C16

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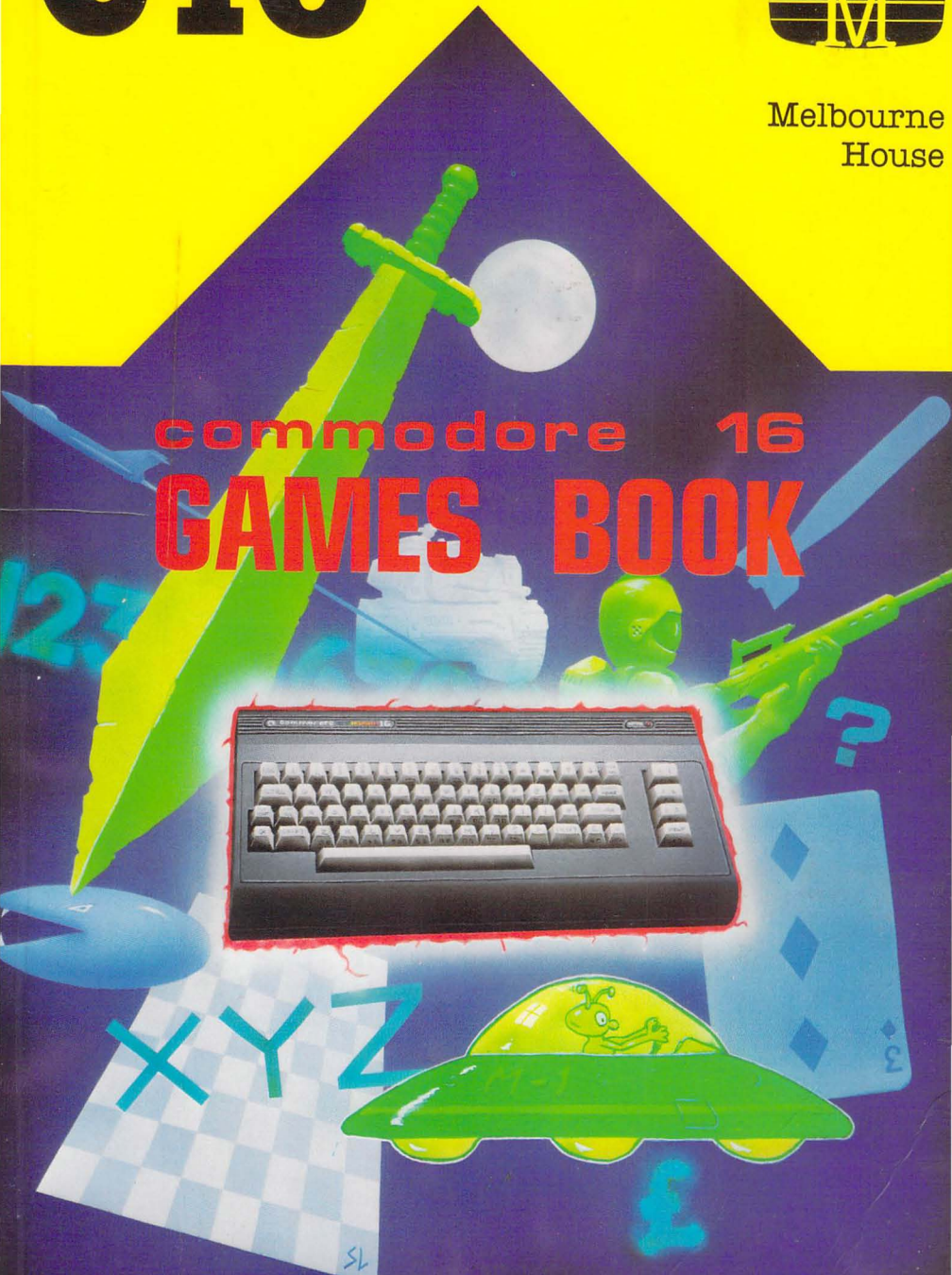

commodore 16
GAMES BOOK

CAMERON DUFFY

RICHARD WOOLCOCK

Commodore 16 Games Book

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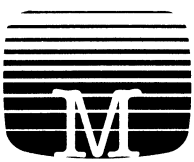
COMMODORE 16 GAMES BOOK

Edited by
Richard Woolcock
and
Cameron Duffy



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Co-ordination Game

Gambling Games

Appendices

Preface

The Commodore 16 represents tremendous value and, while intended for the novice, has many surprises in store for the experienced programmer. The improved version of Commodore BASIC has many powerful graphics statements, making it ideal for developing games.

With this book, Melbourne House continues its tradition of producing high quality literature and software in support of personal computers.

Arrangement of Programs

The games programs are graded within the book from easy to difficult. However, because different people have preferences for particular kinds of games, they are listed in the Contents page grouped by type. If you enjoy strategy games, you will find them all by consulting the Contents.

Ease of Use

Like us, you have probably gone crosseyed while trying to type in programs from computer magazines. Counting spaces and trying to distinguish Commodore graphics characters are the two most frustrating experiences of program typing.

Be of good cheer! In this book programs have been formatted for greater clarity. Graphics characters have been redefined to resemble keyboard pictographs, and spaces within strings are indicated by small black pyramids.

To speed program debugging, the ChexSum utility program enables you to identify incorrectly-typed lines immediately. (This aid is unique to Melbourne House games books.)

But — and this is an important but — read the chapter 'Program Accuracy' first if you want to get the maximum benefit from all the aids to accurate transcription.

Programming Projects

We hope that as you read and use our book, you will absorb the principles of programming the Commodore 16 by osmosis. Lists of variables have been provided and subroutine names inserted in listings to help you discover how programs work.

We have also suggested improvements you may make to the games as a challenge to your programming skills.

Suggestions

Melbourne House is always interested in feedback from readers, whether it be suggestions, praise or complaints — see Appendix E, 'Reader Feedback'.

Happy computer gaming!

Richard Woolcock
Cameron Duffy
September 1984

Program Accuracy

Programs take a long time to type in and debug. To help make programs easier to read and debug, printouts have been specially formatted, and utilities have been provided to help you get programs running. Read the rest of this chapter, and enter the Merge and ChexSum programs before you enter any games programs.

FORMATTED LISTINGS

The program listings in this book have been processed through a formatting program to improve their appearance and readability. The formatter:

- Aligns statements at the left, avoiding the margin stepping that occurs as line numbers increase,
- Inserts spaces between keywords,
- Transforms SPACE characters occurring in strings, i.e. between quote marks ("), into a small black pyramid (▲),
- Makes the colon easier to see by redefining it as two small opposed triangles (▼), and
- Redefines graphics characters to resemble the keyboard pictographs and inserts spaces between them so that they are readily distinguished.

Because the redefined alphanumeric and graphics characters do not exactly resemble the screen display, you may make typing errors until you become familiar with them. To assist you in determining which symbol corresponds to a particular key, tables of colour and control characters, and keyboard pictographs are illustrated overleaf.

These tables are also reproduced in Appendix D, 'Printout Symbols'. We suggest you photocopy or cut out Appendix D and keep it with you for ready reference.

KEYBOARD CHARACTERS*

Symbol in book	Key	Symbol in book	Key
	E		↑
	W		R
	D		Q
	C		F
	B		V
	T		+
	U		Y
	O		I
	@		P
	G		-
	J		H
	L		K
	M		N
	S		£
	A		X
	*		Z
	SHIFT L		SHIFT @
	SHIFT O		SHIFT P
	SHIFT I		SHIFT U
	SHIFT K		SHIFT J
	SHIFT W		SHIFT Q
	SHIFT +		SHIFT V
	SHIFT M		SHIFT N
	SHIFT Z		SHIFT S
	SHIFT X		SHIFT A
	SHIFT E		SHIFT D
	SHIFT *		SHIFT C
	SHIFT F		SHIFT R
	SHIFT T		SHIFT G
	SHIFT B		SHIFT -
	SHIFT H		SHIFT Y
	SHIFT £		SHIFT =
	SHIFT ZERO		

* These characters are designed to emulate the pictographs which appear on the front of the keys. The C= symbol is the special shift key located to the left of the left hand shift key.

Unfortunately different keyboard characters can produce identical symbols on the screen and printout. If a program doesn't work, these symbols may have been interchanged in a string:

	CTRL ,	CURSOR LEFT
	SHIFT *	SHIFT C
	SHIFT B	SHIFT -

COLOUR AND CONTROL CHARACTERS*

Symbol in book	Key
	CLR
	HOME
	CURSOR DOWN
	CURSOR UP
	CURSOR RIGHT
	CURSOR LEFT
	CTRL 1
	CTRL 2
	CTRL 3
	CTRL 4
	CTRL 5
	CTRL 6
	CTRL 7
	CTRL 8
	CTRL 9
	CTRL 0
	C= 1
	C= 2
	C= 3
	C= 4
	C= 5
	C= 6
	C= 7
	C= 8
	CTRL ,
	CTRL .

* These characters are designed to emulate the characters which appear on the screen.

TYPING RULES

In the program listings spaces have only been used as an aid to readability. For example, the line

```
100   POKE 54273, I : PRINT "▲ S T R I N G ▲ "
```

would be entered into your computer as

```
100POKE54273,I:PRINT"▲STRING▲"
```

Spaces are often used in strings but only enter a space when you see a (▲) symbol. This character does not appear on the keyboard but is used to tell you when to press the SPACE bar.

Character Confusion

In the printouts certain similar characters may be confused and entered incorrectly, and cause your program to crash: they are the letter I and the figure 1, and the letter O and the figure 0. In the text, figure zero (0) is shown cancelled (Ø). In listings these confusing characters are soon recognised:

CHARACTER	PRINTOUT
Letter I	I
Figure 1	1
Letter O	O
Figure Ø	Ø

If you are modifying programs and entering code from your own notes, a number of handwritten characters are easily confused unless clearly distinguished. We offer you this guide:

CONFUSED CHARACTERS	RECOMMENDED FORM
Letter Z, figure 2	Z, 2
Letter O, figure Ø	O, Ø
Letter S, figure 5	S, 5
Letter I, figures 1 and 7	I, 1, 7

Punctuation may also be a trap:

- Commas (,) and full stops or periods (.) are not interchangeable.
- Colons (:) and semi-colons (;) are not interchangeable.
- Apostrophes (') and double quotes (") are not interchangeable.
- Use parentheses () and not brackets []. Always ensure that parentheses are correctly paired: a quick check is to make sure that you have as many righthand as lefthand parentheses in a mathematical expression.
- The SHIFT key must be pressed when some characters (such as ! " # $ %, etc.) are entered.

SAVE Before RUNning

Do you remember the old proverb?

> Programs typed and SAVEd today, live to RUN another day.

Be sure to progressively SAVE the programs onto cassette or disk as you enter the listings. From time to time the keyboard may lock up, especially if you try to RUN a program that contains an error. We strongly recommend that you keep SAVEing copies of the program as you enter it into the computer and debug any typing errors.

Note Some programs contain loaders to place machine language routines in high memory and which may alter certain system pointers. If such a program is RUN and crashes, the machine language program and the pointers will remain as they were even when the NEW command has been entered. When debugging programs, SAVE your work before RUNning and always reset the computer after a crash to avoid crashing a program subsequently entered or loaded.

CHEXSUM PROGRAM VERIFICATION

When games programs such as these are keyed in, invariably reading and typing mistakes creep in. You then spend ages trying to sort out where and what is causing the error. Even experienced

programmers often cannot easily identify an error and need to do the tedious job of double-checking with the book, especially with DATA statements.

To avoid this major cause of frustration when entering the programs, there are two short routines in this book which you should enter and save before you enter other programs:

- Merge and
- ChexSum.

The program ChexSum calculates a unique check-sum number for each line of a games program, then prints out a table of program line-numbers and their corresponding line check-sums, plus a grand total for the whole program.

When you have entered a game program, run ChexSum and compare the check-sum table with that in the book. Any discrepancies immediately identify a mistyped line.

Other versions of BASIC have a MERGE command which enables you to construct new programs by combining pre-written subroutines or sections of existing programs. To use ChexSum it must be appended to the end of the games program it is to check. The Merge utility program performs this job and overcomes the lack of a MERGE command in Commodore BASIC. (Merge may also be used to join other programs — see Appendix C, 'Merging Programs'.)

Saving Merge and ChexSum

Follow these instructions to enter Merge and ChexSum, and save them to tape or disc. If saving to tape, do not put games programs on the same tape or you will spend considerable time winding and rewinding the tape to, first, load your program and, second, to load and use ChexSum.

1 Type in the Merge and ChexSum listings below and SAVE them before you do anything else.

Note Hand check Merge character by character after you have saved it. Merge is the only program in the book which cannot be verified by ChexSum. Why? Because you need Merge to load ChexSum to verify Merge and, if Merge is incorrect, this won't happen.

2 Load ChexSum and RUN it. It will first of all process itself, generating a table of line sums and a grand total for the whole program.

3 At this point you may or may not have had a crash. If a table was successfully generated, compare your table with that given below. If the grand totals differ, check the line sums to find the incorrect line.

4 Repeat steps 2 and 3 until ChexSum is debugged.

5 In line 62020, alter the value of E = 62194 to E = 61999. Save a copy to tape or disk.

Note This is your working copy used to check all the other programs in the book. Make sure you don't confuse it with your initial version, which is used only to verify ChexSum itself.

MERGE PROGRAM

```
5     POKE 55,202:POKE 56,63:CLR
10    FOR I=16331 TO 16331+34:READA:POKE I,A:C=C+A:NEXT
20    IF C<>4094THEN PRINT "C H E C K S U M ▲ E R R O R "
      :STOP
100   DATA165,43,141,238,63,165,44,141,239,63,56,165,45,2
      33,2,133,43,165
110   DATA46,233,0,133,44,96,173,238,63,133,43,173,239,63
      ,133,44,96
120   NEW
```

CHEXSUM PROGRAM

```
62000 T=PEEK(62)*256+PEEK(61)+1
62005 INPUT  "F R O M ▲ L I N E ▲ ";FROM
62010 INPUT "T O ▲ P R I N T E R ▲ ( Y / N ) ";Q$
62011 IF  Q$<>"Y "THEN 62020
62015 CLOSE4:OPEN4,4:CMD4:PRINT CHR$(1);CHR$(129)
62020 LINK=PEEK(44)*256+PEEK(43):E=62194
62120 T=LINK
62130 LINK=PEEK(T+1)*256+PEEK(T)
62135 LN=PEEK(T+3)*256+PEEK(T+2):IF LN<FROMTHEN 62120
62136 IF LN>ETHEN PRINT :PRINT "T O T A L = ";CH:CLOSE4:
      END
62137 S$=STR$(LN):L=LEN(S$)-1:S$=MID$(S$,2,L)+MID$("▲ ▲ ▲
       ▲ ▲ ▲ ",1,6-L)
```

```
62138 PRINT S$;
62140 CS=0:N=0:C=0
62150 FOR P=T+4 TO LINK-2:PK=PEEK(P)
62160 IF PK=143THEN P=LINK-2:GOTO 62190
62165 IF PK=34THEN C=(C=0)
62170 IF C=0ANDPK=32THEN 62190
62180 IF PK=137THEN N=N+1:CS=CS+(2030RN):PK=164
62185 N=N+1:CS=CS+(PKORN)
62190 NEXT:CH=CH+CS
62192 H$=STR$(CS):Y=LEN(H$):H$=MID$(H$,2,Y):H$=MID$("▲ ▲
      ▲ ▲ ▲ ",1,5-(Y-1))+H$
62194 PRINT "= ▲ ";H$:GOTO 62120
62196 REM
```

ChexSum Tables

```
62000 = 1848
62005 = 1332
62010 = 1618
62011 = 1281
62015 = 2020
62020 = 2502
62120 =  577
```

```
62130 = 2067
62135 = 3540
62136 = 2407
62137 = 4234
62138 =  338
62140 = 1142
62150 = 2251
```

```
62160 = 2373
62165 = 1431
62170 = 1554
62180 = 3320
62185 = 1862
62190 = 1001
62192 = 4892
62194 = 1247
TOTAL = 44837
```

Using ChexSum

The greatest problem encountered when typing in programs from a book is errors made by the user. Most of these are picked up when the computer responds to the RUN command with the 'Syntax Error' message. The user then has only to LIST the line and compare it with the line in the book. Unfortunately, some errors are more subtle and not fatal to program operation. These types of errors will cause the program to run, but incorrectly, and the computer will not be able to detect them as such.

Checksum is a special program which generates a unique sum for each line in a program and a grand total of all line sums. After each program listing is a table of check sums. You need only compare the numbers in the ChexSum table for each program with those generated by ChexSum. If two numbers differ, check that particular line.

1 Load and run the Merge program by typing LOAD "MERGE" (for tape) or LOAD "MERGE",8 (for disk), and then entering RUN.

2 From your games tape or disk, load the program you want to verify.

Note Always SAVE your program to tape before running ChexSum.

For the first program, enter LOAD "BLOCKADE" for tape or LOAD "BLOCKADE", 8 for disk. Do not RUN the program at this point.

3 Enter SYS16331 to protect the first game program, i.e. BLOCKADE.

4 Load ChexSum by entering LOAD "CHEXSUM" for tape or LOAD "CHEXSUM", 8 for disk.

5 Enter SYS16355 to merge the game program BLOCKADE with ChexSum.

6 Enter RUN 62000 to activate ChexSum.

7 The program will respond with the prompt:

LINE NUMBER: ?

Pressing the RETURN key at this point will cause ChexSum to start with the first line of your program. Entering a line number will start ChexSum at that line.

8 ChexSum next prompts with:

PRINTER (Y/N) ?

A 'Y' will send the ChexSum table to the printer or an 'N' will send it to the screen.

9 Check your grand total with that in the book. If they differ, a line has been typed incorrectly. Compare line numbers until you locate the bad lines and then edit them.

10 Repeat steps 6 to 8 until the games program is debugged. In step 6, enter the number of the first bad line to avoid ChexSum verifying the games program from the first line.

DEBUGGING HINTS

Limitations of ChexSum

ChexSum is not entirely foolproof and cannot detect two errors which give a (seemingly) correct output:

1. If your grand total is correct but the program crashes, two lines have been typed in incorrectly and, although their individual line sums are incorrect, they cancel. Please check that all line sums are correct.
2. At certain column positions in a statement line, a full point (.) and a comma (,) may be interchanged and yet still give a correct line sum. When occurring in a DATA statement a (.) for (,) substitution will cause two adjacent integer numbers to be read as a single real number and will usually generate an 'Out of Data' message. When either possible substitution occurs in a program statement, a 'Syntax Error' message will be generated.

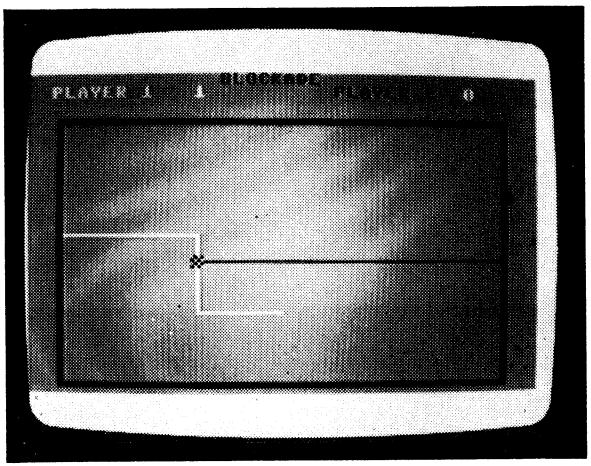
It is impossible for ChexSum to completely eliminate typing errors — it merely reduces the probability of them occurring to a very low level.

Pointer Corruption

Sometimes a program will run incorrectly even when thoroughly debugged by ChexSum and by hand. In this case there are two possibilities:

- The program is wrong — please write and tell us (see Appendix E, 'Reader Feedback').
- A previous run has left system pointers corrupted and they continue to crash the program despite the use of the NEW command. Always reset the computer after a crash to avoid this problem.

Blockade



CLASSIFICATION: Evasion

In this fast-paced game, your goal is to build a wall in front of your opponent so that he crashes into it. Only by quick maneouvres, either left or right, can you avoid the walls. May you outlast your opponent.

The controls are:

Player 1, Q move left, Z move right; player 2, I move left, P move right.

PROGRAMMING SUGGESTIONS

Add a computer opponent. Give the computer limited (or perhaps random!) intelligence when making a decision to turn left or right at each step.

Add obstacles to the board. Set up a routine in the board so that non-blank characters on the field will act as obstacles.

PROGRAM
Variables

CH	Wall characters
CX, CY	Corner characters
X1, Y1	Player 1 co-ordinates
X2, Y2	Player 2 co-ordinates
P1, P2	Scores, player 1 and player 2
D1, D2	Direction of players 1 and 2
A1, B1	Player 1 step value
A2, B2	Player 2 step value
W	Winner

Listing

Initialisation

```
10    COLOR0,2,5:COLOR4,15:VOL 8:P1=0:P2=0
20    X$="■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ":DIMCH(1,1):CH(1,0)=64:C
      H(0,1)=93:DIMCX(3):DIMCY(3)
30    CX(0)=109:CX(1)=125:CX(2)=110:CX(3)=112
40    CY(0)=112:CY(1)=109:CY(2)=125:CY(3)=110
50    B$="■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
      ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ "
60    L$="▲ ▲ ■ █ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ █ ▲ ▲ "
70    COLOR1,16,4:PRINT "■ ■ ■ ■ ■ ▲ ▲ ▲ ■ ■ ■ ▲ ■ ▲ ▲ ▲
      ■ ■ ■ ▲ ■ ■ ■ ▲ ■ ▲ ■ ▲ ▲ ■ ■ ■ ▲ ■ ■ ■ ▲ ■ ■ ■ ▲ ▲
      ■ "
80    PRINT "▲ ▲ ▲ ■ ■ ■ ▲ ■ ▲ ▲ ▲ ■ ▲ ■ ▲ ■ ▲ ▲ ▲ ■ ■ ■
      ▲ ▲ ■ ■ ■ ▲ ■ ▲ ■ ▲ ■ ■ ▲ ▲ ▲ ■ "
90    PRINT "▲ ▲ ▲ ■ ■ ■ ▲ ■ ■ ■ ▲ ■ ■ ■ ▲ ■ ■ ■ ▲ ■ ▲ ■
      ▲ ▲ ■ ▲ ■ ▲ ■ ■ ■ ▲ ■ ■ ■ ▲ ▲ O "
100   COLOR1,9,4:PRINT :PRINT :PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ C O N T R O L S "
110   PRINT :PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ P L A Y E R 1 ▲ ▲ ▲
      ▲ ▲ P L A Y E R ▲ 2 "
120   PRINT :PRINT "▲ L E F T ▲ ▲ : ▲ ▲ ▲ < Q > ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ < + > "
130   PRINT :PRINT "▲ R I G H T ▲ : ▲ ▲ ▲ < Z > ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ < / > "
140   COLOR1,7,4:PRINT :PRINT :PRINT :PRINT "▲ ▲ ▲ ▲ ▲ H
      I T ▲ < R E T U R N > ▲ T O ▲ C O N T I N U E . . .
      "
150   PRINT :PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ < E > ▲ T O ▲ E X I
      T . "
160   GETA$:IF A$=""THEN 160
170   IF A$="E "THEN PRINT "■ ■ ■ ■ ■ T H E ▲ E N D . . .
      ":END
180   IF ASC(A$)<>13THEN 160
190   COLOR1,3,3:PRINT "■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ B
      L O C K A D E ":PRINT :PRINT :PRINT "▲ ▲ ■ ";B$;"■
      "
200   COLOR1,3,3:FOR I=1 TO 20:PRINT L$:NEXT:PRINT "▲ ▲ ■
      ■ ";B$;"■ ■ ";
210   COLOR1,8:PRINT "■ ■ ▲ ▲ P L A Y E R ▲ 1 "
220   COLOR1,15,2:PRINT "■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
      ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ P L A Y E R ▲ 2 "
230   X1=2:X2=37:Y1=12:Y2=14:A1=1:A2=-1:B1=0:B2=0:D1=0:D2
      =2:S=0
```

```
240  COLOR1,2:PRINT "▚ ▙ ▙ ";X$;"▲ ▲ ▲ ▲ ▲ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ";P
     1;X$;"▙ ▙ ▙ ▙ ▙ ▙ ▲ ▲ ▲ ▲ ▲ ▮▮ ▮▮ ▮▮ ▮▮ ";P2
```

Get Player Input

```
250  GETA$:C1=CH(ABS(A1),ABS(B1)):C2=CH(ABS(A2),ABS(B2))
     :S=S+1:IF S=2THEN S=0
260  X1=X1+A1:X2=X2+A2:Y1=Y1+B1:Y2=Y2+B2
270  IF A$="Q "THEN C=B1:B1=-A1:A1=C:D1=INT(((D1+1)/4-
     INT((D1+1)/4))*4):C1=CX(D1)
280  IF A$="+ "THEN C=B2:B2=-A2:A2=C:D2=INT(((D2+1)/4-
     INT((D2+1)/4))*4):C2=CX(D2)
290  IF A$="Z "THEN C=-B1:B1=A1:A1=C:D1=INT((ABS((D1+3)
     /4)-INT(ABS((D1+3)/4)))*4):C1=CY(D1)
300  IF A$="/ "THEN C=-B2:B2=A2:A2=C:D2=INT((ABS((D2+3)
     /4)-INT(ABS((D2+3)/4)))*4):C2=CY(D2)
```

Collision Detection

```
310  IF PEEK(3072+40*Y1+X1)<>32THEN A1=0:B1=0:P2=P2+1:W
     =2:X=X1:Y=Y1:GOSUB 400:GOTO 160
320  IF PEEK(3072+40*Y2+X2)<>32THEN A2=0:B2=0:P1=P1+1:W
     =1:X=X2:Y=Y2:GOSUB 400:GOTO 160
330  GOSUB 350
340  GOTO 250
```

Draw New Bricks In Each Player's Wall

```
350  POKE 3072+40*Y1+X1,C1:POKE 2048+40*Y1+X1,119
360  POKE 3072+40*Y2+X2,C2:POKE 2048+40*Y2+X2,46
370  IF S=0THEN SOUND 1,400+20*D1,5
380  IF S=1THEN SOUND 1,320+20*D2,5
390  RETURN
400  SOUND 3,850,20:SOUND 3,800,100
410  FOR I=1 TO 10:POKE 3072+40*Y+X,102:POKE 2048+40*Y
     +X,96:FOR J=1 TO 20:NEXTJ
420  POKE 3072+40*Y+X,230:POKE 2048+40*Y+X,44:FOR J=1
      TO 20:NEXTJ
430  NEXTI
```

Determine Winner

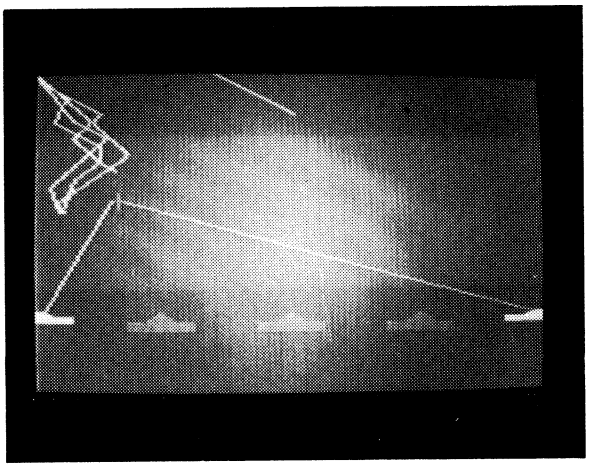
```
440  IF W=1THEN COLOR1,8:PRINT "▮▮ ▚ ▙ ▲ ▲ P L A Y E R ▲
     1 ▬ "
```

```
450   IF W=2THEN COLOR1,15,2:PRINT "▌▌ S Q ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌
      ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ P L A Y E R ▲ 2 ▬
      "
460   COLOR1,2:PRINT "S Q ▌▌ ";X$;"▲ ▲ ▲ ▲ ▲ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ";P
      1;X$;"▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▲ ▲ ▲ ▲ ▲ ▌▌ ▌▌ ▌▌ ▌▌ ";P2
470   RETURN
```

ChexSum Tables

10	= 2228	170	= 2259	330	= 299
20	= 4384	180	= 1378	340	= 526
30	= 2904	190	= 4121	350	= 3105
40	= 2916	200	= 3324	360	= 3055
50	= 6342	210	= 1453	370	= 1843
60	= 2670	220	= 2559	380	= 1844
70	= 6651	230	= 5263	390	= 143
80	= 4821	240	= 4358	400	= 1419
90	= 5645	250	= 5280	410	= 4997
100	= 2784	260	= 3367	420	= 4047
110	= 2292	270	= 6413	430	= 206
120	= 1992	280	= 6374	440	= 2432
130	= 2051	290	= 7025	450	= 3738
140	= 4049	300	= 6980	460	= 4358
150	= 1745	310	= 6585	470	= 143
160	= 1214	320	= 6593	TOTAL	= 160175

Zapp



CLASSIFICATION: Shoot Up

Control your gunsights to target the attacking pods: fire either 1 or 2 zaps to destroy them and to protect your cities and weapon emplacements. You have only limited energy reserves, so zap sparingly. You receive bonus points for remaining energy. Be prepared to zap heavily when later waves of high-tech pods swarm in. The game is over when all cities are destroyed.

