BRAINTEASERS
FOR THE
DRAGON 32

G. LUDINSKI

PROGRAMS TO PUZZLE AND AMUSE

Brainteasers
for the
Dragon 32

Geneviève Ludinski

CONTENTS

INTRODUCTION

Before you dive into this book, here are a few tips you may find useful when keying in the programs.

Omit all the rem statements, except the copyright notices, as these will slow down the execution of the resulting program. The rem statements are there in order to help you understand how the program works, so that typing problems may be debugged quickly.

Removing spaces will also speed up the program. However, as presented the programs work, after removing spaces they may not. If apparently correct statements crash with ?SN errors replace any removed blanks and try again. Obviously spaces in the middle of a string value must be left in place.

Other common errors are the letter O and zero, the letter I and one or the letter L and one being confused. The latter is less likely given the Dragon presentation of lower case, but touch typists don't look at the screen. Omitting whole program lines or statements with lines is also easy to do.

The line numbers have been organised to divide the program into distinct subroutines, when creating the programs it can be useful to build it routine by routine. Where a number is called but not yet entered, merely use a single RETURN statement to keep the interpreter happy while you test the remainder of the program. Insert stop statements and check variable values if you are in deep trouble.

The high resolution programs all use one of two distinct text routines, in both cases these are at line 9000 up. Once you have entered a routine and it works, take a copy onto tape and use it as the basis for all programs with the same hi res text routine.

Some of the routines may be useful in your own programs and you are welcome to use them. You may not however, sell or give them away.

We hope you enjoy these programs, and that your brain is not teased too heavily.

We would also like to express our reservations about the Lapsang Souchong, but then you can't have everything, can you?

HEXAGON PUZZLE
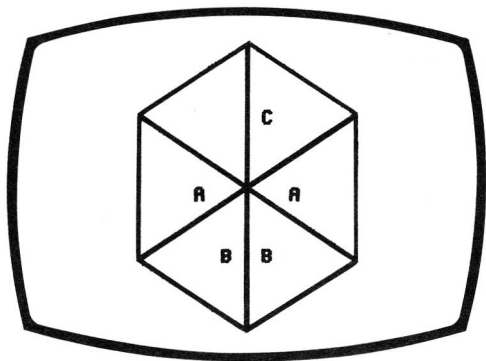
A series of numbers will be positioned around five of the sides of a hexagon and you will be asked to provide the missing letter or number. The relationship between the numbers or letters may be with their corresponding number or letter on the opposite side of the hexagon, or it may follow in sequence from an adjacent number.

The decision is yours.

How to play

Key in the number, or letter, of your choice and press RETURN key.

Programming hints

One change to make the puzzle easier, is to reduce the size of the numbers used. S(2) on line 110 is the value of the first number in the sequence if the pattern is a sequence of numbers going around the hexagon. IC on line 110 is related to the interval between the numbers going round the hexagon. So if the 9 in line 110 is changed to a smaller number and IC is always 1 this will make the puzzle easier.

If you wish to make the puzzle more difficult (and you must be brave or a genius to want to do so), then you could either increase the possible values of S(2) or IC or increase the number of different types of sequence. At present there are five different types of sequences depending on whether W is 0 to 4. If you allow W to become 5 or larger in line 110, you could add a new sequence type for W=5 after line 170.

The program

```
10 REM HEXAGON PUZZLE
11 'COPYRIGHT (C) G.LUDINSKI 1983
12 'DRAGON 32/64 VERSION BY R.P.JONES
20 PMODE 4,1:SCREEN 1,0:PCLS
30 CLEAR 2000:DIM A$(36)
40 GOSUB 9000  :REM INIT CHAR'S
50 GOSUB 300   :REM DRAW HEXAGON
60 S9(0)=2993:S9(1)=4433:S9(2)=5873:S9(3
)=5868:S9(4)=4427
100 REM SEQUENCE
110 S(1)=0:S(2)=RND(9):IC=RND(4):W=INT(R
ND(0)*5)
120 FOR I=3 TO 8
130 IF W=0 THEN S(I)=2*S(I-1)-S(I-2)+IC:
MS$="the interval increases by "+STR$(IC
)+" each time"
140 IF W=1 THEN S(I)=S(I-1)+S(I-2)+IC:MS
$="each number is the sum of the previou
s two plus "+STR$(IC)
```

```
150 IF W=2 THEN S(I)=S(2)^(I-1):MS$="eac
h number is "+STR$(S(2))+" to the power
of 2,3,4,5,6 and 7"
160 IF W=3 AND I>5 THEN S(3)=S(2):S(4)=I
C:S(5)=INT((S(2)+IC)/2):S(I)=S(2)*S(I-3)
:MS$="each number is "+STR$(S(2))+" time
s the number opposite it "
170 IF W=4 AND I>5 THEN S(3)=S(2):S(4)=I
C:S(5)=INT((S(2)+IC)/2):S(I)=IC*S(11-I):
MS$="the numbers on the left hand side o
f the wheel are "+STR$(IC)+" times the n
umbers on the right hand side"
180 FOR J=1 TO 8:S(J)=INT(S(J)):NEXT J
190 NEXT I
200 GOSUB 400  :REM ADD NUMBERS
210 GOTO 600  :REM CHECK ANS'S
300 REM DRAW NUMBER WHEEL
310 PMODE 4,1:SCREEN1,0:PCLS
320 DRAW"BM128,180M128,1BM128,90H45F90H4
5G45E90G45H45E44G44D90F44E44U90H44"
330 RETURN
400 REM ADD NUMBERS TO WHEEL
410 FOR Z=3 TO 7
420 S=S9(Z-3)
430 IF W=2 AND Z>5 AND S(2)>2 THEN S=S-2
440 X$=STR$(S(Z))
450 LE=LEN(X$):X1$=RIGHT$(X$,LE-1)
460 FOR J=1 TO LEN(X1$)
470 P=ASC(X1$)
480 GOSUB 9500
490 S=S+1:X1$=RIGHT$(X1$,LEN(X1$)-1)
500 NEXT J,Z
510 TIMER=0   :REM START CLOCK
520 RETURN
600 REM CHECK ANSWERS
610 T1=INT(TIMER/50)
620 Z1$=""
630 Z$=INKEY$
640 IF Z$=""THEN 630
650 IF Z$=CHR$(13) THEN 680
```

```
660 Z1$=Z1$+Z$
670 GOTO 630
680 IF VAL(Z1$)=S(8) THEN SC$="RIGHT" EL
SE SC$="WRONG"
700 SCREEN0,1:CLS
710 PRINT@41,"HEXAGON PUZZLE"
720 IF SC$="RIGHT"THEN GOTO 800 ELSE GOT
O 900
800 REM RIGHT
810 PRINT@128,"YOU ARE ";SC$;" !";
820 PRINT@192,"YOUR TIME WAS ";INT(TIMER
/50);" SECONDS";
830 PRINT@455,"ANOTHER GO (Y/N)";
840 Z$=INKEY$:IF Z$=""THEN 840
850 IF Z$<>"Y" THEN STOP
860 PMODE 4,1:PCLS:SCREEN 1,0:GOTO 50
900 REM WRONG
910 PRINT@128,"YOU ARE ";SC$;" !";
920 PRINT@192,MS$
930 GOTO 830
940 GOTO 940
9000 REM CHARACTER SET ROUTINE
9010 DATA 124,134,138,146,162,198,124
9020 DATA 16,48,16,16,16,16,56
9030 DATA 56,68,4,8,16,32,126
9040 DATA 254,2,2,62,2,2,254
9050 DATA 8,24,40,72,252,8,8
9060 DATA 252,128,128,252,2,2,252
9070 DATA 32,64,128,252,130,130,252
9080 DATA 254,2,4,8,16,32,64
9090 DATA 124,130,130,254,130,130,124
9100 DATA 124,130,130,126,2,4,8
9110 DATA 16,40,40,68,124,130,130
9120 DATA 254,130,130,254,130,130,254
9130 DATA 254,128,128,128,128,128,254
9140 DATA 252,130,130,130,130,130,252
9150 DATA 254,128,128,252,128,128,254
9160 DATA 254,128,128,248,128,128,128
9170 DATA 252,128,128,142,132,132,252
9180 DATA 130,130,130,254,130,130,130
9190 DATA 16,16,16,16,16,16,16
```

```
9200 DATA 62,8,8,8,8,136,248
9210 DATA 132,152,224,144,136,132,130
9220 DATA 128,128,128,128,128,128,254
9230 DATA 198,198,170,146,130,130,130
9240 DATA 194,226,162,146,138,142,134
9250 DATA 124,130,130,130,130,130,124
9260 DATA 254,130,130,254,128,128,128
9270 DATA 124,130,130,162,146,124,4
9280 DATA 254,130,130,254,146,136,132,130
9290 DATA 254,128,128,254,2,2,254
9300 DATA 254,16,16,16,16,16,16
9310 DATA 130,130,130,130,130,130,124
9320 DATA 130,130,130,68,68,40,16
9330 DATA 130,130,130,130,146,170,198
9340 DATA 130,68,40,16,40,68,130
9350 DATA 130,68,40,16,16,16,16
9360 DATA 254,6,12,24,48,96,254
9370 FOR I=1 TO 36
9380 FOR J=0 TO 6
9390 READ X$
9400 A$(I)=A$(I)+X$+","
9410 NEXT J,I
9420 RETURN
9500 REM PRINT CHARACTER
9510 REM P=ASC OF CHR
9520 REM S=START PRINT POS
9530 IF P>47 AND P<58 THEN P=P-47 ELSE P
=P-54
9540 P9=1
9550 FOR I=0 TO 6
9560 P1=INSTR(P9,A$(P),",")
9570 P$=MID$(A$(P),P9,P1-1)
9580 P2=VAL(P$)
9590 POKE S+32*I,P2
9600 P9=P1+1
9610 NEXT I
9620 RETURN
```

SAFECRACKER


```
        SCORE
          1

IF YOU MULTIPLY THE FIRST DIGIT
BY  6   AND THE SECOND DIGIT BY
  4   AND ADD THEM THEN
THE RESULT IS  70 .
THE FIRST DIGIT MINUS THE
 SECOND DIGIT IS  5
```
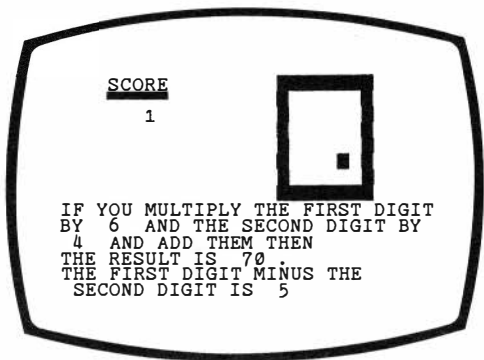
Are you a quick-thinker or a deep thinker? I hope you are one or the other, or you will never be able to crack open someone else's safe!

This game can be played two different ways, depending on whether you are a quick or deep thinker. If you are not sure which you are, then I suggest you play it both ways, and find out which way gives you the highest score.

In all cases, a closed safe is displayed and you are given two clues about the secret code that opens it. If you work out the exact answer before keying in the code, you are given 2 minutes to do it. If you make guesses, then you are only allowed 16 seconds. Wrong answers are ignored.

If you take too long you are surprised by the caretaker who switches on the light. He then presses the alarm button and you hear the police sirens wailing and you know all is lost.

If you do manage to crack the code in time, the safe opens, revealing gold bullion.

How to play

You are given two clues such as those shown above. The code is always a two digit number. Key in the number (you need not press RETURN).

To end the program, press E.

Programming hints

If you want to make the game easier, you can increase the time allowed to guess or reduce the number of digits allowed in the code or both.

To increase the time allowed for guesses, increase the value of TM in line 140. To increase the time allowed when only one answer is keyed in, increase the value of TM in line 110.

To reduce the number of digits allowed, reduce the number inside the RND brackets for XX and YY in line 1110.

If you find the game too easy then do the opposite.

The program

```
10 REM SAFECRACKER
11 'COPYRIGHT (C) G.LUDINSKI 1983
12 'DRAGON 32/64 VERSION BY R.P.JONES
20 C$=CHR$(175)+CHR$(159)+CHR$(159)+CHR$
(159)+CHR$(159)+CHR$(159)+CHR$(159)+CHR$
(175)
30 GOSUB 1000:REM DRAW SAFE
40 PRINT@36,"SCORE";
50 FOR I=68 TO 72:PRINT@I, CHR$(243);:NE
XT I
60 PRINT@102,SC;
70 GOSUB 1100:REM QUESTION
80 GOSUB 1400:REM PRINT QUESTION
90 TIMER=0
100 REM MAIN ROUTINE
110 TM=6000
120 PRINT@128," ";
130 I1$=INKEY$:IF TIMER<TM AND I1$=""THE
N 130
140 IF I1$<>LEFT$(A$,1) AND I1$<>"E" AND
 TIMER<TM THEN TM=800:GOTO 130
150 IF I1$="E"THEN STOP
160 IF TIMER>=TM THEN 260
170 PRINT I1$;
180 I2$=INKEY$:IF TIMER<TM AND I2$=""THE
N 180
190 IF I2$<>RIGHT$(A$,1) AND TIMER<TM TH
EN 180
200 IF TIME>=TM THEN 260
210 PRINT I2$;
220 I$=I1$+I2$
230 IF I$=A$ THEN SC=SC+1:GOSUB 1300:GOT
O 30
240 PRINT" NO. THE CODE IS ";A$
250 GOTO 30
260 REM POLICE SIRENS
270 CLS
280 GOSUB 1000
290 PRINT@352,"THE CODE IS ";A$;
```

```
300 FOR I=1 TO 20:SOUND 200,3:SOUND 160,
3:NEXT I:GOTO 30
1000 REM DRAW SAFE CLOSED
1010 CLS
1020 PRINT@50,STRING$(8,175);
1030 FOR I=1 TO 6
1040 PRINT@50+I*32,C$;
1050 NEXT I
1060 PRINT@274,STRING$(8,175);
1070 PRINT @215,CHR$(128);
1080 RETURN
1100 REM QUESTION
1110 A1=RND(8)+1:B1=RND(8)+1:XX=RND(10)-
1:YY=RND(10)-1
1120 W1=(-1)^RND(2):W2=(-1)^RND(2)
1130 B1=B1*W1
1140 C1=(A1*XX)+(B1*YY)
1150 C2=XX+(W2*YY)
1160 S1$="ADD THEM THEN":IF W1=-1 THEN S
1$="SUBTRACT THEM"
1170 S2$="PLUS":IF W2=-1 THEN S2$="MINUS
"
1180 A1$=STR$(ABS(XX))+STR$(ABS(YY))
1190 A$=MID$(A1$,2,1)+MID$(A1$,4,1)
1200 RETURN
1300 REM DRAW SAFE OPEN
1310 PRINT@102,SC;
1320 GOSUB 1000
1330 FOR I=147 TO 243 STEP 32
1340 PRINT@I, STRING$(6,"$");
1350 NEXT I
1360 FOR J=1 TO 2000:NEXT J
1370 RETURN
1400 REM PRINT QUESTION
1410 PRINT@288,"IF YOU MULTIPLY THE FIRS
T DIGIT":PRINT"BY ";A1;" AND THE SECOND
DIGIT BY":PRINT ABS(B1);" AND ";S1$:PRIN
T"THE RESULT IS ";C1;"."
1420 PRINT"THE FIRST DIGIT ";S2$;" THE":
PRINT" SECOND DIGIT IS ";C2;
1430 RETURN
```

FRACTIONS AND PERCENTAGES


```
26              higher   core 0         core 0
Quiz game 3 - Fractions and percentages

Hello,what is your name ?EVE
Here are some problems EVE

3/7 expressed as a percentage =  0.32
```
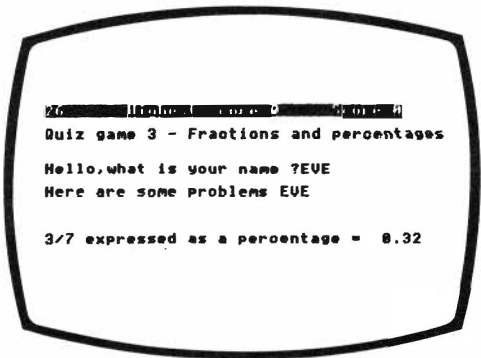
If you have trouble converting percentages to fractions and vice versa then this is for you.

How to play

You will be given five minutes to answer as many questions as possible, and you may press P and RETURN for pass if you cannot work out an answer.

Programming hints

The conversion from fraction to percentage routine expects the percentage value to be entered to two places

of decimals i.e. it expects the player to key in 66.66 not 66.7. The trick to write a number to a certain number of decimal places is to multiply it by 10 to the power of the number of decimal places you require, then find the integral part, then divide by the same number. In the program the fraction F/G is multiplied by a further 100 before conversion as the number is a percentage.

Even though the answer is given to a certain number of decimal places any answer, provided it is within 1 of the correct answer is accepted. This is so that the answer is marked correct however inaccurate the method used to obtain it.

The program

```
10 REM FRACTIONS AND PERCENTAGES
11 'COPYRIGHT (C) G.LUDINSKI 1983
12 'DRAGON 32/64 VERSION BY R.P.JONES
20 CLEAR 2000:DIM IP$(255)
30 S$="                               ":
HC$=" HIGHEST SCORE ":HK$="     SCORE "
40 CLS
50 PRINT@98," FRACTIONS AND PERCENTAGES
";
60 PRINT@194,"HELLO. WHAT IS YOUR NAME "
::PRINT@226," "::INPUT NAME$:PRINT@224,"
HERE ARE SOME PROBLEMS "::IF NAME$=""THE
N 70 ELSE PRINT NAME$;
70 W=1:C=0:T=1:I$="":TIMER=0:P=0:MAX=0
80 P=P+1
100 GOSUB 1000:REM QUESTION
110 PRINT:PRINT
120 PRINT:PRINT Q$;" = ";
130 GOSUB 1500:REM KEYIN ROUTINE
140 IF W=-1 AND I$=A$ AND I$<>""THEN 170
```

```
150 IF W=1 AND ABS(VAL(I$)-VAL(A$))<1 AN
D I$<>""THEN 170
160 GOTO 180
170 PRINT:PRINT"YES. CONGRATULATIONS";:C
=C+1:PRINT:GOTO 210
180 IF T=1 THEN PRINT :PRINT"NO. ";H$;"
TRY AGAIN";:T=2:GOTO 120
190 PRINT:PRINT"SORRY. THE ANSWER IS =":
PRINT L$:PRINT M$
200 PRINT:PRINT N$
210 IF TIMER>=30000 THEN GOSUB 2000:REM
SCORE
220 PRINT:PRINT"DO YOU WANT MORE ? (Y/N)
";:INPUT I$:PRINT
230 IF I$<>"Y" THEN 250
240 GOTO 80
250 GOSUB 2000:STOP
260 GOTO 260
1000 REM QUESTION
1010 L$="":M$="":N$="":B=40
1020 W=-W:F=RND(9)
1030 G=RND(9):J1=RND(19)
1040 IF F=G OR F/G=INT(F/G) OR G/F=INT(G
/F) THEN 1020
1050 IF F<G THEN E=INT(F/G*100):J=J1*5
1060 IF G<F THEN E=INT(G/F*100):H=G:G=F:
F=H:J=J1*2
1070 E$=STR$(E):F$=STR$(F):G$=STR$(G):J$
=STR$(J)
1080 IF W=1 THEN 1170
1090 Q$=J$+"% CONVERTED INTO A FRACTION"
1100 H$="P% IS P/100. IF TOP AND BOTTOM
 OF FRACTION ARE EXACTLY DIVIS-  IBLE BY
 THE SAME NUMBERS, THEN  DIVIDE BY THESE
 NUMBERS"
1110 HU=100:FOR I=1 TO 8
1120 IF J/5=INT(J/5) AND HU/5=INT(HU/5)
THEN J=J/5:HU=HU/5
1130 IF J/2=INT(J/2) AND HU/2=INT(HU/2)
THEN J=J/2:HU=HU/2
```

```
1140 NEXT I:A8$=RIGHT$(STR$(J),LEN(STR$(
J))-1):A9$=RIGHT$(STR$(HU),LEN(STR$(HU))
-1):A$=A8$+"/"+A9$
1150 L$=A$
1160 M$="AS "+J$+"/100 = "+A$
1170 IF W=-1 THEN 1220
1180 Q$=F$+"/"+G$+" EXPRESSED AS A PERCE
NTAGE"
1190 H$="P/Q IS (P/Q) X 100 %"
1200 A$=STR$(INT(F*10000/G)/100):L$=A$+"
%"
1210 M$="AS ("+F$+"/"+G$+") X 100 = "+A$
1220 RETURN
1500 REM KEYIN PROCEDURE
1510 IX=1:PO=428
1520 IP$(IX)=INKEY$:IF IP$(IX)=""THEN PR
INT@14,INT(TIMER/100);:PRINT@32,HC$;MAX;
HK$;C:GOTO 1520
1530 PRINT@PO,IP$(IX);:IX=IX+1:PO=PO+1:I
F IP$(IX-1)=CHR$(13) THEN 1540 ELSE GOTO
 1520
1540 I$="":FOR I=1 TO IX-2:I$=I$+IP$(I):
NEXT I
1550 RETURN
2000 REM SCORE
2010 CLS:PRINT:PRINT:PRINT"NUMBER OF PRO
BLEMS COMPLETED ":PRINT"= ";P;:PRINT:PRI
NT"NUMBER CORRECT = ";C;
2020 TM=INT(TIMER/100):PRINT:PRINT"TIME
TAKEN IN SECONDS = ";TM;
2030 IF C<>0 THEN PRINT:PRINT"TIME PER P
ROBLEM IN SECONDS ":PRINT"= ";INT(TM/C)
2040 IF C>MAX THEN MAX=C
2050 TIMER=0:P=0:C=0
2060 RETURN
```

A-MAZE-ING

steps 37   time 6   score 93
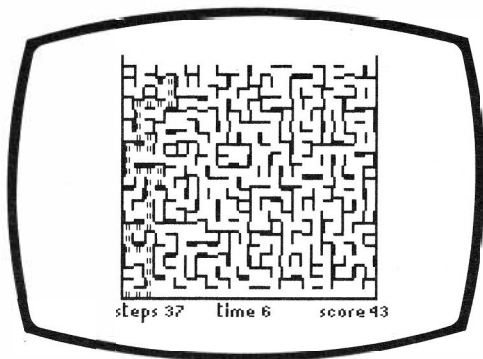
You are at the entrance to a complicated maze, and your objective is to reach the other side in the quickest possible time, but also with the fewest number of moves possible.

Don't rush headlong into this one, as a little forward planning can save you time and points.

Every step counts as a point and every time you try to cross a barrier counts as a point.

You must aim for the top of the screen.

How to play

You are represented by a dot in the lower left hand side of the maze, and you move by using the ARROW cursor keys.

Your score will be displayed at the top of the screen. The number of steps taken has a greater effect on your final score than the time factor.

You may, of course, retrace your steps and begin again from any point you wish to. If you want to give up, or think that the maze is impossible, press CLEAR. The machine will check whether a way through exists.

We hope you make it, as there are plenty of other 'Brainteasers' waiting for you on the outside.

Programming hints

The maze is created of cells, each of which have one side blocked off. The cell shapes are created by DRAW strings shown in lines 130, 300 and 590.

The program

```
10 'A-MAZE-ING
20 'COPYRIGHT (C) G LUDINSKI 1984
30 'DRAGON32/64 VERSION RICHARD HALE
40 PCLEAR8:CLEAR5000:PMODE3,1:COLOR2,3:P
CLS4:SCREEN1,0:DIMAL$(45):DIMMA(25,22)
50 'AL$ HOLDS THE DRAW STRINGS FOR THE C
HARACTERS
55 SM=99999
60 FOR I =10TO45:READAL$(I):NEXT
70 FOR I=0TO9:READAL$(I):NEXT
80 'DG$ IS THE DOT IN GREEN, DY$ IS IT I
N YELLOW
```

```
90 DG$="C1BR2BU2U3R2D3":DY$="C4BR2BU2U3R
2D3"
100 MW$(0)="BR8":MW$(3)="U7BF7BR1":MW$(1
)="BR6U7D7BR2":MW$(2)="R7U1L7D1BR8":MW$(
4)="BU6R7U1L6BF7"
110 TX=68:TY=60:TC=2:TX$="AMAZING ESCAPE
":GOSUB9010
120 FOR YC=80TO160STEP8
130 DW$="BM64,"+STR$(YC):DRAW DW$
140 FORXC=64TO168STEP8:DRAWMW$(RND(4)):N
EXT XC
150 NEXT YC
155 GOSUB2000
160 ' DISPLAY THE TITLE SCREEN WHILE THE
 GAME GRAPHICS ARE SET UP
170 PMODE3,1:SCREEN 1,0:PMODE3,5:COLOR2,
3:PCLS3:GOSUB560:SCREEN1,0
175 TIMER=0
180 ' SCAN THE KEYBOARD
190 TI=FIX(TIMER/50):IF TP<>TI THENGOSUB
665
195 R$=INKEY$:IF R$="" THEN 190
200 'ONLY ALLOW THE ARROW KEYS OR THE CL
EAR BUTTON FOR A QUIT
210 RV=ASC(R$) :IF RV<>94 AND RV<>10 AND
 RV<>8 AND RV <>9 AND RV<>12 THEN SOUND1
,1 :  GOTO 190
220 IF RV=12 THEN 800
230 IF RV=94 AND (MA(XM,YM)<>4 AND MA(XM
,YM-1)<>2) THEN YM=YM-1:GOTO 270
240 IF RV=10 THEN IF(MA(XM,YM)<>2 AND MA
(XM,YM+1)<>4) THEN YM=YM+1:GOTO 270
250 IF RV=8 AND (MA(XM,YM)<>3ANDMA(XM-1,
YM)<>1)THEN XM=XM-1:GOTO270
260 IF RV=9 AND (MA(XM,YM)<>1 AND MA(XM+
1,YM)<>3) THEN XM=XM+1
270 ST=ST+1:GOSUB655:SC=ST+FIX(TIMER/500
):GOSUB670:IF NX=XM AND NY=YM THEN SOUND
1,1:GOTO190:ELSE DW$="BM"+STR$(NX*8+24)+
","+STR$(NY*8+7)+DG$:DRAWDW$
300 DW$="BM"+STR$(XM*8+24)+","+STR$(YM*8
+7)+DY$:DRAWDW$:IF YM=0 THEN 1000
```

```
320 NX=XM:NY=YM
325 GOTO190
550 ' RESET VARIABLES DRAW MAP
560 XM=1:YM=21:NX=XM:NY=YM:SC=0:ST=0:DRA
W"C2"
580 FOR YC=0TO21
590 DW$="BM24,"+STR$(7+YC*8):DRAWDW$
600 FORXC=0TO25:DRAWMW$(MA(XC,YC)):NEXTX
C,YC
610 GOSUB650:GOSUB660:GOSUB670
620 DRAW"BM"+STR$(XM*8+24)+","+STR$(YM*8
+7)+DY$
640 RETURN
650 TX=26:TY=187:TC=2:TX$="STEPS":GOSUB9
010
655 LINE(60,177)-(90,191),PRESET,BF:TX=6
0:TY=187:TC=2:TX$=STR$(ST):GOSUB9010:RET
URN
660 TX=104:TY=187:TC=2:TX$="TIME":GOSUB9
010
665 TX=134:TY=187:TC=3:TX$=STR$(TP):GOSU
B9010:TP=TI:TX$=STR$(TP):TC=2:GOSUB9010:
RETURN
670 TX=182:TY=187:TC=2:TX$="SCORE":GOSUB
9010
675 LINE(216,177)-(246,191),PRESET,BF:TX=216
=216:TY=187:TC=2:TX$=STR$(SC):GOSUB9010
680 RETURN
800 PAINT(XM*8+28,YM*8+3),4,2
805 IFINKEY$=""THEN 805
810 IF PPOINT(128,4)<>3 THEN SOUND 1,1:C
LS4:PRINT@0,"there was a way out after a
ll": GOTO 1020
820 CLS6:PRINT@0,"there was no way out":
GOTO1020
1000 CLS7:PRINT@0,"YOU GOT OUT"
1005 IF SC<SM THEN SL=ST:TL=TI:SM=SC
1010 PRINT,,"YOU TOOK","BEST",STR$(ST);"
 STEPS",STR$(SL),STR$(TI);" SECS",STR$(T
L),"SCORE OF";STR$(SC),STR$(SM)
```

```
1020 IN$=INKEY$:PRINT@484,"ANOTHER TRY?
(Y OR N)";:SCREEN0,1
1030 IN$=INKEY$:IFIN$=""THEN 1030:ELSE I
F IN$="N" THEN END:
1040 CLS6:PRINT@0,"THE SAME MAZE OR A NE
W ONE?","PRESS SPACE BAR FOR A NEW ONE",
"ANY OTHER KEY FOR THE SAME"
1050 IN$=INKEY$:IF IN$="" THEN 1050:ELSE
 IF IN$=" "THEN SOUND255,1:PRINT@483,"TH
E MAZE IS BEING CHANGED";:GOSUB2000
1060 GOTO170
2000 FOR YC=1TO20
2010 MA(0,YC)=1:MA(25,YC)=3
2020 FORXC=1TO24:MA(XC,YC)=RND(4):NEXTXC
2030 NEXTYC
2040 MA(0,0)=1:MA(25,0)=3:FORXC=1TO24:MA
(XC,0)=0:NEXTXC
2050 MA(0,21)=1:MA(25,21)=3:FORXC=1TO24:
MA(XC,21)=2:NEXTXC
2060 RETURN
9000 'HI RES TEXT WRITER
9010 J=LEN(TX$)
9020 DRAW"BM"+STR$(TX)+","+STR$(TY)+"C"+
STR$(TC)
9030 IF J=0 THEN RETURN
9040 FOR I=1TOJ
9050 K=ASC(MID$(TX$,I,1))-55
9060 IF K<10 OR K>35 THEN GOSUB 9100
9070 DRAWAL$(K)
9080 NEXT
9090 RETURN
9100 IF K>-8 ANDK<3 THEN K=K+7:RETURN
9110 IF K=-23 THEN K=36: RETURN
9120 IF K=-9 THEN K=37:RETURN
9130 IF K=-8 THEN K=41:RETURN
9140 IF K=6THEN K=38:RETURN
9150 IF K=-15THEN K=39:RETURN
9160 IF K=-14THEN K=40:RETURN
9170 IF K=8THEN K=42:RETURN
9180 IF K=-11 THEN K=43:RETURN
9190 IFK=-10 THEN K=44:RETURN
```

```
9200 IF K=-16THEN K=45:RETURN
9210 K=37
9220 RETURN
9230 'LOWER CASE DRAW STRINGS
9240 DATA BU1U3R1E1R2D5L2BR6,U10D5R3F1D3
G1L1BR6,BU1U3R1E1R1F1BD3G1BR5,BU1U3R1E1R
2U5D10L2BR6,BU1U3R1E1R1F1D2L3D1F1R2BR4,D
2U10R1E1R1L1G1D3R2BD5BR3
9250 DATA BU1U3R1E1R2D9G1L1H1BU4BR1R2BR4
,U10D5R3F1D4BR4,U5BU2U2BD9BR4,BD4R1E1U8B
U2U2BD9BR4,U10D6R3E1G1L2D2R2F1D1BR4,BU1U
9D9R1F1BR4
9260 DATA U4R1E1R1F1D4R1U4E1R1F1D4BR4,U4
R1E1R1F1D4BR4,BU1U3R1E1R1F1D3G1BR5,D4U9R
3F1D3G1BR5,BU1U3R1E1R1F1D8R2BU4BL1L2BR5
9270 DATA U4R1E1BD5BR4,R1E1U1H1U1E1BD5BR
4,BU1U8D2R2BD7L1BR5,BU1U4D4R1F1R2U5D5BR4
,BU1U4D4R1F1R1R1E1U4D4G1BR5,BU1U4D4R1F1R1E
1U4D4R1F1R1E1U4D4G1BR5
9280 DATA U1R1E1U1U1H1U1D1F1R1E1U1D1G1D1F1
D1BR4,BU1U4D4R1F1R1R2U5D8G1E1U3BR4,U1R1E1U
1R1E1U1L3BD5R3BR4
9290 DATA BR4,U1BDBDBR4,R3BU3L3BD3BR6,U9R2
BD9R1BR5,R3U9L2BD9BR4,E7BD7BR3,BR2U1BU2E
3H1L3BD6BR7,U1D3U2BR6,BE2R2U1L1BF3BR2,B
E2BU6U2BF4BD6
9300 'NUMERIC DRAW STRINGS
9310 DATA BU1U5R1E1R1F1D5G1BR5
9320 DATA R4L1U7L2R2D7BR5,U2BU3U1R1E1R1F
1D2G1L1G1D2R4BR3,BU1R1F1R1E1U2H1E1U1H1L1
G1BD6BR7,BR4U7G1L1G1D2R3D3BR4,BU1R1F1R1E
1U2H1L1H1U2R4BD7BR3
9330 DATA BU1U5R1E1R1F1BG2R1F1D2G1BR5,U1
E5H1L3BF7,BU1U1E2H1U1E1R1F1D1G1F1D2G1BR5
,BU1R1F1R1E1U2L2H1U2E1R1F1D2BD4BR4
```

SPOT THE DIFFERENCE
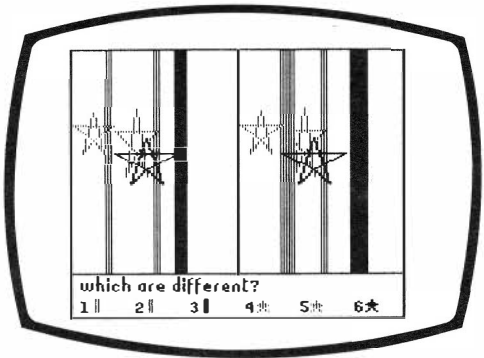
I suppose that this could have been called Star and Stripe, the difference as you will see when you run this colourful eye test.

