

SoftSide™

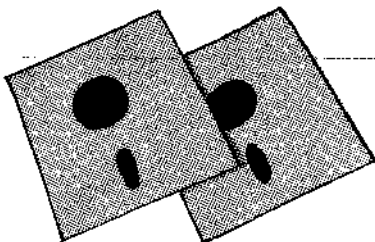
What surprises
lurk within the
MOVING MAZE?

YOUR BASIC SOFTWARE
MAGAZINE

JANUARY
1980



Dem '99



Floppy Disk Diagnostic

by Dave Stambaugh

- 35 or 40 track in same program
- Tests controller functions and status bits
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YOUR BASIC SOFTWARE MAGAZINE VOL. II, NO. 4

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COVER STORY



As we were musing on mazes, we recollected the myth of the legendary half-man, half-bull Minotaur, who lurked deep in a Cretan labyrinth and ate youths and maidens. This tale inflamed the imagination of staff artist Sharon Demmerle, and you can see the result on our cover!

STAD

Symbolic Trace and Debug

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

```
AF BC DE HL IX IY AF' BC' DE' HL' SP PC
0044 0000 C000 B77C 6433 FFFF 0102 0000 4000 3FC0 41FC 4400
4400 LD R, 93
```

All the power of regular monitors as well. Look at these commands:

A FIRST(0) LAST(FFFF)	ASCII dump
A FIRST 0	formatted ASCII dump
B	start of branch table
B VALA	display in decimal
B VALA VALB(0)	hex arithmetic
C	check system tape
D FIRST(0) LAST(FFFF)	dump hex
E FIRST(0)	edit memory
F FIRST LAST VALUE	find byte
G BRKPTS (3 max.)	set breakpoints, continue
H FIRST LAST VALUE	find word
I PORT	read port
K	keyboard echo
L	load system tape
L SECTOR MEMORY COUNT(1)	load from disk
M FIRST LAST BLOCK	move memory
N	display symbol table
N 0	symbol table to tape
N VALUE	define value for symbol table
N FIRST 0	define start symbol table
O PORT VALUE	write to port
P	initialize memory blocks
P ENTRY	write memory blocks and start
P FIRST LAST	define a memory block
Q FIRST LAST	calculate checksum
R	display / modify registers
S FIRST LAST OPTION(0)	disassembler
T COUNT OPTION(6)	trace instructions
U FIRST COUNT OPTION(0)	unformatted tape I/O
V FIRST LAST BLOCK	verify memory
W SECTOR MEMORY COUNT(1)	write to disk
X FIRST LAST BLOCK	exchange memory
Z FIRST LAST VALUE(0)	zero memory

16K, 32K, and 48K versions on one cassette for \$24.95
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SoftSide Magazine is continually seeking original articles and software for publication. Imagination and variety in concept and content are our primary criteria for acceptance. Payment varies with length, suitability, ease of editing and quality.

Our policies with respect to software purchase are highly individualized, and offer the programmer several options, including one-time publication rights, outright purchase, and royalties on sale of prerecorded cassettes. Program submissions should use Radio Shack Level II Basic, should run in Level II and Disk BASIC, and may not employ coding techniques that cannot be accurately presented in a line listing, such as SYSTEM modules and "super graphics" or other hybrid methods. For more information, please write: **SoftSide**, PO Box 68, Milford, NH 03055.

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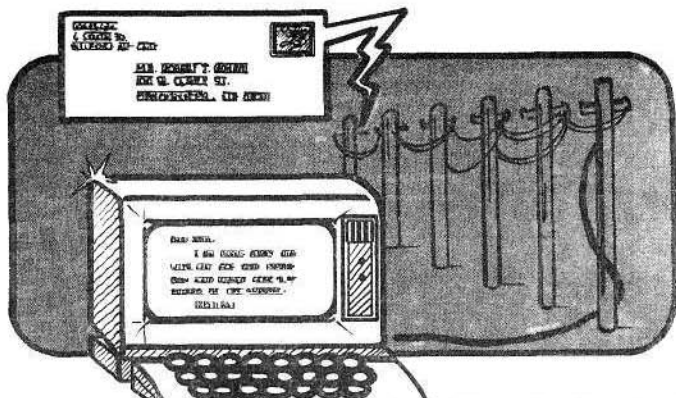
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OUTGOING MAIL

As I write this, in mid December, we are getting our second snow of the season. The first was way back in October. Here in Milford we are keeping warm by staying busy. We have two new publications, AppleSeed, which finally went to press on December 12, and The Eighty, scheduled to go to press with this issue of SoftSide.

AppleSeed is for AppleFolk, but The Eighty is for you, and it is free! Since we do not accept outside advertising in SoftSide, we created The Eighty as a way of getting information on TRS-80 products to our subscribers. Your copy should arrive soon.

At the Software Exchange, after months of delay from the phone company, we finally have our toll-free telephone working (at the moment?). It was promised for September 15, and finally installed the day after Thanksgiving. We apologize to all of those who tried to call before it worked, but it takes almost two months from the time we write an ad until you read it, and we believed Ma Bell. It has been out of service several times already!

Meanwhile, back at SoftSide, we are trying to get caught up with our Bug Report. Unfortunately the report will almost always be at least two months after the problem. Here is the reason. In order to send SoftSide to the printer on the fourth Tuesday of the month, we have to get even last minute changes to the typesetters on the preceding Friday. Then it takes a week to get the magazine back. After that, it takes another week to address them all and mail them out. It may take them three more weeks to reach you before we start to get calls about bugs that we missed. By that time, the next issue has gone to the printer.

Of course, the obvious answer is to get all the bugs out before we publish the program. I wish it were that easy. I used to feel the same way when I was a part-time editor and lived in Pennsylvania. Now that I am full time, and it is MY job to get rid of the bugs, I am not so sure.

I personally play each game, edit it, play it again, and then make the line listing for the magazine. But some bugs get very clever at

hiding. For example, in Westward 1847, there was a disaster because the instructions were spaced wrong. The program worked fine, but when our Radio Shack Line Printer I comes to a carriage return (**ENTER**) followed by a line feed (**DOWN ARROW**), it ignores the line feed! In line 2940 of Everest, **PRINT** is missing after **THEN**. I never noticed it because I never ran out of oxygen. And even when we get it right, we can have problems like we did with Isolate. In line 100, the phrase **PRINT@P+67** did not print right in 1/3 of the copies. I didn't even notice it when it came back because my copies happened to be good ones

All I can do as I reach for the Bug Spray, is mutter, "Every non-trivial program has at least one bug; therefore, if a program has no bugs, it is trivial."

BUSINESSMEN: WE NEED YOUR HELP

If you have discovered a program by someone else that works well in your business, tell us. We are always looking for good programs.

In addition, we need to know what programs work well in which businesses. For example, a Dairy Store, a Mail Order House, a Toy Manufacturer, and an Automobile Dealer all need inventory control. But a program that is ideally suited to one of them might be totally useless to the rest. We need your experience to recommend our different programs.

Finally, our fondest dream is to obtain an integrated Accounts Receivable, Accounts Payable, General Ledger, Inventory,

Payroll, and Mail List package that works well. If you know of one, and have used it with satisfaction, please tell us. We desire a system with complete audit trail, efficient use of memory, the ability to print Balance Sheets, Income Statements, Invoices, Checks, Reports, and mailing labels for the small business. Eventually, we will need several such packages geared to different types of business. We are also interested in sophisticated software for the Model II.

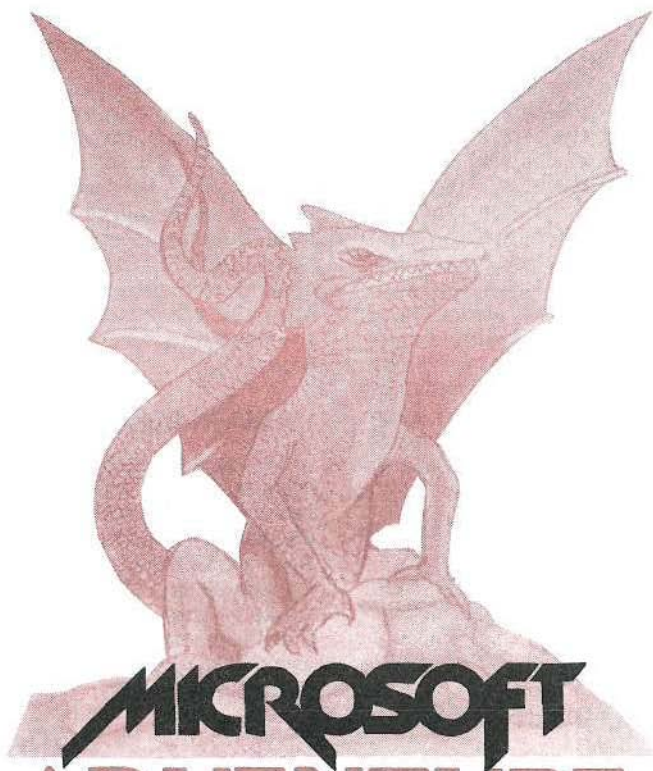
WARNING MODEL II

We have been hearing a lot of complaints about the unreliability of the Model II TRS-80. Even more disturbing than the failure rate is slow repair rate. Of five systems we are aware of, one has never worked, three have had major problems (down at least six weeks) and one has not had a complaint reported.

NEW BOOK

BASIC Computer Games: TRS-80™ Edition by David Ahl. This book, available at your local Shack for \$6.95, is essentially the same as 101 BASIC Computer Games from Creative Computing. The original was a classic at a time when not much was available for personal computers. Unfortunately, it is now quite out of date. In addition, the original was set up for display on a teletype, and little imagination has been used in converting the programs for screen display. For these reasons, very few of the programs would be considered good enough for publication in SoftSide, and TSE has decided not to carry the book.

G.W.B.



MICROSOFT ADVENTURE

Get the granddaddy of the Adventure Games!

From MicroSoft, the people who wrote BASIC for all the personal computers, comes a version of the original Adventure. NOW, you no longer need a PDP-10 for all the power of the original game!

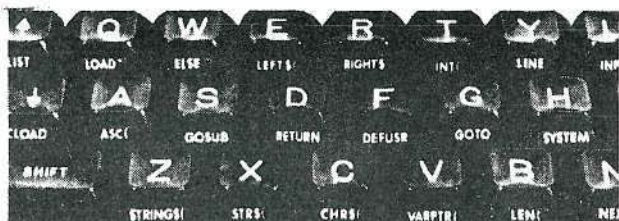
This game fills an entire diskette. Endless variety and challenge as you seek to rise to the level of Grand Master (until you gain skill, there are whole areas of the cave that you cannot enter.)

Requires 32K One Disk ONLY \$29.95!

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- * Features self-entering commands: CONT; GOTO10; KUSTOM™ (Self-enter optional)
- * TSHORT™ W/4 page instruction manual **\$9.95**

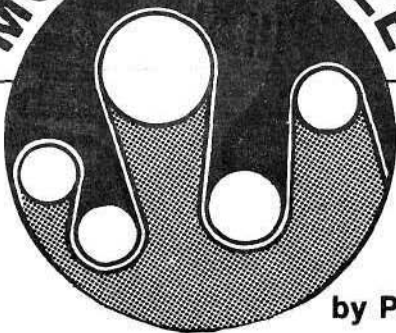
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MOVING MAZE



by Paul Klinger

Paul Klinger, the author of Moving Mazes, is a researcher in Neuro Science at the University of Michigan.

He works with a PDP 8, but plays at home with his TRS-80.