Controls are:

Q up, Z down, I left, P right, SPACE fire.

PROGRAMMING SUGGESTIONS

Create a new type of pod — one that must take more zaps to be destroyed, or perhaps one that can split open to drop more pods. Increase the speed of the game with each level. Give some special pods more intelligence — have them either home in on the gun emplacements or on the cities. Give bonus cities for surviving each wave.

PROGRAM
Variables

NM	Pod co-ordinates
E	Energy
LX, LY	Co-ordinates of sights
G%	Gun damage
C%	City damage
LV	Level
SC	Score
T	Speed of pods
MV	Gunsight step distance

Listing

Select Graphics Mode and Initialise

```
10    DIMNM%(3,2):C%=7:T=0:G%=3:SC%=0:LV=1:LX=79:LY=79:
      GRAPHIC4,1
20    COLOR0,2,2:COLOR4,1:COLOR1,8:COLOR2,3,4:COLOR3,15,5
      :VOL 8
30    GOSUB 400
```

Get Player's Input, Fire Remaining Zappers
Draw Gunsight

```
40    GETA$:T=T+1:GOSUB 190:IF T=6-LVTHEN GOSUB 220
50    IF A$="I "THEN GOSUB 200:LX=LX-7:IF LX<4THEN LX=4
60    IF A$="P "THEN GOSUB 200:LX=LX+7:IF LX>155THEN LX
      =155
70    IF A$="Q "THEN GOSUB 200:LY=LY-9:IF LY<5THEN LY=5
80    IF A$="Z "THEN GOSUB 200:LY=LY+9:IF LY>147THEN LY
      =147
90    IF A$<>"▲ "ORG%=0THEN GOTO 40
100   IF (G%AND2)=2THEN DRAW1,3,148 TO LX-2,LY
110   IF (G%AND1)=1THEN DRAW1,156,148 TO LX+2,LY
120   DRAW0,3,148 TO LX-2,LY:DRAW0,156,148 TO LX+2,LY:
      SOUND 3,1000,15
130   FOR I=0 TO 3:IF NM%(I,0)<=0THEN 160
140   IF NM%(I,0)<LX-3ORNM%(I,0)>LX+3ORNM%(I,1)<LY-5ORNM%
      (I,1)>LY+5THEN 160
150   SOUND 3,900,25:SC%=SC%+LV*5:NM%(I,0)=-1:CIRCLE2,LX,
      LY,2,4:K%=K%+1
160   NEXTI
170   IF K%=LV*4THEN LV=LV+1:SCNCLR:K%=0:PRINT "▙ ▚ ▚ ▚ ▚
       ▚ ▚ ▚ ▚ ▚ ▚ ▚ ▚ ▚ ▚ ▚ ▚ ▚ ▚ ▚ ▚ S C O R E ";SC%:
      GOSUB 400
```

Move Pods, Check If Pods Hit Cities or Zappers. End Game

```
180   GOTO 40
190   B%=2:GOTO 210
200   B%=0
210   DRAWB%,LX,LY-5 TO LX,LY+5:DRAWB%,LX-3,LY TO LX+3,LY
      :RETURN
220   FOR I=0 TO 3
230   IF NM%(I,0)>0THEN 260
240   IF RND(1)>.08*LVTHEN 390
250   NM%(I,0)=INT(RND(1)*140+5):NM%(I,1)=0
```

```
260   IF RND(1)<.3THEN NM%(I,2)=INT(RND(1)*11-5)
270   IF NM%(I,0)+NM%(I,2)<5THEN NM%(I,2)=INT(RND(1)*6)
280   IF NM%(I,0)+NM%(I,2)>154THEN NM%(I,2)=-INT(RND(1)
      *6)
290   NM%(I,0)=NM%(I,0)+NM%(I,2):NM%(I,1)=NM%(I,1)+5
300   DRAW3,NM%(I,0),NM%(I,1) TO NM%(I,0)-NM%(I,2),NM%(I,
      1)-5
310   IF NM%(I,1)<154THEN 380
320   IF (C%AND1)>0ANDNM%(I,0)>24ANDNM%(I,0)<56THEN C%=C%
      -1:D%=0:GOSUB 510
330   IF (C%AND2)>0ANDNM%(I,0)>64ANDNM%(I,0)<96THEN C%=C%
      -2:D%=1:GOSUB 510
340   IF (C%AND4)>0ANDNM%(I,0)>104ANDNM%(I,0)<136THEN C%
      =C%-4:D%=2:GOSUB 510
350   IF NM%(I,0)<13THEN G%=(G%AND1):CHAR1,1,19,"* "
360   IF NM%(I,0)>147THEN G%=(G%AND2):CHAR1,38,19,"* "
370   IF C%=0THEN CHAR1,12,12,"G A M E  O V E R ":END
380   IF NM%(I,1)>159THEN NM%(I,0)=-1
390   NEXTI:T=0:RETURN
400   IF (G%AND2)=0THEN 430
```

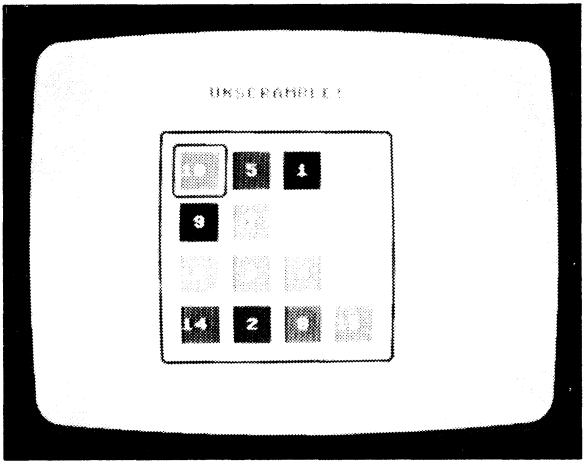
Draw Screen

```
410   DRAW3,0,148 TO 3,148 TO 6,151 TO 12,151 TO 12,154
       TO 0,154 TO 0,148:PAINT3,3,151
420   DRAW3,159,148 TO 156,148 TO 153,151 TO 147,151
       TO 147,154 TO 159,154 TO 159,148:PAINT3,156,150
430   IF (G%AND1)=0THEN 450
440   DRAW3,159,148 TO 156,148 TO 153,151 TO 147,151
       TO 147,154 TO 159,154 TO 159,148:PAINT3,156,150
450   FOR I=0 TO 2:IF (C%AND(2↑I))=0THEN 500
460   DRAW2,25+I*40,154 TO 25+I*40,159 TO 55+I*40,159
       TO 55+I*40,154 TO 53+I*40,154
470   FOR J=0 TO 3:DRAW2 TO 53+I*40-J*7,146 TO 48+I*40-J
      *7,146 TO 48+I*40-J*7,154
480   DRAW2 TO 46+I*40-J*7,154:NEXT
490   PAINT2,38+I*40,157
500   NEXTI:RETURN
510   CHAR1,7+D%*10,19,"# # # # # # ":SOUND 3,600,20:
      RETURN
```

ChexSum Tables

```
10    = 4555
20    = 3054
30    =  298
40    = 2717
50    = 3199
60    = 3413
70    = 3216
80    = 3430
90    = 1955
100   = 2458
110   = 2601
120   = 3916
130   = 2102
140   = 5785
150   = 4962
160   =  206
170   = 5460
180   =  476
190   =  949
200   =  337
210   = 4134
220   =  655
230   = 1210
240   = 1506
250   = 2754
260   = 2819
270   = 3286
280   = 3568
290   = 3479
300   = 3705
310   = 1313
320   = 4561
330   = 4567
340   = 4672
350   = 2742
360   = 2857
370   = 2404
380   = 2122
390   =  791
400   = 1170
410   = 4163
420   = 5367
430   = 1169
440   = 5367
450   = 2261
460   = 5613
470   = 5875
480   = 1994
490   = 1212
500   =  407
510   = 2571
TOTAL = 145403
```

Unscramble



CLASSIFICATION: Logic COLOUR ILLUSTRATION OBC

A four-by-four matrix of numbers ranging from 1 to 15; 1 is blank and 15 are scrambled. You have to re-organise them into sequence from 1 in the top left to 15 in the bottom right. Use I and P to move the blinking cursor, then hit the SPACE bar to shift the pieces.

PROGRAMMING SUGGESTIONS

Increase the size of the matrix for a more challenging game.

PROGRAM
Variables

N	Board array
NZ$	Tile patterns
X, Y	Cursor co-ordinates
X1, Y1	Empty square co-ordinates

Listing

Initialise Game; Display Title and Define Tiles

```
10    COLOR0,2:COLOR4,2:VOL 8
20    DIMN(3,3):DIMNZ$(15)
30    X=0:Y=0:C2$="":C3$=""
40    TP$="▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔▔":S$="▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮▏▯▮"
50    CX$="▲▲▲▲▲▯▮▲▯▮▲▯▮▲▯▮▲▮▮▲▮▮▲▮▮▲▮▮▲□▮▲□▮▲□▮▲"
60    CD$="▯▯▯▯▯":CR$="▮▮▮▮▮▮▮▮▮▮":CS$="▔▔▔▔▏▯▮▏▯▮▏▯▮▏▯▮▏▮▮▔▮▮▔▮▮▔▮▮▏□▮▏□▮▏□▮▏"
70    BD$="▯▯▯▯▯▯▯":BR$="▮▮▮▮▮▮▮▮▮▮▮▮▮"
80    COLOR1,3,3:PRINT "▯▯▮▮▮▮▮┬▲┬┬ ┬▔▔▏▔▏┌▔▏▔▏▏▏▏┌▔▏┬▲┌▔"
90    PRINT "▮▮▮▮▏▲▏▏╲▏▏▔▏▏▲▲├┬▏├▔┤▏▏▏▏├▔┤▏▲├▔"
100   PRINT "▮▮▮▮▏▔▏┴ ┴▏▔▏▏▔▏┴▏▲┴ ┴┴ ┴▏▔▏▏▔▏▔▲●"
110   COLOR1,9,4:PRINT "▯▯▯▮▮▮▮▮▮▮▮▮▮▮▮▮INSTRUCTIONS"
120   PRINT "▯▯▮▮▮▮▮▮▮▮▮▮'I'▲▲▲▲CURSOR▲LEFT"
130   PRINT "▯▮▮▮▮▮▮▮▮▮'P'▲▲▲▲CURSOR▲RIGHT"
140   PRINT "▯▮▮▮▮▮▮▮▮▮'Q'▲▲▲▲CURSOR▲UP"
150   PRINT "▯▮▮▮▮▮▮▮▮▮'Z'▲▲▲▲CURSOR▲DOWN"
160   PRINT "▯▯▮▮▮▮▮▮▮▮SPACE▲▲▲SHIFT▲PIECES"
170   PRINT "▯▯▯▮▮▮▮▮▮▮▮▮(HIT▲RETURN▲TO▲START)"
180   GETA$:IF ASC(A$)<>13THEN 180
190   NZ$(0)="▯▯▲▲▲▯▮▮▮▲▲▲▯▮▮▮▲▲▲"
200   NZ$(1)="■▯▲▲▲▯▮▮▮▲1▲▯▮▮▮▲▲▲"
210   NZ$(2)="▯▯▲▲▲▯▮▮▮▲2▲▯▮▮▮▲▲▲"
220   NZ$(3)="◣▯▲▲▲▯▮▮▮▲3▲▯▮▮▮▲▲▲"
230   NZ$(4)="▯▯▲▲▲▯▮▮▮▲4▲▯▮▮▮▲▲▲"
240   NZ$(5)="▯▯▲▲▲▯▮▮▮▲5▲▯▮▮▮▲▲▲"
250   NZ$(6)="▯▯▲▲▲▯▮▮▮▲6▲▯▮▮▮▲▲▲"
260   NZ$(7)="▯▯▲▲▲▯▮▮▮▲7▲▯▮▮▮▲▲▲"
270   NZ$(8)="▯▯▲▲▲▯▮▮▮▲8▲▯▮▮▮▲▲▲"
280   NZ$(9)="▯▯▲▲▲▯▮▮▮▲9▲▯▮▮▮▲▲▲"
```

```
290   NZ$(10)="▒ ▒ ▲ ▲ ▲ ▒ ▒ ▒ ▒ 1 0 ▲ ▒ ▒ ▒ ▒ ▲ ▲ ▲ "
300   NZ$(11)="▒ ▒ ▲ ▲ ▲ ▒ ▒ ▒ ▒ 1 1 ▲ ▒ ▒ ▒ ▒ ▲ ▲ ▲ "
310   NZ$(12)="▒ ▒ ▲ ▲ ▲ ▒ ▒ ▒ ▒ 1 2 ▲ ▒ ▒ ▒ ▒ ▲ ▲ ▲ "
320   NZ$(13)="▒ ▒ ▲ ▲ ▲ ▒ ▒ ▒ ▒ 1 3 ▲ ▒ ▒ ▒ ▒ ▲ ▲ ▲ "
330   NZ$(14)="▒ ▒ ▲ ▲ ▲ ▒ ▒ ▒ ▒ 1 4 ▲ ▒ ▒ ▒ ▒ ▲ ▲ ▲ "
340   NZ$(15)="▒ ▒ ▲ ▲ ▲ ▒ ▒ ▒ ▒ 1 5 ▲ ▒ ▒ ▒ ▒ ▲ ▲ ▲ "
350   FOR I=0 TO 3:FOR J=0 TO 3:N(I,J)=I*4+J:NEXTJ,I
360   PRINT "▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ U N S C R A
      M B L E ! ":GOSUB 550
```

Shuffle Tiles Randomly; Draw Cursor

```
370   X1=0:Y1=0:X=0:Y=0:Z=20+INT(RND(0)*25)
380   FOR J=1 TO Z:X=INT(RND(0)*4):GOSUB 620:Y=INT(RND(0)
      *4):GOSUB 620:NEXT
390   COLOR1,3,3:PRINT CD$;CR$;"▒ ▒ ";C2$;C3$;CS$;"▒ ":X
      =0:Y=0
```

Get Input; Move and Draw Cursor

```
400   GET A$:IF A$<>"▲ "AND A$<>"P "AND A$<>"I "AND A$<>"Q "
      AND A$<>"Z "THEN 400
410   IF A$="▲ "AND(X1=X OR Y1=Y)THEN GOSUB 620:GOTO 400
420   PRINT CD$;CR$;"▒ ▒ ";C2$;C3$;CX$
430   IF A$<>"▲ "THEN SOUND 1,400,7
440   IF A$="P "THEN X=X+1:C2$=C2$+"▒ ▒ ▒ ▒ ":IF X>3
      THEN X=0:C2$=""
450   IF A$<>"I "THEN 480
460   X=X-1:IF X>=0 THEN C2$=LEFT$(C2$,X*4):GOTO 520
470   X=3:C2$="▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ":GOTO 520
480   IF A$<>"Q "THEN 510
490   Y=Y-1:IF Y>=0 THEN C3$=LEFT$(C3$,Y*4):GOTO 520
500   Y=3:C3$="▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ▒ "
510   IF A$="Z "THEN Y=Y+1:C3$=C3$+"▒ ▒ ▒ ▒ ":IF Y>3
      THEN Y=0:C3$=""
520   COLOR1,3,3:PRINT CD$;CR$;"▒ ▒ ";C2$;C3$;CS$
530   GOTO 400
540   END
```

Draw Board and Tiles On Screen

```
550   COLOR1,1:PRINT CD$;CR$;"▒ ";TP$;"▒ ▒ ";S$;
560   PRINT CD$;CR$;"▒ ";S$;"▒ ";TP$;"▒ ";
570   PRINT CD$;"▒ ▒ ▒ ▒ ";
580   FOR I=0 TO 3:PRINT CR$;"▒ ▒ ";:FOR J=0 TO 3
590   PRINT "▒ ▒ ";NZ$(I*4+J);"▒ ▲ ";:N(I,J)=I*4+J
600   NEXTJ:PRINT :PRINT :PRINT :PRINT :NEXTI
610   RETURN
```

Shuffle Tiles

```
620   IF X1=XANDY1=YTHEN RETURN
630   IF Y<Y1THEN FOR I=Y1-1 TO Y STEP -1:N(I+1,X)=N(I,X)
      :GOSUB 680:Y1=Y:NEXT
640   IF Y>Y1THEN FOR I=Y1+1 TO Y:N(I-1,X)=N(I,X):
      GOSUB 690:NEXT:Y1=Y:RETURN
650   IF X<X1THEN FOR I=X1-1 TO X STEP -1:N(Y,I+1)=N(Y,I)
      :GOSUB 710:NEXT:X1=X:RETURN
660   IF X>X1THEN FOR I=X1+1 TO X:N(Y,I-1)=N(Y,I):
      GOSUB 720:NEXT:X1=X:RETURN
670   PRINT BD$;BR$;NZ$(0):COLOR1,1:RETURN
```

Shuffle Down

```
680   Z$=BD$:BD$=LEFT$(BD$,I*4+7):GOTO 700
```

Shuffle Up

```
690   Z$=BD$:BD$=BD$+"[U] [U] [U] [U] "
700   SOUND 1,1000-5*I,2:GOSUB 670:PRINT Z$;BR$;NZ$(N(I,X
      )):RETURN
```

Shuffle Right

```
710   Z$=BR$:BR$=LEFT$(BR$,I*4+12):GOTO 730
```

Shuffle Left

```
720   Z$=BR$:BR$=BR$+"[R] [R] [R] [R] "
730   SOUND 1,970+5*I,2:GOSUB 670:PRINT BD$;Z$;NZ$(N(Y,I)
      ):RETURN
```

ChexSum Tables

```
10    =  1171
20    =  1100
30    =  1770
40    = 12924
50    =  4369
60    =  9603
70    =  1522
80    =  6927
90    =  5657
100   =  6244
110   =  2443
120   =  1883
130   =  1952
140   =  1701
150   =  1892
160   =  2194
170   =  2257
180   =  1709
190   =  2137
200   =  2277
210   =  2155
220   =  2285
230   =  2285
240   =  2159
250   =  2161
260   =  2285
270   =  2277
280   =  2297
290   =  2351
300   =  2354
310   =  2349
320   =  2352
330   =  2347
340   =  2350
350   =  3185
360   =  2195
370   =  3202
380   =  4131
390   =  3259
400   =  4985
410   =  3011
420   =  1590
430   =  1525
440   =  4019
450   =  1124
460   =  3425
470   =  1840
480   =  1133
490   =  3428
500   =  1116
510   =  4014
520   =  2220
530   =   529
540   =   129
550   =  2587
560   =  2098
570   =   634
580   =  2142
590   =  3195
600   =  1351
610   =   143
620   =  1477
630   =  4803
640   =  4594
650   =  5030
660   =  4582
670   =  1709
680   =  2745
690   =  1489
700   =  3286
710   =  2848
720   =  1583
730   =  3212
TOTAL = 203307
```

SAM

CLASSIFICATION: Shoot Up

You are the commander of a ground-based guided-missile launcher. You launch surface-to-air missiles at attacking enemy craft flying overhead, and try to intercept and destroy them. The smaller and faster the target, the more points you earn.

Use Q to move the missile up, Z down, I left and P right. The SPACE bar will launch a new missile and abort one currently zooming about.

PROGRAMMING SUGGESTIONS

Have the enemy shoot their own anti-missile missiles — you must evade them. Have the enemy drop paratroopers who will try to overrun your emplacement.

