

# SoftSide™ Apple Edition

VOL.1, ISSUE 5, MAY 1980 \$2.00



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# BISMARCK!

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# ADVENTURES

by Scott Adams

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Gentlemen:

I received my SoftSide: Apple Version today. As you can see I wasted no time in attempting to code in and check out some of the programs.

There are a few bugs.

In programming tips "The Vocal Apple" there should be a multitude of uses for the machine language routine to make so many different sounds. With some more coding to have single key inputs for a chromatic scale you can have an Apple piano. I will send it along when it is done.

There is no return following the GOSUB in Line 100. The programs loads the machine language routine and dies. Also there is no end which gets an error message in Integer BASIC.

I also took the print with sound subroutine out of Chip Anderson's "Connection" for use elsewhere. In that program as in some others it is unclear without some study whether the program is in integer or floating point BASIC and there are just enough differences to matter.

Keep up the good work!

Sincerely,

Nelson Gothie  
McConnellsburg, PA

Two new magazines for APPLE computer users appeared in January. Of the two, I find that SoftSide is the best thing I have found in computer magazines.

Somehow I was put on your mailing list and I received your February issue and started reading. In five minutes I was busily keying "Super-Nim" into my Apple and was the happiest I had been with my computer in the five months I have owned it. This magazine is perfect for me. It is full of programming hints and techniques, which I need. And primarily, your magazine is (joy of joys) strictly for Apple users! No more translating programs from languages that I have to sit and figure out. No more guessing as to what a TRS-80 command means in AppleSoft. And now I have somewhere that I know I can communicate with people who have the same problems and needs as I do. Thank you for opening up this door for me and I hope to be writing again in the future to share some of my programs and programming ideas.

Christopher K. Haun  
Rantoul, IL

P.S. Remember, it is very important that you state in all

articles and advertising whether the programs are written in AppleSoft or Integer BASIC. You were pretty good with that in the February issue, but you did miss some.

Congratulations to Michael Wienstock, who has moved from Editor of SoftSide to Vice President of the International Apple Corps.

We've had several letters inquiring whether certain programs are in AppleSoft or Integer BASIC, plus some citing errors that we diagnosed as occurring because an AppleSoft program has been typed in on an Integer BASIC system or vice versa. We hope most of this has been rectified by now. As a standard, we will print our programs with the prompts that occur in either version of BASIC. Integer BASIC programs will start with >LIST, and AppleSoft programs with ]LIST. We're sorry for any confusion we've caused.

*M.P.*

OOPS....

In the February issue's "VOCAL APPLE" article, as stated in Nelson Gothie's letter in this issue, we omitted the lines:

330 RETURN  
340 END

STAFF 4, BUGS 1. (There went the shutout....)

**IS THERE LIFE ON OTHER PLANETS?**

Our feature program this month, by the talented Mark Pelczarski, is a re-creation of the popular arcade

game ALIEN INVASION. Mark has added some interesting twists, including super-rapid laser fire instead of the usual slower moving missiles and a surprise ending that had our staff rolling around on the floor, laughing helplessly...look for a lot more quality offerings from Mark in these pages in the months to come.

**APPLE CLOSES GENERATION GAP**

The program RIGHT/LEFT is the first program we've seen that allows toddlers to play with an Adult Machine (simultaneously getting a head start on learning the vital concept of the difference between Left and Right). Don't skip this one just because there are no spoonbangers in your domicile; the author demonstrates some useful techniques for disabling RESET and CTRL C.

**CAN A SMALL ROUND APPLE SINK A BIG BAD GERMAN BATTLESHIP?**

"Historical wargaming may be the only intellectual hobby which creates more intensely devoted fanatics than home computing."

So begins the advertisement for COMPUTER BISMARCK from a company called Strategic Simulations Inc. Blending the aforementioned hobbies in the style of the popular Avalon Hill wargames, BISMARCK represents a quantum leap forward in Apple programming, packaging and presentation.

The first thing you notice is the 8½" x 11" box in which this simulation is packaged. At first glance it looks just like one of the "bookshelf" games. Opening the silver, blue and red box, you

discover enough paraphernalia to delight the soul of the most avid wargamer: data sheets on the British and German ships and planes, a 15 page rule book, maps and charts galore, and even a set of two grease pencils with which the players can plan their strategies on the specially prepared maps.

The program simulates the attempted breakout of the German battleship BISMARCK into the North Atlantic in May 1941. One player commands the British fleet and naval air forces while the second player (or the computer) directs the German fleet.

In addition to being as rich in detail as any non-computerized wargame (including several pages on the historical background of the battle), BISMARCK brings all

of the inherent gaming advantages of the computer to an already exciting field. No longer need the players suffer the distraction and drudgery of paper and pencil scoring. Since the computer knows all the rules and all of the relevant historical data, the time normally given to constant reference to rulebooks and bookkeeping is freed for actual play.

Congratulations to Strategic Simulations and the many talented people who put this package together and opened a new dimension to Apple users.

What will be next?

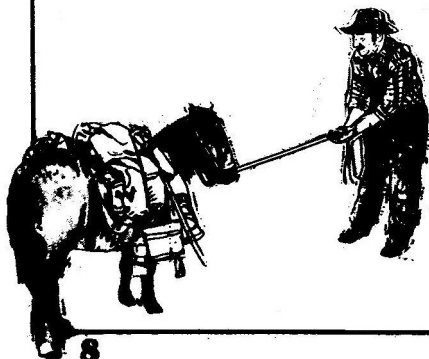
*James*

# Lost Dutchman's Gold

by Teri Li

This unique CompuNovel combines the best features of **Adventure** with the thrill of the old west. There is an old prospector, a stubborn mule, a ghost town, a cave in the fabled Superstitions mountains, Indians, a burning desert, and the fabulous treasure of the **Lost Dutchman's Gold**. So grab your rifle and your saddlebags 'pardner' and get ready for the **Adventure** of a lifetime!

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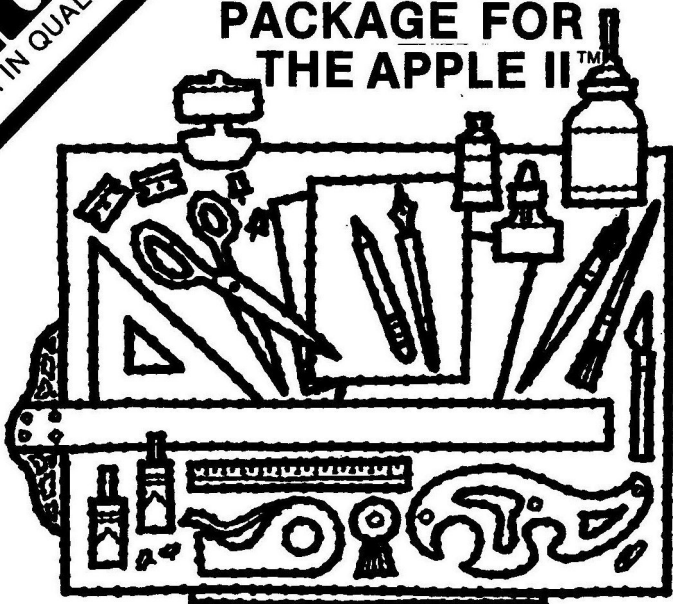




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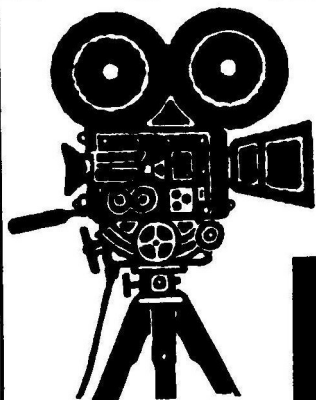
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# THE SMALL MARQUEE

by Mark J. Wolfson



A small movie theater has scheduled some old and new blockbuster films in effort to bolster business. However, the theater's small marquee cannot accommodate the full titles.

So, the manager said, "Just eliminate all the vowels and spaces!"

Imagine you're driving by this theater and see the following marquees. Try to guess the full titles.

(For example: "GNWHTHWD" would be "Gone With The Wind"). If you can't guess a title type "7". By the way, this particular theater manager considers "Y" to be a vowel.

## APPLESOFT

LIST

5 N = 30

10 HOME : INVERSE

20 DIM M\$(N)

30 M\$ = "THE SMALL MARQUEE"

40 B\$ = "-----"

- - -"

50 C\$ = B\$ + M\$ + " " + B\$

60 HTAB 3: VTAB 8: FOR I = 1 TO

34: PRINT "\*": NEXT I

70 HTAB 3: VTAB 12: FOR I = 1 TO

34: PRINT "\*": NEXT I

80 FOR I = 1 TO 3: HTAB 3: VTAB

8 + I: PRINT "\*": NEXT I

90 FOR I = 1 TO 3: HTAB 36: VTAB

8 + I: PRINT "\*": NEXT I

100 NORMAL

110 HTAB 19: VTAB 14: PRINT "BY"

120 HTAB 13: VTAB 16: PRINT "MAR  
K J. WOLFSON"

130 HTAB 13: VTAB 18: PRINT "BUR  
BANK, CALIF."

140 INVERSE

150 FOR X = 1 TO 2

160 FOR I = 1 TO LEN (C\$) - 30

170 D\$ = MID\$(C\$, I, 30)

180 HTAB 5: VTAB 10

190 PRINT D\$

200 FOR J = 1 TO 75: NEXT J

210 NEXT I

220 NEXT X

230 NORMAL : HOME

240 HTAB 3: PRINT "A SMALL MOVIE  
THEATER HAS SCHEDULED"

250 PRINT "SOME OLD AND NEW BLOC  
KUSTER FILMS IN"

260 PRINT "AN EFFORT TO BOLSTER  
BUSINESS. HOWEVER."

270 PRINT "THE THEATER'S SMALL M  
ARQUEE CANNOT"

280 PRINT "ACCOMMODATE THE FULL T  
ITLES."

290 PRINT

300 HTAB 3: PRINT "SO THE MANAGE  
R SAID: 'JUST ELIMINATE"

310 PRINT "ALL THE VOWELS AND SP  
ACES !'"

320 PRINT

330 HTAB 3: PRINT "IMAGINE DRIVI  
NG PAST THIS THEATER"

340 PRINT "AND YOU SEE THE FOLLO  
WING MARQUEES."

350 PRINT "TRY TO GUESS THE FULL  
TITLES."

360 PRINT : PRINT "(FOR EXAMPLE,  
'GNWHTHWD' WOULD BE"

370 PRINT "'GONE WITH THE WIND'"

380 PRINT

390 PRINT "IF YOU CAN'T GUESS A

```

TITLE, TYPE "?"
400 PRINT : PRINT "BY THE WAY, I
HIS PARTICULAR THEATER". PRINT
"MANAGER CONSIDERS 'Y' TO BE
A VOWEL ". PRINT
410 HTAB 10
420 PRINT "HIT ANY KEY TO BEGIN
"). GET R$
430 HOME
440 FOR J = 1 TO N. READ W$(J):
NEXT J
450 Q = INT (N * RND (1) + 1)
460 LET W$ = W$(Q)
470 IF W$ = "-1" THEN 450
490 W$(Q) = "-1"
500 GOSUB 950
510 IF T$ = "?" THEN GOTO 600
520 IF T$ = W$ THEN 600
540 M = INT (3 * RND (1) + 1)
550 IF M = 1 THEN VTAB 18: PRINT
"INCORRECT. THE FULL TITLE I
S": PRINT W$, ". "
560 IF M = 2 THEN VTAB 18: PRINT
"SORRY, THAT'S WRONG. THE CO
RRECT TITLE". PRINT "IS ";W$
". "
570 IF M = 3 THEN VTAB 18: PRINT
"NOPE, THAT'S NOT IT. ". PRINT
W$: " IS THE RIGHT ANSWER. "
580 W1 = W1 + 1. IF C1 + W1 = 20 THEN
FOR I = 1 TO 1750. NEXT I. GOTO
700
590 GOTO 720
600 C = INT (5 * RND (1) + 1)
610 IF C = 1 THEN VTAB 18: PRINT
"CORRECT!"
620 IF C = 2 THEN VTAB 18: PRINT
"VERY GOOD!"
630 IF C = 3 THEN VTAB 18: PRINT
"YES, THAT'S RIGHT!"