Two pictures, composed of stars and stripes, in cyan, magenta and orange appear on the screen, and you will be asked to identify which of the items is different.

How to play

Items are keyed as follows (this is shown on the screen)

1 = Cyan Stripe	4 = Cyan Star
2 = Magenta Stripe	5 = Magenta Star
3 = Orange Stripe	6 = Orange Star

Identify the differences and press the appropriate keys, pressing CLEAR when you think that you have found all the differences.

If your answer was correct a high pitched bleep will be heard and the number will be blanked out in green, otherwise a low buzz will sound and the number will be blanked out in orange.

If, after pressing CLEAR, you have missed any anwers the computer will show them by drawing an orange box round them. Pressing ENTER, as prompted, will take you onto the score display.

To play again press any key other than "N".

Programming hints

The star drawing routine at lines 8000 - 8090 might be of use to you in your own non-commercial programs. You have to assign the x and y co-ordinates required to X and Y respectively, the width (which is multiplied by 4) to W and the height (which is multiplied by 3) to H. The colour required is assigned to CL.

To make the differences more or less obvious assign different values to LO and HI and the RND statements when using FNA in lines 3100 to 3250. Remember that as the PMODE3 the X axis must start on an even co-ordinate.

The program

```
10 'SPOT THE DIFFERENCE
20 'COPYRIGHT (C) G LUDINSKI 1984
30 'DRAGON32/64 VERSION RICHARD HALE
40 PCLEAR8:CLEAR5000:PMODE3,1:COLOR3,1:P
CLS4:SCREEN1,0:DIMAL$(45),WH(6),AN$(6)
```

```
50 'AL$ HOLDS THE DRAW STRINGS FOR THE C
HARACTERS.
60 FOR I =10TO45:READAL$(I):NEXT
70 FOR I=0TO9:READAL$(I):NEXT
80 'SR$ HOLDS THE STAR DRAW STRING. ST$
FOR THE STRIPE.
90 SR$="BR1E3H1L1U1L1R3H1R1U2R1D2R1G1D1E
1R2G1BD2D1F1BR4"
100 ST$="BR2U9R2D9BR4"
110 X=34:Y=8:CL=3:W=44:H=58:GOSUB8000
120 TX=60:TY=80:TC=2:TX$="SPOT THE DIFFE
RENCE":GOSUB9010
130 PAINT(128,0),1,3
140 DEF FNA(HI)=RND(HI-LO+1)+LO-1
150 TT=0:CR=0:NQ=0
500 PMODE3,1:SCREEN 1,0:GOSUB2000:SCREEN
1,1
510 TIMER=TT
520 R$=INKEY$:IF(R$<"1" OR R$>"6" )AND R
$<>CHR$(12) THEN 520
530 IF R$=CHR$(12) THEN 600
540 RV=VAL(R$)
550 IF AN(RV)=1 THEN SOUND1,10:GOTO520
560 IF WH(RV)<>1 THEN SOUND1,1:CL=4:AN(R
V)=2:ELSE SOUND155,1:CL=2:AN(RV)=1
570 COLORCL,1:X=RV*42-38
580 LINE(X,176)-(X+32,189),PSET,BF
590 GOTO520
600 TT=TIMER:COLOR4,1:WR=0:FORJ=1TO6
610 IF AN(J)<>WH(J) THEN WR=1:IF AN(J)=0
THENSOUND1,1:X=J*42-38:LINE(X,176)-(X+32
,189),PSET,B
620 NEXTJ
630 TX=164:TY=172:TC=4:TX$="PRESS ENTER"
:GOSUB9010
640 R$=INKEY$
650 IF INKEY$<>CHR$(13)THEN 650
660 IF WR=0 THEN CR=CR+1:CLS5:ELSE CLS8
670 TM=FIX(TT/50):TP=FIX(TM/NQ)
680 PRINT@10,"SCORE SHEET";:PRINT@64,"PU
ZZLES TAKEN",NQ,"PUZZLES CORRECT",CR,:PR
```
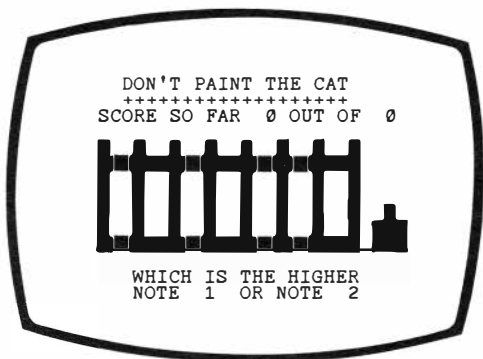
```
INT@160,"TOTAL TIME ",TM,"TIME PER PUZZL
E",TP
690 PRINT@483,"PRESS ANY KEY TO CONTINUE
";:SCREEN0,1
700 IF INKEY$="" THEN 700: ELSE 500
710 ' RESET VARIABLES DRAW MAP
2000 PMODE3,5:PCLS:COLOR4,1
2010 NQ=NQ+1
2020 GOSUB 3000
2030 LINE(0,160)-(255,191),PRESET,BF
2040 LINE(0,0)-(255,191),PSET,B
2050 LINE(0,160)-(255,160),PSET
2060 LINE(128,0)-(128,160),PSET
2070 TX=8:TY=172:TC=3:TX$="WHICH ARE DIF
FERENT?":GOSUB9010
2080 NU=1:TY=187:FORTX=4TO 214STEP42
2090 TX$=STR$(NU):GOSUB9010
2100 IF NU<4THENDRAW"C"+STR$(NU+1)+ST$+"
C3":ELSE DRAW"C"+STR$(NU-2)+SR$+"C3"
2110 NU=NU+1
2120 NEXTTX
2130 RETURN
3000 NZ=0
3010 FOR I=1TO6
3020 WH(I)=RND(2)-1
3030 IF WH(I)=1 THEN NZ=NZ+1
3040 AN(I)=0
3050 NEXT I
3060 IF NZ=0 THEN 3010
3070 FORJ=1TO3
3080 LO=J*32-16:X=FNA(J*32+16)
3090 W=RND(5)+3
3100 COLORJ+1,1:LINE(X,0)-(X+W,159),PSET
,BF
3110 X=X+128+WH(J)*(RND(5)+3)
3120 W=W+WH(J)*(RND(5)+3)
3130 LINE(X,0)-(X+W,159),PSET,BF
3140 NEXTJ
3150 FOR J=1TO3
3160 X=2*RND(48)
3170 Y=RND(121)-1
```

```
3180 LO=16:W=2*INT(FNA(2*(128-X)/3)/8+1)
3190 LO=20:H=INT(FNA(160-Y)/6)
3200 CL=J+1
3210 GOSUB8000
3220 X=X+128+WH(J+3)*(RND(5)+3)
3230 Y=Y+WH(J+3)*(RND(5)+3)
3240 W=W+WH(J+3)*2*RND(2)
3250 H=H+WH(J+3)*RND(2)
3260 GOSUB8000
3270 NEXTJ
3280 RETURN
8000 DRAW"C"+STR$(CL)+"BM"+STR$(X+2*W)+"
,"+STR$(Y)
8010 DRAW"M-"+STR$(W)+",+"+STR$(3*H)
8020 DRAW"M+"+STR$(W)+",-"+STR$(H)
8030 DRAW"M+"+STR$(W)+",+"+STR$(H)
8040 DRAW"M+"+STR$(W)+",-"+STR$(3*H)
8050 DRAW"BM+0,"+STR$(2*H)
8060 DRAW"M+"+STR$(2*W)+",-"+STR$(H)
8070 DRAW"M-"+STR$(4*W)+",+0"
8080 DRAW"M+"+STR$(2*W)+",+"+STR$(H)
8090 RETURN
9000 'HI RES TEXT WRITER
9010 J=LEN(TX$)
9020 DRAW"BM"+STR$(TX)+","+STR$(TY)+"C"+
STR$(TC)
9030 IF J=0 THEN RETURN
9040 FOR I=1TOJ
9050 K=ASC(MID$(TX$,I,1))-55
9060 IF K<10 OR K>35 THEN GOSUB 9100
9070 DRAWAL$(K)
9080 NEXT
9090 RETURN
9100 IF K>-8 ANDK<3 THEN K=K+7:RETURN
9110 IF K=-23 THEN K=36: RETURN
9120 IF K=-9 THEN K=37:RETURN
9130 IF K=-8 THEN K=41:RETURN
9140 IF K=6THEN K=38:RETURN
9150 IF K=-15THEN K=39:RETURN
9160 IF K=-14THEN K=40:RETURN
9170 IF K=8THEN K=42:RETURN
```

```
9180 IF K=-11 THEN K=43:RETURN
9190 IFK=-10 THEN K=44:RETURN
9200 IF K=-16THEN K=45:RETURN
9210 K=37
9220 RETURN
9230 'LOWER CASE DRAW STRINGS
9240 DATA BU1U3R1E1R2D5L2BR6,U10D5R3F1D3
G1L1BR6,BU1U3R1E1R1F1BD3G1BR5,BU1U3R1E1R
2U5D10L2BR6,BU1U3R1E1R1F1D2L3D1F1R2BR4,D
2U10R1E1R1L1G1D3R2BD5BR3
9250 DATA BU1U3R1E1R2D9G1L1H1BU4BR1R2BR4
,U10D5R3F1D4BR4,U5BU2U2BD9BR4,BD4R1E1U8B
U2U2BD9BR4,U10D6R3E1G1L2D2R2F1D1BR4,BU1U
9D9R1F1BR4
9260 DATA U4R1E1R1F1D4R1U4E1R1F1D4BR4,U4
R1E1R1F1D4BR4,BU1U3R1E1R1F1D3G1BR5,D4U9R
3F1D3G1BR5,BU1U3R1E1R1F1D8R2BU4BL1L2BR5
9270 DATA U4R1E1BD5BR4,R1E1U1H1U1E1BD5BR
4,BU1U8D2R2BD7L1BR5,BU1U4D4R1F1R2U5D5BR4
,BU1U4D4R1F1R1E1U1U4D4G1BR5,BU1U4D4R1F1R1E
1U4D4R1F1R1E1U4D4G1BR5
9280 DATA U1R1E1U1U1H1U1D1F1R1E1U1D1G1D1F1
D1BR4,BU1U4D4R1F1R2U5D8G1E1U3BR4,U1R1E1U
1R1E1U1L3BD5R3BR4
9290 DATA BR4,U1BDBDBR4,R3BU3L3BD3BR6,U9R2
BD9R1BR5,R3U9L2BD9BR5,E7BD7BR3,BR2U1BU2E
3H1L3DBD6BR7,U1D3U2BR6,BE2R2U1L1BF3BR2,B
E2BU6U2BF4BD6
9300 'NUMERIC DRAW STRINGS
9310 DATA BU1U5R1E1R1F1D5G1BR5
9320 DATA R4L1U7L2R2D7BR5,U2BU3U1R1E1R1F
1D2G1L1G1D2R4BR3,BU1R1F1R1E1U2H1E1U1H1L1
G1BD6BR7,BR4U7G1L1G1D2R3D3BR4,BU1R1F1R1E
1U2H1L1H1U2R4BD7BR3
9330 DATA BU1U5R1E1R1F1BG2R1F1D2G1BR5,U1
E5H1L3BF7,BU1U1E2H1U1E1R1F1D1G1F1D2G1BR5
,BU1R1F1R1E1U2L2H1U2E1R1F1D2BD4BR4
```

DON'T PAINT THE CAT

```
        DON'T PAINT THE CAT
        +++++++++++++++++++
      SCORE SO FAR  0 OUT OF  0
```



```
        WHICH IS THE HIGHER
        NOTE  1  OR NOTE  2
```

Seems a strange title for a program. I mean, who would want to emulsion paint the family mogg anyway?

Well you see, the family have decided that you have to paint the garden fence. You lost the draw — it might have been your sister instead who had to do it, but never mind there is always next time. Across the fence from you and your fantastic paint brush, is your neighbour's transistor. As a mental challenge you have decided to paint the fence according to the high/low pitch of your neighbour's music.

Look out for your cat, it's parked at the end of the fence.

How to play

As the game begins you will hear just two notes to compare but, everytime you get the answer correct the next tune will have an extra note.

You will be told which two notes to compare, and you must key in H or L for High or Low.

If you get it wrong you must wait for the fence, and the poor old pussy, to be painted.

If you take too long to answer, the cat will wind up getting covered in paint anyway.

Press the RETURN key when you want a new tune.

The program

```
10 REM DON'T PAINT THE CAT
11 'COPYRIGHT G.LUDINSKI 1983
12 'DRAGON 32/64 VERSION BY R.P.JONES
20 CLS:PRINT@37,"DON'T PAINT THE CAT":FO
R I=69 TO 87:PRINT@I,"+";:NEXT I
30 DIM SEQUENCE(20)
100 REM VOLUME LEVEL TEST
110 PRINT@258,"ADJUST THE VOLUME CONTROL
":PRINT@290,"UNTIL THE LEVEL IS SATIS-":
PRINT@322,"FACTORY.":PRINT@386,"PRESS AN
Y KEY TO CONTINUE."
120 SOUND 150,1
130 IF INKEY$=""THEN 120
200 REM DRAW FENCE & CAT
210 CLS:PRINT@37,"DON'T PAINT THE CAT":F
OR I=69 TO 87:PRINT@I,"+";:NEXT I
220 FOR I=3 TO 24 STEP 3
230 FOR J=5 TO 10
240 PRINT@J*32+I,CHR$(191);
250 NEXT J,I
```

```
260 FOR I=195 TO 216
270 PRINT@I,CHR$(191);
280 PRINT@I+160,CHR$(191);
290 NEXT I
300 PRINT@315,CHR$(160)
310 FOR I=346 TO 378 STEP 32
320 PRINT@I,STRING$(3,160)
330 NEXT I
400 REM INITIALISE VARIABLES
410 SCORE=0
420 XNOTES=2
430 LOW=1
440 HIGH=NOTES
450 RIGHT=0
460 XTOTAL=0
500 REM MAIN ROUTINE
510 PRINT@96," ";:PRINTUSING" SCORE SO
FAR ££ OUT OF ££";RIGHT,XTOTAL
520 GOSUB 1000:REM GENERATE RANDOM NUMBE
RS
530 PRINT@422,"WHICH IS THE HIGHER":PRIN
T@454,"NOTE ";LOW;" OR NOTE ";HIGH;
540 FOR I=1 TO 1000:NEXT I
550 GOSUB 1100:REM GENERATE NOTE SEQUENC
E
560 IF SEQUENCE(HIGH)>SEQUENCE(LOW) THEN
 ANSWER=HIGH ELSE ANSWER=LOW
570 GOSUB 1200:REM GENERATE SOUND
580 INPUT Z
590 IF Z=0 THEN STOP
600 IF Z=ANSWER THEN GOSUB 1300 ELSE GOS
UB 1400
610 IF XTOTAL>20 THEN STOP
620 GOTO 500
999 GOTO 999
1000 REM GENERATE RANDOM NUMBERS
1010 LOW=RND(XNOTES)
1020 HIGH=RND(XNOTES)
1030 IF LOW=HIGH THEN 1020
1040 IF LOW>HIGH THEN TEMP=LOW:LOW=HIGH:
HIGH=TEMP
```

```
1050 RETURN
1100 REM GENERATE NOTE SEQUENCE
1110 FOR I=1 TO XNOTES:SEQUENCE(I)=RND(2
55):NEXT I
1120 RETURN
1200 REM GENERATE SOUND
1210 FOR I=1 TO XNOTES
1220 SOUND SEQUENCE(I),16
1230 NEXT I
1240 RETURN
1300 REM RIGHT
1310 SCORE=SCORE+1
1320 XNOTES=XNOTES+1
1330 RIGHT=RIGHT+1
1340 XTOTAL=XTOTAL+1
1350 RETURN
1400 REM WRONG
1410 XTOTAL=XTOTAL+1
1420 XNOTES=XNOTES+1
1430 Z9=RND(128)+127
1440 FOR I=3 TO 24 STEP 3
1450 FOR J=5 TO 10
1460 PRINT@J*32+I,CHR$(Z9);
1470 NEXT J,I
1480 FOR I=195 TO 216
1490 PRINT@I,CHR$(Z9);
1500 PRINT@I+160,CHR$(Z9);
1510 NEXT I
1520 RETURN
```

FRANCIS DRAKE
ADVENTURE GAME
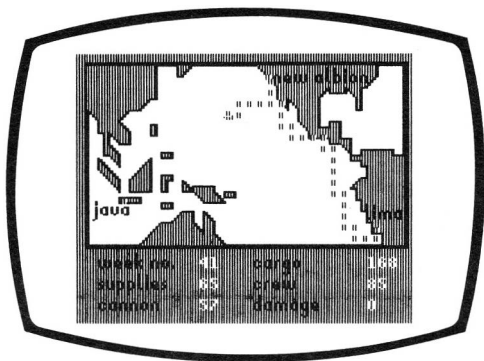
This is by far and away the most ambitious, interesting and testing program in this book.

This is an authentic historical adventure game based on Francis Drake's circumnavigation of the world, from 1577 to 1580. As you travel in the footsteps of the greatest of Elizabeth the First's free-booting adventurers, you will encounter the same problems and challenges as Drake.

Drake sailed in search of the elusive North West Passage that would allow him access to the Pacific, and the galleons of the Spanish Empire. As history books will already have told you, he did not find the object of his

quest, but he did find much more, and so will you as you sail into the Francis Adventure Game.

How to play

On the map you will see your position marked by a white sailing ship, docked near the port of Lima.

Everytime you use this game, the dangers and treasures will be located in different parts of the ocean, so do not think that you can predict your moves too easily. We didn't feel it was fair, however, to move the rocks, reefs and Spanish galleons, so try and remember their locations. It will help you considerably.

You **must** follow Drake's route by first travelling to the port known as New Albion and thence onward, past Java, to the bottom left hand corner of the map.

Your aim is to reach the bottom left corner of the map with, at least, 400 units of cargo.

If you achieve this feat of daring then you will, naturally, be rewarded by the gift of a knighthood from your grateful, and avaricious, Queen.

You move using the ARROW keys.

At intervals you will be told the situation at sea and asked which action you would like to take, from the choice shown.

Remember to consider your options carefully as to the amounts of cargo, supplies, cannon balls and crew conditions.

Damage rating is based on a 1 to 10 scale. If you are damaged to the level of 10 then I'm afraid that it's into the sea for you, as the Golden Hind settles gently below your feet.

Do your best, as the present Government is emptying the coffers more quickly than you are filling them.

Warning

During play the program will stop, every 10-20 moves, while The Dragon clears out its string space. This cannot be avoided and is due to the large amount of string handling performed in the program. If you own a Dragon 64 then change line 40 to clear 25000, this removes the problem.

Hints and changes you can make

Type in the programs main loop (up to line 2900), initialisation routine (lines 5000-5990) first. Leave the subroutine at 6000 as RETURN and all others (3000-4910) as GOTO 4900, coding in lines 4900 and 4910. Now test and debug the program. When all errors are clear enter the remainder of the program.

If you find the adventure too easy, then reduce the cargo (CA), supplies (SU), crew (CR), and/or cannon balls (BA) that you start with. They are on line 5010. If you find that knighthood escapes you, then reduce the 400 in line 7000.

Extra types of hazards or rewards can be introduced by giving them a code, either at the start in the matrix, or randomly in subroutine 5000, lines 5100-5170. Add a new subroutine to handle the problem/reward, ending it with a GOTO 4900 statement. Include the new routine in the

ON . . . . GOSUB statement at 2100. Perhaps Drake might meet mythical beasts . . . . or discover the Northwest Passage.