Navigate the blinking dot through three sections of constantly moving maze, from the top to the bottom of the screen. Direction of the dot is controlled by the arrow keys. Any time you bump a wall -- in any direction -- the computer says OOPS, and you start over again at the beginning of

the section you are attempting. Time is of the essence -- you are battling against a clock which ticks off your seconds of play in a corner of the screen. Three levels of play: beginner, advanced and super-expert (we haven't found any super-experts around here yet).

```
5 REM * * * * *
```

```
* MOVING MAZE *
```

```
* BY PAUL KLINGER *
```

```
* * * * *
```

```
10 CLS:RANDOM: CLEAR1500:DEFINT A-F, X-Z:PRINT@25, "MOVING MAZE"
```

```
15 GOSUB210:GOSUB20:GOSUB290:GOTO380
```

```
20 M$=STRING$(211, 0)
```

```
22 R$=CHR$(26)+STRING$(5, 24)
```

```
24 O$=CHR$(188)+STRING$(3, 131)+CHR$(188)+R$+CHR$(191)+STRING$(3,  
128)+CHR$(191)+R$+CHR$(143)+STRING$(3, 176)+CHR$(143)
```

```
26 P$=CHR$(191)+STRING$(3, 131)+CHR$(188)+R$+CHR$(191)+STRING$(3,  
140)+CHR$(131)+R$+CHR$(191)+STRING$(4, 128)
```

```

20 S$=CHR$(188)+STRING$(3,131)+CHR$(140)+R$+CHR$(131)+STRING$(3,
140)+CHR$(176)+R$+CHR$(140)+STRING$(3,176)+CHR$(143)
30 I=VARPTR(M$):A=0:B=1:C=15168:X=0:Y=0:Z=0:D=127:E=20:F=20:U=.3
3
35 J=PEEK(I+1)+256*PEEK(I+2)
39 IFJ>32767 THEN J=-(65536-J)
40 FORK=JTOJ+210:READX:POKEK,X:NEXT
50 DATA 58,127,60,245,33,126,60,17,127,60,1,63,0,237,184
60 DATA 58,128,60,50,64,60,33,129,60,17,128,60,1,63,0
70 DATA 237,176,58,255,60,50,191,60,33,254,60,17,255,60,1
80 DATA 63,0,237,184,58,0,61,50,192,60,33,1,61,17,0
90 DATA 61,1,63,0,237,176,241,50,63,61,50,191,61,245,33
100 DATA 190,61,17,191,61,1,63,0,237,184,58,192,61,50,128
110 DATA 61,33,193,61,17,192,61,1,63,0,237,176,58,63,62
120 DATA 50,255,61,33,62,62,17,63,62,1,63,0,237,184,58
130 DATA 64,62,50,0,62,33,65,62,17,64,62,1,63,0,237
140 DATA 176,241,50,127,62,58,255,62,245,33,254,62,17,255,62
150 DATA 1,63,0,237,184,58,0,63,50,192,62,33,1,63,17
160 DATA 0,63,1,63,0,237,176,58,127,63,50,63,63,33,126
170 DATA 63,17,127,63,1,63,0,237,184,58,128,63,50,64,63
180 DATA 33,129,63,17,128,63,1,63,0,237,176,241,50,191,63,201
190 POKE16526,PEEK(I+1):POKE16527,PEEK(I+2):RETURN:REM NON-DISK
195 /      190 DEFUSR0=J:RETURN      < USE FOR DISK BASIC
210 PRINT@133,"YOUR TASK WILL BE TO NAVIGATE THE BLINKING DOT TH
ROUGH"
220 PRINT"THE MOVING MAZE TO THE BOTTOM OF THE SCREEN."
230 PRINT@261,"HOLDING DOWN ANY OF THE ARROW KEYS (ONE AT A TIME
) WILL"
240 PRINT"MOVE THE DOT IN THE INDICATED DIRECTION; UP, DOWN, LEF
T, RIGHT."
250 PRINT@453,"THERE WILL BE THREE SECTIONS TO THE MAZE. IF YOU
BUMP"
260 PRINT"A WALL, YOU WILL START AGAIN AT THE TOP OF THE SECTION
THAT"
270 PRINT"YOU BUMPED. TRY TO GET THROUGH IN THE SHORTEST TIME P
OSSIBLE."
280 PRINT"YOUR TIME WILL BE DISPLAYED IN THE UPPER LEFTHAND CORN
ER":PRINT@658,"PAUSE . . .":RETURN
290 A$(1)=STRING$(5,140)+STRING$(6,128)+STRING$(5,140)
300 A$(2)=CHR$(191)+STRING$(5,128)+STRING$(4,140)+STRING$(5,128)

```

```

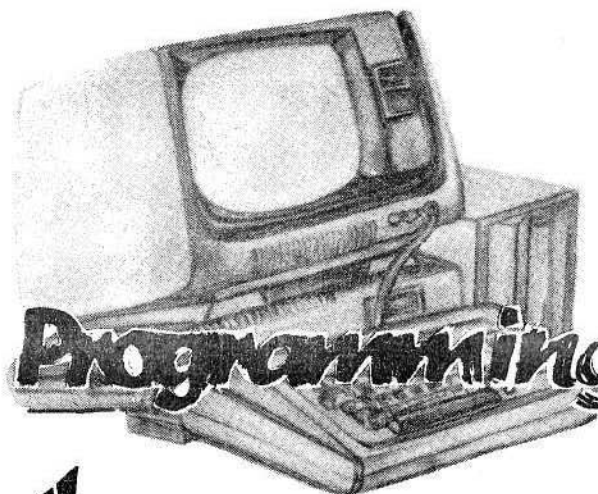
+CHR$(191)
310 A$(3)=CHR$(143)+STRING$(4,131)+STRING$(6,176)+STRING$(4,131)
+CHR$(143)
320 A$(4)=CHR$(191)+STRING$(4,128):A$(4)=A$(4)+A$(4)+A$(4)+CHR$(
191)
330 A$(5)=CHR$(191)+STRING$(4,176)+STRING$(6,179)+STRING$(4,131)
+CHR$(191)
340 A$(6)=CHR$(191)+STRING$(4,176)+CHR$(179)+STRING$(4,131)+CHR$(
179)+STRING$(4,176)+CHR$(191)
350 A$(7)=CHR$(188)+CHR$(176)+CHR$(128)+CHR$(131)+CHR$(143)+CHR$(
128)+STRING$(4,176)+CHR$(128)+CHR$(143)+CHR$(131)+CHR$(128)+CHR
$(176)+CHR$(188)
360 A$(8)=CHR$(191)+STRING$(4,176)+CHR$(188)+CHR$(140)+STRING$(2
,143)+CHR$(140)+CHR$(188)+STRING$(4,176)+CHR$(191)
370 A$(9)=CHR$(191)+STRING$(6,140)+CHR$(143)+CHR$(140)+CHR$(188)
+STRING$(5,140)+CHR$(191):RETURN
380 PRINT@850,"HIT =ENTER= TO PLAY":FORI=1TO40:X$=INKEY$:IFX$<>
""THEN410ELSENEXT
382 PRINT@854,"          ":FORI=1TO20:X$=INKEY$:IFX$<>""THEN410ELS
ENEXT:GOTO380
410 CLS:PRINT@266,"1 = BEGINNER":PRINT@332,"2 = ADVANCED":PRINT@
398,"3 = SUPER-EXPERT"
420 M=0:PRINT:INPUT"          WHICH LEVEL DO YOU WANT":S:IF S<00
RS)3THEN420
430 CLS:PRINT@198,"PAUSE . . .":T=0:Y=1:A$="":B$="":C$="":ONS:GOT
0440,470,500
440 FORI=1TO15:A$=A$+A$(RND(4)):NEXT:A$=A$+STRING$(15,128)
450 FORI=1TO15:B$=B$+A$(RND(4)):NEXT:B$=B$+LEFT$(A$(RND(3)+4),15
)
460 FORI=1TO15:C$=C$+A$(RND(4)):NEXT:C$=C$+LEFT$(A$(RND(2)+7),15
):GOTO600
470 FORI=1TO15:A$=A$+A$(RND(7)):NEXT:A$=A$+LEFT$(A$(RND(3)+4),15
)
480 FORI=1TO15:B$=B$+A$(RND(7)):NEXT:B$=B$+LEFT$(A$(RND(2)+7),15
)
490 FORI=1TO15:C$=C$+A$(RND(6)+1):NEXT:C$=C$+LEFT$(A$(RND(2)+7),
15):GOTO600
500 FORI=1TO15:A$=A$+A$(RND(6)+2):NEXT:A$=A$+LEFT$(A$(RND(4)+5),
15)
510 FORI=1TO15:B$=B$+A$(RND(6)+3):NEXT:B$=B$+LEFT$(A$(RND(2)+7),
15)

```

```

520 FORI=1TO15:C$=C$+R$(RND(5)+4):NEXT C$:C$=LEFT$(R$(RND(3)+4),
15):GOTO600
600 CLS:PRINT@64, A$;:PRINT@384, B$;:PRINT@704, C$;
610 X=RND(80)+20:IFY>29THENY=31:SET(X, Y):GOTO700
620 IFY>14THENY=16:SET(X, Y):GOTO700
630 Y=1:SET(X, Y):GOTO700
700 PRINT@0, INT(T);:RESET(X, Y):Z=PEEK(C):IFZ<>AGOSUB900ELSESET(X
, Y):FORQ=1TOE:NEXT
710 ONERRORGOTO1120:RESET(X, Y):L=USR(0):ONERRORGOTO0
720 IFPOINT(X, Y)THEN800ELSESET(X, Y)
730 RESET(X, Y):Z=PEEK(C):IFZ<>AGOSUB900ELSESET(X, Y):FORQ=1TOE:NE
XT
740 T=T+U:RESET(X, Y):Z=PEEK(C):IFZ<>AGOSUB900ELSESET(X, Y):FORQ=1
TOE:NEXT
745 RESET(X, Y):Z=PEEK(C):IFZ<>AGOSUB900ELSESET(X, Y):FORQ=1TOE:NE
XT
750 GOTO700
800 W=W+1:FORI=1TO150:NEXT:CLS:PRINTCHR$(23):PRINT@200, 0$+" "+0
$+" "+P$+" "+5$;
810 FORI=1TO800:NEXT:GOTO600
900 FORQ=1TOF:IFZ=16THEN950
910 IFZ=32THEN970
920 IFZ=64THEN990
930 IFZ=8THEN1010
940 SET(X, Y):RETURN
950 Y=Y+B:IFY>44THEN1100
960 IFPOINT(X, Y)THEN800ELSESET(X, Y):RETURN
970 X=X-B:IFX<BTHENX=B
980 IFPOINT(X, Y)THEN800ELSESET(X, Y):RETURN
990 X=X+B:IFX>DTHENX=D
1000 IFPOINT(X, Y)THEN800ELSESET(X, Y):RETURN
1010 Y=Y-B:IFY<BTHENY=B
1020 IFPOINT(X, Y)THEN800ELSESET(X, Y):RETURN
1100 PRINT@0, " ";:PRINT@960, FIX((34000-T*10-S*W)*5);"POINT
S:";INT(T);" SECONDS. (AND";W:IFW=1THENPRINT" OOPS");ELSEPRINT"
OOPSES");
1105 PRINT" HIT =ENTER=";
1110 INPUTX$:CLS:GOTO410
1120 CLS:PRINT"YOU MUST REPLACE CURRENT LINE 190":
PRINT"TO USE THIS PROGRAM IN DISK BASIC":LIST 190-195

```



Programming Hints

1 FORMATTED INPUT

Since a certain well-known manufacturer has copyrighted the live key routine they published in their newsletter, here is a better one without a copyright:

```
1 REM * * * * *
  * LIVE KEY *
  * PUBLIC DOMAIN *
  * SUBROUTINE BY *
  * ROGER ROBITAILLE *
  * * * * *
5 REM * LINES 10 AND 20 FOR DEMONSTRATION ONLY *
10 CLS:CU=512:MD=5:SZ=10:GOSUB2000:PRINTE$:E
20 END
1995 REM * CU=CURSOR POSITION * SZ=FIELD SIZE *
      * MD=FLAG (VALUE OF 5 TO SKIP ENTER) *
1996 REM * FOR DOUBLE PRECISION CHANGE LINE 2010 TO: *
      * E#=VAL(E$) *
2000 M$=STRING$(SZ,136):E$="":EH$="":CZ=CU
2010 PRINT@CU,M$:PRINT@CU,E$:IF(MD=5)AND(LEN(E$)=SZ)
THENE=VAL(E$):RETURN
2020 PRINT@CZ," ";FORI=1TO25:EH$=INKEY$:IFEH$=""THEN
NEXTI:PRINT @CZ,CHR$(136):FORI=1TO25:EH$=INKEY$:IFEH$=
""THENNEXTI:GOTO2010
2030 EV=ASC(EH$):IFEV=13THENE=VAL(E$):RETURN
ELSEIF(EV=8)AND(LEN(E$)>0)THENE$=LEFT$(E$(LEN(E$)-1):
CZ=CZ-1:
THEN2010 ELSEE$=E$+EH$:CZ=CZ+1:GOTO2010
```


2 VIDEO DISPLAY WORKSHEET

Those who have done much graphic programming know the work and time it takes to copy a picture onto the TRS-80 Video Display Worksheet. Here is a better way. Simply take a copy of the worksheet to a printing shop and have a clear plastic overlay made. Then all you have to do is pop the overlay on top of that nice picture and punch the coordinates right into your keyboard. Most large office copiers will make overlays, so if you have access to one you can even skip the trip to the printer.

(Thanks to Victor Albino, Woodinville, WA)

3 BREAK KEY

(Level II Only)

To disable the break key, use POKE 16396,23

To enable it again, use POKE 16396,201

4

Be careful using metal tools around cassettes and diskettes. Several diskettes have been spoiled by opening the shipping package with magnetized scissors.

(Thanks to A. Summerville, Douglas, AZ)

BUG REPORT

Everest (Line 2940)

November

Insert PRINT "after THEN

```
ENERGY COST          DECEMBER LINES 620 630 830
620 M=C/(A(B,1)*A(B,2)/100)
630 FOR A=1 TO 6:A(A,3)=A(A,1)*M*A(A,2)/100:NEXT A
830 PRINT"THAT FUEL IS A BETTER BUY THAN ";A$(B,0)
```

Isolate (Line 100, 110)

November

Some pages missed printing portions of these lines. Here are the missing characters.

100 . . . PRINT @ 2P + 67, S; ...

110 . . . MOVE (";; GOSUB ...

