTT
  PDL (0) / 255 * 279, PDL (1
  ) / 255 * 191: FOR X = 1 TO
  3000: HPLOTT TO PDL (0) / 2
  55 * 279, PDL (1) / 255 * 19
  1: NEXT : FOR X = 8192 TO 16
  383: POKE X,S: S = S + 1 - 25
  5 * (254 < S): NEXT : GOTO 1
```

#### An Applesoft One-Liner by Dennis Ward

Note: Be sure you type this in correctly the first time. Unless you have the Program Line Editor, it is too long to edit. (According to Dennis, the original version of this program took about 40 lines.)

```
1 Y = RND (1) * 191: HGR : HCOLOR=
  3: POKE - 16302,0: FOR I =
  1 TO 750: X = X + Y / 2 - 279
  * (X > 279): X = X - 279 * (
  X > 279): Y = Y - X / 4 + 191
  * (Y < 0): Y = Y + 191 * (Y <
  0): HPLOTT X,Y: HPLOTT X,191 -
  Y: HPLOTT 279 - X,191 - Y: HPLOTT
  279 - X,Y: NEXT I: GOTO 1
```

#### An Applesoft One-Liner by Leon A. Osborne

Here's a one-liner that you can use as a boot program if you have a disk system.

```
1 TITLE$ = "insert title": TEXT :
  HOME : VTAB 12: X = 20 - LEN
  (TITLE$) / 2: HTAB X: PRINT
  TITLE$: GET A$: PRINT : PRINT
  CHR$ (4): "CATALOG"
```

#### Bugs, Worms & other undesirables by Kay Pasa

In ROM the ROBOT, part 3 from our August issue, a few people have said that they got a TOO LONG error when typing in line 30. That line goes in okay if you omit the spaces when typing.

# KIDNAPPED!

## Kidnapped is an S-80 adventure for 16K machines.

by Peter Kirsch

You awaken on the 9th floor of a strange building, the victim of a kidnapping. The kidnapper is elsewhere, busy counting the ransom money. Your only job is to escape from the building, floor by floor. You must beware of the kidnapper, and stay alive. Many traps have been set, so be careful!

This adventure has a total of 65 locations, with each floor independent from the rest. You cannot carry items from floor to floor, so you need only to use items found on that particular floor to escape down to the next.

Use 1- or 2-word commands to communicate with the computer, such as GET AX, DROP AX, OPEN DOOR. To move in a particular direction, type that direction or merely its first letter (N,E,S,W,U,D). To restore the

display, if needed, type LOOK. To see a list of the items you're carrying, type INVENTORY or just I.

You awaken. . .

### VARIABLES

A = Current player location.  
 N,W,E,S,U,D = direction pointers.  
 DT = dark flag.  
 DK = Flashlight on?  
 TI = Current time (9th floor only).  
 FL = Floor pointer.  
 CF,CT,KY,G,C = Message flags (if 0, respective message appears).  
 G,V,B,K,K1,K2,K4 = Loops.  
 K1,K3,TM,F,J,X,Y = Work variables.  
 PM,FR,DP,PF,SC = Monster or hazard flags (0 = active, 1 = absent).  
 EF,SD,UM,SP,JK,C1,R1 = Item flags (0 = natural state, 1 = changed).  
 RS = Rope status (0 = loose, 1 = tied to stake, 2 = stretched across quicksand).  
 BO = Balloon status (0 = deflated, 1 = inflated, 2 = tied to string).  
 PT = Plant status (0 = small,

1 = huge).

BR = Book read?

### STRINGS

A\$ = Player input command.

E\$ = Picks last 3 letters of object command D\$.

J\$,N\$ = Room descriptions (repeated use).

M\$,R\$ = Used to change, add or remove an item in room or if carried.

### ARRAYS

H\$(X) = Permanent storage of items.

A\$(X) = Temporary storage of items.

B\$(X) = Commands.

C\$(X) = Items carried by player.

A(X) = Item location (room #s).

B(X) = Holds room #s accessible from current location.

D(X) = Command codes.

I(X) = Main purpose: If item X is carried by player, I(X) = 1.

G(X) = Door status (0 = locked, 1 = open).

```
1 ' BY PETER KIRSCH
   JUNE 1980
```

```
5 GOTO200
```

```
Lines 10-75: Room descriptions
```

```
10 IFA=66THEN600ELSEIFDT=1THEN320ELSEONAGOTO11,12,13,14,15,16,1
17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38
,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,
60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75
11 PRINTJ$:W=4:N=2:E=8:S=7:GOTO350
12 PRINTN$:N=3:S=1:GOTO350
13 PRINT"IN A CLOSET.":S=2:GOTO350
14 PRINTJ$:N=5:E=1:S=6:GOTO350
15 PRINTN$:S=4:GOTO350
16 PRINT"IN A RESTROOM.":N=4:GOTO350
17 PRINTN$:N=1:GOTO350
18 PRINTJ$:W=1:N=9:S=10:GOTO350
19 PRINT"IN AN ELEVATOR.":S=8:GOTO350
20 PRINT"IN A MAINTENANCE ROOM.":N=8:GOTO350
21 PRINT"IN A CRAWLSPACE ON TOP OF THE ELEVATOR.":D=9:GOTO350
22 PRINT"ON A VERY NARROW LEDGE.":GOTO350
23 PRINTJ$:W=14:S=16:GOTO350
24 PRINT"IN A VISITOR'S LOUNGE.":W=15:E=13:GOTO350
25 PRINT"IN A CLOSET.":E=14:GOTO350
26 PRINTN$:N=13:E=17:GOTO350
27 PRINTN$:W=16:GOTO350
28 PRINTJ$:W=20:N=19:E=24:S=21:GOTO350
29 PRINTN$:S=18:GOTO350
30 PRINT"IN A TOOL CRIB.":E=18:GOTO350
31 PRINTJ$:N=18:E=22:GOTO350
32 PRINTN$:W=21:E=23:GOTO350
```

```
33 PRINT"IN A SMALL STORAGE ROOM.":W=22:GOTO350
34 PRINTJ$:W=18:GOTO350
35 PRINT"IN A NARROW STAIRWAY.":W=24:GOTO350
36 PRINTJ$:W=31:N=27:E=29:S=30:GOTO350
37 PRINTN$:N=28:S=26:GOTO350
38 PRINT"IN A CLOSET.":S=27:GOTO350
39 PRINT"IN A GAME ROOM.":W=26:GOTO350
40 PRINTN$:N=26:GOTO350
41 PRINTJ$:W=33:N=32:E=26:GOTO350
42 PRINT"IN A STORE ROOM.":S=31:GOTO350
43 PRINTN$:E=31:GOTO350
44 PRINT"ON A LARGE LEDGE BY WINDOW.":W=36:GOTO350
45 PRINT"IN THE VAULT.":W=36:GOTO350
46 PRINT"ON A LARGE LEDGE BY WINDOW.":E=34:GOTO350
47 PRINTN$:S=41:GOTO350
48 PRINTJ$:E=43:N=39:S=40:GOTO350
49 PRINTN$:S=38:GOTO350
50 PRINTN$:N=38:GOTO350
51 PRINTJ$:W=43:N=37:S=42:GOTO350
52 PRINTN$:N=41:GOTO350
53 PRINTJ$:W=38:E=41:GOTO350
54 PRINT"IN A STAIRCASE.":GOTO350
55 PRINTJ$:N=46:E=48:S=47:GOTO350
56 PRINTN$:S=45:GOTO350
57 PRINT"IN A LIBRARY.":N=45:GOTO350
58 PRINT"IN THE SWIM ROOM.":W=45:GOTO350
59 PRINT"IN THE SWIM ROOM.":N=50:E=51:GOTO350
60 PRINT"IN A LAUNDRY ROOM.":S=49:GOTO350
61 PRINT"IN A DINING ROOM.":W=49:GOTO350
62 PRINTJ$:N=53:E=54:GOTO350
63 PRINT"IN A RESTROOM.":S=52:GOTO350
```

```

64 PRINTJ$;W=52;E=55;GOTO350
65 PRINTJ$;W=54;N=56;GOTO350
66 PRINT"IN A LABORATORY,":S=55;GOTO350
67 PRINT"IN A CHILD'S PLAYROOM,":N=55;GOTO350
68 PRINTN$;W=59;GOTO350
69 PRINT"IN A LOUNGE,":E=58;GOTO350
70 PRINT"IN A CRAWLWAY,":E=61;GOTO350
71 PRINT"IN A CRAWLWAY,":W=60;GOTO350
72 GOTO54
73 PRINT"IN A LOUNGE,":E=64;GOTO350
74 PRINTJ$;W=63;GOTO350
75 PRINT"IN THE ENTRANCE HALL,":GOTO350

```

Lines 200-300: Initialization

```

200 CLEAR300:DIMA$(58),A(58),B(12),B$(39),C$(7),D(39),H$(58),I(58)
210 FORA=1TO55:READA$(A):READA(A):H$(A)=A$(A):NEXT:FORA=1TO39:READB$(A):NEXT:FORA=13TO39:READD(A):NEXT
220 A=1;G=1;FL=9;TM=2;J$="IN A HALLWAY,":N$="IN AN OFFICE,"
300 N=0;W=0;E=0;S=0;U=0;D=0;Y=0;CLS:PRINT"YOU'RE ";:IFDK=0ANDTM>24THENDT=1

```

Lines 310-388: Description of current location

```

310 GOTO10
320 PRINTCHR$(29)"POWER FAILURE! IT'S TOO DARK TO SEE!":DT=2;GOTO390
350 PRINT@50,"FLOOR"FL:PRINT:IFN>0ORW>0ORE>0ORS>0ORU>0ORD>0THENPRINT"SOME EXITS ARE ";:FORB=1TO12:B(B)=0:NEXT
360 IFW>0PRINT" WEST";:B(1)=W:B(2)=W
361 IF(A=41)*(FR=0)THEN363ELSEIFN>0PRINT" NORTH";:B(3)=N:B(4)=N
362 IF(A=16)*(DP=0)THEN366ELSEIFE>0PRINT" EAST";:B(5)=E:B(6)=E
363 IFS>0PRINT" SOUTH";:B(7)=S:B(8)=S
364 IFU>0PRINT" UP";:B(9)=U:B(10)=U
365 IFD>0PRINT" DOWN";:B(11)=D:B(12)=D
366 PRINT:PRINT
370 FORB=1TO58:IFABS(A(B))=ATHENC=C+1;GOTO372
371 NEXT:PRINT:GOTO374
372 IFC=1PRINT"THINGS YOU SEE HERE:"
373 PRINT"  A$(B);GOTO371
374 IFA=37IFFR=1PRINT"YOU FORGOT YOU WERE NAKED YOU BLUSH AND RUN OUT":A=41;GOTO5000
375 IFC=1PRINT"YOU AWAKEN ON THE 9TH FLOOR OF A STRANGE BUILDING, OBVIOUSLY A KIDNAP VICTIM. YOU ARE ALONE AT THE MOMENT AND MUST ESCAPE FROM THE BUILDING, FLOOR BY FLOOR":G=0
376 IFA=7PRINT"YOU SEE A SMALL LEDGE OUTSIDE THE WINDOW":IFKY=0PRINT"AND A SINGLE KEY ON A KEY CHAIN ON THE LEDGE"
377 IFRS=2IFA=64ORA=65PRINT"ROPE IS STRETCHED ACROSS QUICKSAND"
378 IFA=33PRINT"THERE IS A WIDE, LONG LEDGE OUTSIDE THE WINDOW."
382 IFA=56IFJK=0PRINT"LABELS ON BOTTLES:
      SOLUTION: ANTITODE
      FLUID: UNCIPHERABLE"
383 IFA=58PRINT"A DROOLING ALLIGATOR BLOCKS YOUR WAY EAST. HE HAS THE REMAINS OF THE KIDNAPPER IN HIS MOUTH. YOU CATCH A GLIMPSE OF A STAIRCASE PAST THE ALLIGATOR"
384 IFA=64IFRS<2PRINT"A HUGE BOG OF QUICKSAND BLOCKS YOUR WAY EAST. THE FRONT ENTRANCE IS THERE, YOUR WAY TO SAFETY. THERE IS A LARGE HOOK ON THE OTHER SIDE AND A TENT STAKE ON THIS SIDE"
385 IFA=59THENPRINT"THERE IS A TRAP DOOR ABOVE YOU"ELSEIFA=61IFR1=0PRINT"THROUGH THE TRAP DOOR YOU SEE A LONG, COILED ROPE ON THE FLOOR BELOW"
386 IFA=10IFC1=1IFC2=0PRINT"A FLASHLIGHT IS THERE"

```

```

387 IFA=10IFC1=1IFC2=0PRINT"ELECTRICAL TAPE IS THERE"
388 IF(A=16)*(DP=0)THEN1500ELSEIFA=(A=14)*(PF=0)THEN1505ELSEIFA=(A=25)*(SC=0)THEN1510ELSEIFA=(A=35)*(PM=0)THEN1515ELSEIFA=(A=35)*(PM=1)THEN1516ELSEIFA=(A=41)*(FR=0)THEN1520ELSEIFA=(A=48)*(SP=0)THEN1530ELSEIFA=(A=48)*(SP=1)THEN1540

```

Lines 390-400: Player input

```

390 ONERRORGOTO3000:C=0;TM=TM+1;PRINT:PRINT"WHAT DO YOU WANT TO DO";:INPUTA$;:IFDT=2THEN7200ELSEIFA$="LOOK"THEN3000ELSEIFA$="JUMP"THEN8000ELSEIFA$="SKIM"THEN9750ELSEIFA$="WAIT"THEN10500ELSEPRINT:FORR=1TO12:IFA$=B$(R)THEN392ELSENEXT:GOTO394
392 IFB(R)>0THENA=B(R);GOTO3000ELSEPRINT"YOU CAN'T MOVE THAT WAY,":GOTO390
394 IFA$<"I"ANDRIGHT$(A$,3)<"ORY"THEN400ELSEPRINT"YOU ARE CARRYING";:FORK=1TO7:PRINTTAB(POS(0)+4)C$(K);:IFPOS(0)>45PRINT
396 NEXT:GOTO390
400 FORB=13TO39:F=LEN(B$(B));IFLEFT$(A$,F)=B$(B)THEN450ELSENEXT:PRINT"DON'T KNOW WHAT "CHR$(34)A$CHR$(34)" MEANS,":GOTO390

```

Line 450: String sorting routine

```
450 D$=RIGHT$(A$, (LEN(A$)-F)-1);E$=RIGHT$(D$,3)
```

Lines 460-480: GET command. Any special conditions are checked to see if dangerous, stationary, or otherwise hidden items can be carried, else item is given to player and I(X) is set to 1.

```

460 IFD(B)>1THEN490
461 IFE$="GHT"ORE$="APE"IFA=10IFC1=0THENPRINT"CABINET IS LOCKED":GOTO5000ELSEIFE$="GHT"ANDCF=0THENJ=56:A$(J)="FLASHLIGHT":H$(J)=A$(J);A(J)=10;CF=1ELSEIFE$="APE"ANDCT=0THENJ=57:A$(J)="ELECTRIC TAPE":H$(J)=A$(J);A(J)=10;CT=1
462 IFA=75IFKY=0IFE$="KEY"IFI(4)<1THENPRINT"YOUR ARM IS TOO SHORT TO REACH IT,":GOTO5000ELSEJ=58:A$(J)=E$;H$(J)=A$(J);A(J)=7;I(58)=1;KY=1
465 IFA=63IFE$="KEY"PRINT"WE ALL KNOW PIANOS HAVE KEYS":J=56:A$(J)=E$;H$(J)=E$;A(J)=63;I(56)=1
466 IF((A=14)*(E$="NHA")*(PF=0))+((A=17)*(E$="MAN"))+((A=58)*(E$="TOR"))THEN7000
467 IFA=35IFE$="PER"OR(E$="LAR"ORE$="NEY")*(I(27)=0)THENPRINT"YOU GET TOO CLOSE TO HIM, HE JUMPS AND STRANGLES YOU,":GOTO7300ELSEIFI(27)=1PRINT"KIDNAPPER SEES YOUR GUN AND FREEZES YOU GRAB A DOLLAR":A$(56)="DOLLAR":H$(56)=A$(56);A(56)=35;PM=1;E$="LAR"
468 IFI(48)=1IFE$="TER"IFA=58I(57)=1;R$="CUP OF WATER":K3=48;GOSUB1100:H$(48)=R$;GOTO4900
469 IFE$="JAR"PRINT"WHICH ONE?":GOTO5000
470 FORJ=1TO58:IFE$=RIGHT$(A$(J),3)ANDA=ABS(A(J))THEN473
471 NEXT
472 PRINT"THERE'S NO "D$" HERE,":GOTO390
473 IFSGN(A(J))=-1PRINT"BE REASONABLE NOW. THAT'S IMPOSSIBLE,":GOTO390
474 IFE$="OOK"PRINT"TITLE OF BOOK: HOW TO ";:IFA=47THENPRINT"SHIM"ELSEIFA=64PRINT"WALK A TIGHTROPE"
480 PRINT"OK!";:FORK=1TO7:IFC$(K)=""THENC$(K)=A$(J);GOSUB3500;H(K)=J:A$(J)=""A(J)=0;GOTO5000ELSENEXT

```

Lines 480-590: DROP command. If item is carried it's dropped in current room. Program checks for any changes that might occur if certain item is dropped in certain room. I(X) is set to room #.

```

490 IFD(B)>2THEN600
500 FORJ=1TO7:IFE$<RIGHT$(C$(J),3)ELSE520
510 NEXT:PRINT"YOU'RE NOT CARRYING IT,":GOTO390

```

continued on next page



```

520 FORK=1T058:IFA$(K)=""THEN A$(K)=C$(J):A(K)=A:H(J)=0ELSE NEXT
530 PRINT"OK!";FORK1=1T058:IFC$(J)=H$(K1)THENC$(J)=""GOTO540ELS
ENEXT
540 IFA=14IFE$="ILL"PRINT"YOU DROP PILL IN THE AQUARIUM";PF=1:K3
=15:M$="SLEEPING PIRANHA";GOSUB1200:GOTO5000
545 IFA=16IFDP=0IFE$="NHA"PRINT"PIRANHA DEVOURS DOBERMAN PINCHER
THEN DIES OF OVEREATING";DP=1:K3=15:M$="GLUTTONOUS DEAD PIRANHA"
;GOSUB1200:K1=15:A(57)=-16:A$(57)="EATEN DOBERMAN";H$(57)=A$(57)
;GOTO590
550 IFA=32IFE$="LAR"A$(57)="LONG STRING";H$(57)=A$(57):A(57)=32:
K1=57:K3=56:M$=""GOSUB1200
590 I(K1)=A:GOTO5000

```

Lines 600-618: GO command. If conditions are met, player goes where requested (you can't go through a locked door or down a broken staircase). Variable A is then set to new location.

```

600 IFD(B)◇3THEN620ELSEIF((A=16)X(E$="MAN"))+(A=58)X(E$="TOR")
)THEN7000ELSEIF((A=41)X(E$="IRE"))+(A=64)X(E$="AND"))THEN7200EL
SEIFA=25ANDE$="IRS"ANDSC=0PRINT"STEP IS MISSING! YOU FELL DOWN T
HE STAIRS";GOTO7200
605 IFE$="OPE"IFR1=1IFA=17ORA=61A=A+1:R1=0:IFA=1=17THEN8000ELSE3
00
606 IFE$="ANT"IFPT=1IFA=59THENA=60:GOTO300ELSEIFA=60A=59:GOTO300
607 IFE$="OPE"IFA=65THENA=64:GOTO300ELSEIFRS=2IFA=64IFBR=1THENA=
65:GOTO300ELSEPRINT"YOU DON'T KNOW HOW TO WALK A TIGHTROPE";GOTO
7200
608 IFE$="DOW"IFA=34ORA=36A=A-1:GOTO300
610 IFE$="DGE"IFA=7THENPRINT"LEDGE BREAKS!";GOTO7200ELSEIFA=33OR
A=35A=A+1:GOTO300
612 IFE$="IRS"IFA=25ORA=44ORA=62A=A+1:GOTO8000
615 IFE$="OOR"IFA=24ORA=43ORA=30ORA=65IFG((A/10-INT(A/10))X10)=0
THENPRINT"THE DOOR'S LOCKED";GOTO5000ELSEA=A+1:GOTO300
616 IFE$="OOR"IFA=55IFSD=1ORJK=1THENA=57:GOTO300ELSEPRINT"IT'S S
TUCK! YOU'RE NOT STRONG
ENOUGH TO OPEN IT!";GOTO5000
617 IFE$="IDE"IFA=57PRINT"YOU SLIDE THROUGH HOLE IN FLOOR";A=58:
GOTO8000
618 IFA=9IFE$="OOR"ORE$="AIR"IFI(3)=ATHENPRINT"YOU STEP ON THE C
HAIR AND JUST
MANAGE TO REACH THE TRAP DOOR";A=11:GOTO5000ELSEPRINT"YOU CAN'T
REACH IT";GOTO5000

```

Lines 620-630: OPEN command. Checks first if player has a key for doors or cabinet.

```

620 IFD(B)◇4THEN650ELSEIFE$="OOR"IFA=55THENIFJK=0THEN616ELSEGOS
UB4000:G(1)=1:SD=1:GOTO4900ELSEIFA=43ORA=24ORA=65IFI(56)=1OR(A=4
3)X(I(42)=1)THENGOSUB4000:G((A/10-INT(A/10))X10)=1:PRINT"DOOR'S
OPEN";GOTO5000ELSEPRINT"YOU NEED A KEY";GOTO5000
625 IFA=10IFC1=0IFI(58)=1PRINT"CABINET'S OPEN";C1=1:GOTO5000
630 IFI(39)=1IFE$="LLA"K3=39:R$="OPEN POPPIN'S UMBRELLA";GOSUB11
00:UM=1:GOTO4900

```

Lines 650-696: READ command.