The program

```
10 'FRANCIS DRAKE ADVENTURE GAME
20 'COPYRIGHT (C) G LUDINSKI 1984
30 'DRAGON32/64 VERSION RICHARD HALE
40 PCLEAR5: CLEAR5000: PMODE3,1: COLOR2,
3: DIMAL$(45): DIMA(2): DIMM$(29,15)
50 'AL$ HOLDS THE DRAW STRINGS FOR THE C
HARACTERS
60 FOR I =10TO45:READAL$(I):NEXT
70 FOR I=0TO9:READAL$(I):NEXT
80 'SH$ HOLDS THE DRAW STRING FOR THE SH
IP. DO$ HOLDS THE DOT. BA WILL BE USED T
O HOLD THE BACKGROUND
110 SH$="C2BU1BR2R4U2D1L5R1BU2R2U1L2U1R2
":DO$="C4BR2BU2U3R2D3"
120 'DRAW THE SHIP THEN SET THE X & Y CO
ORDINATES, COLOUR AND STRING REQUIRED TH
E CALL HI RES TEXT SUBROUTINE. THEN RESE
T FOREGROUND COLOUR
130 CLS3:PRINT@194,"FRANCIS DRAKE ADVENT
URE GAME";:PRINT@480,"PLEASE WAIT WHILE
THE GAME IS","SET UP AND THE MAP DRAWN"
140 ' DISPLAY THE TITLE SCREEN WHILE THE
 GAME GRAPHICS ARE SET UP, AND THE MAP H
AZARDS RANDOMISED
150 SCREEN 0,1:PCLS2:GOSUB5010:SCREEN1,0
160 GOSUB1000:GOSUB2010
170 GOTO 160
1000 'STATUS CHEC K AND DISPLAY
1010 IF XM=0 AND YM=15 THEN GOTO 7000
1020 IF (XM=16 AND YM=0) OR (XM=17 AND Y
M=1) OR (XM=18AND YM=3) THEN AL=1:CLS1:P
RINT@0,"WELCOME TO NEW ALBION":GOSUB4900
:SCREEN1,0
```

```
1030 IF XM<14 AND AL=0 THEN CLS3:PRINT@0
,"GO TO NEW ALBION":GOSUB 4900:SCREEN 1,
0
1040 IF SU<=0 OR CR<=0 OR DA>10  OR EN=1
 THEN GOTO 7500
1050 GOSUB 6500
1060 RETURN
2000 ' SCAN THE KEYBOARD
2010 R$=INKEY$:IF R$="" THEN 2010
2020 'ONLY ALLOW THE ARROW KEYS
2030 RV=ASC(R$) :IF RV<>94 AND RV<>10 AN
D RV<>8 AND RV <>9 THEN SOUND1,1 :  GOTO
 2010
2035 IF (RV=94ANDYM=0) OR (RV=10ANDYM=15
) OR (RV=8ANDXM=0) OR (RV=9ANDXM=29) THE
N SOUND255,1: GOTO 2010
2040 IF RV<>94 THEN 2050: ELSE IF (M$(XM
,YM-1)<>"1" AND M$(XM,YM-1)<>"9" AND M$(
XM,YM)<>"3") THEN YM=YM-1:GOTO 2080
2050 IF RV<>10 THEN 2060: ELSE IF(M$(XM,
YM+1)<>"3" AND M$(XM,YM+1)<>"9" AND M$(X
M,YM)<>"1")THEN YM=YM+1:GOTO 2080
2060 IF RV<>8 THEN 2070 :ELSE IF M$(XM-1
,YM)<>"0" AND M$(XM-1,YM)<>"9" AND M$(XM
,YM)<>"2" THEN XM=XM-1:GOTO 2080
2070 IF RV<>9 THEN 2080 :ELSE IF M$(XM+1
,YM)<>"2" AND M$(XM+1,YM)<>"9" AND M$(XM
,YM)<>"0" THEN XM=XM+1
2080 WK=WK+1:SU=SU-1:IF DA<>0 THEN DA=DA
+1
2090 IF XM<>X1 OR YM<>Y1 THEN GOSUB6000:
X1=XM:Y1=YM: ELSE GOSUB 4000: GOTO 2900
2100 ON ASC(M$(XM,YM))-47  GOSUB 4100,41
00,4100,4100,3000,4200,4300,41
00,4400
2900 SCREEN1,0:RETURN
3000 CLS4:NM$="":IF M$(XM,YM)="5"THEN IF
 RND(2)=1 THEN NM$="THE CACAFUEGO ": ELS
E NM$="THE ESPRITO SANTO "
```

```
3010 PRINT@0,"YOU SIGHT A SPANISH GALLEO
N",NM$;"ARE YOU GOING TO":PRINT@96,"1) A
TTACK IT",,"2) IGNORE IT":PRINT@490,"SEL
ECT 1 OR 2";:SCREEN0,1
3020 IN$=INKEY$:IF IN$<"1" OR IN$>"2" TH
EN 3020
3030 IF IN$="2" THEN RETURN
3040 IF NM$=""THEN 3500
3045 IF BA<=0 THEN 3100
3050 CLS2:I=RND(20):J=RND(20): PRINT@0,"
YOU FIGHT A FIERCE BATTLE USING",STR$(J)
;" CANNONBALLS AND","FINALLY TAKE COMMAN
D OF THE","GALLEON. YOU TRANSFER ITS CAR
GO","OF";STR$(I);" UNITS TO THE GOLDEN H
IND":CA=CA+I:BA=BA-J:IF BA<0 THEN BA=0
3060 GOTO 4900
3100 CLS0:PRINT@0,"AS YOU HAVE NO SHOT L
EFT THE ","SPANISH WIN THE BATTLE AND","
YOU TO DIE":EN=1:GOTO 4900
3500 CLS:PRINT@0,"DO YOU WANT TO:-","1)
USE YOUR CANNON","2) SEND IN FIRE-SHIPS.
","3) SNEAK UP AND BOARD IT":PRINT@485,"
SELECT 1,2 OR 3";:SCREEN0,1
3510 IN$=INKEY$:IF IN$<"1" OR IN$>"3" TH
EN 3510
3520 IF IN$<>"1" THEN 3600
3530 IF RND(2)=1 THEN CLS4:I=RND(20):J=R
ND(10):PRINT@0,"YOU USE ";STR$(I);" CANN
ONBALLS,","YOUR SHIP IS DAMAGED AND SOME
",STR$(J);" OF YOUR CREW ARE KILLED","RE
TURN TO DRY LAND AT ONCE":DA=DA+1:CR=CR-
J:BA=BA-I:GOTO4900
3540 I=RND(20):J=RND(20):K=RND(20):PRINT
@0,"AS YOUR SHIP IS LOWER THAN ","SPANIA
RD, YOU PUT IT OUT OF","ACTION AND BOARD
 IT WITHOUT ","SERIOUS DAMAGE TO THE HIN
D","YOU USED";STR$(I);" CANNONBALLS,","C
APTURING";STR$(J);" UNITS OF CARGO","AND
";
3550 PRINTSTR$(K);" WEEKS OF SUPPLIES":B
A=BA-I:CA=CA+J:SU=SU+K:GOTO4900
```

```
3600 IF IN$="3" THEN 3700
3610 IF RND(2)=1 THEN 3650
3620 CLS8:PRINT@0,"THE WIND CHANGES DIRE
CTION AND","BLOWS THE BURNING SHIPS BACK
","TOWARDS THE HIND","SETTING THE MIZZEN
 MAST ABLAZE","RETURN TO DRY LAND AT ONC
E":DA=DA+1:GOTO4900
3650 CLS3:I=RND(20):J=RND(20):K=RND(20):
PRINT@0,"THE BURNING SHIPS SET THE ","GA
LLEON ALIGHT. THE CAPTAIN","SURRENDERS."
,,"YOU CAPTURE";STR$(I);" ROUNDS",STR$(J
);" BALES OF CARGO",STR$(K);" WEEKS OF S
UPPLIES":BA=BA+I:CA=CA+J:SU=SU+K:GOTO490
0
3700 IF RND(2)=1 THEN 3750
3710 CLS6:I=RND(20):J=RND(10):PRINT@0,"T
HEY SPOT YOU AND REALISE THAT","YOU ARE
ENGLISH. IN THE ENSUING","MELEE YOU WAST
E":STR$(I);" ROUNDS, AND",STR$(J);" MEMB
ERS OF YOUR CREW ARE","SLAIN",,"RETURN T
O LAND AT ONCE":BA=BA-I:DA=DA+1:CR=CR-J:
GOTO4900
3750 CLS3:I=RND(20):J=RND(20):K=RND(20):
PRINT@0,"YOU BOARD THE SPANIARD AND","CA
PTURE";STR$(I);" ROUNDS",STR$(J);" BALES
 OF SILK",STR$(K);" WEEKS OF SUPPLIES","
WITHOUT EVEN A FIGHT":BA=BA+I:CA=CA+J:SU
=SU+K:GOTO4900
4000 CLS8:IF XM <14 THEN RR$="REEFS": EL
SE RR$="ROCKS"
4010 IF RND(2)=1 THEN PRINT@0,"THERE ARE
 ";RR$;" AHEAD. GO ABOUT":GOTO 4900
4020 PRINT@0,"YOU HAVE RUN AGROUND ON ";
RR$
4030 PRINT"ARE YOU GOING TO EITHER ","1)
 THROW CARGO OVERBOARD    OR","2) PUT OU
T AN ANCHOR TO WINDWARD":PRINT@490,"SELE
CT 1 OR 2";
4035 SCREEN0,1
4040 IN$=INKEY$:IF IN$<>"1" AND IN$<>"2"
 THEN 4040
```

```
4050 IF IN$="1" THEN I=RND(20):CA=CA-20:
CLS8:PRINT@0,"AFTER YOU THROW OVER";STR$
(I);" UNITS","THE GOLDEN HIND FLOATS OFF
":IF CA<0 THEN CA=0:GOTO 4900:ELSEGOTO 4
900
4060 IF RND(2)=1 THEN CLS8:PRINT@0,"YOU
BREAK FREE WITHOUT ANY","MAJOR DAMAGE":G
OTO 4900
4070 CLS8:PRINT@0,"THE GOLDEN HIND HAS B
EEN HOLED.","YOU MUST MAKE FOR DRY LAND
OR","YOU WILL PERISH":DA=DA+1:GOTO 4900
4100 RETURN
4200 CLS6:PRINT@0,"TRADING WITH NATIVES
YOU OBTAIN",
4210 I=RND(20):J=RND(20):CA=CA+I:SU=SU+I

4230 PRINTSTR$(I);" UNITS OF CARGO","AND
";STR$(J);" WEEKS OF SUPPLIES"
4240 GOTO 4900
4300 CLS7:PRINT@0,"HOSTILE NATIVES ATTAC
K YOU"
4310 I=RND(20): CR=CR-I:PRINT"KILLING";S
TR$(I);" OF YOUR CREW"
4320 GOTO 4900
4400 CLS5:PRINT@0,"YOU HAVE ARRIVED AT A
 PORT": IF DA<>0 THEN DA=0: PRINT"YOUR S
HIP HAS BEEN REPAIRED":GOTO 4900
4900 IN$=INKEY$:PRINT@483,"PRESS ANY KEY
 TO CONTINUE";:SCREEN0,1:IF BA<0 THEN BA
=0
4910 IF INKEY$="" THEN 4910: ELSE RETURN
5000 ' GAME SETUP ROUTINES RESET VARIAB
LES.  DRAW MAP. READ MAP MATRIX AND PARS
E IT TO ADD HAZARDS. DRAW SHIP AND RETUR
N
5010 EN=0:XM=27:YM=15:X1=XM:Y1=YM:CA=100
:SU=100:CR=85:BA=100:DA=0:WK=1:COLOR1,2
5020 'DRAW PACIFIC MAP
5030 PCLS2:COLOR4,2
```

```
5040 LINE(6,6)-(250,138),PSET,BF:COLOR1,
2:LINE(8,8)-(248,136),PSET,BF:DRAW"C2BM8
,40F8D8D8R4D16R4F8U8H8U8F8R8U8H8E8R8E8R4U2
4R16D8R4E8R48F16D8F8U8F8D8F8D4R16D4R8F8R
8U4R24D4R8U64L20D8G8L4D16L4U8H8D4L12U4G8
D20R8U4R8D12R8D16R8D4R4D8L4G8R4D8R4D8R4D
8R4D8R8D8L120"
5050 DRAW"H8U8H8D16H8U8L8G8L8G16L40U96BF
8BD26D8F16U8H16F16D8BD4D4R16U4L16R8BU4U8
E16D24L16BR24U12R8D4L4D8L4BD8D4R8U4L8BE8
BR8R8F8R16BU4U4R8D4L8BD4H8U4L16D4H8D8BH8
BU16U4L8D4R8BH16R4U8L4D8":PAINT(128,10),
3,2:PAINT(232,10),3,2
5060 DRAW"BM142,20XDO$;":TX=150:TY=20:TC
=4:TX$="NEW ALBION":GOSUB9010
5070 TX=220:TY=117:TX$="LIMA":GOSUB9010:
DRAW"BM224,129XDO$;"
5080 TX=12:TY=114:TX$="JAVA":TC=2:GOSUB9
010:DRAW"BM32,108XDO$;"
5090 GOSUB 6010
5100 HL$="":FOR I=0TO 15:FORJ=0TO 29:
5110 READ IN$:
5120 IF IN$="9" THEN 5160
5130 IF IN$="E" THEN IN$="4":GOTO 5160
5140 IF IN$="0" THEN IN$=RIGHT$(STR$(RND
(7)-1),1): GOTO 5160
5150 IF (J>3 AND J<14 AND I>6AND I<14) T
HEN IN$=RIGHT$(STR$(RND(2)+6),1) ELSE IN
$=":"
5160 M$(J,I)=IN$:NEXT
5170 NEXT:
5180 TX=16:TY=152:TC=3:TX$="WEEK NO.":GO
SUB9010
5190 TX=16:TY=167:TC=3:TX$="SUPPLIES":GO
SUB9010
5200 TX=16:TY=182:TC=3:TX$="CANNON":GOSU
B9010
5210 TX=134:TY=152:TC=3:TX$="CARGO":GOSU
B9010
5220 TX=134:TY=167:TC=3:TX$="CREW":GOSUB
9010
```

```
5230 TX=134:TY=182:TC=3:TX$="DAMAGE":GOS
UB9010
5980 IN$=INKEY$:SOUND228,1
5990 RETURN
6000 PUT(XE,YE)-(XE+7,YE+7),BA,PSET:DRAW
"BM"+STR$(XE)+","+STR$(YE+7)+DO$
6010 XE=XM*8+8:YE=YM*8+8:GET(XE,YE)-(XE+
7,YE+7),BA,G:DRAW"BM"+STR$(XE)+","+STR$(
YE+7)+SH$
6020 RETURN
6500 LINE (90,140)-(128,191),PRESET,BF:L
INE(218,140)-(255,191),PRESET,BF
6600 TX=90:TY=152:TC=4:TX$=STR$(WK):GOSU
B9010
6700 TX=90:TY=167:TC=4:TX$=STR$(SU):GOSU
B9010
6800 TX=90:TY=182:TC=4:TX$=STR$(BA):GOSU
B9010
6900 TX=218:TY=152:TC=4:TX$=STR$(CA):GOS
UB9010
6910 TX=218:TY=167:TC=4:TX$=STR$(CR):GOS
UB9010
6920 TX=218:TY=182:TC=4:TX$=STR$(DA):GOS
UB9010
6930 RETURN
7000 CLS6:PRINT@0,"YOU HAVE SURVIVED THE
 UNKNOWN,","AND NOW KNOW THAT YOU ARE TH
E","FIRST COMMANDER OF A FLEET TO","SAIL
 AROUND THE WORLD": IF CA>400 THEN PRINT
.,"ARISE SIR FRANCIS"
7010 PRINT@484,"ANOTHER TRIP? (Y OR N)";
7020 IN$=INKEY$: IF IN$="" THEN 7020:ELS
E IF IN$="N" THEN END: ELSE RESTORE:GOT
O 60
7500 CLS0
7510 IF SU<=0 THEN PRINT@0,"YOUR SUPPLIE
S ARE EXHAUSTED","SO YOUR CREW MUTINIES,
 AND","HAVE KILLED YOU ":GOTO 7010
7520 IF CR<=0 THEN PRINT@0,"YOUR CREW HA
VE ALL BEEN KILLED","IN BATTLE, OR HAVE
DIED OF","SCURVY, TYPHUS OR DYSENTRY.","
YOU ARE STRANDED WITHOUT THEM":GOTO 7010
```

```
7530 PRINT@0,"THE GOLDEN HIND SLIPS BENE
ATH","THE WAVES TAKING YOU WITH IT":GOTO
 7010
9000 'HI RES TEXT WRITER
9010 J=LEN(TX$)
9020 DRAW"BM"+STR$(TX)+","+STR$(TY)+"C"+
STR$(TC)
9030 IF J=0 THEN RETURN
9040 FOR I=1TOJ
9050 K=ASC(MID$(TX$,I,1))-55
9060 IF K<10 OR K>35 THEN GOSUB 9100
9070 DRAWAL$(K)
9080 NEXT
9090 RETURN
9100 IF K>-8 ANDK<3 THEN K=K+7:RETURN
9110 IF K=-23THEN K=36:RETURN
9120 IF K=-9 THEN K=37:RETURN
9130 IF K=-8 THEN K=41:RETURN
9140 IF K=6   THEN K=38:RETURN
9150 IF K=-15THEN K=39:RETURN
9160 IF K=-14THEN K=40:RETURN
9170 IF K=8   THEN K=42:RETURN
9180 IF K=-11THEN K=38:RETURN
9190 IF K=-10THEN K=39:RETURN
9200 IF K=-16THEN K=40:RETURN
9210 K=37
9220 RETURN
9230 'LOWER CASE DRAW STRINGS
9240 DATA BU1U3R1E1R2D5L2BR6,U10D5R3F1D3
G1L1BR6,BU1U3R1E1R1F1BD3G1BR5,BU1U3R1E1R
2U5D10L2BR6,BU1U3R1E1R1F1D2L3D1F1R2BR4,D
2U10R1E1R1L1L1G1D3R2BD5BR3
9250 DATA BU1U3R1E1R2D9G1L1H1BU4BR1R2BR4
,U10D5R3F1D4BR4,U5BU2U2BD9BR4,BD4R1E1U8B
U2U2BD9BR4,U10D6R3E1G1L2D2R2F1D1BR4,BU1U
9D9R1F1BR4
9260 DATA U4R1E1R1F1D4R1U4E1R1F1D4BR4,U4
R1E1R1F1D4BR4,BU1U3R1E1R1F1D3G1BR5,D4U9R
3F1D3G1BR5,BU1U3R1E1R1F1D8R2BU4BL1L2BR5
9270 DATA U4R1E1BD5BR4,R1E1U1H1U1E1BD5BR
4,BU1U8D2R2BD7L1BR5,BU1U4D4R1F1R2U5D5BR4
,BU1U4D4R1F1R1E1U4D4G1BR5,BU1U4D4R1F1R1E
1U4D4R1F1R1E1U4D4G1BR5
```

```
9280 DATA U1R1E1U1H1U1D1F1R1E1U1D1G1D1F1
D1BR4,BU1U4D4R1F1R2U5D8G1E1U3BR4,U1R1E1U
1R1E1U1L3BD5R3BR4
9290 DATA BR4,U1BDBR4,R3BU3L3BD3BR6,U9R2
BD9R1BR5,R3U9L2BD9BR5,E7BD7BR3,BR2U1BU2E
3H1L3DBD6BR7,U1D3U2BR6,BE2R2U1L1BF3BR2,B
E2BU6U2BF4BD6
9300 'NUMERIC DRAW STRINGS
9310 DATA BU1U5R1E1R1F1D5G1BR5
9320 DATA R4L1U7L2R2D7BR5,U2BU3U1R1E1R1F
1D2G1L1G1D2R4BR3,BU1R1F1R1E1U2H1E1U1H1L1
G1BD6BR7,BR4U7G1L1G1D2R3D3BR4,BU1R1F1R1E
1U2H1L1H1U2R4BD7BR3
9330 DATA BU1U5R1E1R1F1BG2R1F1D2G1BR5,U1
E5H1L3BF5BD2,BU1U1E2H1U1E1R1F1D1G1F1D2G1
BR5,BU1R1F1R1E1U2L2H1U2E1R1F1D2BD4BR4
9500 'MAP MATRIX STRINGS
9510 DATA 9,9,9,9,9,9,3,0,4,5,0,0,0,0,0,
0,7,9,9,9,9,9,9,9,9,0,0,0
9520 DATA 9,9,9,9,9,9,3,0,0,0,0,0,0,0,0,
0,0,7,9,9,9,9,9,9,9,5,0,0,0
9530 DATA 9,9,9,9,9,3,0,0,0,0,0,0,0,0,0,
0,0,0,9,9,9,9,5,1,7,3,0,0,0
9540 DATA 9,9,9,9,9,5,0,0,0,0,0,0,0,0,0,
0,0,0,7,7,9,9,0,0,0,3,0,0,0
9550 DATA 7,9,9,5,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,9,9,0,0,0,0,0,0,0
9560 DATA 0,9,9,8,0,0,3,0,0,0,0,0,0,0,0,
0,0,0,0,7,9,2,9,0,0,0,0,0,0
9570 DATA 0,4,7,9,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,1,1,9,2,0,0,0,0
9580 DATA 0,4,8,0,0,0,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,7,0,2,2,2,0
9590 DATA 0,8,7,0,0,6,0,0,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,1,9,9,9,9
9600 DATA 0,7,8,0,6,9,0,2,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,4,9,9,9
9610 DATA 0,0,7,0,9,9,0,3,0,8,2,2,0,0,0,
0,0,0,0,0,0,0,0,0,6,9,9,9,9
```

```
9620 DATA 0,0,0,2,2,0,0,0,0,0,7,9,8,1,0,
0,0,0,0,0,0,0,0,0,0,4,9,9,9,9
9630 DATA 0,0,0,0,0,0,0,1,0,0,0,0,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,9,9,9,9
9640 DATA 0,0,0,0,0,0,0,0,6,9,0,8,0,0,0,
0,0,0,0,0,0,0,0,0,0,0,4,9,9,9
9650 DATA 0,0,0,0,0,0,6,9,9,9,8,9,0,0,0,
0,0,0,0,0,0,0,0,0,0,E,E,E,E,E
9660 DATA 0,0,0,0,0,6,9,9,9,9,9,9,8,0,0,
0,0,0,0,0,0,0,0,0,0,E,E,E,E,E
```

NAME THE GRAPH
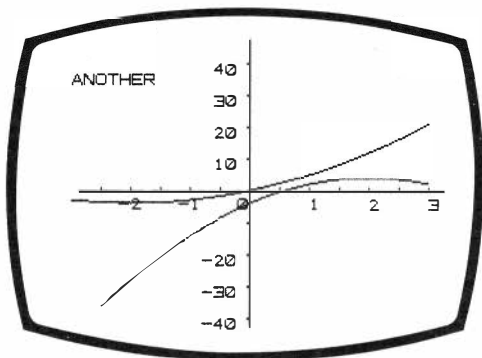
This is a game of logic. You have an aim, to find the equation of the graph that is drawn on the screen. You key in numbers to represent an equation. You can see straight away whether you are getting closer to your goal as the graph of the equation you keyed in is drawn on the screen.

By making the three numbers required larger and smaller, positive and negative, you can see how it effects the graph and hopefully, you can watch your graph getting closer and closer to the target graph until you hit it.

If you give up you will be told the answer, but don't cheat.

How to play

All graphs drawn are of the type

$$y = Ax^2 + Bx + C$$

Where A, B and C are constants (that is numbers that can be positive or negative). For example, the equation might be

$$y = -2x^2 + 3x - 5$$

and in this case A would be equal to -2, B equal to 3 and C to -5.

You will be asked to key in A, B and C. After entering each number press RETURN.

Then the graph of this expression is drawn and you must make another guess. If you cannot guess the answer key in 'N' when the program asks 'ANOTHER' and you will be given the answer and the program ends.

If you key in 'Y' the program allows you to make another guess.

It is more fun if you find out how to do it by trial and error, but if you want a hint to get you started then this is it. (Skip the next paragraph if you do not want to know)

If the first number (A) is positive, the graph will point upwards (u shape), and if it is negative the graph will point downwards (n shape).

Programming hints

The graphs are plotted with the origin (zero, zero point) at the middle of the screen.

You could make the programs easier by reducing the range of numbers allowed. Do this by reducing the 5 in line 1020 or the 9 in line 1030 or both.

The program

```
10 PMODE 4,1:SCREEN 1,0:PCLS
11 'COPYRIGHT G.LUDINSKI 1983
12 'DRAGON 32/64 VERSION BY R.P.JONES
20 PCLEAR8:CLEAR 2000:DIM A$(37)
30 GOSUB 9000
40 DEFFNA(XI)=A*XI^2+A*D*XI+C
50 DEFFNB(XI)=A9*XI^2+B9*XI+C9
100 REM MAIN ROUTINE
110 GOSUB 1000:REM TARGET
120 GOSUB 2000:REM AXES
130 GOSUB 3000:REM DRAW TARGET
140 GOSUB 5000:REM ENTER GUESS
150 GOSUB 3500:REMDRAW GUESS
160 IF Z$="Y" THEN 220
170 CLS:PRINT@64," THE FUNCTION WAS - "
180 IF (A*D)<0 THEN S$=" "ELSE S$="+"
190 IF C<0 THEN S1$=" "ELSE S1$="+"
200 PRINT@134,A;" * X^2 ";S$;A*D;S1$;C
210 STOP
220 PCLS:FOR I=1 TO 4:PCOPY I+4 TO I:NEXT I
230 GOTO 140
999 GOTO 999
1000 REM GENERATE TARGET GRAPH
1010 A=INT(2*RND(0)+1):A=A*((-1)^RND(2))
1020 D=INT(5*RND(0)+2):D=D*((-1)^RND(2))
1030 C=RND(9):C=C*((-1)^RND(2))
1040 A1=A:D1=D:C1=C:B1=2*A1*D1
1050 RETURN
```

```
2000 REM DRAW AXES
2010 PCLS
2020 LINE(5,100)-(250,100),PSET
2030 LINE(120,5)-(120,185),PSET
2040 FOR X=240 TO 20 STEP -20
2050 LINE(X,100)-(X,98),PSET
2060 NEXT X
2070 FOR Y=180 TO 20 STEP -20
2080 LINE(120,Y)-(118,Y),PSET
2090 NEXT Y
2100 FOR Z=1 TO 25
2110 READ P,S
2120 GOSUB 9500
2130 NEXT Z
2140 RETURN
3000 REM DRAW TARGET
3004 X1=-1
3005 FOR X=-3 TO 3 STEP(1/40)
3006 X1=X1+1
3020 Y1=FNA(X)*2
3040 IF Y1>=0 THEN Y1=100-Y1 ELSE Y1=ABS
(Y1)+100
3050 IF Y1<0 OR Y1>190 THEN 3070
3060 PSET(X1,Y1,1)
3070 NEXT X
3080 FOR I=1 TO 4:PCOPY I TO I+4:NEXT I
3090 RETURN
3500 REM DRAW GUESS
3510 X1=-1
3520 FOR X=-3 TO 3 STEP(1/40)
3530 X1=X1+1
3540 Y1=FNB(X)*2
3550 IF Y1>0 THEN Y1=100-Y1 ELSE Y1=ABS(
Y1)+100
3560 IF Y1<0 OR Y1>190 THEN 3580
3570 PSET(X1,Y1,1)
3580 NEXT X
3590 P=65 S=1665 GOSUB 9500
3600 P=78 S=1666 GOSUB 9500
3610 P=79 S=1667 GOSUB 9500
3620 P=84 S=1668 GOSUB 9500
```

```
3630 P=72:S=1669:GOSUB 9500
3640 P=69:S=1670:GOSUB 9500
3650 P=82:S=1671:GOSUB 9500
3660 Z$=INKEY$:IF Z$=""THEN 3660
3670 IF Z$<>"N" AND Z$<>"Y" THEN 3660
3680 RETURN
4000 REM ENTER GUESS
4010 P=69:S=1665:GOSUB 9500
4020 P=78:S=1666:GOSUB 9500
4030 P=84:S=1667:GOSUB 9500
4040 P=69:S=1668:GOSUB 9500
4050 P=82:S=1669:GOSUB 9500
4060 P=G:S=1671:GOSUB 9500
4070 RETURN
5000 REM GUESS ROUTINE
5005 N$=""
5010 G=65:GOSUB 4000
5020 GOSUB 5500
5030 A9=VAL(N$)
5040 G=66:GOSUB 4000
5050 GOSUB 5500
5060 B9=VAL(N$)
5070 G=67:GOSUB 4000
5080 GOSUB 5500
5090 C9=VAL(N$)
5100 RETURN
5500 REM INPUT VALIDATION
5505 N$=""
5510 Z$=INKEY$:IF Z$=""THEN 5510
5515 IF ASC(Z$)=13 THEN 5570
5520 IF ASC(Z$)=45 THEN 5550
5530 IF ASC(Z$)<48 OR ASC(Z$)>57 THEN 55
10
5550 N$=N$+Z$
5560 GOTO 5510
5570 RETURN
9000 REM CHARACTER SET ROUTINE
9010 DATA 124,134,138,146,162,198,124
9020 DATA 16,48,16,16,16,16,56
9030 DATA 56,68,4,8,16,32,126
9040 DATA 254,2,2,62,2,2,254
```

```
9050 DATA 8,24,40,72,252,8,8
9060 DATA 252,128,128,252,2,2,252
9070 DATA 32,64,128,252,130,130,252
9080 DATA 254,2,4,8,16,32,64
9090 DATA 124,130,130,254,130,130,124
9100 DATA 124,130,130,126,2,4,8
9110 DATA 16,40,40,68,124,130,130
9120 DATA 254,130,130,254,130,130,254
9130 DATA 254,128,128,128,128,128,254
9140 DATA 252,130,130,130,130,130,252
9150 DATA 254,128,128,252,128,128,254
9160 DATA 254,128,128,248,128,128,128
9170 DATA 252,128,128,142,132,132,252
9180 DATA 130,130,130,254,130,130,130
9190 DATA 16,16,16,16,16,16,16
9200 DATA 62,8,8,8,8,136,248
9210 DATA 132,152,224,144,136,132,130
9220 DATA 128,128,128,128,128,128,254
9230 DATA 198,198,170,146,130,130,130
9240 DATA 194,226,162,146,138,142,134
9250 DATA 124,130,130,130,130,130,124
9260 DATA 254,130,130,254,128,128,128
9270 DATA 124,130,130,162,146,124,4
9280 DATA 254,130,130,254,136,132,130
9290 DATA 254,128,128,254,2,2,254
9300 DATA 254,16,16,16,16,16,16
9310 DATA 130,130,130,130,130,130,124
9320 DATA 130,130,130,68,68,40,16
9330 DATA 130,130,130,146,146,170,198
9340 DATA 130,68,40,16,40,68,130
9350 DATA 130,68,40,16,16,16,16
9360 DATA 254,6,12,24,48,96,254
9370 DATA 0,0,0,254,0,0,0
9380 FOR I=1 TO 37
9390 FOR J=0 TO 6
9400 READ X$
9410 A$(I)=A$(I)+X$+","
9420 NEXT J,I
9430 RETURN
9500 REM PRINT CHARACTER
9510 REM P=ASC OF CHR
```

```
9520 REM S=START PRINT POS
9530 IF P=45 THEN P=37 ELSE IF P>47 AND
P<58 THEN P=P-47 ELSE P=P-54
9540 P9=1
9550 FOR I=0 TO 6
9560 P1=INSTR(P9,A$(P),",")
9570 P$=MID$(A$(P),P9,P1-1)
9580 P2=VAL(P$)
9590 POKE S+32*I,P2
9600 P9=P1+1
9610 NEXT I
9620 RETURN
9700 REM DATA FOR AXES LABELS
9710 DATA 51,4926,50,4921,49,4916
9720 DATA 48,4910
9730 DATA 45,4905,49,4906,45,4900,50,490
1
9740 DATA 45,7307,52,7308,48,7309,45,666
7,51,6668,48,6669,45,6027,50,6028,48,602
9
9750 DATA 49,4108,48,4109,50,3468,48,346
9,51,2828,48,2829,52,2188,48,2189
9900 Z$=INKEY$:IF Z$=""THEN 9900
9910 IF Z$=CHR$(13) THEN PRINT"DONE" ELS
E PRINT"NO"
```

CLOSE ENCOUNTERS
OF THE FOURTH KIND
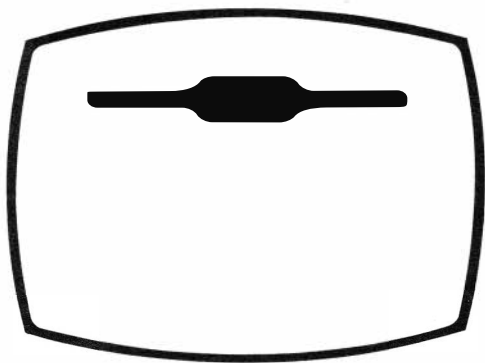
The aliens have sneaked into this book after all — but we believe they are friendly. It's up to you to find out.

Hovering above a field, lights rotating around it's outer edge, is a flying saucer. From the saucer comes a sequence of notes which may contain a message of peace. To find out you must repeat the notes in the same sequence as the aliens have transmitted them.

Every time you repeat the notes properly, the saucer will descend one level towards the ground. Try and bring them in carefully as the last time we succeeded the space vessel blew up after landing.

How to play

The number keys 1 to 7 represent a note in the octave starting with middle C.

The saucer will first emit one note and, if you copy correctly, descend slightly before sounding its next tone which will be a tune of two notes and so on. Each time you have guessed the sequence correctly the saucer will descend.

Programming hints

You could increase the number of possible notes in the tunes by changing the value '20' in line 180 to a smaller number.

The program

```
10 REM CLOSE ENCOUNTERS OF THE FOURTH KI
ND
11 'COPYRIGHT (C) G.LUDINSKI 1983
12 'DRAGON 32/64 VERSION BY R.P.JONES
20 DIM N(20),N$(20)
30 PMODE 4,1:SCREEN 1,0:PCLS
40 SEQUENCE=1:Y=10
50 GOSUB 300:REM DRAW SAUCER
60 GOSUB 500:REM GENERATE SEQ
100 REM MAIN ROUTINE
110 SEQUENCE=SEQUENCE+1
120 FOR I=1 TO SEQUENCE
130 PLAY "XN$(I);"
140 NEXT I
150 I1=0
160 GOSUB 600:REM INKEY ROUTINE
170 IF I2=1 THEN 120
180 Y=Y+20:IF Y>150 THEN 210
```

```
190 PCLS:GOSUB 300
200 GOTO 110
210 REM FINISHED
220 CLS:PRINT@32,"      CLOSE ENCOUNTERS
   "
230 PRINT@160,"C O N G R A T U L A T I O
   N S !"
240 PRINT@422,"ANOTHER GO (Y/N) ?";
250 Z$=INKEY$:IF Z$=""THEN 250
260 PRINT Z$
270 IF Z$="Y" THEN 30
280 STOP
300 REM DRAW SAUCER
310 FOR I=1 TO 5
320 DRAW "BM100,"+STR$(Y+I)+"R50"
330 NEXT I
340 FOR I=6 TO 11
350 DRAW "BM50,"+STR$(Y+I)+"R150"
360 NEXT I
370 FOR I=12 TO 17
380 DRAW "BM100,"+STR$(Y+I)+"R50"
390 NEXT I
400 RETURN
500 REM GENERATE SEQUENCE
510 FOR I=1 TO 20:N(I)=RND(7):N$(I)=CHR$
   (N(I)+64):NEXT I
520 FOR I=1 TO 20:IF N(I)<3 THEN N(I)=N(
   I)+5 ELSE N(I)=N(I)-2
530 NEXT I
540 RETURN
600 REM INKEY ROUTINE
610 Z$=INKEY$:IF Z$="" THEN 610
620 IF ASC(Z$)<49 OR ASC(Z$)>57 THEN 610
630 I1=I1+1
640 IF VAL(Z$)<>N(I1) THEN I2=1:GOTO 680
650 IF I1=SEQUENCE THEN 670
660 GOTO 610
670 I2=0
680 RETURN
```

SPIRAL MAZES
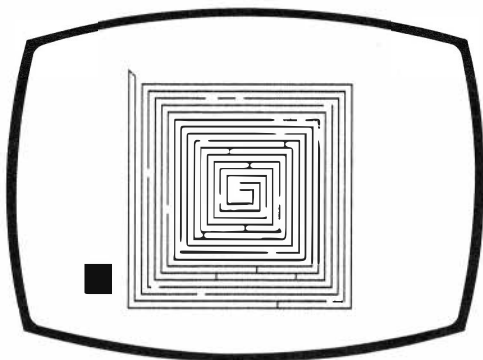
Because you forgot to doff your cap to the local tyrant, you have been thrown into his dungeons.