PROGRAM
Variables

DR%	Direction table
D	Current direction
SC	Screen memory
CL	Colour memory
MX, MY	Missile's (X, Y) co-ordinates
X, Y	Step values for missile
TG	Missile collision
EX, EY	Enemy (X, Y) co-ordinates
SX, SY	Enemy missile (X, Y) co-ordinates
S	Score

Listing

> Draw Title Page and Initialise Game
> Draw Screen and Start Game

```
10   VOL 8:COLOR0,14,6:COLOR4,6:SC=3072:CL=2048
20   DIMDR%(7,1):DIMMC%(7):EX=-1:LV=1
30   FOR I=0 TO 7:READDR%(I,0):READDR%(I,1):NEXT:FOR I
     =0 TO 7:READMC%(I):NEXT
40   DATA1,0,1,-1,0,-1,-1,-1,-1,0,-1,1,0,1,1,1,62,78,30,
     77,60,78,33,77
50   PRINT "[clr][gfx][down][down][down]"
60   PRINT "▲▲▲▲▲▲▲▲▲[gfx]▲▲▲[gfx]▲▲▲
     [gfx]"
70   PRINT "▲▲▲▲▲▲▲▲▲[gfx]▲▲[gfx]▲▲▲[gfx]▲▲[gfx]▲▲▲
     [gfx]▲[gfx]▲[gfx]"
80   PRINT "▲▲▲▲▲▲▲▲▲[gfx]▲▲▲[gfx]▲▲▲
     [gfx]▲[gfx]▲[gfx]"
90   PRINT "▲▲▲▲▲▲▲▲▲[gfx]▲▲[gfx]▲▲▲[gfx]▲▲[gfx]▲▲▲
     [gfx]▲▲▲▲[gfx]"
100  PRINT "▲▲▲▲▲▲▲▲▲[gfx]▲[gfx]▲[gfx]▲▲▲[gfx]▲[gfx]▲
     [gfx]▲▲▲▲[gfx]▲[gfx]"
110  PRINT "[gfx][down][down]▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲CONTRO
     LS"
120  PRINT "[clr][down][down]▲▲▲▲▲▲▲'I'▲▲TURN▲MIS
     SILE▲LEFT"
130  PRINT "[down]▲▲▲▲▲▲▲▲'P'▲▲TURN▲MISSI
     LE▲RIGHT"
140  PRINT "[down]▲▲▲▲▲▲▲▲▲▲▲SPACEBAR▲FIRES
     ▲MISSILE"
150  PRINT "[down][down]▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲RETURN▲TO▲
     START"
160  GETA$:IF A$=""THEN 160
170  IF ASC(A$)<>13THEN 160
180  PRINT "[clr][gfx]▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲S.A.M."
190  GOSUB 670:K=0:N=LV*5:PC=0
200  FOR I=0 TO 39:POKE 4032+I,104:POKE 3008+I,57:NEXT
210  POKE 4050,85:POKE 4051,66:POKE 4052,73
220  MX=2:MY=22:D=2:F$=""
```

> Get Player's Command, Move and Fire Missile
> Generate and Move Enemy

```
230  GETA$:TN=TN+1
240  IF A$<>"▲"THEN 280
250  SOUND 3,750,5:SOUND 3,765,5:SOUND 3,780,5:SOUND 3,7
     95,10
260  PT=PT-1:PC=PC-1:GOSUB 670
```

```
270   POKE SC+40*MY+MX,32:MY=22:MX=19:D=2:POKE SC+40*MY
      +MX,MC%(D):F$="F "
280   IF F$=""THEN 380
290   POKE SC+40*MY+MX,32:POKE CL+40*MY+MX,0
300   MX=MX+DR%(D,0):MY=MY+DR%(D,1)
310   IF MX<0ORMX>39ORMY<2ORMY>23THEN 220
320   TG=PEEK(SC+40*MY+MX)
330   IF TG<>32THEN GOSUB 560:GOTO 230
340   POKE SC+40*MY+MX,MC%(D):POKE CL+40*MY+MX,0
350   IF A$="I "THEN D=D+1:IF D>7THEN D=0
360   IF A$="P "THEN D=D-1:IF D<0THEN D=7
370   SOUND 1,1000-ABS(EX-MX)-ABS(EY-MY),3
380   IF TN<6-LVTHEN 230
390   TN=0:IF EX>=0ANDEX<=39THEN 430
400   FOR I=1 TO 10:SOUND 2,900-5*I,4:FOR J=1 TO 4:NEXTJ:
      NEXTI
410   EX=0:ED=1:IF RND(0)>.5THEN EX=39:ED=5
420   EY=INT(RND(0)*8+RND(0)*8+2)
430   POKE SC+40*EY+EX,32
440   IF EY+DR%(ED,1)<3THEN EY=3:ED=INT(RND(0)*5+4):
      GOTO 510
450   IF EY+DR%(ED,1)>23THEN EY=23:ED=INT(RND(0)*5):
      GOTO 530
460   EX=EX+DR%(ED,0):EY=EY+DR%(ED,1)
470   ED=ED+INT(RND(0)*3)-1
480   IF EX<0THEN EX=1:ED=INT(RND(0)*4+6)
490   IF EX>39THEN EX=38:ED=INT(RND(0)*5+2)
500   IF ED<0THEN ED=ED+7
510   IF ED>7THEN ED=ED-7
520   EG=PEEK(SC+40*EY+EX)
530   POKE SC+40*EY+EX,65:POKE CL+40*EY+EX,49
540   IF EG<>32THEN GOSUB 560
550   GOTO 230
```

Collision Detection and Scoring

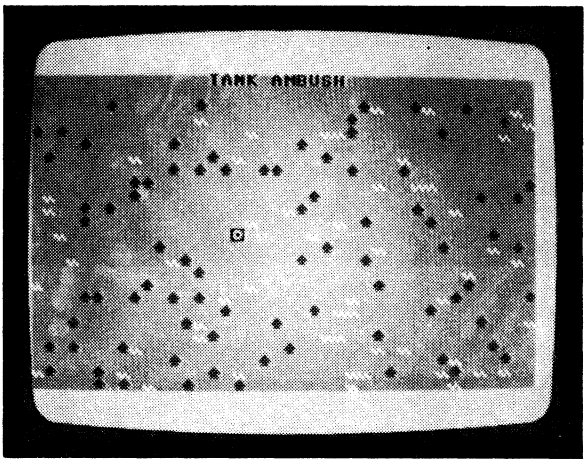
```
560   POKE SC+40*MY+MX,42:PT=PT+5*LV+1:PC=PC+5*LV+1
570   FOR I=1 TO 25:SOUND 3,1000-5*I,5:NEXT
580   FOR I=60 TO 127:POKE CL+40*MY+MX,I:NEXT
590   F$="":POKE SC+40*MY+MX,32:X=19:MY=22:EX=-1:K=K+1
600   IF K<>NTHEN 670
610   FOR I=1 TO 20+2*LV:SOUND 1,600+I*5,5:SOUND 2,900-4
      *I,5:FOR J=1 TO 5:NEXTJ:NEXTI
620   PRINT "■ ■ ■ ■ ■ ■ ■ ■ ■ ■ L E V E L ▲ ";LV;"▲ C O
      M P L E T E D . "
630   PRINT "■ ▲ ▲ ▲ ▲ K I L L ▲ R A T I O ▲ = ▲ ";100*PC
      /(N*5*LV);"% "
640   PRINT "■ ■ ■ ▲ ▲ ▲ ▲ R E T U R N ▲ T O ▲ C O N T I
      N U E "
```

```
650   LV=LV+1⬍IF LV>5THEN LV=5
660   PRINT "[S] [U] ▲ ▲ [E] S C O R E ▲ [W] ";PT⬍GOTO 160
670   PRINT "[S] [U] ▲ ▲ [E] S C O R E ▲ [W] ▲ ▲ ▲ ▲ ▲ ▲ ▌▌ ▌▌ ▌▌ ▌▌
      ▌▌ ▌▌ ";PT⬍RETURN
```

ChexSum Tables

10 = 2655		240 = 1080		470 = 1705	
20 = 2292		250 = 2687		480 = 2669	
30 = 4029		260 = 1939		490 = 2795	
40 = 3521		270 = 5684		500 = 1413	
50 = 471		280 = 848		510 = 1414	
60 = 3899		290 = 2988		520 = 1752	
70 = 2879		300 = 2541		530 = 3050	
80 = 3489		310 = 2810		540 = 1257	
90 = 2556		320 = 1768		550 = 528	
100 = 3365		330 = 1868		560 = 4370	
110 = 1732		340 = 3293		570 = 2187	
120 = 2449		350 = 2361		580 = 2607	
130 = 2345		360 = 2367		590 = 4326	
140 = 2395		370 = 2672		600 = 995	
150 = 1986		380 = 1242		610 = 5218	
160 = 1214		390 = 2358		620 = 2482	
170 = 1378		400 = 3350		630 = 3194	
180 = 1434		410 = 2830		640 = 2149	
190 = 1868		420 = 2213		650 = 1928	
200 = 2771		430 = 1435		660 = 1851	
210 = 1759		440 = 4053		670 = 2740	
220 = 1813		450 = 3927		TOTAL = 163007	
230 = 1075		460 = 2682			

Tank Ambush



CLASSIFICATION: Shoot Up

The hunter against the hunted: hiding within the woods or lying behind hedges are devious infantrymen with dangerous heat-seeking missiles.

These missiles will always home in on your tank. You can shoot them with keys 1 to 8, or manoeuvre by pressing Q for up, Z for down, I for left and Z for right.

PROGRAMMING SUGGESTIONS

Have an enemy helicopter that fires heat-seeking missiles at your tank — shoot them or avoid them by manoeuvring. Introduce limited ammunition in the tank and ammunition dumps (where the tank must wait until it is reloaded). Give the killer tank hit points so it can suffer up to five hits before being destroyed. Also, create a repair station to fix up damages, and create the fuel for the killer tank and fuel dumps where it can refuel.

PROGRAM
Variables

SC	Screen memory
CC	Colour memory
BR	Background brightness level
LV	Level of difficulty
TB, TC	Character and colour beneath tank
F$	Fired flag
X, Y	Co-ordinates of tank
E	Delay for moving misSile
EX, EY	Co-ordinates of enemy missile
EB, EC	Character and colour behind missile
SX, SY	Howitzer shell co-ordinates
GB, GC	Character and colour behind shell
D	Firing direction
PT	Score

Listing

Title Screen and Instructions; Initialise game

```
10   VOL 8:SC=3072:CL=2048:BR=7:COLOR0,2,BR:Y=12:X=0
20   PRINT "▙ ▚ ▐▌ ▐▌ ▐▌ ┌ ┬ ▜ ◤ ═ ◥ ┬ ▲ ┬ ▲ ┬ ▲ ▲ ▲ ▲ ▲ ◤
     ═ ◥ ┌ ┬ ▜ ┌ ┬ ▜ ◤ ═ ◥ ◤ ═ ◥ ┬ "
30   PRINT "▐▌ ▐▌ ▐▌ ▲ ▐ ▲ ├ ═ ┤ ▐ ╲ ▐ ▲ ├ ▜ ▲ ▲ ▲ ▲ ├ ═ ┤
     ▲ ▐ ▲ ▲ ▐ ▲ ├ ═ ┤ ▐ ▲ ▲ ├ ▜ "
40   PRINT "▐▌ ▐▌ ▐▌ ▲ ┴ ▲ ┴ ▲ ┴ ┴ ▲ ┴ ▲ ┴ ◣ ▲ ▲ ▲ ▲ ▲ ┴ ▲ ┴
     ▲ ┴ ▲ ▲ ┴ ▲ ┴ ▲ ┴ ◣ ═ ◢ ┴ ◣ "
50   PRINT "▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▚ I N S T R U
     C T I O N S "
60   PRINT "▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ■ ▚ ● ▀ ▲ ▲ ▲ ▲ ▚ Y O
     U R ▲ T A N K ":PRINT "▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ■ ● ▲ ▲
     ▲ ▲ ▚ E N E M Y ▲ M I S S I L E ▲ ( ▐▌ S H O O T ▀ )
     "
70   PRINT "▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ■ * ▲ ▲ ▲ ▲ ▲ ▚ L A N D ▲
     M I N E ▲ ▲ ▲ ▲ ▲ ▲ ( ▐▌ A V O I D ▀ ) ":PRINT "▐▌ ▐▌ ▐▌
     ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ◘ ♠ ▚ / ▚ ▒ ▲ ▲ ▲ ▚ T R E E / H E D G E
     "
80   PRINT "▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▚ F I R I N G ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
     ▲ ▲ ▲ ▲ ▲ ▲ ▲ M O V E M E N T "
90   PRINT "▐▌ ■ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ 8 ▲ 1 ▲ 2 ▲ ▲ ▲ ▲ ▲ ◤ ═ ═ ═ ═
     ═ ═ ◥ ▲ ▲ ▲ ▲ ▲ ▲ ▲ Q "
100  PRINT "▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ╲ ▐ / ▲ ▲ ▲ ▲ ▲ ▲ ▐ ▐▌ ▚ R E T U
     R N ■ ▀ ▐ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▐ "
110  PRINT "▐▌ ▐▌ ▐▌ ▐▌ ▐▌ 7 ═ ● ═ 3 ▲ ▲ ▲ ▲ ▲ ▐ ▲ T O ▲ ▲ ▲
     ▐ ▲ ▲ ▲ ▲ ▲ I ═ ● ═ P "
120  PRINT "▐▌ ▐▌ ▐▌ ▐▌ ▐▌ ▐▌ / ▐ ╲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▐ B E G I N .
     ▐ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▐ "
130  PRINT "▐▌ ▐▌ ▐▌ ▐▌ ▐▌ 6 ▲ 5 ▲ 4 ▲ ▲ ▲ ▲ ▲ ◣ ═ ═ ═ ═ ═ ═
     ◢ ▲ ▲ ▲ ▲ ▲ ▲ ▲ Z "
140  GETA$:IF ASC(A$)<>13THEN 140
150  GOSUB 710:GOSUB 660
160  TB=PEEK(SC+40*Y+X):TC=PEEK(CL+40*Y+X)
170  POKE SC+40*Y+X,215:POKE CL+40*Y+X,0
```

Get Input; Move Missile In; Move and Fire Tank

```
180  GETA$
190  IF F$="F "THEN GOSUB 450
200  E=E+1:IF E<8-LVTHEN 340
210  E=0
```

```
220   POKE SC+40*EY+EX,EB:POKE CL+40*EY+EX,EC:SOUND 1,100
      0-ABS(EX-X)-ABS(EY-Y),2
230   IF EY=YANDABS(EX-X)>1THEN EY=EY+INT(RND(0)*3-1):
      GOTO 260
240   IF EY<YTHEN EY=EY+1
250   IF EY>YTHEN EY=EY-1
260   IF EX=XANDABS(EY-Y)>1THEN EX=EX+INT(RND(0)*3-1):
      GOTO 290
270   IF EX<XTHEN EX=EX+1
280   IF EX>XTHEN EX=EX-1
290   IF EY<2THEN EY=3:
300   IF EY>24THEN EY=24
310   IF EX<0THEN EX=1
320   IF EX>39THEN EX=38
330   GOSUB 670
340   IF A$=""THEN 180
350   POKE SC+40*Y+X,TB:POKE CL+40*Y+X,TC
360   IF A$="Q "THEN Y=Y-1:SOUND 3,400,10:IF Y<2THEN Y=2
370   IF A$="Z "THEN Y=Y+1:SOUND 3,380,10:IF Y>24THEN Y
      =24
380   IF A$="I "THEN X=X-1:SOUND 3,420,10:IF X<0THEN X=0
390   IF A$="P "THEN X=X+1:SOUND 3,440,10:IF X>39THEN X
      =39
400   IF VAL(A$)>0ANDF$=""THEN F$="F ":SX=X:SY=Y:D=VAL(A$
      ):TS=0:GB=215:GC=0:SOUND 3,800,20
410   TB=PEEK(SC+40*Y+X):TC=PEEK(CL+40*Y+X):IF TB=42
      THEN 780
420   IF TB=43THEN TB=GB:TC=GC
430   POKE SC+40*Y+X,215:POKE CL+40*Y+X,0
440   GOTO 180
450   POKE SC+40*SY+SX,GB:POKE CL+40*SY+SX,GC
460   IF D=8ORD=1ORD=2THEN SY=SY-1:IF SY<2THEN SY=2:
      GOTO 640
470   IF D=2ORD=3ORD=4THEN SX=SX+1:IF SX>39THEN SX=39:
      GOTO 640
480   IF D=4ORD=5ORD=6THEN SY=SY+1:IF SY>24THEN SY=24:
      GOTO 640
490   IF D=6ORD=7ORD=8THEN SX=SX-1:IF SX<0THEN SX=0:
      GOTO 640
500   GB=PEEK(SC+40*SY+SX):GC=PEEK(CL+40*SY+SX)
```

Shell Collision With Missile; Increase Level

```
510   IF GB=215THEN GB=TB:GC=TC
520   IF GB<>81ANDEB<>43THEN 610
530   PRINT "■ ":IF BR=7THEN PRINT "■ "
540   SOUND 3,1000,15:PT=PT+1:PRINT "S C O R E ";
      PT:GB=42:GC=0:GOSUB 660
```

```
550    PU=PU+1:IF PU=LV+1THEN BR=BR-1:PU=0
560    IF BR>=0THEN 600
570    IF BR=-1THEN COLOR0,1:GOTO 640
580    BR=7:COLOR0,2,BR:LV=LV+1:IF LV>8THEN LV=8
590    FOR I=1 TO 500:NEXT:PRINT "■ ■ ■ ■ ■ ■ ■ ■ L E V E
       L ";LV;"▲ C O M P L E T E D ":FOR I=1 TO 1000:
       NEXT:GOTO 150
600    COLOR0,2,BR:GOTO 640
610    POKE SC+40*SY+SX,43:POKE CL+40*SY+SX,0
620    TS=TS+1:IF TS>10THEN 640
630    RETURN
640    POKE SC+40*SY+SX,GB:POKE CL+40*SY+SX,GC
650    F$="":RETURN
```

Initialise Enemy Missile Location

```
660    EX=INT(RND(0)*40):EY=INT(RND(0)*22+2)
670    EB=PEEK(SC+40*EY+EX):EC=PEEK(CL+40*EY+EX)
680    IF EX=XANDEY=YTHEN 780
690    POKE SC+40*EY+EX,81:POKE CL+40*EY+EX,0
700    RETURN
```

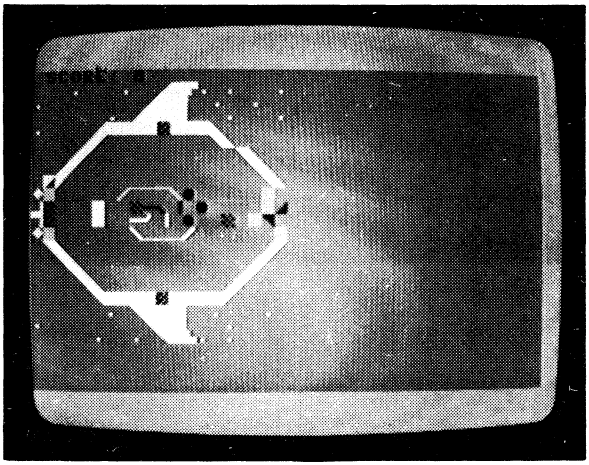
Display Score and Generate Background; End Game

```
710    PRINT "■ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ T A N K ▲ A
       M B U S H "
720    PRINT "■ ■ ▲ ▲ S C O R E ";PT;"/ ";LV+1
730    A=INT(RND(0)*50+50-6*LV)
740    FOR I=1 TO A:B=INT(RND(0)*920+80):POKE SC+B,65:
       POKE CL+B,53:NEXT
750    A=INT(RND(0)*30+30-3*LV)
760    FOR I=1 TO A:B=INT(RND(0)*920+80):POKE SC+B,104:
       POKE CL+B,88:NEXT
770    RETURN
780    POKE SC+40*Y+X,102:FOR I=1 TO 15:COLOR0,I:SOUND 3,8
       00+10*I,9:FOR J=1 TO 50:NEXTJ:NEXTI
790    COLOR0,2,7:PRINT "■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
       ■ G ▲ A ▲ M ▲ E ▲ ▲ ▲ O ▲ V ▲ E ▲ R ▀ "
800    PRINT "■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ S C O R
       E ";PT;"/ ";LV+1:END
```

ChexSum Tables

```
10    = 3640
20    = 6091
30    = 4916
40    = 4620
50    = 1932
60    = 6531
70    = 5860
80    = 2724
90    = 3249
100   = 3413
110   = 3391
120   = 2854
130   = 3121
140   = 1705
150   =  679
160   = 3403
170   = 2704
180   =  267
190   = 1079
200   = 1753
210   =  298
220   = 5329
230   = 4367
240   = 1496
250   = 1495
260   = 4377
270   = 1495
280   = 1494
290   = 1171
300   = 1229
310   = 1109
320   = 1238
330   =  302
340   =  843
350   = 2824
360   = 3174
370   = 3288
380   = 3160
390   = 3284
400   = 6547
410   = 4483
420   = 1843
430   = 2704
440   =  533
450   = 3168
460   = 4302
470   = 4401
480   = 4404
490   = 4298
500   = 3797
510   = 1882
520   = 1912
530   = 1585
540   = 4226
550   = 3158
560   = 1050
570   = 1875
580   = 3168
590   = 5518
600   = 1203
610   = 3007
620   = 1773
630   =  143
640   = 3168
650   =  570
660   = 2876
670   = 3747
680   = 1550
690   = 2987
700   =  143
710   = 2125
720   = 1724
730   = 2055
740   = 4273
750   = 2050
760   = 4321
770   =  143
780   = 5514
790   = 3027
800   = 2529
TOTAL = 220287
```

Alien Overrun



CLASSIFICATION: Defender

Your spaceship has been invaded by hordes of menacing aliens and they are multiplying prodigiously. You must move around your spaceship for as long as possible without being destroyed. Wipe the aliens out by moving onto the green chequered squares. Don't stand still as you don't score when you're still.

PROGRAMMING SUGGESTIONS

Make your ship a multi-level vehicle and arm your man with more than one weapon.

PROGRAM
Variables

X1, Y1	Next position of player
X, Y	Current position of player
Z	Level of difficulty
SC	Score
X( ), Y( )	Array of locations of each alien
A, B	Location of a particular alien
A1, B1	Next location of a particular alien
N	Number of aliens

Listing

```
10      REM ALIEN OVERUN
20      COLOR4,5,5:COLOR0,7,4
```

Input Difficulty Level, Define Variables and Draw the Spaceship

```
30      INPUT "D I F F I C U L T Y  1 - 5 ";Z:Z=Z*10
40      IF Z>50ORZ<10THEN 30
50      C=2048:S=3072:SC=0:DIMX(Z),Y(Z):X=6:Y=10:N=1
60      PRINT "
70      PRINT "
80      PRINT "
90      PRINT "
100     PRINT "
110     PRINT "
120     PRINT "
130     PRINT "
140     PRINT "
150     PRINT "
160     PRINT "
170     PRINT "
180     PRINT "
190     PRINT "
200     PRINT "
210     PRINT "
220     PRINT "
230     PRINT "
240     PRINT "
250     PRINT "
260     A=14:B=10:FOR I=0 TO N
270     X(I)=A:Y(I)=B:POKE C+B*40+A,2:POKE S+B*40+A,81
280     A1=A+INT(RND(1)*3-1):B1=B+INT(RND(1)*3-1)
290     IF PEEK(S+B1*40+A1)<>32THEN 280
300     B=B1:A=A1:NEXT
```

```
310   FOR I=0 TO N:PRINT "[S] ■ ▲ S C O R E : ";SC;:IF SC
      <10THEN PRINT "[I] ▲ "
320   C1=1:A=X(I):B=Y(I)
330   IF RND(1)>.7THEN 350
340   A1=A+(A>X)-(A<X):B1=B+(B>Y)-(B<Y):GOTO 360
350   B1=B+INT(RND(1)*3-1):A1=A+INT(RND(1)*3-1)
360   IF PEEK(S+B1*40+A1)=32ORPEEK(S+B1*40+A1)=81ORPEEK(S
      +B1*40+A1)=88THEN 400
370   C1=C1+1:IF C1<10THEN 350
380   IF I<NTHEN A=X(I+1):B=Y(I+1)
390   GOTO 410
400   POKE S+B*40+A,32
410   A=A1:B=B1:IF A=XANDB=YTHEN 580
420   X(I)=A:Y(I)=B:POKE C+B*40+A,2:POKE S+B*40+A,81
```

Scan Keyboard; Move Player in Response; Multiply and Move Aliens

```
430   GETA$:IF A$<>"A "ANDA$<>"D "ANDA$<>"W "ANDA$<>"X "
      THEN 530
440   X1=X+(A$="A ")-(A$="D "):Y1=Y+(A$="W ")-(A$="X ")
450   P=PEEK(S+Y1*40+X1)
460   IF P=81THEN 580
470   IF P<>32ANDP<>102ANDP<>230THEN 530
480   SC=SC+1
490   POKE C+Y1*40+X1,7:POKE S+Y1*40+X1,88:POKE S+Y*40+X,
      32:Y=Y1:X=X1
500   IF P<>102ANDP<>230THEN 530
510   FOR J=0 TO N:POKE S+Y(J)*40+X(J),32:NEXT:SC=SC-30:
      IF SC<0THEN SC=0
520   N=1:GOTO 260
530   IF N<ZANDRND(1)>.8THEN N=N+1:X(N)=X(N-1):Y(N)=Y(N
      -1)
540   IF N=ZTHEN FOR J=1 TO Z:POKE S+Y(J)*40+X(J),32:
      NEXT:N=1
550   NEXTI:GOTO 310
560   POKE S+Y(0)*40+X(0),32:IF C1=10THEN 430
570   GOTO 310
580   REM
590   FOR I=1 TO 500:NEXT
```

Print the Score and Ask Player If He Wants Another Game

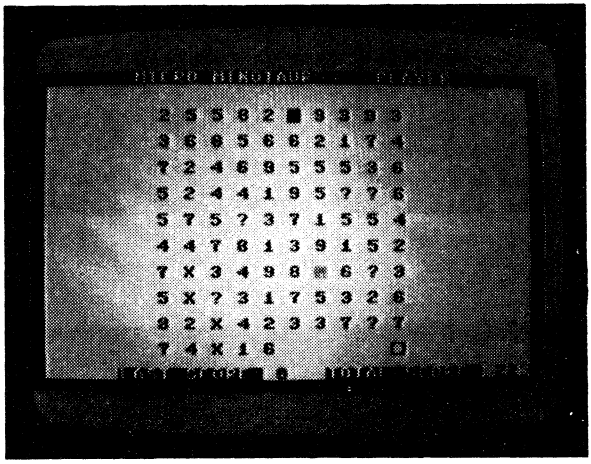
```
600   FOR I=1 TO 1000:NEXT:PRINT "[U] ■ T H E ▲ [A] [L] A L I E
       N S [=] ■ ▲ G O T ▲ Y O U ! ! ":PRINT :PRINT "■ [I] [I]
      [I] [I] S C O R E "SC
610   PRINT :PRINT "■ A N O T H E R ▲ G A M E ? "
620   GETA$:IF A$<>"Y "ANDA$<>"N "THEN 620
```

```
630   IF A$="N "THEN PRINT :PRINT "■ B Y E ▲ B Y E ▲ T H
      E N . ":END
640   PRINT :PRINT :PRINT "■ * * * S T A N D ▲ B Y * * *
      "
650   FOR I=1 TO 1500:NEXT
660   RUN
```

ChexSum Tables

```
10    =    0        230   = 1612        450   = 1582
20    = 1058        240   = 1442        460   =  848
30    = 2270        250   = 1457        470   = 2637
40    = 1392        260   = 1572        480   =  716
50    = 3678        270   = 3668        490   = 5141
60    = 1863        280   = 3417        500   = 1897
70    = 1508        290   = 2231        510   = 4892
80    = 1612        300   = 1009        520   =  917
90    = 1624        310   = 3376        530   = 4296
100   = 1768        320   = 1544        540   = 3756
110   = 1858        330   = 1117        550   =  803
120   = 1915        340   = 4067        560   = 2548
130   = 1961        350   = 3419        570   =  526
140   = 2813        360   = 5833        580   =    0
150   = 3311        370   = 1624        590   =  964
160   = 3668        380   = 2236        600   = 5627
170   = 2852        390   =  530        610   = 1617
180   = 2360        400   = 1167        620   = 2337
190   = 2295        410   = 2247        630   = 2654
200   = 2235        420   = 3668        640   = 1778
210   = 2180        430   = 4118        650   = 1021
220   = 1621        440   = 4047        660   =  139
                                        TOTAL = 147939
```

Micro Minotaur



CLASSIFICATION: Educational

This is a smaller version of the number guessing game Minotaur. The objective is to guess a number in the range of 0 to 99. You do it by moving a piece around a board of numbers. As you pass over a number, it is removed from the board and added to your score. If you pass over an X, a clue appears at the top of the board for a short time. If you pass over a question mark, a random number is added to your Score.

If you pass over a number greater than five as you move around the board, you are pursued by a minotaur. If he captures you, you're dead. Remember, once you pass over a number it is removed from the board and you cannot pass over spaces. If you become encircled by spaces, press T to escape. Move your piece around using I for left, P for right, Q for up and Z for down. When you have guessed the number, move your piece to the white cursor.

PROGRAMMING SUGGESTIONS

Add different pieces to the board, such as bombs and mines. Place temporary barriers in the path of both the player and the minotaur.