STAR TREK

III.4



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Available on Digital Cassette for Level II, 16K - \$14.95

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— Specs: Star Trek III.4 —

Play Board: 8 by 8 by 3 quadrants
Weapons Systems: Phasers and Photon Torpedoes
Power Systems: Warp and Impulse
Computer Systems: Science and Ship's computer
Sensors: Long and Short Range
Reports: Damage Control and Status
Play Elements: 20 Klingon battle cruisers, 100 stars and planets, black holes, pulsars

TIRED OF DISK ERRORS?

STOP BLAMING YOUR DRIVES — FIX YOUR DOS!

NEWDOS, by Apparat, is the third generation disk operating system for your TRS-80. NEWDOS corrects over 70 errors and omissions in TRSDOS 2.1 and disk BASIC, yet the two are completely compatible! Programs and files saved under one can be used with the other interchangeably. Going from TRSDOS to NEWDOS is like going from Level I to Level II: more power, more convenience, greater speed.

NEWDOS NEWDOS+

- Use all DOS commands (incl. directory) in BASIC. Automatically load and run a BASIC program on power-up
 - Produce variable cross-reference tables
 - Open 'E' to add to sequential files
 - Append files
 - Use your line printer as a screen printer
 - Renumber BASIC programs
 - End keyboard bounce
- Editor/Assembler for disk
 - Disassembler (Z80 machine code)
 - LM Offset—allows transfer of any system tape to a disk file (automatically relocated)
 - BASIC1—Level one BASIC saved on disk
 - LV1DSKSL - not a typo, this saves and loads BASIC1 programs to disk
 - DIRCHECK—tests and lists disk directory
 - SUPERZAP—display/print/modify any location in memory or on disk

And, best of all, say goodbye to system crashes, lost data and wasted time caused by your old, bug-ridden system software.

Apparat's NEWDOS is fully documented and available for only \$49.95.

NEWDOS+, Just \$99.95

NOTE: Use of this software may require documentation available only with the purchase of Radio Shack TRSDOS and/or the Radio Shack Editor/Assembler.

The logo for The Software Exchange, featuring the letters 'TSE' in a stylized, bold, outlined font.

The Software Exchange

6 South Street, Boylston Mall, North Attleboro, MA 01937 (617) 675-5444

New Language Announcement...

Coming Soon! APL 80

Watch next issue, or
call for availability and price.
THE SOFTWARE EXCHANGE
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BOMBER

By Chris Freund

Everyone has a favorite canyon filled with debris, which must be cleared by bombing the daylight out of it. You say you don't have one? Astonishing. We'll remedy that right away.

This game begins with your selection of a canyon. Then you

can fly over it, dropping bombs to clear the obstacles. Only one bomb can be dropped at one time, and you must wait for it to finish its destruction before dropping another. If you don't drop a bomb on a run, it counts as a miss.

4 WRITTEN BY CHRIS FREUND

10 CLS

20 PRINT "BOMBER!"

IN THIS PROGRAM, YOU ARE TRYING TO CLEAR A CANYON OF ITS OBSTACLES BY DROPPING BOMBS ON THEM FROM A PLANE. THE GAME CONTINUES UNTIL YOU MISS THREE TIMES. "

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30 PRINT"ONLY ONE BOMB CAN BE DROPPED AT ONE TIME, AND YOU MUST
WAIT FOR A BOMB TO FINISH ITS DESTRUCTION BEFORE FIRING AN-
OTHER. IF YOU DON'T DROP A BOMB ON A RUN, IT COUNTS AS A MISS. "
40 INPUT"PRESS ENTER TO START THE GAME";A$
50 CLS
60 CLEAR500:A$=CHR$(141)+CHR$(140)+CHR$(174)+CHR$(140)
70 B$=CHR$(140)+CHR$(157)+CHR$(140)+CHR$(142)
80 INPUT"WHAT CANYON DO YOU WANT (1-4)";A:CLS:IFA=3THEN550
95 IFA=4THEN680
90 IFA=2THEN580
100 IFA=1THEN80
110 FORX=0TO8:PRINT@X*64+384,STRING$(6+X*3,191);:NEXTX:PRINT@896
,STRING$(63,191);:PRINT@960,STRING$(63,191);:FORX=0TO1:PRINT@817
+X*64+(2+X)*3,STRING$(8+Y*3,191);:NEXTX
120 FORX=442TO762STEP64:PRINT@X,STRING$(5,191);:NEXTX
130 FORX=-1TO8:FORY=1TO19:IFPEEK(15681+X*64+Y*3)<191:POKE15681+X
*64+Y*3,188:POKE15681+X*64+Y*3+1,188
140 NEXTY,X:PRINT@6,"HITS";@;:PRINT@32,"MISSES";@;
150 H=1
160 S=RND(0)+.5:IFD=15=-S
170 FORX=0+D+60TO60-D+60STEP5:PRINT@H*64,CHR$(30);:IFD=0PRINT@H*
64+X,A$;:GOTO190
180 PRINT@H*64+X,B$;
190 '
200 IFINKEY$="":AND0=0THENO=1:X1=X*2+4:Y1=H*3+2:S1=2*S:O1=1
210 IF0=1THEN280
220 '
230 NEXTX
240 PRINT@H*64,CHR$(30);:IF01=0M=M+1:PRINT@38,M;:IFM=3THEN490
250 H=RND(3):D=D+SGN(.5-D)
260 IF0=0O1=0
270 GOTO160
280 X=X+S:X2=X1:Y2=Y1:RESET(X2,Y2):X1=X1+S1
290 G=G+.2:IFG<=00=0:G=0:GOTO390
300 Y1=Y1+G:IFX1<0ORX1>127RESET(X2,Y2):O=0:G=0:O1=0:GOTO240 :IF
M=3THEN490
310 F=15360+INT(Y1/3)*64+INT(X1/2):IFPEEK(F)=1910=0:G=0:GOTO390

320 IFPEEK(F)=188PRINT@INT(Y1/3)*64+INT(X1/2)-1," ";:F1=F1+1:G
OTO340

```

```

330 SET(X1, Y1):GOTO220
340 S1=S1/2:K=INT((X1-2)/6):IF1=0THEN360
350 IFK(I-1)=KGOTO370
360 K(I)=K:I=I+1
370 G=G-1
380 GOTO330
390 PRINT@H*64, CHR$(30):FORZ=0TOI-1:P=0
400 FORZ1=1TO10:F2=15553+Z1*64+3*K(Z)
410 IFPEEK(F2)=188P=P+1
420 NEXTZ1:FORZ1=10TO1STEP-1:F2=15553+Z1*64+3*K(Z):IFPEEK(F2)=19
1GOTO450
430 IFF=0P=P-1:POKEF2,188:POKEF2+1,188:GOTO450
440 POKEF2,32:POKEF2+1,32
450 NEXTZ1
460 NEXTZ:I=0
470 IFF1=0M=M+1:PRINT@30,M:IFM=3THEN490
480 HI=HI+F1:PRINT@4,HI:F1=0:C$=INKEY$:01=1:GOTO240
490 PRINT@0,"YOU HAVE 3 MISSES. YOU HAD"HI"HITS.
PRESS ENTER FOR ANOTHER RUN":INPUTA:RUN
500 FORX=256TO960STEP64:READY:PRINT@X,STRING$(Y,191):NEXT:DATA2
1,18,15,12,9,9,9,15,15,15,63,63
510 PRINT@738,STRING$(2,191):FORX=802TO866STEP64:PRINT@X,STRING
$(8,191):NEXTX
520 FORX=299TO567STEP67:READY:PRINT@X,STRING$(Y,191):NEXT:DATA2
0,17,14,11,8
530 FORX=631TO887STEP64:PRINT@X,STRING$(8,191):NEXT
540 GOTO130
550 FORX=1TO17:READY:NEXTX:FORX=384TO960STEP64:READY:PRINT@X,STR
ING$(Y,191):NEXTX:DATA9,9,12,12,15,15,15,15,63,63
560 FORX=567TO931STEP64:PRINT@X,STRING$(8,191):NEXTX:PRINT@506,
STRING$(5,191):FORX=278TO546STEP67:READY:PRINT@X,STRING$(Y,191)
:NEXTX:DATA20,17,11,5,2
570 FORX=610TO866STEP64:PRINT@X,STRING$(2,191):NEXTX:GOTO130
600 FORX=1TO32:READY:NEXT:FORX=256TO960STEP64:READY:PRINT@X,STR
ING$(Y,191):NEXT:DATA9,9,9,9,9,9,6,3,3,63,63
610 FORX=1TO7:READY,Y1:PRINT@Y1,STRING$(Y,191):NEXT:DATA5,781,1
1,842,8,735,14,796,38,857,14,753,17,814
620 FORX=506TO698STEP64:PRINT@X,STRING$(5,191):NEXT:FORX=1TO3:P
RINT@X*67+238,STRING$((4-X)*3+5,191):NEXT:GOTO130

```


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from
Lance Micklus

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ST80D

Lance Micklus'
ST80-the Smart
Terminal Program-
just got SMARTER!!

ST80D contains extensions for disk drive systems to exchange files with a timesharing computer or another TRS-80.

USING ST80D, your TRS-80 can do all this and more:

- Gather and pre-format data, store it on disk, then transmit it to a timesharing computer for processing.
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- Users may customize their terminal program by redefining the translation tables. Conversion from one set of tables to another takes only seconds.
- Auto logon feature sends your account name, number and password upon request.
- ST80D can transmit any type of TRS-80 ASCII file, including BASIC programs stored in ASCII format, and most BASIC data files. Binary files can also be transmitted from one TRS-80 to another, allowing even machine language programs to be sent over the phone.

ST80D is a practical, full-feature terminal program that has been used on a variety of timesharing systems. These include IBM 370, Honeywell Sigma/6, Harris/7, DECSYSTEM 20, Dartmouth Timesharing, CDC Cyber and HP 2000.

If you're looking for a professional quality product, **not an amateur program**, then order ST80D today!

The logo for The Software Exchange (TSE) features the letters 'TSE' in a large, bold, stylized font with a jagged, blocky appearance. The letters are black with a white outline, and they are set against a background of horizontal lines that create a sense of depth and shadow.

The Software Exchange

6 South Street, Box 68, Millard, NH 03055 603-673-5144

For 32K
disk systems -
\$79.95



REFLECTION

by Ted Lindstrom

Exercise your deductive reasoning

To play this game, you must master the laws of reflection and diffraction (don't worry, the program will teach you what you need to know). Then the computer will hide 3, 4, or 5 balls in a black box. You must determine their location without being able to see into the box. To do this, you send light rays into the sides of the box; inside they are reflected or

diffracted as they encounter the hidden balls. By comparing where you sent them in and where they come out, you should be able to deduce the location of the balls. Each hit or reflection costs you 1 point, other rays that exit cost you 2 points, each incorrect ball at end of game costs you 5 points. Low score wins; the computer keeps score.

```

100 CLS
110 PRINT@22,"R E F L E C T I O N"
120 REM ** WRITTEN BY TED LINDSTROM ***
130 REM ** STAR ROUTE 1 BOX 119AA ***
140 REM ** BONNERS FERRY, IDAHO 83805 **
150 CLEAR 200
160 L$=STRING$(32," ")
170 PRINT
180 INPUT"WOULD YOU LIKE TO SEE THE INSTRUCTIONS";A$
190 IF LEFT$(A$,1)="N" THEN 1200
200 PRINT
210 REM *** INSTRUCTIONS ***
220 PRINT"THIS GAME EXERCISES YOUR DEDUCTIVE REASONING. THE
COMPUTER HIDES 3, 4 OR 5 BALLS IN A BLACK BOX. (YOUR CHOICE)
YOU MUST DETERMINE THEIR LOCATION ON A REFERENCE GRID WITHOUT
BEING ABLE TO SEE INTO THE BOX."
230 PRINT:PRINT"YOU ACCOMPLISH THIS BY SENDING RAYS INTO THE SID
ES
OF THE BOX. THESE RAYS ARE REFLECTED AND DIFFRACTED AS THEY
IMPINGE ON THE BALLS. BY COMPARING WHERE YOU SENT THEM IN
AND WHERE THEY COME OUT, YOU ARE ABLE TO DEDUCE THE LOCATIONS
240 PRINT"OF THE BALLS. A DEMONSTRATION OF THE LAWS OF REFLECTI
ON
AND DIFFRACTION FOLLOWS. (PRESS ENTER WHEN READY)":INPUT A$
250 CLS:GOSUB 2420
260 PRINT@832,"THIS IS THE BOX. THE NUMBERS IDENTIFY THE ENTRY
AND EXIT PORTS FOR THE RAYS. ";
270 PRINT"(PRESS ENTER TO CONTINUE)":INPUT A$
280 PRINT@832,CHR$(31);
290 PRINT@832,"A RAY ENTERING AT 4 AND MEETING NO OBSTRUCTIONS W
ILL
EXIT AT 21. (PRESS ENTER TO CONTINUE)":
300 FOR X=20 TO 84:Y=18:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
310 INPUT A$:PRINT@832,CHR$(31);
320 PRINT@832,"OF COURSE DURING PLAY YOU WILL NOT SEE THIS PATH.
THE PORTS
WILL BE MARKED WITH LETTERS INDICATING YOUR SEQUENCE OF RAYS.
FIRST RAY - A, SECOND - B, ETC. (ENTER TO CONTINUE)":
330 FOR I=1 TO 25:POKE 15748,32:POKE 15792,32:FOR K=1 TO 25:NEXT
340 POKE 15748,65:POKE 15792,65:FOR J=1 TO 25:NEXT J:NEXT I