On the floor, scratched by a previous resident, is a map so now is your chance to escape. Rather than rush head-long into the maze, however, it would be wise to trace your way through in advance. Try drawing a continuous line from where you are to the outside of the dungeons.

By the way, if you make it to the outside, don't forget about doffing the cap next time.

How to play

A maze will be drawn on the screen.

You are the 'blob' at the centre of the maze. By pressing the arrow keys you can move in any direction, but not through walls! If you get out, proceed to the box at the bottom left-hand corner of the screen. The computer will then display your time. If you want to give up, or you decide escape is impossible, then press 'Q'.

Programming hints

The program contains a useful 'Autorepeat key' routine at lines 5000-5040. This is used in conjunction with the arrow keys to provide movement so long as a key is depressed.

The program

```
10 REM SPIRAL COPYRIGHT (C) R.P.JONES 19
84
20 REM BASED ON 'SPIRAL MAZES' COPYRIGHT
 (C) G.LUDINSKI 1983
100 REM MAIN ROUTINE
110 TIMER=0
1000 REM DRAW SPIRAL
1010 PMODE 4,1:PCLS:SCREEN 1,0
1020 X=128:Y=96:K=10
1030 FOR I=1 TO 8
1040 LINE(X,Y)-(X+K,Y),PSET
1050 LINE(X+K,Y)-(X+K,Y+K),PSET
1060 X=X+K:Y=Y+K:K=K+10
1070 LINE(X,Y)-(X-K,Y),PSET
1080 LINE(X-K,Y)-(X-K,Y-K),PSET
1090 X=X-K:Y=Y-K:K=K+10
1100 NEXT I
1110 OX=X:OY=Y
```

```
1120 X=128:Y=91:K=15
1130 FOR I=1 TO 8
1140 LINE(X,Y)-(X+K,Y),PSET
1150 X=X+K:IF I=1 THEN K=K+5
1160 LINE(X,Y)-(X,Y+K),PSET
1170 Y=Y+K:K=K+10
1180 LINE(X,Y)-(X-K,Y),PSET
1190 X=X-K
1200 LINE(X,Y)-(X,Y-K),PSET
1210 Y=Y-K:K=K+10
1220 NEXT I
1230 LINE(OX,OY)-(X,Y),PSET
1240 FOR I=1 TO 40
1250 IX=RND(200):IF IX<50 THEN 1250
1260 IY=RND(180):IF IY<30 THEN 1260
1270 IF PPOINT(IX,IY)=0 THEN 1250
1275 IF I/2=INT(I/2) THEN 1285
1280 IF PPOINT(IX+5,IY)=0 THEN LINE(IX,I
Y)-(IX+5,IY),PSET ELSE LINE(IX,IY)-(IX,I
Y+5),PSET
1281 GOTO 1290
1285 IF PPOINT(IX+1,IY)=0 THEN LINE(IX,I
Y)-(IX,IY-5),PRESET ELSE LINE(IX,IY)-(IX
+5,IY),PRESET
1290 NEXT I
1300 LINE(10,150)-(30,170),PSET,BF
1500 REM MOVE BLOB
1505 X=126:Y=94:PSET(X,Y,1)
1506 OX=126:OY=94
1510 Z$=INKEY$:IF Z$=""THEN 1510
1515 IF Z$="Q" THEN 6000
1520 Z=ASC(Z$):IF Z<8 OR Z>10 AND Z<>94
THEN 1510
1530 IF Z=94 THEN 1600
1540 IF Z=10 THEN 1650
1550 IF Z=9 THEN 1700
1560 REM LEFT
1570 X=X-1:IF PPOINT(X,Y)<>0 THEN X=X+1
1580 PSET(X,Y,1)
1585 PRESET(OX,OY):OX=X:OY=Y
```

```
1590 GOTO 5000
1600 REM UP
1610 Y=Y-1:IF PPOINT(X,Y)<>0 THEN Y=Y+1
1620 PSET(X,Y,1)
1625 PRESET(OX,OY):OX=X:OY=Y
1630 GOTO 5000
1650 REM DOWN
1660 Y=Y+1
1670 IF PPOINT(X,Y)<>0 THEN Y=Y-1
1680 PSET(X,Y,1)
1685 PRESET(OX,OY):OX=X:OY=Y
1690 GOTO 5000
1700 REM RIGHT
1710 X=X+1:IF PPOINT(X,Y)<>0 THEN X=X-1
1720 PSET(X,Y,1)
1725 PRESET(OX,OY):OX=X:OY=Y
1730 GOTO 5000
5000 REM AUTO-REPEAT ROUTINE
5010 IF PEEK(337)=255 THEN 1510
5015 POKE 337,0
5020 IF Z=8 THEN 1570 ELSE IF Z=9 THEN 1
710 ELSE IF Z=10 THEN 1660 ELSE GOTO 161
0
5040 GOTO 5010
6000 REM DONE
6010 IF X>9 AND X<31 AND Y>149 AND Y<171
 THEN 6100
6020 CLS
6030 PRINT@256,"DO YOU WANT ANOTHER GO (
Y/N) ?"
6040 INPUT X$:IF X$<>"Y" THEN STOP
6050 GOTO 100
6100 FOR I=1 TO 5:LINE(10,150)-(30,170),
PSET,B:LINE(10,150)-(30,170),PSET,BF:NEX
T I
6110 CLS
6120 PRINT@,32," C O N G R A T U L A T I
 O N S !"
6130 PRINT:PRINT" YOUR TIME WAS ";TIMER

6140 GOTO 6030
```

WHAT'S YOURS

WHAT IS YOUR ORDER
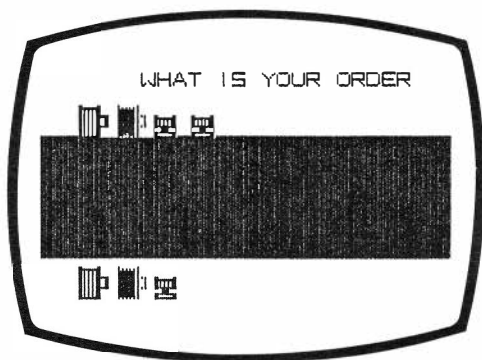
Do you know that awful feeling when you have been put in charge of the drinks purchase at your friend's wedding?

You can be sure that you will get a soft drink for the big fellow in the corner or, even worse, a double whisky with pint chaser for someone's grandmother.

Anyway, it's your turn to buy the drinks and the order is on the bar. If you remember to get everyone the correct drink you will receive a whisky from each of them as they will be so pleased with your effort. If you get the **total** round correct, they will all pitch in and pay for the drinks themselves.

All the drinks are £1 each, so everytime you get the round right you make £1 per drink for yourself.

Oh, we almost forgot, everytime you get it right someone else joins your circle of friends.

How to play

Five different types of drinks can be ordered as follows:-

Beer	Red Mug	B
Lager	Yellow Mug	L
Red Wine	Red Glass	R
White Wine	Yellow Glass	W

Look at the order detail on the bar and key in your copy. As you key in your order, the drinks will appear on the screen. When you finish the first round, a second will appear in a different order and, if the last round was correct, an additional member will be added to your group.

When the drink runs out, you can go home — by taxi.

The program

```
10 REM 'WHATS YOURS' COPYRIGHT (C) G.LUD
INSKI 1983
11 'DRAGON VERSION BY R.P.JONES
20 REM DRAGON VERSION BY R.P.JONES 1984
25 CLEAR 2000
30 DIM A$(36),M1(8),M2(8),M3(8),M4(8),M5
(8)
40 DATA 87,72,65,84,32,73,83,32,89,79,85
,82,32,79,82,68,69,82,32
50 X1$="":FOR I=1 TO 19:READ X1:X1$=X1$+
RIGHT$(STR$(X1),2):NEXT I
90 GOSUB 9000
```

```
100 REM MAIN ROUTINE
110 PMODE 3,1
120 GOSUB 1000
130 GOSUB 2000
140 SCREEN 1,0
150 REM DRAW DRINKS ORDERED
160 M=0:OW=0
170 FOR J=2 TO 10
175 PCLS(1):GOSUB 2000
180 FOR I=1 TO J
190 W(I)=RND(4)-1
200 IF W(I)=0 THEN PUT(10+I*20,25)-(29+I
*20,40),M1,PSET:GOTO 240
210 IF W(I)=1 THEN PUT(10+I*20,30)-(22+I
*20,40),M2,PSET:GOTO 240
220 IF W(I)=2 THEN PUT(10+I*20,25)-(29+I
*20,40),M3,PSET:GOTO 240
230 IF W(I)=3 THEN PUT(10+I*20,30)-(22+I
*20,40),M4,PSET:GOTO 240
240 NEXT I
250 S=1800
260 FOR I9=1 TO 19
270 P=VAL(MID$(X1$,I9*2-1,2))
280 IF P=32 THEN 300
290 GOSUB 9500
300 S=S+1
310 NEXT I9
320 REM ACCEPT DRINKS ORDER
322 E1=0
325 FOR I=1 TO J
330 Z$=INKEY$:IF Z$=""THEN 330
340 IF Z$<>"B" AND Z$<>"L" AND Z$<>"W" A
ND Z$<>"R" THEN 330
350 IF Z$="B" THEN B1=0:GOTO 390
360 IF Z$="R" THEN B1=1:GOTO 390
370 IF Z$="L" THEN B1=2:GOTO 390
380 IF Z$="W" THEN B1=3:GOTO 390
390 REM
400 IF B1<>W(I) THEN E1=1
410 ON B1+1 GOSUB 3000,3100,3200,3300
420 NEXT I
```

```
430 IF E1=0 THEN 450
440 GOSUB 2000:GOTO 180
450 NEXT J
455 I=4
460 CLS(I)
470 PRINT@ 100," W E L L   D O N E ! ";
480 PRINT@ 229," ANOTHER GO (Y/N) ";
490 Z$=INKEY$:IF Z$=""THEN 510
500 IF Z$="Y" THEN 25 ELSE STOP
510 I=I+1:IF I=9 THEN I=0
520 GOTO 460
999 GOTO 999
1000 REM DRAW MUGS AND GLASSES
1010 PCLS
1020 COLOR 2,1
1030 M1$="BM100,100D15R10U15D10R4U5L4U4L
10"
1040 DRAW M1$
1050 PAINT(105,105),4,2
1060 GET(100,100)-(119,115),M1,G
1070 PCLS
1080 M2$="BM100,100D1R10U1D5L10U5D5R4D3L
4D2R10U2L4U3"
1090 DRAW M2$
1100 PAINT(105,103),4,2
1110 GET(100,100)-(112,110),M2,G
1120 PCLS
1130 COLOR 4,1
1140 DRAW M1$
1150 PAINT(105,105),2,4
1160 GET(100,100)-(119,115),M3,G
1170 PCLS
1180 DRAW M2$
1190 PAINT(105,103),2,4
1200 GET(100,100)-(112,110),M4,G
1210 DRAW M2$
1220 PAINT(105,103),3,4
1230 GET(100,100)-(112,110),M5,G
1240 RETURN
2000 REM DRAW BAR
2010 PCLS(1)
```

```
2015 COLOR 4,2
2020 LINE(10,40)-(240,100),PSET,BF
2030 RETURN
3000 REM RED MUG
3010 PUT(10+I*20,105)-(29+I*20,120),M1,P
SET
3020 RETURN
3100 REM RED GLASS
3110 PUT(10+I*20,110)-(22+I*20,120),M2,P
SET
3120 RETURN
3200 REM YELLOW MUG
3210 PUT(10+I*20,105)-(29+I*20,120),M3,P
SET
3220 RETURN
3300 REM YELLOW GLASS
3310 PUT(10+I*20,110)-(22+I*20,120),M4,P
SET
3320 RETURN
9000 REM CHARACTER SET ROUTINE
9010 DATA 124,134,138,146,162,198,124
9020 DATA 16,48,16,16,16,16,56
9030 DATA 56,68,4,8,16,32,126
9040 DATA 254,2,2,62,2,2,254
9050 DATA 8,24,40,72,252,8,8
9060 DATA 252,128,128,252,2,2,252
9070 DATA 32,64,128,252,130,130,252
9080 DATA 254,2,4,8,16,32,64
9090 DATA 124,130,130,254,130,130,124
9100 DATA 124,130,130,126,2,4,8
9110 DATA 16,40,40,68,124,130,130
9120 DATA 254,130,130,254,130,130,254
9130 DATA 254,128,128,128,128,128,254
9140 DATA 252,130,130,130,130,130,252
9150 DATA 254,128,128,252,128,128,254
9160 DATA 254,128,128,248,128,128,128
9170 DATA 252,128,128,142,132,132,252
9180 DATA 130,130,130,254,130,130,130
9190 DATA 16,16,16,16,16,16,16
9200 DATA 62,8,8,8,8,136,248
9210 DATA 132,152,224,144,136,132,130
```

```
9220 DATA 128,128,128,128,128,128,254
9230 DATA 198,198,170,146,130,130,130
9240 DATA 194,226,162,146,138,142,134
9250 DATA 124,130,130,130,130,130,124
9260 DATA 254,130,130,254,128,128,128
9270 DATA 124,130,130,162,146,124,4
9280 DATA 254,130,130,254,136,132,130
9290 DATA 254,128,128,254,2,2,254
9300 DATA 254,16,16,16,16,16,16
9310 DATA 130,130,130,130,130,130,124
9320 DATA 130,130,130,68,68,40,16
9330 DATA 130,130,130,130,146,170,198
9340 DATA 130,68,40,16,40,68,130
9350 DATA 130,68,40,16,16,16,16
9360 DATA 254,6,12,24,48,96,254
9370 FOR I=1 TO 36
9380 FOR J=0 TO 6
9390 READ X$
9400 A$(I)=A$(I)+X$+","
9410 NEXT J,I
9420 RETURN
9500 REM PRINT CHARACTER
9510 REM P=ASC OF CHR
9520 REM S=START PRINT POS
9530 IF P>47 AND P<58 THEN P=P-47 ELSE P
=P-54
9540 P9=1
9550 FOR I=0 TO 6
9560 P1=INSTR(P9,A$(P),",")
9570 P$=MID$(A$(P),P9,P1-1)
9580 P2=VAL(P$)
9590 POKE S+32*I,P2
9600 P9=P1+1
9610 NEXT I
9620 RETURN
```

PATTERN PAIRS
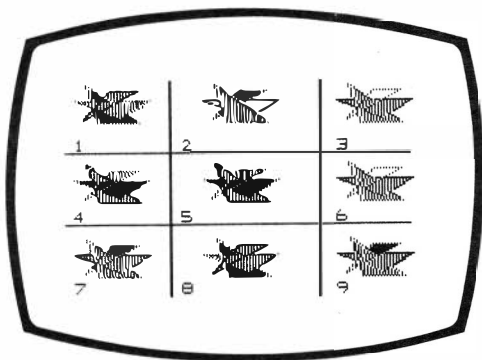
If you have tried Odd One Out in this book, then you will find this following puzzle a little more difficult.

There are nine patterns displayed on the screen, in a range of colours, and you have only a few seconds to compare them and nominate the pair, you believe, are a match.

How to play

Identify your pair, note the numbers alongside and key in your answer. You don't have to key in your answer in strict chronological order. Just punch in your numbers and wait. Correct responses will be rewarded with a

pleasant little high pitched tune, but wrong answers will be faced with a 'cascading sound'.

To continue, press Y for Yes and to stop, press N for No.

A score sheet will appear at the end showing your tries, results, time and average time.

The program

```
10 REM 'PATTERN PAIRS' COPYRIGHT (C) G.L
UDINSKI 1983
20 REM DRAGON VERSION BY R.P.JONES 1984
30 CLEAR 2000
40 DIM A$(36),P1(39),P2(39),P3(39),P4(39
),P5(39),P6(39),P7(39),P8(39)
50 Z1=0:CLS4
60 K9=0:IT=TIMER:R9=0:O9=0:W9=0
70 PRINT@161," I N I T I A L I S A T I O
 N "::PRINT@227," I N    P R O G R E S S
 ";
80 DATA 80,65,84,84,69,82,78,32,80,65,73
,82,83
90 X1$="":FOR I=1 TO 13:READ X1:X1$=X1$+
RIGHT$(STR$(X1),2):NEXT I
100 DATA 15,40,100,40,100,40,100,40,15,90,100,9
0,190,90,15,137,100,137,190,137
110 FOR I=1 TO 9:READ X1(I),Y1(I):NEXT I
120 GOSUB 9000
130 GOSUB 1610
135 GOSUB 2200
140 GOSUB 1400
200 REM MAIN ROUTINE
210 IF K9=1 THEN 260
220 CLS8:PRINT@34," P A T T E R N    P A
I R S ";
230 PRINT@130," ADJUST YOUR VOLUME CONTR
OL ";
240 PRINT@163," PRESS 'ENTER' WHEN READY
 ";
```

```
250 SOUND 100,1:Z$=INKEY$:IF Z$<>CHR$(13
) THEN 250
260 CLS3
270 PRINT@167," C R E A T I N G ";
280 PRINT@231," G R A P H I C S ";
290 PMODE 3,1:PCLS
300 GOSUB 1000
310 SCREEN 1,0
320 TX=TIMER
330 GOSUB 1730
340 ON C GOSUB 1900,2000,2100
350 CLS7
360 K9=1
370 PRINT@34," P A T T E R N    P A I R S
 ";:PRINT@166," ANOTHER GO (Y/N) ? ";
380 Z$=INKEY$:IF Z$="" THEN 380
390 IF Z$="Y" THEN 130
400 IF Z$<>"N" THEN 380
410 CLS3
420 PRINT@34," P A T T E R N    P A I R S
 ";
430 PRINT@64,STRING$(32,236);
440 PRINT@ 132," CORRECT  - ";R9;" "·
450 PRINT@ 196," WRONG    - ";W9;" ";
460 PRINT@ 260," TIME OUT - ";O9;" ";
470 PRINT@ 324," TIME USED- ";INT((TIMER
-IT)/50);" ";
480 PRINT@384,STRING$(32,236);
490 GOTO 490
1000 REM DRAW GRID
1010 COLOR 4,1
1020 S=1796
1030 FOR I9=1 TO 13:P=VAL(MID$(X1$,I9*2-
1,2)):IF P=32 THEN 1050
1040 GOSUB 9500
1050 S=S+2
1060 NEXT I9
1070 LINE(80,40)-(80,175),PSET
1080 LINE(180,40)-(180,175),PSET
1090 LINE(10,85)-(240,85),PSET
1100 LINE(10,130)-(240,130),PSET
```

```
1110 S=4002:P=49:GOSUB 9500
1120 S=4011:P=50:GOSUB 9500
1130 S=4024:P=51:GOSUB 9500
1140 S=5442:P=52:GOSUB 9500
1150 S=5451:P=53:GOSUB 9500
1160 S=5464:P=54:GOSUB 9500
1170 S=6882:P=55:GOSUB 9500
1180 S=6891:P=56:GOSUB 9500
1190 S=6904:P=57:GOSUB 9500
1200 FOR I=1 TO 9
1210 ON Q(I) GOSUB 1230,1240,1250,1260,1
270,1280,1290,1300
1220 NEXT I:RETURN
1230 PUT(X1(I),Y1(I))-(X1(I)+54,Y1(I)+28
),P1,PSET:RETURN
1240 PUT(X1(I),Y1(I))-(X1(I)+54,Y1(I)+28
),P2,PSET:RETURN
1250 PUT(X1(I),Y1(I))-(X1(I)+54,Y1(I)+28
),P3,PSET:RETURN
1260 PUT(X1(I),Y1(I))-(X1(I)+54,Y1(I)+28'
),P4,PSET:RETURN
1270 PUT(X1(I),Y1(I))-(X1(I)+54,Y1(I)+28
),P5,PSET:RETURN
1280 PUT(X1(I),Y1(I))-(X1(I)+54,Y1(I)+28
),P6,PSET:RETURN
1290 PUT(X1(I),Y1(I))-(X1(I)+54,Y1(I)+28
),P7,PSET:RETURN
1300 PUT(X1(I),Y1(I))-(X1(I)+54,Y1(I)+28
),P8,PSET:RETURN
1400 REM DRAW PATTERN 1
1410 PMODE 3,1:PCLS
1420 M1$="BM100,100R50M130,112M100,100"
1430 M2$="BM124,94R18M106,112M124,94"
1440 M3$="BM108,90M116,114M144,114M108,9
0"
1450 COLOR C1,1
1460 DRAW M1$
1470 IF Z1=1 THEN PAINT(110,102),1,C1 EL
SE PAINT(110,102),C2,C1
1480 COLOR C3,1
1490 DRAW M2$
```

```
1500 IF Z1=2 THEN PAINT(133,96),1,C3 ELS
E PAINT(133,96),C1,C3
1510 IF Z1=2 THEN PAINT(112,108),1,C3 EL
SE PAINT(112,108),C1,C3
1520 COLOR C2,1
1530 DRAW M3$
1540 PAINT(114,98),C3,C2
1550 PAINT(118,110),C3,C2
1560 RETURN
1600 REM GREEN INFILL
1610 REM GENERATE COLOUR SEQUENCE
1620 C1=2:C2=3:C3=4:GOSUB 1400:GET(98,88
)-(152,116),P1,G
1630 C1=2:C2=4:C3=3:GOSUB 1400:GET(98,88
)-(152,116),P2,G
1640 C1=3:C2=2:C3=4:GOSUB 1400:GET(98,88
)-(152,116),P3,G
1650 C1=3:C2=4:C3=2:GOSUB 1400:GET(98,88
)-(152,116),P4,G
1660 C1=4:C2=2:C3=3:GOSUB 1400:GET(98,88
)-(152,116),P5,G
1670 C1=4:C2=3:C3=2:GOSUB 1400:GET(98,88
)-(152,116),P6,G
1680 Z1=1:GOSUB 1400:GET(98,88)-(152,116
),P7,G
1690 Z1=2:GOSUB 1400:GET(98,88)-(152,116
),P8,G
1700 RA=RND(8):D1=RND(9)
1710 D2=RND(9):IF D2=D1 THEN 1710
1720 RETURN
1730 REM ACCEPT ANSWER
1740 U=1
1750 Z$=INKEY$:IF TIMER-TX>1000 THEN C=3
:GOTO 1800
1760 IF Z$=""THEN 1750
1770 IF ASC(Z$)<49 OR ASC(Z$)>57 THEN 17
50
1780 U1(U)=VAL(Z$):U=U+1:IF U=3 THEN 179
0 ELSE 1750
1790 IF (U1(1)=D1 AND U1(2)=D2) OR (U1(1
)=D2 AND U1(2)=D1) THEN C=1 ELSE C=2
```

```
1800 RETURN
1900 REM RIGHT
1910 R9=R9+1
1920 CLS2:PRINT@166," W E L L   D O N E
! ";
1930 PLAY"T3L4GABL2O4CO3G"
1940 RETURN
2000 REM WRONG
2010 W9=W9+1
2020 CLS0:PRINT@164," S O R R Y - W R O
N G ! ";
2030 FOR I=255 TO 1 STEP-2:SOUND I,1:NEX
T I:SOUND 1,10
2040 PRINT@288," THE CORRECT CHOICE WAS"
:D1;"&";D2;
2050 FOR I=1 TO 1500:NEXT I
2060 RETURN
2100 REM OUT OF TIME
2110 O9=O9+1
2120 CLS2:PRINT@164," O U T   O F   T I
M E ";
2130 PRINT@288," THE CORRECT CHOICE WAS"
:D1;"&";D2;
2140 FOR I=1 TO 1500:NEXT I
2150 RETURN
2200 REM CREATE PATTERN TABLE
2210 FOR I=1 TO 9:Q1(I)=1:NEXT I
2220 Q(D1)=RA:Q(D2)=RA:Q1(RA)=0
2230 FOR I=1 TO 9:IF I=D1 OR I=D2 THEN 2
260
2240 X=RND(8):IF X=RA OR Q1(X)=0 THEN 22
40
2250 Q(I)=X:Q1(X)=0
2260 NEXT I:RETURN
9000 REM CHARACTER SET ROUTINE
9010 DATA 124,134,138,146,162,198,124
9020 DATA 16,48,16,16,16,16,56
9030 DATA 56,68,4,8,16,32,126
9040 DATA 254,2,2,62,2,2,254
9050 DATA 8,24,40,72,252,8,8
9060 DATA 252,128,128,252,2,2,252
```

```
9070 DATA 32,64,128,252,130,130,252
9080 DATA 254,2,4,8,16,32,64
9090 DATA 124,130,130,254,130,130,124
9100 DATA 124,130,130,126,2,4,8
9110 DATA 16,40,40,68,124,130,130
9120 DATA 254,130,130,254,130,130,254
9130 DATA 254,128,128,128,128,128,254
9140 DATA 252,130,130,130,130,130,252
9150 DATA 254,128,128,252,128,128,254
9160 DATA 254,128,128,248,128,128,128
9170 DATA 252,128,128,142,132,132,252
9180 DATA 130,130,130,254,130,130,130
9190 DATA 16,16,16,16,16,16,16
9200 DATA 62,8,8,8,8,136,248
9210 DATA 132,152,224,144,136,132,130
9220 DATA 128,128,128,128,128,128,254
9230 DATA 198,198,170,146,130,130,130
9240 DATA 194,226,162,146,138,142,134
9250 DATA 124,130,130,130,130,130,124
9260 DATA 254,130,130,254,128,128,128
9270 DATA 124,130,130,162,146,124,4
9280 DATA 254,130,130,254,136,132,130
9290 DATA 254,128,128,254,2,2,254
9300 DATA 254,16,16,16,16,16,16
9310 DATA 130,130,130,130,130,130,124
9320 DATA 130,130,130,68,68,40,16
9330 DATA 130,130,130,130,146,170,198
9340 DATA 130,68,40,16,40,68,130
9350 DATA 130,68,40,16,16,16,16
9360 DATA 254,6,12,24,48,96,254
9370 FOR I=1 TO 36
9380 FOR J=0 TO 6
9390 READ X$
9400 A$(I)=A$(I)+X$+","
9410 NEXT J,I
9420 RETURN
9500 REM PRINT CHARACTER
9510 REM P=ASC OF CHR
9520 REM S=START PRINT POS
9530 IF P>47 AND P<58 THEN P=P-47 ELSE P
=P-54
```

```
9540 P9=1
9550 FOR I=0 TO 6
9560 P1=INSTR(P9,A$(P),",")
9570 P$=MID$(A$(P),P9,P1-1)
9580 P2=VAL(P$)
9590 POKE S+32*I,P2
9600 P9=P1+1
9610 NEXT I
9620 RETURN
9800 PMODE4:SCREEN1,1
9850 EXEC&H7531
```

CONCENTRATION TEST

```
              1                   2
  1234567890123456789012345678
A 448202144230█ 19146206019082 A
B 183088521843623082450819813 6 B
C 834939546231138995008227498 7 C
D 046809364823484573738942952 5 D
E 298215255273634137162320863 9 E
F 461141415082682186414337002 77 F
G 897774634696136466072010499 5 4 G
H 953908488660616202565374849 5 H
I 808065667 0█ 529619976279398 4 I
J 572512148861871531369824512 2 J
K 438642332164780216098673640 7 K
```

KEY IN ROW/COL , ROW/COL

This time we have given a little longer to work out your answers, because we think you'll need all the brainpower at your command.

On the screen will be displayed 11 rows of 28 numbers and you have eight minutes to find as many pairs of adjacent numbers, whose sum is 10, as possible.

These pairs must be in the same row.

How to play

When you have found the matching pairs, key in the row number followed by the column number of each, and

then press Example A3, A4. Always place a comma between each entry. If your pair of numbers is correct they will be blocked out on the screen.

You may key in the pairs in any order and, if you cannot find any 'missing' pairs before your time is up, type in N followed by ENTER.

This ending of the game will cause your score sheet to be displayed. If you fail to complete in the alloted time the score sheet will automatically appear.

Your score sheet will give a classification and an IQ rating on your powers of concentration.

Programming hints

Lines 50-180 draw out the matrix of numbers and the row and column labels. Note that the letters are displayed in a loop by referring to their ASCII values. As the letter A has ASCII value of 65, B has a value of 66 etc so CHR$(64+J) where J is 1,2,3 etc. will display the letters A,B,C etc.

I would not advise any alterations as the scoring and IQ levels were determined by scientific testing, and any changes would make the scores and IQ level incorrect.