```

650 IFD(B)◇5THEN700ELSEIFE$="ITI"IFA=6THENPRINT"GRAFFITI: WATCH
OUT FOR LIVE ONES";GOTO5000ELSEIFA=53PRINT"GRAFFITI: DO YOU HAV
E A SPLIT PERSONALITY?";GOTO5000
660 IFE$="OTE"IFI(1)=AORI(1)=1OR(A=2)X(I(1)=0)PRINT"NOTE SAYS:
"CHR$(34)"IMPORTANT TV PROGRAM ON"CHR$(34):GOTO390
670 IFE$="IGN"IFA=32PRINT"SIGN: STRING COSTS $1.00";GOTO5000

```

```

680 IFE$="TV"IFA=5PRINT"BULLETIN:
POWER WILL BE SHUT OFF AT MIDNIGHT";GOTO5000
690 IFE$="OCK"IFA=5PRINT"TIME: ";:TI=INT(TM/2):IFTI>12THENPRINT"
PAST MIDNIGHT";GOTO5000ELSEPRINTTI"P.M.";GOTO5000
696 IFE$="OOK"IFI(38)=1ORI(52)=1THENBR=1:GOTO4900

```

Lines 700-730: PUSH command.

```

700 IFD(B)◇6THEN830ELSEIFE$◇"TON"THEN1000ELSEIFA=9IFEF=1THENPR
INT"ELEVATOR GOES DOWN!";A=13:GOTO8000
710 IFA=42IFFR=0PRINT"SPRINKLER TURNED ON. FIRE OUT.
BUT YOUR CLOTHES ARE VERY WET.
YOU TAKE THEM OFF. YOU ARE NOW NAKED.";FR=1:A$(57)="WET CLOTHES"
:H$(57)=A$(57):A(57)=-42:GOTO5000
720 IFA=46IFSP=0PRINT"CLICK";SP=1:GOTO5000
730 PRINT"NOTHING HAPPENS";GOTO5000

```

Lines 800-810: JUMP command.

```

800 IFA=60ORA=61ORA=64THEN7100ELSEIFA=34ORA=36IFI(25)=1ANDBO=2TH
ENPRINT"BALLOON CARRIES YOU DOWN ONE FLOOR";A=43:GOTO8000ELSE710
0
805 IFI(39)=1IFUM=1THENPRINT"YOU FLOAT DOWN ONE FLOOR";A=52:GOTO
8000ELSEPRINT"UMBRELLA WASN'T OPEN!";GOTO7100
810 GOTO730

```

Lines 830-845: TIE command.

```

830 IFD(B)◇9THEN850ELSEIFA=11IFE$="RES"IFTM<23THENPRINT"YOU'RE
ELECTROCUTED!";GOTO7200ELSEIFI(57)=1THENEFF=1:A$(12)="TAPED WIRES
";H$(12)=A$(12):GOTO4900ELSEPRINT"WIRES FALL APART AGAIN";GOTO50
00
835 IFE$="DON"ORE$="ING"IFBO=1IFI(25)=1IFI(57)=1K3=57:R$=""GOSU
B1100:K3=25:R$="INFLATED BALLOON WITH STRING";GOSUB1100:BO=2:GOT
O4900
840 IFE$◇"OPE"THEN850ELSEIFA=64IFI(54)=1K3=54:R$=""GOSUB1100:A
$(54)="END OF ROPE TIED TO STAKE";H$(54)=A$(54):A(54)=-64:RS=1:G
OTO4900
845 IFA=17IFI(14)=1PRINT"ROPE TIED TO DESK";K3=14:R$=""GOSUB110
0:A$(8)="ROPE HANGING OUT WINDOW";R1=1:H$(8)=A$(8):A(8)=-17:GOTO
5000

```

Lines 850-970: LIGHT, MAKE, GLUE, INFLATE, SHOOT, KNIT commands.

```

850 IFD(B)◇10THEN900ELSEIFA=13IFE$="GHT"IFI(56)=1K3=56:R$="LIT
FLASHLIGHT";GOSUB1100:H$(56)=R$:DK=1:GOTO4900
900 IFD(B)◇11THEN930ELSEIFA=19IFE$="KEY"IFI(21)=1A$(56)="CRUDE
KEY";H$(56)=A$(56):A(56)=19:GOTO4900
930 IFD(B)◇12THEN950ELSEIFA=25IFI(19)=1IFI(20)=1ORI(20)=AIFE$="
TEP"ORE$="IRS"PRINT"STAIR'S FIXED";SC=1:R$=""K3=20:GOSUB1100:H$
=""GOSUB1200:GOTO5000
950 IFD(B)◇13THEN960ELSEIFI(25)=1IFI(24)=1ORI(24)=AIFE$="DON"K3
=25:R$="LARGE INFLATED BALLOON";GOSUB1100:H$(25)=R$:BO=1:GOTO490
0
960 IFD(B)◇14THEN970ELSEIFE$="GUN"ORE$="PER"IFI(27)=1IFA=35THEN
PRINT"GUN HAD BLANKS!
KIDNAPPER SHOTS YOU!";GOTO7200ELSEPRINT"GUN MISFIRES";GOTO5000
970 IFD(B)◇15THEN980ELSEIFFR=1IFI(32)=1IFI(33)=1IFE$="HES"PRINT
"YOU HAVE KNITTED A FINE SUIT
AND ARE WEARING IT";FR=2:GOTO5000

```

Line 975: SWIM command.

```
975 IFSP=0THEN1000ELSEIFA=49THENA=48:GOTO300ELSEIFA=48IFBR=0THEN
PRINT"YOU DON'T KNOW HOW TO SWIM!";GOTO720ELSEA=49:GOTO4900
```

Line 980-982: DRINK command.

```
980 IFD(B)◇18THEN985ELSEIFE$="ION"IFI(44)=1IFJK=1THENPRINT"YOU'
VE CHANGED BACK!";JK=0:GOTO5000ELSE4900
982 IFE$="UID"IFI(45)=1PRINT"YOU'VE CHANGED INTO MR. HYDE!
YOU ARE VERY STRONG!";JK=1:GOTO5000
```

Line 985: POUR command.

```
985 IFD(B)◇19THEN990ELSEIFA=59IFE$="TER"IFI(57)=1PRINT"PLANT GR
OWS TO CEILING";A$(49)="HUGE PLANT";PT=1:H$(49)=A$(49):GOTO5000
```

Line 990-993: PLAY command.

```
990 IFD(B)◇20THEN995ELSEIFE$="UTE"IFA=61IFI(50)=1IFR1=0PRINT"IN
DIAN ROPE RISES UP TO YOU";R1=1:A$(56)="END OF ROPE";H$(56)=A$(5
6):A(56)=-61:GOTO5000
993 IFE$="AND"IFA=63PRINT"LIBERACE YOU'RE NOT!";GOTO5000
```

Line 995: THROW command.

```
995 IFD(B)◇21THEN1000ELSEIFE$="OPE"IFA=64IFRS=0PRINT"TIE THE OT
HER END FIRST";GOTO5000ELSEIFRS=1THENPRINT"HOOK ON ROPE CATCHES
HOOK NEAR ENTRANCE
AND STRETCHES TIGHT";RS=2:K3=54:M$="";GOSUB1200:GOTO5000
```

Lines 1000-1050: Various messages.

```
1000 PRINT"YOU CAN'T DO THAT NOW.":GOTO390
1050 PRINT"3 HOURS PASS":TH=TH+5:GOTO390
```

Lines 1100-1210: Subroutines change, add, or vanish items that are carried or in current room. R\$ or M\$ is set to item (change, add) or to null (vanish).

```
1100 FORK2=1TO7:IFC$(K2)=H$(K3)THENC$(K2)=R$:GOSUB1150:RETURNELS
ENEXT:RETURN
1150 IFR$=""I(K3)=0
1160 RETURN
1200 FORK2=1TO58:IFA$(K2)=H$(K3)THENA$(K2)=M$:H$(K3)=M$:IFM$◇""
THENRETURNELSEA(K2)=0:I(K3)=0
1210 NEXT:RETURN
1499 GOTO5000
```

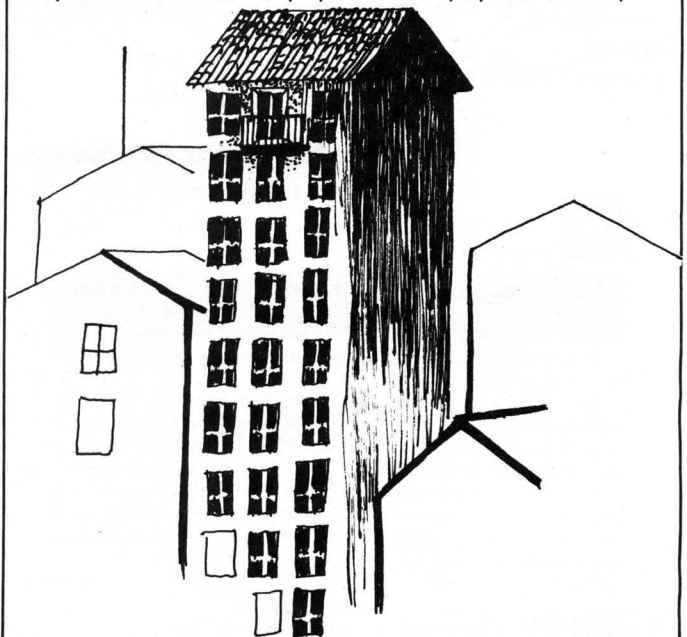
Lines 1500-1540: Descriptions (part of line 388 to further describe contents of room).

```
1500 PRINT"THERE IS A PATH EAST, BUT A
VISCIOUS, SNARLING DOBERMAN
BLOCKS YOUR WAY.":GOTO390
1505 PRINT"AQUARIUM IS FULL OF PIRANHA FISH.":GOTO390
1510 PRINT"THE STAIRCASE IS VERY ROTTEN
AND ONE WOODEN STEP IS
MISSING.":GOTO390
1515 PRINT"KIDNAPPER IS COUNTING MONEY.
HE DOESN'T SEE YOU YET.":GOTO390
1516 PRINT"KIDNAPPER IS SCARED":GOTO390
1520 PRINT"THERE IS A PATH NORTH, BUT
A RAGING FIRE BLOCKS YOUR
WAY.":GOTO390
1530 PRINT"A LARGE SWIMMING POOL SPANS ACROSS
THE ENTIRE ROOM, DIVIDING IT IN HALF.
IT IS VERY DEEP AND IT IS EMPTY.":GOTO390
1540 PRINT"SWIMMING POOL IS FULL OF WATER.":GOTO390
```

Lines 2000-2040: Item data. Strings are read permanently into H\$(X) and temporarily into A\$(X). The number

following each string indicates the room number the item is placed in initially and read into A(X). A(X) will always correspond with A\$(X) where X is the item number. A negative number indicates an item cannot be removed from room under any condition, but it could still be altered.

```
2000 DATAPAPER NOTE,2,DESK,-2,CHAIR,2,LONG BROOM,3,TV SET,-5,CLO
CK,-5,GRAFFITI ON WALL,-6,OPEN WINDOW,-7,TRAP DOOR IN CEILING,-9
,DOWN BUTTON,-9,CABINET,-10,ENDS OF 2 'LIVE' WIRES,-11,AQUARIUM,
-14,ROPE,15,SLEEPING PILL,16,OPEN WINDOW,-17
2010 DATADESK,-17,KEY MAKING MACHINE,-19,SUPER GLUE,20,WOODEN ST
AIR STEP,20,THICK COPPER SHEET,23,LOCKED DOOR,-24,WOODEN STAIRS,
-25,TANK OF HELIUM GAS,28,LARGE DEFLATED BALLOON,29
2020 DATALOCKED DOOR,-30,GUN,30,SIGN ON WALL,-32,STRING VENDING
MACHINE,-32,OPEN WINDOW,-33,LOCKED DOOR,-43,BALL OF YARN,39,KNIT
TING NEEDLES,40,PUSH BUTTON ON WALL,-42,"SEXY, YOUNG GIRL OFFICE
WORKERS",-37,STAIRS,-44
2030 DATAPUSH BUTTON ON WALL,-46,BOOK,47,MARY POPPIN'S UMBRELLA,
50,OPEN WINDOW,-51,GRAFFITI ON WALL,-53,SMALL KEY,37,STEEL DOOR,
-55,JAR OF YELLOW SOLUTION,56,JAR OF FLUID,56,CHILD'S SLIDE,-57
```



```
2040 DATAWATER COOLER,-58,PAPER CUP,58,SMALL-SIZED PLANT,-59,FLU
TE,61,STAIRS,-62,SMALL BOOK,64,PIANO,-63,LONG ROPE,63,FRONT DOOR
,-65
```

Lines 2100-2110: Command data. Commands are read into B\$(X). B\$(1)-B\$(12) hold all possible directions and short-hand notation allowing for player to input entire direction or just the first letter. Starting with B\$(13) all commands have a corresponding code number read into D(X) which picks the proper action, allowing the use of synonyms for the same command.

```
2100 DATAMEST,W,NORTH,N,EAST,E,SOUTH,S,UP,U,DOWN,D,GET,TAKE,DROP
,PUT,GIVE,PAY,CLIMB,GO,ENTER,OPEN,READ,CHECK,WATCH,PRESS,PUSH,TA
PE,TIE,LIGHT,MAKE,GLUE,INFLATE,SHOOT,KNIT,DRINK,POUR,PLAY,THROW
2110 DATA1,2,2,2,2,3,3,3,4,5,5,5,6,6,9,9,10,11,12,13,14,15,18,
19,20,21
```

Lines 3000-4100: Short subroutines.

```
3000 PRINT"WHAT?":RESUME5100
3500 FORK4=1TO58:IFA$(J)=H$(K4)THENI(K4)=1ELSENEXT
3600 RETURN
4000 IFA=24THENX=22ELSEIFA=43THENX=31ELSEIFA=55THENX=43ELSEX=55
```

continued on next page

```
4100 A$(X)="OPEN DOOR";RETURN
Lines 4900-5100: Timing loop. This is the only delay in the
program and is used to give player time to read mes-
sages.
```

```
4900 PRINT"OK!"
5000 IFE$="ODR"ANDA=71PRINT"YOU NEED A KEY"
5100 FORV=1TO2000:NEXT:GOTO300
```

Line 6000: You win!

```
6000 PRINT"OUT, YOU'VE MADE IT.":END
```

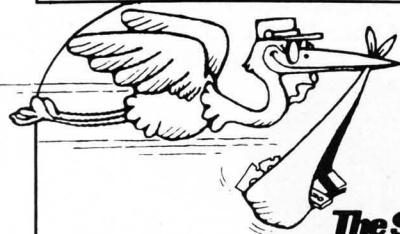
Lines 7000-7400: You're dead. Note line 7400. A special 32-character wavy effect is created for a few seconds if player meets his doom, then reverts back to 64-character format and stops.

```
7000 PRINT"AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA....."
```

```
YOU DIE A HORRIBLE AND GRIZZLY DEATH,
YOUR BODY TORN TO SHREDS.":GOTO7300
7100 PRINT"YOU NOW LOOK LIKE A PANCAKE!"
7200 PRINT"YOU SEEM TO HAVE GOTTEN YOURSELF KILLED!"
7300 PRINT:PRINT"TO TRY AGAIN YOU'LL HAVE TO START
OVER FROM THE 9TH FLOOR."
7400 FORB=1TO400:OUT255,3:OUT255,200:NEXT:END
```

Line 8000: Drops you down to the next floor. You lose any item you were carrying. C\$(X) is cleared as is part of I(X).

```
8000 I(38)=0:G(1)=0:IFJK=1THENPRINT"YOU FORGOT THE ANTIDOTE. FL
UID POISONS YOU.":GOTO7200ELSEBR=0:FL=FL-1:PRINT"YOU MADE IT DOWN
TO THE NEXT FLOOR
BUT YOU DROP ANYTHING YOU WERE CARRYING.":FORG=1TO7:C$(G)="" :NEX
T:FORG=56TO58:I(G)=0:NEXT:GOTO5000
```



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# WHOA

by Shane Causer

**A program of this nature was published in the Radio Shack newsletter, but we thought it was worth repeating.**

Whenever you LIST a rather long program in search of a specific line, what do you see? Yep, that's right! A whole ton of lines, scrolling by faster than a speeding bullet.

If you are tired of having to time your pause (a SHIFTed "@") with the appearance of the line you wish to examine, you have an alternative: "WHOA!"

To slow the LISTing scroll in a 16K Level II computer, do the following:

- 1) Answer "MEMORY SIZE?" with 32753.
- 2) ENTER this short BASIC program: (See Fig. 1)
- 3) RUN this program, then NEW it.

Now, whenever you LIST a program, it will proceed at its normal speed until the SHIFT key is pressed. It will then slow down (it doesn't matter which SHIFT key; the computer isn't picky).

By changing the number 32 in line 50 to 255, the computer will wait a full second before scrolling the next line into view.

NOTE: For those who want to make SYSTEM tapes of this (or are just curious), here is a machine-language listing: (See Fig. 2)

In addition, a patch must be put into low memory as follows: (See Fig. 3)

To make the SYSTEM tape, load TBUG as in the TBUG manual, then ENTER the above program and Punch it onto a tape. To kill two birds with one stone, relocate KBFIX, using RELO as in the RELO manual, where you desire, along with the "WHOA!" routine.

NOTE TO 4K LEVEL II USERS: "WHOA!" can be used in 4K systems by doing the above with the following changes:

- 1) Answer "MEMORY SIZE?" with 20465
- 2) Change line 20 in the basic program to read:  
FOR P+20465 to 20479:READ  
A:POKE P,A:NEXT:END  
All else remains the same.

Fig. 1

```

10 FOR P=16863 TO 16865:READ A:POKE P,A:NEXT
20 FOR P=32754 TO 32767:READ A:POKE P,A:NEXT
30 DATA 195,242,127
40 DATA 58,128,56,31,208,197
50 DATA 1,0,32,205,96,0,193,201

```

Fig. 2

```

7FF2 3A 80 38 LD A,(3880H) ;GET BYTE WITH SHIFT KEY
7FF5 1F RRA ;PUT LOW BIT INTO CARRY FLAG
7FF6 D0 RET NC ;RETURN TO ROM IF NO SHIFT
7FF7 C5 PUSH BC ;SAVE B AND C REGISTERS
7FF8 01 00 20 LD BC, 2000H ;LOAD TIME DELAY VALUE
7FFB CD 60 00 CALL 0060H ;CALL ROM DELAY ROUTINE
7FFE C1 POP BC ;RESTORE B AND C REGISTERS
7FFF C9 RET ;RETURN TO LISTING

```

Fig. 3

```

41DF C3 F2 7F JP 7FF2 ;JUMP TO TEST TIMER

```



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## 1). Kriegspiel II

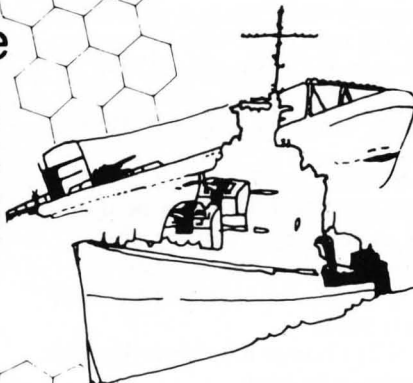
A much improved two-player version of the original. Kriegspiel II is a wargamer's delight. Choose the number of mountains (up to 200) and pick a scenario from the 9,999 possible, and then watch the computer set up the pieces, towns, mountains and a river. To win, you must enter the capital city of your opponent or reduce his fighting strength to below half of your own

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## 2). Up Periscope

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## 3). Warpath

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$\text{INT}(X^N \cdot X \cdot \text{SIN}(X^2), X)$

# SOLUTION.



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# SQUISH 3

by Dave Archibald

**SQUISH3 is an S-80 program requiring at least 16K of memory and at least one disk drive.**

Ever wished you had just one more K of memory for that one extra large program, you know, the one that requires 17K of memory and all your friends have 16K Level IIs so you end up carrying your disk drives all over creation just to show off that one great program.

Here's what you've been waiting for, SQUISH3 is designed to squeeze every unused byte of memory out of that monster by deleting remarks, combining lines, and removing extra spaces.

To use SQUISH3 you first need to save your program in the ASCII format using the SAVE"FILESPEC", A option. Next, load and run SQUISH3. After entering filespecs just sit back and watch as your computer removes all the unnecessary garbage in your program, without you lifting a finger!!!.

Once completed, you will find that your program requires considerably less memory, and maybe it will be just enough to let you start carrying a cassette tape to your friends instead of a disk drive, an expansion interface, buffered cables, etc. . . .

**IMPORTANT NOTE:** If your program uses packed (super) graphics, then SQUISH3 should not be used as the string structure of packed graphics is altered when placed into an ASCII file.

Variables used in SQUISH3

A = Temporary storage of the referenced line number in line 330.

A\$ = The program line inputted from the file being squished.

C\$ = The lines that have been combined.

D = The length of the res-word that's being searched for.

DS = The 'DIM' size of REF() + 30 & PRO() (increase DS if your program references more than 100 lines).

DDT = 1 if there's a 'DATA' statement in A\$.

G1-G5 = The position in A\$ where 'INSTR' starts searching from.

HH = Used in a 'For-Next' loop

in line 330.

IP\$ = Whether 'REM' statements are to be deleted.

J\$ = Temporary storage of A\$. J\$ is built one character at a time - minus the extra spaces.

L\$ = The character in A\$ the 'For-Next' loop (T) points to. (line 560).

LN = The line number of the line in A\$.

N\$ = The string value of the line number in A\$.

P = 1 if a 'print' statements quotes are encountered in A\$.

PJ = Points to a protected line number in PRO() that's being checked for.

PP = The position of the space in A\$ following the line number.

PRO() = The line numbers that are to be protected.

PV = The number of protected line numbers that were entered.

Q\$ = Is used for a 'Inkey' in line 550.

R = The number of referenced line numbers stored in REF().

R9 = Temporary storage during the sorts in lines 390&400.

RD = The number of 'Rem' statements deleted.

RE = The number of lines that have been combined.

REF() = The referenced line number of the program being squished.

S = A 'For-Next' loop used in the sorts in lines 390&400.

S1 = The same as S above.

SD = The number of spaces that have been deleted.

SQ\$ = The file name of the program being squished.

SV\$ = The file name the squished program is saved under.

T = Points to various positions in A\$ throughout the program.

V\$ = The line in A\$ minus its line number.

X = PP.

XC\$ = Whether any lines are to be combined.

XS\$ = Whether the extra spaces are to be deleted.

XP\$ = Whether any lines are to be protected.

ZC = The 'Print 0' location that shows what position the program is at in A\$.