```

```

640 IF C = 4 THEN VTAB 18: PRINT
"YOU GOT IT!"
650 IF C = 5 THEN VTAB 18: PRINT
"ABSOLUTELY RIGHT!"
660 C1 = C1 + 1: IF C1 + W1 = 20 THEN
FOR I = 1 TO 1200. NEXT I. GOTO
700
670 GOTO 720
680 VTAB 18: PRINT "SORRY YOU CO
ULDN'T FIGURE THIS ONE OUT. "
690 PRINT "THE ANSWER IS ";W$: ".
"
700 W1 = W1 + 1: IF C1 + W1 = 20 THEN
FOR I = 1 TO 1750. NEXT I: GOTO
700
710 GOTO 720
720 VTAB 22: PRINT "TRY ANOTHER
"
730 INPUT T$
740 IF LEFT$(T$,1) = "Y" THEN
450
750 IF LEFT$(T$,1) = "N" THEN
700
760 PRINT "I DON'T UNDERSTAND. ".
PRINT "PLEASE TYPE YES OR N
O. ": GOTO 730
780 HOME
790 HTAB 7: VTAB 2
800 PRINT "WELL, HERE'S HOW YOU
DID:"
810 PRINT : PRINT
820 HTAB 5: PRINT "YOU GOT. ",
830 HTAB 15: PRINT C1, " RIGHT"
840 HTAB 15: PRINT W1, " WRONG"
850 S = INT (C1 / (C1 + W1) * 10
0)
860 PRINT
870 HTAB 15: PRINT "YOUR SCORE I
S ";S;"%"

```

```

880 PRINT : PRINT
890 IF S < 60 THEN PRINT "IT'S
A LOT HARDER THAN YOU THOUGHT
IT IS" PRINT "WOULD BE, ISN'T
IT?"
900 IF S < = 60 AND S < 75 THEN
PRINT "NOT BAD, BUT IT'S QU
ITE OBVIOUS THAT": PRINT "YO
U SPEND MORE TIME IN FRONT O
F THEM": PRINT "LITTLE SCREEN
AT HOME."
910 IF S < = 75 AND S < 90 THEN
PRINT "NOT TOO SHABBY. EITH
ER YOU KNOW YOUR": PRINT "YO
UR MOVIE TITLES OR YOU LEARN
ED" PRINT "ENGLISH FROM A V
ERY WEIRD TEACHER."
920 IF S < = 90 AND S < = 100 THEN
PRINT "ALL RIGHT!! YOU EITH
ER HAVE A REAL": PRINT "KNOC
K FOR THIS DUMB GAME OR YOU"
PRINT "LEARNED ENGLISH USI
NG ONLY 26 LETTERS!"
940 END
950 A$ = ""
960 FOR I = 1 TO LEN (W$)
990 B$ = MID$(W$,I,1)
1000 IF B$ = "A" OR B$ = "E" OR
B$ = "I" OR B$ = "O" OR B$ =
"U" OR B$ = "Y" OR B$ = " " THEN
B$ = ""
1070 A$ = A$ + B$
1080 NEXT I
1090 HOME
1100 INVERSE
1110 HTAB (40 - LEN (A$)) / 2 -
2: VTAB 10
1120 PRINT " ";A$; " "
1130 HTAB (40 - LEN (A$)) / 2 -
4: VTAB 8: FOR I = 1 TO LEN

```

```

(A$) + 8: PRINT "*": NEXT I
1140 HTAB (40 - LEN (A$)) / 2 -
4: VTAB 12: FOR I = 1 TO LEN
(A$) + 8: PRINT "*": NEXT I
1150 H = H + 1: IF H < = 3 THEN
HTAB (40 - LEN (A$)) / 2 -
4: VTAB 8 + H: PRINT "*" GOTO
1150
1160 V = V + 1: IF V < = 3 THEN
HTAB (40 - LEN (A$)) / 2 +
(LEN (A$) + 3): VTAB 8 + V:
PRINT "*" GOTO 1160
1170 NORMAL
1180 H = 0: V = 0
1190 HTAB 1: VTAB 14
1200 INPUT "FULL TITLE? ";T$
1210 IF T$ = "" THEN GOTO 1190
1220 RETURN
1230 DATA ANIMAL HOUSE, DIRTY H
ARRY, DRACULA, BONNIE AND CLY
DE, CLEOPATRA
1240 DATA THE ONEN, FANTASIA, LO
VE STORY, CASABLANCA, SUPERMAN
1250 DATA AIRPORT, ALFIE, YELLOW
SUBMARINE, TOP HAT, DIAL M
FOR MURDER
1260 DATA ALL ABOUT EVE, THE CAI
NE MUTINY, IT HAPPENED ONE NI
GHT, THE ODD COUPLE, DEEP TH
ROAT
1270 DATA LAST TANGO IN PARIS,
YANKEE DOODLE DANDY, CABARET
, LAWRENCE OF ARABIA, DOG DA
Y AFTERNOON
1280 DATA THE SPY WHO LOVED ME,
INTERIORS, EARTHWARKE, ANNI
E HALL, SILENT MOVIE
1290 END

```

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Designed by Steve Ciarcia, featured in January, 1980 BYTE.

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TO ORDER TOLL-FREE  
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# HYPERBOLOID

by John Mauch

$Z = \sqrt{A^2 + B^2}$

$Z = \sqrt{A^2 + B^2}$

$$Y = C + A$$

$X = A$

$A = Z \sin \theta$

Here is an excellent example of three-dimensional, HI-RES graphics. For those of you who flunked solid geometry, you can picture a "Hyperboloid of Revolution" as a very tight corset...

## APPLESOFT

```
10 REM 3-D HYPERBOLOID GRAPH
20 REM WRITTEN BY JON MAUCH
30 REM MADEIRA CITY SCHOOLS
40 REM WRITTEN WITH APPLE II
50 REM
60 HGR :B = 20: HCOLOR= 3:PI = 3
   .14159265
70 HOME : VTAB 21: PRINT "THREE-
   DIMENSIONAL HYPERBOLOID"
80 AN = PI / 9:AS = SIN (AN):AC =
   COS (AN)
90 BN = PI / 16:BS = SIN (BN):BC =
   COS (BN)
100 HPLOT 140,0 TO 140,90 TO 149
   + 90 * BC,90 + 90 * BS: HPLOT
   140,90 TO 140 - 90 * AC,90 +
   90 * AS
110 FOR Z = - 40 TO 40 STEP 6
120 FOR S = 1 TO - 1 STEP - 2:
   CT = 0
```

```
130 FOR X = - SQR (B * B + Z *
   Z - 1) TO SQR (B * B + Z *
   Z - 1) STEP 4
140 Y = S * SQR (B * B + Z * Z -
   X * X)
150 CT = CT + 1: IF CT = 1 THEN 2
   10
160 HCOLOR= S + 4
170 HPLT TO 140 + Y * BC - X *
   AC,90 - Z + X * AS + Y * BS
180 NEXT : NEXT : NEXT
190 VTAB 23: INPUT "PRESS RETURN
   TO STOP: ";RS: TEXT : HOME
200 END
210 HPLT 140 + Y * BC - X * AC,
   90 - Z + X * AS + Y * BS
220 GOTO 180
```



# The Best Has Gotten Better!

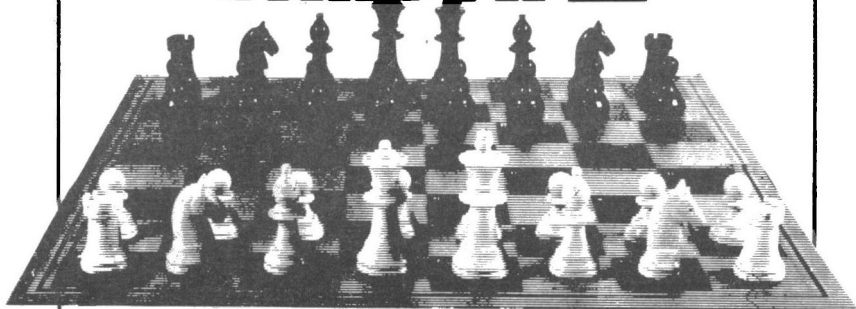
Sargon, the program that came in first in the Creative Computing Microcomputer Chess Tournament, has become Sargon II - **\$29.95**

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# MAGIC CAVE

by Chuck Hartley

You're on an expedition to locate the legendary "Magic Cave". Rumor has it that there is a

fortune in solid gold deep in the cavern.

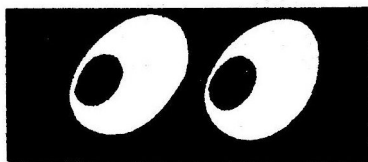
Suddenly, you stumble across a gap at the base of a moss-covered hill. Strange rumblings filter out of the hole and you feel the earth trembling slightly. A small plaque, barely visible, at the side of the crevice reads, "Earnest P. Troll, Connoisseur of Humans."

You take a deep breath, heft your shovel, and descend...

If you enjoy fast action maze games, you'll love "Magic Cave", with it's rapidly changing maze,

LO-RES graphics, real-time action, and hungry troll!

Chuck Hartley has his own software company, Sensible Software, P.O. Box 2395, Dearborn, MI 48123. His most recent program is an excellent disk management system.