The program

```
10 REM CONCENTRATION TESTER
11 'COPYRIGHT (C) G.LUDINSKI 1983
12 'DRAGON 32/64 VERSION BY R.P.JONES
20 CLEAR 2000
30 DIM A$(11,28)
40 TIMER=0:ERROR=0:SCORE=0
50 REM DRAW MATRIX
60 CLS
70 PRINT"          1          2
   ";
```

```
80 PRINT"  1234567890123456789012345678
    ";
90 PRINT
100 FOR J=1 TO 11
110 PRINT CHR$(64+J);" ";
120 FOR I=1 TO 28
130 A$(J,I)=MID$(STR$(INT(RND(0)*10)),2,
1)
140 PRINT A$(J,I);
150 NEXT I
160 PRINT" ";CHR$(64+J);
170 NEXT J
180 PRINT:PRINT" KEY IN ROW/COL , ROW/CO
L ";
200 REM CHECK KEYBOARD
210 R1=0:R2=0:C1=0:C2=0
220 GOSUB 2100
230 IF Z$="N" THEN 2700
240 IF Z$<"A" OR Z$>"K" THEN 2000
250 R1=ASC(Z$)-64
260 GOSUB 2100
270 IF ASC(Z$)<49 OR ASC(Z$)>57 THEN 200
0
280 C1=ASC(Z$)-48
290 GOSUB 2100
300 IF Z$<>"," AND (ASC(Z$)<48 OR ASC(Z$)
>57) THEN GOTO 2000
310 IF Z$="," THEN 360
320 C1=C1*10+(ASC(Z$)-48)
330 IF C1>28 THEN 2000
340 GOSUB 2100
350 IF Z$<>"," THEN 2000
360 GOSUB 2100
370 IF Z$<"A"OR Z$>"K" THEN 2000
380 R2=ASC(Z$)-64
390 GOSUB 2100
400 IF ASC(Z$)<49 OR ASC(Z$)>57 THEN 200
0
410 C2=ASC(Z$)-48
420 GOSUB 2100
430 IF ASC(Z$)=13 THEN 470
```

```
440 IF ASC(Z$)<48 OR ASC(Z$)>57 THEN 200
0
450 C2=C2*10+(ASC(Z$)-48)
460 IF C2>28 THEN 2000
470 IF R1<>R2 OR ( R1=R2 AND C1=C2) THEN
 2000
480 IF ABS(C1-C2)<>1 THEN 2000
490 REM VERIFY ASSERTION
500 IF VAL(A$(R1,C1))+VAL(A$(R2,C2))=10
THEN GOSUB 2200 ELSE GOSUB 2500
510 GOTO 200
520 GOTO 520
2000 REM ERROR ROUTINE
2010 E0$="invalid - re-enter"
2020 PRINT@480,STRING$(30,32);
2030 FOR I=1 TO 5
2040 PRINT@487,E0$;
2050 FOR J=1 TO 200:NEXT J
2060 PRINT@487,"                    ";
2070 FOR J=1 TO 200:NEXT J,I
2080 PRINT@480," KEY IN ROW/COL    ROW/CO
L ";
2090 GOTO 220
2100 REM KEYBOARD READ ROUTINE
2110 Z$=INKEY$
2120 IF TIMER>24000 THEN 2700
2130 IF Z$=""THEN 2110
2140 RETURN
2200 REM RIGHT
2210 A$(R1,C1)=CHR$(240)
2220 A$(R2,C2)=CHR$(240)
2230 GOSUB 2300
2240 SCORE=SCORE+1
2250 RETURN
2300 REM REDRAW MATRIX
2310 CLS
2320 PRINT"          1         2
   ";
2330 PRINT" 1234567890123456789012345678
8 ";
2340 PRINT
```

```
2350 FOR J=1 TO 11
2360 PRINT CHR$(64+J);" ";
2370 FOR I=1 TO 28
2380 PRINT A$(J,I);
2390 NEXT I
2400 PRINT" ";CHR$(64+J);
2410 NEXT J
2420 PRINT:PRINT" KEY IN ROW/COL , ROW/C
OL ";
2430 RETURN
2500 REM WRONG
2510 E1$="no match found"
2520 PRINT @480,STRING$(30,32);
2530 FOR I=1 TO 5
2540 PRINT@489,E1$;
2550 FOR J=1 TO 200:NEXT J
2560 PRINT@489,"                    ";
2570 FOR J=1 TO 200:NEXT J,I
2580 PRINT@480," KEY IN ROW/COL , ROW/CO
L ";
2590 ERROR=ERROR+1
2600 RETURN
2700 REM FINISHED
2710 MAX=0
2720 CLS
2730 PRINT@130,STRING$(28,"*");
2740 PRINT@194,"    COMPUTING RESULTS";
2750 PRINT@258,STRING$(28,"*");
2760 FOR J=1 TO 11:FOR I=1 TO 27
2770 IF VAL(A$(J,I))+VAL(A$(J,I+1))=10 T
HEN MAX=MAX+1
2780 NEXT I,J
2790 CLS
2800 PRINT@ 96," YOU FOUND ";SCORE;" PAI
RS OUT OF ";MAX;
2810 PRINT@160," YOU MADE ";ERROR;" MIST
AKES";
2820 PRINT@224," YOU'RE 'IQ' RATING IS "
;INT((SCORE/(MAX*0.6))*100)
2830 PRINT@416,"    ANOTHER GO (Y/N)";:
INPUT Z$
2840 IF Z$="Y" THEN 10 ELSE STOP
```

WIRE MAZE
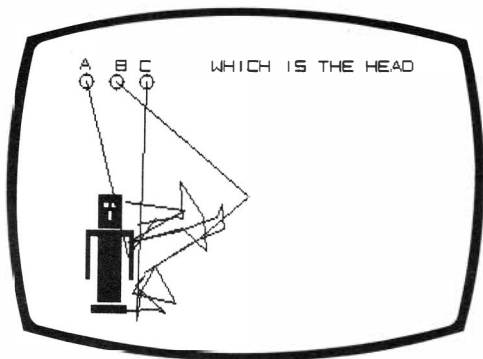
Well at last you have your own robot to cut the grass, clean the car, wash the windows and take the dog for a walk. There is one snag, however.

Your robot has been wired up incorrectly. It must have been Friday afternoon when the other robots put your model together. At the moment, if you press the arm-control button the robot's legs move. You, I'm afraid, are going to have to rewire your new family friend.

How to play

When the program starts a message is displayed telling you that the maze of strings is being created. When this is completed the robot and strings are displayed

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connected to buttons A, B and C. The objective is to determine which button controls the head, and then the arms, and finally the feet. You tell the computer your decision by entering either A, B or C. If you are correct that part of the body will respond. If you are wrong — then disaster strikes.

Programming hints

You may find that the time taken to create the maze is too short or strings too simple. The time taken can be altered by changing the number in line 1010. Similarly, changing the values of X1 and Y1 in line 1020 will tend to increase the complexity of the maze.

The program

```
2 REM WIRE MAZE
3 'COPYRIGHT (C) G.LUDINSKI 1983
4 'DRAGON 32/64 VERSION BY R.P.JONES
10 PMODE 4,1:PCLS
11 CLS
12 PRINT@130,STRING$(28,"*")
13 PRINT@194,"*   W I R E   M A Z E
  *"
14 PRINT@258,STRING$(28,"*")
15 CLEAR 2000:PCLEAR 8
20 DIM A$(36),R1(62),R2(8),R3(8),W(22)
21 DATA 87,72,73,67,72,73,83,84,72,69,72
,69,65,68,65,82,77,83,76,69,71,83
22 FOR I=1 TO 22:READ W(I):NEXT I
23 REMDATA 87,69,76,76,68,79,78,69:REMFO
R I=1 TO 8:REMREAD V(I):REMNEXT I
24 GET(0,0)-(16,20),R3,G
25 GOSUB 9000:REM INITIALISE CHARACTER S
ET
30 REM DRAW AND POSITION ROBOT
40 REM DRAW HEAD
50 S=1800
60 FOR J=0 TO 20
```

```
70 POKE S+J*32,255:POKE S+1+J*32,255
80 NEXT J
90 FOR X=68 TO 70:FOR Y=13 TO 15:PRESET(
X,Y):PRESET(X+5,Y):NEXT Y,X
100 FOR X=71 TO 72:FOR Y=18 TO 23:PRESET
(X,Y):NEXT Y,X
110 REM DRAW SHOULDERS
120 S=S+704
130 FOR J=0 TO 3
140 POKE S-1+J*32,255:POKE S+J*32,255:PO
KE S+1+J*32,255:POKE S+2+J*32,255
150 NEXT J
160 REM DRAW ARMS AND BODY
170 S=S+128
180 FOR J=0 TO 40
190 POKE S+J*32,255:POKE S+1+J*32,255
200 IF J<27 THEN POKE S-1+J*32,224:POKE
S+2+J*32,7
210 NEXT J
220 REM DRAW FEET
230 S=S+1376
240 FOR J=0 TO 4
250 POKE S-1+J*32,15:POKE S+J*32,255:POK
E S+1+J*32,255:POKE S+2+J*32,240
260 NEXT J
270 GET(55,7)-(87,82),R1,G
280 PCLS
290 PRINT@194,"* D R A W I N G   M A Z E
 *"
300 PUT(20,100)-(52,175),R1,PSET
310 GET(28,100)-(44,120),R2,G
400 REM DRAW STRINGS
410 REM HEAD
420 H=RND(3):X=47:Y=105:Z=H
430 GOSUB 1000
440 A=RND(3):IF A=H THEN 440
450 Z=A:X=52:Y=130
460 GOSUB 1000
470 F=RND(3):IF F=H OR F=A THEN 470
480 Z=F:X=47:Y=173
490 GOSUB 1000
```

```
500 REM DRAW BUTTONS
510 FOR X=20 TO 60 STEP 20
520 CIRCLE(X,30),5
530 NEXT X
540 S=2050:P=65:GOSUB 9500
550 S=2053:P=66:GOSUB 9500
560 S=2055:P=67:GOSUB 9500
565 SCREEN 1,0
570 FOR I=1 TO 4:PCOPY I TO I+4:NEXT I
580 REM INPUT ROUTINE
590 GOSUB 900
600 S=S+1
610 FOR I1=11 TO 14
620 S=S+1:P=W(I1):GOSUB 9500
630 NEXT I1
640 GOSUB 1200:REM INKEY ROUTINE
650 Z=ASC(Z$)-64:IF Z=H THEN GOSUB 2500
ELSE GOSUB 3000
660 IF Z<>H THEN 280
670 GOSUB 900
680 S=S+1
690 FOR I1=15 TO 18
700 S=S+1:P=W(I1):GOSUB 9500
710 NEXT I1
720 GOSUB 1200
730 Z=ASC(Z$)-64:IF Z=A THEN GOSUB 2700
ELSE GOSUB 3000
740 IF Z<>A THEN 280
750 GOSUB 900
760 S=S+1
770 FOR I1=19 TO 22
780 S=S+1:P=W(I1):GOSUB 9500
790 NEXT I1
800 GOSUB 1200
810 Z=ASC(Z$)-64:IF Z=F THEN GOSUB 2900
ELSE GOSUB 3000
820 GOTO 280
900 S=2060
910 FOR I1=1 TO 5
920 S=S+1:P=W(I1):GOSUB 9500
930 NEXT I1
```

```
 940 S=S+1
 950 FOR I1=6 TO 7
 960 S=S+1:P=W(I1):GOSUB 9500
 970 NEXT I1
 975 S=S+1
 980 FOR I1=8 TO 10
 985 S=S+1:P=W(I1):GOSUB 9500
 990 NEXT I1
 995 RETURN
 999 GOTO 999
1000 REM STRING ROUTINE
1010 FOR I=1 TO 10
1020 X1=RND(39):Y1=RND(29):U=RND(2):R=RN
D(2)
1030 IF U=1 AND R=1 AND Y-Y1>30 AND X+X1
<255 THEN L=1:GOTO 1080
1040 IF U=1 AND R=2 AND Y-Y1>30 AND X-X1
>47 THEN L=2:GOTO 1080
1050 IF U=2 AND R=1 AND Y+Y1<191 AND X+X
1<255 THEN L=3:GOTO 1080
1060 IF U=2 AND R=2 AND Y+Y1<191 AND X-X
1>47 THEN L=4:GOTO 1080
1070 GOTO 1020
1080 ON L GOSUB 1130,1150,1120,1140
1090 NEXT I
1100 LINE(X,Y)-(Z*20,30),PSET
1110 RETURN
1120 LINE(X,Y)-(X+X1,Y+Y1),PSET:X=X+X1:Y
=Y+Y1:RETURN
1130 LINE(X,Y)-(X+X1,Y-Y1),PSET:X=X+X1:Y
=Y-Y1:RETURN
1140 LINE(X,Y)-(X-X1,Y+Y1),PSET:X=X-X1:Y
=Y+Y1:RETURN
1150 LINE(X,Y)-(X-X1,Y-Y1),PSET:X=X-X1:Y
=Y-Y1:RETURN
1200 REM INKEY ROUTINE
1210 Z$=INKEY$:IF Z$=""THEN 1210
1220 IF Z$<>"A" AND Z$<>"B" AND Z$<>"C"
THEN 1210
1230 RETURN
2500 REM HEAD RIGHT
```

```
2510 FOR I=1 TO 20
2520 PUT(28,100)-(44,120),R3,PSET
2530 PUT(28,60)-(44,80),R2,PSET
2540 PUT(28,60)-(44,80),R3,PSET
2550 PUT(28,100)-(44,120),R2,PSET
2560 NEXT I
2570 RETURN
2700 REM ARMS RIGHT
2710 FOR I=1 TO 5
2720 FOR J=0 TO 27
2730 POKE 5606+J*32,0
2740 NEXT J
2750 FOR K=5478 TO 5480
2760 FOR J=0 TO 3
2770 POKE K+J*32,255
2780 NEXT J
2790 NEXT K
2795 FOR K1=1 TO 100:NEXT K1
2800 FOR K=5480 TO 5478 STEP -1
2810 FOR J=0 TO 3
2820 POKE K+J*32,0
2830 NEXT J
2840 NEXT K
2850 FOR J=0 TO 27
2860 POKE 5606+J*32,56
2870 NEXT J,I
2880 PUT(20,100)-(52,175),R1,PSET
2890 RETURN
2900 REM LEGS RIGHT
2940 S=6349:P=87:GOSUB 9500
2950 S=S+2:P=69:GOSUB 9500
2960 S=S+2:P=76:GOSUB 9500:S=S+2:P=76:GO
SUB 9500
2970 S=S+4:P=68:GOSUB 9500:S=S+2:P=79:GO
SUB 9500
2980 S=S+2:P=78:GOSUB 9500:S=S+2:P=69:GO
SUB 9500
2990 FOR I=1 TO 3000:NEXT I:RETURN
3000 REM WRONG
3010 PUT(28,100)-(44,120),R3,PSET
3020 FOR X=44 TO 252 STEP 16
```

```
3030 PUT(X,100)-(X+16,120),R2,PSET
3040 FOR J=1 TO 250:NEXT J
3050 PUT(X,100)-(X+16,120),R3,PSET
3060 NEXT X
3070 RETURN
9000 REM CHARACTER SET ROUTINE
9010 DATA 124,134,138,146,162,198,124
9020 DATA 16,48,16,16,16,16,56
9030 DATA 56,68,4,8,16,32,126
9040 DATA 254,2,2,62,2,2,254
9050 DATA 8,24,40,72,252,8,8
9060 DATA 252,128,128,252,2,2,252
9070 DATA 32,64,128,252,130,130,252
9080 DATA 254,2,4,8,16,32,64
9090 DATA 124,130,130,254,130,130,124
9100 DATA 124,130,130,126,2,4,8
9110 DATA 16,40,40,68,124,130,130
9120 DATA 254,130,130,254,130,130,254
9130 DATA 254,128,128,128,128,128,254
9140 DATA 252,130,130,130,130,130,252
9150 DATA 254,128,128,252,128,128,254
9160 DATA 254,128,128,248,128,128,128
9170 DATA 252,128,128,142,132,132,252
9180 DATA 130,130,130,254,130,130,130
9190 DATA 16,16,16,16,16,16,16
9200 DATA 62,8,8,8,8,136,248
9210 DATA 132,152,224,144,136,132,130
9220 DATA 128,128,128,128,128,128,254
9230 DATA 198,198,170,146,130,130,130
9240 DATA 194,226,162,146,138,142,134
9250 DATA 124,130,130,130,130,130,124
9260 DATA 254,130,130,254,128,128,128
9270 DATA 124,130,130,162,146,124,4
9280 DATA 254,130,130,254,136,132,130
9290 DATA 254,128,128,254,2,2,254
9300 DATA 254,16,16,16,16,16,16
9310 DATA 130,130,130,130,130,130,124
9320 DATA 130,130,130,68,68,40,16
9330 DATA 130,130,130,130,146,170,198
9340 DATA 130,68,40,16,40,68,130
9350 DATA 130,68,40,16,16,16,16
```

```
9360 DATA 254,6,12,24,48,96,254
9370 FOR I=1 TO 36
9380 FOR J=0 TO 6
9390 READ X$
9400 A$(I)=A$(I)+X$+","
9410 NEXT J,I
9420 RETURN
9500 REM PRINT CHARACTER
9510 REM P=ASC OF CHR
9520 REM S=START PRINT POS
9530 IF P>47 AND P<58 THEN P=P-47 ELSE P
=P-54
9540 P9=1
9550 FOR I=0 TO 6
9560 P1=INSTR(P9,A$(P),",")
9570 P$=MID$(A$(P),P9,P1-1)
9580 P2=VAL(P$)
9590 POKE S+32*I,P2
9600 P9=P1+1
9610 NEXT I
9620 RETURN
```

ODD ONE OUT
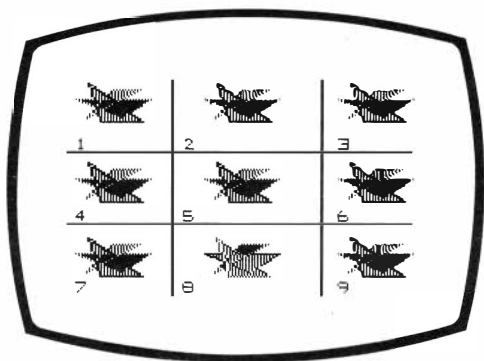
Nine patterns are displayed on the screen and you are given only a few seconds to compare them and identify the odd one out.

A score sheet will be displayed, showing the number of puzzles completed, number correct and the time and average time taken.

How to play

Each of the patterns on the screen will be identified by a number, and you must key in the appropriate number as your guess.

If you get the answer wrong, you will be told the correct answer, to the accompaniment of a 'cascading' sound. Get it right, however, and you will hear a pleasant little tune.

After each attempt you will be asked if you wish more (Y for Yes) or wish to stop (N for No).

Programming hints

The random colour sequence is produced by the subroutine at lines 2000-2100. The sequence is then used by the subroutine at lines 1500-1660 to draw the patterns. Finally the grid and patterns are drawn by the subroutine at lines 1000-1250. To lengthen the pause adjust the 250 in line 2120.

The program

```
10 REM 'ODD ONE OUT' COPYRIGHT (C) G.LUD
INSKI 1983
20 REM DRAGON VERSION BY R.P.JONES 1984
30 CLEAR 2000
40 DIM A$(36),P1(39),P2(39)
50 CLS4
60 K9=0:IT=TIMER:R9=0:O9=0:W9=0
70 PRINT@161," I N I T I A L I S A T I O
 N ";:PRINT@227," I N    P R O G R E S S
 ";
80 DATA 79,68,68,32,79,78,69,32,79,85,84
90 X1$="":FOR I=1 TO 11:READ X1:X1$=X1$+
RIGHT$(STR$(X1),2):NEXT I
100 DATA 15,40,100,40,190,40,15,90,100,9
0,190,90,15,137,100,137,190,137
110 FOR I=1 TO 9:READ X1(I),Y1(I):NEXT I
120 GOSUB 9000
130 GOSUB 2000
140 GOSUB 1500
150 GET(98,88)-(152,116),P1,G
```

```
160 C1=A1:C2=A2:C3=A3:GOSUB 1500
170 GET(98,88)-(152,116),P2,G
200 REM MAIN ROUTINE
210 IF K9=1 THEN 260
220 CLS8:PRINT@36," O D D    O N E    O U
T ";
230 PRINT@130," ADJUST YOUR VOLUME CONTR
OL ";
240 PRINT@163," PRESS 'ENTER' WHEN READY
 ";
250 SOUND 100,1:Z$=INKEY$:IF Z$<>CHR$(13
) THEN 250
260 CLS3
270 PRINT@167," C R E A T I N G ";
280 PRINT@231," G R A P H I C S ";
290 PMODE 3,1:PCLS
300 GOSUB 1000
310 SCREEN 1,0
320 TX=TIMER
330 GOSUB 2110
340 ON C GOSUB 2200,2300,2400
350 CLS7
360 K9=1
370 PRINT@36," O D D    O N E    O U T ";:
PRINT@166," ANOTHER GO (Y/N) ? ";
380 Z$=INKEY$:IF Z$=""THEN 380
390 IF Z$="Y" THEN 130
400 IF Z$<>"N" THEN 380
410 CLS3
420 PRINT@36," O D D    O N E    O U T ";
430 PRINT@64,STRING$(32,236);
440 PRINT@ 132," CORRECT  - ";R9;" ";
450 PRINT@ 196," WRONG    - ";W9;" ";
460 PRINT@ 260," TIME OUT - ";O9;" ";
470 PRINT@ 324," TIME USED- ";INT((TIMER
-IT)/50);" ";
480 PRINT@384,STRING$(32,236);
490 GOTO 490
1000 REM DRAW GRID
1010 COLOR 4,1
1020 S=1796
```

```
1030 FOR I9=1 TO 11:P=VAL(MID$(X1$,I9*2-
1,2)):IF P=32 THEN 1050
1040 GOSUB 9500
1050 S=S+2
1060 NEXT I9
1070 LINE(80,40)-(80,175),PSET
1080 LINE(180,40)-(180,175),PSET
1090 LINE(10,85)-(240,85),PSET
1100 LINE(10,130)-(240,130),PSET
1110 S=4002:P=49:GOSUB 9500
1120 S=4011:P=50:GOSUB 9500
1130 S=4024:P=51:GOSUB 9500
1140 S=5442:P=52:GOSUB 9500
1150 S=5451:P=53:GOSUB 9500
1160 S=5464:P=54:GOSUB 9500
1170 S=6882:P=55:GOSUB 9500
1180 S=6891:P=56:GOSUB 9500
1190 S=6904:P=57:GOSUB 9500
1200 FOR I=1 TO 9
1210 IF I=ANSWER THEN 1230
1220 PUT(X1(I),Y1(I))-(X1(I)+54,Y1(I)+28
),P1,PSET
1230 NEXT I
1240 PUT(X1(ANS),Y1(ANS))-(X1(ANS)+54,Y1
(ANS)+28),P2,PSET
1250 RETURN
1500 REM DRAW PATTERN 1
1510 PMODE 3,1:PCLS
1520 M1$="BM100,100R50M130,112M100,100"
1530 M2$="BM124,94R18M106,112M124,94"
1540 M3$="BM108,90M116,114M144,114M108,9
0"
1550 COLOR C1,1
1560 DRAW M1$
1570 PAINT(110,102),C2,C1
1580 COLOR C3,1
1590 DRAW M2$
1600 PAINT(133,96),C1,C3
1610 PAINT(112,108),C1,C3
1620 COLOR C2,1
1630 DRAW M3$
```

```
1640 PAINT(114,98),C3,C2
1650 PAINT(118,110),C3,C2
1660 RETURN
2000 REM GENERATE COLOUR SEQUENCE
2010 C1=RND(4):IF C1=1 THEN 2010
2020 C2=RND(4):IF C2=1 OR C2=C1 THEN 202
0
2030 C3=RND(4):IF C3=1 OR C3=C1 OR C3=C2
 THEN 2030
2040 A1=C1:A2=C2:A3=C3
2050 A=RND(3)
2060 IF A=1 THEN A1=C2:A2=C1:GOTO 2090
2070 IF A=2 THEN A2=C3:A3=C2:GOTO 2090
2080 A3=C1:A1=C3
2090 ANSWER=RND(9)
2100 RETURN
2110 REM ACCEPT ANSWER
2120 Z$=INKEY$:IF TIMER-TX>250 THEN C=3:
GOTO 2160
2130 IF Z$=""THEN 2120
2140 IF ASC(Z$)<49 OR ASC(Z$)>57 THEN 21
20
2150 IF VAL(Z$)=ANSWER THEN C=1 ELSE C=2
2160 RETURN
2200 REM RIGHT
2210 R9=R9+1
2220 CLS2:PRINT@166," W E L L   D O N E
! ";
2230 PLAY"T3L4GABL2O4CO3G"
2240 RETURN
2300 REM WRONG
2310 W9=W9+1
2320 CLS0:PRINT@164," S O R R Y - W R O
N G ! ";
2330 FOR I=255 TO 1 STEP-2:SOUND I,1:NEX
T I:SOUND 1,10
2340 PRINT@291," THE CORRECT CHOICE WAS"
:AN;" ";
2350 FOR I=1 TO 1500:NEXT I
2360 RETURN
2400 REM OUT OF TIME
```

```
2410 O9=O9+1
2420 CLS2:PRINT@164," O U T    O F    T I
M E ";
2430 PRINT@291," THE CORRECT CHOICE WAS"
;AN;" ";
2440 FOR I=1 TO 1500:NEXT I
2450 RETURN
9000 REM CHARACTER SET ROUTINE
9010 DATA 124,134,138,146,162,198,124
9020 DATA 16,48,16,16,16,16,56
9030 DATA 56,68,4,8,16,32,126
9040 DATA 254,2,2,62,2,2,254
9050 DATA 8,24,40,72,252,8,8
9060 DATA 252,128,128,252,2,2,252
9070 DATA 32,64,128,252,130,130,252
9080 DATA 254,2,4,8,16,32,64
9090 DATA 124,130,130,254,130,130,124
9100 DATA 124,130,130,126,2,4,8
9110 DATA 16,40,40,68,124,130,130
9120 DATA 254,130,130,254,130,130,254
9130 DATA 254,128,128,128,128,128,254
9140 DATA 252,130,130,130,130,130,252
9150 DATA 254,128,128,252,128,128,254
9160 DATA 254,128,128,248,128,128,128
9170 DATA 252,128,128,142,132,132,252
9180 DATA 130,130,130,254,130,130,130
9190 DATA 16,16,16,16,16,16,16
9200 DATA 62,8,8,8,8,136,248
9210 DATA 132,152,224,144,136,132,130
9220 DATA 128,128,128,128,128,128,254
9230 DATA 198,198,170,146,130,130,130
9240 DATA 194,226,162,146,138,142,134
9250 DATA 124,130,130,130,130,130,124
9260 DATA 254,130,130,254,128,128,128
9270 DATA 124,130,130,162,146,124,4
9280 DATA 254,130,130,254,130,132,130
9290 DATA 254,128,128,254,2,2,254
9300 DATA 254,16,16,16,16,16,16
9310 DATA 130,130,130,130,130,130,124
9320 DATA 130,130,130,68,68,40,16
9330 DATA 130,130,130,130,146,170,198
```

```
9340 DATA 130,68,40,16,40,68,130
9350 DATA 130,68,40,16,16,16,16
9360 DATA 254,6,12,24,48,96,254
9370 FOR I=1 TO 36
9380 FOR J=0 TO 6
9390 READ X$
9400 A$(I)=A$(I)+X$+","
9410 NEXT J,I
9420 RETURN
9500 REM PRINT CHARACTER
9510 REM P=ASC OF CHR
9520 REM S=START PRINT POS
9530 IF P>47 AND P<58 THEN P=P-47 ELSE P
=P-54
9540 P9=1
9550 FOR I=0 TO 6
9560 P1=INSTR(P9,A$(P),",")
9570 P$=MID$(A$(P),P9,P1-1)
9580 P2=VAL(P$)
9590 POKE S+32*I,P2
9600 P9=P1+1
9610 NEXT I
9620 RETURN
```

FRACTION CAR CHASE
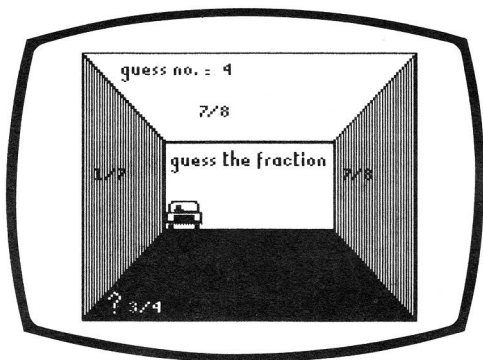
We might have named this program 'Duel' after the film of the same name as, like the hero of the film, you are being chased by a juggernaut driver.

As you turn right, the juggernaut turns right; turn left and it still follows you.

Coming up in the near distance is an archway. You **must** escape through the arch before the lumbering truck rolls over you.

Your only answer is to work out how far across the road the centre of the arch is. Guess wrongly and you hit the arch damaging your car. Too many wrong guesses and your car will be immobilised leaving you the defenceless victim of the fast approaching juggernaut.

How to play

The computer will think of a number whose numerator (top half) and denominator (bottom half) are both ten or less. You must guess the correct fraction and enter it in using the / symbol (eg 2/3) and ENTER. If your guess is too big, or small, you will be told. The guess closest to the correct answer, will be displayed on the arch. The lower guess will be shown on the left hand pillar and the higher guess, closest to the correct answer, will be shown on the right hand pillar.

If your answer is displayed on the arch then you know that you are almost correct. You have nine lives.

This is more difficult than it sounds, after all do you know which is the larger, 3/8 or 4/9? You will be amazed at what you find out about fractions. A hint is that to make a fraction bigger, increase its numerator (top half) or reduce its denominator (bottom half) or both. Do the opposite to make a fraction smaller.