PROGRAM
Variables

SC	Screen memory
CO	Colour memory
H$	Characters to place on screen
R	Row co-ordinate of player's piece
C	Column co-ordinate of player's piece
PO	Player's pieces position
PE	Player's pieces previous position
BE	Start of matrix on screen
C1	Column position of minotaur
R1	Row position of minotaur
MA	Minotaur's screen position

Listing

```
10    REM MICRO MINOTAUR
20    CLR
```

Draw Border, Rows of Numbers; Generate Number to Guess

```
30    SCNCLR:VOL 8:COLOR1,1,3
40    SC=3072:CO=2048:COLOR0,7,4:COLOR4,6,4:C=0:R=0:PO=SC
      +(R*40)+C:BE=SC+130
50    PRINT "■ ";
60    FOR I=1 TO 24:RR$=RR$+"■ ":NEXT
70    FOR I=1 TO 40:CC$=CC$+"■ ":NEXT
80    FOR I=1 TO 34:CL$=CL$+"▲ ":NEXT
90    H$="1 2 3 4 5 6 7 8 9 ? "+CHR$(24):DIMCL$(10)
100   FOR I=SC TO SC+39:POKE I,160:NEXT
110   FOR I=SC+(24*40) TO SC+(24*40)+39:POKE I,160:NEXT
120   FOR I=SC TO SC+(24*40) STEP 40:POKE I,160:NEXT
130   FOR I=SC+39 TO SC+(24*40)+39 STEP 40:POKE I,160:
      NEXT
140   PRINT "■ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ M I C R O ▲ M I N O T
      A U R ";"■ ■ ▲ ▲ ▲ ▲ ▲ P L A Y E R "
150   FOR I=SC+130 TO SC+850 STEP 80
160   FOR J=I TO I+18 STEP 2
170   Q=INT(RND(1)*12):IF Q=0THEN 170
180   A=ASC(MID$(H$,Q,1))
190   POKE J,A:NEXT:NEXT
200   NU=INT(RND(1)*100):IF NU=0THEN 200
210   NU$=STR$(NU):RA=INT(RND(1)*3):IF RA=0THEN GOTO 210
220   IF NU<10THEN NU$="0 "+NU$
```

Make up Clues About Random Number

```
230   IF RA=1THEN CL$(1)="F I R S T ▲ D I G I T ▲ E Q U A
       L S ▲ "+MID$(NU$,2,1)
240   IF RA=2THEN CL$(1)="S E C O N D ▲ D I G I T ▲ E Q U
       A L S ▲ "+MID$(NU$,3,1)
250   CN=2:FOR I=2 TO NU-1
260   A=NU/I:B=INT(A):IF A<>BTHEN 290
270   IF CN=7THEN 300
280   CL$(CN)="A ▲ F A C T O R ▲ O F ▲ T H E ▲ N U M B E
      R ▲ I S ▲ "+STR$(A):CN=CN+1
290   NEXT
300   IF NU/2=INT(NU/2)THEN CL$(CN)="T H E ▲ N U M B E R
      ▲ I S ▲ E V E N "
```

```
310   IF NU/2<>INT(NU/2)THEN CL$(CN)="T H E ▲ N U M B E R
      ▲ I S ▲ O D D "
320   GB=VAL(MID$(NU$,3,1))‡FOR I=2 TO 9‡A=GB/I‡IF A=
      INT(GB/I)THEN GOSUB 1060‡GOTO 340
330   NEXT
340   GB=VAL(MID$(NU$,2,1))‡FOR I=2 TO 9‡A=GB/I‡IF A=
      INT(GB/I)THEN GOSUB 1070‡GOTO 360
350   NEXT
360   SD=VAL(MID$(NU$,2,1))‡IF SD/2=INT(SD/2)THEN CL$(7)
      ="F I R S T ▲ D I G I T ▲ I S ▲ E V E N "
370   IF SD/2<>INT(SD/2)THEN CL$(7)="F I R S T ▲ D I G I
      T ▲ I S ▲ O D D "
380   SD=VAL(MID$(NU$,3,1))‡IF SD/2=INT(SD/2)THEN CL$(8)
      ="S E C O N D ▲ D I G I T ▲ I S ▲ E V E N "
390   IF SD/2<>INT(SD/2)THEN CL$(8)="S E C O N D ▲ D I G
      I T ▲ I S ▲ O D D "
400   FOR I=1 TO 9‡IF I*I=NUTHEN CL$(9)="N U M B E R ▲ I
      S ▲ T H E ▲ P R O D U C T ▲ O F ▲ A ▲ S Q U A R E "
```

Place Minotaur and Player On Board; Move Them Around

```
410   NEXT
420   HO=BE+10‡POKE HO,160
430   C1=6‡R1=6‡MA=BE+(R1*40)+C1‡VE=PEEK(MA)‡POKE MA,13
440   C=10‡R=18‡PO=BE+(R*40)+C‡VA=PEEK(PO)‡POKE PO,209
450   A=PEEK(198)‡POKE MA,13‡IF A=64THEN 550
460   IF A=62THEN GOSUB 560
470   IF A=12THEN GOSUB 620
480   IF A=33THEN GOSUB 680
490   IF A=41THEN GOSUB 740
500   IF A=22THEN GOTO 1040
510   GOSUB 850‡SOUND 2,15,12‡SOUND 1,23,23
520   PRINT "■ ";LEFT$(RR$,2);LEFT$(CC$,2);CL$;
530   TT=TT+CU
540   PRINT "■ ";LEFT$(RR$,23);LEFT$(CC$,7);"■ L A S T ▲
      S C O R E ‡ ■ ";CU;"▲ ▲ ■ T O T A L ▲ S C O R E ‡ ■
       ";TT;
550   CU=0‡POKE MA,141‡GOTO 450
560   IF R=0THEN RETURN
570   R=R-2‡PE=PO‡PO=BE+(R*40)+C‡DA=PEEK(PO)‡IF DA=32
      THEN R=R+2‡PO=BE+(R*40)+C‡RETURN
580   IF DA=13THEN GOTO 920
590   GOSUB 800
600   POKE PE,VA‡FL=PEEK(PE)‡CU=VAL(CHR$(FL))‡POKE PE,32‡
      VA=PEEK(PO)
610   POKE PO,209‡RETURN
620   IF R=18THEN RETURN
630   R=R+2‡PE=PO‡PO=BE+(R*40)+C‡DA=PEEK(PO)‡IF DA=32
      THEN R=R-2‡PO=BE+(R*40)+C‡RETURN
```

```
640   IF DA=13THEN GOTO 920
650   GOSUB 800
660   POKE PE,VA:FL=PEEK(PE):CU=VAL(CHR$(FL)):POKE PE,32
670   VA=PEEK(PO):POKE PO,209:RETURN
680   IF C=0THEN RETURN
690   C=C-2:PE=PO:PO=BE+(R*40)+C:DA=PEEK(PO):IF DA=32
      THEN C=C+2:PO=BE+(R*40)+C:RETURN
700   IF DA=13THEN GOTO 920
710   GOSUB 800
720   POKE PE,VA:FL=PEEK(PE):CU=VAL(CHR$(FL)):POKE PE,32
730   VA=PEEK(PO):POKE PO,209:RETURN
740   IF C=18THEN RETURN
750   C=C+2:PE=PO:PO=BE+(R*40)+C:DA=PEEK(PO):IF DA=32
      THEN C=C-2:PO=BE+(R*40)+C:RETURN
760   IF DA=13THEN GOTO 920
770   GOSUB 800
780   POKE PE,VA:FL=PEEK(PE):CU=VAL(CHR$(FL)):POKE PE,32
790   VA=PEEK(PO):POKE PO,209:RETURN
800   IF DA=63THEN CU=INT(RND(1)*10)
810   FU=INT(RND(1)*10):DI=(40-LEN(CL$(FU)))/2
820   IF DA=24THEN PRINT "■ ";LEFT$(CC$,DI);LEFT$(RR$,2);
      CL$(FU);:GOSUB 1050
830   IF DA=160THEN GOSUB 1000
840   RETURN
```

Work Out Minotaur's Position and Move Him Closer To You

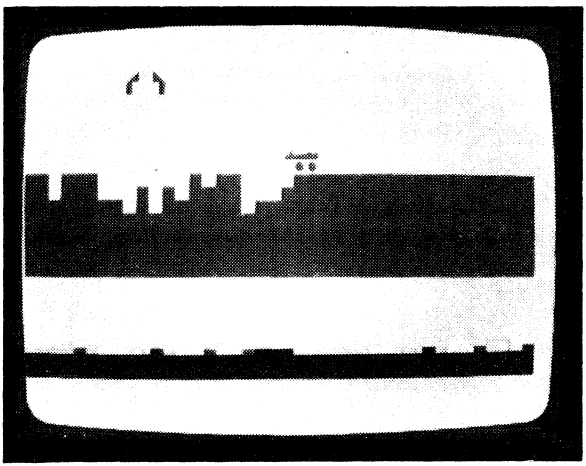
```
850   IF CU<5THEN RETURN
860   IF C1>CTHEN C1=C1-2
870   IF C1<CTHEN C1=C1+2
880   IF R1>RTHEN R1=R1-2
890   IF R1<RTHEN R1=R1+2
900   POKE MA,VE:MA=BE+(R1*40)+C1:IF PEEK(MA)=209THEN
      GOSUB 920:STOP
910   VE=PEEK(MA):POKE MA,13:RETURN
920   PRINT "■ ";LEFT$(RR$,10);"T H E ▲ M I N O T A U R ▲
       H A S ▲ E A T E N ▲ Y O U "
930   PRINT "■ ";LEFT$(RR$,13);"T H E ▲ N U M B E R ▲ W A
       S ";NU;
940   PRINT :PRINT :PRINT
950   PRINT "D O ▲ Y O U ▲ W A N T ▲ A N O T H E R ▲ G A
      M E ( Y / N ) : ";
960   GETA$:IF A$=""THEN 960
970   IF A$="Y "THEN GOTO 20
980   IF A$="N "THEN END
990   GOTO 960
1000  PRINT "■ ";LEFT$(RR$,2);LEFT$(RR$,3);"W H A T ▲ I S
       ▲ T H E ▲ N U M B E R ";:INPUT VT
```

```
1010  IF VT<>NUTHEN PRINT "W R O N G , ▲ T H E ▲ N U M B
      E R ▲ W A S ▲ ";NU:GOTO 940
1020  PRINT "C O N G R A T U L A T I O N S ▲ Y O U ▲ H A
      V E ▲ B E A T E N ▲ M I N O T A U R "
1030  GOTO 940
1040  PRINT "▌ ";:GOTO 930
1050  FOR I=1 TO 1200:NEXT:RETURN
1060  CL$(6)="A ▲ F A C T O R ▲ O F ▲ S E C O N D ▲ D I G
       I T ▲ I S "+STR$(I):RETURN
1070  CL$(5)="A ▲ F A C T O R ▲ O F ▲ F I R S T ▲ D I G I
       T ▲ I S "+STR$(I):RETURN
```

ChexSum Tables

```
10    =     0
20    =   157
30    =  1125
40    =  5999
50    =   295
60    =  1942
70    =  1892
80    =  1914
90    =  2293
100   =  1868
110   =  3341
120   =  2612
130   =  3242
140   =  2922
150   =  1872
160   =  1222
170   =  2025
180   =  1198
190   =   739
200   =  2287
210   =  3559
220   =  1726
230   =  3881
240   =  4040
250   =  1484
260   =  2422
270   =   857
280   =  4306
290   =   131
300   =  4034
310   =  4141
320   =  5441
330   =   131
340   =  5443
350   =   131
360   =  5832
370   =  4090
380   =  5953
390   =  4216
400   =  5668
410   =   131
420   =  1346
430   =  4005
440   =  3984
450   =  2185
460   =   986
470   =   982
480   =   982
490   =   982
500   =  1278
510   =  1647
520   =  2034
530   =   857
540   =  5677
550   =  1573
560   =   761
570   =  7374
580   =  1287
590   =   302
600   =  4201
610   =   729
620   =   824
630   =  7373
640   =  1287
650   =   302
660   =  3195
670   =  1614
680   =   746
690   =  7312
700   =  1287
710   =   302
720   =  3195
730   =  1614
740   =   809
750   =  7311
760   =  1287
770   =   302
780   =  3195
790   =  1614
800   =  2033
810   =  3162
820   =  3756
830   =  1175
840   =   143
850   =   839
860   =  1363
870   =  1364
880   =  1425
890   =  1426
900   =  3944
910   =  1533
920   =  3677
930   =  2735
940   =   585
950   =  2628
960   =  1214
970   =  1271
980   =   895
990   =   535
1000  =  4192
1010  =  3955
1020  =  3802
1030  =   533
1040  =  1051
1050  =  1226
1060  =  3662
1070  =  3546
TOTAL = 250979
```

Dumper



CLASSIFICATION: Defender COLOUR ILLUSTRATION OBC

An alien spacecraft is dropping bombs on your city's shield and gradually eating it away. You have three dumper trucks with which to drop bricks onto the shield and rebuild it. (Be careful, the trucks can be destroyed by the UFO's bombs.) Use the I key to move left, the P key to move right, and the SPACE bar to drop bricks on the shield.

PROGRAMMING SUGGESTIONS

Change or vary the effect of the alien's bombs so that one bomb may take one piece of the shield and another several pieces. Also give bonus points each time the UFO's bombs break the shield if you reseal it before the city is destroyed.

PROGRAM
Variables

HS	Highest score
S	Score
B	Position of bomb
G$	INKEY$
AL	Alien
P	Position of dumper
DI	Holes
DU	Number of dumpers

Listing

```
10    REM DUMPER
20    HS=0:VOL 8
30    COLOR0,4,5:COLOR4,2,5
40    PRINT "▙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ";
```

> Set the Colors; Draw the Sky, Shield and City; Define the Alien

```
50    FOR I=1 TO 8:PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ";
      :NEXT
60    PRINT "▀ ◙ ◙ "TAB(8)"◙ ▐ ◙ ▌▌ + ◙ ▌▌ ▐ ◙ ▌▌ ◙ ▲ "
70    PRINT "◘ ▜ ▄ ▄ ▄ ◙ ▲ ▀ ▀ ▀ ▲ ▟ ◩ ◪ ■ ▄ ▜ ▄ ◙ ╱ ╲ ◙
      ▄ ▜ ┏ ┓ ▲ ■ ▄ ▄ ▄ ";
80    PRINT "▜ ▄ ▄ ▄ ◙ ▲ ▀ ▀ ▀ ▲ ▟ ◩ ◪ ■ ▄ ▜ ▄ ◙ ╱ ╲ ◙ ▄
      ▜ ┏ ┓ ▲ ■ ▄ ";
90    PRINT "◙ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ";
100   PRINT "◙ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ";
110   PRINT "◘ ◘ ◘ ▟ ▟ ▟ ▟ ▀ ◙ ▄ ▟ ▟ ▟ ▟ ▟ ▟ ▟ ▟ ▟ ▟ ▟ ▟
      ▄ "
120   DU=3:S=0
130   AL=1:A$="▲ ◙ ◙ ◤ ◙ ▀ ● ◙ ◙ ◥ ▀ ▲ ◙ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▲ ▌ ◙
      ▀ ◙ ◙ ▌ ▀ ▲ "
140   P=3387
150   B=0
160   K=64:GOTO 220
170   GETG$
180   IF G$=""THEN K=64
190   IF G$="I "THEN K=12
200   IF G$="P "THEN K=20
210   IF G$="▲ "THEN 450
220   D=(K=12)-(K=20)*2+P:IF D<3351THEN 310
230   IF PEEK(D)=160THEN D=D-40
240   IF D>PTHEN D=D-1
250   POKE P,32:POKE P-41,32:POKE P-39,32:POKE P+1,32:
      POKE P-40,32
260   POKE P-81,32:POKE P-80,32:POKE P-79,32:POKE P-121,3
      2:POKE P-119,32:P=D
270   POKE P,81:POKE P+1,81:POKE P-41,233:POKE P-40,98:
      POKE P-39,248
280   IF PEEK(P+40)<>32ANDPEEK(P+40)<>160THEN 520
290   IF PEEK(P+40)=160THEN 310
300   D=P+40:GOTO 250
310   AL=AL+INT(RND(1)*3-1):IF AL<0THEN AL=0
320   IF AL>18THEN AL=18
```

Move the Alien Invader Along the Top of the Screen and the Dumper

```
330   PRINT "■ "TAB(AL)A$
340   IF B>0THEN 370
350   IF RND(1)<.8THEN 440
360   B=3154+AL
370   POKE B,32:B=B+40:IF PEEK(B)=32THEN 430
380   IF PEEK(B)<>160THEN 410
390   POKE B,32
400   B=0:GOTO 440
410   IF B>3711THEN 520
420   GOTO 540
430   POKE B,46
440   GOTO 170
450   DI=P-1:IF PEEK(DI+40)<>160THEN S=S+5
460   POKE P-41,95
470   POKE P-41,233:GOTO 500
480   S=S+1:POKE DI,160
490   FOR I=1 TO 10:NEXT
500   IF PEEK(DI+40)=160ORDI>3671THEN 310
510   POKE DI,32:DI=DI+40:GOTO 480
520   GOTO 530
530   GOTO 610
```

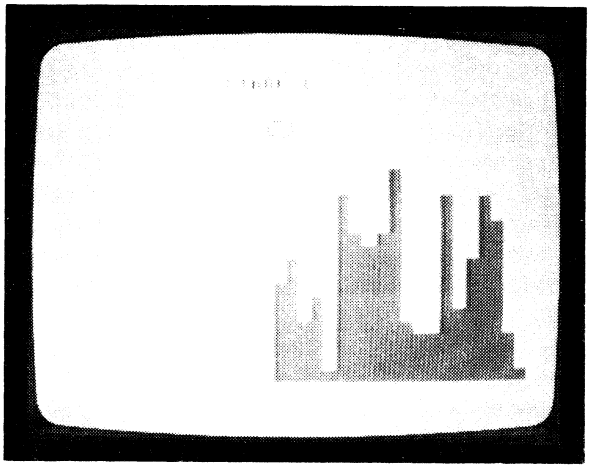
Generate Sound, Print the Score and Prompt for Another Game

```
540   REM SOUND
550   SOUND 2,55,5:POKE B-1,77:POKE B,121:POKE B+1,78
560   IF DU=1THEN 610
570   POKE B,32:POKE B-1,32:POKE B+1,32
580   POKE P,32:POKE P+1,32:POKE P-41,32:POKE P-40,32:
      POKE P-39,32
590   PRINT "■ "TAB(AL+1)"▲ ▲ ▲ ▲ ■■■ ▲ ▲ ▲ "
600   DU=DU-1:GOTO 140
610   FOR I=1 TO 1000:NEXT:PRINT "■ ■ ■ S C O R E "S
620   IF S>HSTHEN HS=S
630   PRINT "■ H I ▲ ▲ ▲ "HS
640   PRINT "■ A N O T H E R ▲ G A M E ? ":POKE 198,0
650   GETA$:IF A$="Y "THEN 40
660   IF A$<>"N "THEN 650
670   PRINT :PRINT "■■■ T O O ▲ T O U G H ▲ F O R ▲ Y
      O U , ▲ E H ▲ ? "
680   END
```

ChexSum Tables

```
10    =    0
20    =  736
30    = 1053
40    =  720
50    = 3160
60    = 2018
70    = 5020
80    = 4551
90    = 2151
100   = 2151
110   = 1716
120   =  779
130   = 3865
140   =  481
150   =  296
160   =  972
170   =  271
180   = 1062
190   = 1145
200   = 1150
210   =  905
220   = 2971
230   = 1652
240   = 1198
250   = 3449
260   = 4378
270   = 3580
280   = 3058
290   = 1503
300   = 1231
310   = 2965
320   = 1203
330   =  721
340   =  769
350   = 1113
360   =  781
370   = 2315
380   = 1393
390   =  374
400   =  903
410   =  957
420   =  529
430   =  371
440   =  528
450   = 2909
460   =  679
470   = 1347
480   = 1161
490   =  908
500   = 2316
510   = 1930
520   =  532
530   =  530
540   =    0
550   = 2477
560   =  867
570   = 1778
580   = 3465
590   = 1762
600   = 1333
610   = 2084
620   = 1179
630   =  696
640   = 1746
650   = 1243
660   = 1128
670   = 2640
680   =  129
TOTAL = 106983
```

Scrambler



CLASSIFICATION. Evasion

You are the commander of a spaceship which must fly through an obstacle course of mountains, corridors and meteors. To move your space vehicle, use the Q key for up, the Z key for down. The program uses a small machine-language routine to scroll the screen, so the program should be saved before running in case you make a 'typo' and crash the program.

PROGRAMMING SUGGESTIONS

Give the player more landscapes to travel through. Cause a missile or a rocket to drift up from the ground occasionally. Give the player a fuel limit or a time limit to complete a given piece of scenery, otherwise he is destroyed.

PROGRAM Variables

SA	Start of screen memory
PO	Position of spaceship
SL	Start of colour memory
R	Row position of spaceship
C	Column position of spaceship
P	Keyscan location
I$	Vertical bar
CC$	Column positioning variable
RR$	Row positioning variable
S1	Score

Listing

```
10    REM SCRAMBLER
20    POKE 55,16:POKE 56,39:CLR
30    GOSUB 450
40    T$="▣ ▲ ▀ ‖ □ ‖ □ ‖ □ ‖ □ ‖ □ ‖ □ ‖ ▣ ▲ ▀ "
50    COLOR0,7,5:COLOR4,7,5
60    K$="▣ ▲ ▀ □ ‖ ":FOR I=1 TO 19:I$=I$+K$:NEXT
70    SA$="▲ ▲ ▲ ▲ ▲ ▣ ‖ ‖ ‖ ‖ ‖ ▲ / ▫ \ ▲ ▣ ‖ ‖ ‖ ‖ ‖ ▲
      \ ▫ / ▲ ▣ ‖ ‖ ‖ ‖ ‖ ▲ ▲ ▲ "
80    RR$="▣ ":FOR I=1 TO 24:RR$=RR$+"▣ ":NEXT:FOR I=1
       TO 39:CC$=CC$+"▣ ":NEXT
90    W$="▣ "+LEFT$(RR$,22)+LEFT$(CC$,38)
```

Define Variables; Read Machine Program Into Memory

```
100   FOR I=11000 TO 11071:READA:POKE I,A:NEXT
110   PRINT "▣ ";:K1=11000
120   P=198:R=12:C=20:SA=3072:SL=2048:LM=300
130   PO=SA+(R*40)+C
140   PRINT "▣ ";TAB(16);"S T A G E ▲ O N E ▲ ▲ ";
```

Stage One: Fly Ship Over Mountains With Lowest Possible Altitude

```
150   FOR SC=1 TO 300:SYS K1:PRINT W$;LEFT$(I$,RND(1)*70)
      ;
160   IF PEEK(PO+83)=160ORPEEK(PO+82)=160THEN GOSUB 560:
      GOTO 140
170   A=PEEK(P):IF A=62THEN GOSUB 320
180   IF A=12THEN GOSUB 340
190   S1=S1+R-6:PRINT "▣ ▣ ";:PRINT USING"# # # ";S1;:
      PRINT "▀ ▲ ▲ ";
200   PRINT LEFT$(RR$,R);LEFT$(CC$,C);SA$;:NEXT
210   PRINT "▣ ";TAB(16);"S T A G E ▲ T W O ▲ ▲ ▲ ";
```

Stage Two: Fly Ship Through Meteor Storm and Keep Dodging Them

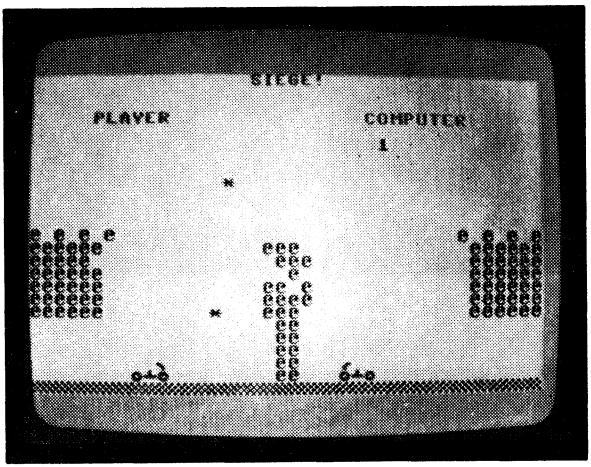
```
220   FOR SC=1 TO 300:SYS K1
230   IF SW=0THEN SW=1:GOTO 270
240   SW=0
250   HK=INT(RND(1)*22):IF HK<5THEN 250
260   FK=3072+(HK*40)+39:POKE FK,81
270   IF PEEK(PO+83)=81ORPEEK(PO+3)=160ORPEEK(PO+43)=81
      ORPEEK(PO+4)=81THEN GOSUB 560
280   A=PEEK(P):IF A=62THEN GOSUB 320
290   IF A=12THEN GOSUB 340
```

```
300   S1=S1+1:PRINT "■ ■ ";:PRINT USING"# # # ";S1;:
      PRINT "■ ▲ ";
310   PRINT LEFT$(RR$,R);LEFT$(CC$,C);SA$;:NEXT:PRINT "■
      Y O U R ▲ S C O R E ▲ W A S : ▲ ";SC:STOP
320   IF R=5THEN RETURN
330   R=R-1:PO=SA+(R*40)+C:RETURN
340   IF R=22THEN RETURN
350   R=R+1:PO=SA+(R*40)+C:RETURN
360   REM DATA FOR BLOCK MOVE
370   REM ====================
380   DATA173,11,255,201,204,208,249,160,0,162,199,185,20
      1,12,153,200,12,185
390   DATA145,13,153,144,13,185,89,14,153,88,14,185
400   DATA33,15,153,32,15,200,202,208,228,160,0,162
410   DATA5,142,238,46,169,32,153,239,12
420   DATA153,183,13,153,127,14,153,71,15,152,24,105,40,1
      68,174,238,46,202
430   DATA208,228,96
440   NEXT
450   PRINT "■ ";TAB(14);"■ S C R A M B L E R ■ ";
460   PRINT :PRINT :PRINT "G U I D E ▲ T H E ▲ S H I P ▲
      A C R O S S ▲ T H E ▲ M O U N T A I N S . T H E ":
      PRINT
470   PRINT "L O W E R ▲ Y O U ▲ S T A Y ▲ T H E ▲ M O R
      E ▲ P O I N T S ▲ Y O U ▲ G A I N . ":PRINT
480   PRINT "I F ▲ Y O U ▲ L I F T ▲ Y O U R ▲ S H I P ▲
      T O ▲ I T S ▲ M A X I M U M ":PRINT
490   PRINT "H E I G H T ▲ Y O U ▲ W I L L ▲ B E G I N ▲
      L O S I N G ▲ P O I N T S . ":PRINT
500   PRINT "B E ▲ C A R E F U L ▲ N O T ▲ T O ▲ C R A S
      H ▲ I N T O ▲ M O U N T A I N S . ":PRINT
510   PRINT "O N C E ▲ Y O U ▲ H A V E ▲ P A S S E D ▲ T
      H E ▲ M O U N T A I N S ▲ Y O U ":PRINT
520   PRINT "W I L L ▲ H A V E ▲ T O ▲ S U R V I V E ▲ A
      ▲ M E T E O R ▲ S T O R M ":PRINT
530   PRINT TAB(10);"P R E S S ▲ A N Y ▲ K E Y ▲ T O ▲ S
      T A R T ";
540   GETA$:IF A$=""THEN 540
550   RETURN
560   FOR I=1 TO 15:FOR J=1 TO 99:NEXT:COLOR4,I,3:NEXT:
      RETURN
```

ChexSum Tables

```
10   =    0
20   = 1149
30   =  302
40   = 2859
50   = 1060
60   = 2816
70   = 4857
80   = 4718
90   = 2201
100  = 2093
110  = 1121
120  = 3254
130  = 1393
140  = 1838
150  = 2911
160  = 3748
170  = 1680
180  =  981
190  = 3016
200  = 2061
210  = 1761
220  = 1205
230  = 1751
240  =  401
250  = 2195
260  = 2109
270  = 5547
280  = 1680
290  =  981
300  = 2697
310  = 4581
320  =  762
330  = 2296
340  =  819
350  = 2235
360  =    0
370  =    0
380  = 4072
390  = 2422
400  = 2393
410  = 1828
420  = 3852
430  =  669
440  =  131
450  = 1946
460  = 4372
470  = 3855
480  = 3518
490  = 3538
500  = 3769
510  = 3716
520  = 3385
530  = 2500
540  = 1212
550  =  143
560  = 2797
TOTAL = 125262
```

Siege



CLASSIFICATION: Shoot Up

It's you versus the Commodore 16. Use your ballista to lob huge rocks at the castle, trying to demolish it before it destroys your castle. You can raise and lower your ballista with Q and Z, and trundle it closer to or further away with P or I. Hitting the SPACE bar will fling your boulder.