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350 INPUT A$
360 CLS:GOSUB 2420
370 POKE 15772,48
380 PRINT@832,"WHEN A RAY MEETS A BALL DIRECTLY, IT IS CALLED A
HIT
AND IS MARKED WITH AN 'H' AT ITS ENTRY POINT. (ENTER)"
390 FOR X=20 TO 52:Y=18:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
400 POKE 15748,72
410 INPUT A$
420 CLS:GOSUB2420
430 POKE 15836,48
440 PRINT@832,"USUALLY IF A RAY SEES A BALL ON EITHER SIDE OF IT
S PATH
IT IS BENT AWAY FROM IT AND PROCEEDS TO AN EXIT. (ENTER)";
450 FOR X=20 TO 49:Y=18:SET(X,Y):FOR I=1 TO 25:NEXT I:NEXT X
460 FOR Y=17 TO 7 STEP-1:X=49:SET(X,Y):FOR I=1 TO 25:NEXT I:NEXT
Y
470 POKE 15748,65:POKE 15384,65
480 INPUT A$
490 PRINT@832,CHR$(31):PRINT@832,"NOTE - THE BENDING OCCURS BEFO
RE THE RAY REACHES
THE SAME ROW THAT THE BALL IS IN. (ENTER)";
500 INPUT A$
510 CLS:GOSUB 2420
520 PRINT@832,"THE EXCEPTION IS WHEN IT SEES ANOTHER BALL DIRECT
LY
AHEAD. IN THAT CASE IT IS STILL A HIT. (ENTER)";
530 POKE 15772,48:POKE 15836,48
540 FOR X=20 TO 52:Y=18:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
550 POKE 15748,72
560 INPUT A$
570 CLS:GOSUB 2420
580 PRINT@832,"A RAY THAT SEES A BALL AHEAD ON EACH SIDE OF ITS
PATH IS REFLECTED BACK TO THE ENTRY POINT AND IS CALLED A REFLEC
TION. 'R' (ENTER)";
590 POKE 15836,48:POKE 15708,48
600 FOR X=20 TO 52:Y=18:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
610 FOR X=20 TO 51:Y=18:RESET(X,Y):NEXT X
620 FOR X=51 TO 20 STEP-1:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
630 POKE 15748,82
640 INPUT A$

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650 CLS:GOSUB 2420
660 PRINT@832, "A REFLECTION ALSO OCCURS IF THERE IS A BALL ON EI
THER SIDE AT
THE ENTRY POINT. THE RAY CANNOT ENTER THE BOX. (ENTER)";
670 POKE 15820, 48
680 FOR X=20 TO 22:Y=18:SET(X,Y):NEXT X
690 POKE 15748, 82
700 INPUT A$
705 PRINT@832, CHR$(31):PRINT@832, "EXCEPT - - IF THERE IS ANOTHER
BALL DIRECTLY AHEAD, IT IS A HIT. (ENTER)".POKE 15756, 48.P
OKE 15748, 72:INPUT A$
710 CLS:GOSUB 2420
720 PRINT@832, "A RAY CAN BE BENT MORE THAN ONCE AS IT TRAVELS.
(ENTER)";
730 POKE 15836, 48:POKE 15572, 48
740 FOR X=20 TO 48:Y=18:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
750 FOR Y=18 TO 12 STEP-1:X=48:SET(X,Y):FOR I=1 TO 15:NEXT I:NEX
T Y
760 FOR X=48 TO 84:Y=12:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
770 POKE 15748, 65:POKE 15664, 65
780 INPUT A$
790 PRINT@832, CHR$(31)
800 PRINT@832, "NOTICE THAT THE RAY COULD HAVE ENTERED AT EITHER
4 OR 23,
ITS PATH WOULD HAVE BEEN THE SAME. (ENTER)";
810 INPUT A$
820 CLS:PRINT:PRINT:PRINT"EXAMINE EACH OF THE FOLLOWING EXAMPLES
CAREFULLY.
IF IT IS NOT CLEAR WHY THE RAY FOLLOWED THE PATH THAT IT DID, OR
YOU DON'T UNDERSTAND WHY A PARTICULAR SHOT IS CALLED A HIT OR
REFLECTION, REVIEW THE INSTRUCTIONS. (ENTER)
830 INPUT A$
840 CLS:GOSUB 2420
850 POKE 15836, 48:POKE 15572, 48:POKE 15592, 48
860 FOR X=20 TO 48:Y=18:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
870 FOR Y=18 TO 12 STEP-1:X=48:SET(X,Y):FOR I=1 TO 15:NEXT I:NEX
T Y
880 FOR X=48 TO 72:Y=12:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
890 FOR Y=12 TO 31:X=72:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT Y
900 POKE 15748, 65:POKE 16164, 65

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910 PRINT@832, "(ENTER)"
920 INPUT A$
930 CLS:GOSUB 2420
940 POKE 15836,48:POKE 15640,48
950 FOR X=20 TO 48:Y=18:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
960 FOR Y=18 TO 15STEP-1:X=48:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT
  Y
970 POKE 15748,72
980 PRINT@832, "(ENTER)"
990 INPUT A$
1000 CLS:GOSUB 2420
1010 POKE15836,48:POKE 15572,48:POKE 15592,48:POKE 15720,48
1020 FOR X=20 TO 48:Y=18:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
1030 FOR Y=18 TO 12 STEP-1:X=48:SET(X,Y):FOR I=1 TO 15:NEXT I:NE
  XT Y
1040 FOR X=48 TO 72:Y=12:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT X
1050 FOR X=20 TO 48:Y=18:RESET(X,Y):NEXT X
1060 FOR Y=18 TO 12 STEP-1:X=48:RESET(X,Y):NEXT Y
1070 FOR X=48 TO 71:Y=12:RESET(X,Y):NEXT X
1080 FOR X=71 TO 48 STEP-1:Y=12:SET(X,Y):FOR I=1 TO 15:NEXT I:NE
  XT X
1090 FOR Y=12 TO 18:X=48:SET(X,Y):FOR I=1 TO 15:NEXT I:NEXT Y
1100 FOR X=48 TO 20 STEP-1:Y=18:SET(X,Y):FOR I=1 TO 15:NEXT I:NE
  XT X
1110 POKE 15748,82
1120 PRINT@832, "WOULD YOU LIKE TO REVIEW INSTRUCTIONS"
1130 INPUT A$
1140 IF LEFT$(A$,1)="Y" THEN 220
1150 CLS:PRINT"AS YOU PLAY, YOU WILL BE GIVEN THE OPPORTUNITY
  TO PLACE BALLS WHERE YOU THINK THEY ARE. YOU MAY ALSO DELETE
  THEM IF YOU CHANGE YOUR MIND LATER. "
1160 PRINT"WHEN YOU THINK YOU HAVE THEM ALL LOCATED CORRECTLY
  TYPE 'END' AND YOU WILL BE SHOWN WHERE THEY ACTUALLY ARE
  AND RECEIVE YOUR SCORE. "
1170 PRINT:PRINT"YOU ARE SCORED AS FOLLOWS:
  EACH HIT OR REFLECTION COSTS YOU - 1 POINT
  OTHER RAYS(THOSE THAT EXIT) COST YOU - 2 POINTS
  EACH INCORRECT BALL AT THE END OF GAME COSTS YOU - 5 POINTS
  LOW SCORE WINS!!           (ENTER)"
1180 INPUT A$
1190 REM   * * * END OF INSTRUCTIONS * * *

```

```

1200 CLS
1210 RANDOM
1220 EY=64
1230 REM   * * *   SETUP   * * *
1240 INPUT"NUMBER OF BALLS (3 - 5)";BN
1250 FOR I = 1 TO BN
1260 X = RND(8):Y = RND(8)
1270 IF A(X,Y) = 0 THEN A(X,Y) = 1:GOTO 1290
1280 GOTO 1260
1290 NEXT I
1300 CLS
1310 GOSUB 2420
1320 GOSUB 2340
1330 PRINT@ 842, "ENTER RAY":INPUT E
1340 IF E>32 THEN PRINT@832, "ERROR":FOR I=1 TO 500:NEXT I:GOTO 2
020
1350 CT=CT+1
1360 GOTO 1380
1370 REM * * ESTABLISH RAY ENTRY POINT AND DIRECTION * *
1380 IF E>0 AND E<9 THEN X=0:Y=E:D$="EAST":GOTO 1440
1390 IF E>8 AND E<17 THEN X=E-8:Y=9:D$="NORTH":GOTO 1440
1400 IF E>16 AND E<25 THEN X=9:Y=25-E:D$="WEST":GOTO 1440
1410 IF E>24 AND E<33 THEN X=33-E:Y=0:D$="SOUTH":GOTO 1440
1420 GOTO 1330
1430 REM * * SCAN AHEAD * *
1440 EP=18*X+Y
1450 IF D$="EAST" THEN I=1:J=0:GOTO 1490
1460 IF D$="WEST" THEN I=-1:J=0:GOTO 1490
1470 IF D$="SOUTH" THEN I=0:J=1:GOTO 1490
1480 IF D$="NORTH" THEN I=0:J=-1:GOTO 1490
1490 L=A(X+I+J,Y-I+J)
1500 C=A(X+I,Y+J)
1510 R=A(X+I-J,Y+I+J)
1520 REM * * MOVE IF CLEAR * *
1530 IF L=0 AND C=0 AND R=0 THEN X=X+I:Y=Y+J:GOTO 1730
1540 REM * * IS IT A HIT? * *
1550 IF C=1 GOTO 1860
1560 REM * * REFLECTION FROM ENTRY POSITION * *
1570 IF X=0 OR X=9 OR Y=0 OR Y=9 GOTO 1880
1580 REM * * MUST BE DEFLECTION * *
1590 REM * * TURN * *

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1600 IF D$="EAST" GOTO 1640
1610 IF D$="WEST" GOTO 1660
1620 IF D$="SOUTH" GOTO 1680
1630 GOTO 1700
1640 IF R=1 THEN D$="NORTH" ELSE D$="SOUTH":GOTO 1450
1650 GOTO 1450
1660 IF R=1 THEN D$="SOUTH" ELSE D$="NORTH": GOTO 1450
1670 GOTO 1450
1680 IF R=1 THEN D$="EAST" ELSE D$="WEST": GOTO 1450
1690 GOTO 1450
1700 IF R=1 THEN D$="WEST" ELSE D$="EAST":GOTO 1450
1710 GOTO 1450
1720 REM * * TEST FOR EXIT * *
1730 IF X=0 OR X=9 OR Y=0 OR Y=9 GOTO 1750
1740 GOTO 1450
1750 EX = 10*X +Y
1760 IF EX=EP GOTO 1880
1770 IF X=0 THEN EX = Y
1780 IF X=9 THEN EX = 25-Y
1790 IF Y=0 THEN EX = 33-X
1800 IF Y=9 THEN EX = X+8
1810 CT=CT+1
1820 EY=EY+1:X=EX:I=EY:GOSUB 1900
1830 IF EY=71 THEN EY=72
1840 X=E:GOSUB 1900
1850 GOTO 2020
1860 X=E:I=72:GOSUB 1900
1870 GOTO2020
1880 X=E:I=82:GOSUB 1900
1890 GOTO2020
1900 IF X>0 AND X<9 THEN 1940
1910 IF X>8 AND X<17 THEN 1960
1920 IF X>16 AND X<25 THEN 1980
1930 IF X>24 AND X<33 THEN 2000
1940 POKE(15492+64*X),I
1950 RETURN
1960 POKE(16139+4*(X-9)),I
1970 RETURN
1980 POKE(16048-(X-17)*64),I
1990 RETURN

```