Programming hints

To make the game easier, reduce the range of fractions allowed. This is done by reducing the tens in line 800. To make it more difficult you may increase these numbers to maximum values of 99 each, but also increase answer length check in line 310 and 10 numerator in line 370.

If you want to allow more guesses, increase the 10 in line 610.

The program

```
10 'FRACTION CAR CHASE
20 'COPYRIGHT (C) G LUDINSKI 1984
30 'DRAGON32/64 VERSION RICHARD HALE
40 PCLEAR8:CLEAR5000:PMODE3,1:COLOR1,3:P
CLS2:SCREEN1,0:DIMAL$(45)
50 'AL$ HOLDS THE DRAW STRINGS FOR THE C
HARACTERS
60 FOR I =10TO45:READAL$(I):NEXT
70 FOR I=0TO9:READAL$(I):NEXT
80 'CA$ HOLDS THE DRAW STRING FOR THE CA
R
90 CA$="BR4C3R2H1R1H1R1H1R1H1L3U1R26D1L1
D4L3U4L17BU2C4L2U4R1D4BR18U4R2D4U4BL3C3L
15BD1C1R15D1L15D1R15D1L15BL5U5R25D5U5L25
E1U4E3R17F3D4L13BU1C3L2U3L1D3L2R4BD1C1L4
BD9L4R23"
100 'DRAW THE CAR THEN SET THE X & Y COO
RDINATES, COLOUR AND STRING REQUIRED THE
 CALL HI RES TEXT SUBROUTINE. THEN RESET
 FOREGROUND COLOUR
110 DRAW"BM112,140XCA$;":TX=60:TY=60:TC=
4:TX$="FRACTION CAR CHASE":GOSUB9010:DRA
W"C1"
120 ' DISPLAY THE TITLE SCREEN WHILE THE
 GAME GRAPHICS ARE SET UP, AND THE TARGE
T FRACTION DERIVED
130 PMODE3,1:SCREEN 1,0:PMODE3,5:PCLS4:G
OSUB720:SCREEN1,0
140 ' SCAN THE KEYBOARD
150 R$=INKEY$:IF R$="" THEN 150
160 'IF ITS A NUMBER ADD IT TO THE INPUT
170 RV=ASC(R$) :IF RV>47 AND RV<58 THEN
IN$=IN$+R$:GOTO 290
180 'OTHERWISE ONLY ALLOW ENTER, BACKSPA
CE OR SLASH
190 IF RV <>13 AND RV<>8 AND RV<> 47 THE
N SOUND1,1:GOTO 150
200 'IF ENTER THEN GO CHECK GUESS
210 IF RV=13 THEN GOTO 310
```

```
220 ' IF SLASH THEN ADD TO STRING
230 IF RV=47 THEN IN$=IN$+R$:GOTO 290
240 ' IT MUST BE A BACKSPACE CHECK THAT
WE CAN BACKSPACE
250 J=LEN(IN$):IF J=Ø THEN SOUND1,1:GOTO
 150
260 ' REMOVE LAST CHARACTER
270 IN$=MID$(IN$,1,J-1)
280 ' WIPE OUT AND REDISPLAY INPUT STRIN
G
290 LINE (36,175)-(130,191),PSET,BF:TX=3
6:TY=185:TX$=IN$:TC=4:GOSUB9010:DRAW"C1"
:GOTO 150
300 ' LETS CHECK THE GUESS, IT MUST BE N
O MORE THAN FOUR LONG X/XX
310 I=LEN(IN$):IFI>4THEN 570
320 ' MUST HAVE ONE, ONLY / IN IT
330 J=INSTR(1,IN$,"/"):IF J <2 THEN 570
340 ' CHECK FOR SECOND /
350 K=INSTR(J+1,IN$,"/"):IF K<>Ø THEN 57
Ø
360 ' EXTRACT NUMERATOR
370 GF=VAL(MID$(IN$,1,J-1))
380 ' EXTRACT DENOMINATOR
390 GG=VAL(MID$(IN$,J+1,I-J))
400 ' NO ZEROES
410 IF GF=Ø OR GG=Ø THEN 680
420 'NO VULGAR FRACTIONS HERE PLEASE
430 IF GF>=GG THEN 570
440 'ITS A VALID GUESS, COUNT IT
450 GU=GU+1:IF GU=10 THEN 610
460 'CONVERT TO DECIMAL FOR CHECKING
470 VG=GF/GG
480 'IS THE RIGHT ANSWER (OR A MULTIPLE
OF SAME)
490 IF VG=V THEN GOTO 660
500 'IS THE GUESS GREATER, IF SO IS IS L
ESS THAN THE HIGH, IF SO IS THE BEST
510 IF VG>V THEN CX=162: IF VG<MX THEN MX
=VG: GOSUB890:TX=200:TY=90:TC=2: TX$=IN$:
LINE(200,80)-(255,100),PRESET,BF:GOSUB90
10:DRAW"C1": GOTO 550:ELSE 550
```

```
520 'LESS THAN TARGET AS GREATER THAN
530 CX=62: IF VG>MN THEN MN=VG:GOSUB890:
TX=10:TY=90:TC=2:TX$=IN$:LINE(10,80)-(60
,100),PRESET,BF:GOSUB9010:DRAW"C1"
540 'WIPE AND REDISPLAY CAR AT APPROPRIA
TE SIDE
550 DRAW"C2":LINE(64,100)-(190,125),PSET
,BF:DRAW"BM"+STR$(CX)+",125XCA$;"
560 ' DISPLAY GUESS NO.
570 LINE(30,0)-(120,20),PRESET,BF:TX=30:
TY=15:TC=2:TX$="GUESS NO. = "+STR$(GU):G
OSUB9010:DRAW"C1"
580 ' CLEAR OLD GUESS GET NEW ONE
590 IN$="":GOTO 290
600 ' DISPLAY THE BAD NEWS IN LOW-RES
610 CLS4:PRINT@66,"SORRY BUT THE JUGGERN
AUT HAS";:PRINT@98,"WIPED YOU ALL ALONG
THE ROAD";
620 PRINT@228,"THE TARGET FRACTION WAS "
;:PRINT@301,STR$(F);"/";STR$(G);
630 ' GO DISPLAY NEW GAME PROMPT
640 GOTO 680
650 ' DISPLAY GOOD NEWS
660 CLS3: PRINT@232,"PHEW YOU ESCAPED";
670 ' CLEAR KEYBOARD THEN AWAIT ANSWER
680 R$=INKEY$
690 PRINT@484,"ANOTHER GAME YES OR NO?";
700 R$=INKEY$: IF R$="N" THEN 1260: ELSE
 IF R$="" THEN 700: ELSE 130
710 ' RESET VARIABLES DRAW TUNNEL
720 MN=0:MX=1:BT=0:IN$="":GU=1:DR=0:DD=0
:COLOR2,4:LINE(64,63)-(191,127),PSET,BF:
DRAW"C3BM0,0M63,63M63,127M0,191M63,127M1
92,127M255,191M192,127U1M63,126M63,63M19
2,63M192,127M192,63M255,0M192,63D1M63,64
":PAINT(128,150),1,3
730 'DISPLAY CAR
740 DRAW"BM112,125XCA$;"
750 TX=68:TY=80:TC=3:TX$="GUESS THE FRAC
TION":GOSUB9010
```

```
760 TX=30:TY=15:TC=2:TX$="GUESS NO. = "+
STR$(GU):GOSUB9010
770 'DISPLAY QUESTION MARK PROMPT
780 DRAW"C3BM24,186U1BU3U2E5L1H4D1G4"
790 ' CHECK FOT INTEGER RESULT
800 F=RND(10):G=RND(10)
810 IF F=G OR F/G=INT(F/G) OR G/F= INT(G
/F) THEN 800
820 ' SWAP TO GET TARGET LESS THAN ONE
830 IF G<F THEN H=G: G=F: F=H
840 'CONVERT TO DECIMAL FOR GUESS CHECKI
NG
850 V=F/G
860 'RESET COLOUR AND RETURN
870 DRAW"C1":RETURN
880 'CHECK FOR CLOSEST GUESS
890  IF BT=0 THEN 910: ELSEJ=ABS(VG-V):K
=ABS(BT-V)
900 IF J>=K THEN RETURN
910 BT=VG
920 'DISPLAY NEW CLOSEST
930 LINE(90,35)-(130,50),PRESET,BF
940 TX=90:TY=45:TC=2:TX$=IN$:GOSUB9010:D
RAW"C1":RETURN
9000 'HI RES TEXT WRITER
9010 J=LEN(TX$)
9020 DRAW"BM"+STR$(TX)+","+STR$(TY)+"C"+
STR$(TC)
9030 IF J=0 THEN RETURN
9040 FOR I=1TOJ
9050 K=ASC(MID$(TX$,I,1))-55
9060 IF K<10 OR K>35 THEN GOSUB 9100
9070 DRAWAL$(K)
9080 NEXT
9090 RETURN
9100 IF K>-8 ANDK<3 THEN K=K+7:RETURN
9110 IF K=-23 THEN K=36: RETURN
9120 IF K=-9 THEN K=37:RETURN
9130 IF K=-8 THEN K=41:RETURN
9140 IF K=6THEN K=38:RETURN
9150 IF K=-15THEN K=39:RETURN
```

```
9160 IF K=-14THEN K=40:RETURN
9170 IF K=8THEN K=42:RETURN
9180 IF K=-11 THEN K=43:RETURN
9190 IFK=-10 THEN K=44:RETURN
9200 IF K=-16THEN K=45:RETURN
9210 K=37
9220 RETURN
9230 'LOWER CASE DRAW STRINGS
9240 DATA BU1U3R1E1R2D5L2BR6,U10D5R3F1D3
G1L1BR6,BU1U3R1E1R1F1BD3G1BR5,BU1U3R1E1R
2U5D10L2BR6,BU1U3R1E1R1F1D2L3D1F1R2BR4,D
2U10R1E1R1L1G1D3R2BD5BR3
9250 DATA BU1U3R1E1R2D9G1L1H1BU4BR1R2BR4
,U10D5R3F1D4BR4,U5BU2U2BD9BR4,BD4R1E1U8B
U2U2BD9BR4,U10D6R3E1G1L2D2R2F1D1BR4,BU1U
9D9R1F1BR4
9260 DATA U4R1E1R1F1D4R1U4E1R1F1D4BR4,U4
R1E1R1F1D4BR4,BU1U3R1E1R1F1D3G1BR5,D4U9R
3F1D3G1BR5,BU1U3R1E1R1F1D8R2BU4BL1L2BR5
9270 DATA U4R1E1BD5BR4,R1E1U1H1U1E1BD5BR
4,BU1U8D2R2BD7L1BR5,BU1U4D4R1F1R2U5D5BR4
,BU1U4D4R1F1R1E1U4D4G1BR5,BU1U4D4R1F1R1E
1U4D4R1F1R1E1U4D4G1BR5
9280 DATA U1R1E1U1U1H1U1D1F1R1E1U1D1G1D1F1
D1BR4,BU1U4D4R1F1R2U5D8G1E1U3BR4,U1R1E1U
1R1E1U1L3BD5R3BR4
9290 DATA BR4,U1BDBR4,R3BU3L3BD3BR6,U9R2
BD9R1BR5,R3U9L2BD9BR5,E7BD7BR3,BR2U1BU2E
3H1L3DBD6BR7,U1D3U2BR6,BE2R2U1L1L1BF3BR2.B
E2BU6U2BF4BD6
9300 'NUMERIC DRAW STRINGS
9310 DATA BU1U5R1E1R1F1D5G1BR5
9320 DATA R4L1U7L2R2D7BR5,U2BU3U1R1E1R1F
1D2G1L1G1D2R4BR3,BU1R1F1R1E1U2H1E1U1H1L1
G1BD6BR7,BR4U7G1L1G1D2R3D3BR4,BU1R1F1R1E
1U2H1L1H1U2R4BD7BR3
9330 DATA BU1U5R1E1R1F1BG2R1F1D2G1BR5,U1
E5H1L3BF7,BU1U1E2H1U1E1R1F1D1G1F1D2G1BR5
,BU1R1F1R1E1U2L2H1U2E1R1F1D2BD4BR4
```

WESTERN ADVENTURE GAME
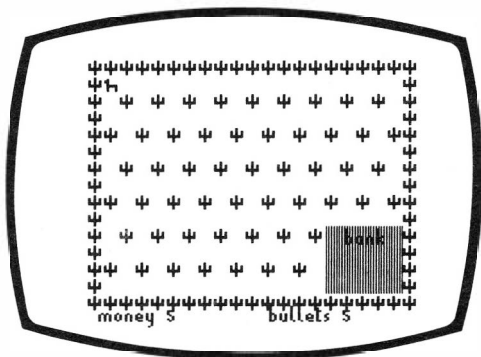
Your rough, tough and ready desperado colleagues have fled into the scrubland, dropping their guns and the loot.

Well we all know that a man, or a Calamity Jane, has got to do what ever it is. So, you are on your own outside the bank and you have to make it to the horses, which some idiot left on the outskirts of town.

On the way you can collect money and guns with bullets and then decide, if you run into the Sheriff's posse, whether to bribe or blast your way to freedom. Obviously your aim is to reach the horses with some bullets and some money.

We are not advocating here that crime pays — that is up to you.

How to play

Use the ARROW keys to make your moves.

Your footsteps will appear on the screen as you move toward the horse in the top left hand corner of the screen.

Your progress will be recorded on the bottom of the screen, and you will, in your progress, be told that you have run into the posse, and you will then be asked if you intend to shoot or bribe your way out.

Choose 1 or 2 as directed.

Should you run out of bullets I'm afraid that a lynching is your fate, as the posse were playing poker when you robbed the bank, and the Sheriff had a Royal Flush.

To exit from the game reply "N" when asked whether you want a new game.

Programming hints

You can increase the number of events in the adventure by allowing RD on line 320, to be larger, to allow rattlesnakeds, indians or ambushes.

A new subroutine describing the event, and the effect of it, on the money and bullets could be written and should be inserted after line 660.

Remember that

>BU is number of bullets

>MO is money

>RL is the random amount to increase/decrease

The program

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10 'WESTERN ADVENTURE GAME
20 'COPYRIGHT (C) G LUDINSKI 1984
30 'DRAGON32/64 VERSION RICHARD HALE
40 PCLEAR8:CLEAR5000:PMODE3,1:COLOR1,2:P
CLS2:SCREEN1,0:DIMAL$(45)
50 'AL$ HOLDS THE DRAW STRINGS FOR THE C
HARACTERS
60 FOR I =10TO45:READAL$(I):NEXT
70 FOR I=0TO9:READAL$(I):NEXT
80 'CA$ HOLDS THE DRAW STRING FOR THE CA
CTI. HO$ THE HORSE. MA$ THE MANS FOOTPRI
NTS
90 CA$="BR4U3L4U4D3R4U5R1D5R4U3D4L4"
100 HO$="BR2U6L2U1R2U1R1D4R6D4U3L4"
110 MA$="BU1BR2R1BU2U2BR3D2BD2R1"
120 'DRAW THE CACTI THEN SET THE X & Y C
OORDINATES, COLOUR AND STRING REQUIRED T
HE CALL HI RES TEXT SUBROUTINE. THEN RES
ET FOREGROUND COLOUR
130 DRAW"BM106,140C3XHO$;":DRAW"BM112,14
0C1XCA$;":TX=60:TY=60:TC=4:TX$="WESTERN
ADVENTURE":GOSUB9010:DRAW"C4"
140 ' DISPLAY THE TITLE SCREEN WHILE THE
 GAME GRAPHICS ARE SET UP.
150 PMODE3,1:SCREEN 1,0:PMODE3,5:PCLS2:G
OSUB540:SCREEN1,0
160 ' SCAN THE KEYBOARD
170 R$=INKEY$:IF R$="" THEN 170
180 'ONLY ALLOW THE ARROW KEYS
```

```
190 RV=ASC(R$) :IF RV<>94 AND RV<>10 AND
 RV<>8 AND RV <>9 THEN SOUND1,1 :  GOTO
170
200 ' NX, NY HOLD THE NEXT X AND Y CO-OR
DINATES
210 IF RV=94 THEN NY=YM-12:NX=XM:GOTO 26
0
220 IF RV=10 THEN NY=YM+12:NX=XM:GOTO 26
0
230 IF RV=8 THEN NX=XM-12:NY=YM:GOTO260
240 NX=XM+12:NY=YM
250 ' BOTH THE CACTI AND THE BANK ARE NO
T YELLOW AT THIS CO-ORD
260 IF PPOINT(NX+4,NY) <> 2 THEN SOUND1,
1:GOTO170
270 ' ADD DISTANCE. REDRAW FOOTPRINTS IN
 BLUE . CHECK FOR ARRIVAL AT HORSE
280 DI=DI+1:DRAW"C3BM"+STR$(XM)+","+STR$
(YM)+MA$:IF NX=14 AND NY=23 THEN 480
290 ' MOVE AND DRAW NEW FOOTPRINTS
300 XM=NX:YM=NY: DRAW"C4BM"+STR$(XM)+","
+STR$(YM)+MA$
310 ' I.E. POSSE,BULLETS ,MONEY.
320 RL=RND(5)+1: RD=RND(4): ON RD GOSUB
390,430,460
330 'NO BULLETS YOURE DEAD
340 IF BU<0 THEN GOTO 470
350 'HI-RES SCREEN, CLEAR MONEY AND BULL
ETS DISPLAY , THEN REDISPLAY
360 SCREEN1,0:LINE(0,180)-(255,191),PRES
ET,BF:GOSUB630
370 ' GO AND GET NEXT MOVE
380 GOTO 170
390 CLS4:PRINT @0,"YOU MEET ONE OF THE S
HERRIFF'S","POSSE. DO YOU"," ","SHOOT(1)
","OR BRIBE(2)","YOUR WAY OUT?"
400 IN$=INKEY$:IF IN$ <> "1" AND IN$ <>
"2" THEN 400
410 IF IN$="2" THEN MO=MO-RL:IF MO<0 THE
N MO=0:RETURN :ELSE RETURN
420 BU=BU-RL: RETURN
```

```
430 CLS6:PRINT@0,"YOU FIND";RL;"BULLETS"
,"LEFT BEHIND BY YOUR GANG":BU=BU+RL
440 PRINT@483,"PRESS ANY KEY TO CONTINUE
";
450 IF INKEY$="" THEN 450:ELSE RETURN
460 CLS7:PRINT@0,"YOU FIND";RL;"BAGS OF
MONEY", "LEFT BEHIND BY YOUR GANG":MO=MO
+RL: GOTO 440
470 CLS0:PRINT@0,"SORRY BUT YOU STOPPED
A BULLET","","","YOU COVERED A DISTANCE
OF";DI:GOTO 500
480 CLS5: PRINT@0,"CONGRATULATIONS YOU M
ADE IT TO","YOUR HORSE","","WITH";BU;"BU
LLETS","","AND";MO;"BAGS OF MONEY"
490 ' CLEAR KEYBOARD THEN AWAIT ANSWER
500 R$=INKEY$
510 PRINT@484,"ANOTHER GAME YES OR NO?";
520 R$=INKEY$: IF R$="N" THEN 980: ELSE
IF R$="" THEN 520: ELSE 150
530 ' RESET VARIABLES DRAW MAP
540 XM=170:YM=167:BU=5:MO=5:DI=1:COLOR4,
2
550 'DISPLAY CACTI
560 COLOR1,2:FOR TX=2TO242STEP12:FORTY=1
1TO179STEP168:DRAW"BM"+STR$(TX)+","+STR$
(TY)+CA$:NEXT TY,TX
570 FOR TY=23TO167STEP12:FORTX=2TO242STE
P240:DRAW"BM"+STR$(TX)+","+STR$(TY)+CA$:
NEXT TX,TY
580 FOR TY=35TO131STEP48:FORTX=26TO218ST
EP24:DRAW"BM"+STR$(TX)+","+STR$(TY)+CA$:
NEXT TX,TY
590 FOR TY=59TO155 STEP48:FOR TX=14 TO 2
30 STEP 24 :DRAW"BM"+STR$(TX)+","+STR$(T
Y)+CA$:NEXT TX,TY
600 COLOR3,2:LINE(183,120)-(241,167),PSE
T,BF:TX=198:TY=132:TC=2:TX$="BANK":GOSUB
9010:COLOR4,2
610 DRAW"BM14,23C3XHO$;"
620 DRAW"C4BM"+STR$(XM)+","+STR$(YM)+MA$
:GOSUB 630:RETURN
```

```
630 TX=10:TY=187:TC=4:TX$="MONEY "+STR$(
MO):GOSUB9010
640 TX=140:TY=187:TC=4:TX$="BULLETS "+ST
R$(BU):GOSUB9010
650 DRAW"C4BM"+STR$(XM)+","+STR$(YM)+MA$
660 RETURN
9000 'HI RES TEXT WRITER
9010 J=LEN(TX$)
9020 DRAW"BM"+STR$(TX)+","+STR$(TY)+"C"+
STR$(TC)
9030 IF J=0 THEN RETURN
9040 FOR I=1TOJ
9050 K=ASC(MID$(TX$,I,1))-55
9060 IF K<10 OR K>35 THEN GOSUB 9100
9070 DRAWAL$(K)
9080 NEXT
9090 RETURN
9100 IF K>-8 ANDK<3 THEN K=K+7:RETURN
9110 IF K=-23 THEN K=36: RETURN
9120 IF K=-9 THEN K=37:RETURN
9130 IF K=-8 THEN K=41:RETURN
9140 IF K=6THEN K=38:RETURN
9150 IF K=-15THEN K=39:RETURN
9160 IF K=-14THEN K=40:RETURN
9170 IF K=8THEN K=42:RETURN
9180 IF K=-11 THEN K=43:RETURN
9190 IFK=-10 THEN K=44:RETURN
9200 IF K=-16THEN K=45:RETURN
9210 K=37
9220 RETURN
9230 'LOWER CASE DRAW STRINGS
9240 DATA BU1U3R1E1R2D5L2BR6,U10D5R3F1D3
G1L1BR6,BU1U3R1E1R1F1BD3G1BR5,BU1U3R1E1R
2U5D10L2BR6,BU1U3R1E1R1F1D2L3D1F1R2BR4,D
2U10R1E1R1L1L1G1D3R2BD5BR3
9250 DATA BU1U3R1E1R2D9G1L1H1BU4BR1R2BR4
,U10D5R3F1D4BR4,U5BU2U2BD9BR4,BD4R1E1U8B
U2U2BD9BR4,U10D6R3E1G1L2D2R2F1D1BR4,BU1U
9D9R1F1BR4
```

```
9260 DATA U4R1E1R1F1D4R1U4E1R1F1D4BR4,U4
R1E1R1F1D4BR4,BU1U3R1E1R1F1D3G1BR5,D4U9R
3F1D3G1BR5,BU1U3R1E1R1F1D8R2BU4BL1L2BR5
9270 DATA U4R1E1BD5BR4,R1E1U1H1U1E1BD5BR
4,BU1U8D2R2BD7L1BR5,BU1U4D4R1F1R2U5D5BR4
,BU1U4D4R1F1R1E1U4D4G1BR5,BU1U4D4R1F1R1E
1U4D4R1F1R1E1U4D4G1BR5
9280 DATA U1R1E1U1H1U1D1F1R1E1U1D1G1D1F1
D1BR4,BU1U4D4R1F1R2U5D8G1E1U3BR4,U1R1E1U
1R1E1U1L3BD5R3BR4
9290 DATA BR4,U1BDBR4,R3BU3L3BD3BR6,U9R2
BD9R1BR5,R3U9L2BD9BR5,E7BD7BR3,BR2U1BU2E
3H1L3DBD6BR7,U1D3U2BR6,BE2R2U1L1BF3BR2,B
E2BU6U2BF4BD6
9300 'NUMERIC DRAW STRINGS
9310 DATA BU1U5R1E1R1F1D5G1BR5
9320 DATA R4L1U7L2R2D7BR5,U2BU3U1R1E1R1F
1D2G1L1G1D2R4BR3,BU1R1F1R1E1U2H1E1U1H1L1
G1BD6BR7,BR4U7G1L1G1D2R3D3BR4,BU1R1F1R1E
1U2H1L1H1U2R4BD7BR3
9330 DATA BU1U5R1E1R1F1BG2R1F1D2G1BR5,U1
E5H1L3BF7,BU1U1E2H1U1E1R1F1D1G1F1D2G1BR5
,BU1R1F1R1E1U2L2H1U2E1R1F1D2BD4BR4
```

DETECTIVE
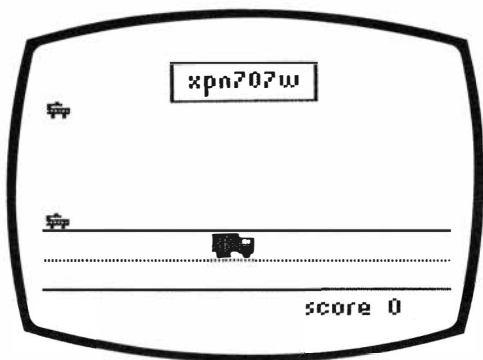
Could you solve the cases and survive the perils of being a detective. Find out by playing this game.

Firstly, you are briefed on the correct number-plates for the cars and trucks you are likely to see. Then you are stationed near a main road, watching cars and vans travel past.

You are looking for a stolen vehicle whose plates have been changed. When you see a car or lorry you suspect, you must call up, by radio, the two squad cars in the area, and tell them to set up a road-block.

If you time it right, the suspected vehicle, which veers off the road when it sees you are interested, will be caught. If your suspected vehicle was stolen and you catch it, the driver comes quietly and your score increases. If however, you catch a vehicle which has not been stolen, the driver dresses you down, and your score decreases. If you do not catch the suspected vehicle, then you are told whether your suspicions were correct but your score is unchanged.

How to play

Press ENTER when you have read which cars and lorries have which number plates. Then you see cars and lorries travel by with the number plates they have attached to them displayed below the road. When you see a vehicle which you suspect has the wrong number plate, press any key to alert your intercept vehicles. The suspect vehicle will veer off the road and by pressing 'A' for the top car or 'Z' for the lower one you must catch it. The fleeing vehicle must be in line with your car when you press A or Z.

If you catch the vehicle you will hear police-car sirens as the other squad cars approach. Then you are told the result. Press the ENTER key to play again.

If while watching the cars travel past, you forget what the correct number plates are, then press D to return to the Duty Roster.

Programming hints

The cars and lorries are animated by PUTting DA, for speed purposes. For ease of programming all the vehicle

graphics are held in VA() and assigned to DA when the vehicle is chosen. Note that only works if DA has never been GOT into with the optional G suffix, and if the image being stored was contained in complete memory locations. The program will work only if it is exactly copied, do not rewrite the GET, PUT and array assignments.

To make the game more tricky, the vehicles can be sped up by adjusting lines 560 and/or 1170 and 1180. If 560 causes a trail to be left, BA can be put in the previous DA position to clean it up.

The program

```
10 'DETECTIVE
20 'COPYRIGHT (C) G LUDINSKI 1984
30 'DRAGON32/64 VERSION RICHARD HALE
40 PCLEAR8:CLEAR5000:PMODE3,1:COLOR3,4:P
CLS2:SCREEN1,0:DIMAL$(45),VA(6,7),DA(7),
BA(7)
50 'AL$ HOLDS THE DRAW STRINGS FOR THE C
HARACTERS. VA THE GET/PUT IMAGES OF THE
VEHICLES, DA IS USED TO ACTUALLY GET/PUT
 THEM
60 FOR I =10TO45:READAL$(I):NEXT
70 FOR I=0TO9:READAL$(I):NEXT
80 'VH$() ARE THE DRAW STRINGS FOR THE C
ARS OR LORRIES
90 VH$(0)="C3BE2R10U1C4L9BU1C3R9BH2BL1L2
U1D1L4D1BD4BR1D1BR6U1"
100 VH$(2)="BE2BU2R20D1U2L19U1R19U1L19U1
R19U1L19U1R11UL11BD8C3R1D3R2U3R2D3R2U3R6
D1U1R2D3R2U3D1R3BH5C2U1R2D1"
110 VH$(1)="BE1BR1R10U1L9U1R9BH2BL1L4D1B
D3C3D1BR5U1"
120 TX=96:TY=40:TC=3:TX$="DETECTIVE":GOS
UB9010
```

```
130 CL$(1)="C1":CL$(2)="C3":CL$(3)="C4":
CL$(4)="C1":CL$(5)="C3":CL$(6)="C4"
140 VH$=VH$(1):I=1
150 FORXC=8TO208STEP40
160 DRAW"XCL$(I);BM"+STR$(XC)+",91XVH$;"
170 GET(XC,80)-(XC+23,91),DA
180 FORJ=0TO7:VA(I,J)=DA(J):NEXTJ
190 I=I+1:IFI=4THENVH$=VH$(2)
200 NEXTXC
210 LINE(0,147)-(255,147),PRESET:LINE(0,
177)-(255,177),PRESET
220 LINE(0,162)-(255,162),PRESET
230 DRAW"BM118,70XVH$(0);"
240 GET(0,96)-(23,107),BA
500 PMODE3,1:SCREEN 1,0:GOSUB2010
510 JV=RND(6):FORI=0TO7:DA(I)=VA(JV,I):N
EXTI:PCLS2:PCOPY4TO8
520 DRAW"BM0,90XVH$(0);BM0,146XVH$(0);"
530 LINE(90,2)-(166,21),PSET,B:TX=100:TY
=14:TC=3:TX$=V$(P(JV)):GOSUB9010
540 TX=140:TY=189:TC=1:TX$="SCORE "+STR$
(SC):GOSUB9010
550 R$=INKEY$
560 FORIR=0TO233STEP2
570 PUT(IR,149)-(IR+23,160),DA,PSET
580 R$=INKEY$:IFR$=""THENNEXTIR:GOTO510
700 GOSUB1000
710 TX=4:TY=174
720 IF EN=1 AND P(JV)<>JV THEN TC=1:TX$=
"ITS A FAIR COP, GUV.":GOSUB9010:SC=SC+1
:GOTO760
730 IF EN=1 THEN TC=4:TX$="I'LL SUE YOU
B.......S FOR THIS.":GOSUB9010:SC=SC-1:G
OTO760
740 IF P(JV)<>JV THEN TC=3:TX$="THE STOL
EN VEHICLE HAS ESCAPED.":GOSUB9010:GOTO7
60
750 TC=3:TX$="YOU WERE CHASING THE WRONG
 VEHICLE.":GOSUB9010
760 TIMER=0
```