## INTEGGER

```

1 DIM A$(10)
2 DIM M$(40)
3 GOTO 2000
1400 DX=OFF: DY=OFF
1410 COLOR=OFF: PLOT TX, TY
1415 IF T1<OFF THEN 1550
1420 IF TX=PX THEN 1500
1430 DX= SGN (PX-TX)
1440 IF SCRNX(TX+DX, TY) < CC THEN
1700
1445 DX=OFF
1500 IF TY=PY THEN 1540
1510 DY= SGN (PY-TY)
1520 IF SCRNX(TX, TY+DY) < CC THEN
1700
1530 DY=OFF
1540 T1=OFF
1550 D=C3* RND (TWO): ROT= SGN (TWO-
D)
1560 T1=(T1+ONE) MOD C6
1600 GOTO 1610+C20*D
1610 DX=ONE: IF SCRNX(TX+DX, TY) <
CC THEN 1700
1620 DX=OFF: D=D+ROT

```

```

1630 DY=ONE: IF SCRNX(TX, TY+DY) <
CC THEN 1700
1640 D=D+ROT: DY=OFF
1650 DX=-ONE: IF SCRNX(TX+DX, TY) <
CC THEN 1700
1660 D=D+ROT: DX=OFF
1670 DY=-ONE: IF SCRNX(TX, TY+DY) <
CC THEN 1700
1680 DY=OFF
1700 TX=TX+TWO*DX: TY=TY+TWO*DY
1710 IF TX=PX AND TY=PY THEN 2000

```

```

1720 COLOR=CT: PLOT TX, TY
1730 IF RND (H) < OFF THEN 1790
1740 COLOR=OFF: GOTO 1741+ RND (
C4)
1741 IF TX<ONE THEN PLOT TX-ONE,
TY: GOTO 1790
1742 IF TY<ONE THEN PLOT TX, TY-ONE:
GOTO 1790
1743 IF TX<C37 THEN PLOT TX+ONE,
TY: GOTO 1790
1744 IF TY<C37 THEN PLOT TX, TY+ONE.
GOTO 1790

```

```

1790 RETURN
1800 M=PEEK (K1): POKE K2,OFF
1802 X=PX, Y=PY
1810 IF M=CU AND SCRNX(PX, PY-ONE)
=OFF THEN PY=PY-TWO
1820 IF M=CD AND SCRNX(PX, PY+ONE)
=OFF THEN PY=PY+TWO
1830 IF M=CL AND SCRNX(PX-ONE, PY)
=OFF THEN PX=PX-TWO
1840 IF M=CR AND SCRNX(PX+ONE, PY)
=OFF THEN PX=PX+TWO
1845 COLOR=OFF: PLOT X,Y
1850 IF SCRNX(PX, PY)=CG THEN GOSUB
4000
1860 COLOR=CP: IF G=OFF THEN 1870

1861 COLOR=CG: IF PX=ONE THEN 1870

1862 IF PY=ONE THEN 6000
1870 IF SCRNX(PX, PY)=CT THEN 7000

1880 PLOT PX, PY
1889 IF RND (C3)>OFF THEN 1900
1890 COLOR=OFF: GOTO 1891+ RND (
4)
1891 IF PX=ONE THEN PLOT PX-ONE,
PY: GOTO 1900
1892 IF PY=ONE THEN PLOT PX, PY-ONE:
GOTO 1900
1893 IF PX=C37 THEN PLOT PX+ONE,
PY: GOTO 1900
1894 IF PY=C37 THEN PLOT PX, PY+ONE:
GOTO 1900
1900 RETURN
2000 REN MAIN-PM
2002 GOSUB 9010
2100 IF G=ONE THEN 2220
2110 COLOR=OFF: PLOT G1, G1
2120 COLOR=CG: PLOT G1, G1

```

```

2220 GOSUB 1800
2320 GOSUB 1400
2400 A=TWO* RND (C18)+TWO
2410 B1=TWO* RND (C19)+ONE
2450 COLOR=CC+ RND (2)
2460 PLOT BL, A: PLOT A, B1
2990 GOTO 2100
4000 G=ONE: REN GOLD FOUND
4005 H=TWO
4010 CALL -936
4020 M="YOU FOUND THE GOLD!!!":
GOSUB 9000
4030 GOSUB 9001
4040 M="BUT THE TROLL SAYS, ": GOSUB
9000
4050 M="YOU'LL NEVER GET IT OUT!!!":
: GOSUB 9000
4060 GOSUB 9070: RETURN
6000 REN YOU WIN
6001 REN -----
6010 CALL -936
6020 PRINT "YOU DID IT!!!"
6040 M="GOT AWAY WITH ALL THAT GOLD:
!!": GOSUB 9000
6060 M=" ": GOSUB 9000
6070 M="WOULD YOU LOAN ME A FEW THOU
SAND?": GOSUB 9000
6075 GOSUB 9001: GOSUB 9001
6080 TEXT : CALL -936
6090 VTB 10: TAB 5
6100 POKE K2, 0
6110 PRINT "CARE TO TRY FOR SOME MORE
GOLD?";
6120 INPUT M: IF M<L1)="Y" THEN"
2000: END
7000 REN YOU LOSE
7001 REN -----
7010 CALL -936
7020 M="YUM YUM ARE YOUR RELATIVES
THIS TASTY?"

```

```

7838 GOSUB 9000: GOSUB 9001
7850 M$="THE TROLL JUST ATE YOU FOR D
INNER !!!": GOSUB 9000
7870 GOTO 6875
9000 FOR Q=1 TO LEN(M$): PRINT M$
(Q,Q): FOR Q1=1 TO 16: NEXT
Q1,Q: PRINT : FOR Q=1 TO 400
: NEXT Q: RETURN
9001 M$=" " : GOSUB 9000
: RETURN
9009 REM BANNER
9010 TEXT : CALL -936
9011 VTAB 9: TAB 14: PRINT "MAGIC CAV
E"
9012 VTAB 16: TAB 4: PRINT "A CREATIO
N OF SENSIBLE SOFTWARE"
9014 GOSUB 9001: GOSUB 9001
9015 REM CAVE
9016 GR : CALL -936:CG=13:CT=12:
CC=10:CP=15: COLOR=CC
9017 FOR I=0 TO 38 STEP 2: H.LIN
0,38 AT I: V.LIN 0,38 AT I: NEXT
I
9018 FOR X=1 TO 37 STEP 2: FOR Y=
2 TO 36 STEP 2: COLOR= RND
(2)*CC: PLOT X,Y: PLOT Y,X:
NEXT Y,X
9020 REM TROLL&PLAYER
9021 G=0:PX=1:PY=1: COLOR=CP: PLOT
PX,PY
9022 TX=21:TY=19: COLOR=CT: PLOT
TX,TY
9023 DT=1
9024 H=50
9028 REM CONSTANTS
9031 ONE=1:TWO=2:C18=18:C19=19:G1=
37
9032 C3=3:C20=20:CG=6:CA=4
9033 C37=37

```

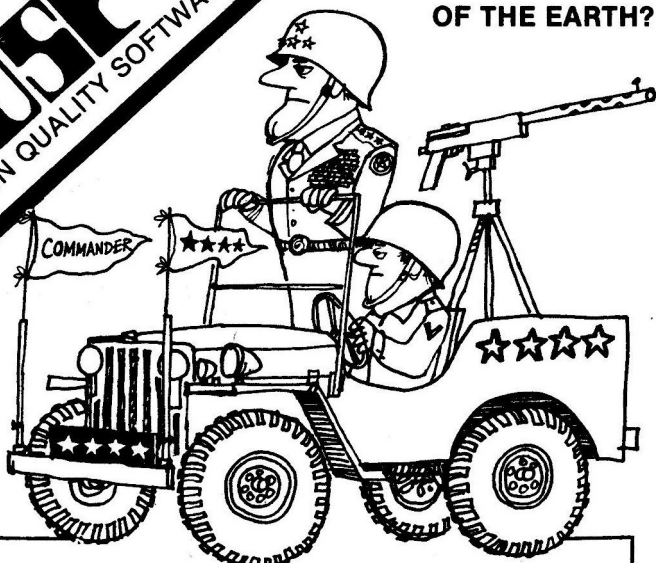
```

9034 K1=-16384:K2=-16368
9035 CU=213:CD=196:CL=204:CR=210
9040 REM INSTRUCTIONS
9041 IP=IP+1: IF IP>1 THEN 9071
9044 CALL -936:M$="YOU HAVE JUST ENTE
RED THE ENTRANCE OF": GOSUB
9000
9046 M$="THE MAGIC CAVE... (AT THE TOP
LEFT)": GOSUB 9000
9047 GOSUB 9001
9048 M$="RUMOR HAS IT THAT THERE IS G
OLD ": GOSUB 9000
9049 M$="IN THE FARTHEST REACHES OF T
HE CAVERN...": GOSUB 9000
9050 GOSUB 9001
9051 M$="IT IS ALSO RUMORED THAT THE
OWNER": GOSUB 9000
9052 M$="OF THE GOLD, A FIERCE LITTLE
TROLL,": GOSUB 9000
9053 M$="LIVES THERE AND HUNGERS FOR
HUMANS...": GOSUB 9000
9054 GOSUB 9001
9062 M$="I RECOMMEND THAT YOU AVOID H
IM...": GOSUB 9000
9063 GOSUB 9001
9065 M$="IF YOU GET THE GOLD TO THE E
NTRANCE": GOSUB 9000
9067 M$="THEN IT'S YOURS!!!": GOSUB
9000
9070 GOSUB 9001: GOSUB 9001
9071 CALL -936
9072 PRINT "PRESS 'U' TO GO UP, 'D' T
O GO DOWN"
9074 PRINT " 'L' TO GO LEFT, AND
'R' FOR RIGHT"
9076 PRINT " AND 'S' TO STAY PUT."
9999 RETURN

```

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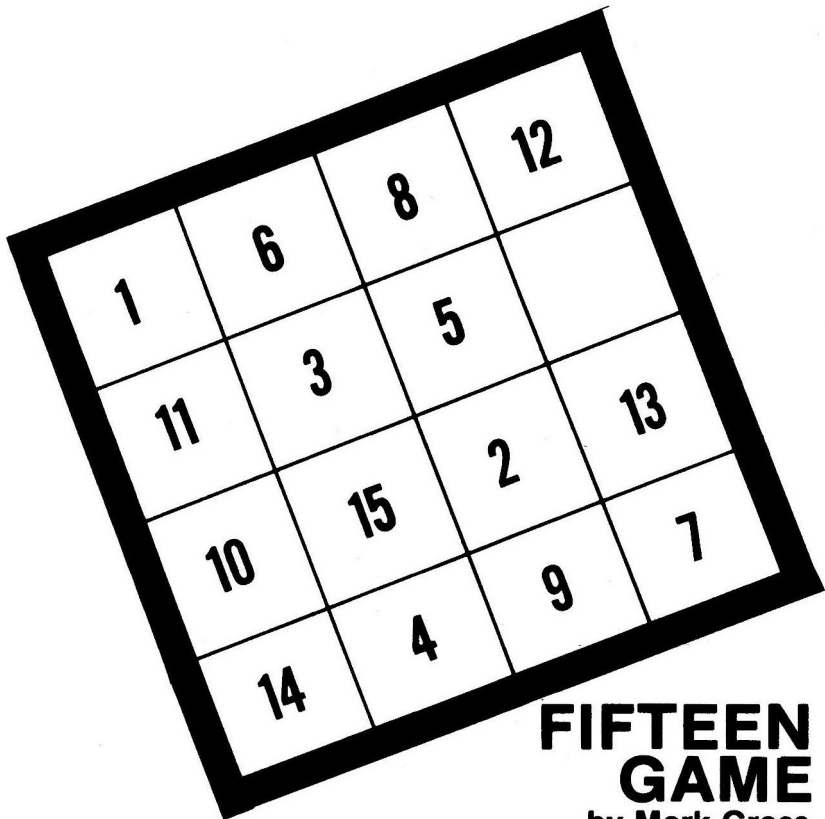
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# FIFTEEN GAME

by Mark Cross

Remember those plastic puzzles with the numbers from 1 through 15 and a blank space? Remember the hours of pleasure you got from sliding those numbers around until they were in order? Well, it's nostalgia time. No longer need you part with your hard-earned change to purchase those maddening plastic playthings.

Now, for the price of a mere computer and some typing time, you can relive those fabulous days of childhood innocence and ecstasy!