```

2000 POKE(15371+(32-X)*4), I
2010 RETURN
2020 PRINT@832, "ENTER 'D' TO DELETE BALL OR 'A' TO ADD BALL, OR
ENTER NEXT RAY": INPUT G$
2030 PRINT@832, STRING$(64, " ")
2040 T$=LEFT$(G$, 1)
2050 FL=0
2060 IF T$="D" GOTO 2100
2070 IF T$="A" GOTO 2110
2080 IF LEFT$(T$, 1)="E" THEN 2270
2085 IF ASC(LEFT$(T$, 1))>65 THEN PRINT@832, "ERROR":FOR I=1 TO 50
0:NEXT I:GOTO 2020
2090 E=VAL(G$):GOTO 1340
2100 FL=1
2110 PRINT@832, "BALL LOCATION BY COLUMN AND ROW. COL 26, ROW 5 =
26, 5": INPUT N1, N2
2120 PRINT@832, STRING$(64, " ")
2130 NB=N1
2140 IF (NB>0) AND (NB<9) THEN Y=NB
2150 IF (NB>16) AND (NB<25) THEN Y=25-NB
2160 IF (NB>8) AND (NB<17) THEN X=NB-8
2170 IF (NB>24) AND (NB<33) THEN X=33-NB
2180 IF NB=N2 GOTO 2200
2190 NB=N2: GOTO 2140
2200 IF FL=1 GOTO 2230
2210 IF B(X, Y)=0 THEN B(X, Y)=1: M=48: GOTO 2250
2220 GOTO 2110
2230 IF B(X, Y)=1 THEN B(X, Y)=0: M=46: GOTO 2250
2240 GOTO 2110
2250 POKE(15496 +64*Y+4*X), M
2260 GOTO 2020
2270 FOR X=1TO8
2280 FOR Y=1TO8
2290 IF A(X, Y)=1 THEN POKE(15496+64*Y+4*X), 88
2300 IF A(X, Y)=1 AND B(X, Y)>0 THEN CT=CT+5
2310 NEXT: NEXT
2320 PRINT@842, "YOUR SCORE IS", CT
2330 GOTO 2330
2340 POKE 15541, 84: POKE 15542, 79: POKE 15543, 32: POKE 15544, 69:
POKE 15545, 78: POKE 15546, 68: POKE 15605, 71: POKE 15606, 65: POKE
15607, 77: POKE 15608, 69

```

```
2350 POKE 15669, 84:POKE 15670, 89:POKE 15671, 80:POKE 15672, 69
2360 POKE 15733, 69:POKE 15734, 78:POKE 15735, 68
2370 IF BN=3 POKE 15861, 51
2380 IF BN=4 POKE 15861, 52
2390 IF BN=5 POKE 15861, 53
2400 POKE 15925, 66:POKE 15926, 65:POKE 15927, 76:POKE 15928, 76:POK
E 15929, 83
2410 RETURN
2420 FOR X=0 TO 7
2430 PRINT@(202+64*X), L$
2440 NEXT
2450 FOR X=49 TO 56
2460 POKE(15494+64*(X-48)), X
2470 NEXT
2480 FOR Y=8 TO 31:SET(19, Y):SET(85, Y):NEXT
2490 FOR X=19 TO 85:SET(X, 7):SET(X, 32):NEXT
2500 FOR X=20 TO 84 STEP 8
2510 FOR Y=8 TO 31
2520 SET(X, Y)
2530 NEXT:NEXT
2540 POKE 16075, 57
2550 Y=0
2560 FOR X=16079 TO 16103 STEP 4
2570 Y=Y+1
2580 POKE X, 49
2590 POKE X+1, Y+47
2600 NEXT
2610 FOR X=0 TO 2
2620 POKE(15917+64*X), 49
2630 POKE(16045-64*X+1), X+55
2640 POKE(15435+4*X), 51
2650 POKE(15435+4*X+1), 50-X
2660 NEXT
2670 FOR X=0 TO 4
2680 POKE(15853-64*X), 50
2690 POKE(15853-64*X+1), X+48
2700 POKE(15447+4*X), 50
2710 POKE(15447+4*X+1), 57-X
2720 NEXT
2730 RETURN
```

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INPUT

A COLUMN OF YOUR LETTERS

Dear Sir,

I am ten years old and I disagree with Arnold Gross's statement that the **Abstract** puzzle is "nearly impossible". I did it — on my first try — in 25 moves with a time of 8:60. In fact, it's easier than the **Diamond** puzzle which I completed in 30 moves.

But, I can see his point about **Abstract** being difficult for some people because my Mom tried it, but after 80 moves and a time of 28:31, she gave up. My Dad tried it and he quit at first sight because he couldn't see any sense in the shapes.

I think **Abstract** may be nearly impossible for adults, but for bright kids it's so easy.

Signed,

Krista M. Young
Oak Park, IL

Dictated to and typed by her embarrassed father, Rocky Young.

Dear Sir,

First, I wish someone would write an analysis of variance program which includes the "interaction of the main effects". I purchased the \$20.00 statistical program

which your company sells; but like others, its program does not include the interaction analysis. Analysis of the interaction effect is of great value in various research projects, but I just don't have the time to write the program myself. Maybe someone could write a patch program which I could incorporate in my existing statistics software.

Second, I need help in assembly language. I wish someone would write sample programs in basic and in assembly language so that I can see how the two are related. I bought the Radio Shack assembly language book, but I need to work with "sample programs". I wish someone would also describe how to "run" an assembly language program on the TRS-80. (I bought the editor-assembler, but I have not been successful in running the sample program.)

Third, I bought a recent publication on "TRS-80 interfacing" - a fantastic book. I want to buy the interface/breadboard but no one has it in stock yet.

Sincerely,

Rocky Young
University of Illinois at
The Medical Center, Chicago, IL



It's
Here
At
Last . . .

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THE AUTOMATED DISKETTE DIRECTORY

by George Blank

All you do is insert the diskette in the drive and type the name or number you use for that diskette. The program automatically reads the directory of the diskette, ignoring invisible files like BASIC/CMD and normal DOS files like DISKDUMP/BAS, and stores it in a disk file.

Display options include:

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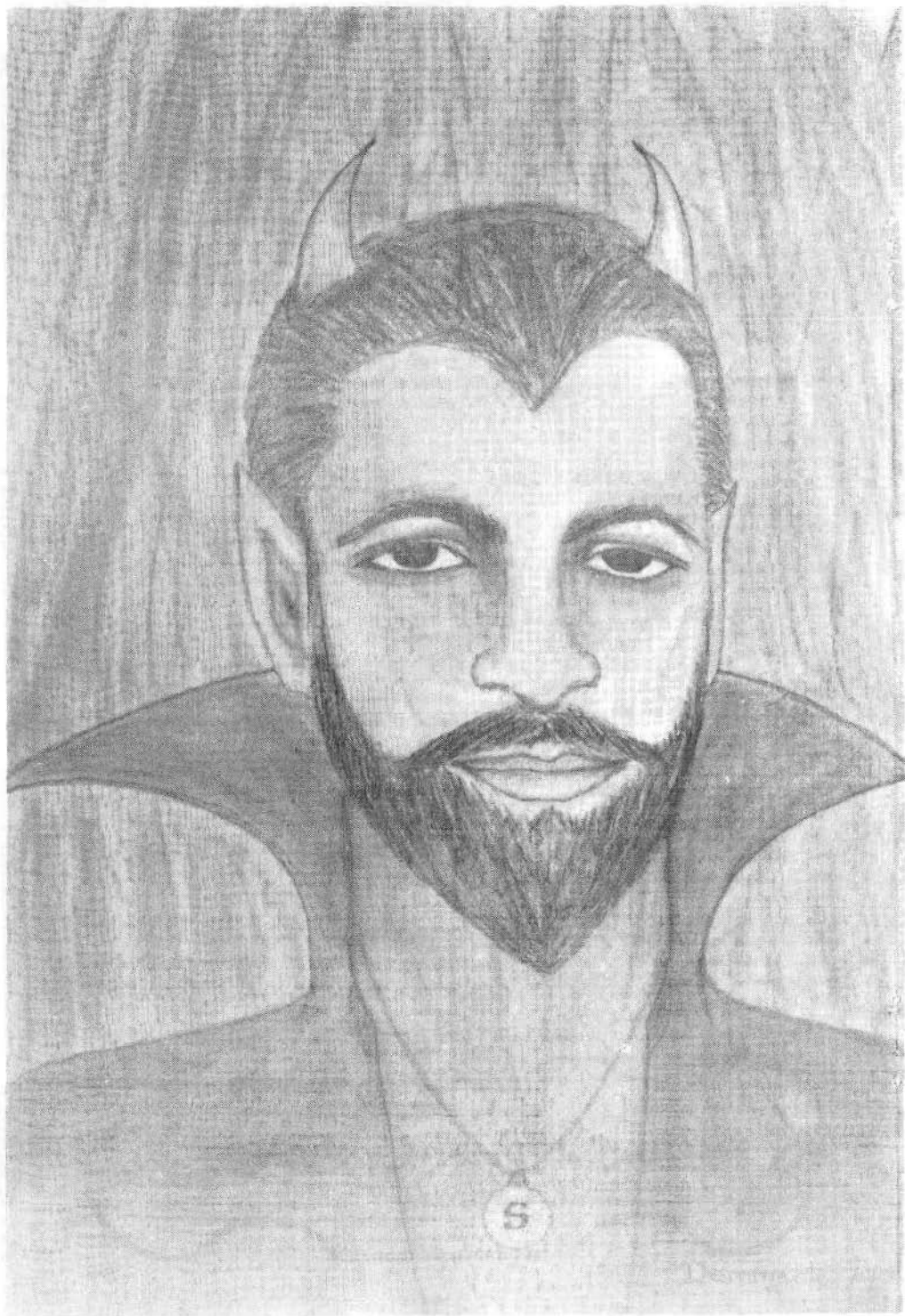
The logo for The Software Exchange, featuring the letters 'TSE' in a large, bold, stylized font with a thick outline and a slight shadow effect.

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DANTE'S INFERNO

A CompuNovel by Gerard Bernor

In anticipation of that distinguished multitude who demonstrate concern for the welfare of their souls only at Christmas and Easter, the Prince of Darkness awaits in the Inferno. Your task, having sold your soul to the dark one for power and wealth in this life, is to slip into hell, retrieve the contract by which you are bound, and escape.

This program does not use any fancy programming methods, yet demonstrates that the key to a good game is the concept, not the technique. Mr. Bernor is to be congratulated for his literary ability and his appeal to our imaginations.

```
1000 REM **          DANTE'S INFERNO          **
1010 REM **          FOR THE TRS-80 LEVEL II 16K  **
1020 REM **          COPYRIGHT 1979 BY          **
1030 REM **          ADVENTURES IN SOFTWARE    **
1040 RC=0:D=0:CLS:PRINTCHR$(23)
1050 PRINT:PRINT:PRINT:PRINT:PRINT:PRINT
1060 PRINT"          DANTE'S INFERNO"
1070 GOSUB5740
1080 CLS:PRINTCHR$(23)
1090 PRINT"DO YOU NEED INSTRUCTIONS???"
1100 GOSUB5680:REM TO INKEY
1110 IFA$="N"CLS:PRINTCHR$(23):PRINT"THERE IS A BOAT OF LOST SOU
LS":PRINT"COMING DOWN THE RIVER STYX,":PRINT"YOU'VE GOT TO WAIT
```

```

UNTIL THEY":PRINT"ENTER THE GATES OF HELL. ":GOTO1280
1120 PRINT
1130 CLS:PRINTCHR$(23)
1140 PRINT"IN EXCHANGE FOR THE RICHES OF"
1150 PRINT"THE WORLD, YOU HAVE SOLD YOUR"
1160 PRINT"SOUL TO THE DEVIL. "
1170 PRINT
1180 PRINT"NOW YOU REALIZE THAT YOUR"
1190 PRINT"IMMORTAL SOUL IS WORTH MORE"
1200 PRINT"THAN FAME AND GOLD. "
1210 PRINT
1220 PRINT"YOUR TASK IS TO ENTER THE"
1230 PRINT"GATES OF HELL, FIND YOUR"
1240 PRINT"CONTRACT WITH THE DEVIL, "
1250 PRINT"AND ESCAPE WITH IT. "
1260 PRINT
1270 PRINT"GOOD LUCK!!!"
1280 GOSUB5740
1290 M9=45:T1=44:T2=45
1300 DIMW(M9),M(6,M9)
1310 FORI=1TOM9
1320 READN
1330 IFI=NTHENL360
1340 PRINT"DATABASE PROBLEM":I:N
1350 STOP
1360 FORJ=1TO6:READN(J,I):NEXTJ
1370 NEXTI
1380 GOSUB2600
1390 N=5
1400 RC=RC+1
1410 IFRC=3GOSUB5770
1420 M0=0
1430 M6=0
1440 IFRS=0THENM=T1ELSEM=T2
1450 F=0
1460 JL=0
1470 P1=0
1480 FORJ=1TOM9
1490 W(J)=0
1500 NEXTJ

```

```
1510 PRINT
1520 GOSUB2670
1530 M0=M0+1
1540 GOSUB2220
1550 GOSUB1710
1560 GOSUB1890
1570 IFT>0THEN1530
1580 IFN<5THEN1530
1590 GOSUB1890
1600 CLS:PRINTCHR$(23)
1610 PRINT" CONGRATULATIONS!!"
1620 PRINT
1630 PRINT"YOU HAVE RETRIEVED YOUR SOUL"
1640 PRINT"IN";M0;"MOVES. "
1650 PRINT
1660 PRINT"CAN YOU DO IT AGAIN ???";
1670 GOSUB5680
1680 IFA$="N"GOTO5860
1690 RS=1
1700 GOTO1390
1710 IFT<0THENRETURN
1720 IFT<0THENRETURN
1730 IFM6+5>M0THENRETURN
1740 PRINT"WANT TO TAKE IT WITH YOU NOW?"
1750 GOSUB5680
1760 IFA$="N"ORA$="NO"GOTO1810
1770 T=-1
1780 CLS:PRINTCHR$(23)
1790 PRINT"OK, LETS GET OUT OF HERE!"
1800 RETURN
1810 CLS:PRINTCHR$(23)
1820 PRINT"WE'LL LEAVE IT HERE FOR NOW"
1830 PRINT"AND YOU CAN LOOK AROUND SOME"
1840 PRINT"MORE. "
1850 PRINT
1860 PRINT"DON'T FORGET WHERE IT IS!!!"
1870 M6=M0
1880 RETURN
1890 IFN=12THENRETURN
1900 IFP=1THENRETURN
```