PROGRAMMING SUGGESTIONS

Put flags on towers for extra points if hit. Have limited ammunition or reloading times. Have a different type of ammunition which starts fires which you must put out. You cannot shoot while extinguishing fires. Adapt the game for two players..

PROGRAM Variables

CX	Computer position
PX	Player position
EV	Elevation of player's ballista
BY	Height of player's rock
VY	Velocity of player's rock
B%	Horizontal position of player's rock
CY	Height of computer's rock
FY	Velocity of computer's rock
C%	Horizontal position of computer's rock
PB	Bricks remaining in player's castle
CB	Bricks remaining in computer's castle
CH	Character beneath player's rock
C2	Character beneath computer's rock
F$	Player fired flag
F2$	Computer fired flag
M	Computer move distance

Listing

Title Screen

```
10   COLOR0,14:COLOR4,11:VOL 8:PRINT "♥ ":COLOR1,6,6
20   PRINT "▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲╭═╮▲┌═╮▲┬▲╭═╮▲┌═╮"
30   PRINT "▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲│▲▲▲│▲▲▲│▲│▲▲▲│▲▲▲o"
40   PRINT "▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲╰═╮▲├═▲▲│▲│▲▲▲├═"
50   PRINT "▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲│▲│▲▲▲│▲│▲┬▲│▲▲▲o"
60   PRINT "▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲╰═╯▲└═┘▲┴▲╰═╯▲└═┘"
70   PRINT :PRINT :PRINT "▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲ C O N T R O L S : "
80   PRINT :PRINT "▲▲▲▲▲▲▲▲ ' Q ' ▲▲▲▲▲I N C R E A S E ▲R A N G E "
90   PRINT :PRINT "▲▲▲▲▲▲▲▲ ' Z ' ▲▲▲▲▲D E C R E A S E ▲R A N G E "
100  PRINT :PRINT "▲▲▲▲▲▲▲▲ ' P ' ▲▲▲▲▲M O V E ▲B A L L I S T A ▲R I G H T "
110  PRINT :PRINT "▲▲▲▲▲▲▲▲ ' I ' ▲▲▲▲▲M O V E ▲B A L L I S T A ▲L E F T "
120  PRINT :PRINT "▲▲▲▲▲▲▲▲ S P A C E ▲▲▲ F I R E S ▲B A L L I S T A "
130  PRINT :PRINT :PRINT :PRINT "▲▲▲▲▲▲▲▲▲▲▲▲▲( H I T ▲R E T U R N ▲T O ▲B E G I N ) "
```

Initialise Game and Draw Game Screen

```
140  GETA$:IF A$=""THEN 140
150  IF ASC(A$)<>13THEN 140
160  PRINT "♥ ":CD$="▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ "
170  CR$="":CC$="▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ "
180  CX=4:PX=1:EV=1.9:B%=0:BY=0:VY=0:CH=32:C%=0:CY=0:FY=0:C2=32:PB=40:CB=40
190  B$="▲ o ┴ o ▲ "
200  B1$="▲▲ * ╮▲▮‖‖‖‖‖ ":C1$="▲ ╭ * ▲▮‖‖‖‖ "
210  B2$="▲▲▲ │ ▮‖‖‖‖ ":C2$="▲ │ ▲▮‖‖‖ "
220  B3$="▮▲▲ ╮ ▲▮‖‖‖‖‖ ":C3$="▲ ╭ ▲▲▮‖‖‖‖ "
```

```
230   CT$="e ▲ e ▲ e ▲ e "⇕CW$="e e e e e e "⇕SP$="▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "
240   COLOR1,9,5⇕PRINT "S ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
       ▲ S I E G E ! "⇕PRINT "S U U U U U U U U P L A Y E
       R ";
250   COLOR1,15,5⇕PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ C
      O M P U T E R "⇕COLOR1,2,3
260   PRINT "S U U U U U U U U U U U U U ";CT$;SP$;"▲ ▲ ";S
      P$;CT$;
270   FOR I=1 TO 6⇕PRINT CW$;SP$;"e e e e ";SP$;CW$;⇕
      PRINT ⇕NEXT
280   PRINT ,"▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ e e U II II e e U II II e e U
       II II e e U II II e e "⇕COLOR1,10,2
290   PRINT "% % % % % % % % % % % % % % % % % % % % % % % % %
      % % % % % % % % % % % % % % % % % % % % % % % % % ";⇕POKE 4071,102⇕
      POKE 3047,31
300   F$=""⇕F2$=""⇕BX$=B1$⇕CX$=C1$
```

Get Input

```
310   GETA$
320   COLOR1,10,4⇕PRINT CD$;CR$;BX$;B$;CD$;CC$;CX$;B$
330   IF A$="I "THEN PX=PX-1⇕SOUND 2,100,2⇕CR$=LEFT$(CR$,
      PX)⇕IF PX<1THEN PX=1
340   IF A$="P "THEN PX=PX+1⇕SOUND 2,100,2⇕CR$=CR$+"U "⇕
      IF PX>14THEN PX=14⇕CR$=LEFT$(CR$,14)
350   IF A$="Q "THEN EV=EV+.01⇕SOUND 2,1000,1⇕IF EV>2.4
      THEN EV=2.4
360   IF A$="Z "THEN EV=EV-.01⇕SOUND 2,1000,1⇕IF EV<1.5
      THEN EV=1.5
370   IF RND(0)<.5THEN 430
380   M=INT(RND(0)*3)-1
390   CX=CX+M⇕IF CX>15THEN CX=15⇕M=0
400   IF CX<4THEN CX=4⇕M=0
410   IF M=1THEN CC$=LEFT$(CC$,36-CX)
420   IF M=-1THEN CC$=CC$+"U "
430   IF F$="F I R E D "THEN GOSUB 510
440   IF F2$="F I R E D "THEN GOSUB 610⇕GOTO 470
```

Fire Computer's Ballista

```
450   F2$="F I R E D "⇕PRINT CD$;CC$;C2$;B$;CD$;CD$;CC$;C
      3$;B$;⇕FV=1.5+RND(0)*.24⇕Y=1
460   SOUND 2,850,1⇕CX$=C3$⇕F2=37-CX⇕GOSUB 620
```

Fire Player's Ballista

```
470   IF A$<>"▲ "ORF$="F I R E D "THEN 310
480   PRINT CD$;CR$;B2$;B$;CD$;CD$;CD$;CR$;B3$;B$;
490   VY=EV*.7071:BY=1:SOUND 3,200,10
500   BX$=B3$:FS=PX+2:F$="F I R E D ":GOSUB 520:GOTO 310
```

Move Player's Rock and Check For Collision

```
510   POKE 3992+FS-INT(BY)*40+B%,CH
520   B%=B%+1:BY=BY+VY:VY=VY-.1
530   CH=PEEK(3992+FS-INT(BY)*40+B%):IF CH=32THEN 590
540   SOUND 1,0,0:SOUND 3,800,10
550   IF CH=42THEN POKE 3992+FS-INT(BY)*40+B%,32:F$="":B%
      =0:BY=0:VY=0:BX$=B1$:GOTO 700
560   IF B%>16ANDCH<>32ANDCH<>102THEN P1=P1+1:COLOR1,3,4:
      PRINT "S U U U U U U U U U U U ";P1
570   POKE 3992+FS-INT(BY)*40+B%,32:IF B%>16ANDCH=0
      THEN CB=CB-1
580   IF CB=0THEN SOUND 1,1000,9:PRINT "S U ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ Y O U ▲ W O N ! ! ! ":GOTO 710
590   IF CH=32ANDB%+FS<40ANDINT(BY)>0THEN POKE 3992+FS-
      INT(BY)*40+B%,42:RETURN
600   F$="":B%=0:BY=0:VY=0:BX$=B1$:RETURN
```

Move Computer's Rock and Check For Collision

```
610   POKE 3992+F2-INT(CY)*40-C%,C2
620   C%=C%+1:CY=CY+FY:FY=FY-.1
630   C2=PEEK(3992+F2-INT(CY)*40-C%):IF C2=32THEN 690
640   SOUND 1,0,0:SOUND 3,900,20
650   IF C2=42THEN POKE 3992+FS-INT(BY)*40+B%,32:F$="":B%
      =0:BY=0:VY=0:BX$=B1$:GOTO 700
660   IF C%>17ANDC2<>32ANDC2<>102THEN P2=P2+1:PRINT "S S
      U U U U U U U U U U U U U U U U U U U U U U U U U U
      U U U U U ";P2
670   POKE 3992+F2-INT(CY)*40-C%,32:IF C%>17ANDC2=0
      THEN PB=PB-1
680   IF PB=0THEN PRINT "S U ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ T H E
      ▲ ▌▌ C O M P U T E R ▬ ▲ W O N . . . ":GOTO 710
690   IF C2=32ANDC%-F2<0ANDINT(CY)>0THEN POKE 3992+F2-
      INT(CY)*40-C%,42:RETURN
700   F2$="":C%=0:CY=0:FY=0:CX$=C1$:RETURN
```

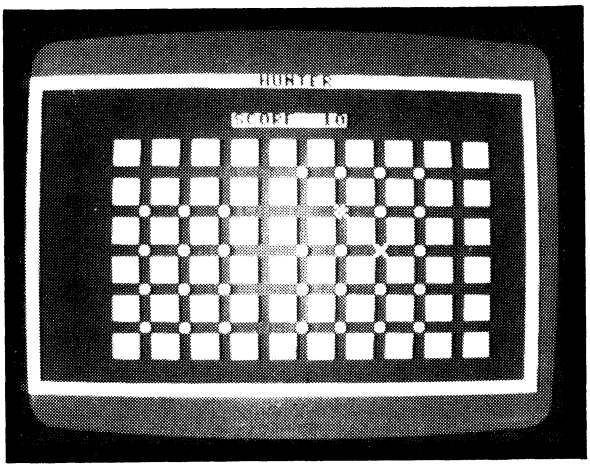
End Game

```
710   PRINT "■■■■■■■■▲▲▲▲▲▲ANOTHER▲GA
      ME▲?"
720   GETA$:IF A$=""THEN 720
730   IF A$="Y "THEN RUN160
740   PRINT "■ ":END
```

ChexSum Tables

```
10    = 2374
20    = 3574
30    = 2694
40    = 2946
50    = 2824
60    = 3571
70    = 2244
80    = 2784
90    = 2590
100   = 3098
110   = 2957
120   = 2752
130   = 3162
140   = 1212
150   = 1376
160   = 1513
170   = 2362
180   = 6916
190   = 1063
200   = 3213
210   = 2774
220   = 3206
230   = 3005
240   = 3853
250   = 2898
260   = 2126
270   = 3028
280   = 3522
290   = 8556
300   = 2230
310   =  267
320   = 2868
330   = 4963
340   = 6143
350   = 3827
360   = 3835
370   = 1113
380   = 1326
390   = 2455
400   = 1497
410   = 2015
420   = 1669
430   = 1396
440   = 2055
450   = 5624
460   = 2504
470   = 2084
480   = 2727
490   = 2179
500   = 3343
510   = 2177
520   = 2471
530   = 3512
540   = 1191
550   = 6534
560   = 5001
570   = 4406
580   = 4037
590   = 5127
600   = 2659
610   = 2106
620   = 2457
630   = 3426
640   = 1191
650   = 6510
660   = 5810
670   = 4350
680   = 4119
690   = 4913
700   = 2711
710   = 1784
720   = 1216
730   = 1096
740   =  569
TOTAL = 223686
```

Hunter



CLASSIFICATION: Evasion COLOUR ILLUSTRATION OBC

You are a wild animal in a maze being pursued by a hunter. You can move yourself around the maze by pressing the keys I, P, Q and Z. No matter where you go in the maze, the hunter will know where you are and seek you out. As you move through the maze you eat munchies. When you have eaten all the munchies, you win. There are four levels.

PROGRAMMING SUGGESTIONS

Add a facility at the hardest level of the game so that the player can 'teleport' to another part of the board. He can't, however, control his destination, so he might land on top of the hunter.

PROGRAM Variables

F$	Barriers of maze
D$	Munchies
SC	Screen start in memory
CC$	Horizontal position string
RR$	Vertical position string
R	Row position of animal
C	Column position of animal
PO	Current position of animal
T1	Previous position of animal
C1	Column position of hunter
R1	Row position of hunter
PC	Hunter's previous position
P1	Hunter's current position

Listing

```
10      REM HUNTER
20      CLR:COLOR0,8,3:COLOR4,7,3:COLOR1,2,7
30      GOSUB 710
40      GOSUB 850
```

Draw the Border, Maze, Power Pills and Define Variables

```
50      SCNCLR
60      SC=3072:CO=2048:BE=3072+207
70      A$="■ ▲ ▲ ■ ":B$="▲ ":C$=A$+B$
80      E$="▲ ▲ ● "
90      FOR I=1 TO 40:CC$=CC$+"■ ":NEXT
100     FOR I=1 TO 25:RR$=RR$+"■ ":NEXT
110     FOR I=SC TO SC+39:POKE I,160:POKE I+960,160:NEXT
120     FOR I=SC TO SC+999 STEP 40:POKE I,160:POKE I+39,160
        :NEXT
130     PRINT "■ ";TAB(18);"■ H U N T E R ";
140     FOR I=1 TO 8:F$=F$+E$:NEXT
150     FOR I=1 TO 10:D$=D$+C$:NEXT:PRINT :PRINT :PRINT :
        PRINT :PRINT
160     FOR I=1 TO 5:PRINT TAB(7);D$:PRINT TAB(7);D$:
        PRINT TAB(7);F$:NEXT
170     PRINT TAB(7);D$:PRINT TAB(7);D$
180     R=2:C=0
190     PO=BE+(R*40)+C:POKE PO,102
200     C1=26:R1=16:P1=BE+(R1*40)+C1:VE=PEEK(P1):POKE P1,86
```

Move Your Piece Up, Down, Left and Right; Move the Hunter

```
210     A=PEEK(198):IF A=62THEN GOSUB 370
220     IF A=12THEN GOSUB 420
230     IF A=33THEN GOSUB 470
240     IF A=41THEN GOSUB 520
250     GOSUB 290
260     IF CN=40THEN GOSUB 640:GOTO 10
270     PRINT "■ ";LEFT$(RR$,3);LEFT$(CC$,16);"■ S C O R E
        ▲ ";S1;"■ ";
280     GOTO 210
290     IF SW<>AWTHEN SW=SW+1:RETURN
300     SW=0
310     PC=P1:IF C1<CTHEN C2=C1:C1=C1+1:P1=BE+(R1*40)+C1:
        IF PEEK(P1)=160THEN C1=C2:P1=PC
320     IF C1>CTHEN C2=C1:C1=C1-1:P1=BE+(R1*40)+C1:IF
        PEEK(P1)=160THEN C1=C2:P1=PC
```

```
330   IF R1<RTHEN R2=R1:R1=R1+1:P1=BE+(R1*40)+C1:IF
      PEEK(P1)=160THEN R1=R2:P1=PC
340   IF R1>RTHEN R2=R1:R1=R1-1:P1=BE+(R1*40)+C1:IF
      PEEK(P1)=160THEN R1=R2:P1=PC
350   POKE PC,VE:VE=PEEK(P1):IF VE=102THEN GOSUB 600:
      GOTO 10
360   POKE P1,86:RETURN
370   IF R=0THEN RETURN
380   T1=PO:R=R-1:PO=BE+(R*40)+C:IF PEEK(PO)=160THEN PO
      =T1:R=R+1:RETURN
390   IF PEEK(PO)=13THEN GOSUB 570
400   IF PEEK(PO)=81THEN S1=S1+1:CN=CN+1
410   POKE T1,32:POKE PO,102:RETURN
420   IF R=16THEN RETURN
430   T1=PO:R=R+1:PO=BE+(R*40)+C:IF PEEK(PO)=160THEN PO
      =T1:R=R-1:RETURN
440   IF PEEK(PO)=81THEN S1=S1+1:CN=CN+1
450   IF PEEK(PO)=86THEN GOSUB 570
460   POKE T1,32:POKE PO,102:RETURN
470   IF C=0THEN RETURN
480   T1=PO:C=C-1:PO=BE+(R*40)+C:IF PEEK(PO)=160THEN C=C
      +1:PO=T1:RETURN
490   IF PEEK(PO)=81THEN CN=CN+1:S1=S1+1
500   IF PEEK(PO)=86THEN GOSUB 570
510   POKE T1,32:POKE PO,102:RETURN
520   IF C=28THEN RETURN
530   T1=PO:C=C+1:PO=BE+(R*40)+C:IF PEEK(PO)=160THEN C=C
      -1:PO=T1:RETURN
540   IF PEEK(PO)=81THEN CN=CN+1:S1=S1+1
550   IF PEEK(PO)=86THEN GOSUB 570
560   POKE T1,32:POKE PO,102:RETURN
```

You Ran Into the Hunter; You Won the Game; Print Instructions

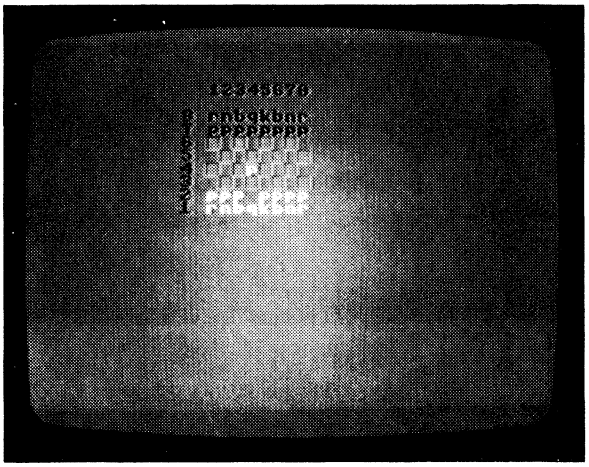
```
570   SCNCLR:PRINT "Y O U ▲ R A N ▲ S T R A I G H T ▲ I N
       T O ▲ T H E ▲ H U N T E R ! ! ! ! "
580   PRINT :PRINT :PRINT TAB(13);"Y O U   ▲ A T E ▲ ";CN
      ;"P O W E R ▲ P I L L S "
590   PRINT :PRINT :GOSUB 680:GOTO 10
600   SCNCLR:PRINT "▲ ▲ ▲ Y O U ▲ W E R E ▲ C A P T U R E
       D ▲ B Y ▲ T H E ▲ H U N T E R ! ! ! ! ! ! ":
      PRINT :PRINT
610   PRINT TAB(10);"Y O U ▲ A T E ▲ ";CN;"▲ P O W E R ▲
      P I L L S ":PRINT :PRINT
620   GOSUB 680
630   RETURN
640   SCNCLR
650   PRINT "▒ ";TAB(13)"C O N G R A T U L A T I O N S "
```

```
660   PRINT :PRINT :PRINT :PRINT TAB(5);"Y O U ▲ H A V E
      ▲ C O M P L E T E D ▲ L E V E L : ";TY
670   PRINT :PRINT :GOSUB 680:RETURN
680   PRINT TAB(8);"P R E S S ▲ A N Y ▲ K E Y ▲ T O ▲ C O
       N T I N U E ";:FOR I=1 TO 20:GET A$:NEXT
690   GET A$:IF A$=""THEN 690
700   RETURN
710   SCNCLR:PRINT TAB(16);"■ H U N T E R "
720   PRINT :PRINT :PRINT "M O V E ▲ A R U N D ▲ T H E ▲
      S C R E E N ▲ F O R ▲ A S ▲ L O N G ▲ A S ":
      PRINT
730   PRINT "P O S S I B L E ▲ W I T H O U T ▲ B E I N G
      ▲ D E S T R O Y E D ▲ B Y ▲ T H E ":PRINT
740   PRINT "H U N T E R . ▲ Y O U ▲ G E T ▲ P O I N T S
      ▲ F O R ▲ E A T I N G ▲ T H E ":PRINT
750   PRINT "P O W E R ▲ P I L L S . W H E N ▲ A L L ▲ A
      R E ▲ G O N E ▲ Y O U ▲ G E T ":PRINT
760   PRINT "A N O T H E R ▲ G A M E , M O V E ▲ Y O U R
      ▲ M A N ▲ W I T H ▲ T H E S E ":PRINT
770   PRINT "K E Y ▲ C O M B I N A T I O N S - ":PRINT
780   PRINT :PRINT
790   PRINT TAB(15);"I ▲ - ▲ L E F T "
800   PRINT TAB(15);"P ▲ - ▲ R I G H T "
810   PRINT TAB(15);"Q ▲ - ▲ U P "
820   PRINT TAB(15);"Z ▲ - ▲ D O W N ":PRINT :PRINT
830   GOSUB 680:COLOR1,2,7
840   RETURN
850   SCNCLR:PRINT "D I F F I C U L T Y ▲ L E V E L ▲ ( 1
       - 4 ) ";
860   GET A$:IF A$<"1 "THEN 860OR A$>"4 "THEN 860
870   TY=VAL(A$):AW=4-TY:RETURN
880   FOR I=1  TO 255:GETKEYA$:POKE 3072,I:NEXT
```

ChexSum Tables

```
10    =    0
20    = 1877
30    =  299
40    =  306
50    =  233
60    = 2185
70    = 1988
80    =  656
90    = 1892
100   = 1942
110   = 2799
120   = 3115
130   = 1374
140   = 1664
150   = 2794
160   = 3016
170   = 1266
180   =  682
190   = 1995
200   = 4078
210   = 1779
220   =  980
230   =  986
240   =  978
250   =  302
260   = 1620
270   = 3012
280   =  526
290   = 2023
300   =  401
310   = 6496
320   = 6003
330   = 6080
340   = 6079
350   = 3206
360   =  648
370   =  761
380   = 5535
390   = 1389
400   = 2636
410   = 1283
420   =  818
430   = 5535
440   = 2636
450   = 1392
460   = 1283
470   =  746
480   = 5439
490   = 2556
500   = 1392
510   = 1283
520   =  810
530   = 5439
540   = 2556
550   = 1392
560   = 1283
570   = 3479
580   = 3170
590   = 1301
600   = 4057
610   = 3192
620   =  306
630   =  143
640   =  233
650   = 2157
660   = 3740
670   =  943
680   = 4171
690   = 1213
700   =  143
710   = 1437
720   = 3957
730   = 3862
740   = 3592
750   = 3579
760   = 3604
770   = 1778
780   =  366
790   = 1147
800   = 1250
810   = 1019
820   = 1597
830   =  867
840   =  143
850   = 2250
860   = 2286
870   = 1804
880   = 2167
TOTAL = 231234
```

Chess



CLASSIFICATION: Logic

This game plays a subset of the standard chess game against you. You move around the screen by entering the starting position and then the destination position in the format (X, Y). The pieces are represented on the screen by the following symbols:

King	K	or	k
Queen	Q	or	q
Rook	R	or	r
Knight	N	or	n
Pawn	P	or	p

You play red from the bottom. When your pawn reaches the top, you must enter the initial of the piece you want to exchange it with, using the same system as above. The computer will tell you when you are in checkmate. If this happens, type 999999 when it is your move. You always go first and the game does not permit castling nor *en passant* moves.

PROGRAMMING SUGGESTIONS

Increase the game's central logic so that it can handle castling and *en passant* moves. Add to the number of pieces that can be fielded by both sides and replace symbols with user-defined characters.

