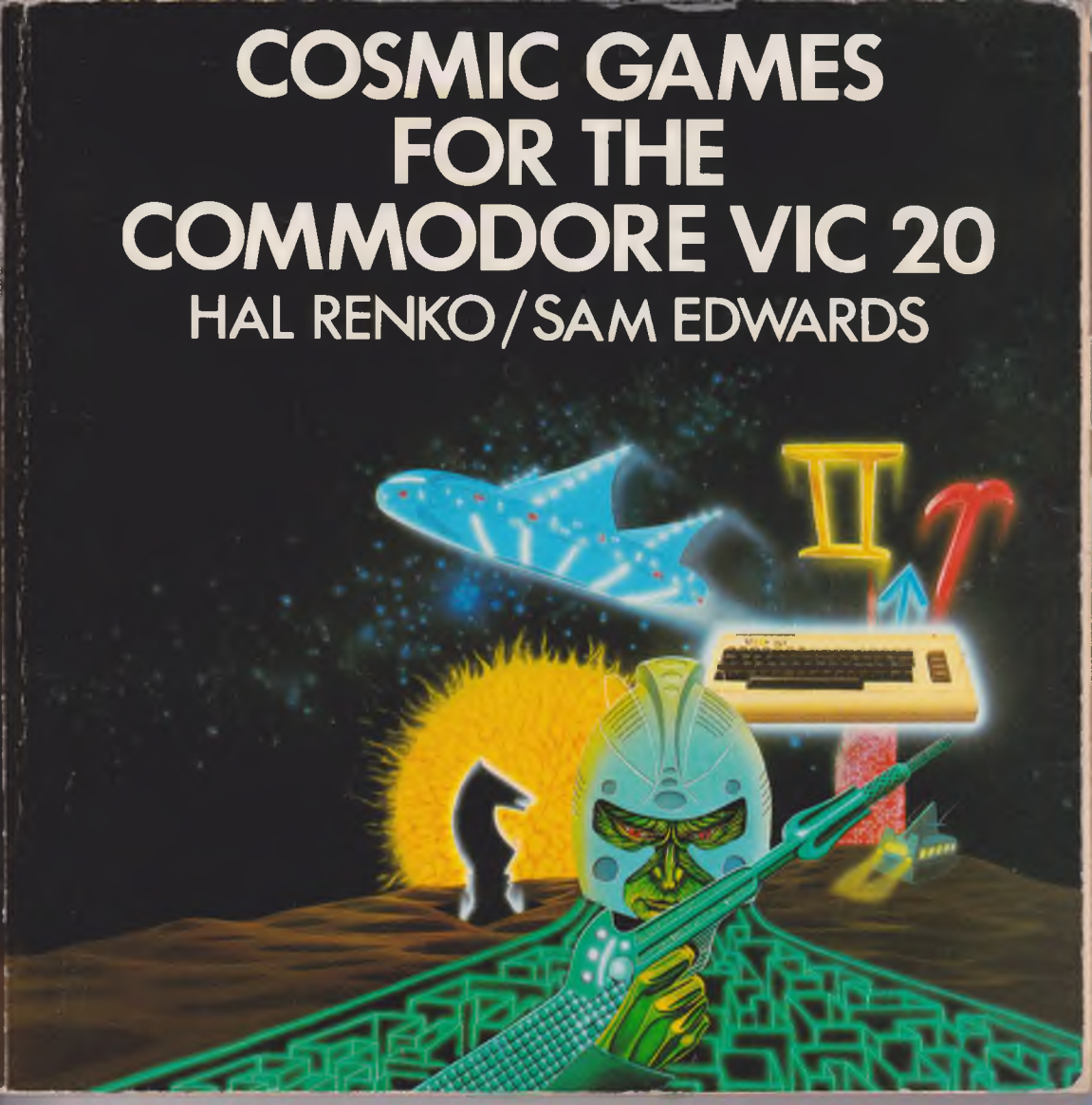
COSMIC GAMES FOR THE COMMODORE VIC 20

HAL RENKO/SAM EDWARDS



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Hal Renko and Sam Edwards


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* These games require extra memory, as follows:Las Vegas a Go Go (+ 3K), Qui Vive (+ 16K), Escher (+ 8K), New York, New York (+ 3.5K), Road Race (+ 8K)

Acknowledgements

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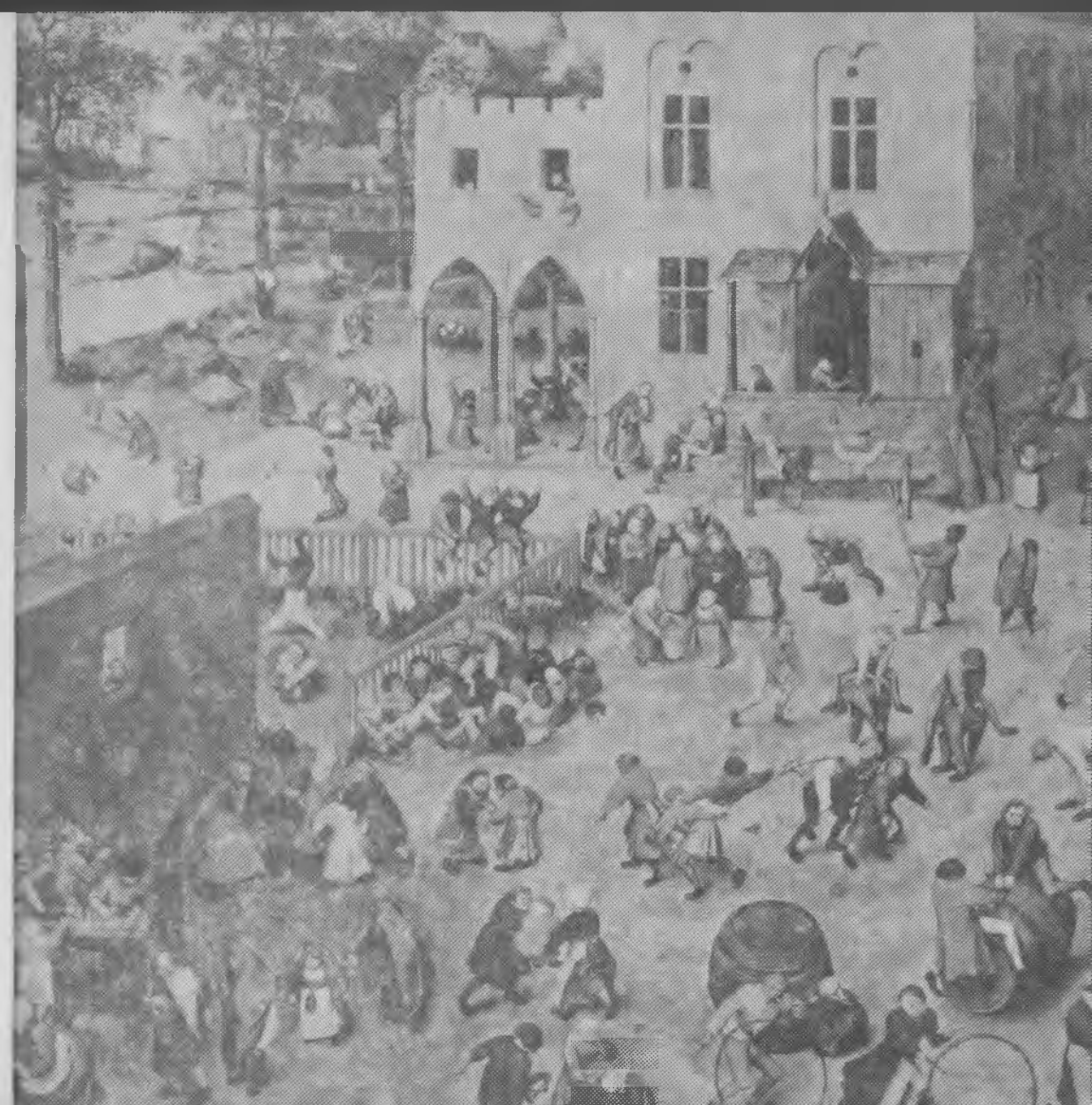


Introduction

Everybody knows that computers are used for all kinds of serious purposes — financial calculations, business applications and text processing, for instance. They can, however, help us in another way. As the proverb says 'All work and no play makes Jack a dull boy' and it's certainly true that we all need something to keep the cogwheels of our mind turning when we are not considering the 'important' things in life. So we read books, do hobbies, and play games.

Bruegel's wonderful painting 'Children at Play' shows us that this has been true for centuries, if not forever.

This book aims to provide something for everybody from 6 to 96. There are games to play on your own, and others to play with your family and friends. You will find fast action games to test your reflexes and your ability to control many moving objects on the screen; puzzles and brainteasers to get you thinking; board games where you pit your wits against the computer; and, of course, some wonderful arcade-type games which combine aspects of all of these. There are also some very intriguing games which are in a class of their own.

A number of the games have been devised to give interesting and worthwhile results from relatively short listings that will not take much time to enter.

Looking again at 'Children at Play' a thought springs to mind. If Bruegel were alive today, would his painting look something like this . . .

Galactic Monsters

There it is, registering on the x-y-Gz radar. At last, you are approaching the Milky Way. In just 2.56 protoseconds you will be safe in your home galaxy!

But there is danger here, and as captain of your ship, you know very well what it is. You keep a watchful eye on the XR6-screen. No alert yet. The tension is unbearable . . . 2.5 protoseconds . . . 2.0 protoseconds . . . 1.5 protoseconds . . . oh no! There it is —

THE VAN ALLEN SQUARE STONE BELT

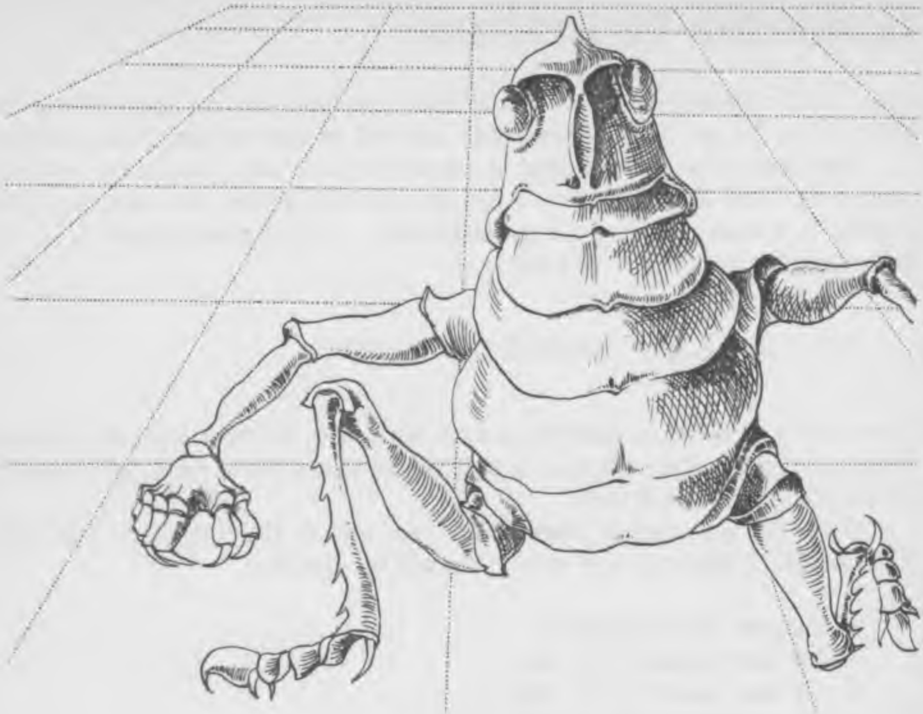
There are a number of these notorious belts, and in them lurk the dreaded Galactic monsters. No weapon can defend you against these vengeful creatures; all you can do is avoid them.

Once the program is started and you see a *VAN ALLEN SQUARE STONE BELT* then you can move yourself by pressing:

W, for one square upwards
A, for one square to the left
D, for one square to the right
X, for one square downwards

Those terrible Galactic monsters will approach closer and closer. Your only hope for survival is to avoid them! If you cross a *VAN ALLEN SQUARE STONE BELT* a second time, the monsters will become more aggressive. Somehow, they seem to anticipate your every move.

Good luck, captain . . . only a few protoseconds to go, and you are home free!



```
10 REM *** GALACTIC MONSTERS ***
20 D$="SQQQQQQQQQQQQQQQQQQQQQ"
30 S1=36876
40 DIM X(12)
50 DIM Y(12)
60 GOTO 2000
100 REM**SCREEN**
110 PRINT"♥"
120 FOR T=1 TO 10
130 PRINT" ●●●●●●●●●●●●●"
140 NEXT T
```

```
150 PRINT" ▒▒▒▒▒▒▒▒▒▒▒▒▒▒"
160 PRINT"■■■■■■■■■■"
170 X1=6
180 Y1=2
190 FOR T=1 TO 11
200 X(T)=T
210 Y(T)=11
220 NEXT T
230 KA=KA+.1
240 RETURN
300 REM**PLAYER'S MOVE**
310 GET KY$:IF KY$="" THEN 310
320 POKE S1+2,15
330 POKE S1,240
340 FOR M=1 TO 20:NEXT M
350 POKE S1,0
360 POKE S1+2,0
370 PRINT "■";TAB(X1);LEFT$(D$,Y1);"●"
380 IF KY$="D" THEN X1=X1+1
390 IF KY$="W" THEN Y1=Y1-1
400 IF KY$="X" THEN Y1=Y1+1
410 IF KY$="A" THEN X1=X1-1
420 IF X1<1 THEN X1=1
430 IF Y1<1 THEN Y1=1
440 IF X1>11 THEN X1=11
450 PRINT "■";TAB(X1);LEFT$(D$,Y1);"▲"
460 PRINT "■";TAB(X1);LEFT$(D$,Y1);"▲"
470 FOR T=1 TO 11
480 IF X1<>X(T) THEN 520
490 IF Y1<>Y(T) THEN 520
500 GOSUB 1020
510 CA=-1
520 NEXT T
530 RETURN
600 REM**MONSTER'S MOVE**
610 FOR T=1 TO 11
620 PRINT "■";TAB(X(T));LEFT$(D$,Y(T));"●"
630 IF RND(0)<KA THEN 900
640 A=INT(RND(0)*4)
650 IF A=0 THEN 690
660 IF A=1 THEN 710
670 IF A=2 THEN 730
680 GOTO 750
690 X(T)=X(T)+1
700 GOTO 760
710 X(T)=X(T)-1
720 GOTO 760
730 Y(T)=Y(T)-1
740 GOTO 760
750 Y(T)=Y(T)-1
```

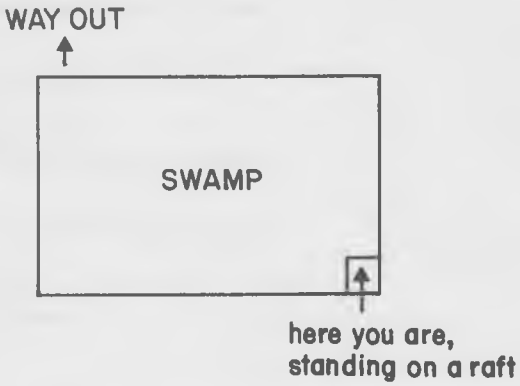
```
760 IF X(T)<1 THEN 810
770 IF X(T)>11 THEN 830
780 IF Y(T)<1 THEN 850
790 IF Y(T)>11 THEN 870
800 GOTO 880
810 X(T)=X(T)+1
820 GOTO 960
830 X(T)=X(T)-1
840 GOTO 960
850 Y(T)=Y(T)+1
860 GOTO 960
870 Y(T)=Y(T)-1
880 PRINT "■";TAB(X(T));LEFT$(D$,Y(T));"■"
890 GOTO 960
900 X2=X1-X(T)
910 Y2=Y1-Y(T)
920 IF RND(0)<.6 THEN 950
930 X(T)=X(T)+SGN(X2)
940 GOTO 960
950 Y(T)=Y(T)+SGN(Y2)
960 PRINT "■";TAB(X(T));LEFT$(D$,Y(T));"■"
970 NEXT T
980 FORU=1 TO 11
990 PRINT "■";TAB(X(U));LEFT$(D$,Y(U));"■"
1000 NEXT U
1010 RETURN
1020 POKE S1+2,15
1030 FOR L=1 TO 10
1040 FOR M=200 TO 220+L*2
1050 POKE S1,M
1060 NEXT M
1070 NEXT L
1080 POKE S1+2,0
1090 POKE S1,0
1100 RETURN
2000 REM**MAIN PROGRAM**
2010 KA=KA+.1
2020 GOSUB 110:REM SCREEN
2030 GOSUB 310:REM PLAYER MOVES
2040 BR=BR+1
2050 IF NOT CA THEN 2170
2060 K=K+1:CA=0
2070 SC=SC+AT-BR-5*K
2080 AT=AT+20
2090 BR=0
2100 IF K<5 THEN 2020
2110 PRINT"■END OF THIS GAME."
2120 PRINT"YOUR SCORE IS:"
2130 PRINT SC
```

```
2140 PRINT"TYPE RUN TO START"
2150 PRINT"AGAIN."
2160 END
2170 IF Y1=11 THEN 2020
2180 GOSUB 610
2190 GOTO 2030

READY.
```

Zombies in the Swamp

Watch out! There are zombies about, and you have to cross the swamp where they live. To do this you must walk across on rafts.

At the start of the game the swamp looks like this:



You are at one corner, and you must reach the diagonally opposite corner to escape. To put a raft next to the one you are standing on, enter T and the computer asks

THROW TO THE?

Enter N for north, S for south, E for east, or W for west, and a raft will appear in the appropriate position (north is at the top of the screen). To move, enter M and the computer will ask

MOVE TO THE?

Again, enter N, S, E, or W as appropriate, to step onto the raft.

So far so good, but beware! From time to time one of those zombies will emerge from the swamp and run across the rafts you have positioned. If you are in its way it will catch you. Luckily, zombies can't see very well so they often fall off the rafts back into the swamp.

To succeed in this exciting game you must develop your own strategy. The longer and more complicated your path the less likely the zombies are to catch you, but, on the other hand, it will take you longer to get across the swamp, giving time for more zombies to appear.

Oh no! Here come those terrifying zombies again. You had better just hope they don't catch you.

```
10 REM **ZOMBIES IN THE SWAMP**
20 DEFFNR(X)=INT(RND(1)*X+1)
30 A$(1)="NORTH":A$(2)="EAST":A$(3)="SOUTH":A$(4)="WEST"
40 A$(5)="????"
50 S$="                                                  "
60 DIMA(7,7):FORI=0TO7:A(7,I)=-1:A(I,7)=-1:NEXT
70 GOTO1010
100 GETA$:IFA$=""THEN100
110 FORI=1TOB:IFA$=MID$(B$,I,1)THENRETURN
120 NEXT:RETURN
200 REM *INPUT*
210 B$="MT":B=2:GOSUB100:ONIGOTO230,290
220 P$="???":GOSUB510:GOTO210
230 P$="MOVE TO THE ?":GOSUB510:GOSUB330
240 X=PX+DX:Y=PY+DY:IFX<0ORX>6ORY<0ORY>6THEN500
250 IFA(X,Y)<=0THEN500
260 GOSUB410:PRINT"***********"
270 A=X:B=Y:X=PX:Y=PY:PX=A:PY=B
280 GOSUB420:RETURN
290 P$="THROW TO THE ?":GOSUB510:GOSUB330
300 X=PX+DX:Y=PY+DY:IFX<0ORX>6ORY<0ORY>6THEN500
310 IFA(X,Y)<>0THEN500
320 A(X,Y)=1:GOSUB410:GOSUB420:RETURN
330 B$="NESW":B=4:GOSUB100:P$=P$+A$(I):GOSUB510:ONIGOTO350,360,370,380
340 GOTO330
350 DX=0:DY=-1:RETURN
360 DX=1:DY=0:RETURN
```

```
370 DX=0:DY=1:RETURN
380 DX=-1:DY=0:RETURN
400 REM *OUTPUT*
410 PRINTLEFT$(S$,1+3*Y)SPC(3*X);:RETURN:REM MOVE CURSOR TO X,Y
420 GOSUB410:PRINT"[illegible]   [illegible]   [illegible]   ":RETURN
430 GOSUB410:PRINT"[illegible]###[illegible]###[illegible]###":RETURN
500 P$="IMPOSSIBLE":GOTO510
510 IFLEN(P$)>20THENP$=RIGHT$(P$,20)
520 PRINTS$P$"[illegible]":RETURN
1000 REM *MAIN PROGRAM*
1010 PRINT"[illegible]";:FORI=1TO21:PRINT"[illegible]                    ":NEXT
1020 PRINT"[illegible]***[illegible]***[illegible]***[illegible]":PX=6:PY=6:A(6,6)=1
1030 GOSUB210:M=M+1
1040 IFPX=0ANDPY=0THEN1510
1050 IFFNR(PX+PY)>3ORM<5THEN1030
1060 MX=6:MY=6:X=6:Y=6:C2=0:IFPY=6AND(PX=6ORPX=7)THEN1520
1070 GOSUB430:CX=-1:CY=0
1080 C=0:C1=0:C2=C2+1
1090 C1=C1+1:ONFNR(4)GOSUB350,360,370,380
1100 IFC1>6THEN1270
1110 IFDX=-CXANDDY=-CYANDC1<6THEN1090
1120 IFPX+PY<4THEN1210
1130 X=MX+DX:Y=MY+DY:IFX<0ORY<0ORX>6ORY>6THEN1150
```

```
1140 IFA(X,Y)>0ORCTHEN1160
1150 DX=CX:DY=CY
1160 CX=DX:CY=DY:X=MX+DX:Y=MY+DY:IFX<0ORY<0ORX>60RY>6THENC=-1:GOTO1090
1170 IFA(X,Y)<0THENC=-1:GOTO1090
1180 IFPX=XANDPY=YTHEN1520
1190 IFA(X,Y)=0THENA(X,Y)=-1:GOSUB410:PRINT"■■■■":X=MX:Y=MY:GOSUB420:GOTO1030
1200 GOSUB430:A=X:B=Y:X=MX:Y=MY:MX=A:MY=B:GOSUB420:C1=0:GOTO1080
1210 IFC1>4THEN1130
1220 X=MX+DX:Y=MY+DY:IFX<0ORY<0THEN1090
1230 IFA(X,Y)<0THEN1090
1240 IFFNR(M)=0ANDC2>20THEN1180
1250 IFA(X,Y)=0THEN1090
1260 CX=DX:CY=DY:GOTO1180
1270 IFC1>10THEN1290
1280 A=DX:DX=-DY:DY=A:GOTO1130
1290 X=MX:Y=MY:GOSUB420:GOTO1030
1500 REM *END*
1510 PRINTS$"YOU SUCCEEDED !■":FORI=0TO2000:GOTO1540
1520 FORI=0TO1000:NEXT
1530 PRINTS$"YOU FAILED■":FORI=0TO2000:NEXT:GOTO1540
1540 PRINT"DO YOU WANT TO":PRINT"TRY AGAIN (Y/N)?"
1550 GETA$:IFA$="N"THENPRINT"■":END
1560 IFA$="Y"THENRUN
1570 GOTO1550

READY.
```

Keyboard Memory

This game uses the computer keyboard to test your memory. Eighteen of the keys each conceal a number, in the same way that a playing card, lying face down, hides its value. There are nine different numbers, each hidden by two keys.

The symbols of the keys you must concentrate on are shown on the screen.

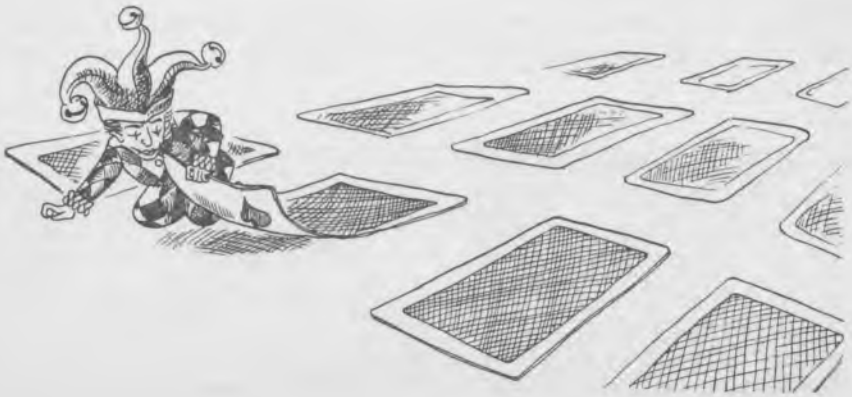
Q W E R T Y
A S D F G H
Z X C V B N

Press a key and the number it is hiding will be shown on the screen: press two, one after the other, and if they are both hiding the same number their symbols will disappear from the screen.

Your first few attempts will obviously be guesses but by memorizing the positions of the numbers they show, you should soon be able to work out where the pairs are.