```

1910 IFT1=T2THENRETURN
1920 IFT0=-1THENRETURN
1930 IFRC>=3GOTO1950
1940 IFN=16THENP=160
1950 IFP1<0THENP1=P1+1
1960 IFRC>=3ANDN=41THENP1=P1+1:GOTO1980
1970 IFN=3THENP1=P1+1
1980 IFP1<15THENRETURN
1990 CLS:PRINTCHR$(23)
2000 PRINT"FROM THE DARK LEAP THE INCUBI"
2010 PRINT"OF MEPHISTOPHELES. "
2020 PRINT
2030 CSAVE"THEY SNATCH THE CONTRACT AWAY"
2040 PRINT"FROM YOU. IN THE CONFUSION"
2050 PRINT"YOU MANAGE TO SLIP INTO THE"
2060 PRINT"DARKNESS. "
2070 PRINT
2080 PRINT"NOW THEY ARE ALERTED FOR YOU,"
2090 PRINT"BE VERY CAUTIOUS!!!"
2100 P=1
2110 T=T2
2120 RETURN
2130 A$=INKEY$
2140 IFA$=" "GOTO2130
2150 IFA$="B"THENA1=1:RETURN
2160 IFA$="L"THENA1=2:RETURN
2170 IFA$="U"THENA1=3:RETURN
2180 IFA$="D"THENA1=4:RETURN
2190 IFA$="R"THENA1=5:RETURN
2200 IFA$="F"THENA1=6:RETURN
2210 GOTO2130
2220 N9=N
2230 N8=0
2240 GOSUB2570
2250 IFN=1THEN2280
2260 N8=N
2270 A8=A1
2280 I=M(A1,N)
2290 IFI=-2THENI=N9
2300 IFD<>0THENPRINT"

```

DEBUG";N;"TO";I

```

2310 IF I<500 THEN 2340
2320 I=I-500
2330 GOTO 2290
2340 ON I/100 GOTO 2370, 2400
2350 N=I
2360 GOTO 2420
2370 N=I-100
2380 IFT=-1 THEN N=N+1
2390 GOTO 2420
2400 N=I-200
2410 IFT=-1 THEN N=N+P
2420 IF N<>1 THEN 2470
2430 FOR J=1 TO 6
2440 M(J, N)=2
2450 NEXT J
2460 M(7-RO, N)=NO
2470 IF N<=2 THEN GOSUB 2670
2480 W(N)=1
2490 N8=N
2500 IF M(1, N)<=2 THEN 2560
2510 I=M(6, N)
2520 IF M(4, N)>100+RND(0) THEN I=M(5, N)
2530 IF M(2, N)>100+RND(0) THEN I=M(3, N)
2540 IF D<=0 THEN PRINT "DEBUG BOUNCE TO"; I
2550 GOTO 2290
2560 RETURN
2570 PRINT:PRINT"          WHICH WAY?";
2580 GOSUB 2130
2590 RETURN
2600 IFA$="NO" OR A$="N" GOTO 2660
2610 CLS:PRINTCHR$(23)
2620 PRINT"TYPE B, F, L, R, U OR D FOR"
2630 PRINT"BACK, FORWARD, LEFT, RIGHT."
2640 PRINT"UP OR DOWN. "
2650 GOSUB 5740
2660 RETURN
2670 I=INT(N/5)
2680 J=N-5*I+1
2690 ON I+1 GOTO 2700, 2710, 2720, 2730, 2740, 2750, 2760, 2770, 2780, 2790
2700 ON J GOTO 2890, 2890, 2930, 2990, 3050

```



```
2710 ONJGOTO3110, 3230, 3290, 3350, 3400
2720 ONJGOTO3420, 3480, 3550, 3590, 3670
2730 ONJGOTO3720, 3780, 3860, 3920, 3980
2740 ONJGOTO4040, 4110, 4180, 4200, 4260
2750 ONJGOTO4320, 4380, 4490, 4550, 4570
2760 ONJGOTO4650, 4710, 4790, 4870, 4920
2770 ONJGOTO4970, 5020, 5070, 5120, 5220
2780 ONJGOTO5280, 5330, 5390, 5470, 5530
2790 ONJGOTO5580, 5630, 5640, 5650, 5660
2800 IFT<NTHEN2830
2810 PRINT"YOU'VE ALSO FOUND THE HIDING"
2820 PRINT"PLACE OF SATAN'S CONTRACTS. "
2830 IFT<T2THEN2880
2840 IFT1=T2THEN2880
2850 IFT1<NTHEN2880
2860 PRINT"BUT THE RECORDS HAVE BEEN"
2870 PRINT"MOVED. "
2880 RETURN
2890 DATA1, 0, 0, 0, 0, 0, 0
2900 CLS:PRINTCHR$(23)
2910 PRINT"YOU'RE AT A DEAD END!"
2920 GOTO2880
2930 DATA2, -2, 101, -2, 0, 0, 0
2940 CLS:PRINTCHR$(23)
2950 PRINT"YOU CAN'T GO IN THAT"
2960 PRINT"DIRECTION!"
2970 GOTO2880
2980 DATA3, 33, 2, 1, 10, 106, 4
2990 CLS:PRINTCHR$(23)
3000 PRINT"A TUNNEL EXTENDS IN FRONT AND"
3010 PRINT"BEHIND YOU. THERE IS A HOLE IN"
3020 PRINT"THE WALL ON YOUR RIGHT THAT"
3030 PRINT"IS GLOWING BRIGHT RED. "
3040 GOTO2880
3050 DATA4, 3, 30, 2, 11, 2, 1
3060 CLS:PRINTCHR$(23)
3070 PRINT"THE MUD IS STEAMING IN FRONT"
3080 PRINT"OF YOU. IT IS COMING FROM"
3090 PRINT"A DEEP PIT. "
3100 GOTO2880
```

```
3110 DATA5,8,8,15,10,8,16
3120 CLS:PRINTCHR$(23)
3130 PRINT"YOU'RE ON THE BANK OF THE"
3140 PRINT"RIVER STYX.     CHUNKS OF"
3150 PRINT"BRIMSTONE FLOAT ON MOLTEN"
3160 PRINT"LAVA     THE GATES OF HELL"
3170 PRINT"ARE AHEAD OF YOU. OVER THE"
3180 PRINT"GATES IS THE LEGEND;"
3190 PRINT
3200 PRINT"     'ABANDON ALL HOPE"
3210 PRINT"     YE WHO ENTER HERE'"
3220 GOTO2800
3230 DATA6,16,3,2,10,2,2
3240 CLS:PRINTCHR$(23)
3250 PRINT"YOU'VE ENTERED SATAN'S ROOM. ""
3260 PRINT"IT'S LUCKY FOR YOU THAT HE'S"
3270 PRINT"NOT HERE NOW. "
3280 GOTO2800
3290 DATA7,-2,101,-2,0,0,0
3300 CLS:PRINTCHR$(23)
3310 PRINT"SATAN IS HERE, YOU'D BETTER"
3320 PRINT"TRY ANOTHER WAY. "
3330 GOSUB5750
3340 GOTO2800
3350 DATA8,18,18,15,10,18,9
3360 CLS:PRINTCHR$(23)
3370 PRINT"YOU'RE IN PURGATORY, HELL IS"
3380 PRINT"STRAIGHT AHEAD. "
3390 GOTO2800
3400 DATA9,-2,33,5,1,0,-2
3410 GOTO2800
3420 DATA10,-2,101,-2,0,0,0
3430 CLS:PRINTCHR$(23)
3440 PRINT"YOU'RE NOT GOING TO GET FAR"
3450 PRINT"DIGGING THROUGH ROCK!!!"
3460 GOSUB5740
3470 GOTO2800
3480 DATA11,1,13,4,2,1,2
3490 CLS:PRINTCHR$(23)
3500 PRINT"YOU'RE AT THE BOTTOM OF A PIT. "
```

```
3510 PRINT"IT IS VERY DARK AND YOU CAN"  
3520 PRINT"HEAR THE SOUNDS OF BUBBLING"  
3530 PRINT"LAVA ON YOUR LEFT. "  
3540 GOTO2800  
3550 DATA12, 36, 2, 1, 2, 1, 2  
3560 CLS:PRINTCHR$(23)  
3570 PRINT"YOU'RE AT A DEAD END!!!"  
3580 GOTO2800  
3590 DATA13, 2, 37, 2, 1, 11, 14  
3600 CLS:PRINTCHR$(23)  
3610 PRINT"YOU'VE ENTERED A LARGE GROTTA. "  
3620 PRINT"THE FLOOR IS COVERED WITH"  
3630 PRINT"WHAT LOOKS LIKE HUMAN BONES,  
3640 PRINT"AND YOU CAN HEAR FAINT SOUNDS"  
3650 PRINT"ahead. "  
3660 GOTO2800  
3670 DATA14, 13, 1, 19, 2, 31, 31  
3680 CLS:PRINTCHR$(23)  
3690 PRINT"YOU'RE UNDER A HEATING SHAFT. "  
3700 PRINT"THERE IS A DIM RED GLOW ABOVE. "  
3710 GOTO2800  
3720 DATA15, -2, 101, -2, 0, 0, 0  
3730 CLS:PRINTCHR$(23)  
3740 PRINT"YOU'RE NOT A BIRD, YOU"  
3750 PRINT"CAN'T FLY!!!"  
3760 GOSUB5740  
3770 GOTO2800  
3780 DATA16, 5, 33, 2, 10, 1, 106  
3790 CLS:PRINTCHR$(23)  
3800 PRINT"YOU'RE IN HELL'S PORTAL. "  
3810 PRINT"A SMALL OPENING IS ON YOUR"  
3820 PRINT"LEFT AND YOU CAN SEE FORWARD"  
3830 PRINT"DIMLY AND TO YOUR RIGHT. "  
3840 PRINT"THERE IS LIGHT BEHIND YOU. "  
3850 GOTO2800  
3860 DATA17, -2, 101, -2, 0, 0, 0  
3870 CLS:PRINTCHR$(23)  
3880 PRINT"IT'S A TIGHT SQUEEZE, YOU"  
3890 PRINT"CAN'T GET PAST CARRYING"  
3900 PRINT"THE BOX OF CONTRACTS. "
```

```
3910 GOSUB5750
3920 DATA8, -2, 101, 8, 0, 0, 0
3930 CLS:PRINTCHR$(23)
3940 PRINT"IT LOOKS LIKE YOU'RE HAVING"
3950 PRINT"TROUBLE GOING TO HELL. "
3960 GOSUB5740
3970 GOTO2800
3980 DATA19, 224, 2, 2, 14, 1, 42
3990 CLS:PRINTCHR$(23)
4000 PRINT"YOU'RE AT THE TOP OF A HEAT-"
4010 PRINT"ING SHAFT. FUMES FROM BELOW"
4020 PRINT"BURN YOUR EYES. "
4030 GOTO2800
4040 DATA20, 226, 29, 2, 2, 25, 2
4050 CLS:PRINTCHR$(23)
4060 PRINT"THE TUNNEL FLOOR SUDDENLY DROPS"
4070 PRINT"AWAY. IT LOOKS TOO WIDE TO TRY"
4080 PRINT"AND JUMP, AND ECHOES FROM BELOW"
4090 PRINT"INDICATE IT IS VERY DEEP. "
4100 GOTO2800
4110 DATA21, 1, 226, 2, 2, 38, 25
4120 CLS:PRINTCHR$(23)
4130 PRINT"YOU'RE IN HELL'S CENTRAL"
4140 PRINT"HEATING SYSTEM, THERE ARE"
4150 PRINT"PIPES AND SHAFTS LEADING"
4160 PRINT"EVERYWHERE. "
4170 GOTO2800
4180 DATA22, -2, 33, 13, 50, 29, 30
4190 GOTO2800
4200 DATA23, 2, 1, 2, 31, 44, 2
4210 CLS:PRINTCHR$(23)
4220 PRINT"YOU'RE ON A ROCKY LEDGE OVER-"
4230 PRINT"LOOKING THE THIRD LEVEL OF"
4240 PRINT"TORMENT. "
4250 GOTO2800
4260 DATA24, -2, 101, 19, 0, 0, 0
4270 CLS:PRINTCHR$(23)
4280 PRINT"I HEAR THE GARGOYLES COMING!!!!"
4290 PRINT"YOU'D BETTER GO BACK!"
4300 GOSUB5740
```