PROGRAM
Variables

B% ( )	Numerical representation of the chess board
D% ( )	Chess board
A$ ( )	Chess in character format
XB, YB	Position of player's next move
X, Y	Position variable
KX, KY	Starting position for Commodore 16
F$	Flag for checkmate

Listing

```
10    REM CHESS
20    COLOR4,10,5:COLOR0,10,5
30    PRINT "▽ ▯ ▲ ▲ P L E A S E ▲ W A I T "
40    KX=5:KY=8:DIMB%(8,8),D%(6,8,2),P%(6),A$(6):FOR Y=1
       TO 8:FOR X=1 TO 8
```

Read in Data for Pieces Representation on Board

```
50    B%(X,Y)=0:IF  Y=1 THEN  READ B%(X,Y)
60    IF Y=8THEN B%(X,Y)=-B%(X,1)
70    IF Y=2THEN B%(X,Y)=-1
80    IF Y=7THEN B%(X,Y)=1
90    NEXTX,Y
100   DATA-4,-2,-3,-5,-6,-3,-2,-4
110   FOR X=1 TO 6:P%(X)=2:FOR Y=1 TO 8:IF Y<3ORY=8
      THEN D%(X,Y,2)=1
120   IF Y>1ANDY<5THEN D%(X,Y,1)=1
130   IF Y>5THEN D%(X,Y,1)=-1
140   IF Y>3ANDY<7THEN D%(X,Y,2)=-1
150   NEXTY:IF X<>2THEN 190
160   FOR Y=1 TO 4:READD%(X,Y,1),D%(X,Y,2):D%(X,Y+4,1)=
      -D%(X,Y,1):D%(X,Y+4,2)=D%(X,Y,2)
170   NEXT
180   DATA -2,1,-1,2,1,2,2,1
190   IF X=1THEN P%(X)=8
200   IF X>4THEN P%(X)=1
210   NEXT:FOR  X=1 TO 6:READA$(X):NEXT
220   DATAP,N,B,R,Q,K
230   PRINT "▽ ":GOTO 620
```

Clear All the Variables to Zero and Work Out Next Move

```
240   XB=0:YB=XB:DB=XB:CL=1:BP=XB:X=9:AX=KX:AY=KY:F1$="":
      GOSUB 750:F1$=F$
250   FOR Y=1 TO 8:FOR X=1 TO 8:TB=0:C=1:TY=0:TX=0:D=0
260   IF  B%(X,Y)<1 THEN 600
270   P=B%(X,Y):FOR I=1 TO 8:DY=D%(P,I,2):DX=D%(P,I,1):AX
      =KX:AY=KY:C1=1:PO=0
280   IF X+DX<1ORX+DX>8ORY+DY<1ORY+DY>8THEN 530
290   IF P>2ANDP<6THEN 440
300   IF DY>-1ANDP=1THEN 530
310   IF Y>1ORP>1THEN 360
320   FOR I1=5 TO 1 STEP -1
330   IF P%(I1)<2THEN P%(I1)=P%(I1)+1:B%(X,Y)=I1:I1=1
340   NEXTI1
```

```
350   GOTO 530
360   IF DX<>0ANDB%(X+DX,Y+DY)>-1THEN 530
370   IF P=6THEN KX=X:KY=Y:AX=X+DX:AY=Y+DY:GOSUB 740:
      IF F$="1 "THEN 530
380   IF DX=0ANDB%(X,Y+DY)<>0THEN 530
390   PO=8-P-B%(X+DX,Y+DY)*3
400   IF Y<>7ORDX<>0ORB%(X,5)<>0ORP>1THEN 530
410   IF  F1$="1 " THEN  GOSUB  740:IF F$="" THEN  530
420   IF  F1$="1 " OR RND(1)>.3 THEN  C1=2
430   GOTO 530
440   X1=X:Y1=Y
450   IF P=3ANDINT(I/2)*2<ITHEN 530
460   IF P=4ANDINT(I/2)*2=ITHEN 530
470   IF X1+DX<1ORX1+DX>8ORY1+DY<1ORY1+DY>8THEN C1=C1-1:
      GOTO 530
480   IF B%(X1+DX,Y1+DY)>0THEN C1=C1-1:GOTO 530
490   PO=8-P+INT(RND(1)*3)-B%(X1+DX,Y1+DY)*3
500   IF F1$="1 "THEN GOSUB 740:IF F$=""THEN PO=PO+50:
      GOTO 570
510   IF B%(X1+DX,Y1+DY)<>0THEN 530
520   C1=C1+1:X1=X1+DX:Y1=Y1+DY:GOTO 470
530   IF PO=0THEN 570
540   IF F1$="1 "THEN GOSUB 740:IF F$=""THEN PO=PO+50:
      GOTO 570
550   IF F1$=""THEN GOSUB 740:IF F$="1 "THEN PO=0:GOTO 57
      0
560   IF PO=>TBTHEN AX=X+DX*C1:AY=Y+DY*C1:GOSUB 740:IF F$
      ="1 "THEN PO=PO-P*2
570   IF PO>TBTHEN TB=PO:TX=X:TY=Y:D=I:C=C1
580   NEXTI
590   IF TB>BPORTB=BPAND(RND(1)>.9OR(TY<YBANDRND(1)>.5))
      THEN BP=TB:XB=TX:YB=TY:CL=C:DB=D
600   NEXTX,Y:P=B%(XB,YB):X1=XB+D%(P,DB,1)*CL:Y1=YB+D%(P,
      DB,2)*CL:IF P=6THEN KX=X1:KY=Y1
610   AX=KX:AY=KY:B%(X1,Y1)=B%(XB,YB):B%(XB,YB)=0:Q=1:
      GOSUB 750:Q=0
620   GOSUB 840
```

Check If a Checkmate; If Yes Then Finish Game

```
630   IF  F$="1 " THEN  PRINT "■ C H E C K M A T E ":
      END
640   PRINT "■ ■ ■ Y O U R ▲ M O V E ":INPUT  "■ F R O M
      ";X,Y:IF  X=999 THEN  END
650   INPUT "▲ ▲ T O ";XB,YB
660   IF B%(XB,YB)>0THEN P%(B%(XB,YB))=P%(B%(XB,YB))-1
670   B%(XB,YB)=B%(X,Y)
680   B%(X,Y)=0
690   IF B%(XB,YB)<-1ORYB<8THEN 720
```

```
700   INPUT "P I E C E S ▲ ";A$:FOR I1=1 TO 5:IF A$(I1)
      =A$ THEN B%(XB,YB)=-I1
710   NEXT
720   GOSUB 840
730   GOTO 240
740   PC=B%(X+DX*C1,Y+DY*C1):B%(X+DX*C1,Y+DY*C1)=B%(X,Y):
      B%(X,Y)=0
750   F$="":FOR P1=1 TO 6:FOR I1=1 TO 8:D1=D%(P1,I1,1):D2
      =D%(P1,I1,2):L=1
760   IF AX+D1*L<1ORAX+D1*L>8ORAY+D2*L<1OR AY+D2*L>8
      THEN 800
770   IF P1=1ANDD2<1ANDQ=0THEN 800
780   IF B%(AX+D1*L,AY+D2*L)=-P1THEN F$="1 ":GOTO 810
790   IF P1>2ANDP1<6ANDB%(AX+D1*L,AY+D2*L)=0THEN L=L+1:
      GOTO 760
800   NEXTI1,P1
810   IF X>8THEN 830
820   B%(X,Y)=B%(X+DX*C1,Y+DY*C1):B%(X+DX*C1,Y+DY*C1)=PC
830   RETURN
```

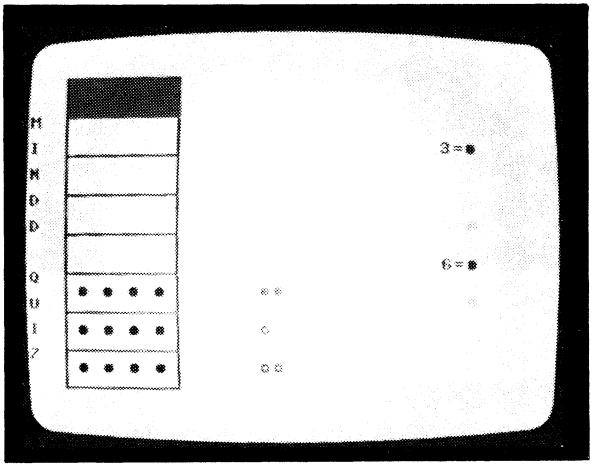
Print Out Chessboard and the Cartesian Co-ordinates

```
840   PRINT :PRINT :PRINT  :PRINT :PRINT :PRINT :PRINT
850   PRINT "▛ ▜ ▙ ▟ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ 1 2 3 4 5
      6 7 8 ▜ ":FOR Y=8 TO 1 STEP -1:PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲
       ▲ ▲ ▲ ▟ ▙ ";Y;
860   FOR X=1 TO 8:IF B%(X,Y)<>0THEN 890
870   IF INT((X+Y)/2)*2=X+YTHENPRINT"▛ ▜ ▲ ▀";:GOTO 920
880   PRINT"▲";:GOTO 920
890   IF B%(X,Y)<0THEN PRINT "▙ ";:GOTO 910
900   PRINT "▟ ";
910   PRINT A$(ABS(B%(X,Y)));
920   NEXT:PRINT :NEXT:RETURN
```

ChexSum Tables

10 = 0	320 = 1110	630 = 1981
20 = 1172	330 = 3514	640 = 3043
30 = 1365	340 = 257	650 = 882
40 = 4458	350 = 532	660 = 3448
50 = 2049	360 = 2848	670 = 1206
60 = 1878	370 = 4816	680 = 671
70 = 1479	380 = 2257	690 = 2079
80 = 1305	390 = 2237	700 = 4088
90 = 361	400 = 3353	710 = 131
100 = 1372	410 = 2092	720 = 306
110 = 4203	420 = 1978	730 = 525
120 = 1954	430 = 532	740 = 5817
130 = 1583	440 = 899	750 = 4715
140 = 2151	450 = 2050	760 = 5120
150 = 1294	460 = 2046	770 = 1908
160 = 6204	470 = 5216	780 = 3753
170 = 131	480 = 3146	790 = 4804
180 = 1003	490 = 3458	800 = 441
190 = 1172	500 = 3394	810 = 808
200 = 1172	510 = 2134	820 = 4966
210 = 1591	520 = 3092	830 = 143
220 = 852	530 = 877	840 = 1449
230 = 988	540 = 3394	850 = 3878
240 = 6086	550 = 2988	860 = 2088
250 = 3667	560 = 5816	870 = 3393
260 = 1169	570 = 3297	880 = 933
270 = 6096	580 = 206	890 = 1937
280 = 3803	590 = 7368	900 = 319
290 = 1320	600 = 7424	910 = 1117
300 = 1581	610 = 4899	920 = 746
310 = 1326	620 = 306	TOTAL = 218926

Mind Quiz



CLASSIFICATION: Logic

The computer or an opponent will generate a sequence of four random numbers in the range of three to eight, represented by the six number keys. You have to guess what the four numbers are by pressing the right sequence of keys. You will get seven chances to guess the numbers. After each guess, the computer will respond by printing a **O** for the right colour in the wrong spot or a ● for the right colour in the right spot.

PROGRAMMING SUGGESTIONS

Add another digit to the number of colours which the player has to guess, giving an extra dimension of complexity.

PROGRAM
Variables

D$	Message 'Instructions Y/N'
A$	Response to input
Y	Flag for end of game and screen position of beads
X	General purpose variable
G$	Response to colour bead input
D%	Array containing random numbers
B%	Array containing input numbers

Listing

```
10    REM MIND QUIZ
20    COLOR4,2,5:COLOR0,2,5:VOL 8:COLOR2,5,6
30    PRINT CHR$(8)CHR$(142):PRINT "■ "
```

Put Border On Screen; Instructions or Play Computer?

```
40    FOR X=3073 TO 3110:POKE X,64:NEXT
50    FOR X=3112 TO 3992 STEP 40:POKE X,93:NEXT
60    FOR X=3151 TO 4031 STEP 40:POKE X,93:NEXT
70    FOR X=4033 TO 4070:POKE X,64:NEXT
80    POKE 3072,85
90    POKE 3111,73:POKE 4032,74:POKE 4071,75
100   PRINT "■■■■■ ▲▲▲▲▲▲ M ▲▲ I ▲▲ N ▲▲ D ▲▲
      ▲▲▲ Q ▲▲ U ▲▲ I ▲▲ Z ▲▲▲▲ "
110   DIMA%(4):DIMB%(4):DIMD%(4)
120   D$="▲▲▲▲▲▲▲▲▲▲▲▲ I N S T R U C T I O N S ▲ Y
       / N ▲ ? ▲▲▲▲▲▲▲▲▲ "
130   PRINT "■■ "
140   PRINT "■■■■ ";D$:FOR X=1 TO 79:NEXT
150   D$=D$+LEFT$(D$,1):D$=MID$(D$,2,36)
160   GETA$:IF A$<>"N "ANDA$<>"Y "THEN 140
170   GOSUB  600
180   PRINT "■■ "SPC(18)"M ) ▲ P L A Y ▲ M E "CHR$(13)
      SPC(18)"■ S ) ▲ P L A Y ▲ S O M E O N E ▲ E L S E "
190   GETA$:IF A$<>"M "ANDA$<>"S "THEN 190
200   PRINT "■■ "SPC(18)"▲▲▲▲▲▲▲▲▲▲ "CHR$(13)
      SPC(18)"■ ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲ "
210   IF A$="M "THEN GOSUB 790:GOTO 280
220   R=1
230   FOR X=1 TO 4
240   GETA$:IF A$=CHR$(20)ANDX>1THEN X=X-1:R=R-2:POKE 311
      5+R,160
250   IF VAL(A$)<3ORVAL(A$)>8THEN 240
260   A%(X)=VAL(A$):POKE 3115+R,81
270   R=R+2:NEXT
280   GOSUB 770
290   PRINT "■■ "SPC(32)"■■■■■■ 3 = ● ■■■■■■■■■ 4
       = ● ■■■■■■■■■ 5 = ● ■■■■■■■■■ 6 = ● ■■■■
      ■■■■■■■■■ 7 = ● ■■■■■■■■■ 8 = ● ■■ "
300   Y=840:R=1
```

Print Your Guess; Make Sound; Input Player's Colour

```
310   PRINT "■■ "SPC(25)"Y O U R ▲ G U E S S "
320   SOUND 2,19,19
```

```
330   FOR X=1 TO 350:NEXT
340   PRINT "■ "SPC(25)"▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "
350   FOR X=1 TO 4:D%(X)=A%(X):NEXT
360   FOR X=1 TO 4
370   GETA$:IF A$=CHR$(20)ANDX>1THEN X=X-1:R=R-2:POKE 311
      5+R+Y,32
380   IF VAL(A$)<3ORVAL(A$)>8THEN 370
390   B%(X)=VAL(A$):POKE 3115+R+Y,81:POKE 2091+R+Y,B%(X)
      -1
400   R=R+2:NEXT
410   FOR X=1 TO 4:IF B%(X)=D%(X)THEN G$=G$+"● ":D%(X)=25
      5:B%(X)=254
420   NEXT
430   IF D%(1)=B%(2)THEN G$=G$+"o ":D%(1)=255:B%(2)=254
440   IF D%(1)=B%(3)THEN G$=G$+"o ":D%(1)=255:B%(3)=254
450   IF D%(1)=B%(4)THEN G$=G$+"o ":D%(1)=255:B%(4)=254
460   IF D%(2)=B%(1)THEN G$=G$+"o ":D%(2)=255:B%(1)=254
470   IF D%(2)=B%(3)THEN G$=G$+"o ":D%(2)=255:B%(3)=254
480   IF D%(2)=B%(4)THEN G$=G$+"o ":D%(2)=255:B%(4)=254
490   IF D%(3)=B%(1)THEN G$=G$+"o ":D%(3)=255:B%(1)=254
500   IF D%(3)=B%(2)THEN G$=G$+"o ":D%(3)=255:B%(2)=254
510   IF D%(3)=B%(4)THEN G$=G$+"o ":D%(3)=255:B%(4)=254
520   IF D%(4)=B%(1)THEN G$=G$+"o ":D%(4)=255:B%(1)=254
530   IF D%(4)=B%(2)THEN G$=G$+"o ":D%(4)=255:B%(2)=254
540   IF D%(4)=B%(3)THEN G$=G$+"o ":D%(4)=255:B%(3)=254
550   PRINT "■ ":FOR X=1 TO ((Y-40)/40):PRINT "■ ";:
      NEXT:PRINT SPC(18)"■ "G$
560   IF G$="● ● ● ● "THEN D$="Y E S ":GOTO 820
570   IF Y=120THEN D$="N O ":GOTO 820
580   Y=Y-120:G$="":R=1
590   GOTO 310
600   IF A$="N "THEN 700
```

Print Instructions; Try Again?

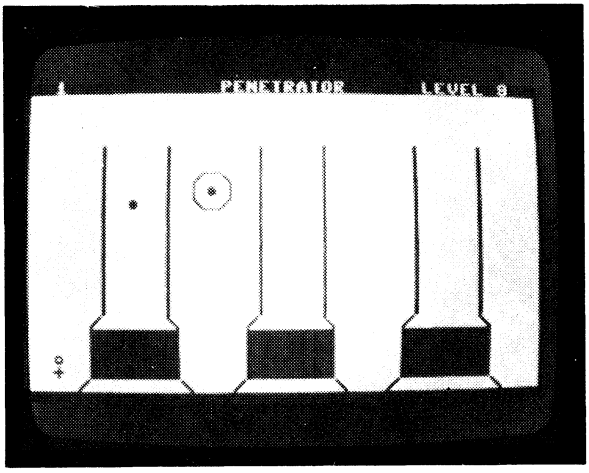
```
610   PRINT "■ ■ ■ ■ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ I N S T
      R U C T I O N S ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "
620   PRINT "■ ■ I N ▲ T H I S ▲ G A M E ▲ Y O U ▲ C A N
      ▲ P L A Y ▲ T H E ▲ C O M P U T E R ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
       ▲ O R ▲ A ▲ H U M A N ▲ O P P O N E N T "
630   PRINT "■ ▲ Y O U ▲ H A V E ▲ ■ 7 ■ ▲ C H A N C E S
      ▲ T O ▲ C R A C K ▲ T H E ▲ C O D E "
640   PRINT "■ T O ▲ E N T E R ▲ C O L O U R S ▲ U S E ▲
      K E Y S ▲ ▲ ■ 3 ▲ ■ 4 ▲ ■ 5 ▲ ■ 6 ▲ ■ 7 ▲ ■ 8 ■ "
650   PRINT "■ ▲ ▲ ▲ ▲ P R E S S ▲ D E L ▲ I F ▲ Y O U ▲
      M A K E ▲ A ▲ M I S T A K E "
660   PRINT "▲ ▲ ■ ■ ▲ ● ■ ▲ ▲ M E A N S ▲ R I G H T ▲ C
      O L O U R ▲ R I G H T ▲ S P O T "
```

```
670   PRINT "▲ ▲ ▮ ▮ ▲ ● ▮ ▲ ▲ M E A N S ▲ R I G H T ▲ C
      O L O U R ▲ W R O N G ▲ S P O T "
680   PRINT "▮ ▮ ▮ ▮ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ P R E S S ▲ R E T
      U R N ▲ T O ▲ S T A R T ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "
690   GETA$:IF A$<>CHR$(13)THEN 690
700   PRINT "▮ ";
710   FOR X=1 TO 8
720   PRINT "▮ ▲ ▲ ▲ ┌ □ □ □ □ □ □ □ ┐ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ [ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ] "
730   PRINT "▲ ▲ ▲ [ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ] "
740   NEXT
750   PRINT "▲ ▲ ▲ □ □ □ □ □ □ □ □ □ ";
760   PRINT "▮ ▮ ▮ ▮ M ▮ ▮ ▮ I ▮ ▮ ▮ N ▮ ▮ ▮ D ▮ ▮ ▮ ▲ ▮
      ▮ ▮ O ▮ ▮ ▮ U ▮ ▮ ▮ I ▮ ▮ ▮ Z "
770   FOR X=1 TO 9:FOR Y=0 TO 2:POKE 3074+X+Y*40,160:
      POKE 2069+X+Y*40,14:NEXTY,X
780   RETURN
790   FOR X=1 TO 4
800   FOR Y=1 TO 3:E=RND(1)*5+3:NEXTY
810   A%(X)=E:NEXT:RETURN
820   FOR X=1 TO 4:POKE 3116+C,81:POKE 2092+C,A%(X):C=C
      +2:NEXT
830   PRINT "▮ ";:IF D$="N O "THEN PRINT SPC(16)"B A D ▲
      L U C K ▲ I T ▲ W A S ▲ T H I S "
840   IF D$="Y E S "THEN PRINT SPC(16)"G O O D ▲ O N ▲ Y
      O U ▲ Y O U ▲ G O T ▲ I T "
850   PRINT "▮ ▮ ▮ "SPC(16)"P L A Y ▲ A G A I N ▲ Y / N ▲
      ? "
860   GETA$:IF A$<>"N "ANDA$<>"Y "THEN 860
870   IF A$="N "THEN POKE 0,0:SYS 0
880   RUN
```

ChexSum Tables

```
10    =     0
20    =  1983
30    =  1439
40    =  1720
50    =  2016
60    =  2016
70    =  1722
80    =   533
90    =  1750
100   =  2294
110   =  1376
120   =  2568
130   =   266
140   =  1693
150   =  2231
160   =  2322
170   =   298
180   =  4416
190   =  2322
200   =  3002
210   =  1684
220   =   312
230   =   670
240   =  4092
250   =  1967
260   =  1761
270   =   770
280   =   303
290   =  7348
300   =   823
310   =  1477
320   =   588
330   =   979
340   =  1398
350   =  1762
360   =   670
370   =  4334
380   =  1968
390   =  3742
400   =   770
410   =  4424
420   =   131
430   =  3439
440   =  3439
450   =  3441
460   =  3439
470   =  3441
480   =  3443
490   =  3439
500   =  3441
510   =  3443
520   =  3441
530   =  3443
540   =  3443
550   =  3301
560   =  2862
570   =  1915
580   =  1542
590   =   526
600   =   938
610   =  2938
620   =  5864
630   =  3494
640   =  3815
650   =  3093
660   =  3447
670   =  3458
680   =  3009
690   =  1711
700   =   435
710   =   678
720   =  4490
730   =   992
740   =   131
750   =  2104
760   =  2940
770   =  5071
780   =   143
790   =   670
800   =  2107
810   =   935
820   =  3572
830   =  3678
840   =  3442
850   =  1979
860   =  2329
870   =  1366
880   =   139
TOTAL = 198346
```

Penetrator



CLASSIFICATION: Shoot Up

You are the pilot of a spaceship which must land and pick up a stranded pilot. In front of your vehicle are three mountains filled with multiplying aliens. You must move your ship up and down with the Q and Z keys to target them, and destroy as many as possible by pressing the SPACE bar.

When the number of aliens gets below five you can land and pick up the pilot — but you must be quick! After picking up the pilot you move onto the next level.

PROGRAMMING SUGGESTIONS

Steadily increase the size of the objects that you must pick up.