At the end of the game the computer will tell you what your intellectual capabilities are.

```
10 REM *** KEYBOARD MEMORY ***
20 D$="[redacted]"
30 R=INT(RND(0)*9+1)
40 PRINT"□"
50 DIM T$(18),W$(18),Q$(2),NN(2)
60 A$="QWERTYASDFGHZXCVBN"
70 B$="153997231546682847"
80 GOTO 500
90 REM**COMPOSE RANDOM LAYOUT**
100 FOR N=1 TO 18
110 T$(N)=MID$(A$,N,1)
120 DI=N+R
130 IF DI<19 THEN 150
140 DI=DI-18
150 W$(N)=MID$(B$,DI,1)
160 NEXT N
170 RETURN
180 REM**SCREEN**
190 FOR K=1TO 3
200 FOR J=1 TO 6
210 PRINT"■"
220 PRINT RIGHT$(D$,2*K);TAB(2*J);
230 PRINT T$((K-1)*6+J)
240 NEXTJ,K
250 RETURN
260 REM**INPUT**
270 PRINT
```



```
280 FOR KK=1 TO 2
290 GET KY$
300 IF KY$="" THEN 290
310 D$(KK)=KY$
320 TU=TU+1
330 REM**TURN CARD**
340 FOR N=1 TO 18
350 K=INT((N-.5)/6)+1
360 J=N-(K-1)*6
370 IF T$(N)<>D$(KK) THEN 410
380 PRINT"■";RIGHT$(D$,2*K+1);TAB(2*J);
390 PRINT W$(N);
400 NN(KK)=N
410 NEXT N
420 NEXT KK
430 RETURN
440 REM**CHECK CARDS**
450 IF W$(NN(1))<>W$(NN(2)) THEN RETURN
460 TE=TE+1
470 T$(NN(1))=" "
480 T$(NN(2))=" "
490 RETURN
500 REM**MAIN PROGRAM**
510 GOSUB 100:REM RANDOM LAYOUT
520 GOSUB 190:REM SCREEN
530 GOSUB 270:REM INPUT
540 GOSUB 450:REM CHECK CARDS
550 IF TE<9 THEN 520
560 PRINT "□NUMBER OF TURNS=";TU
570 END

READY.
```

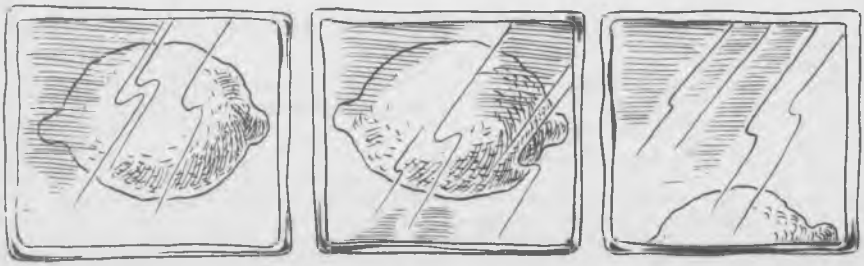
Las Vegas a Go Go

Have you ever watched someone pumping coin after coin into a one-armed bandit, and found yourself wondering what the fascination was? You will soon find out when this program turns your computer into a fabulous Las Vegas-style fruit machine. All the playing instructions you need will appear on the screen. At certain points you will be presented with a list of options, for instance

```
INSERT, HOLD, PLAY, OR END
```

Enter your choice by typing the first letter of the option you want, for instance, P keeps your machine playing. The reels are numbered 1, 2, and 3. If you want to hold one or more reels, type in the appropriate number or numbers after you have entered H.

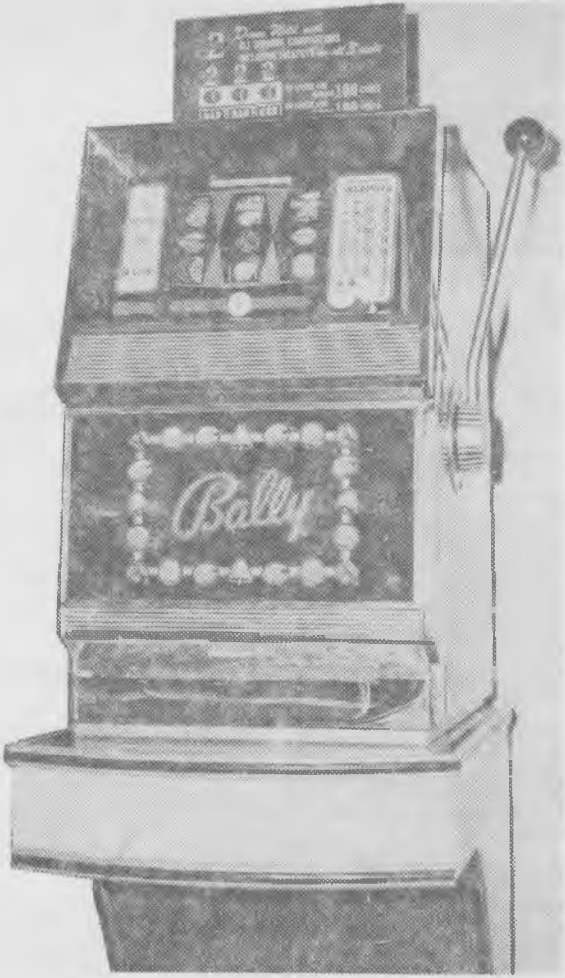
Lights will flash and music play as the wheels whiz around. Have you won this time? Never mind, you are sure to hit the jackpot sooner . . . or later!



```
0 REM YOU NEED AT LEAST 3KB RAM EXTRA!
5 REM **LAS VEGAS A GOGO**
10 SC=4096:CL=37888:CR=36864
20 DEF FNR(X)=INT(RND(1)*X+1):X=RND(-TI)
100 DIMWF$(13),R(2,13),JA(13):JA(5)=-1:JA(6)=-1:JA(7)=-1
110 FOR V=1 TO 13:READ WF$(V),R(1,V),R(2,V):NEXT
120 DATAA,,,K,,,Q,,,J,,,*,8,40,"●",8,40,$,7,30
130 DATA"♠",5,25,"♥",3,20,"♣",3,20,"♦",2,10,#,2,10,%,,
200 DIM JP(4),JF(4),JC(4)
210 FOR JO=1 TO 4:READ JP(JO),JF(JO):NEXT
220 DATA 167,1,168,11,170,17,171,10
300 DIM WP(3),V(4),HV(3):WP(1)=211:WP(2)=213:WP(3)=215
310 DIM HP(3),HF$(3):HP(1)=255:HP(2)=257:HP(3)=259
320 HO$="■H■H■H"
400 DIM GP(4),GV(4):GP(1)=14:GP(2)=40:GP(3)=58:GP(4)=32
410 BR$="                    "
500 NJ=4:NH=0:NG=0:GW=0:NI=0:NT=-1
510 PL$="■■■■■■■■■■■■■■■■■■■■■■■■■                                          ■■■■"
520 H$=LEFT$(PL$,12)+"■■■■■■■■■■■■■■"
530 GOTO3000
599 REM ADD INCREMENT TO MONEY
600 FOR AD=SGN(IN) TO IN STEP SGN(IN)
610 PRINT"■TOTAL:"MO+AD"■  "
620 FOR SO=250 TO 254:IF IN>0 THEN FOR I=10 TO 12:POKE CR+I,SO
630 IF IN<0 THEN FOR I=0 TO 2:POKE CR+12,200:SO=SO+5
640 NEXT I,SO
650 FOR I=10 TO 12:POKE CR+I,0:NEXT I,AD
660 MO=MO+IN:RETURN
699 REM BLINK S1$/S2$ AND GET IN$
700 PRINT "■■■■" S1$:FOR DE=1 TO 250:NEXT
710 GET IN$:IF IN$<>"" THEN PRINT "■■■" S2$: RETURN
720 PRINT "■■■" S2$:FOR DE=1 TO 250:NEXT
730 GET IN$:IF IN$<>"" THEN RETURN
740 GOTO 700
799 REM ** REMOVE DOUBLE
800 DO=0:PRINT"■■               "
810 FOR JO=1 TO 4
820 POKESC+JP(JO),JF(JO):POKECL+JP(JO),0:JC(JO)=0:NEXT
830 NJ=4:RETURN
899 REM ** JACKPOT
900 FOR I=1 TO 4:PRINT"■■■■                              ■■■■■";
910 FOR C=1 TO JC:FOR NO=10 TO 12
920 POKE CR+NO,239+C:NEXT NO
930 PRINT"J";:NEXT C,I
940 FOR NO=10 TO 12:POKE CR+NO,0:NEXT NO
950 RETURN
1000 POKECR+15,127:POKE CR+14,10:PRINT"■■TOTAL: 0"
1010 PRINT"■■■■■"TAB(12)"■■          ■■"
1020 FOR I=1 TO 4:PRINTTAB(12)"■■          ■":NEXT
1030 PRINTTAB(12)"■■             "
```

```
1040 PRINTTAB(12)"       "
1050 FOR I=1 TO 6:PRINTTAB(13)"        ":NEXT
1060 PRINTTAB(12)"        "
1070 PRINTTAB(11)"          "
1100 PRINT"      %  =  1"
1110 FOR V=12 TO 5 STEP-1
1120 PRINT" -"WF$(V)WF$(V)"-= "R(1,V)
1130 NEXT
1140 FOR V=12 TO 5 STEP-1
1150 PRINT" "WF$(V)WF$(V)WF$(V)" ="R(2,V);
1160 IF JA(V) THEN PRINT" +J";
1170 PRINT:NEXT:RETURN
1199 REM ** ADAPT VARIABLES
```

```
1200 NT=NT+1:IF WI>0 THEN HB=-1:WI=0
1210 FOR HO=1 TO 3:HF$(HO)=" ":POKESC+HP(HO),160:NEXT
1220 IF BO THEN 1270
1230 FOR JO=1 TO 4:IF JC(JO)=0 THEN 1260
1240 JC(JO)=JC(JO)-1:IF JC(JO)>0 THEN 1260
1250 NJ=NJ+1:POKESC+JP(JO),JF(JO):POKE CL+JP(JO),0
1260 NEXT JO:GOTO 1280
1270 DC=DC-1:IF DC<=0 THEN GOSUB 800
1280 PRINT" " SPC(99) "              "
1290 IF JA THEN JC=JC-1:PRINT"     " SPC(JC) " ":IF JC<=0 THEN JA=0
1300 IF MO>MM THEN MM=MO
1310 RETURN
1399 REM ** NOT ENOUGH MONEY
1400 HB=-1:GOSUB 800
1410 JA=0:PRINT"                  "
1420 PRINT PL$ "INSERT OR END";
1430 S1$="INSERT (I)":S2$=BR$:GOSUB 700
1440 IF IN$="P" THEN 1430
1450 RETURN
1499 REM ** HOLD POSSIBLE
1500 PRINT PL$ "INSERT,HOLD,PLAY OR END";
1510 S1$=H$+HO$:S2$=H$+HF$(1)+"  "+HF$(2)+"  "+HF$(3)
1520 GOSUB 700:HO=VAL(IN$):IF HO=0 OR HO>3 THEN RETURN
1530 NH=NH+1:IF HF$(HO)=" " THEN HF$(HO)=" H":GOTO1510
1540 HF$(HO)=" "
```


Bally

```
1550 GOTO 1510
1599 REM NO HOLD
1600 PRINT PL$ "INSERT, PLAY OR END";
1610 S1$="■???":S2$="■   ":GOSUB 700
1620 RETURN
1699 REM ** WHAT TO DO WITH WINNINGS?
1700 PRINT PL$;:IF HB THEN 1720
1710 PRINT"HOLD, ";
1720 PRINT"GAMBLE, COLLECT";
1730 GOTO1610
1799 REM ** SPIN GAMBLE WHEELS
1800 FOR WD=1 TO 3:IF HF$(WD)<>" " THEN 1830
1810 FI=FNR(100):IF FI<5 THEN V(WD)=FI-8*(JC(FI)>0):GOTO 1830
1820 V(WD)=5-(FI>7)-(FI>10)-(FI>13)-(FI>23)-(FI>36)-(FI>49)-(FI>68)-(FI>87)
1830 FOR DE=2 TO 500:NEXT:POKE CR+10,175
1840 POKE SC+WP(WD),(ASC(WF$(V(WD)))AND63)
1850 PRINTH$ "■■" SPC(WP(WD)-WP(1)) WF$(V(WD))
1860 POKE CR+10,0
1870 NEXT WD:RETURN
1899 REM ** TAKE CARE OF JOKERS
1900 J=0:FOR WD=1 TO 3:V=V(WD)
1910 IF V>4 THEN FV=V:GOTO 1950
1920 JW=WD:J=J+1
1930 IF JC(V)>0 THEN 1950
1940 PRINT"■" SPC(JP(V)) "■ ":JC(V)=20:NJ=NJ-1
1950 NEXT WD:DO=(NJ=0):IF DO THEN DC=15:PRINT"■■DOUBLE!"
1960 RETURN
1999 REM ** COMPUTE WINNINGS
2000 HV=13:ON J GOTO 2030,2010,2070
2010 IF NOT(JA AND FV>10) THEN HV=FV
2020 GOTO 2070
2030 V(0)=V(3):V(4)=V(1):IF JA AND V(JW-1)<>V(JW+1) THEN 2070
2040 V(0)=15:V(4)=15
2050 IF V(JW+1)>V(JW-1) THEN HV=V(JW-1):GOTO 2070
2060 HV=V(JW+1)
2070 FOR WD=1 TO 3:HV(WD)=V(WD):IF V(WD)<5 THEN HV(WD)=HV
2080 NEXT WD:IF HV(1)<>HV(2) OR HV(2)<>HV(3) THEN 2100
2090 IF JA(HV(1)) THEN JA=-1:JC=15:GOSUB 900
2099 REM ** COMPUTE WINNINGS
2100 FOR WD=1 TO 3:IF HV(WD)=13 THEN WI=WI+1
2110 NEXT WD:IF JA THEN WI=10*WI
2120 NS=-(HV(1)=HV(2))-(HV(2)=HV(3)):WI=WI+R(NS,HV(2))
2130 IF DO THEN WI=2*WI
2140 RETURN
2199 REM ** GAMBLE ROUTINE
2200 DT=1:GV(1)=2*WI:GV(2)=0:GV(3)=INT(3*WI/2):GV(4)=INT(WI/2)
2210 NG=NG+1:PRINT PL$ "      STOP      ";
2220 FOR LI=1 TO 3:PRINT"■" SPC(22-LI-12) "■■              ":NEXT
2230 R=R+1:IF R>4 THEN R=1
2240 PRINT"■■" SPC(OP(R)) GV(R):POKE CR+11,150+10*R:PRINT"■■■  "
```

```
2250 IF IN$<>"S" THEN GET IN$:GOTO 2270
2260 DT=(1+RND(1))*DT:FOR DE=1 TO DT:NEXT:IF DT>500 THEN 2280
2270 PRINT"■■" SPC(GP(R)+1) "   ":GOTO 2230
2280 POKE CR+11,0:FOR LI=1 TO 3:PRINT"■" SPC(22*LI-12) "              ":NEXT
2290 GW=GW+GV(R)-WI:WI=GV(R):RETURN
2399 REM ** END OF GAME
2400 PRINT"□":POKE CR+15,27:POKE CR+14,0
2410 PRINT"PUT IN:";:X=NI:GOSUB 2500
2420 PRINT"GOT BACK:";:X=MO/4:GOSUB 2500
2430 PRINT"MAX AT ONE TIME:";:X=MM/4:GOSUB 2500
2440 PRINT"BY GAMBLING:";:X=GW/4:GOSUB 2500
2450 PRINT"NR. OF HOLDS:  ";NH
2460 PRINT"NR. OF GAMBLES:";NG
2470 PRINT"NR. OF TURNS:  ";NT
2480 RETURN
2500 IF X=0 THEN X$=BR$+".000":GOTO 2520
2510 X$=BR$+STR$(INT(X*100)/100+.001)
2520 PRINT TAB(13) "$" MID$(X$,LEN(X$)-7,7):PRINT
2530 RETURN
2600 PRINT"■■■" SPC(152);:GOSUB 2700
2610 FOR I=0 TO 3:PRINT"■■ ■■■ ";:GOSUB 2700:NEXT
2620 FOR WD=1 TO 3:IF HF$(WD)=" " THEN POKE SC+WP(WD),32
2630 NEXT WD
2640 FOR I=0 TO 3:PRINT"■■ ■■ ";:GOSUB 2700:NEXT
2650 RETURN
2700 FOR DE=0 TO 80:NEXT:RETURN
2999 REM *** MAIN PROGRAM
3000 GOSUB 1000:REM SCREEN
3010 GOSUB 1200:REM ADAPT
3020 ON -2*HB-(MO>1)+1 GOSUB 1400,1500,1400,1600
3030 CA=-(IN$="I")-2*(IN$="P")-3*(IN$="E")
3040 ON CA GOTO 3100,3200,4000
3050 GOTO 3020
```

```
3100 NI=NI+1:IN=4:GOSUB 600
3110 IF MO>MM THEN MM=MO
3120 GOTO 3020
3200 IN=-2:GOSUB 600
3210 GOSUB2600:GOSUB 1600:REM SPIN WHEELS
3220 IF DO THEN 3240
3230 GOSUB 1900:REM JOKERS
```

```
3240 GOSUB 2000:REM WINNINGS
3250 IF HF$(1)<>" " OR HF$(2)<>" " OR HF$(3)<>" " THEN 3280
3260 HB=0:LW=WI:IF WI>0 THEN 3300
3270 GOTO3010
3280 HB=-1:IF WI>LW THEN 3300
3290 PRINT"■■"SPC(99)" YOU LOST   ":POKECR+10,200:FORI=0TO2000:NEXT:POKECR+10,0
GOTO3010
3300 PRINT"■■" SPC(99) "YOU WON"WI"■■  "
3310 FOR DU=1 TO WI:POKE CR+12,220:FOR I=0 TO 50:NEXT:POKE CR+12,0
3320 NEXT DU
3330 IF MO<2 THEN HB=-1
3340 IF WI>499 THEN 3400
3350 GOSUB 1700:REM GET INSTRUCTION
3360 CA=-(IN$="H" AND NOT HB)-2*(IN$="G")-3*(IN$="C")
3370 ON CA GOTO 3600,3500,3400
3380 GOTO 3340
3400 IN=WI:GOSUB 600:GOTO3010
3500 HB=-1:GOSUB 2200:REM GAMBLE
3510 IF WI>0 THEN 3300
3520 GOTO 3290
3600 WI=0:GOTO 3010
4000 GOSUB2400:REM END
4010 END

READY.
```

Parrot

PARROT is a very simple competition game. Play it on a rainy day with a friend (especially after your friend has had a few beers!).

At the start of the game, your computer impertinently asks you:

ARE YOU READY PARROT?

Yes, he is calling *you* a parrot! Press any key and the computer immediately displays a letter. You must enter the same letter as fast as you can. Since you copy each letter, you really are a parrot! The game is repeated for about 10 seconds, and then the computer shows your score.

How good are you as a parrot? Have a competition with your friends and try to win the title of 'Super-Duper Parrot'. (My record is 19 — I teach parrots!)

```
10 REM **PARROT**
20 PRINT"[illegible]      "
30 PRINT"[illegible]         "
40 PRINT"[illegible]         "
50 PRINT"[illegible]         "
60 PRINT"[illegible]   "
70 PRINT"[illegible]PARROT"
80 A=65:B=26
90 T=TI:C=1:PRINT
100 PRINT "ARE YOU READY PARROT?"
110 GET A$
120 IF A$="" THEN 110
130 PRINT
140 X$=CHR$(A+B*RND(1)):PRINTX$;
150 GETA$:IFA$<>X$THEN150
160 IFTI-T>600THEN180
170 C=C+1:GOTO140
180 PRINT:PRINT"YOUR SCORE:"C:PRINT"TIME: "INT((TI-T)/.6)/100"SECONDS"
190 A$="Y":INPUT"[illegible]PLAY AGAIN";A$:IFLEFT$(A$,1)="Y"THENRUN
200 END

READY.
```

Kentucky Derby

Ladies and gentlemen, they are off! Red Arrow is off to a good start . . . Blondish Boy is giving his jockey some trouble . . . and there's the famous Spanish Lady, on the inside track. This is really first class excitement, and we've only just begun! Coming round the first bend . . . Mickey Finn has taken over the lead, hard-pressed by Speedy Gonzales . . .

The Kentucky Derby is a horse-racing game. There are not as many horses in our Kentucky Derby as there are in the real race — in fact, there are only three — but they have to run 10 gruelling laps (with computer horse-racing anything is possible)! At the start of the game the odds are given for each horse. Now you can place your bets. As long as you have money you can bet again and again — these horses never get tired.

After the RUN command we see:

```
YOU MAY BET NOW
THE ODDS OF THE HORSES ARE
HORSE 1: 10 to 1
HORSE 2: 4 to 1
HORSE 3: 20 to 1
```

(odds may vary from race to race).

```
YOU STILL HAVE . . . DOLLARS
YOUR BET ON HORSE 1 IS . . .
```

When you have run out of money, your computer cheekily tells you:

```
YOU CANNOT SPEND THAT MUCH
```

And if you are a little better off:

YOU STILL HAVE . . . DOLLARS

Immediately after you enter all your bets the screen displays the racetrack, with horses at the starting gates. The odds and bets are displayed in the lower part of the screen and then you will see:

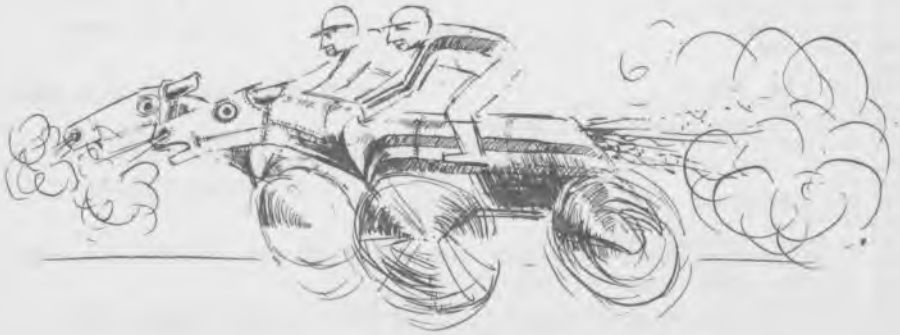
START???

Press ENTER and they are off!

I put my money on the bobtailed nag
Somebody bet on the bay

```
10 REM ***KENTUCKY DERBY***
20 D$="                              "
30 GOSUB 1400
200 REM **MAIN PROGRAM**
220 PRINT "□";
230 GOSUB 700
250 GOSUB 1200
260 REM BEEP .5,6
270 VM=(V(1)+V(2)+V(3))/3
280 FOR Q=1 TO 3
290 GOSUB 400
300 NEXT Q
310 REM BEEP .005,-3
320 IF FINISH<3 THEN GOTO 270
330 CREDIT=CREDIT+I(WINNER)*P(WINNER)
340 IF CREDIT>0 THEN GOTO 230
350 PRINT "□YOU ARE RUINED. I HOPE YOU LEARNED YOUR LESSON"
360 END
400 REM ***MOVE ONE STEP***
410 P$="P"
420 IF D(Q)=1 THEN RETURN
430 PRINT LEFT$(D$,T(Q));TAB(X(Q));" "
440 IF S(Q)=1 THEN S(Q)=0:GOTO 600
450 X(Q)=X(Q)+V(Q)
460 V(Q)=V(Q)+VUPG*RND(0)*(VM-V(Q))
```

```
470 IF S(Q)=2 THEN T(Q)=T(Q)+1:S(Q)=0:GOTO 600
480 IF (H1<X(Q))AND(X(Q)<H3)THEN 580
490 IF X(Q)<XMAX THEN GOTO 600
500 X(Q)=X(Q)+2-XMAX
510 R(Q)=R(Q)+1
520 PRINT LEFT$(D$,T(Q));R(Q)
530 IF R(Q)<ROUNDS THEN GOTO 600
540 IF WINNER=0 THEN WINNER=Q
550 D(Q)=1
560 FINISH=FINISH+1
570 GOTO 600
580 IF X(Q)<H2 THEN P$="O":S(Q)=1:GOTO 600
590 S(Q)=2:T(Q)=T(Q)-1:P$="R"
600 PRINT LEFT$(D$,T(Q));TAB(X(Q));"π"
610 RETURN
700 REM ***INITIALIZE HORSES***
710 P$="P"
720 WINNER=0:FINISH=0
730 FOR K=1 TO 3
740 X(K)=3
750 R(K)=0
760 P(K)=(INT(RND(0)*5)+1)/5
770 V(K)=P(K)*DV+VN
780 T(K)=5*(K-1)+3
790 D(K)=0
800 NEXT K
900 REM ***MAKE BETS***
910 PT=0
920 FOR I=1 TO 3
930 P(I)=(V(I)-VN)/DV
940 PT=PT+P(I)
950 NEXT I
```

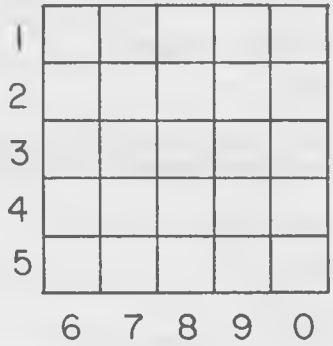


```
960 FOR K=1 TO 3
970 P(K)=INT(PT/P(K))
980 NEXT K
990 PRINT "□";
1000 PRINT "**********************"
1010 PRINT "   YOU MAY BET NOW"
1020 PRINT "**********************"
1030 PRINT
1040 PRINT "THE ODDS OF THE HORSES ARE:"
1050 PRINT
1060 FOR I=1 TO 3
1070 PRINT "HORSE";I;": ";P(I);" TO 1"
1080 NEXT I
1090 PRINT
1100 PRINT "YOU STILL HAVE";CREDIT$;"DOLLAR"
1110 FOR I=1 TO 3
1120 PRINT "YOUR BET ON HORSE";I;"IS:"
1130 INPUT I(I)
1140 REST=CREDIT-I(I)
1150 IF REST<0 THEN PRINT "YOU CANNOT SPEND THAT MUCH":GOTO 1120
1160 CREDIT=CREDIT-I(I):PRINT "■■■■■■■■■■■■■YOU STILL HAVE";CREDIT;"■■ DOLLARS "
1170 NEXT I
1180 RETURN
1200 REM *** PREPARE THE FIELD
1210 PRINT "□";
1220 PRINT "■■■■■■■■■■■■■■■■■■■■"
1230 PRINT
1240 PRINT "HORSE: 1     2     3"
1250 PRINT "————————————————————"
1260 PRINT "RATE: ";P(1);TAB(12);P(2);TAB(18);P(3)
1270 PRINT "BET   ";I(1);TAB(12);I(2);TAB(18);I(3)
1280 PRINT LEFT$(D$,T(1)-3);"————————————————————"
1290 FOR K=1 TO 3
1300 PRINT LEFT$(D$,T(K));TAB(18);"X"
1310 PRINT LEFT$(D$,T(K));R(K)
1320 PRINT LEFT$(D$,T(K));TAB(X(K));"π"
1330 PRINT LEFT$(D$,T(K)+2);"————————————————————"
1340 NEXT K
1350 INPUT "START????";A$
1360 REM BEEP .5,2
1370 RETURN
1400 REM *** INITIALIZE
1410 DIM R(3),V(3),X(3),T(3),P(3),I(3),S(3)
1420 VN=2:DV=1:VUPG=2
1430 ROUNDS=10:XMAX=21
1440 CREDIT=100
1450 XH=18:H1=XH-3:H2=XH-1:H3=XH+1
1460 RETURN

READY.
```

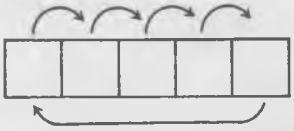
Rainbow Square Dance

A two-dimensional cube? Impossible of course, but this game, played on the computer screen, is similar in many ways to Rubik's Cube.