```
10 ' SQUISH-3
20 ' A THIRD GENERATION PROGRAM
30 ' THE FIRST AND SECOND GENERATION APPEARED IN MAY 79 & SEPT.
79 PROC/80
40 '          BY DAVID ARCHIBALD
50 '          3717 ALDON LANE
60 '          FLINT, MI 48506
70 '          (313) 744-0534
```

Lines 80-150: Initializes memory and variables including filespecs.

```
80 CLEAR1000:DEFINT A-K,S-Z:DS=70:DIM REF(DS+30),PRO(DS)
90 CLS:LINEINPUT"ENTER THE NAME OF THE PROGRAM THAT'S TO BE SQUI
SHED ? ";SQ$
```

```
100 PRINT:LINEINPUT"UNDER WHAT NAME IS THE SQUISHED PROGRAM TO B
E SAVED ? ";SV$
110 PRINT:INPUT"DO YOU WANT THE EXTRA SPACES DELETED (Y/N) ";XS$
120 PRINT:INPUT"DO YOU WANT THE REM STATEMENTS DELETED (Y/N) ";I
P$
```

```
130 PRINT:INPUT"DO YOU WANT THE LINES COMBINED (Y/N) ";XC$
140 PRINT:INPUT"DO YOU WANT TO PROTECT ANY LINES (Y/N) ";XP$
150 IFXP$="Y"THENINPUT"ENTER THE LINE NUMBER THAT'S TO BE PROTEC
TED ('0' TO EXIT) ";PRO(PV):IFPRO(PV)>0 AND PV<DS THENPV=PV+1:GO
TO150
```



Lines 160-190: Opens file to be squished, checks for 'EOF', inputs into A\$, and checks if the file is saved in ASCII format.

```
160 OPEN"I",1,SO$
170 IFEOF(1)THEN350
180 LINEINPUT#1,A$
190 IFASC(A$)>58THENCLS:PRINT@523,"XXXX ";SO$;" IS NOT A ASCII F
ILE XXXX":END
```

Line 200: G1=G5-1 so INSTR starts searching at the beginning of A\$.

```
200 G1=1;G2=1;G3=1;G4=1;G5=1
210 '
220 ' LOOKS FOR RESERVED WORDS THAT MAY REFERENCE A LINE
230 '
```

Lines 240-280: INSTR searches A\$ for reserved words that reference a line number.

```
240 D=4:T=INSTR(G1,A$,"THEN");IF T THEN G1=T+D;GOTO330
250 T=INSTR(G2,A$,"GOTO");IF T THEN G2=T+D;GOTO330
260 T=INSTR(G3,A$,"ELSE");IF T THEN G3=T+D;GOTO330
270 T=INSTR(G4,A$,"GOSUB");IF T THEN D=5;G4=T+D;GOTO330
280 T=INSTR(G5,A$,"RESUME");IF T THEN D=6;G5=T+D;GOTO330
```

Line 290: Loops until EOF is reached.

```
290 GOTO170
300 '
310 ' GETS THE LINE NO. THAT'S REFERENCED AND STORES IT
320 '
```

Line 330: A=Line number referenced. If A<>0 then REF() is searched for a matching number. If a match is not found then R is incremented and A is saved in REF().

```
330 A=VAL(MID$(A$,T+D,10));IF A THEN FORHH=1TOR:IFREF(HH)=A THEN
ELSE NEXT:R=R+1;REF(R)=A
```

Lines 340-350: Loops until EOF then closes the file.

```
340 GOTO240
350 CLOSE
360 '
370 ' SORTS THE REFERENCED & PROTECTED LINE NO.
380 '
```

Lines 390-410: Sorts the referenced & protected line no. into numerical order.

```
390 FORS=1TOR;FORS1=STOR:IFREF(S)<REF(S1)THEN R9=REF(S):REF(S)=R
EF(S1):REF(S1)=R9
400 NEXTS1,S:FORS=0TOPV:FORS1=S TOPV:IFPRO(S)>PRO(S1)THEN R9=PRO
(S1):PRO(S1)=PRO(S):PRO(S)=R9
410 NEXTS1,S
420 GOTO430
```

Lines 430-440: Opens the files that're to be squished (SQ\$) & written to SV\$, and checks for EOF.

```
430 OPEN"I",1,SQ$:OPEN"O",2,SV$:CLS
440 IFEOF(1)THEN630
```

Lines 450-460: A program line is inputted into A\$, the position in A\$ following the line no. is found, the line no. is taken, and the programs status statements are printed.

```
450 LINEINPUT#1,A$:PP=INSTR(A$," ")X=PP:LN=VAL(A$):PRINT@0,"SCA
NNING LINE -";LN:PRINT:PRINT:PRINT:PRINT@64,A$
460 PRINT@384,"SCANNING POSITION -";PRINT@512,"NUMBER OF LINE CO
MBINED -";RE:PRINT@640,"NUMBER OF SPACES ELIMINATED -";SD:PRINT@
768,"NUMBER OF REM STATEMENTS ELIMINATED -";RD;GOTO650
```

Line 470: If no lines are to be combined then A\$ is printed to SV\$.

```
470 IFX<>"Y"THENPRINT#2,A$:GOTO440
```

Line 480: If C\$=null (line 660 has been run) then C\$=A\$, and new line is printed.

```
480 IFC$=""THENC$=A$:GOTO440
```

```
490 '
500 ' CHECKS IF LINE NO. IS REFERENCED
510 '
520 IFR>0THEN IFLN=REF(R)THEN R=R-1;GOTO620 ELSE IFLN>REF(R)THE
N R=R-1;GOTO520
530 '
540 ' CHECKS FOR IF-THEN STATEMENT
550 '
```

Lines 560-640: Examines A\$ byte by byte looking for extra spaces, quotes (so the spaces enclosed in quotes aren't deleted), 'DATA' statements (the same as quotes), and 'REM' statements.

```
560 IFINSTR(C$,"IF")THEN 620
570 '
580 ' COMBINES THE LINES TOGETHER
590 '
600 V$=RIGHT$(A$,LEN(A$)-X):IFLEN(C$)+LEN(V$)<240THENC$=C$+" "+V
$:RE=RE+1 ELSE 620
610 GOTO440
620 PRINT#2,C$:C$=A$:GOTO440
630 PRINT#2,C$:CLOSE:PRINT@896,"PRESS ' L ' TO LOAD THE SQUISHED
PROGRAM "
640 Q$=INKEY$:IFQ$=""THEN640 ELSE IFQ$="L"THEN LOAD SV$ ELSE EN
D
650 N$=LEFT$(A$,PP):ZC=64+PP:PP=PP+1:P=0:J$="" :DT=0:FORT=PPTOLEN
(A$):L$=MID$(A$,T,1):PRINT@ZC," ";ZC=ZC+1:PRINT@403,T
660 IFL$=CHR$(34) THEN IF P THENP=0 ELSE P=1
670 IFFTTHEN820
680 IFMID$(A$,T,4)="DATA"THENDT=1 ELSE IFL$="" THENDT=0
690 IFDTTHEN820
700 '
710 ' REMOVES EXTRA SPACES
720 '
730 IFL$=" "ANDX$="Y"THEN L$="" :SD=SD+1
740 '
750 ' CHECKS IF LINE NO. IS PROTECTED
760 '
770 IFPV:PJTTHEN IFLN=PRO(PJ)THEN PJ=PJ+1;GOTO840 ELSE IFLN>PRO(
PJ)THENPJ=PJ+1
780 '
790 ' REMOVES REM STATEMENTS
800 '
810 IFMID$(A$,T,3)="REM" OR L$="" THEN IFIP$<>"Y"THEN A$=N$+J$+
MID$(A$,T,255);GOTO 840 ELSE RD=RD+1:IFLN=REF(R)THENR=R-1:A$=N$+
J$+"";GOTO840 ELSE IFJ$="" THEN 440 ELSE 830
820 J$=J$+L$:NEXT
830 A$=N$+J$:GOTO470
840 IFC$<>"Y"THEN PRINT#2,C$:C$=""
850 PRINT#2,A$:GOTO440
```



# COMMAND

## COMMAND is an S-80 program requiring at least 16K and DISK BASIC.

by Denslo Hamlin, Jr.

This program creates command files which, when executed, will initiate a series of responses as if they were entered from the keyboard and the computer will act accordingly.

It is very rare that one will find a secretary that enjoys having a computer in the office. This is due in part to the amount of seemingly useless information that must be fed into the computer before it does anything of any value. You know, things like VERIFY, BASIC, # of files, Mem size, and RUN "filespec" :1. The problem is that users generally don't realize the importance of this "TRIVIAL" information. Well, this program is designed to enter all of this information upon power-up and free the secretary to do the all-important typing (even though SCRIPSIT should be used).

COMMAND is a DISK BASIC program and does not function in Level II BASIC. Be sure to reserve at least 256 bytes of high memory using the MEM SIZE option.

### VARIABLES:

EX\$ = This will eventually contain a machine language keyboard command file which, when, executed will dump the new keyboard command file to disk with the following commands:  
CMD "S"

DUMP Filename  
(START = X'####',  
END = X'####', TRA = X'####').

I\$ = Contains keyboard entries to be incorporated into command file.

A\$ = Contains each individual keyboard entry.

ST = Decimal - Start of Machine code.

H1\$ = Hexadecimal - start of machine code.

Z = Decimal - end of machine code.

Z\$ = Hexadecimal - end of machine code.

V\$ = Filename.

K = Displacement from starting address.

AD = Address of poke (= ST + K).  
V = This is an address to be converted to Least Significant Byte (LSB) and Most Significant Byte (MSB).

V1 = MSB from above (also used in calculation of V3).

V2 = LSB from above (also used in calculation of V3).

V3 = Edge of Protected Memory.

H\$ = The Hexadecimal number scale L & K(1) to K(4): Used as in calculations in Hexadecimal/Decimal number conversions.

B = Pointer location for EX\$.

B4 = Location of EX\$.

B1, B2 & B3 = Temporary values used in calculating B4.

B1 = This is also used as an address to be converted to LSB and MSB as in V but for use in EX\$.

C1 = MSB of B1.

C2 = LSB of B1.

X\$ = Value to be poked and inserted in EX\$.

### PROGRAM DOCUMENTATION:

#### LINE# COMMENTS

1000-1630 Keyboard entries are input and put into variable I\$; each entry ends with a carriage return followed by a null (CHR\$(0)). At the end of the list, an End of File, CHR\$(225), is added.

2000-2340 Through the use of the routines on lines 5200, 5300, and 6000, a machine language routine is poked into memory and added to variable EX\$.

2350-2500 Adds keyboard entries to code.

3000-3060 Data statements containing fixed machine language codes.

4200 If memory location is larger than 32767, this will convert to appropriate negative value for peeks and pokes.

4250 Converts address B1 to LSB (C2) and MSB (C1).

4300 Error trapping in case position of EX\$ has changed (normally shouldn't happen).

5000 Get starting address and convert to decimal.

5105 Special note - This looks at locations 40B1H and 40B2H and uses them to get V3 (end of protected memory).

5200 Converts address V into Least Most Significant Byte (LSB), V2, and Most Significant Byte (MSB), V1. These numbers are poked into memory and added to EX\$ by line 6000. This completes the location dependent portion of machine code.

5300 Reads fixed machine language code and uses line 6000 to poke into memory and add to EX\$.

6000 Pokes ASC (X\$) & adds X\$ to EX\$.

6300 Decimal to Hexadecimal conversion (for dump).

Other routines are adequately described in remark statements. Next the computer will request a starting address in hex. This address should be in the protected memory (larger than the memory size already indicated) and be equal or less than:

7F00 for 16K Machine  
BF00 for 32K Machine  
FF00 for 48K Machine

(subtract 50 bytes if you expect to use the command 'BASIC \*' on your next entry into BASIC)

### EXAMPLE:

BE00

The final question the computer will ask is for a filename. If you don't supply an extension '/CMD' will be used (best for quick execution).

### EXAMPLE:

BEGIN:0

continued on next page

Now the program will create a machine language executable file to perform these commands and transfer you in DOS. To execute it just type the file name.

EXAMPLE:

BEGIN

SOME INTERESTING

EXAMPLES:

1. To Write Several Programs on Tape—

BASIC

```
1
48000
CMD" T"
LOAD" PROGRAMA"
CSAVE" A"
LOAD" PROGRAMB"
CSAVE" B"
LOAD" PROGRAMC"
CSAVE" C"
CMD" R"
END
```

2. To list several programs on the lineprinter the procedure would be similar but with LPRINT.

3. To Dump a Large File—

```
BASIC
1
48000
CMD" T"
RUN" DISKDUMP/BAS"
SYSO/SYS.F3GUM
1
2
3
.
.
.
END
```

<pre>10 REM COMMAND 20 REM BY DENSL0 HAMLIN, JR. 30 REM COPYRIGHT 1980 *** ALL RIGHTS RESERVED     Lines 50-70: Clear string space and initialize    variables.  50 CLEAR 1000 60 H\$="0123456789ABCDEF" 70 K=0     Lines 1000-1630: Keyboard entries are put into variable    I\$, each entry ends with a carriage return followed    by a null (CHR\$(0)). At the end of the list, an    End Of File, CHR\$(255), is added.  1000 CLS:I\$="" 1005 PRINT"          C O M M A N D " 1010 PRINT"TYPE IN JOB LIST BELOW FOLLOWING THESE RULES:" 1012 PRINT"       1. PRESS ENTER AFTER EACH ENTRY       2. ENTER A SINGLE 'I' TO CREATE 10 NULLS (A DELAY)       3. ENTER '&lt;END&gt;' TO END ENTRIES"  1014 PRINT" ENTER LIST HERE:" 1020 LINEINPUT A\$ 1030 IF A\$="I" THEN 1500 1040 IF A\$="&lt;END&gt;" THEN 1600 1050 I\$=I\$+A\$+CHR\$(13)+CHR\$(0) 1060 GOTO 1020 1500 I\$=I\$+STRING\$(10,0) 1510 GOTO 1020 1600 I\$=I\$+CHR\$(255) 1610 PRINT"JOB LIST COMPLETE" 1620 PRINT" COMMAND FILE NOW BEING CREATED" 1630 GOTO 5000 1999 REM MACHINE LANGUAGE CODE CREATION     Lines 2000-2900: Through the use of the routines on    5200, 5300, and 6000, a machine language routine is    poked into memory and added to variable EX\$.  2000 EX\$="" 2010 FOR K=0 TO 8 2020 GOSUB5300 2030 NEXT 2060 V=ST+62 2070 GOSUB 5200 2080 FOR K=11 TO 12 2090 GOSUB 5300 2100 NEXT K 2110 V=ST+25 2120 GOSUB 5200 2130 FOR K=15 TO 28 2140 GOSUB 5300 2150 NEXT K</pre>	<pre>2160 V=ST+60 2170 GOSUB 5200 2180 FOR K=31 TO 41 2190 GOSUB 5300 2200 NEXT K 2210 V=ST+60 2220 GOSUB 5200 2230 FOR K=44 TO 48 2240 GOSUB 5300 2250 NEXT K 2260 V=ST+62 2270 GOSUB 5200 2280 FOR K=51 TO 59 2290 GOSUB 5300 2300 NEXT K 2310 V=ST+64 2320 GOSUB 5200 2330 V=ST+62 2340 K=K+1:GOSUB 5200 2350 L=LEN(I\$) 2360 FOR I=1 TO L 2370 K=K+1 2380 X\$=MID\$(I\$,I,1) 2390 GOSUB 6000 2400 NEXT I 2500 Z=ST+255 2510 GOSUB 6300 2520 LINEINPUT"INDICATE DESIRED FILE NAME=&gt; ";V\$ 2530 L=INSTR(V\$,"/") 2540 IF L=0 THEN 7100 2550 REM THE FOLLOWING MODIFIES EX\$ SO THAT IT IS EXECUTABLE       ROUTINE IN ITSELF 2560 EX\$=LEFT\$(EX\$,64)+STRING\$(20,CHR\$(0))+CMD "+CHR\$(34)+"S"+C HR\$(34)+CHR\$(13)+CHR\$(0)+STRING\$(20,CHR\$(0)) 2570 EX\$=EX\$+"DUMP "+V\$+" (START=X'" +H1\$+"',END=X'" +Z\$+"',TRA=X'" +H1\$+"')"+CHR\$(13)+CHR\$(0)+CHR\$(255) 2580 MID\$(EX\$,23,1)=CHR\$(201) 2590 B=0:B1=0:B2=0:B3=0:B4=0:C1=0:C2=0:E5=0 2600 B=VARPTR(EX\$) 2610 B1=B+1:GOSUB4200 2620 B2=PEEK(B1) 2630 B1=B+2:GOSUB4200 2640 B3=PEEK(B1) 2650 B4=B3*256+B2 2660 B1=B4+62 2670 GOSUB4250 2680 MID\$(EX\$,10,2)=CHR\$(C2)+CHR\$(C1) 2690 B1=B4+25:GOSUB4250 2700 MID\$(EX\$,14,2)=CHR\$(C2)+CHR\$(C1) 2710 B1=B4+60:GOSUB4250 2720 MID\$(EX\$,30,2)=CHR\$(C2)+CHR\$(C1) 2730 MID\$(EX\$,43,2)=CHR\$(C2)+CHR\$(C1) 2740 B1=B4+62:GOSUB4250 2750 MID\$(EX\$,50,2)=CHR\$(C2)+CHR\$(C1)</pre>
---	---



```

2760 B1=B4+64:GOSUB 4250
2770 MID$(EX$,61,2)=CHR$(C2)+CHR$(C1)
2780 B1=VARPTR(EX$)

```

```

2790 IF B<>B1 THEN 4300
2800 B1=B+1:GOSUB4200
2810 B5=PEEK(B1)
2820 IF B5<>B2THEN4300
2830 B1=B+2:GOSUB4200
2840 B5=PEEK(B1)
2850 IF B5<>B3 THEN 4300
2860 PRINT"READY TO CREATE COMMAND FILE=> ";V$
2870 B1=B4
2880 GOSUB4200
2885 REM THE FOLLOWING EXECUTES EX$ & THUS DUMPS MACHINE CODE
2890 DEFUSR1=B1
2900 B4=USR1(0)
2910 END

```

Lines 3000-3060: Data statements containing fixed machine language codes. Data item 9999 is a dummy element.

```

3000 DATA 245,221,229,221,42,22,64,221,34
3010 DATA 221,33
3020 DATA 221,34,22,64,221,225,241,195,45,64
3030 DATA 221,229,221,42
3040 DATA 221,126,0,254,255,40,9,221,35,221,34
3050 DATA 221,225,201,221,42
3060 DATA 221,34,22,64,221,225,62,0,201
3070 DATA 9999

```

Line 4200: If memory location is larger than 32767, this will convert to appropriate negative value for peeks and pokes.

```

4200 IFB1>32767THENB1=B1-65536
4210 RETURN

```

Lines 4250-4260: Convert address B1 to LSB(C2) and MSB(C1).

```

4250 C1=INT(B1/256)
4260 C2=B1-256*C1
4270 RETURN

```

Line 4300: Error trapping in case position of EX\$ has changed (normally shouldn't happen).

```

4300 PRINT"STRING LOCATION SHIFTING
      -WILL TRY AGAIN":GOTO 2600

```

Line 5000: Get starting address and convert to decimal.

```

5000 LINEINPUT"INDICATE STARTING ADDRESS IN HEX:";H1$
5010 IF LEN(H1$)>4 OR LEN(H1$)<1 THEN 5000
5020 ST=0
5030 FOR I=1 TO LEN(H1$)
5040 ST=ST*16
5050 L=INSTR(H$,MID$(H1$,I,1))
5060 IF L=0 THEN 5000
5070 ST=ST+L-1
5080 NEXT I
5090 PRINT"DECIMAL EQUIVALENT=>";ST
5100 IF ST<16384 THEN PRINT"NOT POSSIBLE TO START AT AN ADDRESS
      LESS THAN 4000 HEX":GOTO 5000

```

Line 5105: Special Note-This looks a locations 40B1H and 40B2H and uses them to get V3 (End of protected memory).