```
4310 GOTO2800
4320 DATA5, 21, 28, 2, 2, 1, 27
4330 CLS:PRINTCHR$(23)
4340 PRINT"YOU'RE IN THE CAVE OF THE"
4350 PRINT"GARGOYLES. BETTER NOT BE"
4360 PRINT"HERE WHEN THEY RETURN!!!"
4370 GOTO2800
4380 DATA6, -2, 65, -2, 50, 11, 14
4390 CLS:PRINTCHR$(23)
4400 PRINT"YOU ARE IN DANTE'S INFERNO"
4410 PRINT"RESEARCH AND DEVELOPMENT"
4420 PRINT"AREA "
4430 PRINT
4440 PRINT"THIS LEVEL OF HELL IS NOT"
4450 PRINT"OPEN TO VISITORS, YOU WILL"
4460 PRINT"HAVE TO LEAVE IMMEDIATELY!!!"
4470 GOSUB5740
4480 GOTO2800
4490 DATA7, 25, 40, 2, 2, 21, 20
4500 CLS:PRINTCHR$(23)
4510 PRINT"YOU'RE IN THE PIT OF THE"
4520 PRINT"MORTAL SINNERS. I CAN HEAR"
4530 PRINT"THEM COMING NOW!!!"
4540 GOTO2800
4550 DATA8, -2, 60, 221, 50, 14, 19
4560 GOTO2800
4570 DATA9, 2, 43, 15, 13, 1, 1
4580 CLS:PRINTCHR$(23)
4590 PRINT"YOU'RE ON A NARROW LEDGE ABOVE"
4600 PRINT"A DARK PIT WHERE LOST SOULS"
4610 PRINT"FEED THE FURNACES. YOU MIGHT"
4620 PRINT"BE ABLE TO SLIDE DOWN BUT YOU"
4630 PRINT"WON'T BE ABLE TO GET BACK UP. "
4640 GOTO2800
4650 DATA30, 34, 34, 2, 1, 4, 2
4660 CLS:PRINTCHR$(23)
4670 PRINT"YOU'RE IN A LITTLE GROTTA. "
4680 PRINT"LOST SOULS SHOVEL COAL AND"
4690 PRINT"SULFUR INTO STEAMING PITS. "
4700 GOTO2800
```

```
4710 DATA31, 14, 14, 23, 2, 1, 45
4720 CLS:PRINTCHR$(23)
4730 PRINT"YOU HAVE ENTERED THE FOURTH"
4740 PRINT"LEVEL OF THE DAMNNED. AROUND"
4750 PRINT"YOU ARE THE TORMENTED WITH"
4760 PRINT"BURNING LOADS HUNG FROM THEIR"
4770 PRINT"ARMS AND LEGS. "
4780 GOTO2800
4790 DATA32, -2, 101, 516, 0, 0, 0
4800 CLS:PRINTCHR$(23)
4810 PRINT"YOU'RE IN THE SULFUR SUPPLY"
4820 PRINT"TUBE SLIDING DOWN AND DOWN. "
4830 PRINT"THERE'S NO WAY YOU CAN HOLD"
4840 PRINT"ON!!! WATCH OUT!!!"
4850 GOSUB5740
4860 GOTO2800
4870 DATA33, 2, 1, 2, 1, 116, 3
4880 CLS:PRINTCHR$(23)
4890 PRINT"THE TUNNEL NARROWS AND TURNS"
4900 PRINT"THE CORNER. "
4910 GOTO2800
4920 DATA34, 1, 35, 2, 1, 30, 30
4930 CLS:PRINTCHR$(23)
4940 PRINT"YOU'RE IN A NARROW TWISTING"
4950 PRINT"TUNNEL. "
4960 GOTO2800
4970 DATA35, 2, 1, 2, 37, 34, 36
4980 CLS:PRINTCHR$(23)
4990 PRINT"YOU'RE IN A TWISTING NARROW"
5000 PRINT"TUNNEL. "
5010 GOTO2800
5020 DATA36, 35, 2, 1, 37, 34, 12
5030 CLS:PRINTCHR$(23)
5040 PRINT"YOU'RE IN A VERY NARROW"
5050 PRINT"TWISTING TUNNEL. "
5060 GOTO2800
5070 DATA37, 2, 1, 35, 2, 13, 2
5080 CLS:PRINTCHR$(23)
5090 PRINT"YOU'RE IN A VERY TWISTING"
5100 PRINT"NARROW TUNNEL. "
```

```
5110 GOTO2800
5120 DATA38, 2, 21, 2, 116, 1, 2
5130 CLS:PRINTCHR$(23)
5140 PRINT"YOU'RE IN THE FIFTH LEVEL OF"
5150 PRINT"HIS SATANIC MAJESTY'S DOMAIN. "
5160 PRINT"HERE, THOSE WHOM LUCIFER"
5170 PRINT"GIVES HIS PERSONAL ATTENTION"
5180 PRINT"ARE DESTINED TO REMAIN FOR ALL"
5190 PRINT"ETERNITY. YOU CAN SEE A"
5200 PRINT"SMALL OPENING IN THE FLOOR. "
5210 GOTO2800
5220 DATA39, 41, 40, 2, 32, 21, 26
5230 CLS:PRINTCHR$(23)
5240 PRINT"YOU'RE STANDING IN FRONT OF AN"
5250 PRINT"EVIL SMELLING PIT. YOU MAY"
5260 PRINT"SLIP IN. WATCH OUT!!!"
5270 GOTO2800
5280 DATA40, 40, 40, 2, 2, 27, 41
5290 CLS:PRINTCHR$(23)
5300 PRINT"YOU'RE IN THE SECTION OF THE"
5310 PRINT"TWICE DAMMED!!!"
5320 GOTO2800
5330 DATA41, 40, 36, 2, 10, 40, 39
5340 CLS:PRINTCHR$(23)
5350 PRINT"YOU'RE IN THE SECTION OF THE"
5360 PRINT"CURSED, IT'S FILLED WITH"
5370 PRINT"POISONOUS FUMES. "
5380 GOTO2800
5390 DATA42, 28, 28, 28, 28, 28, 28
5400 CLS:PRINTCHR$(23)
5410 PRINT"YOU'RE IN THE CAVE OF LOST"
5420 PRINT"SOULS. SULFUR AND BRIMSTONE"
5430 PRINT"FUMES BURN YOUR EYES AND YOU"
5440 PRINT"HAVE ALSO LOST YOUR SENSE OF"
5450 PRINT"DIRECTION. "
5460 GOTO2800
5470 DATA43, 2, 1, 2, 10, 29, 2
5480 CLS:PRINTCHR$(23)
5490 PRINT"YOU'RE IN THE CAVERN OF FIRE. "
5500 PRINT"YOUR SKIN IS BURNING AND THE"
```



```
5510 PRINT"PAIN IS UNBEARABLE. "  
5520 GOTO2800  
5530 DATA4, 2, 23, 2, 10, 2, 2  
5540 CLS:PRINTCHR$(23)  
5550 PRINT"YOU'RE IN THE RECORD KEEPING"  
5560 PRINT"SECTION.  
5570 GOTO2800  
5580 CLS:PRINTCHR$(23)  
5590 DATA5, 31, 1, 2, 10, 2, 2  
5600 PRINT"YOU'RE IN ANOTHER RECORD"  
5610 PRINT"KEEPING SECTION. "  
5620 GOTO2800  
5630 REM  
5640 REM  
5650 REM  
5660 REM  
5670 END  
5680 A$=INKEY$  
5690 IFA$=""GOTO5680  
5700 IFA$="N"RETURN  
5710 IFA$="Y"RETURN  
5720 GOTO5680  
5730 FORI=1TO5000:NEXTI:RETURN  
5740 FORI=1TO2500:NEXTI:RETURN  
5750 FORI=1TO1000:NEXTI:RETURN  
5760 FORI=1TO500:NEXTI:RETURN  
5770 CLS:PRINTCHR$(23)  
5780 PRINT"YOU'RE GOING TO REGRET IT IF"  
5790 PRINT"TRY AGAIN. I'M GOING TO MAKE"  
5800 PRINT"THINGS A LITTLE HARDER FOR YOU"  
5810 PRINT"THIS TIME. "  
5820 PRINT  
5830 PRINT"GOOD LUCK!!!"  
5840 GOSUB5730  
5850 RETURN  
5860 CLS:PRINTCHR$(23)  
5870 PRINT:PRINT:PRINT:PRINT:PRINT  
5880 PRINT"        GOOD BYE"  
5890 PRINT:PRINT:PRINT:PRINT  
5900 END
```



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BASIC PITFALLS

by
William Mason

Are you smarter than I am? The Level II questions below represent programming mistakes I've made in the last year. Answers and corrections are on page 53.



TRUE OR FALSE

(A) Part 1: After the program below is run, the digits 1 through 9 will be left on the screen.

```
10 FOR K=1 TO 9
20 PRINTK, K
30 NEXT K
```

Part 2: After the program below is run, the digits 1 through 9 will be left on the screen.

```
10 FOR K=9 TO 1 STEP-1
20 PRINTK, K
30 NEXT K
```

(B) Part 1: the program below will print "Different".

```
10 A$="A":B$="B"
20 IFA$=B$PRINT"SAME"ELSEPRINT"DIFFERENT"
```

Part 2: The program below will print "Different".

```
10 A$="A"
20 IF A$="B"PRINT"SAME"ELSEPRINT"DIFFERENT"
```

(C) Part 1: The program below will print "Same" for any letter, number, or symbol you hit.

```
10 PRINT"HIT ANY LETTER, NUMBER, OR SYMBOL"
20 A$=INKEY$:IFA$=""THEN20
30 K=ASC(A$)
40 IFA$=CHR$(K)PRINT"SAME"ELSEPRINT"DIFFERENT"
```

Part 2: The program below will display any letter, number, or symbol you hit.

```
10 PRINT"HIT ANY NUMBER, LETTER, OR SYMBOL"  
20 A$=INKEY$: IF A$="" THEN 20  
30 K=ASC(A$)  
40 PRINT"YOU HIT THE ";CHR$(K); " KEY"
```

(D) The program below will print "Same".

```
10 A$="5"  
20 IF A$=STR$(VAL(A$))PRINT"SAME"ELSE PRINT  
"DIFFERENT"
```

(E) The program below will print "Hi There".

```
10 CLS:PRINTCHR$(23)  
20 PRINT@451, "HI THERE"  
30 GOTO30
```



Solutions to BASIC Pitfalls

(A) Part 1: False. Only "9" will be left on the screen. Each digit is printed with a leading blank, representing the "+" sign. Each

blank destroys a number printed on a previous loop. Conversion to string variables will do the job. Change line 20 to

```
20 PRINT@K, RIGHT$(STR$(K), 1)
```

Part 2: False. Only "1" will be left on the screen. Numbers are also printed with trailing blanks.

The change in part 1 above will work, or more simply,

```
20 PRINT@K, STR$(K);
```

(B) Part 1: True.

Part 2: False. Nothing will be printed. To make the program work, insert a blank after "B" in line 20. (Inserting THEN after "B"

will also work, of course.) It's the quotation mark that fouls things up, not the PRINT. The following program doesn't work either.

```
10 A$="A"  
20 IF A$="B"GOTO 40 ELSE PRINT "DIFFERENT"  
30 END  
40 PRINT "SAME"
```

(C) Part 1: True.

Part 2: False. The down, left and right arrows won't be

displayed (the up arrow will be however). To fix this, look at the table below.

Symbol hit	ASC() you get	ASC() you want
left arrow	8	93
right arrow	9	94
down arrow	10	92
up arrow	91	91

Relating the second column to the third column gives the correction. Insert the line

```
35 IF K<11 THEN K=91+K-INT((K-1)/3)*3
```

(D) False. "Different" will be printed. VAL(A\$) puts a blank, representing the "+" sign, in front of the 5. "Same" will be printed if line 20 is

```
20 IF " "+A$=STR$(VAL(A$))PRINT "SAME"
```

(E) False. Nothing will be printed. PRINTCHR\$(23) shifts to the large character mode. In this mode you may only use even-numbered locations after PRINT@. To make the program work, change 451 in line 20 to 450 to 452.

Your score	Rating
0	Well, at least there are two of us
1	Fair
2-3	Good
4	Very good
5	Please send me your phone number so I can call you will my programming problems.

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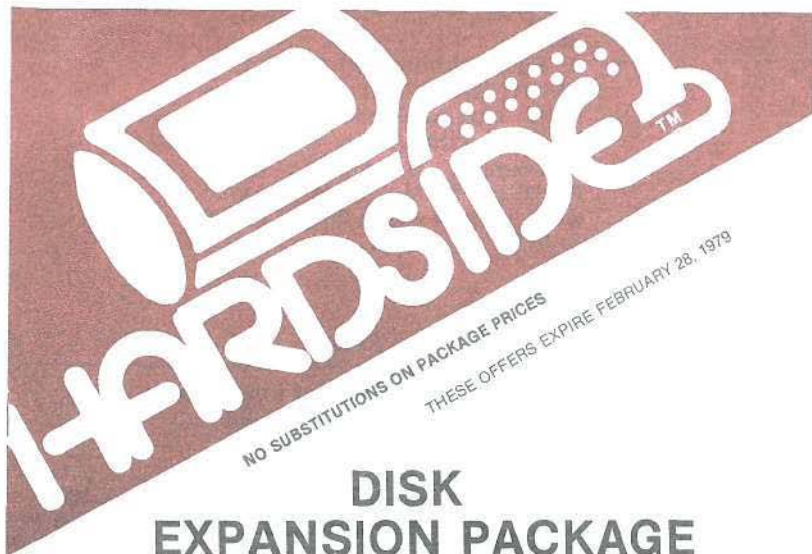
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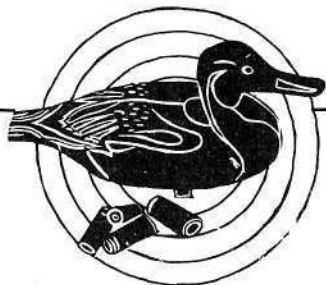
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DUCK HUNTER

by

Dan Lubarsky



Okay, Deadeye, here's your chance! Bag your limit without the discomfort of waiting in the duck blind with wet feet in the cold grey dawn.

The program places the position and angle of your gun and the height of the duck's flight. Fire away -- if you hit, the duck flutters to the ground. The computer keeps track of the number of shots and hits. You get 25 shots per turn. Can be played by one or two players.