APPLESOFT

```

100 REM FIFTEEN GAME
110 REM BY
120 REM MARK CROSS
130 REM
140 REM
150 DIM N(4,4)
160 FOR NUM = 1 TO 15: REM SET U
    P BOARD
  
```



```

170 I = INT ( RND (1) * 4 + 1) : J
    = INT ( RND (1) * 4 + 1)
180 IF N(I,J) < > 0 THEN 170
190 N(I,J) = NUM: NEXT NUM
200 TEXT . HOME
210 GOSUB 550: REM PRINT BOARD O
    UTLINE
220 GOSUB 500: REM PRINT NUMBER
    S
230 VTAB 23: INPUT "INPUT YOUR M
    OVE: RETURN ";M$
240 IF LEN (M$) < 1 THEN 270
250 IF ASC (M$) = 69 THEN END

260 M = VAL (M$): IF M > 0 AND M
    < 16 THEN 290
270 VTAB 22: PRINT "OUT OF RANGE
    USE 1 THROUGH 15. "

280 GOTO 230
290 VTAB 23: CALL - 868
300 FOR I = 1 TO 4: FOR J = 1 TO
    4: IF N(I,J) = M THEN 330
310 NEXT J,I: REM FIND THE I,J
    SQUARE MOVING FROM
320 REM LINES 260-290 FIND THE I
    I,JJ SQUARE MOVING TO
330 II = I + 1:JJ = J: GOSUB 450:
    IF FLAG = 1 THEN 380
340 II = I - 1:JJ = J: GOSUB 450:
    IF FLAG = 1 THEN 380
350 II = I:JJ = J + 1: GOSUB 450:
    IF FLAG = 1 THEN 380
360 II = I:JJ = J - 1: GOSUB 450:
    IF FLAG = 1 THEN 380
370 VTAB 22: PRINT "ILLEGAL. NO
    SPACE NEAR IT. TRY AGAIN.":
    GOTO 230
380 N(I,J) = 0:N(II,JJ) = M

```

```

390 VTAB 22: CALL - 868
400 MOVES = MOVES + 1
410 VTAB 4: HTAB 34: PRINT "MOVE
    S"
420 VTAB 5: HTAB 36: PRINT MOVES

430 VTAB 2 + J * 4: HTAB 7 + I *
    5: PRINT " ";
440 GOTO 220
450 FLAG = 0
460 IF II < 1 OR II > 4 OR JJ <
    1 OR JJ > 4 THEN 490
470 IF N(II,JJ) < > 0 THEN 490
480 FLAG = 1: REM FOUND LEGAL MOV
    E
490 RETURN
500 FOR I = 1 TO 4: FOR J = 1 TO
    4
510 IF N(I,J) = 0 THEN 540
520 HTAB 8 + I * 5 - (N(I,J) > 9
    ): VTAB 2 + J * 4
530 PRINT N(I,J)
540 NEXT J,I: RETURN
550 VTAB 1: PRINT " F I F T E E
    N P U Z Z L E"
560 INVERSE : FOR LINE = 4 TO 20
    STEP 4
570 VTAB LINE: HTAB 10
580 FOR H = 10 TO 30: PRINT " ";
    : NEXT H:LINE
590 FOR L = 5 TO 19: VTAB L: HTAB
    10: PRINT " ";
600 HTAB 15: PRINT " ";: HTAB 20
    : PRINT " ";
610 HTAB 25: PRINT " ";: HTAB 30
    : PRINT " ";
620 NEXT L: NORMAL : HTAB 1
630 VTAB 24: PRINT "PRESS E TO
    END THE GAME.": RETURN

```

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**Game Playing with BASIC, Tape 2** -- features 9 programs: Knight's Tour; Guess the Number; Prime Numbers 1; Prime Numbers 2: Chinese Remainder Theorem; Perfect Numbers; Fibonacci Numbers; Square Numbers; and Armstrong Numbers. **\$9.95**

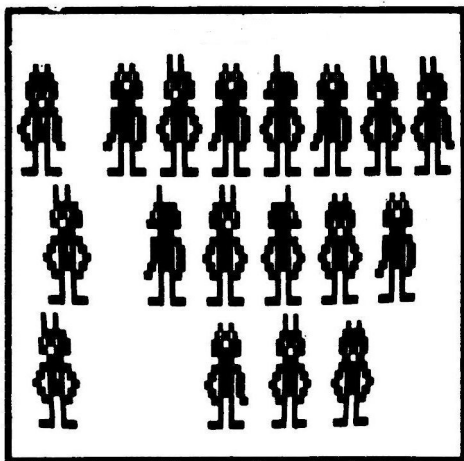
**Game Playing with BASIC, Tape 3** -- features these 8 programs: Slot Machines; Blackjack; Roll the Dice; Towers of Hanoi; 15 Puzzle; Buried Treasure; Odd Cell Magic Square; and 4 x 4 Magic Square. **\$9.95**

**General Mathematics-1** -- features these 13 programs: Log to Any Base; New Coordinates; Rectangular Polar Coordinates; Permutations; Vector Cross-Products; Max/Min Locator; Number Rounder; Dimension Scaler; Histogram; Circle Finder; Nth Root of a Number; Normally Distributed Random Numbers; and Rational Fractions. **\$14.95**

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Here is the complete cast of animated mannikins in Android Nim. They never stop moving.

## A REVIEW OF ANDROID NIM

by Brad Cameron

Android Nim, Leo Christopher's fantastically animated version of Nim, gives you 18 androids, 3 of which are executioners. These three turn out to be the key to the fun and visual delight of the game; the object being to kill the last android with a laser blast, before the computer does.

In addition to the superb animation, the program is loaded with sound effects. You'll hear the androids and executioners talk to one another, you'll see and hear the executioner's laser bolt hit and destroy androids, and if you win you'll hear the whooping sound of victory.

The game starts with the three executioners in a row, one under

the other. Each of them guards 7, 5, and 3 androids respectively. You then input which executioner you wish to give a command to, and then the number of androids you want him to disintegrate. He will then look at the androids he is guarding, and nod his head with a yes if your order is good, or he will shake his head if your order does not compute. And that's it! You and the computer continue taking turns until someone wins.

The animation will fascinate you. The androids turn their heads, look up and down, move their arms and mouths, and even blink their eyes.

A must program for any APPLE user.



# THE ULTIMATE PROGRAM PROTECTION

by Phillip Case

Have you ever wondered how to keep your programs protected from listing and copying? Here is the secret you've been waiting for. The method I will describe here is one of those used by a popular software company in protecting some of their software.

Before I tell you the secret, let me describe for you some of its benefits. First, any program saved under this technique will start running automatically upon successful loading from tape. Second, if you RESET and reenter BASIC, anything you type will restart the program even if it is the command 'LIST'. This is because this change causes the interpreter to see the 'RUN' command instead of what is actually typed. This makes listing, saving, and modifying impossible after you have taken these protective steps.

The secret is POKE 82,213. After making all of your final changes, make the above poke, then save

your program on tape. Now re-power up your system and load your program. Notice you have created a turnkey system from tape!!!

Here's why it works. At the beginning of each tape program is a 255-byte buffer which tells the computer information about the program. When you make this poke, you change the data that is put at the beginning of the tape and thereby confuse the interpreter into protecting your program. If you want to sell copies of your programs without others being able to reproduce them, this poke should do it. There are some people, however, who can still go into the machine code to break into your program, but they are few and far between.

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# TEXT EDITOR

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Fast, simple-to-use program designed for the small business or personal user. Text is processed in memory on a line by line basis. When finished, you can print it out or save all or part of it to disk for later use. It supports upper and lower case letters (computer must have an adapter). It is written as an Applesoft/Machine language hybrid for maximum speed and flexibility. Some of its features include margin adjust, search, replace, and line centering. The program will hold about five printed pages in memory at a time. In addition it can be used in conjunction with the Mailing List and Form Letter program to create personalized letters.

Requires: 48K Apple w/AS-ROM, A2+, or LANGUAGE card: disk

**\$64.95**

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from **PERIPHERALS UNLIMITED** Software

## DAN'S DISK UTILITIES

Allows the user to directly examine and/or modify data on any track and sector of a diskette. Use of this program requires a working knowledge of file structure on the diskette. To assist in this, four pages of documentation are included giving some information on the Apple disk format. Included with DDU is a program called EXPUNGE which can remove the DOS from a disk thus freeing up approximately 10K of disk space that could not otherwise be used. SINGLE DISK COPY is a copy program intended for those who do not have two drives, but still need to copy diskettes for back-up purposes.

(Requires: Any size Apple with Integer Basic and a disk.)

**\$39.95**

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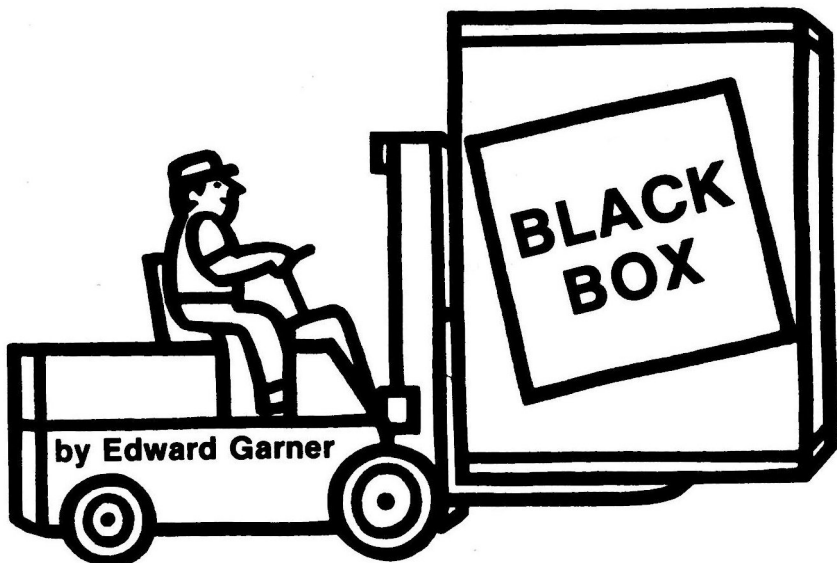
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The Black Box is a 15 by 15 reactor with randomly placed atoms. A particle gun, which can move along the border of the stack, is under your control. You get clues to the location of the atoms by the reaction of the particle with the stack. You can't see inside the reactor; you can only guess what might have happened when you see where or if the particle exists.

The rules of particle behavior are:

1. If there is a head-on collision the particle is absorbed. The display will show the firing designator in inverse video and no exit point.
2. If the particle sees an atom one cell ahead and on its immediate left it will turn right, or on its right it will turn left, and continue until it encounters another atom or reaches the border.

These are the only rules:

A particle can be absorbed, reflected or refracted, giving you useful clues to the location of the atoms.

Guess and fire by pressing the carriage return. If the cursor is on the border it is a firing, otherwise it is a guess.

Firings cost you one energy unit and wrong guesses cost three units.

Try to locate the atoms using as little energy as possible.

Because of shadowing a high level of difficulty may be impossible.

In case of danger, you may flee the control room by typing 0 (zero).