```
770 IFTIMER<100THEN 770
780 GOTO500
1000 FORI=1TO3:SOUND116,5:SOUND102,5:NEX
TI
1010 PCOPY3TO6:PCOPY3TO7:PCOPY3TO8
1020 NX=32:NY=181:OX=NX:OY=NY:TU=0:EN=0:
1030 DRAW"BM0,101XVH$(0);BM0,157XVH$(0);
"
1040 PUT(OX,OY)-(OX+23,OY+11),BA,PSET
1050 PUT(NX,NY)-(NX+23,NY+11),DA,PSET
1060 OX=NX:OY=NY
1070 R$=INKEY$:IF R$<>"A"ANDR$<>"Z"THEN1
170
1080 IFR$<>"A" THEN 1130:ELSEDRAW"BM24,1
02C4R231":TIMER=0:
1090 IF NY=90THEN EN=1:SOUND155,1
1100 IFTIMER<50THEN 1100
1110 DRAW"BM24,102C2R231"
1120 GOTO 1170
1130 DRAW"BM24,158C4R231":TIMER=0
1140 IF NY=146 THEN EN=1:SOUND155,1
1150 IFTIMER<50 THEN1150
1160 DRAW"BM24,158C2R231"
1170 NX=NX+12:IF NX>224THENNX=32
1180 NY=NY-7*(RND(2)-1):IFNY<48THENNY=18
1
1190 TU=TU+1:IFTU<50ANDEN=0THEN1040
1200 RETURN
2000 ' RESET VARIABLES DRAW MAP
2010 PMODE3,5:PCLS2:COLOR4,2
2020 GOSUB 3000
2030 VI=1
2040 FORTX=30TO158STEP128
2050 FORTY=40TO140STEP50
2060 FORJ=0TO7:DA(J)=VA(VI,J):NEXTJ
2070 PUT(TX+18,TY-22)-(TX+41,TY-11),DA,P
SET
2080 TC=3:TX$=V$(VI):GOSUB9010
2090 VI=VI+1:NEXTTY,TX
2100 SCREEN1,0:GOSUB3500
```

```
2110 TX=170:TY=185:TC=4:TX$="PRESS ENTER
":GOSUB9010
2120 IF INKEY$<>CHR$(13)THEN2120
2130 PCLS2:RETURN
3000 FORI=1TO6:V$(I)=""
3010 IF RND(8)=1THEN I1=1:I2=3:ELSEI1=3:
I2=1
3020 FORJ=1TOI1:V$(I)=V$(I)+CHR$(64+RND(
26)):NEXTJ
3030 FORJ=1TO3:V$(I)=V$(I)+CHR$(47+RND(1
0)):NEXTJ
3040 FORJ=1TOI2:V$(I)=V$(I)+CHR$(64+RND(
26)):NEXTJ
3050 NEXTI:RETURN
3500 V1=RND(6)
3510 V2=RND(6):IF V1=V2 THEN3510
3520 FORI=1TO6:P(I)=I:NEXTI
3530 P(V1)=V2:P(V2)=V1
3540 RETURN
9000 'HI RES TEXT WRITER
9010 J=LEN(TX$)
9020 DRAW"BM"+STR$(TX)+","+STR$(TY)+"C"+
STR$(TC)
9030 IF J=0 THEN RETURN
9040 FOR I=1TOJ
9050 K=ASC(MID$(TX$,I,1))-55
9060 IF K<10 OR K>35 THEN GOSUB 9100
9070 DRAWAL$(K)
9080 NEXT
9090 RETURN
9100 IF K>-8 ANDK<3 THEN K=K+7:RETURN
9110 IF K=-23 THEN K=36: RETURN
9120 IF K=-9 THEN K=37:RETURN
9130 IF K=-8 THEN K=41:RETURN
9140 IF K=6THEN K=38:RETURN
9150 IF K=-15THEN K=39:RETURN
9160 IF K=-14THEN K=40:RETURN
9170 IF K=8THEN K=42:RETURN
9180 IF K=-11 THEN K=43:RETURN
9190 IFK=-10 THEN K=44:RETURN
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9200 IF K=-16THEN K=45:RETURN
9210 K=37
9220 RETURN
9230 'LOWER CASE DRAW STRINGS
9240 DATA BU1U3R1E1R2D5L2BR6,U10D5R3F1D3
G1L1BR6,BU1U3R1E1R1FBD3G1BR5,BU1U3R1E1R
2U5D10L2BR6,BU1U3R1E1R1F1D2L3D1F1R2BR4,D
2U10R1E1R1L1G1D3R2BD5BR3
9250 DATA BU1U3R1E1R2D9G1L1H1BU4BR1R2BR4
,U10D5R3F1D4BR4,U5BU2U2BD9BR4,BD4R1E1U8B
U2U2BD9BR4,U10D6R3E1G1L2D2R2F1D1BR4,BU1U
9D9R1F1BR4
9260 DATA U4R1E1R1F1D4R1U4E1R1F1D4BR4,U4
R1E1R1F1D4BR4,BU1U3R1E1R1F1D3G1BR5,D4U9R
3F1D3G1BR5,BU3U3R1E1R1F1D8R2BU4BL1L2BR5
9270 DATA U4R1E1BD5BR4,R1E1U1H1U1E1BD5BR
4,BU1U8D2R2BD7L1BR5,BU1U4D4R1F1R2U5D5BR4
,BU1U4D4R1F1R1R1E1U4D4G1BR5,BU1U4D4R1F1R1E
1U4D4R1F1R1E1U4D4G1BR5
9280 DATA U1R1E1U1H1U1D1F1R1E1U1D1G1D1F1
D1BR4,BU1U4D4R1F1R2U5D8G1E1U3BR4,U1R1E1U
1R1E1U1L3BD5R3BR4
9290 DATA BR4,U1BDBR4,R3BU3L3BD3BR6,U9R2
BD9R1BR5,R3U9L2BD9BR5,E7BD7BR3,BR2U1BU2E
3H1L3DBD6BR7,U1D3U2BR6,BE2R2U1L1BF3BR2,B
E2BU6U2BF4BD6
9300 'NUMERIC DRAW STRINGS
9310 DATA BU1U5R1E1R1F1D5G1BR5
9320 DATA R4L1U7L2R2D7BR5,U2BU3U1R1E1R1F
1D2G1L1G1D2R4BR3,BU1R1F1R1E1U2H1E1U1H1L1
G1BD6BR7,BR4U7G1L1G1D2R3D3BR4,BU1R1F1R1E
1U2H1L1H1U2R4BD7BR3
9330 DATA BU1U5R1E1R1F1BG2R1F1D2G1BR5,U1
E5H1L3BF7,BU1U2E1H1U1E1R1F1D1G1F1D2G1BR5
,BU1R1F1R1E1U2L2H1U2E1R1F1D2BD4BR4
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DECISIVE HERO
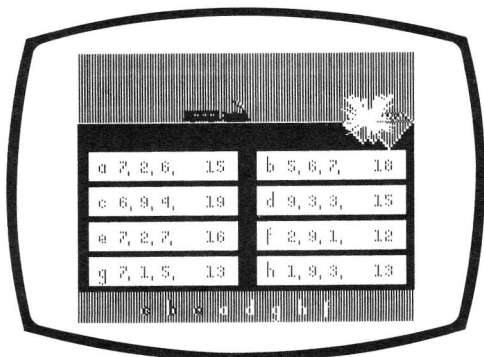
The wicked Baron has captured your love, Loretta, and tied her to a bomb on the railway bridge. To release her and defuse it you must enter a three letter code. The Baron has made one mistake, he left a clue to the code behind in the form of eight sets of numbers. If you get the wrong answers or the train reaches the bridge before you have defused the bomb, it will explode. Only you can now save your love and the train carrying the Crown Prince! But you must act quickly or you will all lose your lives.

How to play

You will be shown eight sets of numbers, you must decide which three sets are highest and enter them to defuse the bomb. You may enter them in any order. The same answer may not be entered twice even if correct.

At the end of each game the totals and correct answers will be shown. The correct numbers will be shown in blue. After this press any key to continue to the score screen.

Skill rating

When the game ends, a score sheet will be displayed showing your total, giving a qualitative rating and an IQ level of your decisiveness. This is not a true IQ level as intelligence is made up of reasoning ability, memory etc. but this result will be an indication of your IQ decisiveness level.

Programming hints

To make the game easier you may

i) reduce the range of numbers used (TP in line 40)

ii) reduce the no of numbers in each set (HI in line 40)

iii) slow down the train (SP in line 40)

iv) Reduce the number of answers required (AN in line 40)

To make it more difficult

i) make HI = 4 in line 40

ii) increase BE in line 40

iii) increase SP in line 40 (carefully or the train will leave a wake behind it)

iv) increase the numbers of answers required (AN in line 40)

The program

```
10 'DECISIVE HERO
20 'COPYRIGHT (C) G LUDINSKI 1984
30 'DRAGON32/64 VERSION RICHARD HALE
40 PCLEAR8:CLEAR5000:PMODE3,1:COLOR1,3:P
CLS:SCREEN1,0:DIMCA(13):DIMAL$(45):TE=0:
ER=0:CR=0:AT=0:HI=2:TP=9:SP=2:BE=2:AN=3
```

```
50 'TE IS NO. OF TESTS. ER=NO. OF ERRORS
. CR= CORRECT TESTS. AT=ATTEMPTS PER RU
N(RESET). HI CAN BE VARIED TO PUT MORE O
R LEES NOS. ON EACH LINE, RANGE Ø TO 3.
TP CAN BE USED TO RESTRICT THE HIGHEST N
OS APPEARING.
60 ' SP IS THE INCREMENT BY WHICH THE TR
AIN IS MOVED. BE IS THE TRAINS STARTING
POINT. A VARIABLE SPEED TRAIN CAN BE ACH
IEVED BY CHANGING THE INCREMENT ROUTINE.
AN IS THE NUMBER OF ANSWERS REQUIRED.
70 'CA IS USED TO GET THE TRAIN IMAGE, 7
Ø BYTES IS ENOUGH. AL$() IS USED TO HOLD
 DRAW STRINGS FOR A LOWER CASE HI RES AL
PHABET. NU$() HOLDS THE NUMBERS.
80 'SC()IS USED AS A 1-5X8 ARRAY HOLDING
 THE NUMBERS TO BE SUMMED WITH THE SUM H
ELD IN SC(*,4). TA() IS USED FOR THE BUB
BLE SORT AS A 2X8 ARRAY HOLDING THE ID A
ND THE SUM.
90 'BR$IS THE BRIDGE. TR$ THE TRAIN AND
CO$THE COACH.
100 FOR I =10TO45:READAL$(I):NEXT
110 FOR I=ØTO9:READAL$(I):NEXT
120 BR$="L52R2E6F6E6F6E6F6E6F6H6L36"
130 TR$="BR2R2D1U1R2D2R2U2R2D2R2D2R2U2
R2D2R2U2R2D1R2L2U2L16U1R16U1L2U2D2L6U1L2
D1L4L2U1L2"
140 CO$="BR6R2BR12R2BR6BU1L28R2U1R24U1L2
4U1R24U1L24U1R24U1L24D2R6C2R2BR4R2BR4R2D
1L2BL4L2BL4L2"
150 DRAW"BM99,71XCO$;C1BM127,69XTR$;":TX
=80:TY=99:TC=2:TX$="DECISIVE HERO":GOSUB
9000
160 GET(99,62)-(154,71),CA,G:PMODE3,5:PC
LS1
170 ' DRAW THE BOXES FOR THE NUMBERS AND
 PUT IN THE IDS(THIS IS ONLY DONE ONCE).
180 COLOR4,2:FOR YC=70TO145STEP25:FORXC
=9TO137STEP128:LINE(XC,YC)-(XC+112,YC+20
),PSET,BF:NEXT:NEXT:COLOR2,3
190 I=10:FORYC=84TO170STEP25:FOR XC=16 T
O 144STEP128:DRAW"BM"+STR$(XC)+","+STR$(
```

```
YC)+AL$(I):I=I+1:NEXT:NEXT
200 ' UP THE NO. OF TESTS. DISPLAY THE T
ITLE SCREEN AND GO SET UP THE ACTION SCR
EEN
210 TE=TE+1:PMODE3,1:SCREEN 1,0:GOSUB590
:SCREEN1,0
220 'SET THE TRAINS START POINT AND..
230 FOR OF=BE TO 200 STEP SP
240 '...GO. DRAW THE SMOKE
250 DRAW"BM"+STR$(OF+42)+",38C3R2C2H4BF4
BL4C3H4"
260 'MOVE THE TRAIN
270 PUT(OF,39)-(OF+55,48),CA,PSET:LINE(O
F-1,39)-(OF-1,48),PRESET
280 ' HAVE WE GOT TO THE BRIDGE YET? WR
= WRONG RESPONSES . DO =NO OF ATTEMPTS
290 IF OF>150 THEN IF DO=AN THENDRAW"BM2
55,49C2XBR$;": ELSE GOSUB560:GOTO440
300 ' IS GUESS IN RANGE A TO H
310 R$=INKEY$:IFR$=""THEN 410:ELSE TR=AS
C(R$)-65:IF TR<0 OR TR>8THEN SOUND1,1:GO
TO410
320 ' AT=ATTEMPTS
330 I=0:AT=AT+1:IF AT>AN THEN 410
340 'IS A RIGHT ANSWER? OR HAVE I ALREAD
Y HAD IT
350 IFTR=TA(I,0) AND TA(I,2)=0 THEN TA(I
,2)=99:DO=DO+1:GOTO 400
360 ' TWN IS NO OF CORRECT ANSWERS  LOOP
 BACK AND TRY AGAIN
370 IF I<TWN THEN I=I+1:GOTO 350
380 'WRONG ANSWER SET WR COUNT ERROR
390 WR=99:ER=ER+1
400 IF AT=AN AND WR=99 THEN GOSUB560:GOT
O 440
410 NEXT OF
420 CR=CR+1
430 'DISPLAY SUMS OF LINES AND THE CORRE
CT ANSWERS
440 IX=0:TC=2:FORTY=84TO160STEP25:FORTX=
98TO226STEP128:TX$=STR$(SC(IX,4)):GOSUB9
000
```

```
450 IX=IX+1:NEXTTX,TY
460 IX=0:TC=3:FOR TX=48TO188STEP20:TY=18
6:TX$=CHR$(TA(IX,0)+65):GOSUB9000:IFIX=T
W THEN TC=4
470 IX=IX+1:NEXTTX:R$=INKEY$:DRAW"C2"
480 IFINKEY$=""THEN480
490 'DISPLAY RUNNING TOTALS
500 CLS3:PRINT@229,"ANOTHER TEST YES OR
NO?"::PRINT@36,"NO. OF TESTS          ";
TE::PRINT@68,"NO. OF SUCESSFUL TESTS";CR
::PRINT@100,"NO. OF WRONG ANSWERS  ";ER;
:RS=INT(((ER*AN)+((TE-CR)*10))/TE)
510 PRINT@355,"RATING ";:IF RS<5 THEN PR
INT"SUPERIOR (UPPER 10%)";:ELSE IF RS<7T
HEN PRINT"    GOOD (UPPER 30%)";:ELSE PR
INT"    FAIR (UPPER 60%)";
520 IF RS=0 THEN IQ=150: ELSE IQ=INT(760
/RS): IF IQ>150 THEN IQ=150
530 PRINT@451,"I.Q. (DECISIVENESS)    ";I
Q;
540 R$=INKEY$: IF R$="N" THEN 830: ELSE
IF R$="" THEN 540: ELSE 210
550 'BLOW UP THE BRIDGE ROUTINE
560 DRAW"C4":FOR I=0TO100:DRAW"BM220,49M
"+STR$(200+RND(40))+","+STR$(29+RND(30))
:NEXT
570 RETURN
580 ' SET UP THE SKY,BRIDGE,TRACK,CLEAR
OLD NUMBERS, SET UP NEW ONES, SORT THEM,
 FIND DUPLICATES, DISPLAY PROBLEM AND GO
.
590 PMODE3,5:WR=0:AT=0:DO=0:COLOR2,3:LIN
E(0,0)-(255,68),PRESET,BF:COLOR2,1:LINE(
0,49)-(255,68),PRESET,BF:COLOR2,3:DRAW"B
M0,49C4R255L55F16E4F4E4F8E20":PAINT(210,
52),3,4:DRAW"BM255,49C2XBR$;":LINE(0,170
)-(255,191),PSET,BF
600 'SET UP RANDOM NUMBERS
610 FOR RW=0TO7:SC(RW,4)=0:FOR CL=0TOHI:
SC(RW,CL)=RND(TP):SC(RW,4)=SC(RW,4)+SC(R
W,CL):NEXT:TA(RW,0)=RW:TA(RW,1)=SC(RW,4)
:NEXT
```

```
620 'BUBBLE SORT ON TA
630 FORJ=0TO6:FORI=0TO6:IFTA(I,1)>=TA(I+
1,1)THENNEXTI,J:ELSEFORK=0TO1:TA(8,K)=TA
(I,K):TA(I,K)=TA(I+1,K):TA(I+1,K)=TA(8,K
):NEXTK,I,J
640 'FIND DUPLICATES OF LAST CORRECT ANS
WER
650 TW=AN-1:FORI=AN TO6:IF TA(I,1)=TA(TW
,1) THEN TW=I
660 NEXT
670 'RESET USED ANSWER FLAGS
680 FOR I=0TO7:TA(I,2)=0:NEXT
690 'DISPLAY PROBLEM
700 COLOR4,2:FOR YC=70TO145STEP25:FORXC=
32TO160STEP128:LINE(XC,YC)-(XC+85,YC+20)
,PSET,BF:NEXTXC,YC:COLOR2,3
710 IX=0:TC=2:FOR TY=84TO160STEP25:FORXC
=32TO160STEP128:FORKX=0TOHI:TX=XC+KX*16:
TX$=RIGHT$(STR$(SC(IX,KX)),1)+",":GOSUB9
000:NEXT:IX=IX+1:NEXTXC,TY
720 RETURN
9000 'HI RES TEXT WRITER
9010 J=LEN(TX$)
9020 DRAW"BM"+STR$(TX)+","+STR$(TY)+"C"+
STR$(TC)
9030 IF J=0 THEN RETURN
9040 FOR I=1TOJ
9050 K=ASC(MID$(TX$,I,1))-55
9060 IF K<10 OR K>35 THEN GOSUB 9100
9070 DRAWAL$(K)
9080 NEXT
9090 RETURN
9100 IF K>-8 ANDK<3 THEN K=K+7:RETURN
9110 IF K=-23 THEN K=36: RETURN
9120 IF K=-9 THEN K=37:RETURN
9130 IF K=-8 THEN K=41:RETURN
9140 IF K=6THEN K=38:RETURN
9150 IF K=-15THEN K=39:RETURN
9160 IF K=-14THEN K=40:RETURN
9170 IF K=8THEN K=42:RETURN
9180 IF K=-11 THEN K=43:RETURN
```

```
9190 IFK=-10 THEN K=44:RETURN
9200 IF K=-16THEN K=45:RETURN
9210 K=37
9220 RETURN
9230 'LOWER CASE DRAW STRINGS
9240 DATA BU1U3R1E1R2D5L2BR6,U10D5R3F1D3
G1L1BR6,BU1U3R1E1R1F1BD3G1BR5,BU1U3R1E1R
2U5D10L2BR6,BU1U3R1E1R1F1D2L3D1F1R2BR4,D
2U10R1E1R1L1G1D3R2BD5BR3
9250 DATA BU1U3R1E1R2D9G1L1H1BU4BR1R2BR4
,U10D5R3F1D4BR4,U5BU2U2BD9BR4,BD4R1E1U8B
U2U2BD9BR4,U10D6R3E1G1L2D2R2F1D1BR4,BU1U
9D9R1F1BR4
9260 DATA U4R1E1R1F1D4R1U4E1R1F1D4BR4,U4
R1E1R1F1D4BR4,BU1U3R1E1R1F1D3G1BR5,D4U9R
3F1D3G1BR5,BU1U3R1E1R1F1D8R2BU4BL1L2BR5
9270 DATA U4R1E1BD5BR4,R1E1U1H1U1E1BD5BR
4,BU1U8D2R2BD7L1BR5,BU1U4D4R1F1R2U5D5BR4
,BU1U4D4R1F1R1E1U4D4G1BR5,BU1U4D4R1F1R1E
1U4D4R1F1R1E1U4D4G1BR5
9280 DATA U1R1E1U1H1U1D1F1R1E1U1D1G1D1F1
D1BR4,BU1U4D4R1F1R2U5D8G1E1U3BR4,U1R1E1U
1R1E1U1L3BD5R3BR4
9290 DATA BR4,U1BDBDBR4,R3BU3L3BD3BR6,U9R2
BD9R1BR5,R3U9L2BD9BR5,E7BD7BR3,BR2U1BU2E
3H1L3DBD6BR7,U1D3U2BR6,BE2R2U1L1BF3BR2,B
E2BU6U2BF4BD6
9300 'NUMERIC DRAW STRINGS
9310 DATA BU1U5R1E1R1F1D5G1BR5
9320 DATA R4L1U7L2R2D7BR5,U2BU3U1R1E1R1F
1D2G1L1G1D2R4BR3,BU1R1F1R1E1U2H1E1U1H1L1
G1BD6BR7,BR4U7G1L1G1D2R3D3BR4,BU1R1F1R1E
1U2H1L1H1U2R4BD7BR3
9330 DATA BU1U5R1E1R1F1BG2R1F1D2G1BR5,U1
E5H1L3BF7,BU1U1E2H1U1E1R1F1D1G1F1D2G1BR5
,BU1R1F1R1E1U2L2H1U2E1R1F1D2BD4BR4
```

3D BRAINSTORM
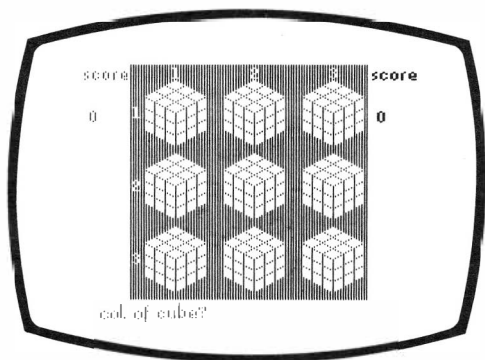
If you feel like some brainstorming, how about this three-dimensional game for two players. It is like three-dimensional noughts and crosses, except it has the advantage that all faces can be seen at a glance.

Nine cubes are displayed on the screen and each face of each cube is divided into nine squares. Your aim is to colour in a row or column of squares of any face of a cube, or to have a row or column of cubes in which you have coloured in the same square.

How to play

Players should take turns to colour in a square. One player will colour in cyan, and the other in orange.

Squares are specified by giving their co-ordinate in terms of

1) column of cube

2) row of cube

3) face on cube

4) column on face

5) row on face.

The computer does prompt you for this. If the co-ordinate is correct, pressing ENTER will colour in that square. Pressing clear will allow you to restart the input.

cube face   2   3

The colour of the prompt indicates whose turn it is. Each player's score is displayed in their colour. The computer will randomly choose the first player.

Programming notes

The two problems for the novice are the five dimensional array and the logical functions. Despite the manuals silence the Dragon will accept a dimensional array. The functions FNA to FND check for completed rows or columns of one colour. It is important to understand that as far as binary logic goes 2 and 2 is 2 (as does 3 and 2) whereas 2 and 1 is 0. 1 and 1 makes 1. 1 and 0, 2 and 0 gives 0. Therefore each player's number and colour are not coincidence.

Two extensions to the game that would be possible are

1) Saving the game by writing the contents of CU() to a data file on cassette, and

2) Using a computer imposed time limit generated by the TIMER function.

Input by joysticks would speed the game up but this should not be lightly undertaken.

Using a screen print of a blank game screen allows the game to be played anytime!