Program Variables

S$	Spaceship
T$	Spaceship blanker
D$	Move down a line
B$	Move back a space
BE	Start of screen memory
C	Column position of spaceship
R	Row position of spaceship
PO	Position of multiplying aliens

Listing

```
10    REM PENETRATOR
20    COLOR4,6,3
```

Build the Spaceship, Pilot, Backspace Variable, Column Position

```
30    B$="▌ ":D$="▩ ":S$="/ ▒ \ "+D$+B$+B$+B$+"▐▒ ▲ ▒▌ "+D$
      +B$+B$+B$+"\ ▒ / "
40    T$="▲ ▲ ▲ ▲ "+D$+B$+B$+B$+B$+"▲ ▲ ▲ ▲ "+D$+B$+B$+B$
      +B$+"▲ ▲ ▲ ▲ " :BE=3072:GOSUB 570
50    GOSUB 450:G$="▩ ▲ ▲ ▀ ":M$="o "+D$+B$+"+ "
60    V$="▲ "+D$+B$+"▲ ":
70    FOR I=1 TO 40:CC$=CC$+"▩ ":NEXT:FOR I=1 TO 25:RR$
      =RR$+"▩ ":NEXT:POKE 208,12:Q=208
80    C(1)=0:C(2)=12:C(3)=24
90    C1(1)=8:C1(2)=20:C1(3)=32
100   C=C(1):R=3:POKE 202,C:POKE 205,R:PRINT "▲ ";S$;:C1
      =C1(1):E=0:LV=LV-.1
110   FOR I=4032 TO 4032+39:POKE I,160:NEXT
120   PRINT "▩ ";LEFT$(CC$,2);LEFT$(RR$,22);M$;
130   FOR I=1 TO 2 STEP 0
140   A=PEEK(Q):IF A=62THEN GOSUB 330
150   IF A=12THEN GOSUB 350:ELSEIF A=60THEN GOSUB 430
160   IF ETHEN GOTO 190
170   GOSUB 380:SOUND 2,4,4
180   Q=198:NEXT
190   C=C(2):C1=C1(2):E=0:CN=0:R=3
200   PRINT "▩ ";LEFT$(CC$,14);LEFT$(RR$,22);M$;:POKE 400
      4,77:Q=208
210   FOR I=1 TO 2 STEP 0:A=PEEK(Q):IF A=62THEN GOSUB 330
220   POKE 4004,77
230   IF A=12THEN GOSUB 350:ELSEIF A=60THEN GOSUB 430
240   Q=198:IF ETHEN 260
250   GOSUB 380:SOUND 2,4,4:NEXT
260   C=C(3):C1=C1(3):E=0:CN=0:R=3:Q=208
270   PRINT "▩ ";LEFT$(CC$,26);LEFT$(RR$,22);M$;
280   FOR I=1 TO 2 STEP 0:A=PEEK(Q):IF A=62THEN GOSUB 330
290   IF A=12THEN GOSUB 350:ELSEIF A=60THEN GOSUB 430
300   IF ETHEN 100
310   Q=198:GOSUB 380:SOUND 2,4,4:NEXT
320   STOP
330   IF R=1THEN RETURN
340   POKE 202,C:POKE 205,R:PRINT T$;:R=R-1:POKE 205,R:
      POKE 202,C:PRINT "▲ "S$;:RETURN
350   IF R=18THEN IF CN<=5THEN GOSUB 610
360   IF R=18THEN RETURN
```

```
370   POKE 202,C:POKE 205,R:PRINT T$;:R=R+1:POKE 205,R:
      POKE 202,C:PRINT "▲ ";S$;:RETURN
380   N=5+INT(RND(1)*LV*10):IF N<5THEN 380
```

Scan the Keyboard; Move Ship Up or Down

```
390   IF N>18THEN RETURN
400   PO=BE+(N*40)+C1:IF PEEK(PO)=32THEN POKE PO,81:CN=CN
      +1:GOSUB 420:SOUND 1,5,5:RETURN
410   RETURN
420   POKE 205,0:POKE 202,0:PRINT "▲ ";:PRINT USING"▣ # #
       ■ ";CN;:RETURN
430   PE=BE+(R*40)+C1:IF PEEK(PE)=81THEN POKE PE,32:CN=CN
      -1:RETURN
440   RETURN
```

Print the Three Mountains; Set the Difficulty Level

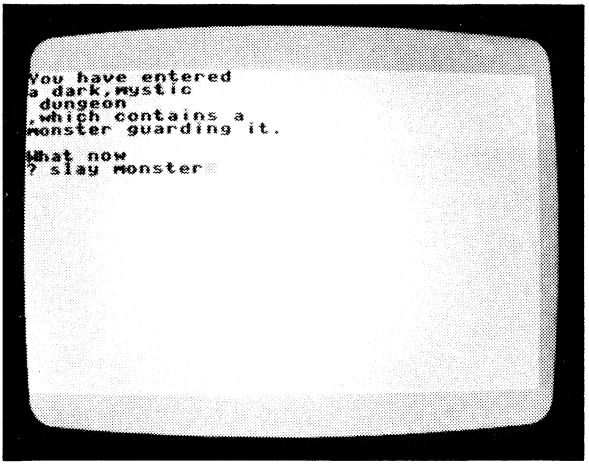
```
450   PRINT "▥ ";
460   PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▣ P E N E T R A
      T O R ■ ▲ ▲ ▲ ▣ S C O R E ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "
470   PRINT :PRINT :PRINT
480   PRINT
490   FOR HU=1 TO 13:PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▥ ▲ ▲ ▲ ▲ ▲ ▥ ▲ ▲ ▲
       ▲ ▲ ▲ ▥ ▲ ▲ ▲ ▲ ▥ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▥ ▲ ▲ ▲ ▲ ▥ ▲ ▲ ▲ ▲ ▥ "
      :NEXT
500   PRINT "▲ ▲ ▲ ▲ ▲ ▲ / ▲ ▲ ▲ ▲ ▲ ▲ \ ▲ ▲ ▲ ▲ ▲ ▲ / ▲ ▲ ▲ ▲
      ▲ \ ▲ ▲ ▲ ▲ ▲ ▲ / ▲ ▲ ▲ ▲ ▲ ▲ \ "
510   PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲
      ▲ ▲ ▲ ▲ ■ ▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ■ "
520   PRINT "▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ■ "
530   PRINT "▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ■ "
540   PRINT "▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▣ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ■ "
550   PRINT "▲ ▲ ▲ ▲ ▲ / ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ \ ▲ ▲ ▲ ▲ / ▲ ▲ ▲ ▲ ▲
      ▲ ▲ \ ▲ ▲ ▲ ▲ / ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ \ "
560   RETURN
570   SCNCLR:PRINT "D I F F I C U L T Y ▲ L E V E L ▲ 1 -
       H A R D E S T ▲ 9 - E A S I E S T ";
580   GETWE$:IF WE$=""THEN 580
590   IF WE$<"1 "ORWE$>"9 "THEN 580
600   LV=VAL(WE$):RETURN
610   REM
620   IF C1=8THEN PRINT "▣ ";LEFT$(CC$,2);LEFT$(RR$,22);V
      $;
630   IF C1=20THEN POKE 3966,32:POKE 4006,32
```

```
640   IF C1=32THEN PRINT "■ ";LEFT$(CC$,26);LEFT$(RR$,22)
      ;V$;
650   PRINT "■ ";LEFT$(CC$,10);LEFT$(RR$,2);"P I L O T ▲
      R E S C U E D ";
660   FOR HJ=1 TO 999:NEXT
670   PRINT "■ ";LEFT$(CC$,10);LEFT$(RR$,2);"▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ";
680   SC=SC+100
690   PRINT "■ ";LEFT$(CC$,33);LEFT$(RR$,0);"■ ";:
      PRINT USING"# # # # ";SC;:PRINT "■ ";
700   VE=1:FOR I=1 TO 3
710   PRINT "■ ";LEFT$(CC$,VE);LEFT$(RR$,R);T$;:CN=0:E=1:
      VE=VE+12
720   NEXT
730   FOR BV=5 TO 18:DF=BE+(BV*40)+C1:POKE DF,32:NEXT
740   RETURN
```

ChexSum Tables

```
10    =    0        260   = 2889       510   = 2461
20    =  486        270   = 2035       520   = 2461
30    = 6464        280   = 2702       530   = 2461
40    = 6083        290   = 2280       540   = 2461
50    = 2946        300   =  537       550   = 2958
60    = 1379        310   = 1582       560   =  143
70    = 5178        320   =  145       570   = 3635
80    = 1639        330   =  762       580   = 1394
90    = 1819        340   = 4005       590   = 1751
100   = 4726        350   = 1892       600   = 1028
110   = 2053        360   =  824       610   =    0
120   = 1961        370   = 4065       620   = 2706
130   =  886        380   = 2634       630   = 1884
140   = 1681        390   =  820       640   = 2847
150   = 2280        400   = 5336       650   = 3193
160   =  923        410   =  143       660   = 1053
170   =  857        420   = 2771       670   = 2527
180   =  629        430   = 4286       680   =  829
190   = 2382        440   =  143       690   = 3606
200   = 3168        450   =  435       700   = 1143
210   = 2702        460   = 3136       710   = 3944
220   =  525        470   =  585       720   =  131
230   = 2280        480   =  153       730   = 3256
240   = 1070        490   = 3879       740   =  143
250   = 1062        500   = 2961       TOTAL = 154194
```

Dragon's Lair



CLASSIFICATION: Adventure

Move through the Dragon's Lair in search of treasure but be careful, a fire breathing nasty is wandering around this place and he isn't too fussy about what or who he eats. You have a number of commands to move to move through this world. They are:

COMMAND	FUNCTION
go left	Move left one location
go right	Move right one location
go forward	Move forward one location
pick-up 'object'	Pick up given object
examine 'object'	Tells you the name of the object
drop 'object'	You guessed it!!
recover treasure	Adds treasure to your hoards
slay monster	Only if you have a weapon
spell monster	Only if you have a magic staff
gaze-into palantir	Reveals important information

PROGRAM
Variables

O%	Number of weapons
O$	Weapons
PO	Strength
TR	Treasure
D	Place
C	Object
N$, V$	Input instructions
P	Flag number of words input

Listing

```
10    COLOR4,8,3:COLOR0,13,3:PRINT CHR$(14)
20    PO=15:DIM0%(3),O$(3):TR=0
```

Read in Objects; Generate a Random Environment

```
30    FOR I=0 TO 3:READO$(I):NEXT
40    DATASWORD,STAFF,PALANTIR,TALISMAN
50    O%(INT(RND(1)*2))=1
60    PRINT "S O U ▲ H A V E ▲ E N T E R E D ":
      PRINT "A ▲ ";
70    D=INT(RND(1)*4):IF D=0THEN PRINT "N ▲ E V I L ▲ S
       M E L L I N G "
80    IF D=1THEN PRINT "H O M E L Y "
90    IF D=2THEN PRINT "D A N K ▲ A N D ▲ W E T "
100   IF D=3THEN PRINT "D A R K , M Y S T I C "
110   D=INT(RND(1)*4+1):IF D=1THEN PRINT "▲ B A R N "
120   IF D=2THEN PRINT "▲ D U N G E O N "
130   IF D=3THEN PRINT "▲ C A S T L E "
140   IF D=4THEN PRINT "▲ T O W E R "
150   C=INT(RND(1)*6):PRINT ", W H I C H ▲ C O N T A I N
      S ▲ A ":C1=C
160   IF C=0THEN PRINT "M Y S T E R I O U S ▲ O B J E C T
       . ":O=INT(RND(1)*4)
170   IF C=1THEN PRINT "B O O K ▲ O F ▲ S P E L L S . "
180   IF C=2THEN PRINT "H O R D E ▲ O F ▲ T R E A S U R E
       . "
190   IF C=3THEN PRINT "S M A L L ▲ A N I M A L ▲ R U M A
       G I N G ▲ I N ▲ T H E ▲ C O R N E R . "
200   IF C=4THEN PRINT "M O N S T E R ▲ G U A R D I N G ▲
       I T . "
210   IF C=5THEN PRINT "D R A G O N ▲ B L O C K I N G ▲ Y
       O U R ▲ W A Y . "
220   IF C<3ANDRND(1)>.6THEN PRINT "H E R E ▲ I S ▲ A L
       S O ▲ A ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ M O N S T E R . ":C1=3
230   IF PO<1THEN PRINT "H O U ▲ A R T ▲ S L A I N
      ":GOTO 1010
240   IF PO<15THEN PO=PO+O%(3)
250   FOR I=0 TO 3:IF RND(1)>.9THEN PO=PO-O%(I)
260   NEXT
```

Input a Response From Player; Check What He Did and Counter

```
270   PRINT :PRINT "W H A T ▲ N O W ":INPUT A$
280   V$="":N$="":P=1:FOR I=1 TO LEN(A$)
```

```
290   IF MID$(A$,I,1)="▲ "THEN P=2:GOTO 320
300   IF P=1THEN V$=V$+MID$(A$,I,1)
310   IF P=2THEN N$=N$+MID$(A$,I,1)
320   NEXTI
330   PRINT "■ "V$"▲ "N$"■ "
340   IF V$="S L A Y "THEN 560
350   IF V$="G O "THEN 620
360   IF V$="P I C K - U P "THEN 650
370   IF V$="E X A M I N E "THEN 680
380   IF V$="D R O P "THEN 720
390   IF V$="G A Z E - I N T O "THEN 750
400   IF V$="S P E L L "THEN 830
410   IF V$="R E C O V E R "THEN 920
420   IF V$="R E A D "THEN 970
430   IF V$="I N V E N T O R Y "THEN 1010
440   PRINT "▙ ▚ ▲ D O N ' T ▲ U N D E R S T A N D . ■ ":
      GOTO 230
450   IF C>3ANDRND(1)>.7THEN C1=C1+1
460   FOR I=1 TO 750:NEXT
```

Print the Countering Message From the Computer

```
470   IF C1=1ANDRND(1)>.9THEN PRINT "▌ H E ▲ R O O F ▲ F
      A L L S ▲ I N ! ":PO=PO-2:GOTO 230
480   IF C1=2ANDRND(1)>.9THEN PRINT "▌ O U ▲ F E L L ▲ D
      O W N ▲ A ▲ P I T ▲ I N ▲ T H E ▲ F L O O R . ":PO
      =PO-3:GOTO 230
490   IF C1=3THEN PRINT "▌ H E ▲ A N I M A L ▲ K E E P S
      ▲ I T S ▲ ▲ D I S T A N C E . "
500   IF C1=4ANDRND(1)>.6THEN PRINT "▌ H E ▲ M O N S T E
      R ▲ A D V A N C E S . "
510   IF C1>5THEN C1=5
520   IF C1<5ORRND(1)<.7THEN 230
530   IF RND(1)>.7THEN PRINT "▌ E ▲ K I L L S ▲ Y O U ! "
      :PO=0:GOTO 1010
540   GOTO 230
550   PRINT "▌ H E ▲ M O N S T E R ▲ A T T A C K S ▲ ▲ ▲
      Y O U . ":PO=PO-INT(RND(1)*4)
560   IF C1<3THEN PRINT "▌ H E R E ▲ I S ▲ N O ▲ M O N S
      T E R . ":GOTO 450
570   IF O%(0)=0THEN PRINT "■ ▌ O U ▲ H A V E ▲ N O ▲ W E
       A P O N S ! ■ ":GOTO 450
580   PO=PO-INT(RND(1)*3)
590   IF C=5ANDRND(1)>.6THEN PRINT "▌ H E ▲ D R A G O N ▲
       L I V E S . ":GOTO 450
600   PRINT "▌ H E ▲ B E A S T ▲ I S ▲ D E A D . ":C1=0
610   GOTO 450
```

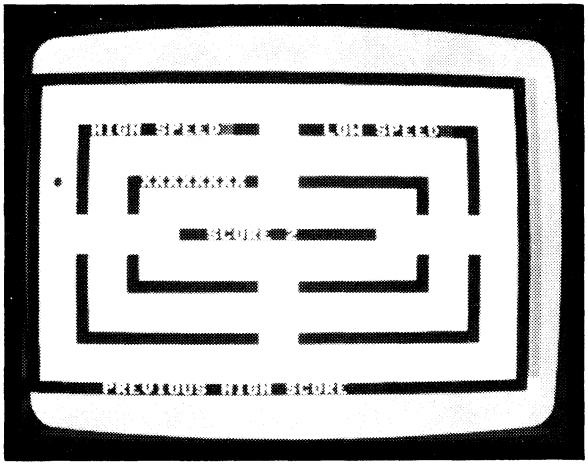
```
620   IF C1>2ANDRND(1)<C1/7THEN PRINT "▌ H E ▲ M O N S T
      E R ▲ W O N ' T ▲ L E T ▲ Y O U . "↕GOTO 450
630   IF N$<>"L E F T "ANDN$<>"R I G H T "ANDN$<>"F O R W
       A R D S "THEN 390
640   PRINT "┌ K "↕GOTO 60
650   IF N$<>O$(O)THEN PRINT "▌ H E R E ▲ I S ▲ N O ▲ "N$
      ↕GOTO 450
660   O%(O)=O%(O)+1↕PRINT "┌ K "
670   GOTO 450
680   IF C1>3THEN PRINT "▌ H I S ▲ A N G E R S ▲ T H E ▲
      B E A S T . "↕C1=C1+1↕GOTO 460
690   IF C>0THEN PRINT "▌ H E R E ▲ I S ▲ N O T H I N G ▲
       T O ▲ ▲ ▲ E X A M I N E . "↕GOTO 450
700   PRINT "▌ H E ▲ O B J E C T ▲ T U R N S ▲ O U T ▲ ▲
      T O ▲ B E ▲ A ▲ "O$(O)". "
710   GOTO 450
720   FOR I=0 TO 3↕IF N$=O$(I)ANDO%(I)=0THEN PRINT "▌ O U
       ▲ D O N ' T ▲ H A V E ▲ A ▲ "N$↕GOTO 450
730   IF N$=O$(I)THEN O%(I)=O%(I)-1↕O=I↕PRINT "┌ K "
740   NEXT↕GOTO 450
750   IF N$<>"┐ A L A N T I R "THEN PRINT "▌ O U ▲ C A N
      ' T ▲ G A Z E ▲ A T ▲ T H A T . "↕GOTO 450


760   IF O%(2)=0THEN PRINT "▌ O U ▲ D O N ' T ▲ H A V E ▲
       A ▲ ▲ ▲ ▲ ▲ ▲ ▲ ┐ A L A N T I R . "↕GOTO 450
770   IF RND(1)>.3THEN 810
780   IF RND(1)>.5THEN PRINT "▌ H E ▲ G L O B E ▲ R E M A
       I N S ▲ B L A N K . "↕GOTO 450
790   IF RND(1)>.5THEN PRINT    "▌ O U ▲ F I N D ▲ A ▲ M O
       N S T E R ▲ L U R K I N G ▲ I N ▲ T H E ▲ S H A D
      O W S . "↕C1=3↕GOTO 490
800   PRINT "▌ O U ▲ S E E ▲ A ▲ G
      T R E A S U R E ▲ I N ▲ Y O U R ▲ ▲ ▲ ▲ ▲ ▲ ▒ O U R
       N E Y S . "↕GOTO 230
810   PRINT "▌ O U ▲ F E E L ▲ W E A K E R . "
820   PO=PO-1↕GOTO 450
830   IF O%(1)=0THEN PRINT "▌ O U ▲ H A V E N ' T ▲ T H E
       ▲ M E A N S ▲ T O ▲ C A S T ▲ S P E L L S . "↕
      GOTO 230
840   IF N$<>"M O N S T E R "THEN PRINT "▌ O U ▲ C A N '
      T ▲ S P E L L ▲ T H A T . "↕GOTO 450
850   IF C1<3THEN PRINT "▌ H E R E ▲ I S ▲ N O ▲ M O N S
      T E R . "↕GOTO 230
860   IF RND(1)<.8THEN 890
870   PRINT "▌ O U R ▲ S P E L L ▲ F A I L E D . "↕
      PRINT "▒ T ▲ H A S ▲ A N G E R E D ▲ T H E ▲ ▲ ▲ ▲
      B E A S T . "↕↕C1=C1+1↕GOTO 460
880   GOTO 450
890   PRINT "▌ H E ▲ S P E L L ▲ W O R K E D . "↕C1=0
```

```
900   IF RND(1)>.6THEN PRINT "▌ U T ▲ Y O U R ▲ S T A F F
      ▲ S N A P P E D ▲ W I T H ▲ T H E ▲ S T R A I N .
      "↕O%(1)=O%(1)-1
910   GOTO 230
920   IF C<>2THEN PRINT "▌ H E R E ▲ I S ▲ N O T H I N G
      ▲ T O ▲ ▲ ▲ R E C O V E R . "↕GOTO 450
930   IF N$<>"T R E A S U R E "THEN PRINT "T H A T ▲ C A
      N N O T ▲ B E ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ R E C O V E R E D . "
      ↕GOTO 400
940   IF C1>2ANDRND(1)>.3THEN PRINT "▌ H E ▲ M O N S T E
      R ▲ W O N ' T ▲ L E T ▲ Y O U . "↕C1=C1+1↕GOTO 460
950   TR=TR+INT(RND(1)*101)+100
960   PRINT "┏ K "↕↕GOTO 230
970   IF C<>1THEN PRINT "▌ H E R E ▲ I S ▲ N O ▲ B O O K
      . "↕GOTO 450
980   IF N$<>"B O O K "THEN 440
990   PRINT "▌ O U ▲ F E E L ▲ F A I N T "↕PO=PO-2
1000  GOTO 230
1010  PRINT "▌ O U ▲ H A V E "PO"S T R E N G T H "
1020  PRINT "▌ O U ▲ H A V E "TR"S I L V E R "↕PRINT "C O
       I N S . "
1030  PRINT "▌ O U ▲ H A V E "↕FOR I=0 TO 3↕PRINT O%(I)O$
      (I);
1040  IF O%(I)<>1THEN PRINT "S ";
1050  PRINT ↕NEXT
1060  IF PO>0THEN 450
```

ChexSum Tables

```
10    =  1780        370   =  1422        730   =  3023
20    =  1716        380   =  1215        740   =   719
30    =  1356        390   =  1557        750   =  4675
40    =  2545        400   =  1296        760   =  4486
50    =  1299        410   =  1447        770   =  1108
60    =  2332        420   =  1195        780   =  3984
70    =  3567        430   =  1688        790   =  6524
80    =  1330        440   =  2648        800   =  5475
90    =  1750        450   =  2117        810   =  1565
100   =  1740        460   =   964        820   =  1352
110   =  2707        470   =  4932        830   =  5169
120   =  1462        480   =  6515        840   =  4313
130   =  1384        490   =  3676        850   =  3286
140   =  1330        500   =  3729        860   =  1105
150   =  3315        510   =  1036        870   =  6537
160   =  3558        520   =  1640        880   =   530
170   =  2000        530   =  3509        890   =  2134
180   =  2266        540   =   528        900   =  6245
190   =  3964        550   =  4076        910   =   528
200   =  2497        560   =  3292        920   =  4353
210   =  2894        570   =  3541        930   =  5121
220   =  4637        580   =  1516        940   =  5629
230   =  3113        590   =  3832        950   =  1994
240   =  1748        600   =  2162        960   =  1190
250   =  2759        610   =   530        970   =  3163
260   =   131        620   =  5091        980   =  1366
270   =  1539        630   =  4264        990   =  2248
280   =  2440        640   =  1074        1000  =   528
290   =  2196        650   =  3212        1010  =  1959
300   =  1943        660   =  1625        1020  =  2671
310   =  1920        670   =   530        1030  =  2742
320   =   206        680   =  4255        1040  =  1430
330   =   867        690   =  4132        1050  =   342
340   =  1216        700   =  3119        1060  =   874
350   =  1033        710   =   530        TOTAL = 310526
360   =  1421        720   =  5160
```

Crash Barrier



CLASSIFICATION: Evasion COLOUR ILLUSTRATION OBC

Test your skills as a high speed driver. Race around the track swapping lanes whenever you feel like it. Use the I, P, Q and Z keys to move the car around the race track. The longer you can move around the track, the more points you score. Periodically a barrier will appear between the lanes and you will have to swerve to avoid it. The longer you survive, the more frequently crash barriers appear.

PROGRAMMING SUGGESTIONS

Adding a gear stick to the controls of the game would give players more choice of play. Also throw obstacles such as mud slicks into the outer lanes to make the driver's life even more torturous.

PROGRAM
Variables

SC	Start of screen memory
CO	Start of color memory
PO	Car's position on screen
E	Flag to indicate end of game
R	Row position of car
C	Column position of car
QL	Number of barrier to erect (1-17)
R1	Row vector of barrier
C1	Column vector of barrier
PT	Position on screen of barrier
FL	Random flag to place barrier on screen

Listing

Scan Keyboard, Move the Car

```
10    REM CRASH BARRIER
20    DZ$="■ "◆FOR I=1 TO 12◆DZ$=DZ$+"■ "◆NEXT
30    FOR I=1 TO 19◆DZ$=DZ$+"■ "◆NEXT
40    COLOR4,7,6◆COLOR0,2,6◆COLOR1,6,2◆GOSUB 740◆VOL 8
50    DIM C1(25),D1(25),R1(25)
60    FOR I=1 TO 18◆READC1(I),R1(I),D1(I)◆NEXT
70    OA=0◆PRINT "■ ";◆GOSUB 430
80    COLOR4,7,5◆COLOR0,2,7◆COLOR1,6,2◆SC=3072◆CO=2048◆C
      =2◆R=2◆D=2◆E=0◆GOSUB 370
90    PRINT "■ "◆POKE PO,81◆POKE CC,6
100   A=PEEK(198)◆IF A=64THEN GOSUB 380
110   IF A=62THEN GOSUB 180◆D=1
120   IF A=12THEN GOSUB 200◆D=2
130   IF A=33THEN GOSUB 220◆D=4
140   IF A=41THEN GOSUB 240◆D=8
150   FL=INT(RND(1)*3)◆IF FL=1THEN GOSUB 260◆IF E=1
      THEN GOSUB 350◆GOTO 70
160   IF E=1THEN GOSUB 350◆GOTO 70
170   SL=SL+.25◆PRINT DZ$;"■ ■ ";INT(SL);"■ ";◆GOTO 100
180   POKE PO,32◆POKE CC,2◆R=R-1◆GOSUB 370◆IF PEEK(PO)>
      =128THEN E=1◆RETURN
190   POKE CC,6◆POKE PO,81◆RETURN
200   POKE PO,32◆POKE CC,2◆R=R+1◆GOSUB 370◆IF PEEK(PO)>
      =128THEN E=1◆RETURN
210   POKE CC,6◆POKE PO,81◆RETURN
220   POKE PO,32◆POKE CC,2◆C=C-1◆GOSUB 370◆IF PEEK(PO)>
      =128THEN E=1◆RETURN
230   POKE CC,6◆POKE PO,81◆RETURN
240   POKE PO,32◆POKE CC,2◆C=C+1◆GOSUB 370◆IF PEEK(PO)>
      =128THEN E=1◆RETURN
250   POKE CC,6◆POKE PO,81◆RETURN
```

Erect a Barrier Between Two Walls; Check for Collision

```
260   IF OA=1GOTO 320
270   QL=INT(RND(1)*21)
280   R1=R1(QL)◆C1=C1(QL)◆D1=D1(QL)
290   ON D1GOTO 300,310◆RETURN
300   R1=R1+1◆PT=3072+(R1*40)+C1◆FOR J=PT TO PT+80
       STEP 40◆POKE J,160◆NEXT◆OA=1◆RETURN
310   C1=C1+1◆PT=3072+(R1*40)+C1◆FOR J=PT TO PT+2◆POKE J,
      160◆NEXT◆OA=1◆RETURN
```

```
320  ON D1GOTO 330,340:RETURN
330  FOR J=PT TO PT+80 STEP 40:POKE J,32:NEXT:OA=0:
     RETURN
340  FOR J=PT TO PT+2:POKE J,32:NEXT:OA=0:RETURN
350  FOR I=1 TO 16:FOR J=1 TO 99:NEXT:COLOR4,I,5:
     SOUND 1,17,8:SOUND 2,8,4:NEXT
360  RETURN
370  PO=3072+(R*40)+C:CC=2048+(R*40)+C:RETURN
380  IF D=1THEN A=62:RETURN
390  IF D=2THEN A=12:RETURN
400  IF D=4THEN A=33:RETURN
410  IF D=8THEN A=41:RETURN
420  RETURN
430  REM
```