## APPLESOFT

```

15 REM BLACK BOX
20 REM
30 REM *****
40 REM WRITTEN BY:
50 REM EDWARD GARNER
70 REM CHEVY CHASE, MARYLAND
80 REM *****
  
```

```

90 REM
100 REM
110 HOME : VTAB 5: INVERSE : HTAB
10: PRINT "B L A C K B O X
": NORMAL : VTAB 12
120 GOTO 160
150 ZZ = 2: GOSUB 1690: GOTO 110
160 VTAB 7
170 ZZ = 5: GOSUB 1690
180 SPEED= 150
190 PRINT "WELCOME TO THE REACTO
R CONTROL ROOM"
200 PRINT "THE CURSOR CONTROL KE
YS ARE: I J K & M"
210 PRINT : PRINT "THESE KEYS, R
ETURN AND 0 ARE THE"
220 PRINT "ONLY ONES UNDER YOUR
CONTROL"
230 PRINT : PRINT : PRINT "TO FL
EE THE CONTROL ROOM TYPE 0"
240 SPEED= 255
250 FOR I = 1 TO 2500: NEXT I
260 DIM P$(40):KK = 1:G3 = 0:G2 =
0
270 FOR I = 1 TO 40: READ P$(I):
NEXT I
280 GOTO 300
290 DATA A,B,C,D,E,F,G,H,I,J,K,
L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,
Z,1,2,3,4,5,6,7,8,9,0,*,*,*,
=
300 HOME : HTAB 5: VTAB 10
310 PRINT "WHAT DIFFICULTY LEVEL
(0 TO 9)": GET I$
320 MM = 6 + VAL (I$)
330 SZ = 16
340 DIM BD(SZ,SZ)
350 FOR I = 1 TO SZ
360 BD(0, I) = 1:BD(SZ, I) = 3: NEXT

```

```

I
370 FOR I = 1 TO SZ
380 BD(I, 0) = 4:BD(I, SZ) = 2: NEXT
I
390 BD(0, 0) = 5:BD(SZ, 0) = 5:BD(0
,SZ) = 5:BD(SZ, SZ) = 5
400 FOR I = 1 TO MM
410 X = 1 + INT ((SZ - 1) * RND
(8)):Y = 1 + INT ((SZ - 1) *
RND (5))
420 IF BD(Y,X) = 6 THEN 410
430 BD(Y,X) = 6: NEXT I
440 HOME
450 FOR Y = 0 TO SZ: FOR X = 0 TO
SZ
460 Q = PEEK (- 16336)
470 VTAB 3 + Y: HTAB 9 + X
480 ON 1 + BD(Y,X) GOSUB 500,510
,510,510,510,520,500
490 NEXT X,Y: GOTO 530
500 PRINT " ": RETURN
510 PRINT "+": RETURN
520 PRINT " ": RETURN
530 GOSUB 1520: GOSUB 1400
540 X = 1:Y = 0
550 REM POSITION CURSOR
560 HTAB X + 9: VTAB Y + 3: GET
I$
570 IF I$ = "0" THEN 1460
580 PP = ("I" = I$) + 2 * ("K" =
I$) + 3 * ("M" = I$) + 4 * (
"J" = I$) + - 1 * ( CHR$(1
3) = I$)
590 IF PP = - 1 THEN 810
600 IF PP = 0 THEN CALL - 190:
GOTO 560
610 IF PP = BD(Y,X) THEN CALL -
190: GOTO 560

```

```

620 ON PP GOSUB 688,718,748,778
630 IF BD(Y,X) < > 5 THEN 560
640 CALL - 198
650 ON PP GOSUB 748,778,688,718
660 CALL - 198: GOTO 560
670 REM
680 Y = Y - 1
690 IF Y < 0 THEN Y = 0
700 RETURN
710 X = X + 1
720 IF X > 52 THEN X = 52
730 RETURN
740 Y = Y + 1
750 IF Y > 52 THEN Y = 52
760 RETURN
770 X = X - 1
780 IF X < 0 THEN X = 0
790 RETURN
800 REM
810 REM CARRIAGE RETURN
820 ON 1 + ABS (BD(Y,X)) GOSUB
      880,930,938,938,938,1140,890

830 IF G1 > = MM THEN 1720
840 GOSUB 1400
850 GOTO 560
860 REM
870 REM ACTION IS A GUESS
880 HTAB X + 9: VTAB Y + 3: PRINT
  "-": G3 = G3 + 1: RETURN
890 HTAB X + 9: VTAB Y + 3: INVERSE
  : PRINT "+": NORMAL
900 G2 = G2 + 1: Z2 = 5: GOSUB 169
  0
910 IF BD(Y,X) = 6 THEN BD(Y,X) =
  - 6: G1 = G1 + 1: RETURN
920 RETURN
930 REM FIRE
940 DR = BD(Y,X):HX = X:HY = Y

```

```

950 ON DR GOSUB 1238,1240,1250,1
  260
960 VTAB KY: HTAB KX: PRINT P*(K
  K)
970 DR = BD(Y,X)
980 ON DR GOSUB 1020,1050,1080,1
  110
990 IF AB = 2 THEN 1270
1000 IF BD(Y,X) < > 0 THEN 1340

1010 GOTO 980
1020 REM MOVE SOUTH(1)
1030 AB = 1:YL = Y + 1
1040 GOTO 1150
1050 REM MOVE WEST(2)
1060 AB = 1:XL = X - 1
1070 GOTO 1190
1080 REM MOVE NORTH(3)
1090 AB = 1:YL = Y - 1
1100 GOTO 1150
1110 REM MOVE EAST(4)
1120 AB = 1:XL = X + 1
1130 GOTO 1190
1140 END
1150 IF ABS (BD(YL,X)) = 6 THEN
  AB = 2: RETURN
1160 IF ABS (BD(YL,X - 1)) = 6 THEN
  DR = 4: RETURN
1170 IF ABS (BD(YL,X + 1)) = 6 THEN
  DR = 2: RETURN
1180 AB = 3:Y = YL: RETURN
1190 IF ABS (BD(Y,XL)) = 6 THEN
  AB = 2: RETURN
1200 IF ABS (BD(Y + 1,XL)) = 6 THEN
  DR = 3: RETURN
1210 IF ABS (BD(Y - 1,XL)) = 6 THEN
  DR = 1: RETURN
1220 AB = 3:X = XL: RETURN
1230 KY = 2:KX = X + 9: RETURN

```

```

1240 KY = Y + 3:KX = SZ + 10: RETURN
1250 KY = SZ + 4:KX = X + 9: RETURN

1260 KY = Y + 3:KX = 8: RETURN
1270 REM ABSORBED
1280 ZZ = 50: GOSUB 1660
1290 VTAB KY: HTAB KX: INVERSE
1300 PRINT P$(KX): NORMAL
1310 X = KX: Y = HY
1320 KK = KK + 1: IF KK > 40 THEN
    1570
1330 RETURN
1340 REM REACHED EDGE
1350 ON BD(V,X) GOSUB 1230,1240,
    1250,1260
1360 VTAB KY: HTAB KX
1370 PRINT P$(KX):KK = KK + 1
1380 IF KK > 40 THEN 1570
1390 ZZ = 5: GOSUB 1660: RETURN
1400 REM PRINT SCOREBOARD
1410 VTAB 22
1420 T1 = 10:T2 = 30
1430 PRINT TAB(T1);"GUESSES"; TAB(
    T2);G2 + G3
1440 PRINT TAB(T1);"FIRINGS"; TAB(
    T2);KK - 1
1450 RETURN
1460 REM FLEE THE CONTROL ROOM
1470 HOME
1480 E1 = 3 * G3 + (KK - 1)
1490 VTAB 10: PRINT "YOU FOUND "
    INT (100 * G1 / MM);" % OF
    THE ATOMS"
1500 PRINT : PRINT "AND USED ";E
    1;" ENERGY UNITS"
1510 END
1520 REM PRINT SIDEBAR
1530 VTAB 8: HTAB 30: INVERSE : PRINT

```

```

"BLACK BOX": NORMAL : VTAB
10
1540 HTAB 30: PRINT "ATOM COUNT"

1550 HTAB 30: PRINT "EQUALS ";MM

1560 RETURN
1570 REM FIRED 40 TIMES
1580 VTAB 22: CALL - 950: PRINT
    "YOU ARE ALLOWED ONLY 40 SHO
    TS"
1590 ZZ = 5: GOSUB 1690
1600 FOR X = 1 TO SZ - 1: FOR Y =
    1 TO SZ - 1
1610 IF BD(V,X) = 6 THEN 1640: REM
    UNFOUND ATOM
1620 NEXT V,X
1630 VTAB 23: GET I$: GOTO 1470
1640 VTAB 3 + Y: HTAB 9 + X
1650 PRINT "#": GOTO 1620
1660 REM **CLICK/CLICK**
1670 FOR Z = 1 TO ZZ:Q = PEEK (
    - 16336)
1680 NEXT Z: RETURN
1690 REM RING THEM CHIMES
1700 FOR Z = 1 TO ZZ: CALL - 19
    8
1710 NEXT Z: RETURN
1720 REM ** WOOPEE **
1730 VTAB 22: CALL - 950
1740 FOR J = 1 TO 14
1750 IF (J = 2 * INT (J / 2)) THEN
    1790
1760 VTAB 22: HTAB 10: PRINT "Y
    O U W I N !": NORMAL
1770 FOR I = 1 TO 60: NEXT I,J
1780 GOTO 1470
1790 INVERSE : CALL - 190: CALL
    - 190: GOTO 1760

```

# TSE



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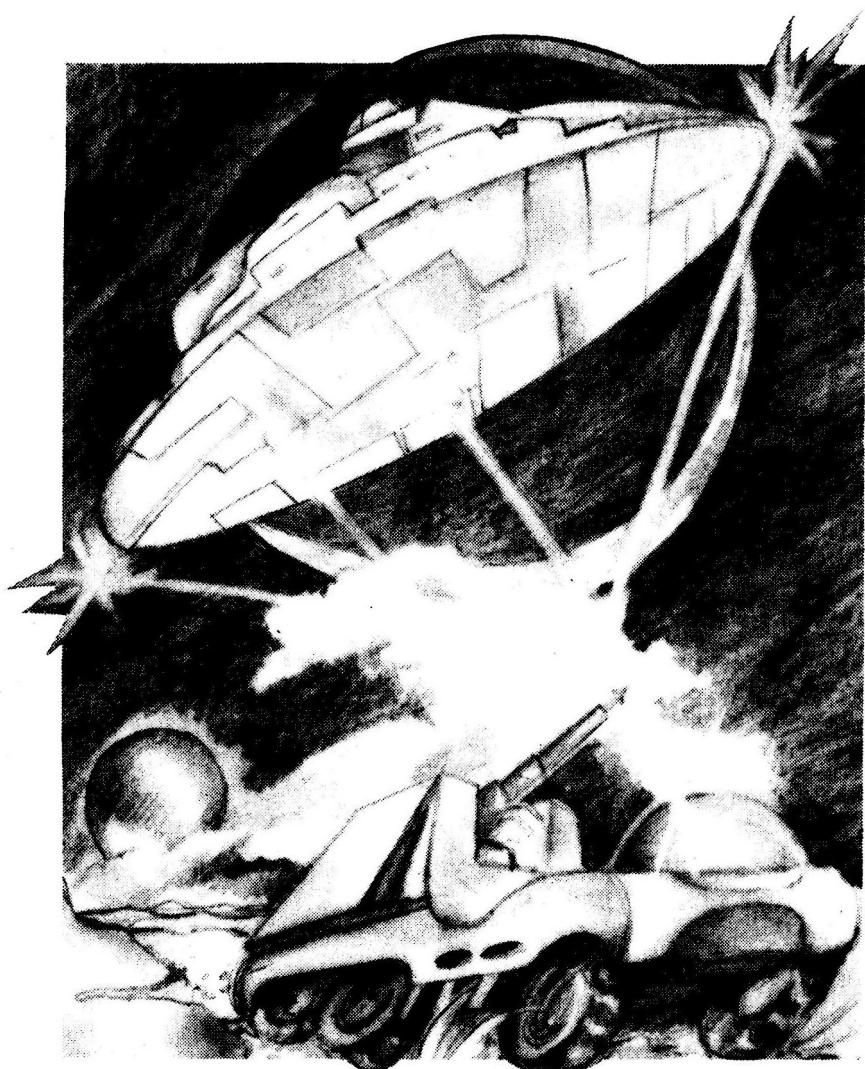
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# INVADERS...

by Mark Pelczarski

Perched in your battle station, dodging deadly laser fire from the oncoming hordes of Martians, you

wait for your own laser to recharge. Moments later, you seize an opportunity to dart from behind a crumbling wall and zap one of the Martian leaders, but you fail to notice the one on your left that has climbed the wall and is now heading straight toward you...