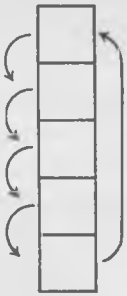
You will see 25 colored squares arranged at random on a 5 × 5 board. The rows of squares on the board are numbered like this:



That is, the horizontal rows are numbered 1 to 5 and the vertical rows 6, 7, 8, 9, and 0. When you enter the number of a row, the squares in that row are moved one position. In a horizontal row the squares move to the right, and in a vertical row they move downwards. As a square disappears off one end of a row it reappears at the other end, like this



in a horizontal row, or this

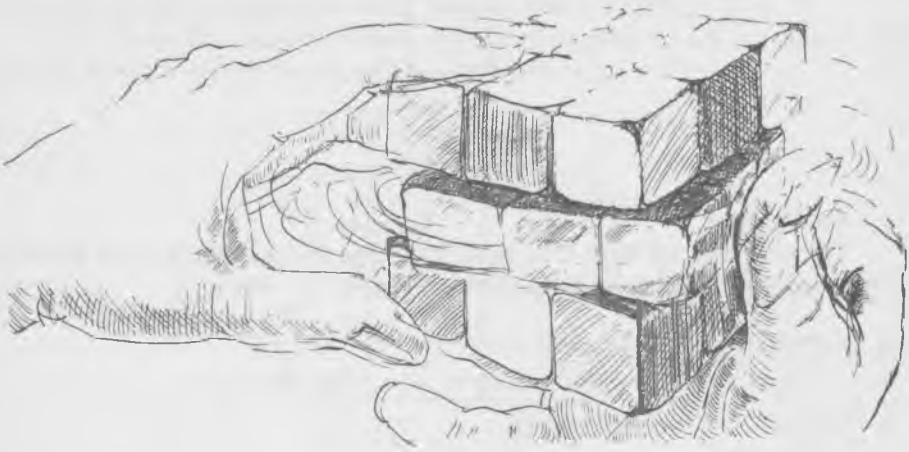


in a vertical row.

The object of all this? You must rearrange the squares to form five horizontal stripes of one color each. Sounds simple . . . but is it?

```
10 REM **RAINBOW SQUARE DANCE**
20 PRINT"■":POKE36879,59
30 DIMA%(5,5):FORI=0TO4:READA%:FORJ=0TO4:A%(I,J)=A%:NEXTJ,I
40 DATA28,5,31,158,30
50 REMRED,WHITE,BLUE,YELLOW,GREEN
60 GOTO510
100 REM *SCREEN*
110 PRINT"■■ ,—6——7——8——9——0—,"
120 FORI=5TO1STEP-1:PRINT"|"SPC(15)"|"
130 A$=RIGHT$(STR$(I),1):PRINTA$SPC(15)A$
140 PRINT"|"SPC(15)"|"
150 NEXT:PRINT"'—6——7——8——9——0—'"
160 PRINT"■";:FORI=0TO4:FORJ=1TO3:PRINT:PRINT"■■";:FORK=0TO4
170 PRINTCHR$(A%(I,K))"    ";:NEXTK,J,I
180 RETURN
200 REM *SHIFT*
210 FORI=5TO1STEP-1:A%(A,I)=A%(A,I-1):NEXT
220 A%(A,0)=A%(A,5):RETURN
230 FORI=5TO1STEP-1:A%(I,A)=A%(I-1,A):NEXT
240 A%(0,A)=A%(5,A):RETURN
500 REM *MAIN PROGRAM*
510 GOSUB110:FORW=0TO20:A=INT(5*RND(1)):ON1+2*RND(1)GOSUB210,230:GOSUB160:NEXTW
520 GETA$:IFA$="0"THENSYS65234
530 A=VAL(A$):IFA$="0"THENA=10
540 IFA=0THEN550
550 IFA>5THENA=A-6:GOSUB230:GOTO570
```

```
560 A=5-A:GOSUB210
570 GOSUB160:GOTO520

READY.
```

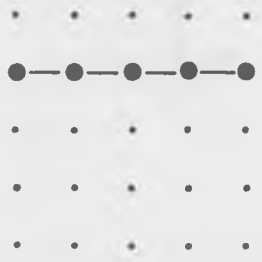


Qui Vive

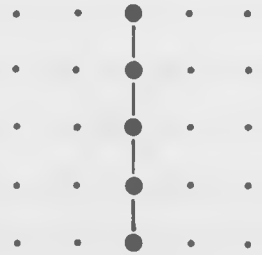
To be 'on the qui vive' means to be alert and watchful. This game is called QUI VIVE because to play it successfully you must always be on the look out for winning situations. The rules are very simple but the program needed to implement them is anything but. In fact, it presents quite a challenge to a games programmer.

QUI VIVE was invented by Eugene de Wolf and is played on a square 5 × 5 board. Each player has five checkers and must try to arrange them into one of seven symmetrical patterns. These are:

a horizontal line, e.g.

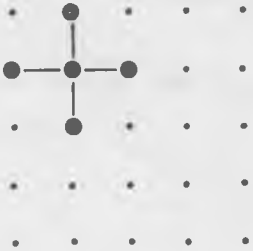


a vertical line, e.g.

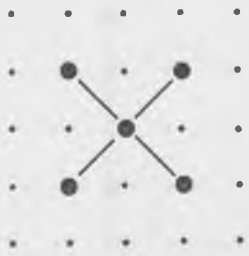


a diagonal, e.g.

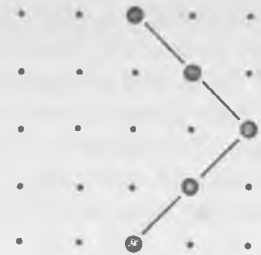
a rectangular cross, e.g.



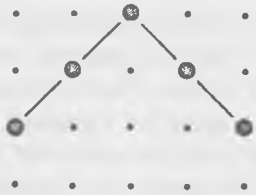
a skew cross, e.g.



a vertical wing, e.g.



a horizontal wing, e.g.



At the start of the game the board is empty and you and the computer take turns to place checkers on it. The positions on the board are labelled like this:

⑤	1	2	3	4	5
④	6	7	8	9	10
③	11	12	13	14	15
②	16	17	18	19	20
①	21	22	23	24	25
	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ

To place a checker at any particular position simply enter the appropriate coordinates: for instance for position 21 enter A1, for position 12, B3, etc. Your checkers are indicated by O and the computer's by ● .

If all ten checkers have been placed on the board and no one has won, the game continues, with you and the computer taking turns to move checkers to try and gain a winning position. To move one of your checkers you enter the coordinates first of its present position and then of the position to which you wish to move it.

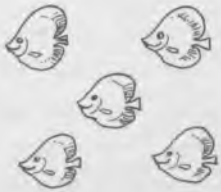
You must keep a look out for chances to make a winning pattern yourself, at the same time making sure that you are blocking any winning moves by the computer.

The program is one of the most interesting in this book. It contains a list of not only all 42 possible winning patterns but also over 100 particularly strong situations from which a player has a chance of making either one of two winning patterns. During the game the computer monitors this list in the light of the situation on the board and assesses what its best move is.

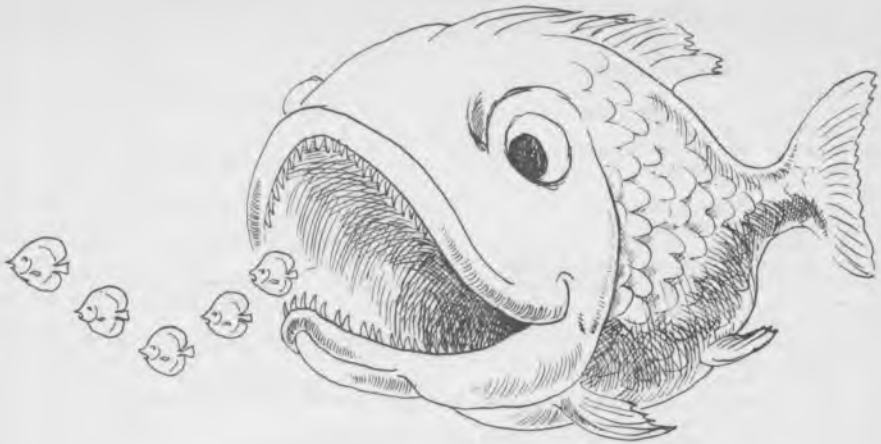
We advise you to play this game on an ordinary checkerboard against one of your friends before you take on the computer. You will soon see what a superb game it is.

```
10 REM***QUI VIVE***
30 DIM SF(41,4),SO(41)
40 DIM D(107,1),DF(15,8)
60 DIM CC(4,1),B(24),C(24)
70 GOTO 3000
100 REM**COMPUTE POINTS OF DF**
110 GV=0:P1=0:P2=0:C1=0:C2=0
120 D1=B(DF(NF,0)):D2=B(DF(NF,1))
130 IF D1=1 OR D2=1 THEN P1=1
140 IF D1=10 OR D2=10 THEN C1=10
150 D1=B(DF(NF,2)):D2=B(DF(NF,3))
160 IF D1=1 OR D2=1 THEN P2=1
170 IF D1=10 OR D2=10 THEN C2=10
180 GV=B(DF(NF,4))+B(DF(NF,5))+B(DF(NF,6))
190 P=GV+P1+P2+C1+C2
200 IF GV=30 AND (C1=0 OR C2=0) THEN P=P-10
210 IF GV=3 AND(P1=0 OR P2=0) THEN P=P-1
```

```
220 RETURN
300 REM**INITIALIZE SINGLE FIGURES**
310 FOR I=0 TO 41:READ X$
320 FOR J=1 TO 5
330 SF(I,J-1)=ASC(MID$(X$,J,1))-65
340 NEXT J,I:RETURN
350 REM WINGS (AV><)
360 DATA UQMSY,PLHNT,KGCIO
370 DATA AGMIE,FLRNJ,KQWSO
380 DATA AGMQU,BHNRV,CIOSW
390 DATA EIMSY,DHLRX,CGKQW
400 REM TIMES (X)
410 DATA ACGKM,BDHLN,CEIMO
420 DATA FLHPR,GIMQS,HJNRT
430 DATA KMQUW,LNRVX,MOSWY
440 REM PLUS (+)
450 DATA BFGHL,CGHIM,DHIJN
460 DATA GKLMQ,HLMNR,IMNOS
470 DATA LPQRV,MQRSW,NRSTX
480 REM DIAGONALS (/)
490 DATA AGMSY,EIMQU
500 REM COLUMNS (I)
510 DATA AFKPU,BGLQV,CHMRW
520 DATA DINSX,EJOTY
530 REM ROWS (-)
540 DATA ABCDE,FGHIJ,KLMNO
550 DATA PQRST,UVWXY
555 REM
560 REM **INIT DOUBLE FIGURES**
570 FOR I=0 TO 107 STEP 12:READ X$
580 FOR J=0 TO 11:FOR K=0 TO 1
590 L=2*J+K+1:D(I+J,K)=ASC(MID$(X$,L,1))-49
600 NEXT K,J,I
610 RETURN
620 DATA "171:1A1C1E1M1O1P2>2@2B2J"
630 DATA "393<3=3?3G474:4=4?4A4G4O"
640 DATA "4P5@5B5D5J696<6C6E6M7=7A"
650 DATA "7C7I7O7P8>8B8D8J9?9E9K:?"
660 DATA ":A:E:K:O:P;>;@;D;J<=<C<I"
```



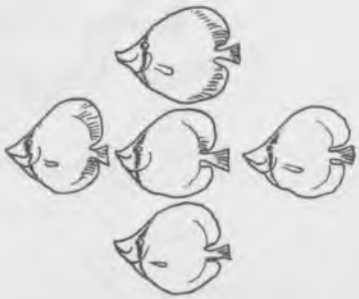
```
670 DATA "=G=I=O>F>H>J?G?K?P@F@J@L"
680 DATA "AGAIAKAMAOAPBHBJBNCICMCP"
690 DATA "DJDLDNEKEMEOFRFWGSGWHTHW"
700 DATA "IRIXJSJXKTKXLRLYMSMYNTNY"
790 REM
800 REM **COMPUTE DOUBLE FIGURE FIELDS**
810 TC=4:TN=0
820 FOR I=0 TO 4:C(SF(D(DF,0),I))=1:NEXT
830 FOR I=0 TO 4:SF=SF(D(DF,1),I)
840 IF C(SF)=1 THEN 860
850 DF(NF,TN)=SF:TN=TN+1:GOTO 870
860 DF(NF,TC)=SF:TC=TC+1:C(SF)=0
870 NEXT I
880 FOR I=0 TO 4:SF=SF(D(DF,0),I)
890 IF C(SF)=1 THEN DF(NF,TN)=SF:TN=TN+1:C(SF)=0
900 NEXT I:RETURN
1000 REM**DISPLAY BOARD**
1005 PRINT "■   ABCDE■"
1010 FOR I=0 TO 4:PRINT 5-I;:FOR J=0 TO 4
1020 F=I*5+J
1030 IF B(F)=0 THEN PRINT ".";
1040 IF B(F)=1 THEN PRINT "o";
1050 IF B(F)=10 THEN PRINT "●";
1060 NEXT J:PRINT 5-I:NEXT I
1070 PRINT "■   ABCDE■"
1080 RETURN
1100 REM**DETERMINE OWNER OF SF'S**
1110 OM=-1:WM=-1
1120 FOR SF=0 TO 41
1130 P=B(SF(SF,0))+B(SF(SF,1))+B(SF(SF,2))+B(SF(SF,3))+B(SF(SF,4))
1140 IF P=0 OR P=10 OR P=20 OR P=30 THEN SO(SF)=10:GOTO 1240
1150 IF P<>40 THEN 1190
1160 GOSUB 1250
1170 GOSUB 1290
1180 WM=1:SF=41:GOTO 1240
1190 IF P>20 OR P<3 OR P=11 OR P=12 THEN SO(SF)=0:GOTO 1240
1200 SO(SF)=1
1210 IF P=4 AND OM=-1 THEN GOSUB 1250
1220 IF P=14 THEN GOSUB 1290
1230 IF P=5 THEN SF=41
1240 NEXT SF:RETURN
1250 REM**DETERMINE OBLIGATORY MOVE (OM)**
1260 FOR I=0 TO 4
1270 IF B(SF(SF,I))=0 THEN OM=SF(SF,I)
1280 NEXT I:RETURN
1290 REM**DETERMINE PINNED CHECKER**
1300 FOR I=0 TO 4
1310 IF B(SF(SF,I))<>10 THEN 1350
1320 FOR J=0 TO CC-1
1330 IF SF(SF,I)=CC(J,0) THEN CC(J,1)=1
```



```
1340 NEXT J
1350 NEXT I
1360 RETURN
1400 REM**DETERMINE OWNER OF DF'S**
1410 NC=0:NP=0:NF=0
1420 FOR I=0 TO 15
1430 DF(I,8)=-1
1440 DF(I,7)=0
1450 NEXT I
1460 FOR DF=0 TO 107
1470 O1=SO(D(DF,0)):O2=SO(D(DF,1))
1480 IF O1<>O2 OR O1=0 OR O2=0 THEN 1600
1490 GOSUB 800
1500 GOSUB 100
1510 IF P=4 OR P=14 THEN DF(NF,7)=1:GOTO 1540
1520 IF O1=1 OR P<=DF(NF,8) THEN 1600
1530 DF(NF,7)=10
1540 DF(NF,8)=P
1550 NF=0
1560 FOR I=0 TO 15
1570 IF DF(I,8)>=DF(NF,8) THEN 1590
1580 IF DF(I,7)=0 OR DF(I,7)=10 THEN NF=1
1590 NEXT I
1600 NEXT DF
1610 RETURN
1800 REM**DETERMINE STRATEGIC VALUE OF MOVE**
```

```
1810 IF WM=1 THEN 1960
1820 MC=0:N2=0
1830 FOR NF=0 TO 15
1840 IF DF(NF,7)=0 THEN 1900
1850 GOSUB 100
1860 IF DF(NF,7)=1 THEN 1890
1870 IF P=MC THEN N2=N2+1
1880 IF P>MC THEN MC=P:N2=1
1890 IF P=4 THEN NF=15
1900 NEXT NF
1910 IF PP=-1 THEN 1960
1920 IF P=4 THEN RETURN
1930 IF MC<MP THEN RETURN
1940 IF MC=MP AND N2<N1 THEN RETURN
1950 IF MC=MP AND N2=N1 AND RND(0)<.5 THEN RETURN
1960 MP=MC:N1=N2
1970 PP=CP:PT=CT
1980 RETURN
2000 REM**PLAYER MOVE**
2010 IF PC<5 THEN 2050
2020 PRINT "WHICH CHECKER DO YOU":PRINT "WANT TO MOVE";
2030 GOSUB 2130:PT=X
2040 IF B(PT)<>1 THEN PRINT"NOT POSSIBLE":GOTO 2020
2050 PRINT"WHERE DO YOU WANT TO  PUT YOUR" PRINT "CHECKER";
2060 GOSUB 2130:PP=X
2070 IF B(PP)<>0 THEN PRINT "NOT POSSIBLE":GOTO 2050
2080 IF PC=5 THEN B(PT)=0
2090 IF PC<5 THEN PC=PC+1
2100 B(PP)=1
2110 GOSUB 1000
2120 RETURN
2130 REM**INPUT**
2140 INPUT X$:IF LEN(X$)<>2 THEN 2190
2150 L$=LEFT$(X$,1):D$=RIGHT$(X$,1)
2160 IF L$<"A" OR L$>"E" OR D$<"1" OR D$>"5" THEN 2190
2170 X=ASC(L$)-5*VAL(D$)-40
2180 RETURN
2190 PRINT "WRONG INPUT,":PRINT"TRY AGAIN:";:GOTO 2140
2200 REM**COMPUTER MOVE**
2210 IF CC<5 THEN PT=CC:CC=CC+1:GOTO 2270
2220 PRINT "I TAKE "CHR$(65+PT-INT(PT/5)*5);5-INT(PT/5)
2230 B(PT)=0
2240 FOR CI=0 TO 4
2250 IF CC(CI,0)=PT THEN PT=CI:CI=4
2260 NEXT CI
2270 PRINT "I PUT IT AT "CHR$(65+PP-INT(PP/5)*5);5-INT(PP/5)
2280 B(PP)=10:CC(PT,0)=PP
2290 GOSUB 1000
2300 RETURN
3000 REM**MAIN PROGRAM**
```

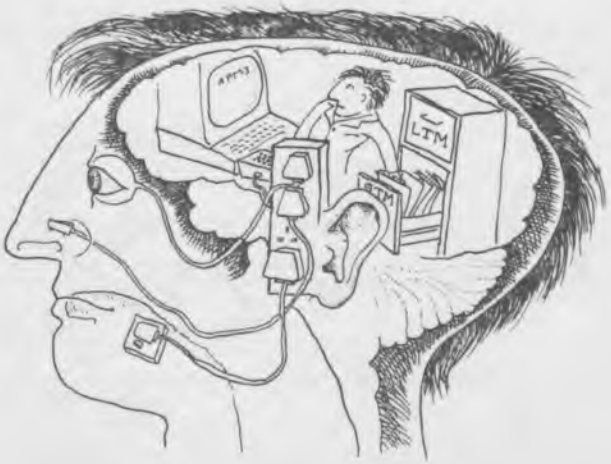
```
3010 PRINT "PLEASE WAIT"
3020 GOSUB 300
3030 GOSUB 560
3060 CC=0:PC=0
3070 PP=12:GOTO 3300
3080 FOR I=0 TO 4:CC(I,1)=0:NEXT
3090 GOSUB 1100
3100 IF P=5 THEN END
3110 IF WM=1 THEN 3130
3120 GOSUB 1400
3130 MP=0:N1=0:PP=-1
3140 BF=0:EF=24
3150 IF OM<>-1 THEN BF=OM:EF=OM
3160 FOR CP=BF TO EF
3170 IF B(CP)<>0 THEN 3290
3180 IF OM<>-1 THEN 3200
3200 B(CP)=10
3210 IF CC<5 THEN GOSUB 1800:GOTO 3280
3220 FOR CI=0 TO 4
3230 IF CC(CI,1) THEN 3270
3240 CT=CC(CI,0):B(CT)=0
3250 GOSUB 1800
3260 B(CT)=10
3270 NEXT CI
3280 B(CP)=0
3290 NEXT CP
3300 GOSUB 2200
3310 IF WM=1 THEN END
3320 GOSUB 2000
3330 PRINT "PLEASE WAIT"
3340 GOTO 3080

READY.
```



STM

The nature of memory is certainly one of the most interesting topics in psychology. To remember something has been defined as 'to show in present responses some signs of earlier learned responses.' Why, though, do we remember some things and forget others? We may recognize someone we haven't seen in years, or call to mind a tune having heard only a few notes of it, but find it very difficult to remember, for instance, a telephone number. There are in fact two distinct types of memory: short term memory (STM) and long term memory (LTM). If you want to find out more about this intriguing topic we recommend that you read *Introduction to Psychology* by Hilgard & Atkinson.

This game tests your short term memory. Play it with your friends and family and see who can remember most. You will see this 'menu' on the screen:



DO YOU WANT TO PLAY WITH
1. LETTERS?
2. NUMBERS?
3. 0 OR 1 ONLY?
4. OR DO YOU WANT TO STOP?

Now you make your choice by entering 1, 2, 3 or 4. Say you entered 1 to play with letters. A letter will now appear on the screen but only for a very short time. You have to enter that letter. The computer will then show you two letters which you have to enter, then three, and so on. Obviously, as the number of letters increases, remembering them all becomes more difficult. What is the longest string of characters you can remember? Can you beat our record of eight?

```
10 REM **STM**
20 PRINT"□DO YOU WANT TO PLAY   WITH"
30 PRINT"■ 1. LETTERS?"
40 PRINT"■ 2. NUMBERS?"
50 PRINT"■ 3. 0 AND 1 ONLY?"
60 PRINT"■ 4. OR DO YOU WANT TO STOP?"
70 GETA$:ONVAL(A$)GOTO80,90,100,230:GOTO70
80 A=26:B=65:GOTO120
90 A=10:B=48:GOTO120
100 A=2:B=48:GOTO120
110 REM *MAIN ROUTINE*
120 C=1:TT=300:T=TI:TA=T
130 A$="":FORD=1TOC:B$=CHR$(B+RND(1)*A):PRINTB$;:A$=A$+B$
140 FORE=0TOTT:NEXT:PRINT"■ ";:NEXT
150 PRINT"":INPUT"ANSWER";B$:IFB$=A$THEN220
160 PRINT"WRONG. YOUR SCORE:"STR$(C-1):PRINT"IT WAS  "+A$
170 PRINT"TIME:"STR$(INT((TA-T)/.6)/100)" SECONDS"
180 PRINT"PLAY AGAIN (Y/N)?"
190 GETA$:IFA$="Y"THEN120
200 IFA$<>"N"THEN190
210 GOTO20
220 C=C+1:TA=TI:GOTO130
230 END

READY.
```

One To Five

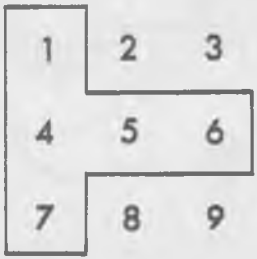
This exasperating game, which we saw first on a CASIO calculator, takes quite some logical reasoning to solve. It is played on a board with nine positions set out like this:

1 2 3

4 5 6

7 8 9

A horizontal and a vertical line drawn through any one position will cross five positions in all. For instance lines drawn through position 4 will also cross positions 1, 5, 6, and 7.



The positions on the board are occupied by a random pattern of digits between 0 and 5. If you enter one of the positions (using the key shown on the screen) the digit on that position, and all the digits on the horizontal and vertical lines going through that position, are increased by 1 (except 5 which becomes 0). For instance if we had

2 2 4

1 5 2

1 5 4

and entered 4, the board would change to

3 2 4

2 0 3

2 5 4

The puzzle is solved when the board looks like this:

0 0 0

0 0 0

0 0 0

```
10 REM **ONE TO FIVE**
20 PRINT "□■■┌┬┬┬┐  ■■Q W E□
30 PRINT"│ │ │ │
40 PRINT"├┼┼┼┤  ■■A S D□
50 PRINT"│ │ │ │
60 PRINT"├┼┼┼┤  ■■Z X C□
70 PRINT"│ │ │ │
80 PRINT"└┴┴┴┘
90 DIMA%(2,2)
100 FORA=0TO10:I=9*RND(1)+1:GOSUB170:NEXTA
110 M=0
120 GETA$:IFA$=""THEN120
130 FORI=1TO9:IFA$=MID$("QWEASDZXC",I,1)THEN160
140 NEXT:GOTO120
150 REM *EXECUTE MOVE*
160 M=M+1:GOSUB170:GOTO120
170 Y=INT((I-1)/3):X=I-3*Y-1
180 A%(X,Y)=A%(X,Y)-1
190 FORI=0TO2
200 A%(X,I)=A%(X,I)+1
210 A%(I,Y)=A%(I,Y)+1
220 NEXT
230 T=0:FORI=0TO2:FORJ=0TO2
240 IFA%(I,J)=6THENA%(I,J)=0
250 IFA%(I,J)=0THENT=T+1
260 NEXTJ,I
270 PRINT"■";:FORI=0TO2
280 PRINT"■":FORJ=0TO2
290 PRINT"■"RIGHT$(STR$(A%(J,I)),1);:NEXTJ,I
300 IFT<9THENRETURN
310 PRINT:PRINT"■■THAT'S GREAT!"
320 PRINT"■IN"M"MOVES"

READY.
```

Escher

The work of the Dutch graphic artist M.C. Escher (1902-1972), based as it is on symmetry and mathematical forms, appeals particularly to computer programmers.