```
3 REM-----THE DUCK HUNTER-----BY DAN LUBARSKY
5 CLEAR 1000
10 DEFSTR B-I
15 DEFINT J-Z
20          REM-----INITILIZE STRINGS
25 GOSUB 9000
30 CLS :INPUT" TYPE 1 OR 2 PLAYERS";P
40 IF P=1 THEN GOTO 100 ELSE INPUT "1ST PLAYER NAME";B1 :INPUT "
2ND PLAYER NAME";B2 :P1=1
50 FOR X=1 TO 300 :PRINT@ 384,B1;" GETS THE 1ST 25 SHOTS";:NEXT
X
100          REM ----SELECT 1 OF 5 GUNS
110 M1=RND(5)
200          REM---SELECT 1 OF 10 START POS.  OF DUCK
```

```

210 SD=RND(10)
220 ON SD GOTO 225, 230, 235, 240, 245, 250, 255, 260, 265, 270
225 ST=63-5 :GOTO 300
230 ST=127-5 :GOTO 300
235 ST=191-5 :GOTO 300
240 ST=255-5 :GOTO 300
245 ST=319-5 :GOTO 300
250 ST=383-5 :GOTO 300
255 ST=447-5 :GOTO 300
260 ST=511-5 :GOTO 300
265 ST=575-5 :GOTO 300
270 ST=639-5 :GOTO 300
300          REM--- PRINT DISPLAY
310          REM #'S 16,20,21=TULLEYS
315 CLS
320   FOR X=960 TO 1022
330   J=RND(3) : IF J=1 THEN J=16 ELSE IF J=2 THEN J=20 ELSE J=21
340   PRINT@X,CHR$(128+J);
350   NEXT X
360          REM----- DISPLAY GUN
380   IF M1=1 THEN PRINT@ 896,CHR$(128)+CHR$(160)+CHR$(134);:PRINT
@ 960,CHR$(184)+CHR$(151);
390   IF M1=2 THEN PRINT@ 909,CHR$(160)+CHR$(136)+CHR$(138);:PRINT
@ 971,CHR$(176)+CHR$(156)+CHR$(131);
400   IF M1=3 THEN PRINT@ 928,CHR$(149);:PRINT@ 992,CHR$(191);
410   IF M1=4 THEN PRINT@ 944,CHR$(129)+CHR$(132)+CHR$(144);:PRINT
@ 1010,CHR$(130)+CHR$(173)+CHR$(176);
420   IF M1=5 THEN PRINT@ 957,CHR$(137)+CHR$(144);:PRINT@ 1022,CHR
$(171);:SET(126,46):SET(126,47):SET(127,47)
795          REM-----START GAME
800   PRINT@ 0,"TO START HIT ANY KEY , THEN TO FIRE GUN HIT 'F' KE
Y";
810   IF INKEY$="" THEN GOTO 810 ELSE PRINT@0,"
"
900   GOSUB 1000 :          'MOV DUCK 1 PLACE
910   IF INKEY$="F" THEN GOTO 1100 :          '1100=FIRE GUN
920   IF Q=58 THEN GOTO 2500
925   GOTO 900
990          REM-----MOVE DUCK 1 PLACE

```

```

1000 Q=Q+1
1010 IF T<2 THEN T=2 ELSE T=1
1020 ON T GOTO 1030,1040
1030 PRINT@ ST-Q, D7; :RETURN
1040 PRINT@ ST-Q, D8; :RETURN
1090          REM-----FIRE GUN M=GUN # (1-5)
1100 S9=S9+1 :ON M1 GOTO 1115,1300,1440,1510,1630
1110          REM LEFT CORNER GUN 1
1115 IF POINT(49-3*SD,3*SD-2)=-1 THEN J1=1 ELSE J1=0 'HIT IF PO
INT(X=-Y+47) X=49-3SD,Y=3SD-2
1120 M=835 : X=835
1130   FOR N=1 TO 7
1140   PRINT@X,C0;
1150   PRINT@M,C1;
1160   PRINT@M,C0;
1170   PRINT@M,C2;
1180   PRINT@M,C0;
1190   PRINT@M+1,C3;
1200   PRINT@M+1,C0;
1210   PRINT@M-63,C4;
1220   PRINT@M-63,C0;
1230   PRINT@M-62,C5;
1240   PRINT@M-62,C0;
1250   PRINT@M-62,C6;
1260   X=M-62 : M=X-63
1270   NEXT N
1280 IF J1=1 THEN GOTO 2000 ELSE GOTO 9500
1290          REM----LEFT GUN 2
1300 M=848 : X=848
1315 IF POINT(119-6*SD,3*SD-2)=-1 THEN J1=1 ELSE J1=0 'IF POIN
T(X=-2Y+115) THEN HIT--SD=LINE DUCK IS ON--X=119-6SD,Y=3SD-2
1318   FOR N=1 TO 14
1320   PRINT@ X,C0;
1330   PRINT@ M,D1;
1340   PRINT@ M,C0;
1350   PRINT@ M+1,D2;
1360   PRINT@ M+1,C0;
1370   PRINT@ M+2,D3;
1380   X=M+2 : M=M-61
1390   NEXT N

```

```

1420 IF J1=1 THEN GOTO 2000 ELSE GOTO 9500
1430     REM----CENTER GUN 3
1440 IF POINT(64,3*SD-2)=-1 THEN J1=1 ELSE J1=0 'IF POINT(Y) TH
EN HIT---SD=LINE DUCK IS ON---Y=3SD-2
1445   FOR Y=41 TO 0 STEP -1
1450   SET(64, Y)
1460   RESET(64, Y)
1470   NEXT Y
1490 IF J1=1 THEN GOTO 2000 ELSE GOTO 9500
1500     REM-----RIGHT GUN 4
1510 M=879 : X=879
1515 IF POINT(6*SD+8,3*SD-2)=-1 THEN J1=1 ELSE J1=0 'IF POINT(X
=2Y+12) X=6SD+8, Y=3SD-2
1520   FOR N=1 TO 14
1530   PRINTM, C0;
1540   PRINTM, F1;
1550   PRINTM, C0;
1560   PRINTM-1, F2;
1570   PRINTM-1, C0;
1580   PRINTM-2, F3;
1590   X=M-2 : M=M-67
1600   NEXT N
1615 IF J1=1 THEN GOTO 2000 ELSE GOTO 9500
1620     REM-----RIGHT CORNER GUN 5
1630 M=892 : X=892
1635 IF POINT(3*SD+78,3*SD-2)=-1 THEN J1=1 ELSE J1=0 'IF POINT
(X=Y+80) X=3SD+78, Y=3SD-2
1640   FOR N=1 TO 7
1650   PRINTM, C0;
1660   PRINTM, G1;
1670   PRINTM, C0;
1680   PRINTM, G2;
1690   PRINTM, C0;
1700   PRINTM-1, G3;
1710   PRINTM-1, C0;
1720   PRINTM-65, G4;
1730   PRINTM-65, C0;
1740   PRINTM-66, G5;
1750   PRINTM-66, C0;
1760   PRINTM-66, G6;

```

```

1770 X=M-66 : M=X-65
1780 NEXT N
1800 IF J1=1 THEN GOTO 2000 ELSE GOTO 9500
1990 REM---" !!! HIT !!! "-----
      DROP THE DUCK --POS. =ST+Q
2000 S=S+1 :IF P1=1 THEN S1=S1+1 : SCORE 1 HIT
2005 IF P2=1 THEN S2=S2+1
2010 X1=ST-Q : A=0 : ST+Q=POS. OF DUCK
2020 PRINT@ X1, " " : ERASE DUCK
2030 FOR SD=50 TO 13 : DROP FROM POS. TO 16
2040 PRINT@ X1+ 64+A, I1;
2050 PRINT@ X1+128+A, I2;
2060 PRINT@ X1+ 64+A, I3;
2090 PRINT@ X1+128+A, I4;
2100 PRINT@ X1+192+A, I5;
2120 PRINT@ X1+ 64+A, I6;
2130 PRINT@ X1+128+A, I7;
2140 PRINT@ X1+192+A, I8;
2160 PRINT@ X1+ 64+A, I9;
2180 A=A+64
2190 NEXT SD
2200 PRINT@ X1+64+A, I6;
2210 PRINT@ X1+128+A, I9;
2500 REM-----RESET FOR NEW SHOT
2505 PRINT@ ST-Q, " ";
2510 IF P=1 THEN PRINT@ 838, "HITS"; S; ELSE PRINT@ 838, LEFT$(BL, 4
); S1; :PRINT@884, LEFT$(B2, 4); S2;
2520 IF S9=25 THEN P1=0 : P2=1 :GOTO 2545
2530 IF S9=50 THEN GOSUB 8000 : 'GAME OVER
2540 GOTO 2550
2545 FOR X=1TO400 : PRINT@0, B2; "'S TURN FOR 25 SHOTS"; : NEXT X
2550 PRINT@0, "HIT ANY KEY TO BEGIN NEXT SHOT"; :IF INKEY$="" THE
N 2550
2555 Q=0
2560 GOTO 100
8000 REM---GAME OVER
8010 PRINT@ 0, "GAME OVER";
8015 IF S1=52 THEN PRINT@ 776, B1; "DRAW"; :PRINT@ 819, B2; "DRAW"
; :GOTO8030
8020 IF S1>S2 THEN PRINT@ 776, B1; "WINS"; ELSE PRINT@ 819, B2; "W

```

```

INS";
8030 PRINT@ 64," " :INPUT "FOR A NEW GAME WITH NEW PLAYERS YES OR
NO";B4
8040 IF B4="YES" THEN INPUT "1ST PLAYER NAME";B1 :INPUT "2ND PLA
YER NAME";B2
8050 S=0 : S1=0 :S2=0 :P1=1 :P2=0 :S9=0
8055 FOR X=1 TO 300 :PRINT@448,B1;" GETS 1ST 25 SHOTS";
8060 RETURN
9000 REM----STRINGS FOR DISPLAY
9010 'FLYING DUCK
9020 D9=CHR$(136):E9=CHR$(140):F9=CHR$(132):C0=CHR$(128)
9030 D7=D9+D9+E9+E9+E9+D9+C0
9040 D8=F9+CHR$(172)+CHR$(158)+CHR$(141)+F9+F9+C0
9050 'BULLETS GUN 1
9060 C1=CHR$(144):C2=CHR$(136):C3=CHR$(129):C4=CHR$(160):C5=CHR$
(132):C6=CHR$(130)
9070 'GUN 2
9080 D1=CHR$(160):D2=CHR$(136):D3=CHR$(130)
9090 'GUN 3 SET,RESET USED
9100 'GUN 4
9110 F1=CHR$(144):F2=CHR$(132):F3=CHR$(129)
9120 'GUN 5
9130 G1=CHR$(160):G2=CHR$(132):G3=CHR$(130):G4=CHR$(144):G5=CHR$
(136):G6=CHR$(129)
9140 'FALLING DUCK
9150 I0=C0+C0+C0
9160 I1=CHR$(138)+CHR$(186)+CHR$(152)
9170 I2= D0+CHR$(171)+CHR$(129)
9180 I3=CHR$(160)+CHR$(168)+CHR$(160)
9190 I4= C0+CHR$(175)+CHR$(135)
9200 I5= C0+CHR$(130)+C0
9210 I6= C0+CHR$(160)+C0
9220 I7=CHR$(130)+CHR$(190)+C0
9230 I8= C0+CHR$(138)+C0
9240 I9=CHR$(144)+CHR$(190)+CHR$(188)
9250 RETURN
9499 REM CHECK S9 ---WHEN PLAYER TAKES MORE THAN ONE S
HOT AT A DUCK
9500 IF S9=25 OR S9=50 THEN GOTO 2500 ELSE GOTO 920
10000 GOTO 10000

```

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