This is a version of the Invaders arcade game written in Applesoft BASIC. Because of the relatively slow speed of BASIC as opposed to machine language, don't expect an exact copy of the arcade game. Then again, expect some interesting additions. This game does use the full HI-RES color capabilities of the APPLE. Both you and the Martians are armed with more deadly and much faster lasers; and, unlike the arcade aliens who march predictably toward you as the French and British would have in the 1700's, you never know exactly where a Martian is moving next...except that it will be closer. There are also ten levels of play, each of which becomes more difficult the longer the game progresses.

This game began as a venture into the HI-RES graphics of the APPLE. Your battle station, the Martians, the walls, and even the explosions are figures stored in a shape table.

To go along with the program listing, here is a list of the variable names and their uses (in order of appearance):

**A\$** — used to check for a keypress  
**W%(30,4)** — a matrix of locations for the walls. Everything is analyzed in 30 discreet columns across the screen. The wall is 4 blocks deep. Each matrix location will contain a 2 if a block is there, 1 if it is a partial block, or 0 if it is vacant.

**M%(30,8)** — there are 8 rows in which the Martians can appear. This matrix contains 0 in vacant locations, or 1,2, or 3 in locations occupied by Martians, depending on the Martians color. **M%(1,1)** is the upper left corner of the screen.

**C(3)** — contains the color assigned to each of the 3 colors of Martians.

**MX** — the number of hits it takes to lose. Value is 5.

**AD** — the number of rows the Martians advance each move. Initially the value is 1, but it increases as the game progresses.

**CH** — charge. Initial value is 250. It takes 10 units to fire, and it recharges in increments of 5.

**I,J,K** — loop index variables.

**PX** — paddle setting, 0-255, converted to a range of 0-29 (for the 30 columns). Used for battle station location.

**XX** — paddle setting converted to a range of 0-269 for drawing battle station.

**LX,LY** — coordinates of next place to look to move a Martian.

**LE** — player's level.

**MN** — score (number of Martians multiplied by the weighted values).

**HN** — hits against you.

**TM** — hold variable for Martian type (1,2, or 3).

**NX,NY** — new coordinates of a Martian as it moves.

**ST,EN** — start and end of a laser shot (Y-coordinates).

**TI** — number of times a player may shoot per turn (= 11 - level).

**L** — location in which to poke data.

The shape table contains five shapes:

**1** — partial block of wall

**2** — full block of wall

**3** — your battle station

**4** — a Martian

**5** — explosion

# APPLESOFT

## INITIALIZATION:

### LIST

```
1 REM INVADERS, MARK PELCZARSKI
  1980
10 GOSUB 1610
20 GOSUB 1800
30 PRINT "          <PRESS ANY
   KEYS>": GET #
40 HOME
50 POKE 232,0: POKE 233,64
60 CLEAR
70 DIM M%(30,4),M%(30,8)
80 C(1) = 6,C(2) = 7,C(3) = 5
90 SCALE= 1: ROT= 0
100 MX = 5
110 AD = 1
120 CH = 250
```

## SET UP THE WALL

```
130 HGR
140 HCOLOR= 1
150 FOR I = 2 TO 30 STEP 5
160 FOR J = 1 TO I + 1
170 FOR K = 1 TO 4
180 M%(J,K) = 2
190 DRAW 2 AT (J - 1) * 9 + 2,13
   3 + 4 * K
200 NEXT K: NEXT J: NEXT I
```

**SET MARTIANS** Line 230 sets the distribution of colors to 3 blue and 5 white for each red Martian.

```
210 FOR I = 3 TO 30 STEP 3
220 FOR J = 1 TO 4
230 M%(I,J) = INT ( 50R ( RND * 1
   ) * 9 + 1))
240 HCOLOR= C(M%(I,J))
250 DRAW 4 AT (I - 1) * 9, (J - 1
   ) * 19
260 NEXT J: NEXT I
```

## DRAW BATTLE STATION, MORE INITIALIZATION:

```
270 HCOLOR= 7:PX = INT ( PDL (0
   ) * .117)
280 XX = PDL (0) * 1.055: DRAW 3
   AT XX,156
290 LX = 1:LY = 4
300 HOME: VTAB 22
310 INPUT "LEVEL (1-EASIEST, TO
   10-HARDEST) ? ":LE
320 HOME: VTAB 22: PRINT "SCORE
   ": "HITS"
330 MN = 0:HN = 0
340 VTAB 23: PRINT MN:HN
350 VTAB 24: PRINT "CHARGE=":CH:
   " ": HTAB 1
```

## MARTIANS' MOVE

**Move battle station according to paddle setting.**

```
360 HCOLOR= 0: DRAW 3 AT XX,156
370 XX = PDL (0) * 1.055: HCOLOR=
   7: DRAW 3 AT XX,156
380 PX = INT ( PDL (0) * .117)
```

**Look across row LX for a Martian. If none, repeat for next higher row.**

```
390 FOR I = LX TO 30
400 IF M%(I,LY) > 0 THEN 490
410 NEXT
420 LY = LY - 1: LX = 1: IF LY > 0
   THEN 360
```

**If no Martians were found to top of screen, add a row of Martians (430-460). Increase the level of play by 1. If the level is already 10, increase the number of rows the Martians advance by .5, to a maximum of 4. Go to players move.**



```

430 FOR I = 3 TO 30 STEP 3
440 MZ(I,1) = INT ( SQR ( RND (1
    ) * 9 + 1))
450 HCOLOR= C(MZ(I,1)): DRAW 4 AT
    (I - 1) * 9, 0
460 NEXT
470 LE = LE + 1: IF LE > 10 THEN
    LE = 10: AD = AD + .5: IF AD >
    4 THEN AD = 4
480 LY = 8: GOTO 780

```

**Black out Martian at old location, pick new location and redraw Martian.**

```

490 LX = I: HCOLOR= 0
500 TM = MZ(LX,LY)
510 MZ(LX,LY) = 0: DRAW 4 AT (LX -
    1) * 9, (LY - 1) * 19
520 NY = LY + INT (AD): IF NY >
    8 AND LY < 8 THEN NY = 8
530 IF NY > 8 THEN 1190
540 NX = INT ( RND (1) * 5) - 2 +
    LX
550 IF NX > 30 OR NX < 1 THEN 54
    0
560 MZ(NX,NY) = TM
570 HCOLOR= C(TM): DRAW 4 AT (NX
    - 1) * 9, (NY - 1) * 19

```

**Move battle station according to paddle settings.**

```

580 HCOLOR= 0: DRAW 3 AT XX,156
590 XX = PDL (0) * 1.055: HCOLOR=
    7: DRAW 3 AT XX,156
600 PX = INT ( PDL (0) * .117)

```

**Is the wall in the path of Martian's shot?**

```

610 FOR I = 1 TO 4
620 IF MZ(NX,I) > 0 THEN 720
630 NEXT

```

**Go to the laser fire subroutine, if the battle station is hit call the sound subroutine and go to explosion subroutine. Add 1 to number of hits and print; if 5 hits, end game, otherwise go to player move.**

```

640 EN = 159: GOSUB 1400
650 IF NX < > PX + 1 THEN 700
660 POKE 768,150: POKE 769,5: CALL
    770
670 GOSUB 1550
680 HN = HN + 1
690 VTAB 23: PRINT MN,HN
700 IF HN = MX THEN 1130
710 GOTO 780

```

**Wall is hit, go to laser fire subroutine, sound subroutine and explosion subroutine. Redraw wall.**

```

720 EN = 135 + 4 * I: GOSUB 1400
730 POKE 768,175: POKE 769,5: CALL
    770
740 GOSUB 1550
750 HCOLOR= 0: DRAW MZ(NX,I) AT
    (NX - 1) * 9 + 2, EN
760 MZ(NX,I) = MZ(NX,I) - 1
770 IF MZ(NX,I) = 1 THEN HCOLOR=
    1: DRAW 1 AT (NX - 1) * 9 +
    2, EN

```

**PLAYER MOVE:**

```

780 REM PLAYER MOVE
790 TI = LE

```

**Move battle station according to paddle setting**

```

800 HCOLOR= 0: DRAW 3 AT XX,156
810 XX = PDL (0) * 1.055: HCOLOR=
    7: DRAW 3 AT XX,156
820 PX = INT ( PDL (0) * .117)

```

**If button is not pushed or charge < 10, skip firing sequence.**

```
830 IF PEEK (-16267) < 128 THEN  
1070
```

```
840 IF CH < 10 THEN 1070
```

**Print current charge,  
if < 21, flash.**

```
850 IF CH < 31 THEN FLASH
```

```
860 CH = CH - 10: VTAB 24: PRINT  
"CHARGE=";CH: ": HTAB 1: NORMAL
```

**Is there a Martian in the  
closest row?**

```
870 IF M%(PX + 1,1) > 0 THEN I =  
8: GOTO 1010
```

**Check if a wall is in the way.**

```
880 FOR I = 4 TO 1 STEP -1  
890 IF M%(PX + 1,I) > 0 THEN 950
```

```
900 NEXT I
```

**Check if a Martian is in the way.**

```
910 FOR I = 7 TO 1 STEP -1  
920 IF M%(PX + 1,I) > 0 THEN 101  
0  
930 NEXT I
```

**Nothing was hit. Perform laser  
fire subroutine.**

```
940 EN = 0: GOSUB 1400: GOTO 1070
```

**Wall is hit. Laser fire, sound  
and explosion subroutines  
called. Wall redrawn.**

```
950 EN = 133 + I * 4: GOSUB 1400  
960 POKE 768,175: POKE 769,5: CALL  
770
```

```
970 HCOLOR= 0: DRAW M%(PX + 1,1)  
AT PX * 9 + 2,EN
```

```
980 M%(PX + 1,1) = M%(PX + 1,1) -  
1
```

```
990 IF M%(PX + 1,1) = 1 THEN HCOLOR=  
1: DRAW 1 AT PX * 9 + 2,EN  
1000 GOTO 1070
```

**Martian is hit. Laser fire, sound  
and explosion subroutines  
called. Add to score and print.**

```
1010 EN = I * 19: GOSUB 1400  
1020 POKE 768,100: POKE 769,5: CALL  
770
```

```
1030 GOSUB 1550
```

```
1040 MN = MN + M%(PX + 1,1) * 5: VTAB  
23: PRINT MN, MN
```

```
1050 M%(PX + 1,1) = 0
```

```
1060 HCOLOR= 0: DRAW 4 AT PX * 9  
, (I - 1) * 19
```

**Check number of player  
moves. (TI starts as level.)  
Repeat player move 11-LE  
times.**

```
1070 TI = TI + 1: IF TI < 11 THEN  
800
```