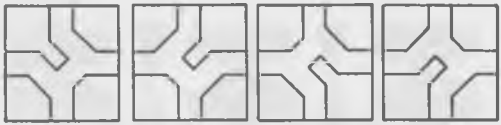
Now with the help of the computer you can produce your own patterns based on the same principles as those used by Escher.

Consider the following pattern:

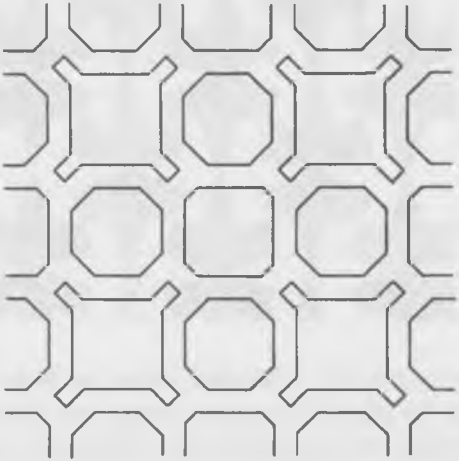
It is based on a mosaic in the Alhambra palace in Spain. If you look closely you can see that all the tiles are the same shape and that they are arranged so that the 'inverse video' of the white tiles shows the same pattern rotated

through 90 degrees. Escher studied such patterns and invented a game based on them. He devised a patterned tile such as

which he rotated through four positions



and arranged to form a continuous pattern.



This program does something very similar. After you have filled a 'basic' square with symbols the computer rotates and shifts it to fill the screen with your own 'Escher'.

At the start of the game the computer asks you to enter the size of your basic square. If you enter, for instance, 4, your basic square will contain 4 × 4 elements. Now you fill your square, row by row, with the graphic symbols shown in lines 3000 to 3200 of the listing. When the square is filled the computer asks for the direction in which you want the squares displayed. You enter N, S, E, or W to indicate north, south, east, or west. The computer will ask you for as many directions as it requires.

With this program you will be able to make an almost infinite number of spectacular patterns! Enter the program and see what you can come up with.

```
10 REM **ESCHER GAME**
20 MK=20
30 PRINT "□"
40 DIM SY(MK,3)
50 FOR CC=0 TO MK
60 FOR R1=0 TO 3
70 READ SY(CC,R1)
80 NEXT
90 NEXT
100 INPUT "ENTER SIZE OF SQUARE";S
110 SN=INT(21/S)+1
120 DIM DS(SN,SN),BS(S,S),RI(S,S),SC(S*SN,S*SN)
130 PRINT "□";
140 FOR R=0 TO S-1
150 PRINT "ROW";R+1;TAB(7);
160 A$=""
170 INPUT A$
180 A$=LEFT$(A$+"            ",S)
190 FOR K=0 TO S-1
200 BS(R,K)=ASC(MID$(A$,K+1,1))
210 NEXT K
220 NEXT R
230 PRINT
240 PRINT "ENTER DIRECTIONS OF   SQUARES (N,S,E,W)"
250 PRINT "EACH ROW"SN"DIRECTIONS"
260 PRINT
270 FOR B=0 TO SN-1
280 PRINT "ROW";B+1;TAB(7);
```

```
290 INPUT A$
300 A$=LEFT$(A$+"                                ",SN)
310 FOR A=0 TO SN-1
320 IN$=MID$(A$,A+1,1)
330 DS(A,B)=-((IN$="N")+2*(IN$="E")+3*(IN$="S")+4*(IN$="W"))=1
340 IF DS(A,B)<0 THEN DS(A,B)=0
350 NEXT A
360 NEXT B
370 PRINT
380 PRINT "[EVALUATING SCREEN]"
390 FOR R=0 TO S-1
400 FOR K=0 TO S-1
410 FOR R1=3 TO 0 STEP -1
420 FOR CC=MK TO 0 STEP -1
430 IF BS(K,R)=SY(CC,R1) THEN C2=CC:R2=R1:CC=0:R1=0
440 NEXT
450 NEXT
460 BS(K,R)=C2
470 RI(K,R)=R2
480 NEXT
490 NEXT
1000 PRINT "[GRAPHICS FOUND]"
1010 FOR R=0 TO S-1
1020 FOR K=0 TO S-1
1030 FOR B=0 TO SN-1
1040 FOR A=0 TO SN-1
1050 ON DS(A,B)+1 GOTO 1060,1070,1080,1090
1060 X=K:Y=R:GOTO 1100
1070 X=S-R-1:Y=K:GOTO 1100
1080 X=S-K-1:Y=S-R-1:GOTO 1100
1090 X=R:Y=S-K-1
1100 R1=(DS(A,B)+RI(R,K))AND 3
1110 SC(X+A*S,Y+B*S)=SY(BS(R,K),R1)
1120 NEXT
1130 NEXT
1140 NEXT
1150 NEXT
2000 REM *DRAW ESCHER*
2010 PRINT "□";
2020 FOR Y=0 TO 21
2030 FOR X=0 TO 21
2040 IF SC(X,Y)>255 THEN PRINT "■";:GOTO 2060
2050 PRINT "■";
2060 PRINT CHR$(SC(X,Y)AND 255);
2070 NEXT
2080 NEXT
2090 PRINT "]";
2100 GOTO 2100
3000 DATA  32, 32, 32, 32:REM" "
```

```
3010 DATA 165,163,167,164:REM"▌"
3020 DATA 212,197,217,210:REM"▐"
3030 DATA 199,196,200,198:REM"▀"
3040 DATA 194,195,221,192:REM"▄"
3050 DATA 180,183,170,175:REM"▌"
3060 DATA 181,184,182,185:REM"▐"
3070 DATA 161,418,417,162:REM"▀"
3080 DATA 205,206,205,206:REM"╲"
3090 DATA 203,202,213,201:REM"╱"
3100 DATA 189,173,176,174:REM"┘"
3110 DATA 207,208,186,204:REM"┌"
3120 DATA 177,171,178,179:REM"┴"
3130 DATA 169,223,425,479:REM"◤"
3140 DATA 190,188,172,187:REM"• "
3150 DATA 209,209,209,209:REM"●"
3160 DATA 214,214,214,214:REM"╳"
3170 DATA 215,215,215,215:REM"◆"
3180 DATA 219,219,219,219:REM"┼"
3190 DATA 166,422,166,422:REM"■"
3200 DATA 191,447,191,447:REM"▖"

READY.
```

Genius at Work

Play this simple game to find out how good you are at thinking mathematically. In fact, get the whole family to play, and find out which one is the genius!

The computer displays seven numbers and a larger 'target' number. You must pick two of the numbers and one of the four simple mathematical functions:

addition +
subtraction −
multiplication ×
division ÷

The computer will then perform this calculation. For instance, if you entered 7, 18 and +, the computer calculates 7 + 18 = 25. The numbers 7 and 18 are then replaced in the initial list by 25. Every time the computer asks you

AGAIN?

you can specify another calculation. Your aim is to end up with a number in your list which is equal, or at least very close, to the target number. Enter Y when you have gotten as close as you can. An additional challenge is that you have to do all this within a fixed time limit.

```
10 REM **GENIUS AT WORK**
20 T=0:X=0:R=0
30 DIM D(7)
40 GOTO 160
50 INPUT "0PERATION";F$
60 FOR N=1 TO LEN(F$)
70 E=ASC(MID$(F$,N))
```

```
80 IF E=42 OR E=43 OR E=45 OR E=47 THEN 110
90 NEXT
100 GOTO 50
110 A=VAL(MID$(F$,1,N-1))
120 B=VAL(MID$(F$,N+1))
130 T$=MID$(F$,N,1)
140 IF VAL(F$)<>INT(VAL(F$)) THEN 50
150 GOTO 310
160 PRINT "J";
170 FOR I=1 TO 7
180 C=INT(10*RND(0)+1)
190 IF INT(4*RND(0))=3 THEN C=INT(4*RND(0)+1)*25
200 D(I)=C
210 NEXT
220 F=INT((9*RND(0)+1)*100)
230 PRINT "TRY TO APROACH  THIS  NUMBER:";F
240 PRINT
250 PRINT "YOU HAVE GOT THESE    NUMBERS"
260 FOR I=1 TO 7
270 PRINT STR$(D(I));
280 NEXT
290 PRINT:PRINT
300 GOTO 50
310 FOR I=1 TO 7
320 IF D(I)=A THEN 350
330 NEXT I
340 GOTO 460
350 D(I)=0
360 FOR I=1 TO 7
370 IF D(I)=B THEN 400
380 NEXT I
390 GOTO 460
400 GOSUB 600
410 PRINT "DO YOU WANT TO KEEP"::PRINT"IT THIS WAY";
420 Z$="":INPUT Z$
430 IF Z$="" THEN 230
440 IF LEFT$(Z$,1)="Y" THEN 490
450 GOTO 230
460 PRINT "YOU DON'T HAVE THESE NUMBERS AT ALL, THIS ROUND GIVES NOTHING"
470 X=0
480 GOTO 510
490 PRINT "YOU HAVE:";D(I);"ON";F
500 X=5-ABS(F-D(I))
510 IF X<0 THEN X=0
520 IF X=5 THEN PRINT "WELL DONE"
530 T=T+X
540 R=R+1
550 PRINT "THIS MAKES";X;"POINTS"
560 PRINT "YOU NOW HAVE";T;"POINTS, IN";R;"ROUNDS"
570 INPUT "AGAIN",Z$
```

```
580 IF LEFT$(Z$,1)="Y" THEN 160
590 END
600 IF T$="+" THEN D(I)=A+B:RETURN
610 IF T$="-" THEN D(I)=A-B:RETURN
620 IF T$="*" THEN D(I)=A*B
630 IF T$="/" THEN D(I)=A/B
640 RETURN

READY.
```

Shark Hunt

For five days now you have been adrift in your boat searching the seven seas. Suddenly you see a slight ripple on the mirror-like surface of the ocean — there it is, your quarry, that terror of the deep — the shark. You will be told at the start of the game how to move your boat. Your echo-sounder will tell you how close you are to the shark — the nearer you get the higher the note it gives. Stray too far from the shark and you are told

SORRY; YOU WENT TOO FAR

When you think you are close enough you can take a shot at the shark by pressing the space bar. If you hit the target you will see the message

THAT'S IT! CONGRATULATIONS!

Unfortunately you only have 200 ergs of energy to use. Moving your boat and firing your gun both cost energy. If you use up all your energy the computer tells you

YOU RAN OUT OF ENERGY

At the end of the game you will be given information on your performance as a shark hunter.

```
10 REM**SHARK HUNT**
20 DIM X$(2),Y$(2),TU(3,8),CO$(2)
30 D$="                    "
40 S1=36875:POKE S1+3,15
50 B$="  "
60 NG=0:TR=0:MR=0
70 FOR RE=0 TO 2
80 READ X$(RE),Y$(RE)
90 NEXT
100 DATA L,F,"","",R,B
110 REM TUNE
120 FOR TU=1 TO 3
130 FOR NO=1 TO 8
140 READ TU(TU,NO)
150 NEXT NO,TU
160 DATA 228,225,228,225,228,229,228,225
170 DATA 195,201,207,209,215,219,223,223
180 DATA 195,191,183,175,163,159,147,135
190 CO$(0)="SORRY, YOU WENT TOO   FAR"
200 CO$(1)="THAT'S IT!            CONGRATULATIONS!"
210 CO$(2)="YOU RAN OUT OF ENERGY"
230 GOTO 3000
300 REM**BEEP
310 POKE S1,TN
320 FOR T=1 TO TM
330 FOR DL=1 TO 10:NEXT DL
340 NEXT T
360 RETURN
1000 REM**INITIALIZE
1010 NG=NG+1
1020 SX=INT(70*RND(0))-35
1030 SY=INT(70*RND(0))-35
1040 DI=ABS(SX)+ABS(SY)
1050 MD=DI:SD=DI
1060 EN=200:SH=0:HI=0:NS=0
1070 VX=0:VY=0
1080 RETURN
1100 REM**INPUT SPEED
1110 GET K$
1120 VX=4*((K$="  ")-(K$="  "))
1130 VY=4*((K$="  ")-(K$="  "))
```

```
1140 SH=(K$=" ")
1150 RETURN
1300 REM**COMPUTE DISTANCE ETC
1310 SX=SX-VX
1320 SY=SY-VY
1330 EN=EN+(VX<>0)+(VY<>0)-1
1340 IF EN<=0 THEN EN=0:GOTO 1460
1350 REM SHARK MOVES AWAY
1360 SX=SX+SGN(SX)
1370 SY=SY+SGN(SY)
1380 DI=ABS(SX)+ABS(SY)
1390 IF DI<MD THEN MD=DI
1400 IF DI>100 THEN 1460
1410 IF NOT SH THEN 1460
1420 NS=NS+1
1430 EN=INT(EN-.5*DI)
1440 IF EN<=0 THEN EN=0:GOTO 1460
1450 HI=INT(DI*RND(0))<=1
1460 RETURN
1500 REM**OUTPUT
1510 GOSUB 2000:REM BLANK
1520 PRINT LEFT$(D$,8);TAB(SGN(VX)+12);X$(SGN(VX)+1);
1530 PRINT LEFT$(D$,8+SGN(VY));TAB(12);Y$(SGN(VY)+1);
1540 IF SH THEN TM=2:TN=255:GOSUB 300:GOTO 1560
1550 TM=1:TN=240-DI:GOSUB 300
1560 PRINT "■";TAB(7);EN;"■■ ";
1570 RETURN
1600 REM**SCREEN
1620 PRINT "□ENERGY:"EN"ERGS"
1640 PRINT LEFT$(D$,15);"MOVE:  USE ARROW KEYS"
1650 PRINT "SHOOT: PRESS SPACEBAR"
1660 GOSUB 2000:REM BLANK
1670 PRINT LEFT$(D$,8);"DIRECTION:"
1680 INPUT "■■<RETURN> TO START";AN$
1710 RETURN
1800 REM**END OF THIS GAME
1810 PRINT "■■";CO$(CA-1)
1820 FOR NO=1 TO 8
1830 TN=TU(CA,NO):TM=10:GOSUB 300
1840 NEXT
1845 POKE S1,0
1850 PRINT "□YOU STARTED AT: ";SD;TAB(20);"M"
1860 PRINT "NUMBER OF SHOTS:";NS
1870 PRINT "YOU CAME WITHIN:";MD;TAB(20);"M"
1880 IF HI THEN PRINT "YOU HIT IT FROM:";DI;TAB(20);"M"
1890 IF HI THEN RE=50+EN/4+SD/10:GOTO 1900
1895 RE=50-DI/2
1900 RE=INT(RE)
1910 IF RE>100 THEN RE=100
1915 IF RE<0 THEN RE=0
```

```
1920 TR=TR+RE
1930 IF RE>MR THEN MR=RE
1940 PRINT "REWARDS (0-100)"
1945 PRINT "----------------"
1950 PRINT "NUMBER OF GAMES:";NG
1955 PRINT "THIS GAME:      ";RE
1960 PRINT "AVERAGE:        ";INT(TR/NG)
1970 PRINT "MAXIMUM:        ";MR
1980 RETURN
2000 REM**BLANK SPACES
2010 PRINT LEFT$(D$,7);TAB(11);"   "
2020 PRINT TAB(11);"   "
2030 PRINT TAB(11);"   "
2040 RETURN
3000 REM**MAIN PROGRAM
3010 GOSUB 1000:REM INITIALIZE
3020 GOSUB 1600:REM SCREEN
3030 GOSUB 1100:REM INPUT
3040 GOSUB 1300:REM COMPUTING
3050 GOSUB 1500:REM OUTPUT
3060 CA=-3*(EN=0)-2*HI-(DI>100)
3070 IF CA=0 THEN 3030
3080 GOSUB 1800:REM END
3090 PRINT
```

```
3095 FOR I=1 TO 10:GET K$:NEXT
3100 INPUT "ANOTHER GAME";AN$
3110 IF LEFT$(AN$,1)="Y" THEN 3010
3120 END

READY.
```

Shakespearian Shuffle

Shakespeare, one of the world's greatest writers, and chess, the king of games, are combined in this unusual puzzle.

Letters are arranged on a chessboard like this:

T	O		B	E		O	R
N	O	T		T	O		B
E.		T	H	A	T		I
S		T	H	E		Q	U
E	S	T	I	O	N		
W	I	L	L	I	A	M	
S	H	A	K	E	S	P	E
A	R	E		I	6	0	3

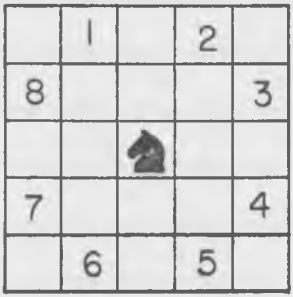
A chesspiece, the knight, then moves around the board as it would in a normal game of chess. As it jumps from one square to another, the letters or symbols on the squares are exchanged. In this way the text on the board is jumbled up. The computer will ask you

```
LEVEL?
```

and you enter the number of moves you want the knight to make. Obviously,

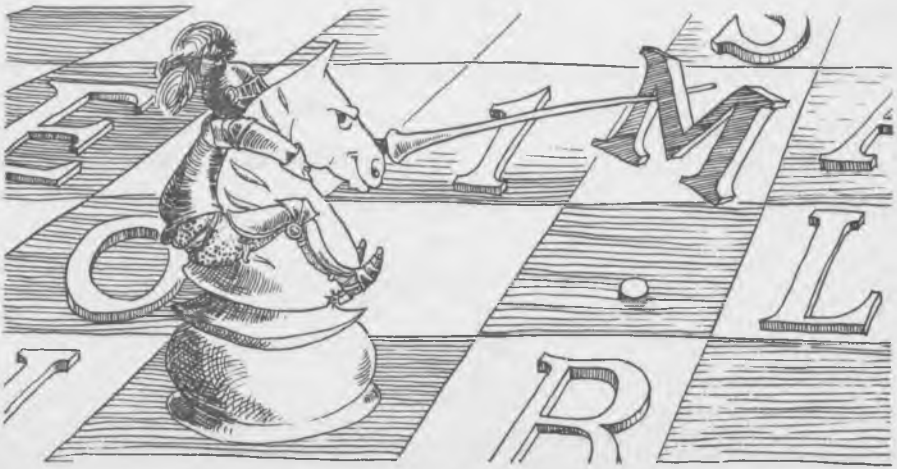
the higher this number the more mixed up the board becomes.

You will be shown the board after the knight has made his moves. Your task is to unscramble the text by moving the knight back around the board. Enter a number between 1 and 8 to move the knight, as shown.




```
10 REM **SHAKESPEARIAN SHUFFLE**
20 D$="■■■■■■■■■■■■"
30 DIM HX(8),HY(8),B$(8,8),T$(8)
40 FOR K=1 TO 8
50 READ T$(K)
60 NEXT
70 DATA "TO BE OR","NOT TO B","E, THAT "
80 DATA "IS THE Q","UESTION."
90 DATA "WILLIAM ","SHAKESPE","ARE 1603"
100 FOR X=1 TO 8
110 FOR Y=1 TO 8
120 B$(X,Y)=MID$(T$(Y),X,1)
130 NEXT:NEXT
140 FOR K=1 TO 8
150 READ HX(K),HY(K)
160 NEXT K
170 DATA -1,-2,1,-2,2,-1,2,1,1,2,-1,2,-2,1,-2,-1
180 C1$="T":C2$="■T■"
190 XO=1:YO=1:XN=1:YN=1
200 GOTO 1000
300 REM**PRINT CHARACTER**
310 PRINT LEFT$(D$,Y+1);TAB(2*X);B$(X,Y);
320 RETURN
```

```
400 REM**RANDOM SHUFFLE**
410 INPUT"□LEVEL";LV
420 FOR DU=1 TO LV
430 NM=INT(RND(0)*8+1):GOSUB 500
440 IF XO=XN AND YO=YN THEN 430
450 XO=XN:YO=YN
460 NEXT
470 RETURN
500 REM**KNIGHT'S MOVE**
510 XS=HX(NM):YS=HY(NM)
520 IF XO+XS<1 OR XO+XS>8 OR YO+YS<1 OR YO+YS>8 THEN RETURN
530 XN=XO+XS:YN=YO+YS
540 W$=B$(XN,YN)
550 B$(XN,YN)=B$(XO,YO)
560 B$(XO,YO)=W$
570 IF NOT DI THEN RETURN
580 X=XO:Y=YO:GOSUB 300
590 X=XN:Y=YN:GOSUB 300
600 XO=XN:YO=YN
610 RETURN
700 REM**SCREEN**
710 PRINT"□"
720 FOR X=1 TO 8
730 FOR Y=1 TO 8
```



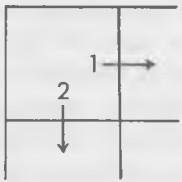
```
740 GOSUB 300
750 NEXT
760 NEXT
770 PRINT D$;TAB(8);"1 2■"
780 PRINT TAB(6);"8     3■"
790 PRINT TAB(9);"H■"
800 PRINT TAB(6);"7     4■"
810 PRINT TAB(8);"6 5"
820 RETURN
900 REM**INPUT MOVE**
910 FOR DE=1 TO 200:NEXT DE
920 PRINT LEFT$(D$,YO+1);TAB(2*XO);C1$
930 FOR DE=1 TO 200:NEXT DE
940 PRINT LEFT$(D$,YO+1);TAB(2*XO);C2$
950 GET I$
960 IF I$>"" THEN RETURN
970 GOTO 910
1000 REM MAIN PROGRAM
1010 GOSUB 400:REM RANDOM SHUFFLE
1020 DI=-1
1030 GOSUB 700:REM SCREEN
1040 GOSUB 900:REM INPUT MOVE
1050 NM=VAL(I$):IF NM=0 OR NM=9 THEN 1040
1060 GOSUB 500:REM KNIGHT'S MOVE
1070 GOTO 1040

READY.
```

Explosion

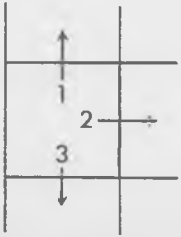
Most computer versions of EXPLOSION set out the board for two or more opponents to play on. With this program you are pitted against the computer itself. Are you up to the challenge?

EXPLOSION is played on a board of 3 × 3 or 4 × 4 squares. The computer will ask you to enter the size of the board you want.

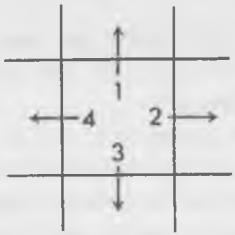
Each square on the board has a capacity equal to the number of squares directly adjoining it. This means that corner squares have a capacity of 2



edge squares have a capacity of 3



and central squares have a capacity of 4.



You and the computer have checkers, of opposite colors, that you place on the board in turn. You may place a checker on any empty square, or on any square which already has one or more of your own checkers on it. A square will 'explode' when the number of checkers it carries reaches its capacity. An exploding square empties, its checkers spreading out, one to each neighboring square. These checkers will 'take over' any opposing checkers on these squares.