```

5105 V1=PEEK(&H40B2):V2=PEEK(&H40B1):V3=V1*256+V2+2:IF ST<V3THEN
PRINT"DANGER":GOTO 7000
5110 GOTO 2000
5199 REM THIS CONVERTS ONE ADDRESS TO TWO NUMBERS

```

Line 5200: Converts address V into LSB, V2 and MSB, V1. These numbers are poked into memory and added to EX\$ by line 6000. This completes the location dependent portion of machine code.

```

5200 V1=INT(V/256)
5210 V2=V-V1*256
5220 X$=CHR$(V2)
5230 GOSUB 6000
5240 X$=CHR$(V1):K=K+1
5250 GOSUB 6000
5260 RETURN
5290 REM GET MACHINE LANGUAGE CODE

```

Line 5300: Reads fixed machine language code and uses line 6000 to poke into memory and add to EX\$.

```

5300 READ X
5310 X$=CHR$(X)
5320 GOSUB 6000
5340 RETURN
5990 REM THE FOLLOWING IS POKE SUBROUTINE

```

Line 6000: Pokes ASC(X\$) & adds X\$ to EX\$.

```

6000 AD=ST+K
6010 IF K1>0 AND K1+1<>K THEN PRINT"ERROR":STOP
6020 K1=K
6030 IF AD>32767 THEN AD=AD-65536
6040 POKE AD,ASC(X$)
6045 EX$=EX$+X$
6050 RETURN
6299 REM DEC TO HEX CONVERSION FOLLOWS
6300 K(1)=INT(Z/4096)
6310 Z1=Z-K(1)*4096
6320 K(2)=INT(Z1/256)
6330 Z1=Z1-K(2)*256
6340 K(3)=INT(Z1/16)
6350 K(4)=Z1-16*K(3)
6360 Z$=""
6370 FOR I=1 TO 4
6380 Z$=Z$+MID$(H$,K(I)+1,1)
6390 NEXT I
6400 RETURN
7000 PRINT" IT IS NOT ADVISABLE TO CREATE A COMMAND FILE IN
      AREAS OTHER THAN PROTECTED MEMORY. WE SUGGEST THAT YOU
      PRESS <BREAK> AND REINITIALIZE BASIC WITH MEMORY SIZE
      LESS THAN ";ST;";" (CURRENT MEMORY SIZE=";V3;"")
7010 INPUT"
PRESS ENTER IF YOU WISH TO CONTINUE (RESULTS UNCERTAIN)";X$
7020 GOTO 5110
7099 REM INSERT DEFAULT FILE EXTENSION /CMD
7100 L=INSTR(V$,".")
7110 IF L=0THEN7140
7120 V$=LEFT$(V$,L-1)+"/CMD"+RIGHT$(V$,LEN(V$)-L+1)
7130 GOTO2560
7140 L=INSTR(V$,".")
7150 IF L=0THEN V$=V$+"/CMD":GOTO2560
7160 GOTO 7120

```



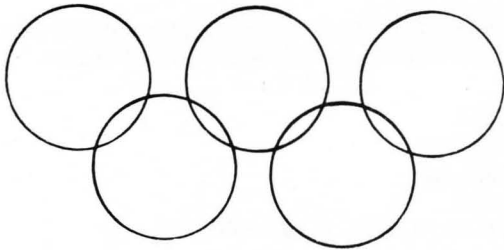
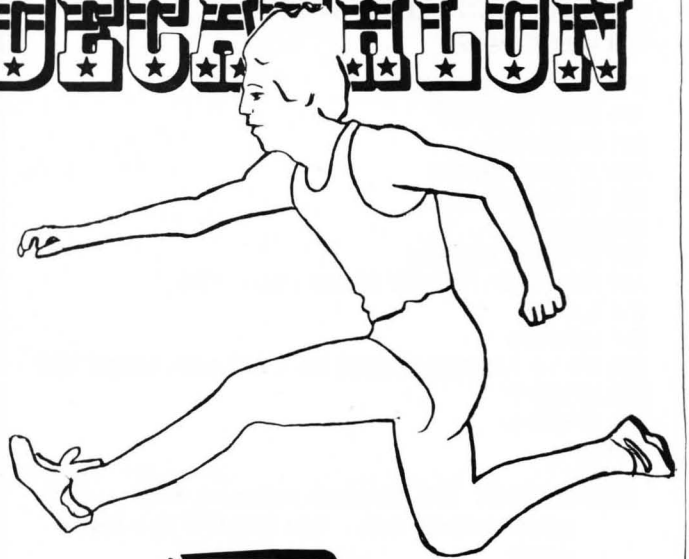
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# BASEBALL

by Dave Bohlke

Apple translation by Steve MacLeay and Steve Justus.

**Baseball requires a 24K Apple with Applesoft ROM.**

So it's the end of the season. So we are now in the middle of basketball, hockey and the all-American pastime of bone-crunching. Here at **SoftSide** we are still hung up on the real American national pastime: baseball. Or, if precision is your thing, Son of a Son of S-80 Baseball, originally penned by Dave Bohlke and since translated by Steve MacLeay, Steve Justus and Mark Pelczarski.

This Apple version requires the use of paddles and some astute managing. The idea, of course, is to rack up the greatest number of runs, by hook, crook, or any other conceivable means. In order to do so one must get one's reflexes in shape, and bone up on patience.

To begin with, plug in your paddles. Boot the program. Your screen will inform you that the visitors are up to bat. The home team will, of course, be pitching and fielding.

To pitch, one must press the fire button. The paddle controls both the speed of the pitch and the direction. If the paddle is turned past the midpoint to the right, a fastball will be delivered. If it is turned to the left, a changeup is forthcoming. After the fire button has been pressed, turning the paddle in either direction will guide the pitch. Knuckleballs are both a skill and an art, and fun into the bargain.

To hit the ball, the batting team must also rely on the fire button. Timing is of the essence.

Once the ball has been hit, so to speak, fielding becomes the main concern. A fielder, either infielder or outfielder, will appear on the screen. So will the ball. The object is to get the fielder under the ball, at about shoulder height (in the case of a ground ball, try to center the fielder), in order to catch it and make the put out. If the trajectory of the ball is such that camping under it is well nigh unto impossible, get the fielder into a stationary position (no flashing fielder) and press the fire button. The fielder then will make an

astounding leap and possibly catch the ball. If the ball is off to the side, press the fire button while the fielder is in motion and he will dive for it. Sound simple? Hah! Batter up. . . . .

## VARIABLES

A\$ — Whose pitch is it?  
B — Who is the batter.  
B1 = 1 — means a runner is on 1st base, 0 means no one is there.  
B2 — Second base (see B1).  
B3 — Third base (see B1).  
BA — Home team's at bat.  
BE — Home team's errors.  
BH — Home team's hits.  
BL — Number of balls pitched.  
BR — Bat rotation.  
BS — Home's score total.  
CV — Curve on pitch.  
E — Errors for a given inning.  
FT — Used to set color for a particular team.  
HT — 1 = A hit.  
I — Dummy variable used in for-next loops, etc.  
IN — Counter for innings.  
OT — Number of outs for a particular inning.  
P — Runs scored in a given inning.  
P1 — Ball's X coordinate.  
P2 — Ball's Y coordinate.  
P3 — A jumped fielder's Y coordinate.  
PE — Batting % for box score.  
PO — Player's X coordinate.  
PT — Used to determine paddle to be checked.  
R — Team that is the running team.  
RA — Visitor's at bat.  
RE — Visitor's errors.  
RH — Visitor's hits.  
RO — 1 = Fielder has jumped.  
S(18) — Keeps track of runs scored for all innings.  
SP — Ball's speed when being pitched.  
ST — Number of strikes.  
T — Temporary number of runs scored in by one hit.  
X4 — 1 = Batter has swung.  
XY — Ball's X coordinate in the diamond; also used to compute arc of fly ball.  
YX — Ball's Y coordinate in the diamond.  
Z — Random number determine ball's direction and whether hit was a foul ball; also used to compute arc of fly ball.  
Z1 — Player's increment for moving left or right.

Initialize and load shape table,

```
10 LOMEM: 17434: HOME : GOSUB 23
20 POKE 232,0: POKE 233,64:
DIM S(18)
```

```
15 IN = 1
```

Makes team at bat the outfield team and vice versa.

```
20 IF B = 2 THEN B = 1: R = 2: GOTO
370
```

Sets the initial outfield and at bat team.

```
40 B = 2: R = 1: GOTO 370
```

whoever was in the outfield adds the errors made during that inning to his total.

```
40 B = 2: R = 1: GOTO 370
```

```
50 IF IN / 2 = INT (IN / 2) THEN
RE = RE + E: GOTO 70
```

```
60 BE = BE + E
```

Have 4 balls, 3 strikes, or 3 outs gone by? If so, set variables to 0.

```
70 E = 0: RO = 0: X4 = 0: IF HT = 1
THEN GOSUB 790: GOTO 50
```

```
80 IF BL = 4 THEN GOSUB 120: GOSUB
1690
```

```
90 IF ST = 3 THEN GOSUB 1980: PRINT
"YER OUT!!": OT = OT + 1: GOSUB
120: GOSUB 2270
```

```
100 IF OT > 2 THEN OT = 0: B1 = 0
: B2 = 0: B3 = 0: S(IN) = P: P =
0: GOSUB 120: GOTO 130
```

```
110 GOTO 370
```

```
120 BL = 0: ST = 0: HT = 0: RETURN
```

Resets window to normal. Displays runs scored so far by both teams.

```
130 POKE 34,0: TEXT : HOME : PRINT
SPC( 10): FLASH : PRINT "AL
LSTAR BASEBALL": NORMAL
```

```
140 PRINT : PRINT : PRINT : PRINT
"INNING": PRINT : PRINT : PRINT
"VISITORS ": PRINT : PRINT "
HOME "
```

```
150 FOR I = 1 TO 9: HTAB I * 3 +
9: VTAB 5: PRINT I:; NEXT I
```

```
160 BS = 0: RS = 0: FOR I = 1 TO I
N
```

continued on next page



```

170 IF I / 2 = INT ( I / 2 ) THEN
210
180 RS = RS + S(I); HTAB ( I / 2 *
3 + 11); VTAB 8
190 PRINT S(I);; NEXT I
200 GOTO 220
210 BS = BS + S(I); HTAB I / 2 *
3 + 9; VTAB 10; PRINT S(I);;
NEXT I

```

Displays box score; runs, hits, errors, batting percentage.

```

220 HTAB 1; VTAB 14; PRINT "BOXS
CORE: RUNS HITS ERRORS HI
TZ";
230 HTAB 2; VTAB 16; PRINT "VISI
TORS"; HTAB 1; VTAB 18; PRINT
" HOME"
240 HTAB 13; VTAB 16; PRINT RS; HTAB
19; VTAB 16; PRINT RH; HTAB
26; VTAB 16; PRINT RE
250 HTAB 13; VTAB 18; PRINT BS; HTAB
19; VTAB 18; PRINT BH; HTAB
26; VTAB 18; PRINT BE
260 PE = INT ( RH / RA * 1000); HTAB
31; VTAB 16; PRINT ".,";PE
270 IF BA = 0 THEN 290
280 PE = INT ( BH / BA * 1000); HTAB
31; VTAB 18; PRINT ".,";PE
290 HTAB 9; VTAB 23; PRINT "PRES
S BUTTON TO CONTINUE . . .";
300 IF PEEK ( - 16287) < 128 AND
PEEK ( - 16286) < 128 THEN
300

```

Has game ended?

```

310 IN = IN + 1; IF IN = 19 THEN
340
320 IF IN = 18 AND BS > RS THEN
340
330 GOTO 20
340 FOR I = 1 TO 100; NEXT I; HTAB
9; VTAB 23; PRINT " PRESS B
UTTON FOR NEXT GAME ?";
350 IF PEEK ( - 16287) > 127 OR
PEEK ( - 16287) > 127 THEN
CLEAR : GOTO 20
360 GOTO 350

```

Sets up HIRE-RES graphics and draws baseball diamond.

```

370 HGR : HCOLOR= 1; HPLOT 0,0; CALL
62454
380 PT = R + 1; IF R = 1 THEN FT =
0; GOTO 400
390 FT = 3
400 HCOLOR= 3; HPLOT 0,25 TO 140
,150 TO 279,25; GOSUB 1750
410 DRAW 2 AT 140,147
420 P3 = 133; IF FT = 3 THEN P3 =
134

```

```

430 HCOLOR= FT; ROT= 0; SCALE= 1
; DRAW 3 AT P3,44
440 GOSUB 1980
450 PRINT " RUNS ";P;" OUT
S ";OT
460 PRINT " BALLS ";BL;" ST
RIKES ";ST; PRINT

```

Draw the bat.

```

470 SCALE= 11; HCOLOR= 0;ER = 64
; ROT= BR; XDRAW 1 AT 135,14
5
480 A$ = " VISITOR"; IF B = 2 THEN
A$ = " HOME"
490 PRINT A$;"S PITCH ";

```

Set ball's initial X and Y positions.

```

500 IF PEEK ( PT - 16289) < 128 THEN
500
510 XY = 141;YX = 60

```

Sets initial ball speed based on the paddle's position before ball is pitched.

```

520 IF PDL ( PT - 2) > - 1 AND
PDL ( PT - 2) < 95 THEN SP =
2.5; GOTO 550
530 IF PDL ( PT - 2) > 159 AND PDL
( PT - 2) < 256 THEN SP = 7; GOTO
550
540 SP = 4
550 IF XY < 130 THEN 610

```

Sets curve for the ball based upon the paddle's present position.

```

560 CV = SGN ( INT ( ( PDL ( PT -
2) - 32) / 191))
590 IF XY = 135 AND CV = - 1 THEN
CV = 0
600 IF XY = 148 AND CV = 1 THEN
CV = 0

```

Change ball's actual position.

```

610 YX = YX + 2 + SP;XY = XY + CV

```

Draw ball and erase old position.

```

620 ROT= 0; SCALE= 1; HCOLOR= 3;
DRAW 2 AT XY,YX
630 HCOLOR= 1; DRAW 2 AT XY - CV
,YX - 2 - SP

```

Did the batter swing?

```

640 IF PEEK ( B - 16288) > 127 THEN
X4 = 1
650 IF X4 = 1 THEN 680
660 IF YX > 138 THEN 700

```

```

670 GOTO 550

```

Draw and change bat position.

```

680 BR = BR - 5; ROT= BR; SCALE=
11; XDRAW 1 AT 135,145
690 ROT= BR + 5; XDRAW 1 AT 135,
145

```

Should I check for a hit or a strike?

```

700 IF YX > 138 OR BR < 32 THEN
720
710 GOTO 550

```

Check for hits, balls, or strikes.

```

720 IF YX > 150 AND XY > 137 AND
XY < 147 THEN ST = ST + 1; GOTO
50
730 IF BR = 64 AND XY > 146 OR B
R = 64 AND XY < 137 THEN BL =
BL + 1; GOTO 50
740 IF BR < 32 THEN ST = ST + 1;
GOTO 50
750 IF BR < > 64 AND XY > 146 OR
BR < > 64 AND XY < 137 THEN
ST = ST + 1; GOTO 50
760 IF YX > 137 AND YX < 151 AND
BR < 57 AND BR > 39 THEN HT =
1; GOTO 50
770 IF XY > 136 AND XY < 147 THEN
ST = ST + 1; GOTO 50
780 GOTO 550

```

Sets ball at random direction for leaving the diamond.

```

790 Z = INT ( RND ( 1) * 9) - 4
800 SCALE= 1; ROT= 0; HCOLOR= 1
810 DRAW 2 AT XY - CV,YX - 2 - S
P
820 FOR YX = YX TO 15 STEP - 3
830 XY = XY + Z; IF XY < 3 OR XY >
275 THEN 860
840 HCOLOR= 3; DRAW 2 AT XY,YX; HCOLOR=
1
850 DRAW 2 AT XY - Z,YX + 3

```

Was it a foul ball?

```

860 NEXT YX
880 IF ABS ( Z) < > 4 THEN 900
890 GOSUB 1980; PRINT "FOUL BALL
!";ST = ST + 1; IF ST = 3 THEN
ST = 2

```

Draw infield.

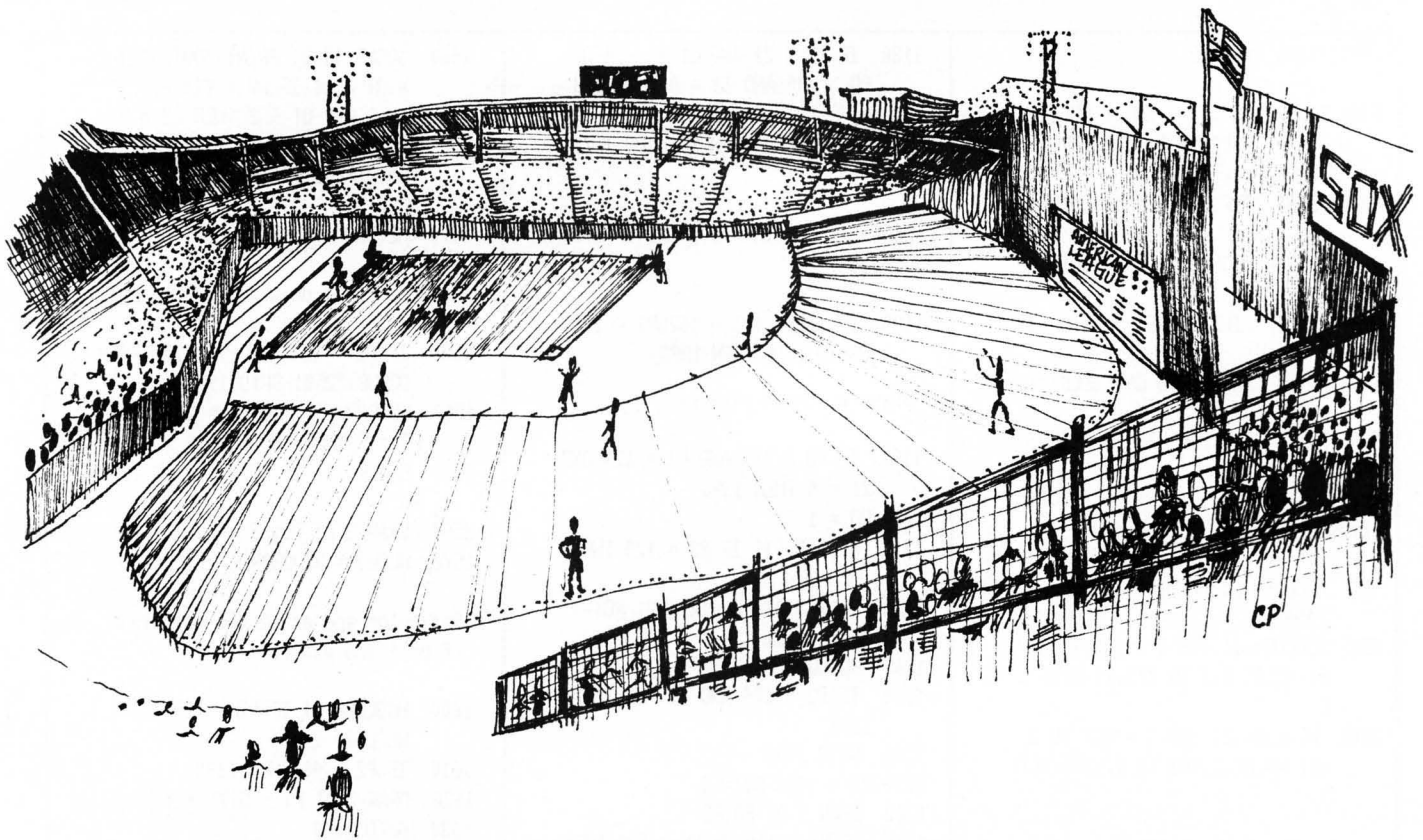
```