**Print current charge. Go  
to Martians move.**

```
1080 IF CH < 16 THEN FLASH  
1090 CH = CH + 5: VTAB 24: PRINT  
"CHARGE=";CH: ": HTAB 1  
1100 NORMAL  
1110 GOTO 360
```

**END OF GAME, animation  
and sound.**

```
1120 POKE 768,30: POKE 769,5: CALL  
770
```

```
1130 LX = 2: TX = 1: GOTO 1190
```

```
1140 INPUT "PLAY AGAIN? ";R$
```

```
1150 IF LEFT$(R$,1) = "Y" THEN  
60
```

```
1160 IF LEFT$(R$,1) < > "N" THEN  
1140
```

```
1170 TEXT
```

```
1180 STOP
```

```

1190 FOR I = (LX - 1) * 9 TO PX *
      9 STEP 3 * SGN (PX - LX + 1
      )
1200 HCOLOR= C(TM): DRAW 4 AT I,
      140
1210 HCOLOR= 0: DRAW 4 AT I,140
1220 NEXT
1230 I = PX * 9
1240 FOR J = 1 TO 10
1250 HCOLOR= 0: DRAW 4 AT I,140
1260 HCOLOR= C(TM): DRAW 4 AT I,
      130
1270 POKE 768,50: POKE 769,5: CALL
      770
1280 HCOLOR= 0: DRAW 4 AT I,130
1290 HCOLOR= C(TM): DRAW 4 AT I,
      140
1300 NEXT
1310 HCOLOR= 0: DRAW 3 AT XX,156

```

```

1320 HCOLOR= 7
1330 DRAW 1 AT I,156: DRAW 1 AT
      I + 3,156
1340 POKE 768,87: POKE 769,100: CALL
      770
1350 POKE 768,103: POKE 769,50: CALL
      770
1360 POKE 768,78: POKE 769,50: CALL
      770
1370 POKE 768,87: POKE 769,100: CALL
      770
1380 POKE 768,103: POKE 769,250:
      CALL 770
1390 GOTO 1140

```

### MARTIAN LASER SUB-ROUTINE

```

1400 HCOLOR= 5
1410 ST = (NX - 1) * 9 + 8
1420 ST = ST + NX - INT (NX / 2)

```

\* 2

```

1430 HPL0T ST,NY * 19 TO ST,EN
1440 POKE 768,20: POKE 769,5: CALL
      770
1450 HCOLOR= 0
1460 HPL0T ST,NY * 19 TO ST,EN
1470 RETURN

```

### YOUR LASER SUBROUTINE

```

1480 HCOLOR= 6
1490 ST = 2 * ( INT (XX / 2) ) + 4

1500 HPL0T ST,156 TO ST,EN
1510 POKE 768,10: POKE 769,5: CALL
      770
1520 HCOLOR= 0
1530 HPL0T ST,156 TO ST,EN
1540 RETURN

```

### EXPLOSION SUBROUTINE

```

1550 FOR K = 1 TO 2
1560 FOR J = 1 TO 4
1570 SCALE= J
1580 XDRAM 5 AT ST,EN
1590 NEXT J: NEXT K
1600 SCALE= 1: RETURN

```

**INSTRUCTIONS.** These can be omitted if line 10 is also omitted.

```

1610 HOME
1620 PRINT "      WELCOME TO
      INVADERS"
1630 PRINT "      MY SOFTWARE
      E. 1980"
1640 PRINT PRINT "THE ALIENS ARE
      COMING! THE OBJECT IS TO"

1650 PRINT "SHOOT AS MANY AS YOU
      CAN BEFORE THEY"
1660 PRINT "SHOOT YOU 5 TIMES OR

```

```

REACH YOUR BATTLE"
1670 PRINT "STATION."
1680 PRINT : PRINT "IN THIS MANN
OTH LASER BATTLE YOU USE"
1690 PRINT "THE GAME PADDOLE TO M
OVE AND THE BUTTON"
1700 PRINT "TO FIRE YOUR LASER."

1710 PRINT : PRINT "YOU START WI
TH 250 CHARGE UNITS, AND"
1720 PRINT "EACH TIME YOU FIRE 1
0 UNITS ARE USED."
1730 PRINT "THE LASER CONSTANTLY
RECHARGES ITSELF."
1740 PRINT : PRINT "BLUE MARTIAN
S ARE WORTH 5 POINTS, WHITE"

1750 PRINT "MARTIANS ARE WORTH 1
0 POINTS, AND RED"
1760 PRINT "MARTIANS ARE WORTH 1
5 POINTS EACH IF"
1770 PRINT "YOU ARE USING A BLAC
K AND WHITE TV, FAKE";
1780 PRINT "IT....": PRINT
1790 RETURN

```

### LOAD MACHINE LANGUAGE SOUND SUBROUTINE

```

1800 L = 770: GOSUB 1870

LOAD SHAPE TABLE
1810 L = 16384
1820 FOR MX = 1 TO 9: GOSUB 1870
: NEXT MX
1830 RETURN

```

Read a set of hexadecimal digits and POKE them into memory starting at location L.

```

1870 READ A$
1880 FOR I = 1 TO LEN (A$) STEP
2

```

```

1890 AD = ASC ( MID$ (A$, I, 1) ) -
48
1900 IF AD > 9 THEN AD = AD - 7
1910 CH = ASC ( MID$ (A$, I + 1, 1
)) - 48
1920 IF CH > 9 THEN CH = CH - 7
1930 POKE L, AD * 16 + CH
1940 L = L + 1: NEXT I
1950 RETURN

```

### SOUND SUBROUTINE, as data

```

1960 DATA "AD38C888D085CE8183F8
09C8D6F5AE80834C828368"

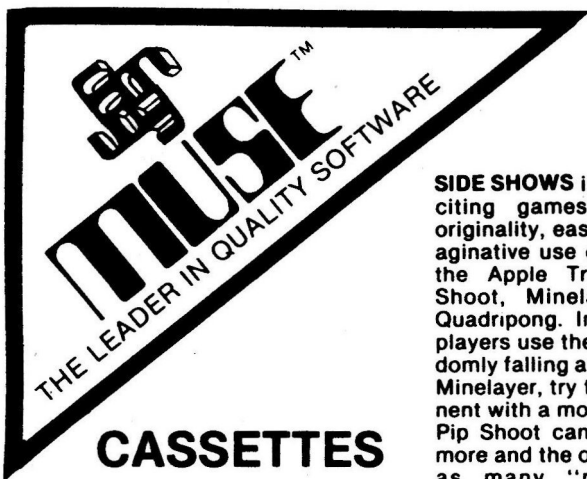
```

### SHAPE TABLE

```

1970 DATA "05000C88210036804700
E800"
1980 DATA "00090809111838181813
0909092931181838381300"
1990 DATA "20202020353F3F3F37
20202020353F3F3F3700"
2000 DATA "0929001118381F1320D0
20353F3F3F3700"
2010 DATA "09092020292000091118
1818381F3F181813090909202000
09091118183F3F3F3F3F18130929
202020202000"
2020 DATA "11183F3F183818383F13
2920200900292020153F3F3F3F3F
3F3F3F3729202020292020201518
3F3F3F3F3F3F3F"
2030 DATA "13092920090909200011
18183F383F1F3F18132920202020
20202015381F183F183F18381729
0009200920"
2040 DATA "0929151818183F183F18
1813090909200920090911183F3F
3F183F3F1F1300"
2050 DATA "363F24272C253C2C202E
2E3E37E3E800"

```



## CASSETTES

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by Scott Adams

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## RIGHT/LEFT

By Carl Swenson, PHD.

Right/Left distinguishes between the right and left sides of the keyboard by sound and graphic color. The author has used it successfully with his fifteen month old son to allow him to play on the Apple II. An interesting feature of this program is that there is no exit other than power

off. This example could be helpful to others who are trying to write absolutely crash-proof programs.

The author is a mathematics professor at Seattle University and has published Apple articles in both Creative Computing and Recreational Computing.

```

10 REM **** RIGHT/LEFT ****
11 :
20 REM A CRASH-PROOF PROGRAM
30 REM FOR TODDLERS
31 :
40 REM REQUIRES AUTOSTART ROM
50 REM AND APPLESOFT
51 :
60 REM          BY CARL SWENSON
    
```

```

100 REM ---DISABLE RESET---
110 POKE 1010,102: POKE 1011,213
    : POKE 1012,112
200 REM ---DISABLE CTRL-C ---
210 ONERR OR GOTO 300
300 REM --- RE-ENTRY POINT ---

310 GR : POKE - 16302,0
400 REM ---BOUNDARY---
410 COLOR= 0: FOR I = 40 TO 47: H.LIN
    0,39 AT I: NEXT
420 COLOR= 15
430 H.LIN 0,39 AT 0
440 H.LIN 0,39 AT 47
450 V.LIN 0,47 AT 0
460 V.LIN 0,47 AT 19
470 V.LIN 0,47 AT 20
480 V.LIN 0,47 AT 39
1000 REM ---READ KEYBOARD---
1010 X = PEEK ( - 16304)
    
```

```

1020 IF X < 120 THEN 1010
1030 POKE - 16368,0
1040 X = X - 120: COLOR= X
1050 IF X < 27 THEN X = X + 64
1060 IF X < 39 THEN 1500
1070 IF X < 49 THEN 2000
1080 IF X < 55 THEN 1500
1090 IF X < 65 THEN 2000
1100 IF X < 72 THEN 1500
1110 IF X < 81 THEN 2000
1120 IF X = 85 THEN 2000
1130 IF X > 90 THEN 2000
1500 REM ---LEFT KEY---
1510 CALL 64477: REM BEEP
1520 FOR I = 1 TO 18
1530 V.LIN 1,46 AT I
1540 NEXT
1550 GOTO 1000
2000 REM ---RIGHT KEY---
2010 FOR I = 1 TO 5: X = PEEK ( -
    16336) + PEEK ( - 16336) -
    PEEK (16336) - PEEK (16336
    ): NEXT
2020 FOR I = 21 TO 38
2030 V.LIN 1,46 AT I
2040 NEXT
2050 GOTO 1000
2999 :
3000 REM -- TURN OFF MACHINE
3010 REM          TO END
    
```



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(continued from last month)

# INTIMATE INSTRUCTIONS IN INTEGER BASIC

by Brian and George Blackwood

## LESSON II

After completion of Lesson II you should be able to:

1. Load a program into memory.
2. Save a program stored in memory.

Vocabulary:

Line Number — the positive integer with which each program statement begins.

**LIST** — causes a program to be displayed on the screen.  
**LOAD** — reads (LOADs) BASIC program from cassette tape into memory.  
**NEW** — clears current BASIC program from memory.  
**OUTPUT** — Results produced by the computer.  
**Program Statement** — an instruction to the computer that is stored in memory.  
**RUN** — the performance of one program or routine.

Programs that are typed on the keyboard are stored in memory. Programs that are of value or programs that will be frequently used are **SAVED** on cassette tape. From your library, programs will be **LOADED** into computer memory for your use. Programs are also referred to as software.