As the game progresses the explosions get bigger and bigger. Eventually the whole board will explode in one color. If it's your color you've won!

```
10 REM***EXPLOSION***
20 DIM RB(5,5),SB(5,5),ST(5,5)
30 D$="
40 GOTO 3000
200 REM**COPY RB TO SB**
210 FOR X=1 TO SI
220 FOR Y=1 TO SI
230 SB(X,Y)=RB(X,Y)
240 NEXT:NEXT
250 RETURN
300 REM**COPY SB TO RB**
310 FOR X=1 TO SI
320 FOR Y=1 TO SI
330 RB(X,Y)=SB(X,Y)
340 NEXT:NEXT
350 RETURN
400 REM**INITIALIZE**
410 PRINT "CENTER SIZE OF BOARD"
```

```
420 INPUT "(3 OR 4)";SI
430 IF SI<3 OR SI>4 THEN 410
440 FOR X=1 TO SI
450 FOR Y=1 TO SI
460 ST(X,Y)=4+(X=1)+(X=SI)+(Y=1)+(Y=SI)
470 NEXT:NEXT
490 PRINT "DO YOU WANT TO BEGIN"
500 INPUT "(Y/N)";AN$
510 CM=(LEFT$(AN$,1)<>"Y")
600 REM*SETUP SCREEN*
610 PRINT "□"
620 PRINT "  \ X"
630 PRINT "   \ ";
640 FOR X=1 TO SI:PRINT X;" "; NEXT:PRINT
650 FOR Y=1 TO SI
660 IF Y=1 THEN PRINT " Y ";:GOTO 680
670 PRINT "   ";
680 FOR X=1 TO SI:PRINT "+---";:NEXT:PRINT "+"
690 FOR I=1 TO 3
700 PRINT " ";
710 IF I=2 THEN PRINT STR$(Y);:GOTO 730
720 PRINT "   ";
730 FOR X=1 TO SI:PRINT "|   ";:NEXT:PRINT "|"
740 NEXT I,Y
760 PRINT "   ";
770 FOR X=1 TO SI:PRINT "+---";:NEXT:PRINT "┘"
780 RETURN
800 REM**PLAYER MOVE**
810 PRINT D$;
820 INPUT "YOUR MOVE (X,Y)       ■■■■■■";MX,MY
830 IF MX<1 OR MX>SI OR MY<1 OR MY>SI THEN 810
840 IF RB(MX,MY)<0 THEN 810
850 GOSUB 200
860 X=MX:Y=MY:DI=-1
870 GOSUB 1000:REM EXPLOSION
880 IF ET THEN 2200:REM END
890 GOSUB 300
900 RETURN
1000 REM**OUTPUT EXPLOSION**
1010 SB(X,Y)=SB(X,Y)+PL
1020 NE=0
1030 IF DI THEN X1=X:Y1=Y:GOSUB 1400
1040 XP=0
1050 FOR Y=1 TO SI
1060 FOR X=1 TO SI
1070 IF ABS(SB(X,Y))<ST(X,Y) THEN 1160
1080 XP=-1
1090 NE=NE+1
1100 SB(X,Y)=SB(X,Y)-ST(X,Y)*PL
1110 IF DI THEN X1=X:Y1=Y:FOR I=1 TO 999:NEXT I:GOSUB 1400
```

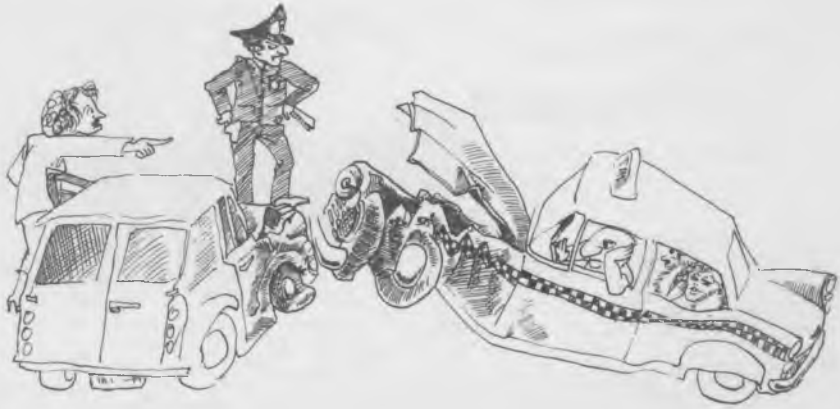
```
1120 X1=X:Y1=Y-1:GOSUB 1300
1130 X1=X+1:Y1=Y:GOSUB 1300
1140 X1=X:Y1=Y+1:GOSUB 1300
1150 X1=X-1:Y1=Y:GOSUB 1300
1160 NEXT X,Y
1170 ET=(NE>1.5*SI*SI)
1180 IF XP AND NOT ET THEN 1040
1190 RETURN
1300 REM**ADD TO NEIGHBOURS**
1310 SB(X1,Y1)=PL*(ABS(SB(X1,Y1))+1)
1320 IF DI AND ST(X1,Y1)>0 THEN GOSUB 1400
1330 RETURN
1400 REM**PRINT FIELD**
1410 FOR I=1 TO 500:NEXT I
1420 PRINT LEFT$(D$,4*Y1+1);TAB(4*X1);
1430 PRINT "   ▒▒▒▒   ▒▒▒▒   ▒▒▒▒";
1440 IF SB(X1,Y1)=0 THEN 1480
1450 IF PL=-1 THEN PRINT "▒";
1460 PRINT "   ▒▒▒▒";ABS(SB(X1,Y1));"▒▒ ▒▒▒▒
1470 PRINT "▒"
1480 RETURN
1600 REM**COMPUTER MOVES**
1610 PRINT D$;"MY MOVE:
1620 BE=1000
1630 FOR TX=1 TO SI
1640 FOR TY=1 TO SI
1650 IF RB(TX,TY)>0 THEN 1720
1660 GOSUB 200
1670 X=TX:Y=TY:DI=0
1680 GOSUB 1000:REM OUTPUT EXPLOSION
1690 IF ET THEN MX=TX:MY=TY:GOTO 1800
1700 GOSUB 2000:REM EVALUATION
```

```
1710 IF EN<BE OR (EN=BE AND RND(0)<.4) THEN BE=EN:MX=TX:MY=TY
1720 NEXT:NEXT
1800 REM*ACTUAL MOVE*
1810 GOSUB 200
1820 X=MX:Y=MY:DI=-1
1830 PRINT D$;TAB(8),X;",";Y
1840 GOSUB 1000:REM OUTPUT EXPLOSION
1850 IF ET THEN 2200:REM END
1860 GOSUB 300
1870 RETURN
2000 REM**EVALUATE**
2010 EN=0
2020 FOR X=1 TO SI
2030 FOR Y=1 TO SI
2040 EN=EN+SB(X,Y)
2050 IF -SB(X,Y)<ST(X,Y)-1 THEN 2110
2060 EN=EN-2
2070 IF SB(X+1,Y)=ST(X+1,Y)-1 THEN EN=EN+10
2080 IF SB(X,Y+1)=ST(X,Y+1)-1 THEN EN=EN+10
2090 IF SB(X-1,Y)=ST(X-1,Y)-1 THEN EN=EN+10
2100 IF SB(X,Y-1)=ST(X,Y-1)-1 THEN EN=EN+10
2110 NEXT:NEXT
2120 RETURN
2200 REM**END**
2210 PRINT D$;"□AN ETERNAL EXPLOSION"
2220 IF PL=1 THEN PRINT "YOU";:GOTO 63999
2230 PRINT "I";
2240 PRINT " WON IN";NT;"■ TURNS"
2250 INPUT "(HIT RETURN)";AN$
2260 END
3000 REM**MAIN PROGRAM**
3010 GOSUB 400:REM INITIALIZE
3020 IF CM THEN 3040
3030 PL=1:GOSUB 800:REM PLAYER MOVE
3040 PL=-1:GOSUB 1600:REM COMPUTER MOVES
3050 NT=NT+1
3060 GOTO 3030

READY.
```

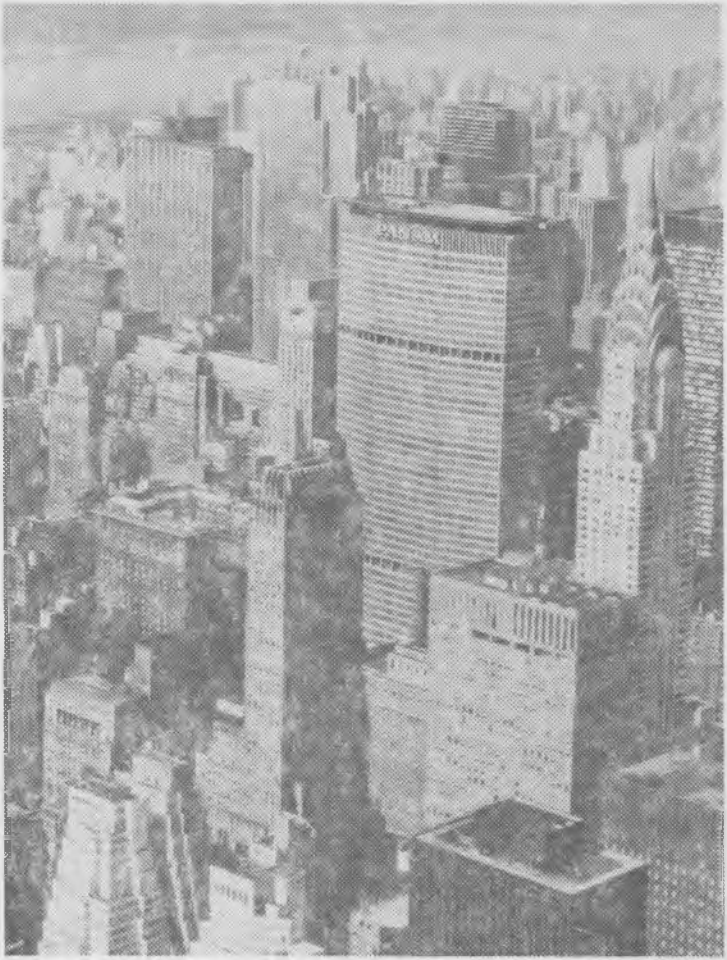
New York, New York

This original and exciting game puts you in a helicopter high over New York, looking down on the city's streets. At the moment they are deserted, but soon traffic will appear, and it's up to you to keep it moving. You do this by controlling the city's traffic lights. When a car (represented by a square) reaches a red light it will stop. Each traffic light bears a symbol — pressing the key bearing that symbol changes the light to green and the car will continue on its journey.

At the beginning of the game you have 100 points. You gain 10 points every time a car goes through a crossroads, and 25 points for every car that gets right across the city. However if two cars collide at a crossroads you lose 100 points and the road is temporarily blocked. If you run out of points the game ends — if not it lasts about five minutes. The more points you get, the better traffic cop you are!



```
10 REM **NEW YORK, NEW YORK**
20 TI$="000000":TB=TI:PU=100
30 PRINT"Z▒▒ | ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒ | ▒▒";
40 PRINT"▒▒A| ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒B| ▒▒";
50 PRINT"   | C  ┬ D  ┬ E  | F ";
60 PRINT"──┼────┼────┼────┼──";
70 PRINT" G |  H |  I |  J |   ";
80 PRINT"▒▒ |K▒▒ |L▒▒ |M▒▒ |N▒▒";
90 A$="▒▒ | ▒▒ | ▒▒ | ▒▒ | ▒▒":PRINTA$A$A$;
100 PRINT"▒▒O| ▒▒P| ▒▒Q| ▒▒R| ▒▒";
110 PRINT"▒▒ | S  | T  | U  | ▒▒";
120 PRINT"▒▒ ┼────┼────┼────┼▒▒";
130 PRINT"▒▒ |  V |  W |  X | ▒▒";
140 PRINT"▒▒ |Y▒▒ |Z▒▒ |0▒▒ |1▒▒";
150 PRINTA$A$A$;
160 PRINT"▒▒2| ▒▒3| ▒▒4| ▒▒5| ▒▒";
170 PRINT"   | 6  | 7  | 8  | 9 ";
180 PRINT"──┼────┼────┼────┼──";
190 PRINT" + |  £ ┴  @ ┴  *  |   ";
200 PRINT"▒▒ |↑▒▒▒▒▒▒▒▒▒▒▒▒▒ |=▒▒";
210 PRINT"▒▒ | ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒ | ▒▒";
400 AW=40:SC%=7679:CL=38399
500 DIMX%(AW),Y%(AW),R%(AW),L%(41),A%(3),F%(9)
510 FORI=0TO41:READL%(I):NEXT
520 DATA25,40,50,55,60,65,90,95,100,105,115,120,125,130,201,206,211,216
530 DATA226,231,236,271,276,281,291,296,301,306,377,382,387,392,402,407,412,417
540 DATA442,447,452,457,467,482
550 FORI=0TO41:A=PEEK(L%(I)+SC%):POKEL%(I)+SC%,AOR128
560 POKEL%(I)+CL,2:NEXT
590 A%(0)=1:A%(1)=-1:A%(2)=22:A%(3)=-22
600 A=RND(-TI):DEFFNR(X)=INT(RND(1)*X)
1000 FORI=0TOAW:R%=R%(I):IFR%=0THEN1099
1010 X%=X%(I):Y%=Y%(I)
1020 IFR%AND1THENX%=X%+1:F%=98:00%=226:0%=64:S%=22:IFX%>22THEN1200
1030 IFR%AND2THENX%=X%-1:F%=226:00%=98:0%=64:S%=-22:IFX%<1THEN1200
1040 IFR%AND4THENY%=Y%+1:F%=97:00%=225:0%=93:S%=-1:IFY%>22THEN1200
1050 IFR%AND8THENY%=Y%-1:F%=225:00%=97:0%=93:S%=1:IFY%<0THEN1200
1060 IFR%AND16THEN1100
1070 IFR%AND32THEN1400
1080 IFR%AND64THENO%=91:R%=R%-64:R%(I)=R%:PU=PU+10
1090 GOTO1300
1099 NEXT:GOTO2000
1100 IF(PEEK(X%(I)+22*Y%(I)+S%+CL)AND15)<>2THENR%(I)=(R%OR32)ANDNOT16:GOTO1300
1110 PU=PU-1:GOTO1099
1200 PU=PU+25:PN=PN+1:R%(I)=0:P%=-1:GOTO1330
1300 P%=X%+22*Y%:PS%=PEEK(P%+SC%):IFPS%=F%ORPS%=160THENPU=PU-1:GOTO1099
1310 A=PEEK(P%+S%+SC%):IFA<>32THENR%(I)=R%OR16
1320 IFPS%=00%THENF%=160
1325 V%=PEEK(X%(I)+22*Y%(I)+SC%):IFV%=160THENO%=00%
1327 IFV%=102THENR%(I)=0:AO=AO+1:PU=PU-100:GOTO1099
```



```
1330 POKEP%+SC%,F%:POKEX%(I)+22*Y%(I)+SC%,O%:X%(I)=X%:Y%(I)=Y%:GOTO1099
1400 P%=X%+22*Y%:A=PEEK(P%+SC%):IFA=F%THEN1099
1410 IFA<>91THEN1500
1420 VB=0:FORJ=0TO3:A=2↑J:B=PEEK(P%+SC%+A%(J)):IFNOT(B=64ORB=93)THENVB=VBORA
1430 NEXT
1440 B=2↑FNR(4):IF(BANDVB)=0THENR%(I)=BOR64:GOTO1330
1450 IFVB=15THEN1099
1460 GOTO1440
1500 AO=AO+1:R%(I)=0:IFA<>102THENF%(AF)=P%:AF=AF+1:PU=PU-200
1510 F%=102:GOTO1330
2000 IFR%(TL)=0THEN2100
2010 TL=TL+1:IFTL>AWTHENTL=0
2020 GOTO3000
2100 A=FNR(4):R%(TL)=2↑A:ONA+1GOTO2110,2120,2130,2140
2110 X%(TL)=1:GOTO2200
2120 X%(TL)=22:GOTO2200
2130 Y%(TL)=0:GOTO2300
2140 Y%(TL)=22:GOTO2300
2200 IFFNR(2)=1THENY%(TL)=3:GOTO3000
2210 Y%(TL)=19:GOTO3000
2300 IFFNR(2)=1THENX%(TL)=4:GOTO3000
2310 X%(TL)=19:GOTO3000
3000 GETA$:IFA$=""THEN3090
3010 A=ASC(A$):IFA>64ANDA<91THENA=A-65:GOTO3100
3020 IFA>47ANDA<58THENA=A-22:GOTO3100
3030 IFA=43THENA=36:GOTO3100
3040 IFA=92THENA=37:GOTO3100
3050 IFA=64THENA=38:GOTO3100
3060 IFA=42THENA=39:GOTO3100
3070 IFA=94THENA=40:GOTO3100
3080 IFA=61THENA=41:GOTO3100
3090 GOTO4000
3100 P%=LX(A):A=PEEK(P%+CL):IF(AAND15)=2THENA=5:GOTO3110
3105 A=2
3110 POKEP%+CL,A
3120 GOTO3000
4000 REM PRINT"■■■■■■■■■■■■■■■■■■■■"RIGHT$("    "+STR$(PN),4)SPC(15)RIGHT$("    "+ST
R$(AO),4)
4010 PRINT"■■■■■■■■■■■■■■■■■■■■■■■■■■"SPC(9)MID$(TI$,4,1)":"RIGHT$(TI$,2)"■"
4020 IFPU<0THENPU=0
4030 PRINT"■■"SPC(9)RIGHT$("    "+STR$(PU),4)
4040 IFPU=0THEN9000
4100 IFFNR(25)ORF%(0)=0THEN4200
4110 POKEF%(0)+SC%,91:FORI=0TO8:F%(I)=F%(I+1):NEXT:AF=AF-1
4200 IFTI-TB>18E3THEN9000
5000 GOTO1000
9000 FORI=0TO3E3:NEXT:PRINT"■■■ PLAY AGAIN ? (Y/N)"
9010 GETA$:IFA$="Y"THENRUN20
9020 IFA$="N"THEN9040
```

```
9030 GOTO9010
9040 PRINT"□YOU HAVE"PU"POINTS■"

READY.
```

Key

Searching for a key you have lost can be an aggravating experience at the best of times, but when you have to find it as quickly as possible and, what's more, it's hidden inside a computer the whole thing becomes very exasperating, but also very challenging.

The computer has stored inside it a string of 20 ones and zeroes.

1 0 1 0 0 1 0 1 0 1 1 1 0 1 0 1 0 1 1 0

These figures can be shifted cyclically, that is, digits are moved from the lefthand end to the right. This is done three times and the numbers in each column added, for instance

row 1 → 0 0 1 0 1 0 1 1 1 0 1 0 1 0 1 1 0 1 0 1
row 2 → 0 1 1 1 0 1 0 1 0 1 1 0 1 0 1 0 0 1 0 1
row 3 → 0 1 0 0 1 0 1 0 1 1 1 0 1 0 1 0 1 1 0 1
sums → 0 2 2 1 2 1 2 2 2 2 3 0 3 0 3 1 1 3 0 3

This is all kept hidden from you: it is in fact the key you must find.

What you are shown are the three rows of numbers, each shifted again. For instance if the top row is shifted two positions, the middle row four positions and the bottom row eight positions you will see

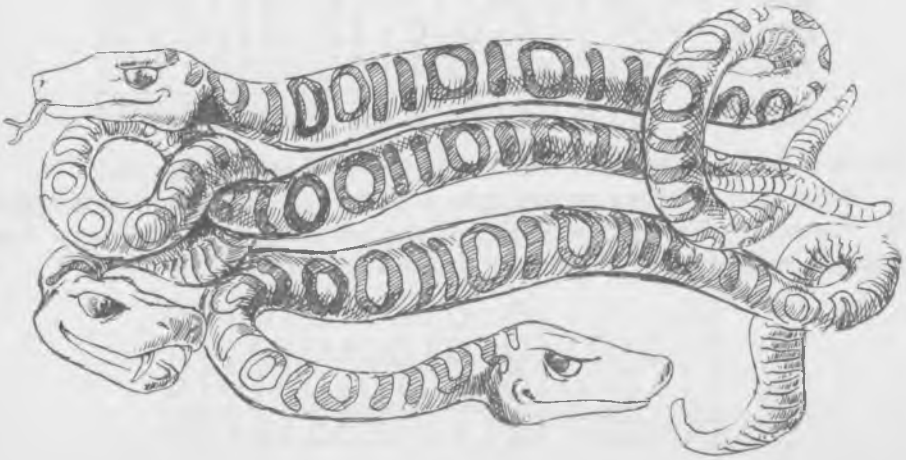
1 0 1 0 1 1 1 0 1 0 1 0 1 1 0 1 0 1 0 0
0 1 0 1 0 1 1 0 1 0 1 0 0 1 0 1 0 1 1 1
1 1 1 0 1 0 1 0 1 1 0 1 0 1 0 0 1 0 1 0
2 0 0 0 0 1 1 2 1 1 1 1 2 3 3 1 0 1 2 2

You are not shown the sum of the new columns but the difference for each column, between this sum and the first 'hidden' sum. In the first column, for instance, the hidden sum was 0 and the new sum is 2 so you see 2; in the second column the hidden sum was 2 and so is the new sum so you see 0. You must now shift the three rows until they are the same as the hidden key, when, of course, all the differences will be 0. The rows are numbered (the top row is 1, the middle 2 and the bottom 3) so that if you enter

```
ROW = 2
STEPS = 1
```

the middle row will shift one position to the left.

How few turns will it take you to find the key? It has been done in as few as 10.



```
10 REM**KEY**
20 A$="10100101011101010110"
30 DIM T(3,19)
40 GOTO 1000
100 REM**INITIATE**
110 FOR K=0 TO 19
120 T(0,K)=VAL(MID$(A$,K+1,1))
130 T(1,K)=T(0,K)
140 T(2,K)=T(0,K)
150 NEXT K
160 GOSUB 400
170 FOR K=0 TO 19
180 T(3,K)=T(0,K)+T(1,K)+T(2,K)
190 NEXT K
200 GOSUB 400
210 RETURN
300 REM**SHIFT ROW**
310 FOR I=1 TO S
320 H=T(R,0)
330 FOR K=0 TO 18
340 T(R,K)=T(R,K+1)
350 NEXT K
360 T(R,19)=H
370 NEXT I
380 RETURN
400 REM**RANDOM SHIFT**
410 FOR R=0 TO 2
420 S=INT(20*RND(0))
430 GOSUB 300
440 NEXT R
450 RETURN
500 REM**SCREEN**
510 PRINT "J"
520 FOR R=0 TO 2
530 PRINT " ";
540 FOR K=0 TO 19
550 PRINT CHR$(T(R,K)+48);
560 NEXT K
570 PRINT
580 NEXT R
590 PRINT " ----------------------"
600 F=0
610 PRINT " ";
620 FOR K=0 TO 19
630 D=ABS(T(0,K)+T(1,K)+T(2,K)-T(3,K))
640 PRINT CHR$(D+48);
650 F=F OR D
660 NEXT K
670 PRINT
680 RETURN
```

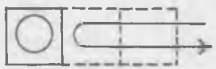
```
800 REM**INPUT**
810 PRINT
820 INPUT "ROW  =";R
830 INPUT "STEPS=";S
840 R=R-1
850 RETURN
1000 REM**MAIN**
1010 GOSUB 100:REM INIT
1020 NT=0
1030 GOSUB 500:REM SCREEN
1040 IF F=0 THEN 1090
1050 GOSUB 800:REM INPUT
1060 GOSUB 300:REM SHIFT
1070 NT=NT+1
1080 GOTO 1030
1090 PRINT
1100 PRINT "DONE IN";NT;"TURNS"

READY.
```

Black Box

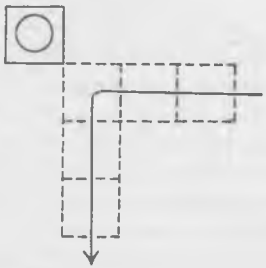
Armed only with a laser beam you must discover the whereabouts of a handful of atoms hidden in a vast black box.

The box consists of 8 × 8 × 8 cubes. Atoms can be hidden in any of the cubes apart from those in the outer layer. However, there are never more than five atoms in the box. These atoms will reflect or divert laser beams according to the following rules:

— a beam which strikes an atom is reflected straight back in the opposite direction

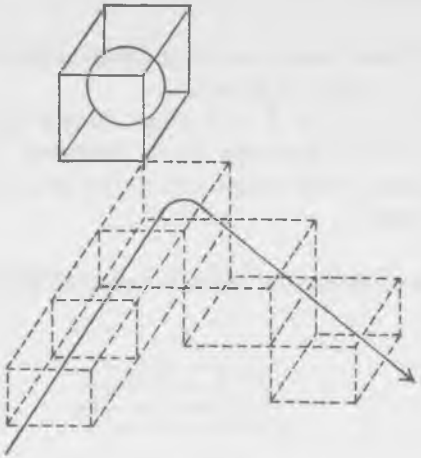


— a beam which is set to pass through a cube directly adjacent to an atom will be reflected at right angles

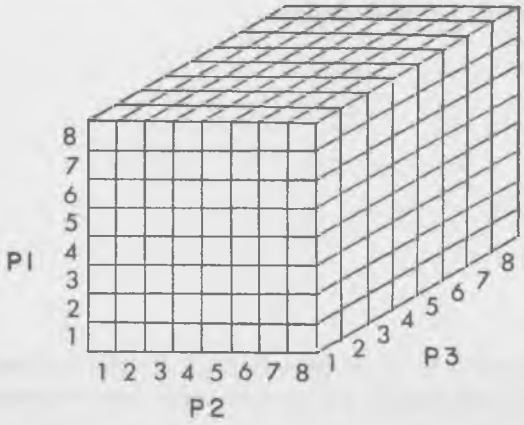


— a beam which is set to pass through a cube diagonally adjacent to an atom will be reflected in a direction which can be obtained by adding two

right-angled reflections



The box is numbered like this:



The computer will ask you to enter P1, P2, and P3, the coordinates of the position where you want the beam to enter the box. Obviously, this must be on the surface, so at least one of the coordinates must be 1 or 8. When you have entered the shot the computer will tell you where the beam has emerged. Remember that a beam may be reflected by more than one atom. After you have had a few shots you should be able to work out where the atoms are — but then how few is 'a few'?

```
10 REM **BLACK BOX**
20 DIM B(9,9,9)
30 GOTO 1000
100 REM**INPUT SHOT**
110 PRINT "PLEASE INPUT SHOT"
120 GOSUB 500:REM INPUT
130 DX=(PX=8)-(PX=1)
140 DY=(PY=8)-(PY=1)
150 DZ=(PZ=8)-(PZ=1)
160 IF DX=0 AND DY=0 AND DZ=0 THEN 120
170 RETURN
200 REM**COMPUTE RESULT**
210 FOR TX=-1 TO 1
220 FOR TY=-1 TO 1
230 FOR TZ=-1 TO 1
240 IF B(PX+TX,PY+TY,PZ+TZ)<>1 THEN 280
250 DX=DX-TX
260 DY=DY-TY
270 DZ=DZ-TZ
280 NEXT TZ,TY,TX
290 DX=SGN(DX):DY=SGN(DY):DZ=SGN(DZ)
300 PX=PX+DX:PY=PY+DY:PZ=PZ+DZ
310 IF (PX=1)+(PX=8)+(PY=1)+(PY=8)+(PZ=1)+(PZ=8)=0 THEN 210
320 PRINT "RESULT:";PX;PY;PZ
330 RETURN
400 REM**INPUT GUESS**
410 PRINT "PLEASE INPUT GUESS"
420 GOSUB 500:REM INPUT
430 IF B(PX,PY,PZ)=1 THEN PRINT "RIGHT!":GOTO 450
440 PRINT "WRONG!"
450 RETURN
500 REM**INPUT COORDINATES**
510 PRINT "ENTER COORDINATES:"
520 INPUT "P1=";PX:PX=PX
530 IF PX<1 OR PX>8 THEN 520
540 INPUT "P2=";PY:PY=PY
```

```
550 IF PY<1 OR PY>8 THEN 540
560 INPUT "P3=";PZ:PZ=PZ
570 IF PZ<1 OR PZ>8 THEN 560
580 RETURN
1000 REM**MAIN PROGRAM**
1010 FOR AT=1 TO 5
1020 B(6*RND(0)+1,6*RND(0)+1,6*RND(0)+1)=1
1030 NEXT
1040 GOSUB 100:REM INPUT SHOT
1050 GOSUB 200:REM COMPUTE RESULT
1060 PRINT "SHOOT OR GUESS? (S/G)"
1070 GET IN$
1080 IF IN$="S" THEN 1040
1090 IF IN$<>"G" THEN 1070
1100 GOSUB 400:REM INPUT GUESS
1110 GOTO 1060

READY.
```

Treasure Hunt

Have you ever dreamed of going in search of hidden treasure? Of journeying through wild and hostile countryside, living off the land and sleeping out, until you reach the remote and forbidding land where your glittering prize is hidden? If so, this is the game for you.