895 HT = 0; RETURN
900 GOSUB 120; GOSUB 1980; GOSUB
2270
910 HCOLOR= 1; HPLOT 0,0; CALL 6
2454

```

<p>What type of hit?</p> <pre> 920 GOSUB 1980:I = INT ( RND (1) ) * 5) + 1: ON I GOTO 930,94 0,950,960,970 930 PRINT "INFIELD FLY!": GOTO 1 040 940 PRINT "GROUND BALL!": GOTO 1 040 950 PRINT "LINE DRIVE!": GOTO 98 0 960 PRINT "POP UP TO OUTFIELD!": GOTO 980 970 PRINT "FLY BALL TO OUTFIELD!" "  Draw outfield.  980 HCOLOR= 2: HPLLOT 0,0: CALL 6 2454 990 HCOLOR= 1: FOR I = 140 TO 15 9: HPLLOT 0,I TO 275,I: NEXT I 1000 HCOLOR= 3: FOR I = 257 TO 2 60: HPLLOT I,103 TO I,139: NEXT I  Sets player's and ball's starting positions.  1010 XY = INT ( RND (1) * 100) + 25:Z = INT ( RND (1) * 25) + 5:P0 = ( INT ( RND (1) * 40) + 27) * 2 + R + 1:P2 = 124: P1 = 2:YY = INT ( RND (1) * 55) + 70 1030 GOTO 1060 1040 P0 = ( INT ( RND (1) * 64) + 32) * 2 + R:P1 = INT ( RND (1) * 230) + 15:YY = 145:P2 = 40  Is player moving left, right, or standing still?  1060 Z1 = 4 * SGN ( INT (( PDL ( PT - 2) - 15) / 225))  Arc for outfield ball.  1090 IF P2 &lt; &gt; 124 THEN YY = YY - 5: GOTO 1130 1100 IF P1 &lt; XY THEN Y1 = - 1: GOTO 1115 1110 IF P1 &gt; XY + Z THEN Y1 = 2: GOTO 1115  Is player at the edges of the field? If so, don't let him keep moving in that direction.  1112 Y1 = 0 1115 YY = YY + Y1 1120 P1 = P1 + 5 </pre>	<pre> 1130 IF P0 &lt; 20 AND Z1 = - 4 OR P0 &gt; 240 AND Z1 = 4 THEN 118 0 1140 IF R0 = 0 THEN P0 = P0 + Z1  Does he not want to jump, or has he already?  1180 IF PEEK (PT - 16289) &lt; 128 OR R0 = 1 THEN 1390  Draws a jumped player.  1190 IF P0 &gt; 235 AND P2 = 124 AND Z1 = 4 THEN 1390 1200 R0 = 1 1210 HCOLOR= 1: IF P2 = 124 THEN HCOLOR= 2 1220 DRAW 3 AT P0 - Z1,P2: ROT= 48:Z1 = Z1 * 8 1260 HCOLOR= FT 1270 IF P2 = 124 AND Z1 = 0 THEN 1290 1280 GOTO 1330 1290 P3 = 100: ROT= 0 1300 DRAW 3 AT P0,P3 1310 IF YY &lt; 110 OR YY &gt; 120 THEN 1550 1320 GOTO 1450 1330 P3 = 60: IF P2 = 40 AND Z1 &gt; 0 THEN P3 = 45: GOTO 1360 1335 IF P2 = 40 THEN 1360 1340 P3 = 143: IF Z1 &gt; 0 THEN P3 = 129 1360 IF Z1 &gt; 0 THEN ROT= 16 1370 P0 = P0 + Z1: DRAW 3 AT P0,P 3 1380 IF YY &gt; 100 AND YY &lt; 110 THEN 1450  Should I check for a catch?  1390 IF YY &lt; 20 OR YY &gt; 134 AND P2 &lt; &gt; 40 THEN GOSUB 1980: GOTO 1400 1395 GOTO 1410 1400 IF RND (1) &lt; .1 AND R0 = 1 THEN PRINT "ERROR":E = E + 1: GOTO 1700 1405 PRINT "BASE HIT": GOSUB 225 0: GOTO 1700 1410 IF P2 = 124 THEN 1440 1420 IF YY &lt; 56 AND YY &gt; 40 THEN 1450 1430 GOTO 1550 1440 IF YY &gt; 134 OR YY &lt; 123 THEN 1550  Did he make a catch?  1450 IF ABS (P1 - P0 - 5) &lt; 4 THEN 1480 1470 GOTO 1550 </pre>	<pre> 1480 GOSUB 1980: PRINT "OUT!":OT = OT + 1: IF P2 = 124 AND B 3 = 1 AND OT &lt; 2 THEN B3 = 0 :P = P + 1: GOSUB 1980: PRINT "SACRIFICE!!!": PRINT "RUN SC ORES!" 1490 RETURN  Set color and draw player and ball.  1550 IF P2 = 124 AND P1 &gt; 255 THEN GOSUB 2250: GOTO 1990 1560 HCOLOR= FT: IF P2 = 124 AND FT = 2 THEN HCOLOR= 0 1570 SCALE= 1: IF R0 = 1 THEN 15 90 1580 DRAW 3 AT P0,P2 1590 HCOLOR= 3: DRAW 2 AT P1,YY  Set color and erase old positions of ball and player.  1600 HCOLOR= 1: IF P2 = 124 THEN HCOLOR= 2 1610 IF P2 = 40 THEN 1640 1620 DRAW 2 AT P1 - 5,YY - Y1 1630 GOTO 1660 1640 DRAW 2 AT P1,YY + 5: IF Z1 = 0 OR R0 = 1 THEN 1060 1650 HCOLOR= 1: IF P2 = 124 THEN HCOLOR= 2 1660 IF R0 = 1 THEN 1090 1670 IF Z1 = 0 THEN 1060 1680 DRAW 3 AT P0 - Z1,P2: GOTO 1060  Check for any scoring and advance runners.  1690 GOSUB 1980: PRINT "BATTER W ALKED!": GOSUB 1980: GOTO 17 10 1700 GOSUB 1980: IF B3 = 1 THEN P = P + 1:T = 1:B3 = 0: PRINT "RUN SCORES" 1704 IF B2 = 1 THEN B3 = 1:B2 = 0: PRINT "RUNNER ADVANCES" 1706 IF B1 = 1 THEN B2 = 1 1708 B1 = 1: RETURN 1710 IF B3 = 1 AND B2 = 1 AND B1 = 1 THEN T = 1:P = P + 1: GOSUB 2290 1720 IF B2 = 1 AND B1 = 1 THEN B 3 = 1: PRINT "RUNNERS ADVANC E": RETURN 1730 IF B1 = 1 THEN B2 = 1: PRINT "RUNNER ADVANCES": RETURN 1740 B1 = 1: RETURN  Draw players on the baseball diamond.  1750 HCOLOR= 3 - FT: ROT= 0: SCALE= 1 </pre>
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continued on next page



<pre> 1770 IF B1 = 1 THEN 1840 1790 IF B2 = 1 THEN 1860 1810 IF B3 = 1 THEN 1880 1820 GOTO 1890 1840 DRAW 3 AT 211 + R,59: GOTO 1790 1860 DRAW 3 AT 133 + R,13: GOTO 1810 1880 DRAW 3 AT 55 + R,60 1890 HCOLOR= 3: HPLLOT 137,140 TO 141,140 1900 SCALE= 5: ROT= 8 1910 IF B1 = 1 THEN 1930 1920 DRAW 2 AT 220,75 1930 IF B2 = 1 THEN 1950 1940 DRAW 2 AT 140,15 1950 IF B3 = 1 THEN 1970 1960 DRAW 2 AT 60,75  1970 RETURN  Pause and lower window for graphics screen.  1980 FOR I = 1 TO 100: NEXT I: POKE 34,20: HOME : RETURN  Was the ball hitting the wall a double or a triple?  1990 IF YY &gt; 115 THEN 2100 2000 IF YY &lt; 104 THEN 2200 2010 T = B1 + B2 + B3:P = P + T: PRINT "TRIPLE!!" </pre>	<pre> 2020 B1 = 0:B2 = 0:B3 = 1: RETURN  2100 T = B2 + B3:P = P + T: PRINT "DOUBLE!!" 2110 B3 = 0: IF B1 = 1 THEN B3 = 1 2120 B2 = 1:B1 = 0: RETURN  Home run. Add up runs.  2200 T = B1 + B2 + B3 + 1:P = P + T 2210 IF T = 4 THEN : PRINT "GRAN D SLAM!!!!": GOTO 2230 2220 PRINT "HOME RUN!" 2230 PRINT T;" RUNS SCORE!!" 2240 B1 = 0:B2 = 0:B3 = 0:T = 0: RETURN  Add one to number of hits for home or visiting team.  2250 IF IN / 2 = INT (IN / 2) THEN BH = BH + 1: RETURN 2260 RH = RH + 1: RETURN  Add one to number of at bats for home or visiting team.  2270 IF IN / 2 = INT (IN / 2) THEN BA = BA + 1: RETURN 2280 RA = RA + 1: RETURN  Display runs scored for a particular hit. </pre>	<pre> 2290 GOSUB 1980: PRINT T;" RUN"; : IF T &gt; 1 THEN PRINT "S"; 2300 PRINT " SCORE";: IF T = 1 THEN PRINT "S"; 2310 PRINT :T = 0: RETURN  Load shape table. Shape 1 is the bat, shape 2 is the ball and the bases, shape 3 is a player.  2320 L = 16384 2330 FOR MX = 1 TO 2 2340 READ A\$ 2350 FOR I = 1 TO LEN (A\$) STEP 2 2360 AD = ASC ( MID\$ (A\$,I,1)) - 48 2370 IF AD &gt; 9 THEN AD = AD - 7 2380 CH = ASC ( MID\$ (A\$,I + 1,1 )) - 48 2390 IF CH &gt; 9 THEN CH = CH - 7 2400 POKE L,AD * 16 + CH 2410 L = L + 1: NEXT I 2420 NEXT MX 2430 RETURN 2440 DATA "030008000A000D000600 3C2E0009092D0D0909111B1E1B 3E3F1F1B130909092D0D0909111B 1B1B3E3F1E1B1309090929090909 111B1E1B3F3F1F1B1309092D2D" 2450 DATA "2D0D09111B1B3F3E3F3E 1F13092D092D0D290D111B3E1E3E 3F1E3E13090D092D0D090D111E1E 1E3F3E1F1B1309092D09290D0911 1E1E3E1E1E3E1E1309090D09090D 09111B1B3F1E1E3E1F1300" </pre>
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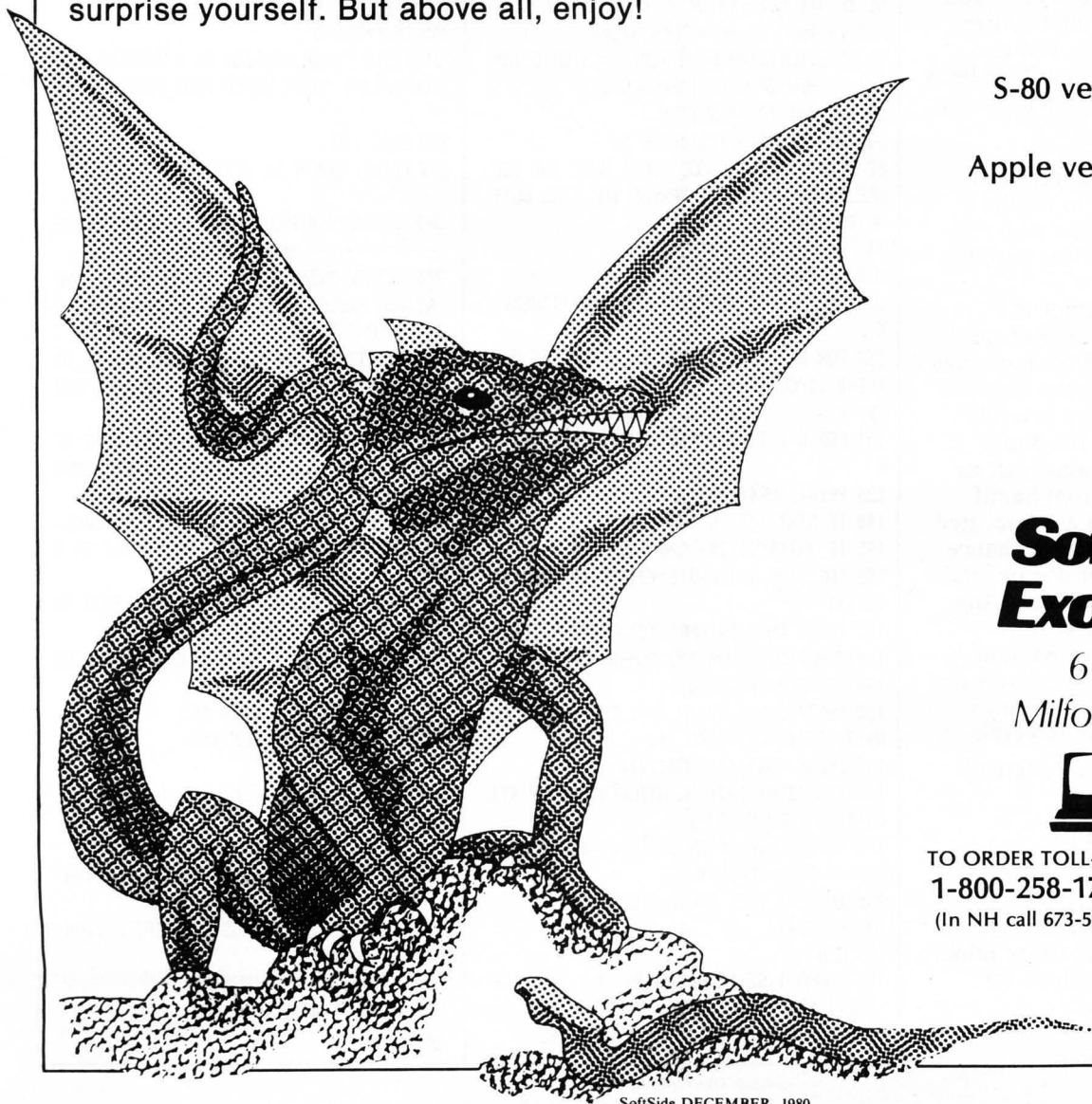


# A Microsoft Adventure for the TRS-80™ and Apple.

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As you become more skilled in overcoming obstacles and avoiding hazards, more regions of the cave will open up to you. Keep your wits about you and you may eventually become a Grand Master. Slip up and you may not become anything, if that. It all depends upon your ability and your ingenuity.

When your adventure begins, you will find yourself outside of the cave. From there on in you must tell the computer what you wish to do by means of one- or two-word commands. Sometimes the computer might offer to help you with a small hint, but remember, there's no free lunch! You will have to do most of the work, including learning to use magic, yourself. Look for allies in unexpected places and you might surprise yourself. But above all, enjoy!



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# SPACE DODGE

by Michael McKenna  
Atari translation by Rich Bouchard

**The S-80 version of SPACE DODGE requires at least 16K RAM. The Atari version requires 16K and a joystick.**

For those of you with Ataris, here is SPACE DODGE complete with action packed graphics and extensive sound effects. Translated for the Atari by our own Atari expert.

You are a spy for the Lastels, a people resident in the small oppressed system known as Trifsed.

For the last seven centuries your people have been trying to form their own government. But the Saplifts, your oppressors, have been quick to suppress any such attempts.

The people realized long ago that the only chance to rise as a people was to somehow stop the intelligence efforts of the Saplifts.

In a desperate attempt to infiltrate the Saplift intelligence organization, a small team of spies succeeded in crossing the dreaded minefield and obtained several documents exposing the Saplift spies on Lastel. But alas, just as they were escaping from Saplift, they were discovered and executed, but not before they had a chance to hide the important documents. Your mission is to get across the minefield, get the secret documents, and return without being destroyed by the ever-present triton mines which come out of hyperspace at random intervals.

Can you succeed???? Here's your chance.

## VARIABLES:

X1 = Speed factor.  
ZM\$ = Sound Routine string.  
A\$ = String storing triton mine.  
A = Random positions for triton mines.  
Y = Steering logic.  
O&Z = Ship's position.

## ATARI VERSION

```

2 REM *****
3 REM **** SPACE DODGE ****
4 REM *****
5 REM ** ORIGINAL PROGRAM
10 REM * MICHAEL MCKENNA
15 REM * ATARI TRANSLATION
18 REM * RICH BOUCHARD
20 POKE 82,2:GOSUB 360
25 S1=37:S2=10:S3=1
30 GRAPHICS 0:POKE 752,1
35 OPEN #1,4,0,"K"
40 S=0:PRINT :PRINT "PUSH JOYSTICK FORWARD OR BACKWARD":PRINT "TO SELECT SPEED FACTOR,"
42 PRINT "PRESS FIRE WHEN READY TO PLAY":PRINT "SPEED FACTOR ->":S;
50 IF STRIG(0)=0 THEN 60
51 IF STICK(0)=10 OR STICK(0)=14 OR STICK(0)=6 THEN IF S<9 THEN S=S+1
52 IF STICK(0)=9 OR STICK(0)=13 OR STICK(0)=5 THEN IF S<0 THEN S=S-1
53 FOR K=1 TO 50:NEXT K
54 PRINT CHR$(30);S;:GOTO 50
60 PRINT :PRINT "GOOD LUCK! ONCE THE SQUAD IS DRAWN":PRINT "PRESS THE FIRE BUTTON TO START"
70 FOR P=1 TO 1000:NEXT P
120 GRAPHICS 0:POKE 752,1
130 FOR K=1 TO 38:PRINT CHR$(160);:NEXT K
132 FOR K=1 TO 21:POSITION 2,K:PRINT CHR$(160);:POSITION 39,K:PRINT CHR$(160);:NEXT K
134 FOR K=1 TO 37:PRINT CHR$(160);:NEXT K
136 PRINT CHR$(160);
140 IF STRIG(0)<0 THEN 140
145 IF INT(RND(0)*5)<0 THEN 150
146 POSITION INT(RND(0)*34)+3,INT(RND(0)*20)+1
147 PRINT CHR$(8);CHR$(10);CHR$(29);CHR$(30);CHR$(30);CHR$(138);CHR$(136);
148 SOUND 0,100,12,6
150 POSITION S1,S2:IF S3=1 THEN PRINT CHR$(4);CHR$(30);:GOTO 160
155 PRINT CHR$(1);CHR$(30);
160 IF STICK(0)=10 OR STICK(0)=14 OR STICK(0)=6 THEN S2=S2-1
170 IF STICK(0)=9 OR STICK(0)=13 OR STICK(0)=5 THEN S2=S2+1
180 IF S3=1 THEN S1=S1-1:GOTO 190
185 S1=S1+1
190 REM
195 SOUND 1,S2+10,8,2:SOUND 0,0,0,0:POKE 752,1:PRINT " ";:IF S1=39 THEN 250
200 LOCATE S1,S2,A:IF A=32 THEN 145
210 IF S1=2 AND S3=1 THEN S1=S1+1:S3=2:GOTO 200
220 SOUND 0,250,4,4:SOUND 1,240,8,8
221 FOR K=1 TO 20:FOR I=1 TO 15
225 SETCOLOR 2,I,14:NEXT I:NEXT K
230 GOSUB 500
231 IF S2<1 OR S2>19 THEN 240
232 PRINT " WAS DESTROYED BY A TRITON MINE IN";:PRINT "THE ATTACK FIELD.":GOTO 600
240 PRINT " LEFT THE SPECIFIED ATTACK":PRINT "FIELD AND WAS DESTROYED BY A TRITON MINE":PRINT "LASER BLAST."
245 GOTO 600
250 FOR K=1 TO 30:SOUND 0,10,10,10:SOUND 1,20,10,10:SOUND 2,30,10,10:SOUND 3,40,10,10
252 FOR K1=0 TO 3:SOUND K1,0,0,0:NEXT K1:NEXT K
255 GRAPHICS 0
260 PRINT "YOUR MISSION IS A SUCCESS AND YOU":PRINT "HAVE SAVED YOUR PEOPLE!!!!!"
270 GOTO 600
359 PRINT "DON'T GO HERE":STOP
360 GRAPHICS 0:PRINT :PRINT "SPACE DODGE"
SPACE DODGE"
370 PRINT :PRINT "CAN YOU GET ACROSS THE ATTACK FIELD":PRINT "AND BACK WITHOUT HITTING ONE OF THE"
372 PRINT "TRITON MINES COMING OUT OF HYPERSPACE?":PRINT "OPERATION OF YOUR SHIP IS EASY."
380 PRINT "IF YOU REACH THE LEFT SIDE OF THE":PRINT "MONITOR YOU WILL TURN AROUND, AND"
382 PRINT "YOU MUST TRY TO MAKE IT BACK.":PRINT "-WARNING- DON'T TRY TO FLY ON OR"
384 PRINT "PAST THE THICK WHITE LINES ON THE":PRINT "TOP AND BOTTOM!"
390 PRINT :PRINT "PRESS FIRE TO CONTINUE"
400 IF STRIG(0)<0 THEN 400
405 IF STRIG(0)=0 THEN 405
410 RETURN
500 SOUND 1,0,0,0:SOUND 0,0,0,0:GRAPHICS 0:POKE 752,1
510 PRINT "FEDERATION HEADQUARTERS:"
520 PRINT "LONG RANGE SCANNER SHOWS THAT THE SPY":PRINT "SHIP":RETURN
600 PRINT :PRINT "PRESS THE FIRE BUTTON TO PLAY AGAIN";
610 IF STRIG(0)<0 THEN 610
620 IF STRIG(0)=0 THEN 620
630 RUN

```

## S-80 VERSION

10 ' BY MICHAEL MCKENNA

The subroutine at 360 calls up and displays the instructions for playing.

```
20 GOSUB360
30 CLS
```

Lines 40-60: Clears string space and inputs skill level.

```
40 CLEAR300:L$=INKEY$:PRINT:PRINT"INPUT SPEED FACTOR (9(SLOW)-0(F
FAST!!!))"
50 CLEAR:X$=INKEY$:IFX$=""THEN50 ELSEIFASC(X$)<48ORASC(X$)>57T
HEN50
60 PRINT"GOOD LUCK! ONCE THE SQUARE IS DRAWN PRESS ANY KEY TO ST
ART"
70 FORP=1TO1000:NEXT
```

ZM\$ = Sound routine string.

Line 90 finds address of sound routine.

Line 100 pokes address pointers and checks for disk basic.

```
90 I=WARPTR(ZM$):J=PEEK(I+1)+256*PEEK(I+2):IFJ>36767THENJ=J-6553
6
100 FORK=JTOJ+20:READX:POKEK,X:NEXT:IFPEEK(16396)=201POKE16526,P
EEK(I+1):POKE16527,PEEK(I+2)ELSEDEFUSR0=J:CMD"TT":POKE14308,0
```

Line 110: Initializes variables.

```
110 X1=VAL(X$)+1:Z=507:D$=CHR$(93):A$=CHR$(160)+CHR$(191)+CHR$(1
44)+STRING$(3,24)+CHR$(26)+STRING$(3,191)+STRING$(3,24)+CHR$(26)
+CHR$(130)+CHR$(191)+CHR$(129):CLS
120 CLS
```

Line130: Creates playing field.