**Example:**

After the screen has been cleared (Lesson I) type in the following program:

```
10 PRINT "THIS IS THE USA"  
20 PRINT  
30 PRINT "THIS IS THE"  
40 PRINT "UNITED STATES"  
50 PRINT "OF AMERICA"           (50 is a line number)  
60 PRINT                        (PRINT is a program statement)  
70 PRINT "THIS IS THE",  
80 PRINT "USA"  
999 END                          (Lines 10 to 999 is a complete program)
```

Type in **RUN** and press **RETURN**. The output from the program appears on the screen. Study the output in relation to the program statements. Now type **LIST** and press **RETURN**. The program is **LISTED** on the screen. To **SAVE** the program stored in memory to cassette tape follow these steps:

1. Type in **SAVE** — **DO NOT PRESS RETURN**
2. Place a cassette into the tape recorder and rewind until the tape stops.
3. Press the stop-pause button.
4. Set the mechanical counter on the recorder to zero.
5. Forward the tape to a specific number on the counter. (for example #5)
6. Set recorder volume to 6 and tone to medium.
7. Press record-play buttons (or the combination that will cause your recorder to record.)
8. Now press **RETURN** (see #1) key on the computer. The cursor leaves the screen and the computer beeps. This indicates the program is being **SAVED** to tape.
9. When the recording is completed, the computer beeps and the cursor returns to the screen.
10. Press the stop-pause button on the recorder.

The program has been **SAVED** to tape. To facilitate future location of this program, label the program on the cassette cover in the following manner:

1. Name and description of the program.
2. Starting number (on the counter) of the program.
3. Ending number (on the counter) of the program.
4. Volume and tone of the recording (generally a volume of 6 and a medium tone from a Panasonic recorder will satisfactorily SAVE and LOAD programs on the Apple II).

To keep a record of programs on tape aids to find and LOAD programs. Four programs for each 15 minute tape is sufficient for program protection. Record programs on only one side of the tape. Valuable programs should be duplicated on separate tapes and stored in a safe place.

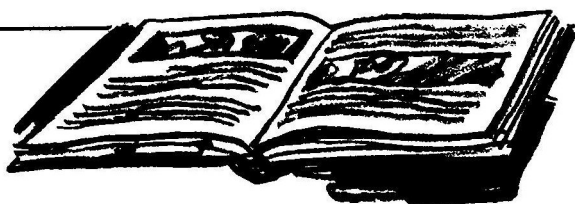
To check the program just recorded, reload the program in computer memory. The following routine is valid to LOAD a program into memory or to reLOAD a program:

1. Type in NEW — this clears memory.
2. Type in LIST — this checks to see that memory is clear.
3. Type in LOAD — DO NOT HIT RETURN.
4. Rewind tape until it stops.
5. Press counter to read zero.
6. Forward tape to #4. (program recording started at #5)
7. Stop tape recorder.
8. Pull out monitor plug from recorder so sound can be heard.
9. Press play button on the recorder.
10. When the shrill sound is heard, press plug into monitor.
11. Now press RETURN (see #3)
12. Cursor leaves the screen, computer beeps, and the program is LOADING.
13. When the program is completed loading, a beep is heard and the cursor returns to the screen.
14. Type RUN to run or LIST to list the program.

After each operation, the RETURN key must be pressed to complete the operation. From this point on, when an operation is complete, you must press the RETURN key. Enough said about the RETURN key.

In most cases, a volume of 6 and a medium tone on the cassette recorder will produce a satisfactory LOAD or SAVE. A volume and/or tone that is too low will produce an ERR below the LOAD or SAVE on the screen. A volume and/or tone that is too high will produce a MEM FULL ERR below the LOAD or SAVE. Persistent difficulty in LOAD or SAVE routines indicates the tape recorder should be checked to determine if the frequency of the recorder synchronizes with the frequency of the computer.

Tapes should be of the highest quality and low background noise. Tapes of 15 minute duration should be sufficient to record 4 programs of average length. Low quality tape will give the user great difficulty in LOADING and SAVEing programs.



# CATALOG II

by Lennis Hall

This is an excellent 'BOOT' or 'HELLO' program. When you run it, all the programs in the diskette catalog will be presented on the screen. You run a selected program by pressing its corresponding number.

One way to utilize this program is to INIT a disk with it. Then when you BOOT the diskette, this catalog program will run.

## INTEGER.

10 REM SELECT PROGRAM BY NUMBER

20 REM BY LENNIS L HALL 4-1-79

30 REM IN INTEGER BASIC

40 REM REQUIRES DOS 3.2

50 C=0: B\$="" : LM= PEEK (74)+ PEEK

(75)+256: DIM A\$(250),A(50)

,B(50) D\$="": REM D\$= CTRL "D

" : IN QUOTES

60 POKE LM+1,162: O\$=B\$

70 POKE 768,56: POKE 769,72: POKE

770,132: POKE 771,0: POKE 772

,160: POKE 773,0: POKE 774,

201: POKE 775,32: POKE 776,

176: POKE 777,2

80 POKE 778,105: POKE 779,192:

POKE 780,201: POKE 781,96:

POKE 782,176: POKE 783,2: POKE

784,105: POKE 785,128: POKE

786,201: POKE 787,128

90 POKE 788,176: POKE 789,2: POKE

790,105: POKE 791,64: POKE

792,145: POKE 793,2: POKE 794

,230: POKE 795,2: POKE 796,

208: POKE 797,2

100 POKE 798,230: POKE 799,3

110 POKE 800,104: POKE 801,164:

POKE 802,0: POKE 803,96: POKE

804,0: POKE 805,0: POKE 806

,0: POKE 807,0

120 POKE 808,169: POKE 809,160:

POKE 810,96

130 REM POKES IN LINE 70 TO 110 EN

TER A MACHINE LANGUAGE PROGRAM T

HAT

140 REM (1) WRITES ANY PRINTING

TO MEMORY (2) WEEDS OUT ANY INVE

RSE AND FLASHING VIDEO CHARACTER

S



```

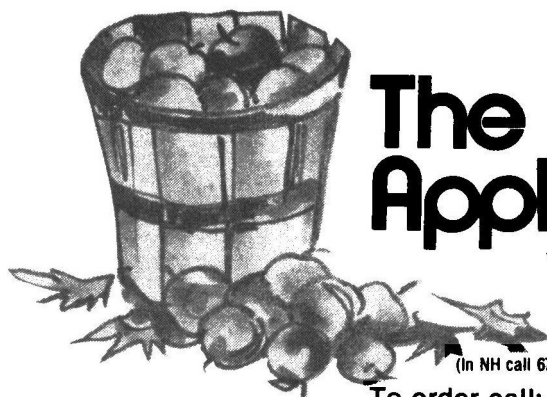
150 REM LAST 3 POKES IN LINE 120
ENTER A ROUTINE THAT ANSWERS THE
KEYBOARD
160 PRINT D$;"NOMON 0,1,C"
170 REM
180 GOSUB 470
190 POKE 2,0: POKE 3,16: POKE LM+
4, PEEK (54): POKE LM+5, PEEK
(55): C=C+2966: REM LM+4=LOCATIO
N OF VARIABLE "C"
200 POKE C,0: POKE C+1,3: POKE
C+2,40: POKE C+3,3: REM CONNECT
MACHINE LANGUAGE TO I/O SWITCHE
S IN DOS
210 PRINT D$;"CATALOG, Y0": REM WRI
TE CATALOG OUT TO MEMORY
220 PRINT D$;"PR00": PRINT D$;"IN00"
. REM DISCONNECT MACHINE LANGUA
GE PROGRAM FROM I/O SWITCHES IN
DOS
230 00=C+31: 01=C+13
240 REM NOW WE HAVE THE CATALOG IN
MEMORY, LET'S PRINT IT TO THE SC
REEN
250 C=1: FOR I=4115 TO ( PEEK (
2)+ PEEK (3)*256)-1 STEP 38
260 IF PEEK (I+1)=ASC("T") THEN
340
270 A(C)=I
280 IF C<10 THEN PRINT " "; PRINT
C;" "; C=C+1
290 FOR J=1+7 TO I+22
300 POKE LM+11, PEEK (J): PRINT
B$: NEXT J: PRINT
310 REM LM+11=LOCATION OF VARIABLE
"B$"
320 IF PEEK (37)>20 THEN 340: POKE
33,20: POKE 32,20: IF C>30 THEN

```

```

GOTO 330: VTAB 6: GOTO 340
330 TEXT : VTAB 22: PRINT "HIT RETUR
N TO CONTINUE": CALL -676: CALL
-936: GOSUB 470: NEXT I
340 NEXT I
350 IF C<10 THEN PRINT " "; PRINT
C;" "; POKE 50,63: PRINT "NORMA
L CATALOG": POKE 50,255
360 TEXT : POKE 34,21
370 VTAB 22: PRINT "ENTER DESIRED PR
OGRAM BY NUMBER. ENTER 0 TO CATAL
OG FROM ANOTHER DISKETTE. "
380 TAB 15: PRINT "PROGRAM # ";
: INPUT P: CALL -936: IF P=
C THEN 460: IF P=0 THEN 170
: IF P<1 OR P>C THEN 370
390 N=A(P): FOR Q=N TO N+36: POKE
LM+25+(Q-N), PEEK (Q): NEXT
Q: REM LM+25 IS LOCATION OF VAR
IABLE "A$"
400 POKE LM+25+(Q-N), 30
410 IF A$(2,2)="B" THEN 440: REM IS
IT A BINARY PROGRAM
420 A$=A$(8, LEN(A$))
430 TEXT : CALL -936: PRINT D$,
"RUN "; A$: END
440 A$=A$(8, LEN(A$))
445 TEXT : CALL -936
450 PRINT D$, "BRUN "; A$: END
460 TEXT : CALL -936: PRINT D$:
"CATALOG": END
470 TEXT : CALL -936: PRINT
480 TAB 8: PRINT "SELECT PROGRAM BY
NUMBER": VTAB 4: PRINT "=====
=====
": POKE 34,5: RETURN
490 REM COPYRIGHT (C) 1979
BY LENNIS L HALL
PORTLAND, OREGON

```



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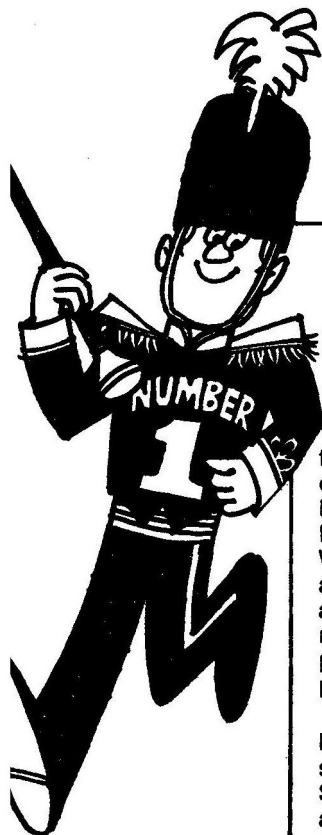
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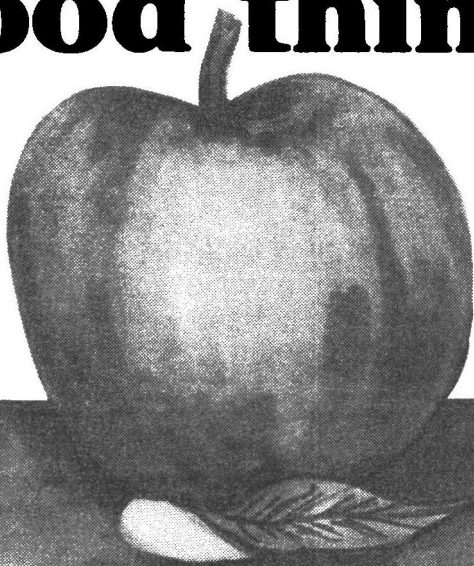
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