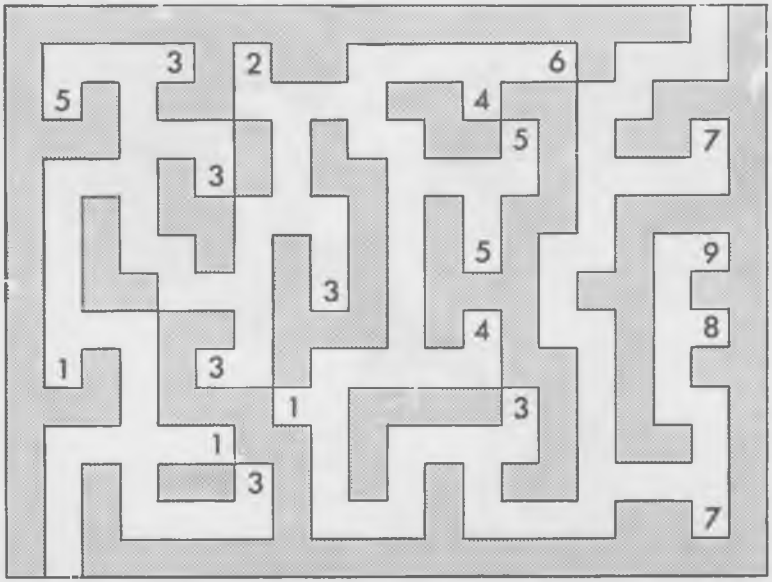
You will be taken high up into the Rocky Mountains and given a map which shows where the treasures you seek are hidden, and what they are worth. To reach them you must make your way along narrow twisting paths — one

false step means certain death — by using the following keys.

O, for one step upwards
K, for one step to the left
;, for one step to the right
., for one step downwards

You discover the treasures simply by treading on them.

But wait . . . it's not that easy. You didn't really think it would be that simple, did you? The treasures you seek are very carefully guarded by some



extremely vicious and terrifying birds who will attack you if you are not careful. If they get you in their sights you will be paralyzed with fear. The only thing you can do to try and stop them is to press the space bar.

If you still feel up to the challenge start your search in the lower left hand corner of the map. Collect as much treasure as you can and take it away through the upper right hand exit. This will give you bonus points, and another chance to journey along the paths, picking up treasure. In fact you can make as many treasure-seeking trips as you can get away with. Unfortunately each time you go through you disturb more of those appalling birds, who become increasingly aggressive.

The risks are high, but so are the rewards, so gather up your courage and off you go!

```
10 REM**TREASURE HUNT**
20 SC=7680
30 D$="
40 GOTO 1000
100 REM**SCREEN**
110 PRINT "
120 PRINT "
130 PRINT "
140 PRINT "
150 PRINT "
160 PRINT "
170 PRINT "
180 PRINT "
190 PRINT "
200 PRINT "
210 PRINT "
220 PRINT "
230 PRINT "
240 PRINT "
250 PRINT "
260 PRINT "
300 Y=14:X=1
310 PL=22*Y+X
320 POKE SC+PL,0
330 PRINT D$;P2,NC;
340 RETURN
400 REM**PLAYER MOVES**
```

```
410 T1=400-INT(30*NC*RND(0))
420 FOR DU=1 TO T1
430 GET DI$:IF DI$="" THEN 510
440 VX=(DI$="K")-(DI$=":")
450 VY=(DI$="O")-(DI$=".")
460 NP=22*(Y+VY)+(X+VX)
470 PK=PEEK(SC+NP):IF PK<>32 AND (PK<49 OR PK>57) THEN 510
480 POKE SC+PL,32:X=X+VX:Y=Y+VY:PL=NP
490 PO=PK-48:IF PO<0 THEN 510
500 P1=P1+PO:P2=P2+PO:PRINT D$;P2;
510 POKE SC+PL,0:IF PL=22 THEN DU=T1
520 NEXT DU:IF PL>22*15 THEN 400
530 RETURN
600 REM**BIRD ATTACKS**
610 DT=15-3*NC
615 FOR I=1 TO 10:GET DI$:NEXT
620 BU=22*Y+20
630 PK=PEEK(SC+BU)
640 POKE SC+BU,31
650 FOR DE=1 TO DT:NEXT
660 GET DI$
670 IF DI$=" " OR PK=0 THEN RETURN
680 POKE SC+BU,PK
690 BU=BU-1
700 GOTO 630
1000 REM**MAIN PROGRAM**
1010 GOSUB 100:REM SCREEN
1020 GOSUB 400:REM MOVE
1030 IF PL<22 THEN NC=NC+1:P2=P2+NC*P1:P1=0:GOTO 1010
1040 GOSUB 600:REM BIRD
1050 IF PK<>0 THEN POKE SC+BU,PK:P1=P1+1:GOTO 1020

READY.
```

I.T. — The Adventure of the Century

In this crazy adventure you will sink into the bowels of the earth and meet a very strange creature who lives there. His name is, of course, I.T. which stands for Intra Terrestrial.

If you have never played an adventure game before don't worry about the rules — there aren't any! You have to work everything out for yourself as you journey beneath the earth's surface, performing extraordinary tasks and facing terrifying dangers as you go. If it all gets too much for you enter HELP and see what the computer comes up with.

So, type in the game, take out a good insurance policy, give the RUN command, and off you go!

```
10 REM**I.T.**
20 GOSUB 5000
30 MV=8:NR=0:GOTO 50
40 GOSUB 200
50 GOSUB 500
60 GOSUB 400
70 IF NW<6 THEN 40
100 PRINT "@CONGRATULATIONS! YOU  SUCCEEDED IN KILLING  YOURSELF!"
110 END
200 REM**INPUT**
210 NR=0:MV=0
220 INPUT "WHAT NEXT";C$
230 FOR I=1 TO 14
240 IF LEFT$(M$(I),LEN(C$))=C$ THEN MV=I:I=14
250 NEXT I
260 IF MV>6 THEN GOTO 310
270 IF MV=0 THEN PRINT "I DON'T UNDERSTAND":GOTO 200
280 NR=R(RM,MV):IF NR<>0 THEN 310
290 PRINT "THE WAY IS BARRED"
300 GOTO 200
310 PRINT "□";
320 RETURN
400 REM**OUTPUT**
410 PRINT "YOU'RE IN ";D$(RM)
420 IF RM<25 AND(NOT LO OR T(1)>0 AND T(1)<>RM) THEN PRINT "IT'S VERY DARK HERE"
:GOTO 440
430 FOR I=1 TO 12
432 IF T(I)=RM THEN PRINT "A ";T$(I)" IS HERE"
434 NEXT I
435 IF LO AND RL>120 THEN PRINT "YOUR LAMP HAS EXPIRED":LO=0
436 IF LO AND RL>100 THEN PRINT "YOUR  LAMP  BATTERIES ARE GETTING EXHAUSTED"
440 FOR I=1 TO 6
450 IF R(RM,I)<>0 THEN PRINT "YOU CAN GO "M$(I)
460 NEXT I
470 PRINT TAB(8);"***"
480 RETURN
500 REM**OPERATIONS**
510 IF NR<>0 THEN RM=NR
520 TH=0
530 FOR I=1 TO 12
540 IF T(I)=RM THEN TH=I:I=12
550 NEXT I
560 HL=0
570 FOR I=1 TO 6
580 IF H(I,1)=RM THEN HL=I:I=6
590 NEXT I
600 REM*GENERAL OPERATIONS*
610 IF RM<12 AND RR<>8 THEN GOSUB 4200
620 RL=RL-LO
630 REM*PERSONAL OPERATIONS*
```

```
640 IF MV<7 THEN 660
650 ON MV-6 GOSUB 1000,1200,1300,1400,1600,1700,1800,1900
660 REM*HANDLERS*
670 ON HL GOSUB 2000,2300,2600,2700,2900,3100
680 RETURN
1000 REM**KILL**
1010 IF HL=0 OR HL>4 THEN PRINT "TIME IS THE ONLY THINGYOU CAN KILL HERE":RETURN
1020 TP=7:GOSUB 4100
1030 IF PO=0 THEN PRINT "ATTACK WITH YOUR BARE HANDS? THAT'S SUICIDE!" RETURN
1040 PRINT "YOU TRY TO  KILL  THE":PRINT H$(HL)
1050 PRINT "YOU STRIKE WITH  YOUR SWORD,";
1055 IF (HL=1 OR HL=2) AND (H(HL,2)=6 OR H(HL,2)=5) THEN 1070
1060 IF RND(0)<.5 THEN PRINT " BUT  IT  MOVES AWAY QUICKLY...":GOTO 1090
1070 PRINT " AND  YOU  GIVE IT A TERRIBLE BLOW !"
1080 H(HL,3)=H(HL,3)-1
1090 IF RND(0)>.2 THEN 1120
1100 PRINT "THIS IS YOUR CHANCE!! YOU CAN HIT IT  AGAIN BEFORE IT RECOVERS."
1110 INPUT "DO YOU WANT TO";AN$:PRINT "□";
1115 IF AN$="Y" THEN PRINT "YOU RAISE YOUR  SWORD AGAIN,";:GOTO 1055
1120 IF H(HL,3)>1 THEN RETURN
1130 IF H(HL,3)=1 THEN PRINT "THE VICTIM IS BADLY  WOUNDED":RETURN
1140 PRINT "YOU KILLED YOUR VICTIM"
1150 H(HL,1)=0:T(HL+8)=RM:HL=0
1160 RETURN
1200 REM**HELP**
1210 PRINT "□POSSIBLE COMMANDS:□"
1220 FOR I=1 TO 14:PRINT M$(I):NEXT
1230 PRINT "□HIT ANY KEY"
1240 GET IN$:IF IN$="" THEN 1240
1250 PRINT "□";
1260 RETURN
1300 REM**TAKE**
1305 IF (T(1)=0 OR T(1)=RM) AND LO OR RM>24 THEN 1310
1306 PRINT "YOU  CAN'T  SEE  YOUR OWN FINGERS,LET ALONE SOMETHING  TO  TAKE !"
1307 RETURN
1310 IF TH=0 THEN PRINT "THERE IS  NOTHING  TO TAKE HERE":RETURN
1320 PRINT "I TAKE THE ";T$(TH)
1330 P(LP)=TH:LP=LP+1:T(TH)=0:TH=0
1340 RETURN
1400 REM**DROP**
1410 IF LP=1 THEN PRINT"YOU OWN NOTHING !":RETURN
1420 INPUT "DROP WHAT",D$:PRINT "□";
1430 TP=0:FOR I=1 TO 12
1440 IF D$=LEFT$(T$(I),LEN(D$)) THEN TP=I:I=12
1450 NEXT I
1460 IF TP=0 THEN PRINT "I DON'T UNDERSTAND":RETURN
1470 GOSUB 4100
1480 IF PO=0 THEN PRINT "YOU'RE NOT CARRYING A":PRINT T$(TP):GOTO 1520
1490 PRINT "I DROP THE ";T$(TP)
1500 TH=P(PO):T(TH)=RM:LP=LP-1:P(PO)=P(LP)
```

```
1520 PRINT "DO YOU WANT  TO  DROP"
1530 INPUT "MORE";AN$:PRINT "□";
1540 IF AN$="Y" THEN 1420
1550 RETURN
1600 REM**INVENTORY**
1610 IF LP=1 THEN PRINT "YOU OWN NOTHING AT ALL":GOTO 1640
1620 PRINT "YOU ARE CARRYING:"
1630 FOR I=1 TO LP-1:PRINT T$(P(I)):NEXT
1640 PRINT "YOU CAN SUFFER";5-NW;"MORE":PRINT "WOUNDS"
1650 RETURN
1700 REM**BANDAGE**
1710 TP=6:GOSUB 4100
1720 IF PO=0 THEN PRINT "YOU WON'T MANAGE THAT":PRINT "WITHOUT A BANDAGE":RETURN
1730 PRINT "IT DOESN'T  LOOK VERY"
1740 PRINT "HOPEFUL.I'LL NEED ALL"
1745 PRINT "YOU HAVE."
1750 PRINT "ALL RIGHT, IT'LL HOLD"
1755 PRINT "FOR A WHILE."
1760 NW=0:LP=LP-1:P(PO)=P(LP)
1770 RETURN
1800 REM**LANTERN ON/OFF**
1810 IF T(1)>0 AND T(1)<>RM THEN PRINT "GET A LANTERN FIRST":RETURN
1820 IF RL>120 THEN PRINT "YOUR BATTERIES ARE":PRINT "FINISHED":RETURN
1830 LO=NOT LO
1840 PRINT "THE LANTERN IS NOW ";
1850 IF LO THEN PRINT "ON":RETURN
1860 PRINT "OFF"
1870 RETURN
1900 REM**READ**
1910 TP=4:GOSUB 4100
1920 IF PO=0 THEN PRINT "THERE IS NOTHING HERE":PRINT "TO READ.":RETURN
1930 IF NOT LO AND RM<25 THEN PRINT "IT'S TOO DARK TO READ":RETURN
1940 T$="SGD0D HR Z QDBHOD ENQ":GOSUB 4000
1945 T$="BNNJHDR HM SGHR ANNJ.":GOSUB 4000
1950 T$="HS RZXR:":GOSUB 4000
1955 T$="SZJD  NMD   GDKKGNTMC":GOSUB 4000
1960 T$="ZMC Z QHMBG NE VGDZS.":GOSUB 4000
1970 T$="QTS HS NM Z AZQADBTD.":GOSUB 4000
1980 PRINT "THAT'S ALL"
1990 RETURN
2000 REM**I.T.**
2010 IF TH=3 THEN H(1,2)=3:T(TH)=0:TH=0
2020 ON H(1,2) GOTO 2030,2060,2090,2190,2220
2030 PRINT TAB(5);"** I.T. **"
2034 PRINT "THE INTRA-TERRESTRIAL"
2036 PRINT "IS HERE. HE'S TALKING"
2040 PRINT "URGENTLY,   BUT   YOU"
2045 PRINT "CAN'T UNDERSTAND HIM.":PRINT
2050 H(1,2)=2:RETURN
2060 T$="H.S. FDRSTQDR SGZS GD HR  UDQX  SGHQRSX. GD KNNJR CDRODQZSD."
```

```
2070 GOSUB 4000
2075 PRINT
2080 RETURN
2090 T$=" H.S. CQHMJR ZR HE GD":GOSUB 4000
2095 T$="MDICDC HS UDQX AZCKX.":GOSUB 4000
2100 T$="ZESDQ  Z   VGHKD   GD":GOSUB 4000
2110 T$="RSZQSR SZKJHMF ZFZHM;":GOSUB 4000
2115 T$="ZMC XNT  QDZKHYD  XNT":GOSUB 4000
2120 T$="BZM  TMCDQRSZMC  GHL!":GOSUB 4000:PRINT
2130 T$="   GD RZXR: OKDZRD FN":GOSUB 4000
2134 T$="CNVM EHMC SGD MTKKHSX":GOSUB 4000
2138 T$="ANLA.    RNLD   BQZYX":GOSUB 4000
2140 T$="OQNEDRRNQ  VZMSR   SN":GOSUB 4000
2145 T$="CDRSQNX ZKK KHED VHSG HS!":GOSUB 4000
2150 T$="   H GZC Z EHFQS VHSG SGD   LNMRSDQ    SGZS":GOSUB 4000
2155 T$="OQNSDBSR HS,ATS MNV H":GOSUB 4000
2160 T$="ZL DWGZTRSDC, RN HS'R TO SN XNT SN RZUD SGD DZQSG!":GOSUB 4000
```

```
2170 PRINT "SUDDENLY I.T.COLLAPSES"
2180 H(1,2)=4:RETURN
2190 PRINT "IT LOOKS LIKE I.T. IS"
2195 PRINT "IN A COMA. NOW YOU'LL"
2200 PRINT "HAVE  TO  DO  IT  ALL"
2205 PRINT "ALONE...  GOOD LUCK !":PRINT
2210 H(1,2)=5:RETURN
2220 PRINT "I.T. IS HERE."
2230 PRINT "HE IS IN A COMA":PRINT
2240 RETURN
2300 REM**DRAGON**
2310 IF TH=8 THEN H(2,2)=5:T(TH)=0:TH=0
2320 ON H(2,2) GOTO 2330,2370,2400,2430,2470,2520
2330 PRINT "THERE IS  AN ENORMOUS"
2335 PRINT "MONSTER  HERE.   IT'S"
2340 PRINT "EYES   ARE   ROLLING."
2350 PRINT "IT YELLS:"
2355 PRINT "ARE YOU A COOKIE ?!"
2360 H(2,2)=2:RETURN
2370 PRINT "THE  MONSTER  YELLS"
2375 PRINT "LOUDER AND LOUDER:"
2380 PRINT "ARE YOU A COOKIE?!!"
2390 H(2,2)=3:RETURN
2400 PRINT "THE   MONSTER   KEEPS"
2405 PRINT "YELLING, AND IT  GETS"
2410 PRINT "RATHER  AGGRESSIVE."
2420 H(2,2)=4:RETURN
2430 PRINT "THE MONSTER GIVES YOU"
2435 PRINT "A TERRIBLE BLOW. YOUR"
2440 PRINT "HEAD IS SPINNING."
2450 NW=NW+1
2460 H(2,2)=3*RND(0)+1:RETURN
2470 PRINT "THE   MONSTER    SAYS"
2475 PRINT "SURPRISED' COOKIES ?"
2480 PRINT "AND STARTS TO EAT  AT"
2490 PRINT "ONCE.   AN   ENORMOUS"
2495 PRINT "   ! ! B O N G ! !"
2497 PRINT "AND IT FALLS ASLEEP."
2500 R(16,6)=1
2510 H(2,2)=6:RETURN
2520 PRINT "THE MONSTER IS ASLEEP"
2530 RETURN
2600 REM**SNAKE**
2610 PRINT "THERE IS A SNEAKY":PRINT "SNAKE HERE."
2620 IF RND(0)<.4 THEN RETURN
2630 IF LP=1 OR RND(0)<.5 THEN 2670
2640 RN=INT((LP-1)*RND(0)):T(P(RN))=12+INT(12*RND(0)):LP=LP-1:P(RN)=P(LP)
2650 PRINT "WITH A QUICK MOVE  IT":PRINT "SNATCHES   SOMETHING,"
2660 PRINT "AND ";
2670 PRINT "IT SNEAKS AWAY."
```

```
2680 H(3,1)=H(3,1)+3:IF H(3,1)>24 THEN H(3,1)=H(3,1)-8
2690 RETURN
2700 REM**HELLHOUND**
2710 ON H(4,2) GOTO 2720,2750,2780
2720 PRINT "THERE  IS   A   GIANT"
2725 PRINT "HELLHOUND  HERE.   IT"
2730 PRINT "LOOKS LIKE  IT  WANTS"
2735 PRINT "YOU FOR DINNER."
2740 H(4,2)=2:RETURN
2750 PRINT "THE HELLHOUND ATTACKS"
2754 PRINT "YOU  AND  BITES   YOU"
2758 PRINT "VIOLENTLY."
2760 NW=NW+1
2770 H(4,2)=3:RETURN
2780 PRINT "THE HELLHOUND  GROWLS"
2785 PRINT "AND SEEMS TO  PREPARE"
2790 PRINT "FOR ANOTHER ATTACK."
2800 H(4,2)=1+INT(2*RND(0)):RETURN
2900 REM**BOMB**
2910 PRINT "THE NULLITY  BOMB  IS"
2915 PRINT "HERE. THERE ARE THREE"
2920 PRINT "WIRES CONNECTING  THE"
2922 PRINT "BOMB AND THE  TIMING-"
2923 PRINT "MECHANISM:"
2925 PRINT "A GREEN  ONE (G)"
2927 PRINT "A YELLOW ONE (Y)"
2929 PRINT "A RED    ONE (R)"
2930 PRINT "YOU  MUST  DISCONNECT"
2935 PRINT "TWO TO MAKE IT STOP."
2940 INPUT "WHICH ONE FIRST";X$
2950 INPUT "AND SECOND";Y$
2960 CB=0:C$="YRG":FOR I=1 TO 3
2970 CB=CB-(X$=MID$(C$,I,1))-(Y$=MID$(C$,I,1))
2980 NEXT I
2990 IF CB<2 THEN PRINT "□WATCH OUT!":PRINT "WRONG INPUT!":GOTO 2910
3000 IF ASC(X$)*ASC(Y$)=6319 THEN 3030
3015 PRINT "□ENORMOUS EXPLOSION !":PRINT "MUSHROOM CLOUD!"
3017 PRINT "YOU TRIED BRAVELY,":PRINT "BUT ALAS ! !":PRINT "YOU DIDN'T SUCCEED.
."
3020 END
3030 PRINT "□** CONGRATULATIONS **"
3040 PRINT "■YOU SUCCEEDED WHERE"
3050 PRINT "EVERYONE ELSE FAILED!"
3060 END
3100 REM**BARBECUE**
3130 IF T(2)=RM AND T(12)=RM THEN TH=8:T(TH)=RM:T(2)=0:T(12)=0:H(6,2)=2
3140 ON H(6,2) GOTO 3150,3180,3220
3150 PRINT " THERE  IS  A  GIANT"
3160 PRINT "BARBECUE HERE, WITH A"
3165 PRINT "LARGE FIRE UNDER IT."
```

```
3170 RETURN
3180 PRINT "  AN  ENORMOUS  FLASH"
3185 PRINT "LIGHTENS  THE  PLACE,"
3187 PRINT "AND   A   PENETRATING"
3190 PRINT "SMELL FILLS YOUR NOSE"
3210 H(6,2)=3:RETURN
3220 PRINT "EVERYTHING  IS  QUIET"
3230 PRINT "NOW;EVEN THE TERRIBLE"
3240 PRINT "SMELL HAS FADED."
3250 H(6,2)=1:RETURN
4000 REM**DECODE TEXT**
4010 TN$="":FOR I1=1 TO LEN(T$):C$=MID$(T$,I1,1)
4020 IF C$="Z" THEN C$="A":GOTO 4030
4025 IF C$>="A" AND C$<"Z" THEN C$=CHR$(ASC(C$)+1)
4030 TN$=TN$+C$
4040 NEXT:IF NOT IN THEN PRINT TN$
4050 RETURN
4100 REM**WHAT IS CARRIED**
4110 PO=0:FOR I=1 TO LP-1
4120 IF P(I)=TP THEN PO=I:I=LP-1
4130 NEXT I
4140 RETURN
4200 REM**PUZZLE**
4210 RT=RT+1
4220 IF RM=S(RT) THEN RR=RR+1
4230 IF RT<8 THEN RETURN
4240 IF RR=8 THEN 4310
4250 PRINT "AN ABSOLUTE  DARKNESS"
4260 PRINT "COVERS  YOU  AND  IT"
4265 PRINT "FEELS AS IF SOMETHING"
4270 PRINT "IS  LIFTING  YOU."
4275 PRINT "FOR A MOMENT YOU  ARE"
4277 PRINT "UNCONCIOUS."
4290 RT=1:RR=1:RM=1
4300 RETURN
4310 PRINT "YOU  HEAR  A  STRANGE"
4320 PRINT "SOUND,AS IF SOMETHING"
4330 PRINT "IS BEING PUSHED AWAY."
4340 FOR DL=1 TO 5000:NEXT DL
4500 PRINT "NOW IT HAS STOPPED."
4510 R(2,1)=3
4520 RETURN
5000 REM**INITIALIZATION**
5010 PRINT "WAIT A MINUTE PLEASE"
5020 DIM R(36,6),D$(36),M$(14),H(6,3),H$(6),T(12),T$(12),P(12),D(8)
5100 REM*CONNECTIONS*
5110 FOR I=1 TO 36
5120 R(I,1)=I+1:R(I,2)=I-1:R(I,3)=I+4:R(I,4)=I-4
5130 NEXT I
5140 FOR I=0 TO 24 STEP 12
```

```
5150 FOR J=1 TO 9 STEP 4:R(I+J+3,1)=0:R(I+J,2)=0:NEXT
5160 FOR J=1 TO 4:R(I+J+8,3)=0:R(I+J,4)=0:NEXT
5170 NEXT I
5180 R(1,5)=16:R(7,5)=15:R(32,6)=13:R(13,5)=32:R(35,6)=18:R(18,5)=35
5190 FOR I=1 TO 15:READ RM:READ MV:R(RM,MV)=0:NEXT
5200 REM*INIT PARAMETERS*
5210 RM=36 PO=1:LP=1:RL=0:LO=0:NW=0:RT=0:RR=0
5300 REM*FILL ARRAYS*
5310 IN=-1
5320 FOR I=1 TO 14:READ M$(I):NEXT
5330 FOR I=1 TO 12:READ T$:GOSUB 4000:T$(I)=TN$:NEXT
5340 FOR I=1 TO 6:READ T$:GOSUB 4000:H$(I)=TN$:NEXT
5350 FOR I=1 TO 36:READ T$:GOSUB 4000:D$(I)=TN$:NEXT
5360 FOR I=1 TO 12:READ T(I):NEXT
5370 FOR I=1 TO 6:READ H(I,1),H(I,3):H(I,2)=1:NEXT
5380 FOR I=1 TO 8:READ S(I):NEXT
5390 IN=0
```

```
5400 RETURN
5500 DATA 21,1,22,2,22,1,23,2,18,1,19,2,16,3,20,4,11,1,12,2,7,1,8,2,7,4,3,3,2,1
5510 DATA EAST,WEST,NORTH,SOUTH,UP,DOWN,KILL,HELP,TAKE,DROP,INVENTORY,BANDAGE,LA
NTERN,READ
5520 DATA KZMSDQM,VGDZSOHKD,VZSDQRZBJ,BNNJANNJ,KDZEKDS,AZMCZFD,RVNQC,BNNJHD,ANCX
 NE H.S.
5525 DATA FHZMS BNQORD,RKHBDC RMZFD,CDZC GNTMC
5530 DATA H.S.,LNMRSDQ,RMZJD,GDKKGNTMC,AZQADBTD,ANLA
5540 DATA QDRDS BZUD,S-BZUD,RDBQDS BNQQHCNQ,BNMSQNK QNNL,N-BZUD,H-BZUD,ROZBD-BZU
D
5545 DATA AKZBJ QNNL,O-BZUD,D-BZUD,M-BZUD,DLOSHMDRR
5550 DATA RLZKK BZUD,QNBJX BZUD,RLDKKX BZUD,CQZFNM BZUD,RMZJD BZUD,XDKKNV BZUD
5555 DATA RSQDZL AZMJ,RSHMJX OKZBD,ENNC BZUD,EHMZK BZUD
5560 DATA BNKNQDC BZUD,HBD BZUD,NODM OKZBD,VNNCR,VNNCR,VNNCR,VNNCR,VNNCR,VNNCR
5565 DATA VNNCR,VNNCR,VNNCR,VNNCR,VNNCR
5570 DATA 34,30,28,21,14,15,13,0,0,0,0,0
5580 DATA 34,2,16,15,17,4,29,2,8,1,25,1
5590 DATA 1,5,9,10,11,7,6,2

READY.
```

The Wolf and the Five Little Goats

A Grimm's fairy tale? No, an intriguing board game! This game is played on a checkerboard displayed on the screen. As the game begins, the goats are scattered throughout the lower half of the board and are represented by little squares containing a number. The wolf stands at the upper left-hand corner of the board.