```
130 FORX=15422TO15360STEP-1:POKEX,191:NEXT:FORX=15360TO16320STEP
64:POKEX,191:NEXT:FORX=16320TO16382:POKEX,191:NEXT:FORX=16382TO1
5422STEP-64:POKEX,191:NEXT
```

Lines 140-150: Wait for player input to start game.

```
140 Q$=INKEY$
150 F$=INKEY$:IFF$=""THEN150
```

Line 160: Makes sound and created a triton mine at a RANDOM location.

```
160 Q2=USR(25610):A=(RND(12))*64+RND(58):PRINT@A,A$;
```

Line 170: Starts loop relative to skill level. This loop determines the length of time spent between appearances of triton mines.

```
170 FORY=1TOX1:IFZ-INT(Z/64)*64=1THENJ=2:D$=CHR$(94)
180 O=Z
```

Line 190: Steering loop. Determines the amount of change in vertical position before next forward advance of player. Directly related to skill level.

```
190 FORT=1TOX1:IF$=INKEY$:IFB$<>""THENGOSUB260
200 NEXT
```

Line 210: Check to see if player has successfully crossed screen the first time. If so change pointer and start moving to the right.

```
210 IFJ=2THENZ30 ELSEIFPEEK(15360+Z-1)<>32THENZ290
220 Z=Z-1:GOTO250
230 IFZ-INT(Z/64)*64=61THENZ340 ELSEIFPEEK(15360+Z+1)<>32THENZ90
```

```
240 Z=Z+1
```

Line 250: Erase ships old position and update new.

```
250 PRINT@O," ";PRINT@Z,D$;;O=Z:NEXT:GOTO160
260 IFB$="["THENZ=Z-64
270 IFB$=CHR$(10)THENZ=Z+64
280 RETURN
290 PRINT@O," ";IFZ<64ORZ>959THENZ320
```

Line 300-320: You have been zapped by a triton mine. The federation is informed and the game starts over.

```
300 FORO=1TOZ:PRINT@Z,CHR$(153);;O2=USR(25800):PRINT@Z,CHR$(166)
;;O2=USR(25800):NEXT:CLS:PRINT
310 PRINT"FEDERATION HEADQUARTERS:
LONG RANGE SCANNER SHOWS THAT THE SPY SHIP WAS
DESTROYED BY A TRITON MINE IN THE ATTACK FIELD.":PRINT:PRINT:GOT
O40
320 O2=USR(150):CLS:PRINT:PRINT"FEDERATION HEADQUARTERS:
LONG RANGE SCANNERS SHOW THAT THE SPY SHIP WENT OUT OF ITS
SPECIFIED BOARDER AND WAS DESTROYED BY A TWIN LASER GENERATOR":G
OTO40
330 CLEAR:GOTO50
```

Line 340: You win!!!!

```
340 FORZ=0TO20:O2=USR(10280):NEXT:CLS:PRINT:PRINT"CONGRADULATION
S, YOU MADE IT!!
YOU ARE NOW PROMOTED AND DON'T HAVE TO TAKE
SUCH DANGEROUS MISSIONS":PRINT:PRINT:GOTO40
350 DATA05,127,10,68,62,1,211,255,16,252,68,62,2,211,255,16,252
,45,32,239,201
```

Subroutine called by line 20

```
360 CLS:PRINT"
```

SPACE DODGE-----SPACE DODGE"

```
370 PRINT"
```

CAN YOU GET ACROSS THE ATTACK FIELD AND BACK  
WITHOUT HITTING ONE OF THE TRITON MINES COMING  
OUT OF HYPER-SPACE? OPERATION OF YOUR SHIP  
IS EASY. PRESS THE [ KEY TO GO UP, THE "CHR\$(92)" KEY

```
";
```

```
380 PRINT" TO GO DOWN. IF YOU REACH THE LEFT SIDE OF THE
```

MONITOR YOU WILL TURN AROUND, AND YOU MUST TRY TO  
MAKE IT BACK. =WARNING= DON'T TRY TO FLY ON OR  
PAST THE THICK WHITE LINES ON THE TOP AND BOTTOM!"

```
390 PRINT"
```

THIS GAME HAS SOUND SO HOOK UP YOUR AMPLIFIER!  
PRESS ENTER";

```
400 INPUTA:RETURN
```





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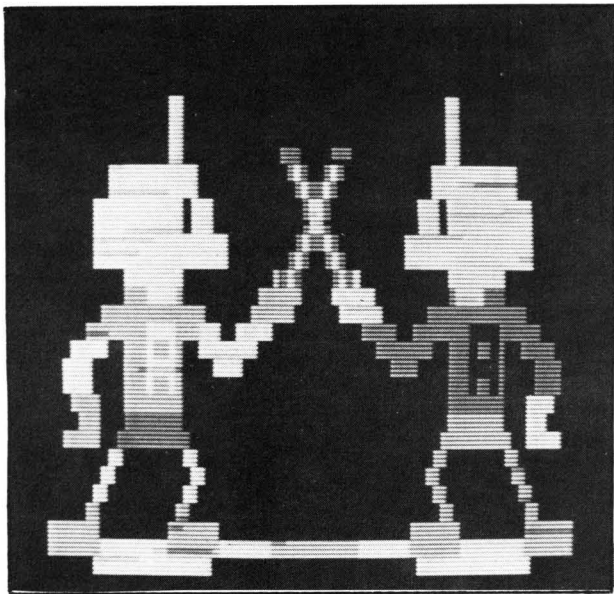
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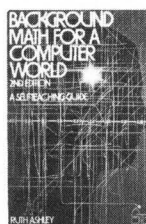


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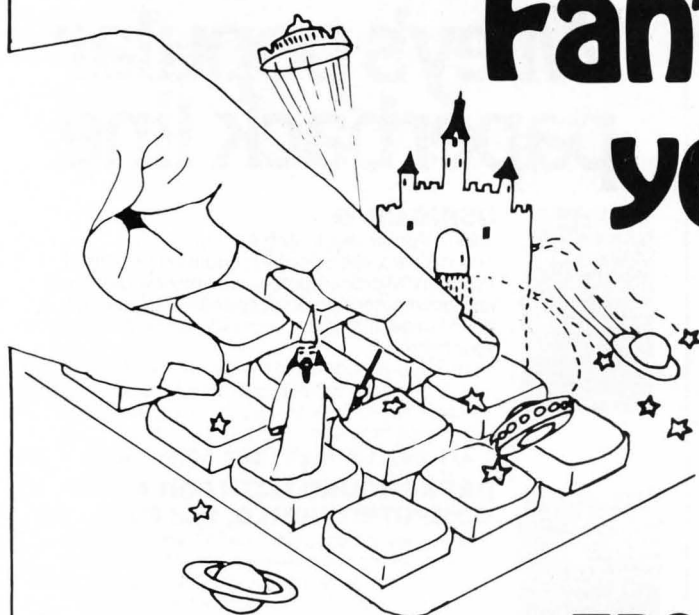


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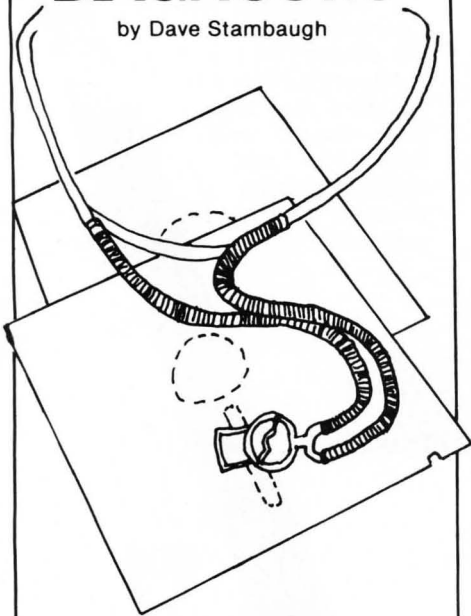
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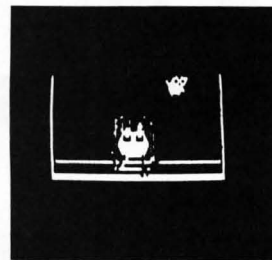
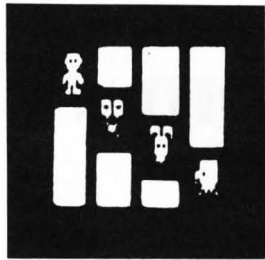
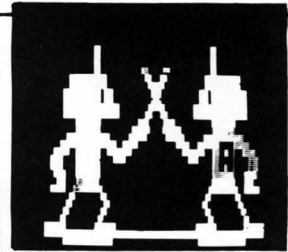
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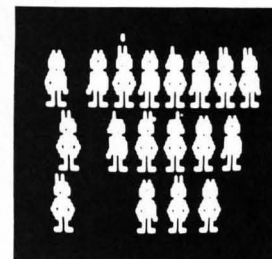
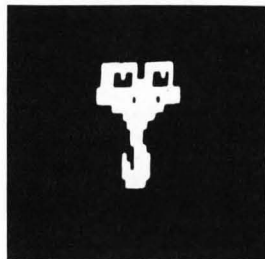
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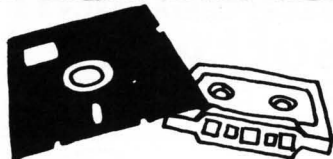
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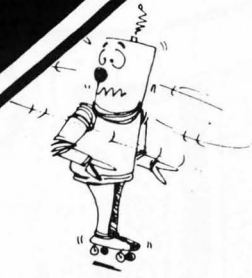
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## Board Games-1, CS-3001 (16K)

### • Mugwump \$7.95

Mugwump is a board game which uses a 10x10 grid on which four friendly Mugwumps are hiding. Your mission is to locate these mysterious animals and capture them.

### • Flip Disc

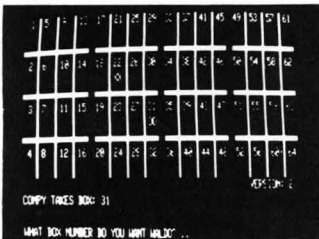
Are you an Othello freak? Flip Disc is a program which will turn your computer into an excellent opponent. Three different skill levels, (good, expert, and genius), provide an introduction for the novice and continuing interest for the experienced player.

### • Wumpus

In game 1, you scour a network of underground caves in search of the prized Wumpus. Bagging a Wumpus wins the game, but if you accidentally stumble into his cave, the Wumpus will enjoy a tasty dinner of sauteed computer freak.

### • Wumpus 2

If you master the dodecahedron cave network in Wumpus 1, you may proceed to Wumpus 2 which allows you to choose from five different caves, or you can design your own.



### • Qubic

Qubic is a three dimensional Tic Tac Toe game. The game is played in a 3 dimensional cube (4x4x4). The object is to outwit the computer and place four pieces in any straight line.

### • Backgammon

This is the TRS-80 adaptation of the popular board game. Backgammon uses graphics and all the standard backgammon rules, not a strange computer variation. The computer is your opponent in this version, written by Scott Adams of "Adventure" fame.

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## Space Games-3, CS-3002 (16K)

### • Ultra-Trek \$7.95

Ultra-Trek is a fast-paced version of Star Trek, complete with "real time" action graphics, lasers, Nilon space mines, high energy photon torpedoes, enemy ships that move, and an experimental ray which does something different each time you use it. You must act quickly to save yourself and the Federation.

### • Star Lanes

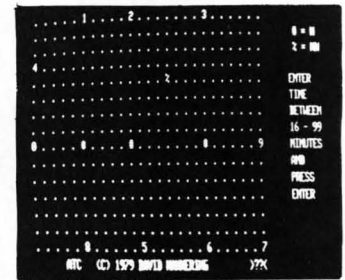
Imagine yourself the president of an intergalactic shipping company. If you're successful, you may be named Imperial Advisor on Economic Affairs. Entrepreneurs: to your ships.

### • Star Wars

If you hate Darth Vader, you'll love Star Wars. This real time game is fun for aliens of all ages. May the Force be with you!

### • Romulan

Your mission is to destroy an invading Romulan space craft. Maneuver through space and around stars looking for the deadly enemy, but be careful! The nasty Romulans fire back.



## Air Traffic Controller, CS-3006 (16K) \$7.95

This real time machine language program puts you in the chair of an air traffic controller. There are 27 airplanes — jets and prop planes — which must be controlled as they land, take off and fly over your air space. You give the orders to change altitude, turn, maintain a holding pattern, clear for approach, and land at your two airports. This realistic simulation includes navigational beacons, and requires planes to take off and land into the wind. Air Traffic Controller was written by an air traffic controller and is a favorite of the Creative Computing staff!

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Creative Computing consists of five divisions serving you. **Creative Computing magazine** is the number 1 magazine of software and applications. **Creative Computing Press** publishes a wide variety of books, art prints, posters and T-shirts for the computer enthusiast. And **Creative Computing Software** produces and markets software on cassette and floppy disk for a wide variety of computers for home, school, and small business.

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### • The Count

You'll love this Adventure; in fact, you might say it's LOVE AT FIRST BITE . . .

CS-3011 TRS-80 Level II \$14.95  
(Available in November)

## Strategy Games, CS-3005 (16K)

- **Tunnel Vision** \$7.95

You are transported into a massive labyrinth and must find the exit or be lost forever. This is an excellent example of three dimensional perspective using TRS-80 graphics.

- **Evasion**

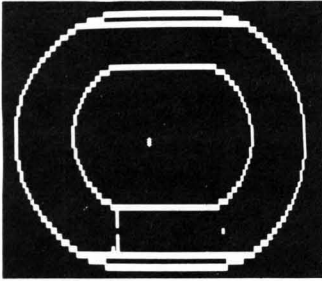
In this real time game, you are pursued around the game board by an evil-looking snake. Variations of play include two different speeds and hyper-jumps which randomly relocate you on the board. Looking for an escape? Try Evasion.

- **Jigsaw**

Jigsaw is a computer-age puzzle game making extensive use of TRS-80 graphics. The computer generates a random puzzle and puzzle board. Using a combination of deductive reasoning and luck you must fit the graphically represented puzzle piece into place.

- **The Masters**

Are you a wandering pro or just a Sunday golfer who would like to keep in practice? Once you're on the green, a worm's-eye view is displayed for putting.



- **Motor Racing**

Motor Racing combines real time racing action with advanced graphics functions. The graphics and animation make Motor Racing fun to watch as well as play.

## Pursuit Games, CS-3004 (16K)

- **Stock Car Race** \$7.95

Stock Car Race is a real time racing game on a road race circuit.

- **Maze**

You are timed throughout your run and rated on the basis of elapsed time and the number of moves required to escape. Nine skill levels.

- **Indy Racer**

Indy Racer is a real time racing game for the TRS-80. Similar to the popular arcade-style driving games.

- **Depth Charge**

As commander of a destroyer, your mission is to destroy as many enemy subs as possible in this re-creation of the Battle of the Atlantic.

- **Kaleidoscope**

This graphics demonstration program turns your TRS-80 into a computer age kaleidoscope.



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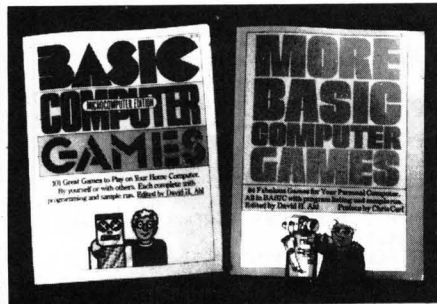
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## More Basic Computer Games

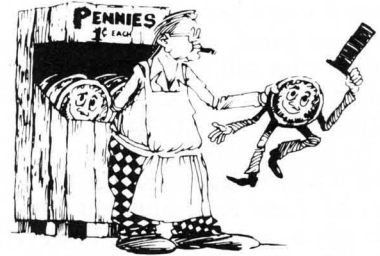
Contains 84 fascinating and entertaining games for solo and group play — evade a man-eating rabbit, crack a safe, tame a wild horse, become a millionaire, race your Ferrari, joust with a knight, trek across the desert on your camel, navigate in deep space.

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The first two years of **Creative Computing** magazine have been edited into two big blockbuster books. **American Vocational Journal** said of Volume 1, "This book is the 'Whole Earth Catalog' of computers." [6A] Volume 2 continues in the same tradition. "Non-technical in approach, its pages are filled with information, articles, games and activities. Fun layout." — **American Libraries**. [6B] Each volume \$8.95.



## Computer Coin Games

**Computer Coin Games** by Joe Weisbecker aids newcomers to the field of computers by simplifying the concepts of computer circuitry through games which can be played with a few pennies and full sized playing boards in the book. Enhanced by outrageous cartoons, teachers, students and self-learners of all ages will enjoy this 96 page softbound book. [10R]\$3.95.

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# Creative Computing

# STATES AND CAPITALS

by David Bohlke

**States & Capitals is for a 16K Atari with paddles.**

States and Capitals has always been a popular educational game for microcomputers. For the most part, I wrote this version to experiment with the Atari graphics. The main feature of this version is that each State to be guessed will be individually outlined on the map. Also, your response time is recorded after each attempt. Thus, the game can be competitive for adults, as well as educational. Since it is not necessary to spell out your guess, even very young players who can identify names should be able to use this version.

## USING THE PROGRAM

To begin, it will be necessary to plug a pair of game paddles into Slot #1. Only the paddle on the left will be used for play, however. After you type RUN, turn the game paddle to select either the State or Capital quiz; then press the fire button.

The program will randomly select and outline on the map the State to be guessed. The States (or Capitals) will be displayed in alphabetical order in the print window at the bottom of the screen. To pick your guess, turn the paddle knob until your choice is opposite the time indicator in the print display, then press the fire button. A correct/incorrect bar graph will be displayed at the lower right of the screen. If you miss more than ten attempts before guessing all fifty States (or Capitals), the program will terminate and you will need to begin again. Otherwise, this sequence will continue until you correctly match all fifty states.

A timing sequence was added so that several players can attempt to guess all fifty States in the shortest amount of time. I hope, then, this States and Capitals program can be educational and competitive for you. Maybe you'll even find the graphics display impressive enough so that you will want to use this version when you show off your Atari to friends.



Lines 10-68: Program initialization

Colors

```
10 GRAPHICS 7:COLOR 3:POKE 752,1
12 SETCOLOR 4,13,2
```

DIMENSION strings  
A\$(51)=1 If state is guessed correctly.

```
20 DIM S$(20),C$(20),A$(20),A(51)
```

C,W are the number of correct/wrong guesses.

```
22 S1=10:W=0:C=0
```

Display box for bar graphs.

```
30 PLOT 142,79:DRAWTO 142,28:DRAWTO 159,28
```

Plot 50 states.

```
40 FOR J=1 TO 50:RESTORE J+900:GOSUB 960:NEXT J
```

Zero answer array.

```
44 FOR I=0 TO 51:A(I)=0:NEXT I
```

Input State/Capital option.

```
60 P=PADDOLE(0):IF P1=P THEN 64
61 PRINT "Turn the paddle knob, then press fire" :PRINT "to select your choice:"
```

```
62 P1=P:IF P>113 THEN PRINT " Guess the Capital "
```

```
63 IF P<114 THEN PRINT " Guess the State "
```

```
64 IF PTRIG(0)=1 THEN SOUND 0,RND(0)*250,10,2:GOTO 60
```

```
65 FOR I=1 TO 50:SOUND 0,I,10,6:SETCOLOR 4,RND(0)*15,RND(0)*15:NEXT I
```

Zero timer.

```
66 POKE 20,0:POKE 18,0:POKE 19,0
```

branch to State/Capital option.

```
67 IF P<114 THEN 100
68 GOTO 300
```

Guess the State.

Check if all States have been guessed.

```
100 SETCOLOR 4,13,2:P=25:FOR I=1 TO 50:IF A(I)=0 THEN 103
101 NEXT I:GOTO 220
```

Get random state.

```
103 S=INT(RND(0)*50)+901:IF A(S-900)>0 THEN 103
```

Read State to be guessed.

```
105 RESTORE S:READ A$
```

Print three States at current paddle(P) position.

```
110 RESTORE P+899:READ S$:PRINT ,S$
111 GOSUB 600:RESTORE P+900:READ S$:PRINT ,S$
112 RESTORE P+901:READ S$:PRINT ,S$
```

S\$ is State guessed

```
113 RESTORE P+900:READ S$:P1=P
```

If fire button is pressed, check if guess is correct.

```
114 RESTORE P+900:READ S$:IF PTRIG(0)=0 THEN GOSUB 160:GOTO 100
```

Adjust P to new paddle position. Display outline of state

```
115 P=INT(PADDOLE(0)/4.5):IF P<1 THEN P=1
```

```
116 IF P>50 THEN P=50
118 IF P1=P THEN GOSUB 700:GOTO 114
119 GOTO 110
```

Check if guess is correct, adjust counters.

```
160 IF A$=S$ THEN PRINT "SETCOLOR 4,11,1 0:?" :PRINT "CORRECT"+A$(S-900)=1:C=C+1:GOTO 192
```

```
170 W=W+1:SETCOLOR 4,5,10:?" ? " :PRINT " INCORRECT " :GOSUB 750
```

```
180 SOUND 0,12,2,8
190 FOR I=1 TO 50:NEXT I:GOTO 195
```

```
192 GOSUB 750:FOR I=1 TO 3:FOR J=1 TO 50 :SOUND 0,J,10,7:NEXT J:NEXT I
```

```
195 RESTORE S:COLOR 3:GOSUB 960:RETURN
```

End of game prompt

```
220 FOR I=1 TO 200:SOUND 0,I,10,4:NEXT I
```

```
221 PRINT " TIME: MIN: " :MIN: " :MN: " :SEC " :SE
```

```
222 PRINT "PRESS FIRE to continue ??? "
```

```
224 SOUND 0,RND(0)*250,10,4
226 SETCOLOR 4,RND(0)*15,RND(0)*15
```

```
228 IF PTRIG(0)=1 THEN 234
230 RUN
```

Guess the Capital.

Check if every capital has been guessed.