The program

```
10 '3-D BRAINSTORM
20 'COPYRIGHT (C) G LUDINSKI 1984
30 'DRAGON32/64 VERSION RICHARD HALE
40 PCLEAR8:CLEAR5000,30000:PMODE3,1:COLO
R4,1:PCLS:SCREEN1,1:DIMAL$(45),CU(3,3,3,
3.3)
50 'AL$ HOLDS THE DRAW STRINGS FOR THE C
HARACTERS.
60 FOR I =10TO45:READAL$(I):NEXT
70 FOR I=0TO9:READAL$(I):NEXT
100 'CU$ IS A SINGLE CUBE DRAW STRING,
110 CU$="BR28M-24,+12D24M+24,+12M+24,-12
U24M-24,-12M-8,+4M+24,+12D24M-8,+4U24M-2
4,-12M-8,-4M-24,+12D24M-8,-4U24M+24,-12M
-8,-4M-24,+12D24M-8,-4U8M-24,+12M+24,-12
U8M-24,+12M-24,-12U8M+24,+12M+24,-12"
120 TX=80:TY=60:TC=4:TX$="3-D  BRAINSTOR
M":GOSUB9010
130 DRAW"S8BM70,70C3XCU$;S4"
200 'FUNCTIONS CHECK IF ROW OR COLUMN IS
 ALL ONE COLOUR, RETURNING THE PLAYERS N
UMBER IF TRUE. DU IS A DUMMY VARIABLE.
```

```
210 DEF FNA(DU)=CU(1,MY,MF,MC,MR) AND CU
(2,MY,MF,MC,MR) AND CU(3,MY,MF,MC,MR)
220 DEF FNB(DU)=CU(MX,1,MF,MC,MR) AND CU
(MX,2,MF,MC,MR) AND CU(MX,3,MF,MC,MR)
230 DEF FNC(DU)=CU(MX,MY,MF,1,MR) AND CU
(MX,MY,MF,2,MR) AND CU(MX,MY,MF,3,MR)
240 DEF FND(DU)=CU(MX,MY,MF,MC,1) AND CU
(MX,MY,MF,MC,2) AND CU(MX,MY,MF,MC,3)
300 'PR$CONTAINS PROMPTS, OMIT THEM WHEN
 YOU ARE FLUENT
310 PR$(1)="COL OF CUBE?"
320 PR$(2)="ROW OF CUBE?"
330 PR$(3)="CUBE FACE?"
340 PR$(4)="COL ON CUBE?"
350 PR$(5)="ROW ON CUBE?"
360 PR$(6)="IS THIS CORRECT?"
500 PMODE3,1:SCREEN 1,1:GOSUB2010:SCREEN
1,1
600 'SIX SCANS FOR FIVE MATRIX DIMENSION
S AND ONE CHANCE TO CHANGE
610 RS$="":FOR ME=1TO6
620 LINE(0,167)-(255,192),PRESET,BF
630 TX=0:TY=180:TC=PC:TX$=RS$+"   "+PR$(
ME):GOSUB9010
640 '1,2,3, ENTER OR CLEAR ONLY
650 R$=INKEY$:IF (R$<"1" OR R$>"3") AND
R$<>CHR$(12) AND R$<>CHR$(13) THEN 650
660 'CLEAR MEANS START ENTRY AGAN
670 IF R$=CHR$(12) THEN 610
680 ' ENTER TO PROCEED TO UPDATE MATRIX
DETAILS
690 IF R$=CHR$(13) THEN IF ME<>6 THEN SO
UND1,1: GOTO 650: ELSE 750
700 'FORCE ENTER TO BE PRESSED
710 IF ME=6 THEN SOUND1,1:GOTO650
720 SOUND255,1
730 RV(ME)=VAL(R$)
740 IF RS$<>""THENRS$=RS$+","+R$:ELSE RS
$=R$
750 NEXT ME
800 MX=RV(1)
```

```
810 MY=RV(2)
820 MF=RV(3)
830 MC=RV(4)
840 MR=RV(5)
850 FORI=1TO6:RV(I)=0:NEXT
860 IF CU(MX,MY,MF,MC,MR)<>0 THEN SOUND1
,10: GOTO610
870 CU(MX,MY,MF,MC,MR)=PL
880 CX=(MX-1)*60+42
890 CY=(MY-1)*52+10
900 ON MF GOSUB 1210,1310,1410
910 PAINT(CX,CY),PC,3
920 'FUNCTIONS RETURN 0 IF NO LINE OF TH
REE OR NO. OF PLAYER IF LINE PRESENT. TS
 IS NO. OF SUCH LINES
930 TS=(FNA(DU)+FNB(DU)+FNC(DU)+FND(DU))
/PL
940 IF TS<>0 THEN LINE(0,167)-(255,191),
PRESET,BF:TX=0:TY=180:TX$=STR$(TS)+" SCO
RED":GOSUB9010:GOSUB1110:FORN=1TO200:NEX
TN
950 IF PL=1 THEN PL=2:ELSE PL=1
960 PC=PL*2
970 'TU COUNTS TURNS TAKEN
980 TU=TU+1:IF TU<242THEN610
1000 IFSC(1)>SC(2)THEN TX$="GREEN WON":E
LSE IF SC(2)>SC(1)THEN TX$="ORANGE WON":
ELSE TX$="A DRAW"
1010 LINE(0,168)=(255,191),PRESET,BF
1020 TX=0:TY=180:TC=3:GOSUB9010
1030 'LOOP TO MAINTAIN DISPLAY
1040 GOTO1040
1100 'SCORE DISPLAY ROUTINE
1110 TX=220*(PL-1):TY=40:TC=1:TX$=STR$(S
C(PL)):GOSUB9010
1120 SC(PL)=SC(PL)+TS
1130 TX$=STR$(SC(PL)):TC=PC:GOSUB9010
1140 RETURN
1200 'TOP FACE (ONE)
1210 CX=CX+(MC+MR)*8+2
1220 CY=CY+4*MR-4*MC+12
```

```
1230 RETURN
1300 'LEFT FRONT FACE (TWO)
1310 CX=CX+8*MC-2
1320 CY=CY+8*MR+4*MC+5
1330 RETURN
1400 'RIGHT FRONT FACE (THREE)
1410 CX=CX+8*MC+22
1420 CY=CY+8*MR-4*MC+22
1430 RETURN
2000 ' RESET VARIABLES SET UP SCREEN
2010 PMODE3,5:PCLS:COLOR3,1
2020 TU=1:PL=RND(2):PC=2*PL
2030 'DRAW CUBES
2040 FOR CY=10TO114STEP52
2050 FOR CX=42TO162STEP60
2060 DRAW"BM"+STR$(CX)+","+STR$(CY)+CU$
2070 NEXT CX,CY
2080 'BOX OFF CUBES AND INFILL
2090 DRAW"BM36,0D166R181U166"
2100 PAINT(44,0),3,3
2110 'PUT IN ROW AND COL NUMBERS
2120 TY=9:TC=1
2130 FOR TX=64TO184 STEP60
2140 TX$=STR$((TX-4)/60)
2150 GOSUB9010
2160 NEXT TX
2170 TX=34
2180 FOR TY=37TO141 STEP52
2190 TX$=STR$((TY+15)/52)
2200 GOSUB9010
2210 NEXT TY
2220 TX=0:TY=10:TC=2:TX$="SCORE":GOSUB90
10
2230 TX=220:TC=4:GOSUB9010
2240 TY=40:TX$=" 0":GOSUB9010
2250 TX=0:TC=2:GOSUB9010
2500 ' CLEAR OUT MATRIX
2510 FOR MX=1TO3
2520 FOR MY=1TO3
2530 FOR MF=1TO3
2540 FOR MC=1TO3
```

```
2550 FOR MR=1TO3
2560 CU(MX,MY,MF,MC,MR)=0
2570 NEXTMR,MC,MF,MY,MX
2580 'CLEAR OUT SCORES
2590 FOR J=1TO2:SC(J)=0:NEXT
2600 SOUND1,1
2610 RETURN
9000 'HI RES TEXT WRITER
9010 J=LEN(TX$)
9020 DRAW"BM"+STR$(TX)+","+STR$(TY)+"C"+
STR$(TC)
9030 IF J=0 THEN RETURN
9040 FOR I=1TOJ
9050 K=ASC(MID$(TX$,I,1))-55
9060 IF K<10 OR K>35 THEN GOSUB 9100
9070 DRAWAL$(K)
9080 NEXT
9090 RETURN
9100 IF K>-8 ANDK<3 THEN K=K+7:RETURN
9110 IF K=-23 THEN K=36: RETURN
9120 IF K=-9 THEN K=37:RETURN
9130 IF K=-8 THEN K=41:RETURN
9140 IF K=6THEN K=38:RETURN
9150 IF K=-15THEN K=39:RETURN
9160 IF K=-14THEN K=40:RETURN
9170 IF K=8THEN K=42:RETURN
9180 IF K=-11 THEN K=43:RETURN
9190 IFK=-10 THEN K=44:RETURN
9200 IF K=-16THEN K=45:RETURN
9210 K=37
9220 RETURN
9230 'LOWER CASE DRAW STRINGS
9240 DATA BU1U3R1E1R2D5L2BR6,U10D5R3F1D3
G1L1BR6,BU1U3R1E1R1F1BD3G1BR5,BU1U3R1E1R
2U5D10L2BR6,BU1U3R1E1R1F1D2L3D1F1R2BR4,D
2U10R1E1R1L1G1D3R2BD5BR3
9250 DATA BU1U3R1E1R2D9G1L1H1BU4BR1R2BR4
,U10D5R3F1D4BR4,U5BU2U2BD9BR4,BD4R1E1U8B
U2U2BD9BR4,U10D6R3E1G1L2D2R2F1D1BR4,BU1U
9D9R1F1BR4
```

```
9260 DATA U4R1E1R1F1D4R1U4E1R1F1D4BR4,U4
R1E1R1F1D4BR4,BU1U3R1E1R1F1D3G1BR5,D4U9R
3F1D3G1BR5,BU1U3R1E1R1F1D8R2BU4BL1L2BR5
9270 DATA U4R1E1BD5BR4,R1E1U1H1U1E1BD5BR
4,BU1U8D2R2BD7L1BR5,BU1U4D4R1F1R2U5D5BR4
,BU1U4D4R1F1R1E1U4D4G1BR5,BU1U4D4R1F1R1E
1U4D4R1F1R1E1U4D4G1BR5
9280 DATA U1R1E1U1H1U1D1F1R1E1U1D1G1D1F1
D1BR4,BU1U4D4R1F1R2U5D8G1E1U3BR4,U1R1E1U
1R1E1U1L3BD5R3BR4
9290 DATA BR4,U1BDBR4,R3BU3L3BD3BR6,U9R2
BD9R1BR5,R3U9L2BD9BR5,E7BD7BR3,BR2U1BU2E
3H1L3DBD6BR7,U1D3U2BR6,BE2R2U1L1BF3BR2,B
E2BU6U2BF4BD6
9300 'NUMERIC DRAW STRINGS
9310 DATA BU1U5R1E1R1F1D5G1BR5
9320 DATA R4L1U7L2R2D7BR5,U2BU3U1R1E1R1F
1D2G1L1G1D2R4BR3,BU1R1F1R1E1U2H1E1U1H1L1
G1BD6BR7,BR4U7G1L1G1D2R3D3BR4,BU1R1F1R1E
1U2H1L1H1U2R4BD7BR3
9330 DATA BU1U5R1E1R1F1BG2R1F1D2G1BR5,U1
E5H1L3BF7,BU1U1E2H1U1E1R1F1D1G1F1D2G1BR5
,BU1R1F1R1E1U2L2H1U2E1R1F1D2BD4BR4
9340 SCREEN1,1
9350 GOTO9350
```

BAR CHARTER

This program will allow you to analyse items into any number of categories, selectively display them and, providing you have a suitable printer and dump routine, print a bar chart.

It can be used to record expenses, club accounts, collections, sales or merely to impress your boss.

How to use it

First you are asked how many categories you require, ask for more than you need, you can't later change your mind. You may ask for as many categories as will fit into the Dragon.

Next the computer will ask you for a label for each category. This is used on the bar chart and can be used when entering data. The labels can be two, three letter words separated by a comma.

After all the categories have been named, the computer reminds you how to enter the data to be analysed. This is always done by entering a quantity followed by a category. The category can be described by its number, its label or, if omitted, is assumed to be the previous category again. To finish entering data type in 0, OOO.

The computer will then ask you how many columns you wish to display this time. No more than 8 will fit on the display. It will then ask which categories to display as which column. This will allow you to juggle columns to get the best presentation. Enter a title and then display the chart. Press enter to leave the display.

If you have a printer, then you can print the chart using a Hi res screen dump routine. Note that it must have been displayed first.

The computer will allow you to add further items or change the display.

Programming hints

In order to get more bars on the screen, the length of the labels must be reduced in line 170 and the number of columns allowed increased in 1030. The width of each column should be adjusted in line 2100.

The same program could also be used to calculate averages, etc with very little effort.

A directory of the categories and their labels could also be usefully incorporated.

In order to incorporate a screen print routine, just enter it at lines 3000-9000, remembering to return. Suitable routines for some printers are available from Dragon Data by enclosing a SAE and telling them which printer you have. See also Dragon World No. 2 February 1984.

The program

```
10 'BAR CHARTER
20 'COPYRIGHT (C) G LUDINSKI 1984
30 'DRAGON32/64 VERSION RICHARD HALE
40 CLEAR5000:DIMAL$(45)
50 'AL$ HOLDS THE DRAW STRINGS FOR THE C
HARACTERS.
60 FOR I =10TO45:READAL$(I):NEXT
70 FOR I=0TO9:READAL$(I):NEXT
80 CLS3:PRINT@10,"BAR CHARTER"::PRINT@96
," YOU MAY USE AS MANY COLUMNS AS","YOU
WISH. EACH COLUMN MAY HAVE","A TITLE OF
TWO LINES OF THREE","LETTERS."
90 PRINT@484,"PRESS ENTER TO CONTINUE";:
R$=INKEY$
100 IF INKEY$<>CHR$(13) THEN 100
110 CLS:INPUT"HOW MANY COLUMNS WOULD YOU
 LIKE?";CN:IF CN=0 THEN 110
120 DIMCN(CN,1):DIMCN$(CN,1)
130 CLS:PRINT"ENTER COLUMN TITLES, SEPAR
ATE   WORDS WITH A COMMA."
140 FOR I=1TOCN
150 PRINT"COLUMN";I;
160 INPUT CN$(I,0),CN$(I,1)
170 IF LEN(CN$(I,0))>3 OR LEN(CN$(I,1))>
3 THEN SOUND1,1:PRINT"***ERROR, TOO LONG
 ***":GOTO 160
180 NEXT I
190 CLS:PRINT "NOW ENTER QUANTITIES UNDE
R EACH HEADING. THIS MAY BE DONE IN A  M
IXTURE OF THREE WAYS.",,," IN EACH METHO
D THE QUANTITY IS FOLLOWED BY A COLUMN S
PECIFIER, WHICH MAY BE :-",," A COLUM
N NUMBER,","   THE FULL COLUMN TITLE,"
```

```
200 PRINT" OR OMITTED IF IT IS THE SAME"
."    AS THE PREVIOUS ENTRY.",,,"THE CHA
RT CAN BE DISPLAYED BY ","TYPING IN 0,@@
@."
210 PRINT@484,"PRESS ENTER TO CONTINUE";
220 IF INKEY$<>CHR$(13) THEN 220
230 CLS:EN=0
240 INPUT QU,TT$
250 IF TT$="" AND EN=0THEN 240
260 IF TT$="@@@" THEN 1000
270 GOSUB1260
280 IF MS$<>"" THEN PRINTMS$:MS$="":GOTO
240
290 CN(EE,0)=CN(EE,0)+QU
300 CN(EE,1)=CN(EE,1)+1
310 EN=EN+1
320 GOTO 240
1000 CLS:PRINT@5,"DISPLAY OR PRINT CHART
"
1010 PRINT@128,"HOW MANY COLUMNS?"
1020 INPUTNC
1030 IF NC>8 OR NC=0 OR NC>CN THEN PRINT
"*** ERROR TOO MANY COLUMNS ***":GOTO101
0
1040 CLS:PRINT@128,"WHICH COLUMNS?"
1050 MX=0
1060 FOR I=1TONC
1070 INPUTC(I)
1080 IF C(I) =0 OR C(I)>CN THEN PRINT,"I
NVALID COLUMN NUMBER":GOTO 1070
1090 IF CN(C(I),0)>MX THEN MX=CN(C(I),0)
1100 NEXT
1110 SC=140/MX
1120 FOR I=1TONC
1130 BL(I)=INT(CN(C(I),0)*SC)
1140 NEXT
1150 CLS:INPUT"TITLE FOR CHART";TL$
1160 PRINT"PRINT,DISPLAY OR BOTH? (P,D O
R B)."
1170 R$=INKEY$:IF R$<>"P" AND R$<>"D" AN
D R$<>"B" THEN 1170
1180 IF R$<>"P" THEN GOSUB2000
1190 IF R$<>"D" THEN GOSUB3010
```

```
1200 CLS:PRINT"DO YOU WISH TO EITHER:-",
,," 1) REDO DISPLAY."," 2) ENTER MORE DA
TA."," 3) END."
1210 INPUT J
1220 IF J=3 THEN END
1230 IF J=2 THEN 240
1240 IF J=1 THEN 1000
1250 GOTO 1210
1260 IF TT$="" THEN RETURN
1270 J=VAL(TT$):IF STR$(J)=" "+TT$ THEN
IF J=0 OR J>CN THEN MS$="*** ERROR, INVA
LID COLUMN ***":RETURN:ELSE EE=J:RETURN
1280 FOR I=1TOCN
1290 IF TT$=CN$(I,0)+CN$(I,1) THEN EE=I:
RETURN
1300 NEXT
1310 MS$="*** ERROR, UNKNOWN TITLE ***":
RETURN
2000 ' DISPLAY REQUIRED COLUMNS
2010 PMODE3,1:PCLS1:SCREEN1,1
2020 TX=0:TY=10:TC=3:TX$=TL$:GOSUB9010
2030 TY=176:FOR M=0TO1
2040 L=1:FORTX=0TO 224 STEP 32
2050 IF L<=NC THEN TX$=CN$(C(L),M):GOSUB
9010
2060 L=L+1:NEXT TX
2070 TY=189:NEXT M
2080 CL=1:L=1:FOR M=0TO 224 STEP32
2090 IF CL=1 THEN COLOR2,1: CL=2: ELSE I
F CL=2 THEN COLOR3,1:CL=3: ELSE COLOR4,1
:CL=1
2100 IF L<=NC THEN LINE(M,160-BL(L))-(M+
20,160),PSET,BF
2110 L=L+1:NEXT M
2120 R$=INKEY$
2130 IF INKEY$<>CHR$(13) THEN 2130
2140 RETURN
3000 ' INSERT GRAPHIC SCREEN DUMP ROUTIN
E HERE. NOTE THAT CHART MUST HAVE BEEN D
ISPLAYED FIRST
3010 RETURN
```
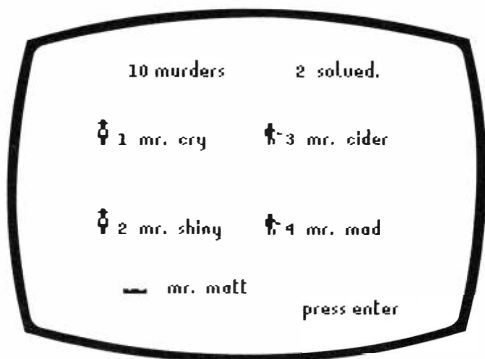
```
9000 'HI RES TEXT WRITER
9010 J=LEN(TX$)
9020 DRAW"BM"+STR$(TX)+","+STR$(TY)+"C"+
STR$(TC)
9030 IF J=0 THEN RETURN
9040 FOR I=1TOJ
9050 K=ASC(MID$(TX$,I,1))-55
9060 IF K<10 OR K>35 THEN GOSUB 9100
9070 DRAWAL$(K)
9080 NEXT
9090 RETURN
9100 IF K>-8 ANDK<3 THEN K=K+7:RETURN
9110 IF K=-23 THEN K=36: RETURN
9120 IF K=-9 THEN K=37:RETURN
9130 IF K=-8 THEN K=41:RETURN
9140 IF K=6THEN K=38:RETURN
9150 IF K=-15THEN K=39:RETURN
9160 IF K=-14THEN K=40:RETURN
9170 IF K=8THEN K=42:RETURN
9180 IF K=-11 THEN K=43:RETURN
9190 IFK=-10 THEN K=44:RETURN
9200 IF K=-16THEN K=45:RETURN
9210 K=37
9220 RETURN
9230 'LOWER CASE DRAW STRINGS
9240 DATA BU1U3R1E1R2D5L2BR6,U10D5R3F1D3
G1L1BR6,BU1U3R1E1R1F1BD3G1L1BR5,BU1U3R1E1R
2U5D10L2BR6,BU1U3R1E1R1F1D2L3D1F1R2BR4,D
2U10R1E1R1L1G1D3R2BD5BR3
9250 DATA BU1U3R1E1R2D9G1L1H1BU4BR1R2BR4
,U10D5R3F1D4BR4,U5BU2U2BD9BR4,BD4R1E1U8B
U2U2BD9BR4,U10D6R3E1G1L2D2R2F1D1BR4,BU1U
9D9R1F1BR4
9260 DATA U4R1E1R1F1D4R1U4E1R1F1D4BR4,U4
R1E1R1F1D4BR4,BU1U3R1E1R1F1D3G1BR5,D4U9R
3F1D3G1BR5,BU1U3R1E1R1F1D8R2BU4BL1L2BR5
9270 DATA U4R1E1BD5BR4,R1E1U1H1U1E1BD5BR
4,BU1U8D2R2BD7L1BR5,BU1U4D4R1F1R2U5D5BR4
,BU1U4D4R1F1R1E1U1U4D4G1BR5,BU1U4D4R1F1R1E
1U4D4R1F1R1E1U1U4D4G1BR5
```

```
9280 DATA U1R1E1U1H1U1D1F1R1E1U1D1G1D1F1
D1BR4,BU1U4D4R1F1R2U5D8G1E1U3BR4,U1R1E1U
1R1E1U1L3BD5R3BR4
9290 DATA BR4,U1BDBR4,R3BU3L3BD3BR6,U9R2
BD9R1BR5,R3U9L2BD9BR5,E7BD7BR3,BR2U1BU2E
3H1L3DBD6BR7,U1D3U2BR6,BE2R2U1L1BF3BR2,B
E2BU6U2BF4BD6
9300 'NUMERIC DRAW STRINGS
9310 DATA BU1U5R1E1R1F1D5G1BR5
9320 DATA R4L1U7L2R2D7BR5,U2BU3U1R1E1R1F
1D2G1L1G1D2R4BR3,BU1R1F1R1E1U2H1E1U1H1L1
G1BD6BR7,BR4U7G1L1G1D2R3D3BR4,BU1R1F1R1E
1U2H1L1H1U2R4BD7BR3
9330 DATA BU1U5R1E1R1F1BG2R1F1D2G1BR5,U1
E5H1L3BF7,BU1U1E2H1U1E1R1F1D1G1F1D2G1BR5
,BU1R1F1R1E1U2L2H1U2E1R1F1D2BD4BR4
```

WHO DUNNIT

```
        10 murders          2 solved.

    ♟ 1 mr. cry        ♟-3 mr. cider


    ♟ 2 mr. shiny      ♟ 4 mr. mad


    ▄▄  mr. matt

                            press enter
```

Looking through the window you see him standing in his study. Then you hear a gun shot and he falls to the ground. You walk into the house and go into his study.

There are four men there. You know their names. The victim is related to the murderer. Find the connection and you have your felon. Example: victim Mr. Green and Mr. Grass. You must decide which of the four men is the murderer before they slip out the room.

How to play

The victim's note is by the man lying down. You must work out which of the names of the other men has some

connection with this word. For example, in the screen show above, Mr Lager is the murderer as Lager and Cider are both drinks. Alternatively words that are related may have the same or opposite meanings. For example, Big and Large, also Hot and Cold are related.

Key in the number below the suspected murderer, (3 in this case) before the four men disappear off the screen.

If you are right, you hear police sirens as the police cars approach. If you are wrong or too late, you do not. The score is given on the top line. Press ENTER to play again.

Programming hints

If you want to add more words to the game, add some more DATA statements at the end of the program. Put in sets of three words that are related. Read the other words in lines 9500 onwards for ideas. Make sure that each set is not related to the other words in those lines. When you have added the extra words, count up the total number of sets of words and assign it to TT in line 40.

To slow down the program, increase the 35 in line 250.

The program

```
10 'WHODUNNIT
20 'COPYRIGHT (C) G LUDINSKI 1984
30 'DRAGON32/64 VERSION RICHARD HALE
40 PCLEAR8:CLEAR5000:PMODE3,1:COLOR3,1:P
CLS:SCREEN1,1:DIMAL$(45) :DIMWD$(30,3):T
T=25
50 'AL$ HOLDS THE DRAW STRINGS FOR THE C
HARACTERS
```

```
60 FOR I =10TO45:READAL$(I):NEXT
70 FOR I=0TO9:READAL$(I):NEXT
80 FOR I=1TOTT:FORJ=1TO3:READWD$(I,J):NE
XTJ,I
90 'MA$() HOLDS THE DRAW STRING FOR THE
MEN.
100 MA$(0)="C3U2BR2C4D2R2U1BR2C2D1U2R2D2
R2U2D1R2D1R2U1R2U1D2"
110 MA$(1)="C3BR2U6L1D1U5BE1C4U4C3L1R1U2
R2D2R2L1BD1C4D3BF1C3D5U1L1D6"
120 MA$(2)="C2E5L3U5BR4BU1C4U3L1D3BD2C2D
3R1U3R2U1D4R3L4D2F4"
130 MA$(3)="BR2C2U5BU1C3L1U4BR1C4U4R2D4B
G1C3D4R1U4R2U1F3R1BL5BD2C2DF1D3"
140 MA$(4)="C3E5H1BU1C2U4L1G4E4BE1C4U2BU
1C3L1E1R3F1L1BD1C4D2BD1C2R1D5R2L2H1U3BD4
C3D6"
150 'DRAW THE TITLE SETTING THE X & Y CO
ORDINATES, COLOUR AND STRING REQUIRED TH
EN CALL HI RES TEXT SUBROUTINE. THEN DRA
W THE FENCE.
160 TX=60:TY=60:TC=4:TX$="WHODUNNIT?":GO
SUB9010
170 DRAW "C4BM144,60XMA$(0);"
175 I=1:FOR XC=50TO200STEP50:DRAW"BM"+ST
R$(XC)+",140XMA$(I);":I=I+1:NEXTXC
200 ' DISPLAY THE TITLE SCREEN WHILE THE
 GAME GRAPHICS ARE SET UP, AND THIS PROB
LEM SET
210 PMODE3,1:SCREEN 1,1:PMODE3,5:PCLS:GO
SUB2010:SCREEN1,1
220 FORIX=18TO146STEP128:FORIY=46TO110ST
EP64
230 ' SCAN THE KEYBOARD
240 TIMER=0
250 R$=INKEY$:IF R$=""  AND TIMER < 35 T
HEN 250
260 IF R$=""THEN LINE(IX,IY)-(IX+12,IY+1
8),PRESET,BF:ELSE 280
270 NEXT IY,IX:GOTO290
```

```
280 IF " "+R$=STR$(SN) THEN SC=SC+1:PLAY
"T301L8FCFCFCFCFCFCFCFC":GOSUB310
290 TX=178:TY=185:TC=2:TX$="PRESS ENTER"
:GOSUB9010
300 IF INKEY$<>CHR$(13)THEN 300:ELSE210
310 TX=168:TY=15:TC=1:TX$=STR$(SC-1):GOS
UB9010:TC=4:TX$=STR$(SC):GOSUB9010:RETUR
N
2000 ' RESET VARIABLES DRAW MAP
2010 COLOR4,1
2020 GOSUB 3000
2030 P=1
2040 FOR IX=20TO148STEP128:FORTY=64TO128
STEP64:DRAW"BM"+STR$(IX)+","+STR$(TY)+MA
$(RND(4)):TX=IX+12:TC=4:TX$=STR$(P):GOSU
B9010:TC=2:TX$=" MR. "+P$(P):GOSUB9
010:P=P+1:NEXT TY:NEXTIX
2050 TX=40:TY=15:TC=4:TX$=STR$(TU)+" MUR
DERS":GOSUB9010:TX=168:TX$=STR$(SC)+" S
OLVED.":GOSUB9010
2060 DRAW"BM40,170XMA$(0);":TX=70:TY=170
:TC=3:TX$=" MR. "+P$(0):GOSUB9010
2070 PLAY"T255V3101CGCGV20CGCGV10CGCGV5C
GCGCG"
2080 RETURN
3000 FOR I=1TO4
3010 N(I)=RND(TT)
3020 NEXTI
3030 IF N(1)=N(2) OR N(1)=N(3) OR N(1)=N
(4) OR N(2)=N(3) OR N(2)=N(4) OR N(3)=N(
4) THEN 3000
3040 TU=TU+1
3050 SN=RND(4)
3060 FORI=1TO4
3070 P$(I)=WD$(N(I),RND(3))
3080 NEXT I
3090 P$(0)=WD$(N(SN),RND(3)):IF P$(0)=P$
(SN) THEN 3090
3100 RETURN
9000 'HI RES TEXT WRITER
9010 J=LEN(TX$)
```

```
9020 DRAW"BM"+STR$(TX)+","+STR$(TY)+"C"+
STR$(TC)
9030 IF J=0 THEN RETURN
9040 FOR I=1TOJ
9050 K=ASC(MID$(TX$,I,1))-55
9060 IF K<10 OR K>35 THEN GOSUB 9100
9070 DRAWAL$(K)
9080 NEXT
9090 RETURN
9100 IF K>-8 ANDK<3 THEN K=K+7:RETURN
9110 IF K=-23 THEN K=36: RETURN
9120 IF K=-9 THEN K=37:RETURN
9130 IF K=-8 THEN K=41:RETURN
9140 IF K=6THEN K=38:RETURN
9150 IF K=-15THEN K=39:RETURN
9160 IF K=-14THEN K=40:RETURN
9170 IF K=8THEN K=42:RETURN
9180 IF K=-11 THEN K=43:RETURN
9190 IFK=-10 THEN K=44:RETURN
9200 IF K=-16THEN K=45:RETURN
9210 K=37
9220 RETURN
9230 'LOWER CASE DRAW STRINGS
9240 DATA BU1U3R1E1R2D5L2BR6,U10D5R3F1D3
G1L1BR6,BU1U3R1E1R1F1BD3G1L1BR5,BU1U3R1E1R
2U5D1OL2BR6,BU1U3R1E1R1F1D2L3D1F1R2BR4,D
2U1OR1E1R1L1G1D3R2BD5BR3
9250 DATA BU1U3R1E1R2D9G1L1H1BU4BR1R2BR4
,U1OD5R3F1D4BR4,U5BU2U2BD9BR4,BD4R1E1U8B
U2U2BD9BR4,U1OD6R3E1G1L2D2R2F1D1BR4,BU
9D9R1F1BR4
9260 DATA U4R1E1R1F1D4R1U4E1R1F1D4BR4,U4
R1E1R1F1D4BR4,BU1U3R1E1R1F1D3G1BR5,D4U9R
3F1D3G1BR5,BU1U3R1E1R1F1D8R2BU4BL1L2BR5
9270 DATA U4R1E1BD5BR4,R1E1U1H1U1E1BD5BR
4,BU1U8D2R2BD7L1BR5,BU1U4D4R1F1R2U5D5BR4
.BU1U4D4R1F1R1E1U4D4G1BR5,BU1U4D4R1F1R1E
1U4D4R1F1R1E1U4D4G1BR5
9280 DATA U1R1E1U1H1U1D1F1R1E1U1D1G1D1F1
D1BR4,BU1U4D4R1F1R2U5D8G1E1U3BR4,U1R1E1U
1R1E1U1L3BD5R3BR4
```

```
9290 DATA BR4,U1BDBR4,R3BU3L3BD3BR6,U9R2
BD9R1BR5,R3U9L2BD9BR5,E7BD7BR3,BR2U1BU2E
3H1L3DBD6BR7,U1D3U2BR6,BE2R2U1L1BF3BR2,B
E2BU6U2BF4BD6
9300 'NUMERIC DRAW STRINGS
9310 DATA BU1U5R1E1R1F1D5G1BR5
9320 DATA R4L1U7L2R2D7BR5,U2BU3U1R1E1R1F
1D2G1L1G1D2R4BR3,BU1R1F1R1E1U2H1E1U1H1L1
G1BD6BR7,BR4U7G1L1G1D2R3D3BR4,BU1R1F1R1E
1U2H1L1H1U2R4BD7BR3
9330 DATA BU1U5R1E1R1F1BG2R1F1D2G1BR5,U1
E5H1L3BF7,BU1U1E2H1U1E1R1F1D1G1F1D2G1BR5
,BU1R1F1R1E1U2L2H1U2E1R1F1D2BD4BR4
9500 DATA BIG,SMALL,LARGE,FAT,THIN,PLUMP
,QUIET,LOUD,NOISY,WET,DRY,DAMP
9510 DATA HOT,COLD,WARM,A,Z,ALPHA,GOOD,B
AD,NICE,MAD,CRAZY,SANE,DULL,SHINY,MATT,S
EE,HEAR,FEEL,OLD,YOUNG,AGED,LAUGH,CRY,WE
EP,KID,CHILD,ADULT,AM,PM,NOON,BIRD,FOWL,
BEAST,SNOW,ICE,SLEET,BEER,LAGER,CIDER
9520 DATA KING,QUEEN,JACK,GIVE,TAKE,GRAS
P,B.B.C.,I.T.V.,CH. 4,ILL,WELL,SICK,GYM,
P.T.,P.E.,RED,AMBER,GREEN,DRAW,PAINT,ETC
H,EYE,I,AYE
```

BRAINTEASERS

FOR THE
DRAGON 32

PROGRAMS TO PUZZLE AND AMUSE

Here at last is a collection of programs
worthy of the title 'Brainteasers' and worthy of
the computers for which they are designed.
Built around a competition element you will be
asked questions requiring logic, general knowledge
and mathematical skills in your answers.

Only your quick powers of numeracy can save
the lady on the railway track; escape with the
takings from the bank; break open a safe.

Only your powers of deduction can solve the Whodunnit?
Work out the wiring on the robot; catch the car thief.

All of the programs will exploit the graphic capabilities
of your machine and, <u>if you can face up to it</u>,
many of the programs will contain an
IQ rating at the end of the program.

THE AUTHOR

Genevieve Ludinski is a widely experienced
programmer and technical author and has her own
software company specialising in
educational material.