Off we go — you are the wolf, and the computer controls the goats. You win if you eat three goats, and the computer wins if one of the goats eats you. (These wolf-eating goats are amazing creatures!)

You may start. On the lower part of the screen you see:

```
YOU MAY ENTER . . . MOVES
```

for example

```
YOU MAY ENTER 2 MOVES
```

The number of moves always lies between 1 and 3, and tells you how many steps you may take during your turn. The wolf — in other words, you — may move horizontally or vertically, but never diagonally. Each move must be entered on the cursor keys. If the *last* move of a series of moves brings you on a square with a goat, the goat is yours. You may never cross a square that has a goat on it.

There are 5 goats in all, and they may jump over each other. Goats can move only in one direction. The number of steps they may move is shown on the goats themselves, and is always between 1 and 5. For instance, if a goat bears the number 3 he can move

3 steps to the left, or
3 steps to the right, or
3 steps forward, or
3 steps backward

He cannot move 1 step forward and 2 steps to the left. If you (the wolf) have moved to a new position the computer shows

NOW IT'S MY TURN

When it is your turn, the computer shows

YOU MAY ENTER . . . MOVES

At the end of the game the computer either tells you

YOU WIN!

or worse

YOU LOSE

```
10 REM**THE WOLF AND THE 5 LITTLE GOATS**
20 DIM B(10,10),R(5),C(5),NM(5)
30 C$(0)="▒▒"
40 C$(1)="  "
50 D$="[illegible]"
60 GOTO 2000
1000 REM**DRAW ONE FIELD**
1010 ON CA+2 GOTO 1020,1030,1040
1020 R=RW:C=CW:TX$="WW":GOTO 1070
1030 TX$=C$(R+C AND 1):GOTO 1070
1040 R=R(GT):C=C(GT)
1050 TX$="G"+RIGHT$(STR$(NM(GT)),1)
1060 CA=GT
```

```
1070 PRINT LEFT$(D$,3+R);TAB(2*C-1);TX$
1080 B(R,C)=CA
1090 RETURN
1100 REM**INITIALIZE**
1110 REM DRAW CHECKERBOARD
1120 PRINT "■";
1130 FOR R=1 TO 10
1140 FOR C=1 TO 10
1150 CA=0:GOSUB 1000
1160 NEXT C,R
1170 REM PLACE WOLF
1180 RW=1:CW=1:NM=INT(RND(0)*3+1)
1190 CA=-1:GOSUB 1000
1200 REM PLACE GOATS
1210 FOR GT=1 TO 5
1220 R(GT)=INT(RND(0)*10+1)
1230 C(GT)=INT(RND(0)*10+1)
1240 NM(GT)=INT(RND(0)*5+1)
1250 IF B(R(GT),C(GT))<>0 THEN 1220
1260 CA=1:GOSUB 1000
1270 NEXT GT
1280 RETURN
1300 REM**MOVE WOLF**
1310 PRINT D$;"YOU MAY ENTER";NM;"■ MOVES"
```

```
1320 FOR DU=1 TO NM
1330 GET MV$:IF MV$="" THEN 1330
1350 RD=(MV$="□" AND RW>1)-(MV$="■" AND RW<10)
1360 CD=(MV$="■" AND CW>1)-(MV$="■" AND CW<10)
1370 TE=B(RW+RD,CW+CD)
1380 IF TE<0 OR TE>0 AND DU<NM THEN 1330
1390 NM(TE)=0
1400 SC=SC+SGN(TE)
1410 R=RW:C=CW
1420 CA=0:GOSUB 1000
1430 RW=RW+RD:CW=CW+CD
1440 CA=-1:GOSUB 1000
1450 NEXT DU
1460 NM=INT(RND(0)*3+1)
1470 RETURN
1500 REM**COMPUTER MOVE**
1510 PRINT D$;"NOW IT'S MY TURN
1520 REM EVALUATION
1530 MX=-400
1540 FOR GT=1 TO 5
1550 IF NM(GT)=0 THEN 1600
1560 CG=C(GT):RG=R(GT)+NM(GT):GOSUB 1800
1570 RG=R(GT)-NM(GT):GOSUB 1800
1580 RG=R(GT):CG=C(GT)+NM(GT):GOSUB 1800
1590 CG=C(GT)-NM(GT):GOSUB 1800
1600 NEXT GT
1610 REM MOVE GOAT
1620 C=C(GB):R=R(GB)
1630 CA=0:GOSUB 1000
1640 R(GB)=RB:C(GB)=CB
1650 NM(GB)=INT(RND(0)*5+1)
1660 GT=GB
1670 CA=1:GOSUB 1000
1680 IF MX<400 THEN RETURN
1690 PRINT D$;"  YOU LOSE
1700 END
1800 REM**STATUS**
1810 IF ABS(R(GT)-RW)+ABS(C(GT)-CW)=NM THEN SQ=200:GOTO 1820
1815 SQ=0
1820 IF RG<1 OR RG>10 OR CG<1 OR CG>10 THEN RETURN
1830 IF B(RG,CG)>0 THEN RETURN
1840 DI=ABS(RW-RG)+ABS(CW-CG)
1850 IF DI=0 THEN SQ=500:GOTO 1930
1860 IF DI=NM OR DI=NM-2 THEN RETURN
1870 IF DI<=5 THEN SQ=SQ+35
1880 SQ=SQ-40*((RG=RW)+(CG=CW))
1890 FOR G=1 TO 5
1900 SQ=SQ-10*((RG<>R(G))+(CG<>C(G)))
1910 NEXT
1920 IF SQ+RND(0)<MX THEN 1940
```

```
1930 MX=SQ:GB=GT:RB=RG:CB=CG
1940 RETURN
2000 REM**MAIN PROGRAM**
2010 GOSUB 1100:REM INITIALIZE
2020 GOSUB 1300:REM MOVE WOLF
2030 IF SC=3 THEN 2060
2040 GOSUB 1500:REM COMPUTER MOVE
2050 GOTO 2020
2060 PRINT D$;"  YOU WIN !
2070 END

READY.
```

Road Race

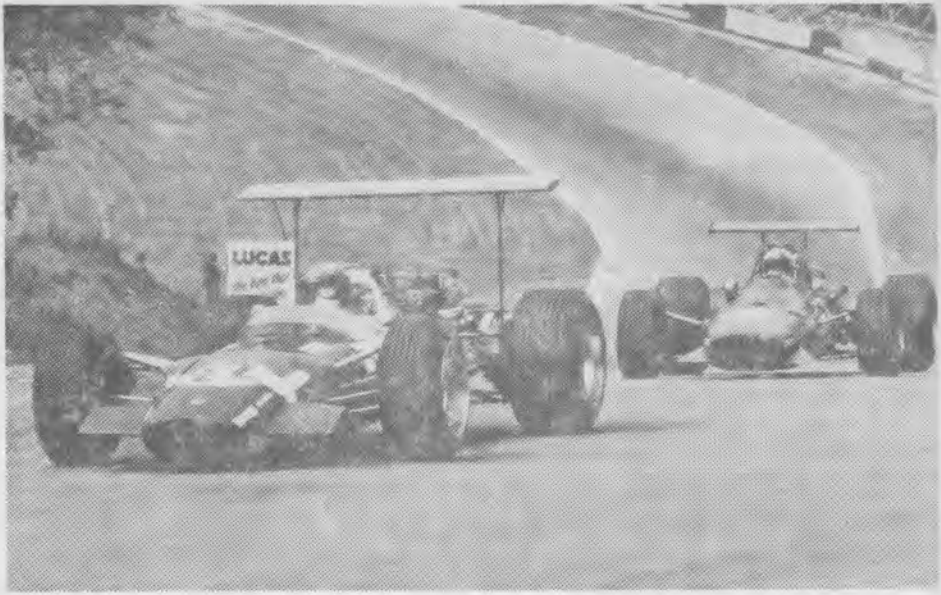
Ladies and gentlemen, the cars are now on the grid waiting for the start of the most thrilling Grand Prix you are ever likely to see. With the world championship at stake none of these drivers will be looking for anything other than first place. The weather is fine and the track is dry so it's sure to be a very fast race. Who knows, we may even see the lap record broken. The last minute checks have been made, the drivers are now revving their engines up to full power and, as the starter's flag drops, they're off . . . !

After you have entered the RUN command, the computer will ask you a number of questions about how you want to play. It is possible to use a joystick, but if you don't have one you can steer from the keyboard using the keys indicated in lines 140 and 150 of the listing.

Note the instructions that are given in the REM statements. You will have to POKE certain values before entering the program. Don't worry if the letters at the start of some of the words in the program seem peculiar, for instance NUMBER in line 1030. After you have typed in the program and pressed the shift and Commodore keys these words will appear correctly.

```
90 REM **ROADRACE**
100 REM YOU NEED AT LEAST 8KB RAM EXTRA!
110 REM TO LOAD THIS PROGRAM TYPE:
120 REM POKE44,34:POKE34*256,0:NEW
130 REM
140 REM LEFT PLAYER USES W,A,S,Z
150 REM RIGHT PLAYER USES ■;:,/
160 REM
200 PRINT"□":SC=4096:CL=37888:CR=36864:CH=4096
210 DEFFNC(X)=CH+16*X
220 Q1=37154:Q2=37151:Q3=829:Q4=840
230 FR=.95:LE=6.789:RE=18000:REM 4474
300 DIMX(1),Y(1),VX(1),VY(1),CL(1),SX(1),XO(1),YO(1),CO(1)
310 DIMFT(1),DT(1),RO(1),MT(1),LT(1),Q3(1,3),Q4(1,3)
320 CL(0)=3:CL(1)=2
330 GOTO3000
400 DATA3,11,13,14,10
```

```
410 DATA4,7,6,8,3,10,6,6
420 DATA3,12,6,4,3,5,4,5,6,2
430 DATA3,3,8,5,4,2,3,3,3,2,3,5,4,2
440 DATA3,3,3,2,3,5,4,2,3,3,3,2,3,5,4,2
450 DATA3,3,3,2,3,4,5,2
460 DATA3,3,3,2,3,2,7,2,4,2,3,2,3,1,6,5
470 DATA8,2,7,10,4,4,5,12,4,4,5,8,0
1000 PRINT"□":POKECR+3,194
1010 INPUT"□NE OR TWO PLAYERS";NP:IF NP<1 OR NP>2 THEN 1010
1020 JO=0:IF NP=1 THEN INPUT"↑OYSTICK";AN$:JO=(LEFT$(AN$,1)="Y")
1030 INPUT"⁄UMBER OF LAPS";NR:IF NR<1 THEN 1030
1100 FOR PL=0 TO 1
1110 XO(PL)=100:X(PL)=100:VX(PL)=0
1120 YO(PL)=8+16*PL:Y(PL)=YO(PL):VY(PL)=0
1130 D⁻(PL)=0:MT(PL)=1E9:LT(PL)=0:RO(PL)=0
1140 NEXT PL
1150 N=36:NF=0:MI=0
1160 RETURN
1200 PRINT"□":POKECR,9:POKECR+1,24:POKECR+2,25:POKECR+3,31:POKECR+5,204
1210 POKECR+14,40:POKECR+15,125:FORI=10TO12:POKECR+I,0:NEXT
1220 FORJ=0TO15:POKEFNC(32)+J,0:NEXTJ
1230 FORJ=0TO15:POKEFNC(33)+J,85:NEXT
1240 FORI=0TO15*33:POKECL+I,14:NEXT
1250 RESTORE:I=0
1260 READA:IFA=0THEN900
1270 FORI=ITOI+A-1 POKESC+I,33:NEXT
1280 READA:IFA=0THEN1310
1290 FORI=ITOI+A-1:POKESC+I,32:NEXT
1300 GOTO1260
1310 FORI=0TO31:READA:POKEFNC(34)+I,A:NEXT
1320 POKESC+57,34:POKECL+57,8
1330 POKESC+58,35:POKECL+58,8:RETURN
1340 DATA85,,85,85,85,170,85,85,85,85,85,85,85,85,85,85
1350 DATA85,149,101,89,170,89,101,149,85,85,85,85,85,85,85
1400 FOR I=0 TO 3:FOR J=0 TO 1:READ Q3(J,I),Q4(J,I):NEXT J,I
1410 DATA223,2,251,64,239,2,247,64
1420 DATA251,2,223,32,253,2,191,32
1430 FOR I=828 TO 839:READ X:POKE I,X:NEXT
1440 DATA169,127,141,32,145,173,33,145,141,72,3,96
1450 T0=TI:RETURN
1499 REM ** INPUT ACCELERATION **
1500 IF JO THEN 1600
1510 POKEQ3,Q3(PL,0):SYS828:AR=-((PEEK(Q4)ANDQ4(PL,0))=0)
1520 POKEQ3,Q3(PL,1):SYS828:AD=-((PEEK(Q4)ANDQ4(PL,1))=0)
1530 POKEQ3,Q3(PL,2):SYS828:AL=-((PEEK(Q4)ANDQ4(PL,2))=0)
1540 POKEQ3,Q3(PL,3):SYS828:AU=-((PEEK(Q4)ANDQ4(PL,3))=0)
1550 RETURN
1600 POKEQ1,127:AR=-((PEEK(Q2+1)AND128)=0)
1610 POKEQ1,255:Q=PEEK(Q2)
1620 AD=-((QAND8)=0)
```




```
1630 AL=-((QAND16)=0)
1640 AU=-((QAND4)=0)
1650 RETURN
1699 REM ** COMPUTE NEW SPEED & PLACE **
1700 VX(PL)=(VX(PL)-2*AL+2*AR)*FR
1710 VY(PL)=(VY(PL)-2*AU+2*AD)*FR
1720 XO(PL)=X(PL):X(PL)=X(PL)+VX(PL)
1730 YO(PL)=Y(PL):Y(PL)=Y(PL)+VY(PL)
1740 V=127+SQR(ABS(VX(PL))+ABS(VY(PL)))*10
1750 FORI=10TO12:POKECR+I,V:NEXT
1760 POKECR+13,0
1770 RETURN
1800 X=X(PL):Y=Y(PL):X%=X/16:Y%=Y/16
1810 A=PEEK(SC+X%+25*Y%)
1820 IFA>35THEN1870
1830 IF A<>32 OR X<0 OR Y<0 OR X>399 OR Y>239 THEN1900
1840 FORI=0TO15:POKEFNC(N)+I,0:NEXT
1850 POKESC+X%+25*Y%,N
```

```
1860 A=N:N=N+1
1870 POKESX(PL),0
1880 SX(PL)=INT(FNC(A)+Y-16*Y%)
1890 POKESX(PL),(CL(PL)*2↑(6-INT((X-X%*16)/4)*2)):RETURN
1900 DT(PL)=INT(ABS(VX(PL))+ABS(VY(PL)))
1910 X(PL)=XO(PL):Y(PL)=YO(PL):VX(PL)=0:VY(PL)=0
1920 POKECR+13,150
1930 RETURN
2000 FOR PL=0 TO 1
2010 IF X(PL)>100 AND Y(PL)<40 AND CQ(PL)=1 THEN CQ(PL)=0:GOTO2060
2020 IF X(PL)<70 AND CQ(PL)=2 THEN CQ(PL)=1
2030 IF Y(PL)>192 AND CQ(PL)=3 THEN CQ(PL)=2
2040 IF X(PL)>300 AND CQ(PL)=0 THEN CQ(PL)=3
2050 GOTO2110
2060 T1=TI:RT=T1-T0-LT(PL)
2070 LT(PL)=T1-T0
2080 IF RT<MT(PL) THEN MT(PL)=RT
2090 RO(PL)=RO(PL)+1:IF RO(PL)<NR THEN 2110
2100 NF=NF+1:FT(PL)=T1-T0
2110 NEXT PL:RETURN
2200 PRINT"□":POKECR,12:POKECR+1,38:POKECR+2,22:POKECR+3,46:POKECR+5,194
2210 POKECR+14,0:POKECR+15,27
2230 PRINT"_ECORD TIME:";:T=RE:GOSUB2400
2240 PRINT"/UMBER OF LAPS:"NR
2250 PRINTTAB(33)"|IME:"
2260 FOR PL=0 TO NP-1
2270 IF NP=2 THEN PRINT" ▩▩LAYER"PL+1
2280 PRINT"▩|OTAL:";:T=FT(PL):GOSUB2400
2290 PRINT"♠VERAGE:";:T=LT(PL)/NR:GOSUB2400
2300 PRINT"_ASTEST:";:T=MT(PL):GOSUB2400
2310 IF MT(PL)<RE THEN RE=MT(PL) :PRINT"▩▩/‾O |_♠~ _‾┬_‾||■"
2320 NEXT PL: RETURN
2400 T0=INT(T/3600):T1=INT((T/60-60*T0)*100)/100
2410 PRINTTAB(10);T0"▩:"MID$(STR$(100+T1),3,5)
2420 RETURN
2999 REM MAIN PROGRAM
3000 GOSUB 1000:REM INITIALZATION
3010 GOSUB 1200:REM SCREEN
3020 GOSUB 1400:REM START
3030 FOR PL=0 TO 1
3040 IF PL>NP-1 THEN FOR DE=1 TO 150:NEXT:GOTO3090
3050 IF DT(PL)>0 THENDT(PL)=DT(PL)-1:FORI=10TO12:POKECR+I,0:NEXT:POKECR+13,150:G
OTO 3090
3060 GOSUB 1500:REM INPUT
3070 GOSUB 1700:REM COMPUTING
3080 GOSUB 1800:REM OUTPUT
3090 NEXT PL
3100 GOSUB 2000:REM ADAPT
3110 IF NF<NP THEN 3030
3120 GOSUB2200:REM END
```

```
3130 POKE198,0:REM CLEAR INPUT BUFFER
3140 INPUT"■■NOTHER RACE (Y/N)";AN$:IF LEFT$(AN$,1)="Y" THEN 3000
3150 END

READY.
```

At the Market

Have you ever wandered through a market and been amazed at the speed with which the salesmen can add up a list of prices? Play this game with your family and find out how good a market trader you would make.

You will see pairs of numbers of increasing length which you have to add up. You will soon find out that this isn't as easy as it sounds. To see why, consider the sum

```
  75856
+ 37637
```

Normally you would add the numbers in the right hand column first, then the column next to it, and so on. With the computer, however, you must enter the answer starting with the left hand column. It is this difference that makes the game so tricky.

How many numbers can you add correctly within the time limit of about one minute? Can you beat our record of eight?

```
10 REM **AT THE MARKET**
20 PRINT "□"
30 DIMA$(10):FORI=0TO10:READA$(I):NEXT:GOTO140
40 DATATRY AGAIN,THAT'S BETTER!,PAPER-BOY,CLERK,AUTO DEALER,PRETTY GOOD
50 DATABROKER,OIL MAGNATE,MILLIONAIRE,WORLD-CHAMPION,WORLD-SUPER CHAMPION
60 REM *END*
70 PRINT:PRINT"PLAY AGAIN ?   (Y/N)"
80 GETA$:IFA$="Y"THENRETURN
90 IFA$="N"THENEND
100 GOTO80
110 REM *RANDOM NUMBER*
120 X$="":FORB=1TOA:X$=X$+RIGHT$(STR$(INT(RND(1)*9+1)),1):NEXT:RETURN
130 REM *MAIN ROUTINE*
140 T=TI:A=1:TT=T
150 GOSUB120:A$=X$
160 GOSUB120:B$=X$
170 PRINT:PRINTA$:PRINTB$+" +"
180 FORB=0TOA:PRINT"─";:NEXT:PRINT"":INPUT"ANSWER";D$
190 D=VAL(A$)+VAL(B$):IFD=VAL(D$)THEN220
200 PRINT"FALSE, IT WAS:"STR$(D)
210 A=A-1:GOTO240
220 TT=TI:IFTT-T>3600THEN240
230 A=A+1:GOTO150
240 PRINT"YOUR SCORE:"STR$(A):IFA>10THENA=10
250 PRINT"■"A$(A):PRINT"TIME:"STR$(INT((TT-T)/.6)/100)" SECONDS"
260 GOSUB70:GOTO140

READY.
```

Fallout

At the start of this simple but absorbing game you will see eight horizontal bars with gaps in them. Above the bars are eight checkers which can fall through the gaps. In this example

checker 2 has already fallen into a gap. The object of the game is to get all eight checkers through the bars. You can do this by moving the bars to line up the gaps for the checkers to fall through.

To move a particular bar enter a command of the form

BDS

where

B is the number of the bar (the bars are numbered from 1 at the top to 8 at the bottom)

D is the direction you wish to move it (L for left, R for right) and

S is the number of steps the bar has to be shifted.

For instance

3R12

moves bar 3, 12 steps to the right. This might sound like a very simple game but when you actually start playing it you will find that it provides quite a stiff test of your ability to think logically.

```
10 REM **FALLOUT**
20 DIM H(16,8)
30 PRINT "J";
40 REM ** FILL WITH BARS
50 FOR X=0 TO 16
60 FOR Y=1 TO 8
70 H(X,Y)=1
80 NEXT Y,X
90 REM ** 4 RANDOM HOLES
100 FOR Y=1 TO 8
110 FOR B=1 TO 4
120 X=INT(RND(0)*16+1)
130 H(X,Y)=0
140 NEXT B,Y
150 REM ** PUT 1-8 ON TOP
160 FOR B=1 TO 8
170 H(2*B-1,0)=B+100
180 NEXT B
190 GOSUB 610:REM ** DRAW
200 GOSUB 910:REM ** MODIFY
210 GOSUB 610:REM ** DRAW
300 REM *** GET COMMAND
310 INPUT Z$
320 Y=VAL(LEFT$(Z$,1))
330 IF Y<1 OR Y>8 THEN 510:REM ** WIPE
340 D$=MID$(Z$,2,1)
350 DX=VAL(MID$(Z$,3))
360 IF DX=0 THEN 510:REM ** WIPE
370 IF D$<>"L" AND D$<>"R" THEN 510:REM ** WIPE
380 IF D$="L" THEN GOSUB 1110:REM ** SHIFT LEFT
```

```
390 IF D$="R" THEN GOSUB 1210:REM ** SHIFT RIGHT
400 BR=BR+1
410 GOSUB 910:REM ** MODIFY
420 GOSUB 610:REM ** DRAW
430 IF SC>=36 THEN END:REM ** WHEN ALL CHECKERS ARE DOWN
440 IF DX>1 THEN DX=DX-1:GOTO 380:REM ** REPEAT DX TIMES
500 REM *** WIPE
510 PRINT "[illegible]"
520 FOR Y=10 TO 21
530 PRINT "                         "
540 NEXT Y
550 PRINT "                         "
560 PRINT "[illegible]"
570 GOTO 310:REM ** GET COMMAND
600 REM *** DRAW
610 PRINT "[illegible]";
620 FOR Y1=0 TO 8
630 REM * PRINT BARNUMBER (OR DON'T)
640 IF Y1=0 THEN PRINT "     ";
650 IF Y1>0 THEN PRINT STR$(Y1);"> ";
660 FOR X=0 TO 16
670 Z=H(X,Y1)
680 GOSUB 810:REM ** PRINT ELEMENT
690 NEXT X
700 PRINT
710 NEXT Y1
```

```
720 PRINT "    SCORE";SC;" TURN";BR
730 RETURN
800 REM *** PRINT ELEMENT
810 IF Z=0 THEN PRINT " ";
820 IF Z=1 THEN PRINT "■";
830 IF Z>100 THEN PRINT CHR$(Z-52);
840 RETURN
900 REM *** MODIFY
910 FOR Y1=8 TO 0 STEP -1:REM * SEARCH FROM BOTTOM TO TOP
920 FOR X=0 TO 16
930 TY=Y1
940 IF H(X,Y1)<100 THEN 1020
950 IF TY>=8 THEN 1060:REM ** REACHED BOTTOM
960 IF H(X,TY+1)<>0 THEN 1020:REM ** BLOCKED
970 REM ** SHIFT CHIP DOWN
980 H(X,TY+1)=H(X,TY)
990 H(X,TY)=0
1000 TY=TY+1
1010 GOTO 950:REM ** CONTINUE TO SHIFT
1020 NEXT X
1030 NEXT Y1
1040 RETURN
1050 REM ** REACHED BOTTOM
1060 SC=SC+H(X,TY)-100
1070 H(X,TY)=0
1080 GOTO 1020
1100 REM *** SHIFT BAR LEFT
1110 TM=H(0,Y)
1120 FOR X=0 TO 15
1130 H(X,Y)=H(X+1,Y)
1140 NEXT X
1150 H(16,Y)=TM
1160 RETURN
1200 REM *** SHIFT BAR RIGHT
1210 TM=H(16,Y)
1220 FOR X=16 TO 1 STEP -1
1230 H(X,Y)=H(X-1,Y)
1240 NEXT X
1250 H(0,Y)=TM
1260 RETURN

READY.
```

Ship's Attack

First, let's describe this game as realistically as possible. In the lower half of the screen is a shape like this:

Little squares fall down from the top of the screen. You must move the shape using the cursor controls and the shift key to stop the squares hitting it. If that sounds dull what about this . . .