```
300 SETCOLOR 4,13,2:P=25:FOR I=1 TO 50:IF A(I)=0 THEN 303
```

```
301 NEXT I:GOTO 220
```

Select random capital to be guessed.

```
303 P1=0:S=INT(RND(0)*50)+901:IF A(S-900)>0 THEN 303
```

READ Capital to be guessed.



```

310 ? :? :? :RESTORE S:READ A#
Adjust paddle
320 P=INT(PADDDLE(0)/4.5):IF P<1 THEN P=1
321 IF P>50 THEN P=50
325 IF P1=P THEN 336

```

Print Capital to be guessed

```

330 RESTORE P+799:READ S$:PRINT ,S$
332 GOSUB 600:RESTORE P+800:READ S$:PRIN
T MN:":":SE:":":S$
334 RESTORE P+801:READ S$:PRINT ,S$

```

S\$ is guess, GG is State number for capital.

```
336 RESTORE P+800:READ S$,GG
```

Check if guess is correct when fire button is pressed.

```

338 RESTORE GG+900:READ S$
350 IF PTRIG(0)=0 THEN ? :GOSUB 160:GOTO
300

```

Outline State, continue.

```
360 P1=P:GOSUB 700:GOTO 320
```

Adjust time.

```

600 SE=(PEEK(19)*256+PEEK(20))+PEEK(18)*6
5536)/60
602 MN=INT(SE/60):SE=INT(SE-MN*60):RETUR
N

```

Outline (or trace) State

```

700 IF D=1 THEN D=2:GOTO 705
702 D=1
705 RESTORE S:COLOR D:GOSUB 960: SOUND 0,
S*3,10,5:RETURN

```

Adjust bar graph.  
Check for more than 10 misses.

```

750 COLOR 2:PLOT 150,78-C:DRAWTO 159,78-
C:RETURN
760 COLOR 1:PLOT 144,79-W*2:DRAWTO 148,7
9-W*2
762 IF W=10 THEN ? :PRINT "You have miss
ed 10 questions !!!":GOTO 220
764 RETURN

```

DATA for Capitals.  
The number if the DATA LINE # plus  
900 of the machine State

```

800 DATA "",0
801 DATA ALBANY,32
802 DATA ANNAPOLIS,20
803 DATA ATLANTA,10
804 DATA AUGUSTA,19
805 DATA AUSTIN,43
806 DATA BATON ROUGE,18
807 DATA BISMARCK,34
808 DATA BOISE,12
809 DATA BOSTON,21
810 DATA CARSON CITY,28
811 DATA CHARLESTON,48
812 DATA CHEYENNE,50
813 DATA COLUMBIA,40
814 DATA COLUMBUS,35
815 DATA CONCORD,29
816 DATA DENVER,6
817 DATA DES MOINES,15
818 DATA DOVER,8

```

```

819 DATA FRANKFORT,17
820 DATA HARRISBURG,38
821 DATA HARTFORD,7
822 DATA HELENA,26
823 DATA HONOLULU,11
824 DATA INDIANAPOLIS,14
825 DATA JACKSON,24

```

```

826 DATA JEFFERSON CITY,25
827 DATA JUNEAU,2
828 DATA LANSING,22
829 DATA LINCOLN,27

```

```

830 DATA LITTLE ROCK,4
831 DATA MADISON,49
832 DATA MONTGOMERY,1
833 DATA MONTPELIER,45

```

```

834 DATA NASHVILLE,42
835 DATA OKLAHOMA CITY,36
836 DATA OLYMPIA,47
837 DATA PHOENIX,3
838 DATA PIERRE,41

```

```

839 DATA PROVIDENCE,39
840 DATA RALEIGH,33
841 DATA RICHMOND,46
842 DATA SACRAMENTO,5
843 DATA SALEM,37

```

```

844 DATA SALT LAKE CITY,44
845 DATA SANTA FE,31
846 DATA SPRINGFIELD,13
847 DATA ST. PAUL,23

```

```

848 DATA TALLAHASSEE,9
849 DATA TOPEKA,16
850 DATA TRENTON,30
851 DATA "",0

```

DATA for states.  
The first # is the number of  
coordinates remains in the DATA  
line for each States outline  
minus  
one -- for example,

950 DATA WYOMING,3, ... means  
Wyoming has four points (corners) to  
be plotted. The remaining numbers in  
the line are the actual paired X,Y  
coordinates for the State's outline.

```

900 DATA ""
901 DATA ALABAMA,4,85,49,91,49,92,62,87,
62,85,63

```

```

902 DATA ALASKA,9,24,79,20,75,20,64,14,6
3,9,65,10,69,8,73,10,76,2,79,19,76
903 DATA ARIZONA,5,23,42,35,42,35,60,29,
60,21,54,22,46
904 DATA ARKANSAS,4,70,45,81,45,78,54,72
,54,70,52

```

```

905 DATA CALIFORNIA,8,3,27,11,27,11,34,2
2,46,21,54,16,54,9,47,2,34,3,27
906 DATA COLORADO,3,35,31,51,31,51,43,35
,43
907 DATA CONNECTICUT,3,117,27,121,27,121
,30,117,30

```

```

908 DATA DELAWARE,3,113,35,116,36,115,39
,113,39
909 DATA FLORIDA,6,87,62,102,62,107,72,1
05,77,102,73,100,66,87,64
910 DATA GEORGIA,4,91,49,97,49,103,58,10
2,62,92,62

```

```

911 DATA HAWAII,0,31,72,34,73,33,74,37,7
4,38,74,37,75,40,76,39,79,42,78,40,76
912 DATA IDAHO,6,20,5,24,6,28,21,31,21,3
1,27,18,27,20,14

```

```

913 DATA ILLINOIS,6,78,27,79,28,76,32,81
,43,85,41,85,29,83,27
914 DATA INDIANA,3,85,29,85,41,92,36,92,
29

```

```

915 DATA IOWA,4,66,24,76,24,79,28,76,32,
67,32
916 DATA KANSAS,3,51,33,68,33,70,43,51,4
3
917 DATA KENTUCKY,6,81,45,81,43,85,41,92
,36,99,38,100,41,97,44
918 DATA LOUISIANA,5,72,54,79,54,79,62,8
1,62,82,66,73,64
919 DATA MAINE,4,123,12,124,23,133,13,12
9,3,125,4
920 DATA MARYLAND,5,105,35,113,35,113,39
,115,39,113,41,110,37
921 DATA MASSACHUSETTS,3,117,24,123,24,1
24,27,117,27
922 DATA MICHIGAN,7,90,14,84,19,78,15,90
,14,96,22,95,29,97,29,98,22
923 DATA MINNESOTA,5,62,9,77,11,72,10,76
,24,66,24,62,9
924 DATA MISSISSIPPI,6,80,49,85,49,85,63
,81,64,81,62,78,62,79,54
925 DATA MISSOURI,3,67,32,76,32,81,45,70
,45

```

```

926 DATA MONTANA,5,24,6,47,8,47,19,31,19
,31,21,28,21
927 DATA NEBRASKA,6,47,25,61,25,66,26,68
,33,51,33,51,31,47,31
928 DATA NEVADA,4,11,27,11,34,22,46,23,4
2,23,27
929 DATA NEW HAMPSHIRE,3,121,13,119,24,1
24,24,123,12
930 DATA NEW JERSEY,4,113,28,114,33,113,
35,116,36,117,30
931 DATA NEW MEXICO,4,35,43,48,43,48,58,
42,58,35,60
932 DATA NEW YORK,6,102,28,103,25,106,23
,111,15,116,14,117,30,113,28
933 DATA NORTH CAROLINA,5,101,44,112,43,
114,47,108,53,105,48,95,49
934 DATA NORTH DAKOTA,3,47,8,62,9,64,17,
47,17
935 DATA OHIO,4,92,29,102,28,102,35,99,3
8,92,36
936 DATA OKLAHOMA,5,48,43,70,43,70,52,55
,51,55,45,48,45

```

```

937 DATA OREGON,4,6,11,3,27,18,27,20,14,
8,15
938 DATA PENNSYLVANIA,4,102,28,113,28,11
4,33,113,35,102,35
939 DATA RHODE ISLAND,3,121,27,124,27,12
2,29,121,30
940 DATA SOUTH CAROLINA,3,97,49,105,48,1
08,53,103,58
941 DATA SOUTH DAKOTA,4,47,17,64,17,66,2
6,61,25,47,25
942 DATA TENNESSEE,3,81,45,101,44,95,49,
80,49
943 DATA TEXAS,11,48,45,55,45,55,51,70,5
2,72,54,73,64,65,70,63,78,52,64,47,68,42
,58,48,58
944 DATA UTAH,5,23,27,31,27,31,31,35,31,
35,42,23,42
945 DATA VERMONT,3,116,14,121,13,119,24,
117,24

```

```

946 DATA VIRGINIA,5,100,37,100,41,97,44,
112,43,113,41,110,37
947 DATA WASHINGTON,6,5,5,9,7,11,3,20,5,
20,14,8,15,6,11
948 DATA WEST VIRGINIA,4,102,35,105,35,1
09,37,100,41,99,38
949 DATA WISCONSIN,5,74,14,72,18,76,24,7
8,27,83,27,84,18,78,15
950 DATA WYOMING,3,31,19,47,19,47,31,31,
31
951 DATA ""

```

This routine will read the  
coordinates for each State, and plot  
the outline for the State.

```

960 READ S$,N,X,Y:PLOT X+S1,Y
961 SOUND 0,X*Y,10,6
962 IF S$="HAWAII" THEN 970
964 FOR I=1 TO N:READ A,B
966 DRAWTO A+S1,B:NEXT I:DRAWTO A+S1,Y:R
ETURN
970 FOR I=1 TO 5:READ A,B:PLOT A+S1,B:NE
XT I
972 READ A,B:PLOT A+S1,B:READ A,B:DRAWTO
A+S1,B:READ A,B:DRAWTO A+S1,B
974 READ A,B:DRAWTO A+S1,B:RETURN

```

# Adventure

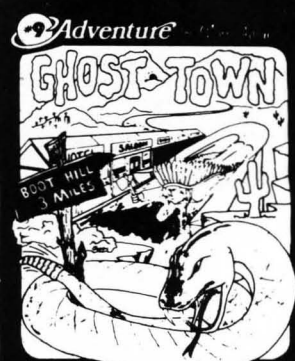
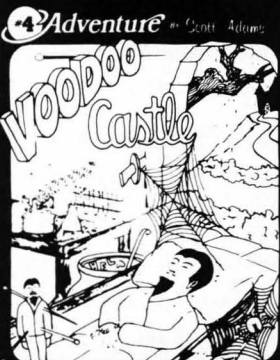
BY Scott Adams

For

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Model 1

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\*Note: Apple requires 24K and has no lower case. † Recommended for the novice adventurer, with many built-in HELPS!

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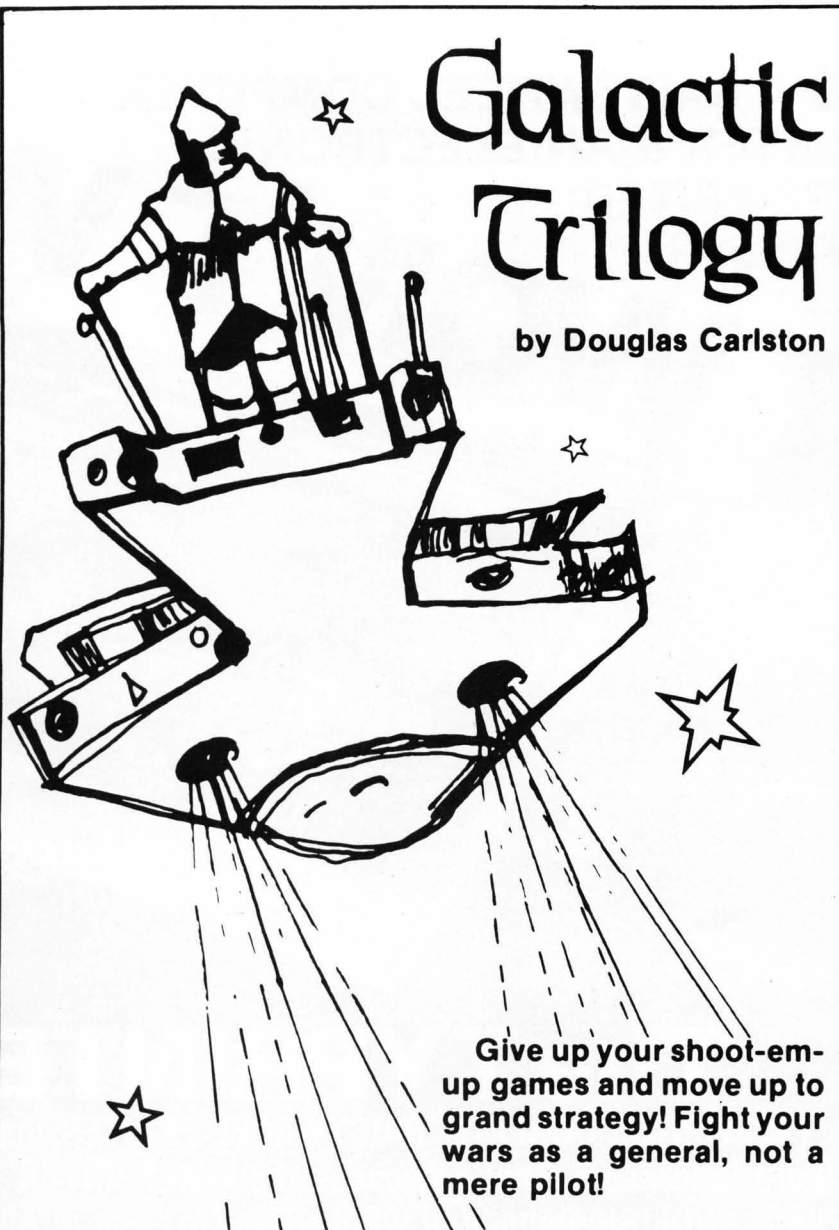
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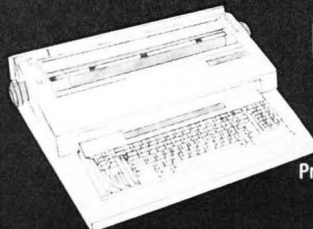
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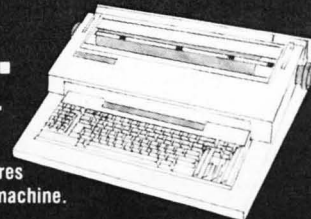
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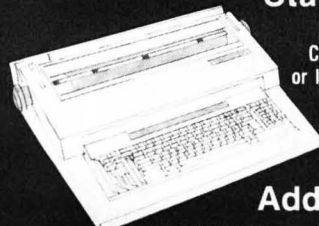
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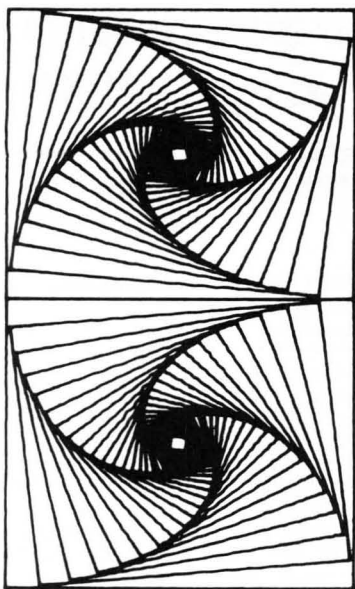
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# SPEEDELLO

by Dave Bohlke

## Speedello is for a 16K Atari with one joystick.

Speedello is an adaptation of the popular strategy board game of Othello. In this version, one human player is pitted against the computer and the clock. Since the BASIC language is slow in execution time, it is usually not used when a lot of computer evaluation is needed — as in strategic games like Othello. Speedello, though, makes its move according to the board square location, not the piece situations. The advantage here is that the computer can select its move in a very few seconds. On the other hand, this evaluation does not make for a very strong game on the computer's part.

So to make play more interesting, this version has a response timing clock which will record your move time. Thus the object of the game is to not only win, but to win in the shortest possible time. Perhaps you can even compete with friends to see who can play the quickest winning game. But don't get too careless against the computer. The machine strategy is good enough to consistently beat inexperienced players. So if you haven't played Othello too much, take your time at first and try for a win. Even after your confidence grows, the machine has the ability to jump all over you if your playing strategy is weak.

## USING THE PROGRAM

Plug a joystick into Slot number 1. The computer's pieces are in red, and yours are green. The computer determines who will go first by random selection. Two graphics bars will be displayed on the left of the screen indicating the relative number of pieces each player has. The exact number of pieces for each, as well as the current human response time, will be displayed in the printing window.

When it is your turn to move, press the joystick in any of the four cardinal directions to place

the black cursor in the square you wish to move to, then press the fire button. If you attempt to make three illegal moves during any one turn, the computer will assume you have no move at all, and it will take its turn. Or, if you have no square to move to, press the fire button three times and the computer will continue with its move.

```
Initialization
Colors, eliminate cursor.
5 REM SPEEDELLO
6 REM by David Bohlke, Cooson IA
10 GRAPHICS 5:SETCOLOR 4,10,6
12 SETCOLOR 0,4,12:SETCOLOR 1,14,12
14 POKE 752,1:SETCOLOR 2,9,2

B(99) Holds pieces on board
B(S) = 1 Computer piece (red)
B(S) = 2 Human piece (green)
B(S) = 0 Empty square
B(S) = 9 Off edge of board
P(99) = Move point value for each
square
D(8) = Eight possible move directions
F(20) = squares flipped in move

20 DIM B(99),P(99),D(8),F(20)
M1, M2, M3 used to initialize
real-time clock.

22 M1=0:M2=0:M3=0

Plot board.
50 COLOR 3:FOR I=10 TO 66 STEP 7:PLOT I,
0:DRAWTO 1,39:NEXT I
52 FOR I=0 TO 35 STEP 5:PLOT 10,I:DRAWTO
52 FOR I=0 TO 35 STEP 5:PLOT 10,I:DRAWTO
66,I:NEXT I

Eight directions.
60 FOR I=1 TO 8:READ X:D(I)=X:NEXT I
62 DATA -11,-10,-9,-1,1,9,10,11

Initial board array.
64 FOR I=0 TO 99:B(I)=0:NEXT I
70 FOR I=0 TO 9:B(I)=9:B(I+90)=9:NEXT I
72 FOR I=1 TO 8:B(I*10)=9:B(I*10+9)=9:NE
XT I
74 B(44)=1:B(45)=2:B(54)=2:B(55)=1

Plot pieces.
75 S=44:COLOR B(S):GOSUB 900:S=55:GOSUB
900
76 S=45:COLOR B(S):GOSUB 900:S=54:GOSUB
900

Initial point array.
80 FOR I=1 TO 4:FOR J=1 TO 8:READ X:K=I*
10+J:P(K)=X:P(4-I)*20+K+10=X:NEXT J:NE
XT I
81 DATA 9,2,8,6,6,8,2,9
82 DATA 2,1,3,4,4,3,1,2
83 DATA 8,3,7,5,5,7,3,8
84 DATA 6,4,5,0,0,5,4,6

Zero time, branch to (RND) first move.
289 POKE 18,M1:POKE 19,M2:POKE 20,M3
290 IF RND(0)<.5 THEN 399

Human's move.
S = current square, C = Color,
NM = No move flag.
300 S=44:C=1:NM=0

Start clock.
302 POKE 18,M1:POKE 19,M2:POKE 20,M3
```

```
Prompts.
305 PRINT "Use the stick to move the c
ursor":PRINT "to the square you wish to
move to,"
306 PRINT " then press fire !
!"

Display cursor.
310 X=(S-INT(S/10)*10)*7+4:Y=INT(S/10)*5
-4:LOCATE X,Y,C
312 COLOR 3:PLOT X+1,Y+1:DRAWTO X+4,Y+1:
PLOT X+1,Y+2:DRAWTO X+4,Y+2

Branch to move if fire button was
pressed.
320 IF STRIG(0)=0 THEN 350

Get STICK location, adjust cursor
if necessary.
322 T=STICK(0):IF T=15 THEN SOUND 0,RND(
0)*255,10,4:GOTO 312
324 COLOR C:PLOT X+1,Y+1:DRAWTO X+4,Y+1:
PLOT X+1,Y+2:DRAWTO X+4,Y+2
330 IF T=7 THEN S=S+1:IF B(S)=9 THEN S=S
-8
332 IF T=13 THEN S=S+10:IF S>90 THEN S=S
-80
334 IF T=11 THEN S=S-1:IF B(S)=9 THEN S=
S+8
336 IF T=14 THEN S=S-10:IF S<11 THEN S=S
+80
345 GOTO 310

Increment no. move flag, branch if
greater than three.
350 NM=NM+1:FOR I=1 TO 20:NEXT I:IF NM=3
THEN COLOR C:GOSUB 900:GOTO 399

Branch if square is occupied.
355 IF B(S)>0 THEN SM=0:COLOR C:GOSUB 9
00:GOTO 365

PM = piece to move (2 for Human)
PF = Piece to flip (1 for computer)
Branch to check for legal move, SM
will equal S on return if legal move.
360 PM=2:PF=1:SM=0:GOSUB 800

Not legal move.
365 IF SM=0 THEN ? :? :PRINT "ILLEGAL MO
VE":SOUND 0,111,10,8:FOR I=1 TO 700:NEXT
I:GOTO 305

Fill square.
370 COLOR 3:GOSUB 900

Place all squares to be flipped in
F(N). N = Number of squares to flip.
375 N=1:F(1)=S:GOSUB 820

Adjust board indicators, adjust
bar graphs.
380 FOR K=1 TO N:B(F(K))=PM:NEXT K:GOSUB
850

Display flips.
382 FOR K=1 TO N:S=F(K):COLOR PM:GOSUB 9
00:FOR I=1 TO 30:SOUND 0,1,10,6:NEXT I:B
(S)=PM:NEXT K

Turn off clock (save values for time),
display time.
399 M1=PEEK(18):M2=PEEK(19):M3=PEEK(20):
GOSUB 950

Computers move.
Initial piece and flip indicators.
400 S0=0:PF=2:PM=1

Check each square.
410 FOR S=11 TO 88

Move not possible.
420 IF P(S)<P(S0) OR B(S)>0 THEN 450

Sound, move cursor.
421 SOUND 0,S*3,10,4
422 X=(S-INT(S/10)*10)*7+4:Y=INT(S/10)*5
-4:LOCATE X,Y,C
```

```

424 COLOR 1:PLOT X+1,Y+1:DRAWTO X+4,Y+1:
PLOT X+1,Y+2:DRAWTO X+4,Y+2
  Check square for legal move.
430 SM=0:GOSUB 800
  Save square with highest point value
  in SQ.
440 IF SM=SQ AND RND(0)<.5 THEN SQ=SM
442 IF SM>SQ THEN SQ=SM
  Reset cursor.
445 COLOR 0:PLOT X+1,Y+1:DRAWTO X+4,Y+1:
PLOT X+1,Y+2:DRAWTO X+4,Y+2
  No move possible.
450 NEXT S:IF SQ=0 THEN PRINT "NO MOVE":
FOR I=1 TO 100: SOUND 0,150,10,4:NEXT I:G
OTO 300
  Fill F(N) with squares to be flipped.
460 S=SQ:F(1)=SQ:N=1:GOSUB 820
  Adjust board values to computer
  pieces.
470 FOR K=1 TO N: B(F(K))=PM:NEXT K
  Display bar graphs.
480 GOSUB 850
  Flip pieces
490 FOR K=1 TO N: S=F(K):COLOR PM:GOSUB 9
00: B(S)=PM:FOR I=1 TO 40: SOUND 0,I,10,8:
NEXT I:NEXT K
  Branch to Human's move.
495 GOTO 300
  Check for legal move.

800 FOR J=1 TO 8:K=S+DKJ:IF B(K)>PF TH
EN 808
802 K=K+DKJ:IF B(K)=PF THEN 802
804 IF B(K)>PM THEN 808
806 SM=S:RETURN
808 NEXT J:RETURN

  Fill F(N) with the number of each
  square to be flipped, place a
  cursor in each square to be flipped.

820 FOR J=1 TO 8:K=S+DKJ:IF B(K)>PF TH
EN 838
822 K=K+DKJ:IF B(K)=PF THEN 822
824 IF B(K)>PM THEN 838
825 K=K-DKJ:X=(K-INT(K/10))*10*7+4:Y=IN
T(K/10)*5-4
826 COLOR PM:PLOT X+1,Y+1:DRAWTO X+4,Y+1
:PLOT X+1,Y+2:DRAWTO X+4,Y+2
828 IF K=S THEN 838
830 N=N+1:F(N)=K:GOTO 825
838 NEXT J:RETURN

  Plots bar graph, adjusts score.
  HS = Human score, CS = Computer score.

850 CS=0:HS=0:COLOR 0
852 FOR I=1 TO 5:PLOT I,0:DRAWTO I,39:NE
XT I
860 FOR S=11 TO 88
862 IF B(S)=1 THEN 870
864 IF B(S)=2 THEN 880
866 GOTO 890
870 CS=CS+1:C1=CS:IF C1>40 THEN C1=40
872 SOUND 0,CS*6,10,6:COLOR 1:PLOT 1,40:
C1:PLOT 2,40-C1:GOTO 890
880 HS=HS+1:H1=HS:IF H1>40 THEN H1=40
882 SOUND 0,HS*6,10,6:COLOR 2:PLOT 4,40:
H1:PLOT 5,40-H1
890 NEXT S:RETURN

  Fills square (S) with current color.

900 X=(S-INT(S/10))*10*7+4:Y=INT(S/10)*5
-4
902 FOR I=Y TO Y+3:PLOT X,I:DRAWTO X+5,I
:NEXT I:RETURN

  Computes and prints time, checks for
  end of game.

950 PRINT " Computer ";CS," Human ";HS
952 S=INT((M3+M2*256+M1*65536)/60):M=INT
(S/60)
953 S=S-INT(S/60)*60
954 ? :PRINT "Min ";M,"Sec ";S:" ";
956 IF HS<CS<64 THEN ? :RETURN
965 FOR I=1 TO 999:NEXT I
970 PRINT " END GAME ":PRINT "PRESS FIR
E to continue ";
990 SOUND 0,RND(0)*100,10,4
992 IF STRIG(0)=0 THEN RUN
994 GOTO 990

```



# Hellfire Warrior

At last the sequel to the "Temple of Apsai." Dunjonquest's newest, "Hellfire Warrior," adds four more levels to the lowest reaches of Apsai's dunjon. Undead and fiery demons roam seemingly endless labyrinths, gobbling up all but the hardest warriors. If you are a beginner, perhaps you should explore other regions first, for "Hellfire Warrior" is for only the most hardened.

Cassette ..... \$24.95  
Disk ..... \$29.95



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# X-WING

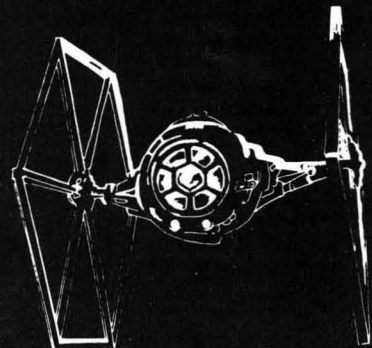


by Chris Freund



For the thousands who have enjoyed X-Wing Fighter, X-Wing II presents a totally new element in the game!

You are the pilot of an X-Wing fighter . . . Your Mission, Destroy the Death Star!



Where X-Wing I left Death Star looming on the screen, X-Wing II lets you guide your fighter into the trench, find the exhaust port, aim and fire — all the while avoiding enemy fighters. Excellent graphics, 12 levels of play, and extensive INKEY\$ commands make this one of our most exciting "real time" games.

Level II, 16K - \$9.95

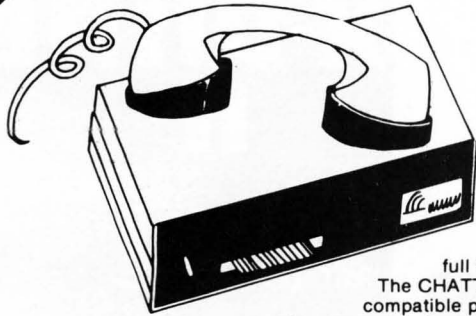
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# The Chatterbox

## A TRS-80 Interfacing Alternative

The CHATTERBOX is a unique packaging combination of the presently available COMM-80 I/O Interface for the TRS-80\* and an acoustic modem. This one box is all that is required to turn even a barebones 4K TRS-80\* into a full time-sharing terminal.

The CHATTERBOX includes built-in programmable 50-19200 baud serial port, a Centronics compatible parallel printer port, a 300 baud acoustic originate modem, and a spare TRS-BUS expansion connector. It comes complete with power supply, ribbon cable and connector, user's manual, and terminal software for immediate operation. When the modem is in use, the complete data conversion is automatically routed to the serial output port where it can be logged on a printer.

The CHATTERBOX is the only peripheral needed to allow a TRS-80\* to communicate with time-sharing systems such as MICRONET and the SOURCE.

It is completely hardware and software compatible with existing TRS-80\* products and connects either to the keyboard connector or screen printer port on the RS Expansion Interface. Features: Full 8-bit parallel port; RS-232-C serial port (up to 19,200 baud); Acoustic modem; TRS-BUS connector for future expansion; Connects to Keyboard or E.I.; Includes terminal software; Users manual; Power supply. \$259.95

## PRINTERS

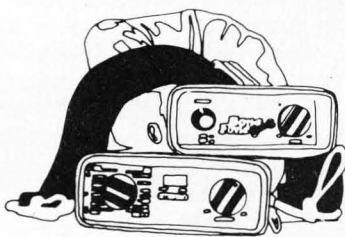
	LIST PRICE	OUR PRICE
Centronics 730	\$795.00	\$749.00
Centronics 730-3	\$895.00	795.00
Centronics 737	\$995.00	\$869.00
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NEC 5510 SpinWriter		\$2795.00
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ISO-7/CB Super Filter-Isolator	\$146.95	\$99.95
Mini-Flex Diskette File	\$24.95	\$19.95
CASIO C-80 Calculator Watch	\$49.95	\$44.95
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## SPECIAL



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**\$56.95**

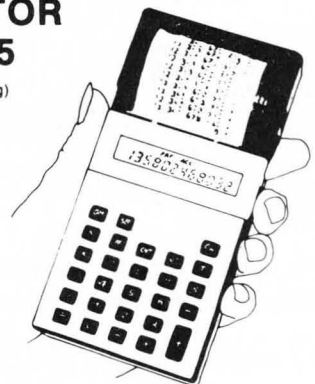
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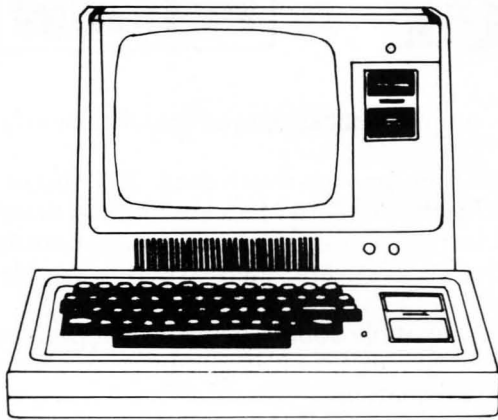


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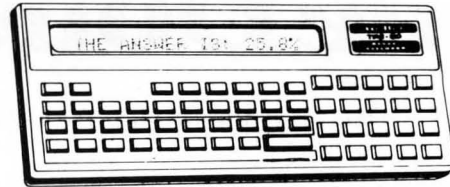
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Pocket Computer w/Interface	\$298.95	\$269.00
TRS-80 Color Computer	\$399.00	\$359.00
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COMM-80 Interface	\$179.95	\$159.95
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DISK-80 Interface	\$349.95	<b>\$339.95</b>
Expansion Interface, no RAM	\$299.00	\$279.00
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## MODEL III \$929



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Video Reverse Kit		\$23.95
CPU Speed-up Kit		\$24.95
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TRS-80 Dust Cover (3pc set)	\$9.95	\$7.95
TRS-80 Computer Case	\$109.00	\$99.95
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Percom, TFD-40, 40-track	\$399.95	\$379.00
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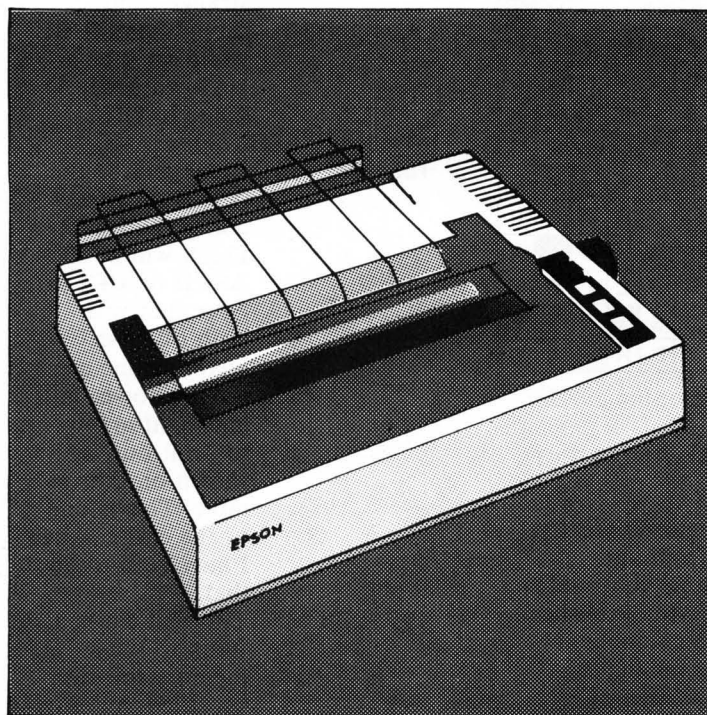
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If you  
just bought  
another  
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boy are  
you gonna  
be sorry.



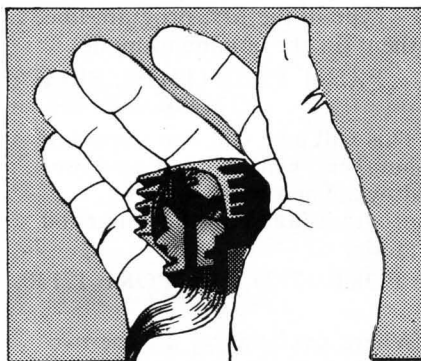
# MX-80

The Epson MX-80. It's not just another worked-over rehash of last year's model. It's our top-of-the-line 80-column printer. It's new. From the ground up. And it's the most revolutionary printer to hit the market since Epson invented small printers for the 1964 Olympics in Tokyo. Don't take our word for it, though. Compare. There simply isn't a better value in an 80-column printer. Period.

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Now that's revolutionary, but that's only the beginning. The MX-80 also prints bidirectionally at 80 CPS with a logical seeking function to minimize print head travel time

The world's first disposable print head. It has a life expectancy of over 50 million characters, yet it's so simple, you can change it with one hand. And it cost less than - repeat less than - \$30.



and maximize throughput. It prints 96 ASCII, 64 graphic and eight international characters in a tack-sharp 9x9 matrix. And it provides a user-defined choice of 40, 80, 66 or 132 columns and multiple type fonts.

We spent three long years developing the MX-80 as the first of a revolutionary series of Epson MX Printers. We employed the most advanced automatic assembly and machining techniques in existence to produce a printer that is incredibly versatile, remarkably reliable and extraordinarily inexpensive. It's a printer that could only come from the world's largest manufacturer of print mechanisms: Epson.

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# REVIEWS

## Olympic Decathlon Review

by Dave Albert

All right all of you closet Bruce Jenners, here's your chance to make his record for ten events seem measly at best. It's "Olympic Decathlon", a program by Timothy W. Smith. The program simulates the ten events of the decathlon in a manner that requires split-second timing and good hand-to-eye coordination by the players to achieve scores comparable to the points awarded in the true athletic competition. On top of the authentic scoring system, "Olympic Decathlon" easily has the best graphics this author has seen on the TRS-80.

The ten events of the decathlon are: 100 meter dash, long jump, shot put, high jump, 400 meter dash, discus throw, pole vault, javelin, 110 meter hurdles, and 1500 meter run. In each of the events, save the three running races, you actually watch yourself (that is, you watch a humanoid figure on the screen) compete, and your digital dexterity determines your graphic counterpart's success. . .or humiliation. The pole vault requires four separate operations: the running approach, the planting of the pole, the pullup into a handstand, and the final push-off needed to clear the bar without knocking it off. It has to be seen (and played) to be believed.

Unlike many computer games, "Olympic Decathlon" does not rapidly become boring. Each event demands of the player a constant refinement of technique, rather than the mere quickening of reflexes needed for improvement in Invasion-type games. Yet, at the same time, "Olympic Decathlon" is pretty much a straightforward affair, without the cute little puzzles, sometimes logical and sometimes not, that are so prevalent in Adventure-type games.

Even if you are an athlete only in the armchair sense of the work, "Olympic Decathlon" may bring out the true competitor in you. The graphics are both remarkable and delightful, and the events have been thrilling people for well over

2,000 years. Here at **SoftSide** we've surpassed Jenner's mark by over 1,000 points. Do you think you can do better?

## Galaxy Invasion Review

by Dave Albert & Glen Ohlund

There's an alien flagship coming to get you! If you don't get it first, you haven't got a prayer. Once it slips by. . . .ZAP! Not only will it get you, but any companion-type flagships will join in on the fun. Multiple lightning bolts are not good for pilots and other living things.

Of course your eagle eye and split-second reflexes won't allow this scenario to take place. . . .right? Well, there's only one way to find out. Hop into your ship via your disk drive or cassette recorder and face the aliens.

The name of the game is "Galaxy Invasion" by Bill Hogue and Jeff Konyu. Marketed by Big 5 Software, the program is based on the popular arcade game "Galaxian."

The object of the game, in case you haven't figured it out, is to shoot down alien ships before they either bomb you out of existence or pull a kamikaze number on you. Sound easy? It isn't. To begin with, there are several different

types of alien ships, which will attack you singly sometimes, and information at other times. Furthermore, the tricky little devils dodge quite astutely and have a nasty habit of boxing you into a corner and then overwhelming you with sheer weight of numbers. On top of that, the infamous flagships can disintegrate you in the blink of an eye from anywhere on the screen. You haven't died until you get zapped from four directions at once. The lateral bolt would have made Jim Thorpe proud.

Unlike a cat, you, the pilot, have only three lives. However, if you're good (and we know you are), you can get additional ships to pilot by racking up 10,000 points. Each multiple of 10,000 adds another ship to your original roster of three.

Oh yes, another feature: sound. Your cannons have one sound, each of the aliens has its own. When they begin to swarm it becomes an audio storm.

We here at **SoftSide** have extensively tested this program (during our lunch hours, of course) and have found it to provide a good deal of amusement and entertainment. Captain James, in particular, showed aptitude by compiling a veritable heap of alien ruins. . . .to the tune of 200,000+ points.

### S-80 One-Liner

Machine-Graphics Routine One-Liner

by Patrick Boyle

MACHINE-GRAPHICS ROUTINE

ONE LINER

BY PATRICK BOYLE

```
0 CLEAR22:A$=STRING$(22,32);J=VARPTR(A$);I=PEEK(J+1)+256*PEEK(J+2);FORK=ITOI+21;READZ:POKEK,Z;NEXT:POKE16526,PEEK(J+1);POKE16527,PEEK(J+2);FORX=1TO2:POKEI+10,RND(63)+128;L=USR(0);X=1;NEXT:DATA 33,0,60,17,1,60,1,255,3,54,0,237,176,6,5,33,0,0,43,124,181,201
```

### S-80 One-Liner

Christmas One-Liner From **SoftSide**

by Dave Garrity

CHRISTMAS ONE-LINER

FROM SOFTSIDE

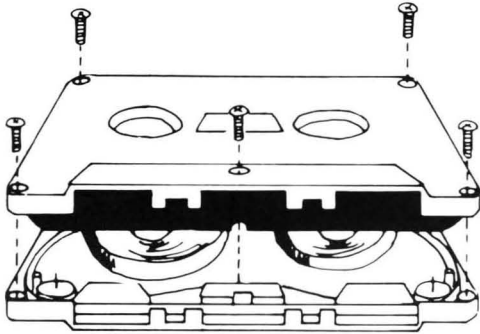
BY DAVE GARRITY

```
0 INPUT"ENTER YOUR NAME";A$;A$=A$+" ";L=LEN(A$);P=30;CLS:PRINTP+1,"*";FORI=1TOI:PRINTP-I+64*I,"X ";PRINTMID$(A$,1,I);PRINTMID$(A$,1,I)+" *";NEXT:PRINTTAB(P)"MERRY";PRINTTAB(P)"XMAS!";FOR T=1TO5000;NEXT:PRINTTAB(P-11);"FROM SOFTSIDE PUBLICATIONS";RUN
```





# Don't lose your message because of the medium...



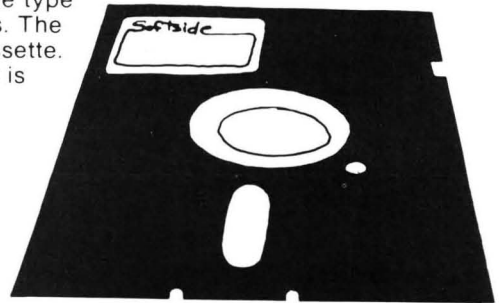
The cassette tapes used for recording data are composed of two parts: the cassette shell and the tape loaded into the shell. The shell can be either a 5-screw or sonic welded type with a non-magnetic leader or a magnetic leader (so called leaderless cassettes). The shell used in our cassettes is of premium quality, 5-screw, with non-magnetic leader. The choice of non-magnetic leader may confuse some people, but there is a valid reason. There is a splice required to connect the magnetic tape to the leader at both ends of the tape. A person recording program material or data, using a leaderless tape, stands to drop a bit of data at the splice point. Not all leaderless tapes have the splice and you have to be very careful when buying this type of data tape. We use standard leader to avoid the confusion, and unhappy customers when the first recording on the tape is always bad.

The tape used in our cassettes is of studio quality. The same type of tape is used by some studios for making master recordings. The magnetic tape used in the cassette is the true heart of the cassette. You can have the best shell made, but with low quality tape it is still junk.

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We offer two levels of diskettes: certified and non-certified. The certified diskettes have been put through a test to check the entire working surface for bad spots. These diskettes are certified error-free by the manufacturer. If you require assurance of every diskette being perfect, then the Dysan certified diskette is for you.

The BASF company invented magnetic tape from which the very large and varied industry of today has grown. We offer the BASF premium quality (non-certified) Diskette. These diskettes enjoy one of the lowest reject rates of any manufacturer (all our disk-based software is duplicated on BASF).

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