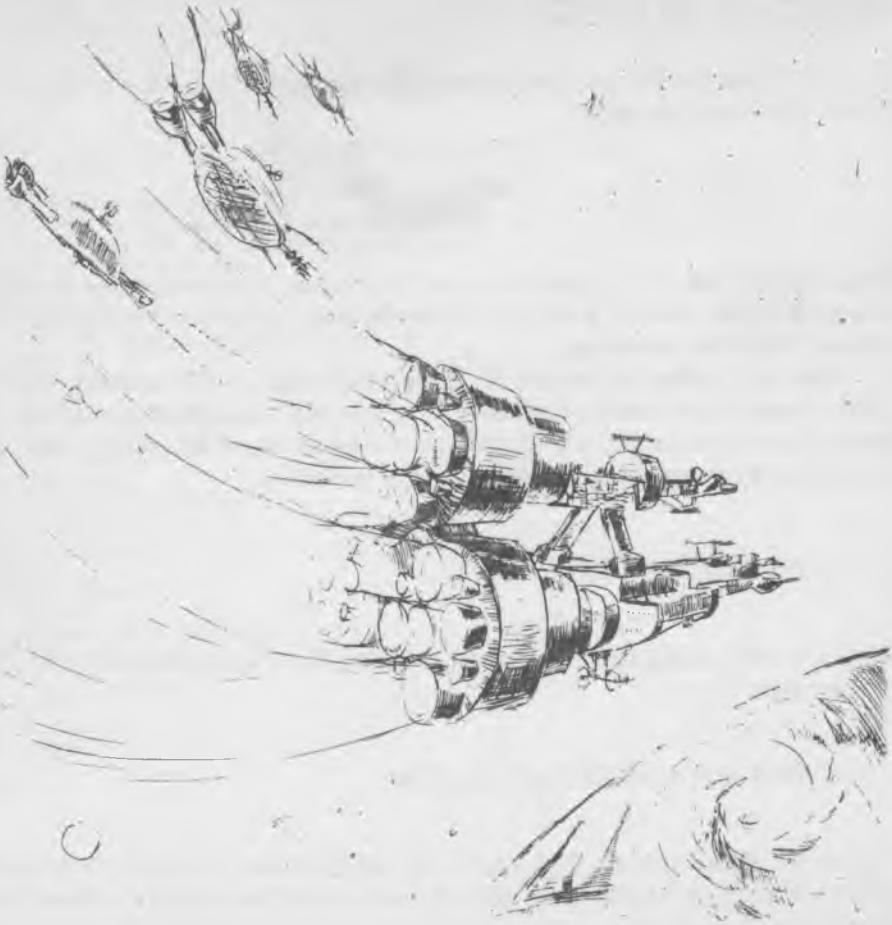
You are captain of one of the finest spaceships in the universe. As you cruise majestically through the Milky Way you can't help feeling proud of the magnificent vessel under your command. Then just as you are nearing base and the end of your voyage is in sight, disaster strikes —

A FLYING SAUCER ATTACK!

How can you escape these unfriendly invaders from across the universe? Why not try your

SUPER ATOMIC ESCAPE MOTOR?

The more flying saucers you avoid, the more points you get. That sounds better, doesn't it? Anyway, the game is fast, simple and great fun to play, and that is all that matters.



```
10 REM*** SHIPS ATTACK ***
20 S$="  ▬  "
30 M$=" ▒▒▒ "
40 INPUT "□LEVEL (1-3)";LE
50 PRINT "□";:PL=10
60 PO=PO+1
70 REM**GENERATE SAUCER**
80 SA=22*9+PL-22*INT(4*RND(0)+5-LE)+3-6*RND(0)
90 GET A$
100 PL=PL+(A$="▮" AND PL>0)-(A$="▮" AND PL<18)
110 REM**MOVE SHIP AND SAUCER**
120 PRINT "▒";TAB(10*22-1+PL);S$
130 PRINT "▒";TAB(SA);M$;
140 SA=SA+22:IF SA<10*22+PL THEN 90
150 PRINT "▮ ";
160 IF SA>10*22+4+PL THEN 60
170 REM**EXPLOSION**
180 FOR DU=1 TO 15
190 POKE 36878,16-DU
200 POKE 36879,11+16*INT(16*RND(0))
210 POKE 36877,128+INT(20*RND(0))
220 FOR T=1 TO 100:NEXT T
230 NEXT DU
240 POKE 36878,0
250 POKE 36879,27
260 PRINT "□YOU HAVE";PO-1;"POINTS"

READY.
```

Mini Mancala

MINI MANCALA is based on an old Arabian game. It is played by moving stones between cups. There are four cups: A and B are the computer's, and C and D are yours. At the start of the game there are two stones in each cup.

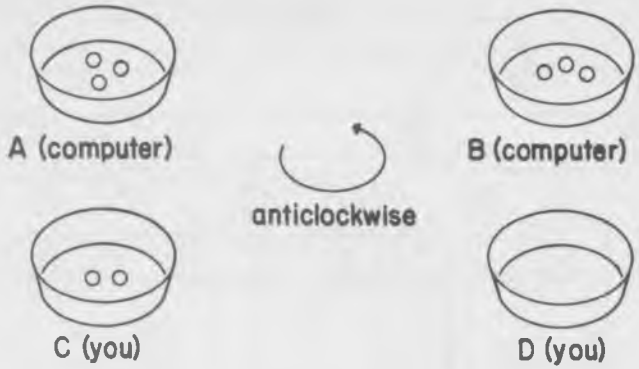
A (computer)

B (computer)

C (you)

D (you)

In turn, the players take the stones from one of their own cups and distribute them counterclockwise to the other three cups. For instance you might choose to move the stones from cup D like this:

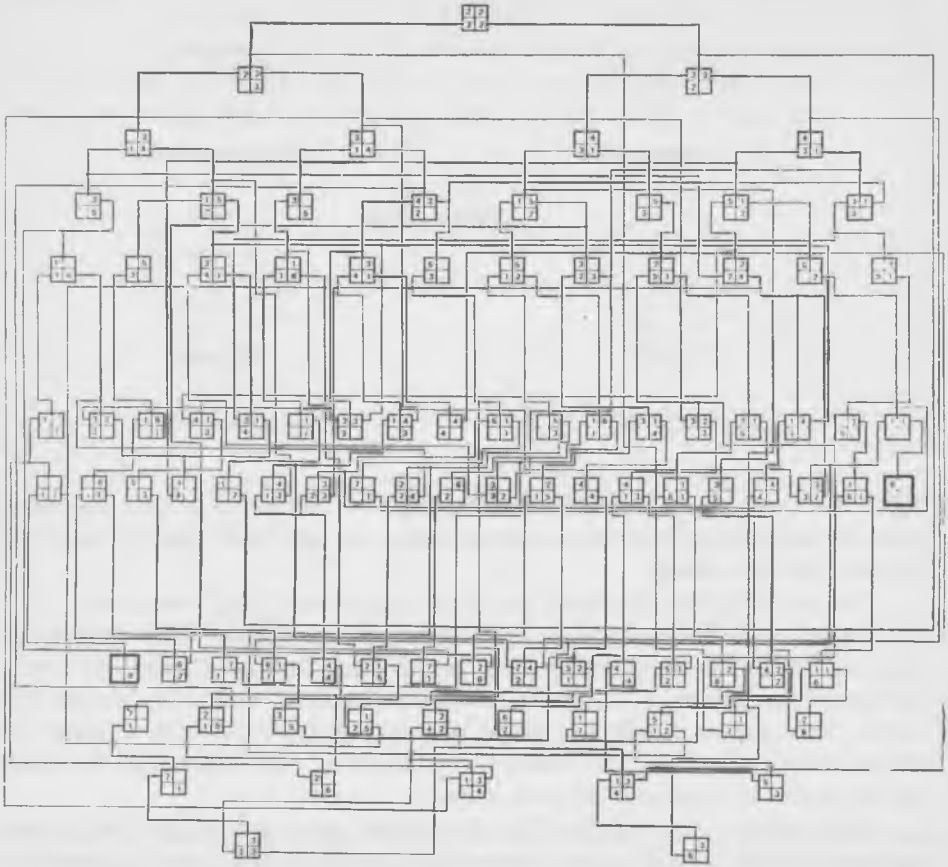


After this move cup D is empty. In fact, there will always be at least one empty cup, because during each move stones cannot be put back into the cup from which they were taken.

To win the game you must get all the stones into your own cups.

On the computer, the cups are represented by squares with numbers on them indicating the number of stones they contain. You can choose the level of difficulty you prefer, 1, 2, or 3 (1 being the easiest), and who has the first move. The computer will ask which of your squares you wish to move the stones from and will tell you what its own move is. The position of the stones on the board is displayed after each move.

You may be surprised that this complicated game can be described in such a short program. The diagram shows all the possible moves, and is an excellent example of how a strategic game can be represented schematically.

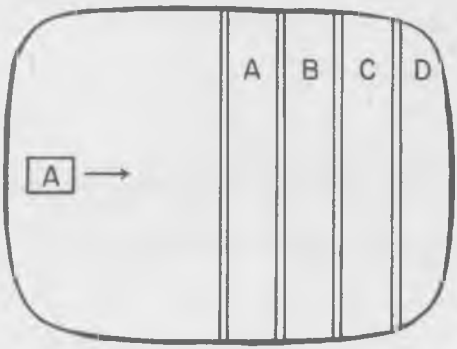


```
10 REM **MINI-MANCALA**
20 DIM B(3),SU(3)
30 DEF FNSP(X)=136+44*(X AND 2)+6*(X AND 1)
40 FOR I=0 TO 3
50 B(I)=2
60 READ SU(I)
70 NEXT
80 DATA 2,0,3,1
90 E$="
100 D$="
110 GOTO 1000
200 REM**DRAW SCREEN**
210 PRINT"
220 PRINT
230 PRINT" A"SPC(13)"B"
240 PRINT"   ┌─────────┬─────────┐"
250 PRINT"   │         │         │"
260 PRINT"   │    2    │    2    │"
270 PRINT"   │         │         │"
280 PRINT"   ├─────────┼─────────┤"
290 PRINT"   │         │         │"
300 PRINT"   │    2    │    2    │"
310 PRINT"   │         │         │"
320 PRINT"   └─────────┴─────────┘"
330 PRINT" C"SPC(13)"D"
340 RETURN
400 REM**INPUT MOVE**
410 PRINT D$"MOVE STONES FROM CUP "
420 PRINT E$"(C,D)";
430 INPUT S$
440 IF S$="" THEN 420
450 S=-2*(S$="C")-3*(S$="D")
460 IF S=0 OR B(S)=0 THEN 410
470 RETURN
500 REM**COMPUTERS TURN**
510 PRINT D$"NOW IT'S MY TURN
520 FOR DE=1 TO 500:NEXT DE
530 IF LE<3 AND RND(0)*LE<.6 THEN S=INT(RND(0)*2):GOTO 560
540 Q=B(2)+10*(B(1)+10*B(0))
550 S=1
560 IF Q=143 OR Q=134 OR Q=611 OR Q=116 THEN S=0
570 IF B(S)=0 THEN S=1-S
580 PRINT D$"I MOVE STONES FROM
590 PRINT E$"CUP "MID$("AB",S+1,1)
600 RETURN
700 REM**SPREAD COUNTER CLOCKWISE**
710 D=S
720 FOR C=1 TO B(S)
730 FOR DE=1 TO 400:NEXT DE
```

```
740 D=SU(D)
750 IF D=S THEN 740
760 B(S)=B(S)-1
770 PRINT "■"SPC(FNSP(S));B(S)
780 B(D)=B(D)+1
790 PRINT "■"SPC(FNSP(D));B(D)
800 NEXT C
810 RETURN
1000 REM**MAIN PROGRAM**
1010 GOSUB 200:REM DRAW SCREEN
1020 PRINT D$"LEVEL (1-3)";
1030 INPUT LE
1040 IF LE<1 OR LE>3 THEN 1020
1050 PRINT D$"DO YOU BEGIN (Y/N)";
1060 INPUT AN$
1070 IF AN$="N" THEN 1120
1080 IF AN$<>"Y" THEN 1050
1090 GOSUB 400:REM INPUT MOVE
1100 GOSUB 700:REM SPREAD COUNTER CLOCKWISE
1110 IF B(3)=8 THEN PRINT D$"YOU WIN!              ":GOTO 1160
1120 GOSUB 500:REM COMPUTERS TURN
1130 GOSUB 700:REM SPREAD COUNTER CLOCKWISE
1140 IF B(0)=8 THEN PRINT D$"I WIN!                ":GOTO 1160
1150 GOTO 1090
1160 END

READY.
```

Stop It!

Although this is only a short program it gives rise to a fast and exciting game. The screen looks like this



The square on the left has a letter on it. When it moves across the screen you must try and stop it, using the space bar, in the region bearing the same letter.

At the start of the game the computer requests a level of difficulty (1 is easiest, 2 is harder, and 3 is the most difficult) and asks how many times you want to play. You will be shown your score at the end, for instance

```
0 HITS OUT OF 10
```

Never mind, better luck next time!

```
10 REM**STOP IT**
20 PRINT "□"
30 D$="■■■■■■■■■■■■■■■■"
40 INPUT "DIFFICULTY (1-3)";DI
50 DT=10-3*DI
60 INPUT "NUMBER OF TURNS";NT
70 PRINT "□"
80 FOR RO=0 TO 15
90 PRINT TAB(13)"| | | |"
100 NEXT RO
110 PRINT "■";TAB(14);"A B C D"
120 TU=TU+1
130 CO=INT(RND(0)*4+1)
140 BU$=MID$("ABCD",CO,1)
150 RO=2*INT(RND(0)*7+1)
160 PRINT "■";LEFT$(D$,RO+1);
170 PRINT " ";BU$;
180 FOR DE=1 TO DT*9:NEXT
190 PRINT "■■ ■■";
200 GET A$
210 IF POS(0)<21 AND A$="" THEN 170
220 IF POS(0)<>12+2*CO OR POS(0)=22 THEN GET DU$:GOTO 250
230 HI=HI+1
240 PRINT "■";HI;
250 IF TU>=NT THEN PRINT "□";HI;"HITS OUT OF";TU:END
260 FOR A=1 TO 500:NEXT
270 GOTO 120

READY.
```

BABA

A *thema con variatone* is a tune that, although it is based on one that has been heard before, has its own mood and identity. This game could be considered as a *thema con variatone* as it has some similarities with another game in this book, but presents its own unique challenge to the solver.

You will see 16 fields filled with a random arrangement of As and Bs e.g.

B	A	B	A
A	A	A	B
A	B	A	B
B	B	A	B

When you enter one of the fields (using the key shown on the screen) all the letters on the horizontal and vertical rows through that field will be altered so that all the As become Bs and vice versa. Your aim is to end up with a screen

which looks like this:

A	B	B	A
A	B	B	A
A	B	B	A
A	B	B	A

```
10 REM**THE SWEDISH POPSONG**
20 DIM B(4,4)
30 REM**INITIALIZE**
40 FOR R=1 TO 4
50 FOR C=1 TO 4
60 B(R,C)=INT(2*RND(0)-1)
70 NEXT C,R
80 PRINT "□";
1000 REM**DRAW SCREEN**
```

```
1010 PRINT "[illegible]";TAB(6);"1234"
1020 FOR R=1 TO 4
1030 PRINT
1040 PRINT TAB(3);STR$(R);" "
1050 FOR C=1 TO 4
1060 IF B(R,C) THEN PRINT "B";:GOTO 1080
1070 PRINT "A";
1080 NEXT C,R
1100 REM**GET MOVE**
1110 PRINT:PRINT
1120 INPUT "ROW   =";R
1130 IF R<1 OR R>4 THEN 1120
1140 FOR C=1 TO 4
1150 B(R,C)=NOT B(R,C)
1160 NEXT
1170 INPUT "COLUMN=";C
1180 IF C<1 OR C>4 THEN 1170
1190 B(R,C)=NOT B(R,C)
1200 FOR R=1 TO 4
1210 B(R,C)=NOT B(R,C)
1220 NEXT
1230 GOTO 1000

READY.
```

Vowels and Consonants

This competition game can be played by the whole family. Unlike most other computer games, it does not involve numbers or arithmetic. At the start of the game enter the number of players, and then take turns to play.

The computer will give you seven letters: when it asks you

V OR C?

enter V for a vowel or C for a consonant. When you have your seven letters the computer challenges you to make as long a word as possible out of them, using each letter once only. There is a time limit, shown on a clock on the screen. It is amazing how addictive a simple game like this can become. Try it and see!

```
10 REM**VOWELS AND CONSONANTS**
20 PRINT "■";
30 INPUT "NUMBER OF PLAYERS";NP
40 IF NP<1 THEN 20
50 DIM PO(NP),C$(7),WO$(20)
60 GOTO 1000
100 REM**CHOOSE CHARACTERS**
110 LE$=""
120 PRINT "■TURN OF PLAYER";PL
130 PRINT "V OR C?"
140 FOR DU=1 TO 7
150 GET IN$
160 IF IN$<>"V" AND IN$<>"C" THEN 150
170 IF IN$="V" THEN CH$="AEIOU"
180 IF IN$="C" THEN CH$="BCDFGHJKLMNPQRSTVWXYZ"
190 C$=MID$(CH$,RND(0)*LEN(CH$)+1,1)
200 LE$=LE$+C$
210 PRINT C$;
220 NEXT DU
230 RETURN
300 REM**INPUT WORD**
310 LE=0
320 PRINT "■TIME IN SECONDS:"
330 FOR TM=45 TO 0 STEP -1
340 PRINT "■■■■■■■■        ";:IF TM<10 THEN PRINT " ";
```

```
345 PRINT TM
350 FOR DE=1 TO 48
360 GET IN$
370 IF (IN$<>CHR$(20) OR LE=0) AND (IN$<"A" OR IN$>"Z") THEN 410
375 IF LE>6 AND IN$<>CHR$(20) THEN 410
380 PRINT "■■■■■■■■■■";TAB(LE+1);IN$
390 IF IN$=CHR$(20) THEN LE=LE-1:GOTO 410
400 LE=LE+1:WO$(LE)=IN$
410 NEXT DE,TM
420 RETURN
500 REM**COMPUTE POINTS**
510 FOR C=1 TO 7
520 C$(C)=MID$(LE$,C,1)
530 NEXT
540 FOR CO=1 TO LE
550 FOR C=1 TO 7
560 IF WO$(CO)=C$(C) THEN C$(C)="":GOTO 580
570 NEXT C:GOTO 600
580 NEXT CO
590 PO(PL)=PO(PL)+LE
600 PRINT"■■■■■■■■■■■";
610 FOR P=1 TO NP
620 PRINT"PLAYER";P;":";PO(P);"POINTS"
630 NEXT P
640 RETURN
1000 REM**MAIN PROGRAM**
1010 FOR PL=1 TO NP
1020 GOSUB 100:REM CHOOSE CHARACTERS
1030 PRINT"■MAKE A WORD OUT OF    THESE■":PRINT TAB(6);LE$
1040 GOSUB 300:REM INPUT WORD
1050 GOSUB 500:REM COMPUTE POINTS
1060 NEXT PL
```

```
1070 GOTO 1010
1080 END

READY.
```

Astrology

This program is based on a study made by the Dutch physicist and astrologer Dr. Ir. J. Van Slooten. He was a research worker at Philips laboratories who spent all his free time on astrology. He developed a theory that the phase of the moon at the time of birth was a very important astrological influence on a person's character. After studying the lives of hundreds of people he concluded, ' . . . that the moon phase forecasts the extent to which the spiritual and emotional life, especially with respect to a person's social environment, will develop and furthermore the role he or she will play in our society . . .'

The diagram shows the cycle of the moon's phases. As there are three phases, waxing, full, and waning, so three types of person can be defined.

Individualists: born in the waxing moon phase, they have waxing energy. They like to work on their own, have strong wills, and are not discouraged by physical discomfort.

Socialists: born in the full moon phase, they like to live in communities. Key words for these people are 'compare', 'choose' and 'combine'. Cooperation is a dominant factor but there is also rivalry and envy.

Conservatives: born in the waning moon phase, they know that the light decreases but will return again. They are careful and sure of themselves, and like to have everything under control.

These three types can be further subdivided to give twelve categories in all:

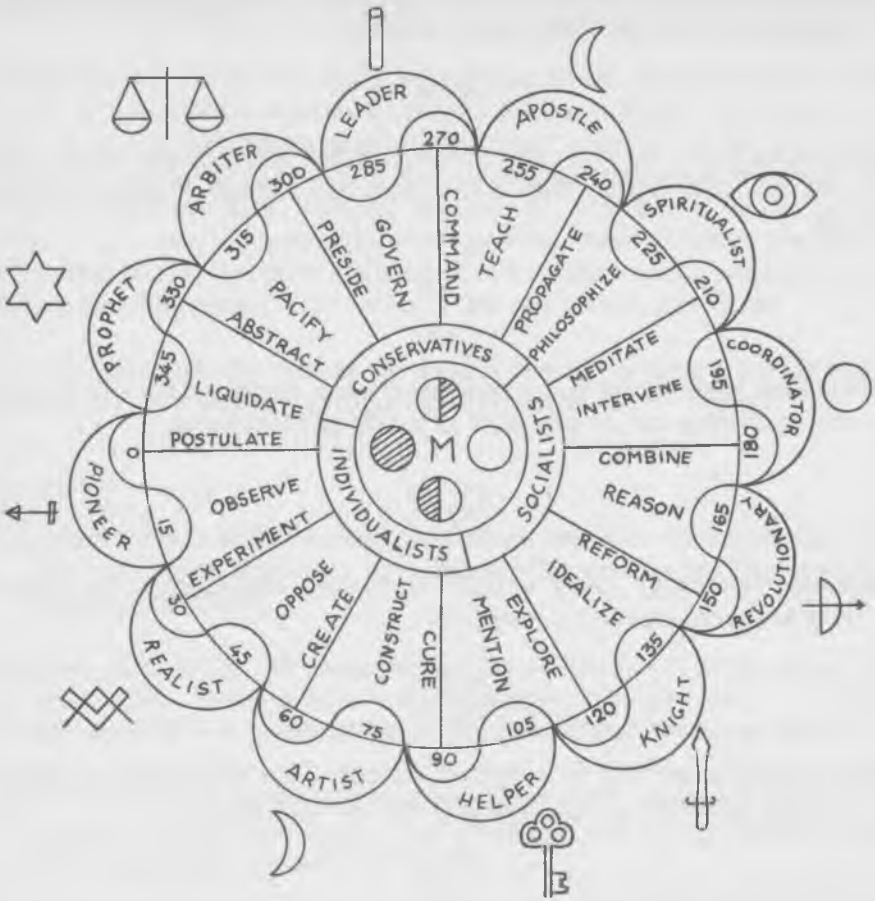
Pioneers are searchers, always ahead of the crowd. Their strength of purpose can sometimes make them appear stubborn.

Coordinators like to be with other people, but feel that they are 'more equal' than their companions. They are romantic and strongly attracted to family life.

Realists look at the world in a very down-to-earth manner. They like to think that everything can be explained in purely physical terms.

Spiritualists are rather 'other worldly' characters. Philosophical in outlook, they are seekers after the unknown.

Artists transform material in a creative manner. They can produce works of art, new products, or anything that did not exist before.


LEADER
APOSTLE
ARBITER
SPIRITUALIST
PROPHET
COORDINATOR
PIONEER
REVOLUTIONARY
REALIST
KNIGHT
ARTIST
HELPER
270
285
255
240
300
315
225
210
330
345
195
180
0
15
165
150
30
45
135
120
60
75
105
90
CONSERVATIVES
INDIVIDUALISTS
SOCIALISTS
M
COMMAND
TEACH
GOVERN
PRESIDE
PROPAGATE
PHILOSOPHIZE
PACIFY
ABSTRACT
MEDITATE
INTERVENE
LIQUIDATE
POSTULATE
COMBINE
REASON
OBSERVE
EXPERIMENT
REFORM
IDEALIZE
OPPOSE
CREATE
EXPLORE
MENTION
CONSTRUCT
CURE

Apostles are not themselves creative but spread the ideas of others to the world at large.

Helpers take on responsibilities for their fellows that might otherwise be ignored. They are helpful and caring to others.

Leaders also assume responsibilities but in this case for directing the lives and actions of others. They look forward where most people would prefer to look back.

Knights are fearless adventurers, always searching for new things to explore. Idealistic in outlook, they have a strong sense of honor.

Arbiters like to preside over the actions of others. They do not prejudge issues, but when they reach a decision they expect it to be obeyed.

Revolutionaries are dissatisfied with the world as it is. They tend to look on the bad side of things, and have a desire to change the world.

Prophets consider the world 'from above' bringing to bear the wisdom of the past. They may not always be listened to, of course.

The program will tell you the phase of the moon on the day you were born. From this you can discover the secrets of your character!

```
10 REM**MOONPHASE ASTROLOGY**
20 GOTO 1000
100 REM**INPUT DATE**
110 PRINT "■MOONPHASE■■"
120 INPUT "DAY   DD ";DD
130 INPUT "MONTH MM ";M
140 INPUT "YEAR YYYY";Y
150 IF M<3 THEN M=M+12:Y=Y-1
160 RETURN
200 REM**CALCULATION**
210 T=INT(365.25*Y)+INT(30.6*(M+1))+DD-694038
220 T=T/36525
230 LA=350.737486+1236*T*360
240 LA=LA+307*T+6*T/60
250 LA=LA+51.18*T/3600-5.17*T*T/3600
260 LA=LA-INT(LA/360)*360
270 LA=INT(LA+.5)
280 RETURN
300 REM**DISPLAY RESULT**
310 PRINT "■■MOONPHASE="LA"DEGREES■■"
320 RETURN
1000 REM**MAIN PROGRAM**
1010 GOSUB 100:REM INPUT DATE
1020 GOSUB 200:REM CALCULATION
1030 GOSUB 300:REM DISPLAY RESULT
1040 PRINT "PRESS ANY KEY"
1050 GET A$:IF A$="" THEN 1050
1060 OOTO 1010

READY.
```

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