> Draw the Race Track and Instructions For Game; Data for Barriers

```
440  PRINT "◣ ■ ";
450  PRINT "⊠ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
     ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ C ▲ ▀ ";
460  PRINT "⊠ ■ ▲ ▀ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
     ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ⊠ ▲ C ▲ ▀ ";
470  PRINT "⊠ ■ ▲ ▀ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
     ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ⊠ ■ ▲ C ▲ ▀ "
     ;
480  PRINT "⊠ ■ ▲ ▀ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
     ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ⊠ ▲ C ▲ ▀ ";
490  PRINT "⊠ ■ ▲ ▀ ▲ ▲ ▲ ⊠ ■ ▲ H I G H ▲ S P E E D ◘ ▲
     ■ ▲ ▲ ▀ ▲ ▲ ▲ ⊠ ■ ▲ ▲ L O W ▲ S P E E D ⊠ ▲ ■ ▲ ▲ ▀
     ▲ ▲ ▲ ⊠ ■ ▲ C ▲ ▀ ";
500  PRINT "⊠ ■ ▲ ▀ ▲ ▲ ▲ ⊠ ▲ ▀ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
     ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ⊠ ▲ ▀ ▲ ▲ ▲ ⊠ ▲ C
     ▲ ▀ ";
510  PRINT "⊠ ■ ▲ ▀ ▲ ▲ ▲ ⊠ ■ ▲ ▀ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
     ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲   ⊠ ■ ▲ ▀ ▲ ▲ ▲ ⊠
     ■ ▲ C ▲ ▀ ";
520  PRINT "⊠ ■ ▲ ▀ ▲ ▲ ▲ ⊠ ▲ ▀ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
     ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ⊠ ▲ ▀ ▲ ▲ ▲ ⊠ ▲ C
     ▲ ▀ ";
530  PRINT "⊠ ■ ▲ ▀ ▲ ◤ ▲ ▲ ⊠ ■ ▲ ▀ ▲ ◤ ▲ ▲ ⊠ ■ ▲ X X X
     X X X X X ▲ ▀ ▲ ▲ ▲ ⊠ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▀ ▲ ◤ ▲ ▲
     ⊠ ■ ▲ ▀ ▲ ◤ ▲ ▲ ⊠ ■ ▲ C ▲ ▀ ";
540  PRINT "⊠ ■ ▲ ▀ ▲ ▲ ▲ ⊠ ▲ ▀ ▲ ▲ ▲ ⊠ ▲ ▀ ▲ ▲ ▲ ▲ ▲ ▲
     ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ⊠ ▲ ▀ ▲ ▲ ▲ ⊠ ▲ ▀ ▲ ▲
     ▲ ⊠ ▲ C ▲ ▀ ";
550  PRINT "⊠ ■ ▲ ▀ ▲ ◤ ▲ ▲ ⊠ ■ ▲ ▀ ▲ ◤ ▲ ▲ ⊠ ■ ▲ ▀ ▲ ◤
     ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ⊠ ■   ▀ ▲ ◤
     ▲ ▲ ⊠ ■ ▲ ▀ ▲ ◤ ▲ ▲ ⊠ ■ ▲ C ▲ ▀ ";
```

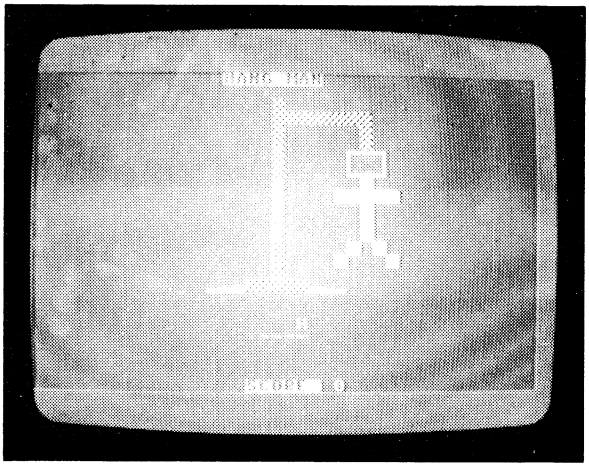
```
560  PRINT "[R]■▲▀▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲[R]▲[C]▲▀";
570  PRINT "[R]■▲▀▲◤▲▲▲▲▲▲▲▲▲▲[R]■▲▲SC
     ORE▲▲▲▲▲▲▲▲▀▲◤▲▲▲▲▲▲▲▲▲▲[R]■
     ▲[C]▲▀";
580  PRINT "[R]■▲▀▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲[R]▲[C]▲▀";
590  PRINT "[R]■▲▀▲◤▲▲[R]■▲▀▲◤▲▲[R]■▲▀▲◤
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲[R]■ ▀▲◤
     ▲▲[R]■▲▀▲◤▲▲[R]■▲[C]▲▀";
600  PRINT "[R]■ ▀▲▲▲[R]▲▀▲▲▲[R]▲▀▲▲▲▲▲▲
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲[R] ▀▲▲▲[R]▲▀▲▲
     ▲[R]▲[C]▲▀";
610  PRINT "[R][S]▲▀▲◤▲▲[R]■▲▀▲◤▲▲[R]■ ▲▲▲
     ▲▲▲▲▲▲▀▲▲▲[R]▲▲▲▲▲▲▲▲▲▲▲▀▲◤▲▲
     [R]■▲▀▲◤▲▲[R]■▲[C]▲▀";
620  PRINT "[R]■▲▀▲▲▲[R]▲▀▲▲▲▲▲▲▲▲▲▲▲▲
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲[R]▲▀▲▲▲[R]▲[C]
     ▲▀";
630  PRINT "[R]■▲▀▲◤▲▲[R]■▲▀▲◤▲▲▲▲▲▲▲▲
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲[R]■▲▀▲◤
     ▲▲[R]■▲[C]▲▀";
640  PRINT "[R]■▲▀▲▲▲[R]▲▀▲▲▲▲▲▲▲▲▲▲▲▲
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲[R]▲▀▲▲▲[R]▲[C]
     ▲▀";
650  PRINT "[R]■▲▀▲◤▲▲[R]■▲▲▲▲▲▲▲▲▲▲▲▲
     ▲▲▀▲▲▲[R]▲▲▲▲▲▲▲▲▲▲▲▲▲▲▀▲◤▲▲
     [R]■▲[C]▲▀";
660  PRINT "[R]■▲▀▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲[R]▲[C]▲▀";
670  PRINT "[R]■▲▀▲◤▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲[R]■▲[C]▲▀
     ";
680  PRINT "[R]■▲▀▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲[R]▲[C]▲▀";
690  PRINT "[R]■▲▲▲▲▲▲PREVIOUS▲HIGH▲
     SCORE▲▲▲▲▲▲▲▲▲▲▲▲▲▲[C][S]";
700  PRINT "[S]"
710  C=0:R=0
720  GETA$:IF A$=""THEN 720
730  RETURN
740  PRINT "[Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q]";
750  PRINT "DO▲YOU▲WANT▲INSTRUCTIO
     NS▲(Y/N)▲:▲";
760  GETA$:IF A$=""THEN 760
770  IF A$="N"THEN RETURN
780  IF A$<>"Y"THEN GOTO 760
790  PRINT "[Q]":PRINT "▲▲▲▲▲▲▲▲▲▲▲[R]CRAS
     H▲BARRIER▀"
800  PRINT :PRINT :PRINT
```

```
810   PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ S T E E R ▲ T H E ▲ C A R ▲
      R O U N D ▲ T H E ▲ M A Z E "
820   PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ F O R ▲ A S ▲ L O N G ▲ A S
      ▲ P O S S I B L E ▲ U S I N G "
830   PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ T H E ▲ - "
840   PRINT ↕PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ I
       ▲ - ▲ L E F T ▲ "
850   PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ P ▲ - ▲
      R I G H T "
860   PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ Q ▲ - ▲
      U P "
870   PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ Z ▲ - ▲
      D O W N "
880   PRINT ↕PRINT ↕PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ P R E S S ▲ A
      N Y ▲ K E Y ▲ T O ▲ S T A R T ";
890   GET A$↕IF A$=""THEN 890
900   RETURN
910   DATA16,0,1,21,0,1,0,10,2,0,14,2,34,14,2,34,10,2,17,
      20,1,21,20,1
920   DATA4,10,2,4,14,2,17,16,1,21,16,1,30,14,2,30,10,2,1
      7,4,1,21,4,1,17,8,1
930   DATA21,8,1,17,13,1,21,13,1
```

ChexSum Tables

```
10    =    0
20    = 2554
30    = 1931
40    = 2370
50    = 1248
60    = 2233
70    = 1282
80    = 5041
90    = 1280
100   = 1782
110   = 1365
120   = 1364
130   = 1368
140   = 1365
150   = 3916
160   = 1483
170   = 3164
180   = 4000
190   = 1135
200   = 4000
210   = 1135
220   = 3986
230   = 1135
240   = 3986
250   = 1135
260   = 1070
270   = 1239
280   = 2355
290   = 1232
300   = 5724
310   = 5337
320   = 1236
330   = 2878
340   = 2479
350   = 3803
360   =  143
370   = 3298
380   = 1184
390   = 1180
400   = 1180
410   = 1187
420   =  143
430   =    0
440   =  584
450   = 2406
460   = 2771
470   = 2962
480   = 2771
490   = 5083
500   = 3221
510   = 3885
520   = 3221
530   = 5437
540   = 3647
550   = 5727
560   = 2771
570   = 3833
580   = 2771
590   = 5727
600   = 3903
610   = 5293
620   = 3221
630   = 4269
640   = 3221
650   = 3855
660   = 2771
670   = 3131
680   = 2771
690   = 3037
700   =  244
710   =  682
720   = 1216
730   =  143
740   =  755
750   = 2766
760   = 1216
770   =  901
780   = 1525
790   = 2596
800   =  585
810   = 2953
820   = 3074
830   =  836
840   = 1967
850   = 1752
860   = 1470
870   = 1678
880   = 3025
890   = 1211
900   =  143
910   = 3383
920   = 4024
930   = 1332
TOTAL = 221692
```

Hangman



CLASSIFICATION: Educational

The classic word-guessing game in brilliant colour. Guess the word before the computer hangs you.

The computer will print out a line of dashes, each dash representing a letter of the unknown word. Guess a letter by pressing a key. If you guessed correctly, the computer will replace a dash or dashes with the letter. If you were wrong, the computer will begin to build the scaffold and start the execution. Hint: the most common letters in English are E and T.

PROGRAMMING SUGGESTIONS

Add more words to the word bank. Design an edit mode which allows you to change, add or delete words quickly without writing DATA statements. Kids can use this editor to test their parents on their most commonly misspelt words.

Program Variables

W	Pointer to random word
RR$	Move cursor down rows
LE	Length of word
LC	Letter count
CC$	Move cursor across columns
N	Number of words in word bank
W$ ( )	Array for word bank
W$	Word

Listing

```
10      COLOR0,3,3:COLOR4,7,4 :VOL 8:PRINT "■ ";
20      FOR I=1 TO 40:CC$=CC$+"■ ":NEXT:FOR I=1 TO 25:RR$
        =RR$+"■ ":NEXT:N=73:GOSUB 340
30      DIM W$(N):FOR I=0 TO N:READW$(I):NEXT
40      SCNCLR:M$="■ H A N G ▲ M A N ■ ":PRINT TAB((40-
        LEN(M$))/2);M$:LC=0
50      PRINT LEFT$(RR$,23);SPC(17);"■ S C O R E ▲ ■ ";SC;
60      W=INT(RND(1)*N):W$=W$(W):LE=LEN(W$):PE=(40-LE)/2:LV
        =10
70      PRINT "■ ";LEFT$(RR$,20);
80      PRINT SPC(PE);:FOR I=1 TO LE:PRINT "- ";:NEXT:CN=0:
        PT$="0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
        "
```

Enter the Letters of the Word One by One

```
90      F=0:GETKEYA$
100     IF A$<"A "ORA$>"Z "THEN GOTO 90
110     PRINT "■ ";LEFT$(RR$,19);:F=0
120     FOR I=1 TO LE:L$=MID$(W$,I,1):IF L$=A$THEN IF
        MID$(PT$,I,1)<>"1 "THEN GOSUB 300
130     NEXT
140     IF CN=LE THEN GOSUB 290:GOTO 40
150     IF F=0THEN GOSUB 170
160     GOTO 90
170     IF LC=10THEN GOSUB 310:GOTO 40
180     LC=LC+1:LV=LV-1
```

Print One More Section of the Hangman; Decrement Score

```
190     IF LC=1THEN PRINT "■ ";LEFT$(RR$,16);SPC(14);Y$(1);
        :SOUND 2,7,7:RETURN
200     IF LC=2THEN PRINT "■ ";LEFT$(RR$,15);SPC(19);Y$(2);
        :SOUND 2,9,8:RETURN
210     IF LC=3THEN PRINT "■ ";LEFT$(RR$,3);SPC(19);Y$(3);:
        SOUND 1,5,5:RETURN
220     IF LC=4THEN PRINT "■ ";LEFT$(RR$,3);SPC(26);Y$(4);:
        SOUND 2,6,5:RETURN
230     IF LC=5THEN PRINT "■ ";LEFT$(RR$,6);SPC(25);Y$(5);:
        SOUND 2,5,6:RETURN
240     IF LC=6THEN PRINT "■ ";LEFT$(RR$,8);SPC(26);Y$(6);:
        SOUND 1,8,8:RETURN
250     IF LC=7THEN PRINT "■ ";LEFT$(RR$,9);SPC(24);Y$(7);:
        SOUND 1,6,9:RETURN
```

```
260   IF LC=8THEN PRINT "[S] ";LEFT$(RR$,9);SPC(27);V$(8);:
      SOUND 1,6,6:RETURN
270   IF LC=9THEN PRINT "[S] ";LEFT$(RR$,12);SPC(26);V$(9);
      :SOUND 1,6,6:RETURN
280   IF LC=10THEN PRINT "[S] ";LEFT$(RR$,12);SPC(26);V$(10
      );:SOUND 2,7,6:RETURN
290   PRINT "[S] ";"[I] G O O D [U] G U E S S [=] ";:FOR I=1
       TO 100:GETA$:NEXT:SC=SC+LV:RETURN
300   POKE 202,0:PRINT SPC(PE+I-1);L$;:F=1:CN=CN+1:MID$(P
      T$,I,1)="1 ":RETURN
310   PRINT "[S] ";LEFT$(RR$,18);
320   K$="[I] [R] T H E [U] W O R D [U] W A S [U] "+W$+"[=] [=] ":KE=
      LEN(K$):TA=(40-KE)/2:PRINT SPC(TA);K$;
330   FOR I=1 TO 50:GETA$:SOUND 1,5,6:SOUND 2,9,2:NEXT:
      RETURN
```

Build the Scaffolding, the Noose and the Hangman

```
340   V$(1)="[ ] [ ] [ ] [X] [X] [X] [X] [X] [ ] [ ] [ ] "
350   V$(2)="[X] [O] [I] [X] [O] [I] [X] [O] [I] [X] [O] [I] [X] [O] [I] [X] [O] [I] [X] [O] [I] [X]
      [O] [I] [X] [O] [I] [X] [O] [I] [X] [O] [I] [X] [I] [O] [X] [I] [O] [X] "
360   V$(3)="[X] [X] [X] [X] [X] [X] [X] [X] [X] "
370   V$(4)="[X] [U] [I] [X] [U] [I] [X] "
380   V$(5)="[F] [ ] [7] [U] [I] [I] [I] [L] [ ] [J] "
390   V$(6)="[R] [U] [I] [U] [I] [U] [I] [U] [I] [=] "
400   V$(7)="[R] [U] [U] [=] "
410   V$(8)="[R] [U] [U] [=] "
420   V$(9)="[R] [U] [I] [I] [U] [U] [I] [I] [U] [U] [I] [I] [U] [=] "
430   V$(10)="[R] [U] [U] [U] [U] [=] "
440   RETURN
450   DATA DOOR,HOUSE,WALL,BRICK,RETURN,COMPUTER
460   DATA TABLE,KEY,CHAIR,POWER,CURTAIN,CASSETTE,TAPE,CO
      LOR,DATA,STABLE,RUN
470   DATA RECORD,SUPPLY,DEMAND,TREASURE,TITANIC,MELBOURN
      E,PERTH,ECONOMIC
480   DATA CALCULATOR,HELP,HEAD,HIGH,BATTLE,BEEF,BECAUSE,
      EAT,EEL,ETCH,GOLD
490   DATA GATE,GET,JUMP,JUSTICE,JAIL,KILL,KEEPER,LOOK,LE
      ACH,KENNEDY,MORRISON
500   DATA ZEBRA,TEETH,UNIVERSITY,ZOO,CUPBOARD,PERCEPTION
      ,CLARITY,FENCE,VENTILATOR
510   DATA SWITCH,LIGHT,PAPER,PLATE,BRACKET,BUTTON,MACHIN
      E,CURSOR,PLUG
520   DATA CARPET,BAG,RING,LORD,STAR,STATISTICS,CHIP,INTE
      RGRATE,BOTTLE
```

ChexSum Tables

```
10    =  1942
20    =  4935
30    =  1968
40    =  3744
50    =  2367
60    =  4623
70    =  1067
80    =  4419
90    =   897
100   =  1939
110   =  1440
120   =  4786
130   =   131
140   =  1654
150   =   925
160   =   480
170   =  1612
180   =  1524
190   =  3399
200   =  3411
210   =  3358
220   =  3345
230   =  3346
240   =  3370
250   =  3366
260   =  3361
270   =  3405
280   =  3499
290   =  4394
300   =  4537
310   =  1066
320   =  5720
330   =  2637
340   =  2497
350   =  7379
360   =  1937
370   =  1428
380   =  2240
390   =  1447
400   =   801
410   =   806
420   =  1884
430   =   972
440   =   143
450   =  3372
460   =  6162
470   =  6167
480   =  5934
490   =  6246
500   =  6800
510   =  5668
520   =  5690
TOTAL = 160240
```

Looney Landa

CLASSIFICATION: Simulation

You have a high-technology exploratory spacecraft at your disposal. Your mission is to land the craft softly on the blue landing pads on the moon. Thrust can be varied up to five without exceeding the safety limits and, in emergencies, you can retro up to nine, risking engine burn-out. Lateral control is achieved by rolling the craft either left or right and thrusting. If you succeed in your mission, you will be given a more difficult task.

The controls are: increase thrust with Z, reduce it with Q, roll left or right with I or P.

PROGRAMMING SUGGESTIONS

Design new environments: create orbiting junk to avoid, different planets with higher gravity and different planetary surfaces. Increase fuel and mass of craft to make manoeuvres more difficult. Invent a new mission — take-off and dock with the mother ship, or land on an asteroid.

PROGRAM
Variables

TL	Toll value
TH	Thrust
FU	Fuel level
M	Mass value
LV	Level
G	Gravity
TM	Timer interval

Listing

Select Graphics Mode and Initialise Game

```
10    COLOR0,1:COLOR4,1:COLOR2,7:COLOR3,10,2:COLOR1,6,5:
      GRAPHIC3,1:VOL 8
20    GOSUB 320:B=1:TL=16:GOSUB 410
30    TH=0:FU%=1000:M=1000:VX=0:VY=0:SX=9600:SY=10800:G=10
      :TM=.1:BO=0
40    CHAR1,34,0,"R O L L "+CHAR1,34,6,"F U E L "+CHAR1,3
      4,10,"V E R T "+CHAR1,34,15,"H O R Z "+COLOR1,4,5
```

Get Player's Input, Update Screen

```
50    GETA$:CHAR1,34,8,STR$(FU%)+"▲ "
60    CHAR1,34,13,STR$(INT(VY))+"▲ "
70    CHAR1,34,19,STR$(INT(VX))+"▲ "
80    IF SX>9120ANDSX<10560ANDSY>16200THEN 450
90    BOX0,INT(SX/120),INT(SY/120)-5,INT(SX/120)+4,INT(SY
      /120),INT(TL*360/32)
100   IF A$<>"P "THEN 130
110   GOSUB 400:TL=TL+1:IF TL>31THEN TL=0
120   B=1:GOSUB 410
130   IF A$<>"I "THEN 160
140   GOSUB 400:TL=TL-1:IF TL<0THEN TL=31
150   B=1:GOSUB 410
160   IF FU%=0THEN GOSUB 200:GOTO 50
170   IF A$="Q "THEN TH=TH-1:IF TH<0THEN TH=0
180   IF A$="Z "THEN TH=TH+1:IF TH>9-BOTHEN TH=9-BO
190   IF TH>FU%THEN TH=FU%
```

Calculate New Position and Velocities
Did Space Craft Crash?

```
200   QY=((TH*9000)/(M+FU%))*COS((TL-16)*π)/32)
210   QX=((TH*9000)/(M+FU%))*SIN((TL-16)*π)/32)
220   SX=SX+VX+.005*QX:SY=SY+VY+.005*QY:VY=VY+G-QY:VX=VX
      +QX:FU%=FU%-TH
230   IF (PEEK(8192+INT(SY/960)*320+INT(SX/960)*16+((
      INT(SY/120))AND7))AND30)>0THEN 460
240   IF (PEEK(8196+INT(SY/960)*320+INT(SX/960)*16+((
      INT(SY/120))AND7))AND30)>0THEN 460
250   BOX1,INT(SX/120),INT(SY/120)-5,INT(SX/120)+4,INT(SY
      /120),INT(TL*360/32)
260   IF TH=0THEN 50
```

```
270   SOUND 3,500+30*TH,80:IF TH>5-BOTHEN SOUND 1,990,10
280   IF TH+BO-5<=0ORRND(0)>(TH+BO-5)/30THEN 50
290   BO=BO+1:SOUND 3,1020,20:IF TH>9-BOTHEN TH=TH-1
300   IF BO=9THEN CHAR1,0,22,"R E T R O ▲ F A I L U R E !
       ! "
310   GOTO 50
```

Scenery Information

```
320   DRAW3,0,0 TO 0,159 TO 131,159 TO 131,0
330   DRAW3,0,0 TO 4,8 TO 6,16 TO 7,24 TO 8,32 TO 9,40
       TO 10,48 TO 12,56 TO 7,64 TO 13,72 TO 14,80
340   DRAW3 TO 16,88 TO 14,96 TO 10,104 TO 6,112 TO 8,120
       TO 8,128 TO 10,136 TO 12,144 TO 14,152 TO 18,157
350   DRAW3,37,157 TO 47,152 TO 50,144 TO 52,136 TO 56,12
      8 TO 64,120 TO 72,128 TO 76,136 TO 80,136
360   DRAW3 TO 78,136 TO 90,136 TO 94,130 TO 94,126 TO 90
      ,120 TO 86,115 TO 85,108 TO 90,104 TO 96,95
370   DRAW3 TO 105,90 TO 112,95 TO 116,88 TO 124,80 TO 12
      5,66 TO 118,60 TO 115,48 TO 126,22 TO 128,7 TO 131,
      0
380   DRAW3,18,157 TO 27,130 TO 37,157:DRAW2,78,135 TO 90
      ,135:PAINT3,1,9
390   RETURN
400   B=0
410   DRAWB,147+9*COS(((TL-16)*π)/16),26+18*SIN(((TL-16)
      *π)/16)
420   DRAWB TO 147-9*COS(((TL-16)*π)/16),26-18*SIN(((TL
      -16)*π)/16)
430   DRAWB,147,26 TO 147+9*SIN(((TL-16)*π)/16),26-18*
      COS(((TL-16)*π)/16)
440   RETURN
450   IF TL=16ANDABS(VX)<=10ANDVY<=10THEN END
460   SOUND 3,900,300:FOR I=1 TO 16:COLOR3,I,4:FOR J=1
       TO 200:NEXTJ,I
```

ChexSum Tables

```
10    =  3367        170   =  2757        330   =  4700
20    =  1588        180   =  3563        340   =  5386
30    =  5652        190   =  1425        350   =  4981
40    =  5720        200   =  3795        360   =  5001
50    =  1804        210   =  3795        370   =  5773
60    =  1766        220   =  7314        380   =  3556
70    =  1764        230   =  5861        390   =   143
80    =  2763        240   =  5865        400   =   296
90    =  5529        250   =  5530        410   =  4995
100   =  1129        260   =   813        420   =  5116
110   =  2388        270   =  3138        430   =  5606
120   =   664        280   =  3547        440   =   143
130   =  1125        290   =  3515        450   =  2909
140   =  2391        300   =  2655        460   =  3552
150   =   664        310   =   476        TOTAL = 148100
160   =  1608        320   =  1972
```

2D Maze

CLASSIFICATION: Evasion

You are placed randomly within a maze and must work your way through to the end.

You can turn left or right with the I and P keys, or move forward to the next junction by hitting the SPACE bar. The end of the maze is a flashing wall of colour.

PROGRAMMING SUGGESTIONS

Put a time limit on solving the maze. Introduce random teleporters which change your position and orientation; once triggered, they disappear. Increase the size of the maze. Have nasty things chase you! Add secret, invisible passageways that change your position but can only be found accidentally.

PROGRAM Variables

MZ	Maze array
J%	Current junction
D%	Actual orientation
N%	Next junction
M	Number of moves

Listing

Initialise Game and Define Maze

```
10    PRINT "▚ W A I T "◆COLOR1,1◆DX=9◆DY=9◆XF=5◆YF=9
20    DIMMZ%(DX,DY)
30    RESTORE
40    FOR I=0 TO DY◆FOR J=0 TO DX◆READMZ%(J,I)◆NEXTJ,I
50    DATA15,3,4,7,5,7,5,5,15,5,11,14,5,13,5,13,5,3,10,6,
      14,11,6,5,5,5,7,11,8,10
60    DATA10,8,10,6,3,6,11,12,7,9,12,5,9,8,6,12,15,5,13,3
      ,5,5,3,6,15,3,10,2,6,13
70    DATA7,5,9,10,10,12,9,10,12,5,14,7,5,9,12,5,5,15,5,1
      ,11,14,5,7,7,5,3,10,4,5
80    DATA11,8,4,9,8,4,9,12,7,5
90    DEFFNL(X)=((X*2)AND15)+INT((XAND8)/8)
100   DEFFNR(X)=INT(X/2)+(XAND1)*8
110   X=INT(RND(0)*6+2)◆Y=INT(RND(0)*5)◆D%=2↑INT(RND(0)
      *4)◆GRAPHIC2,0◆GOSUB 210
```

Get Player's Input; Move Player, Rotate Left or Rotate Right

```
120   GETA$◆IF A$<>"I "ANDA$<>"P "ANDA$<>"▲ "THEN 120
130   IF A$="I "THEN D%=FNR(D%)◆GOSUB 210◆GOTO 120
140   IF A$="P "THEN D%=FNL(D%)◆GOSUB 210◆GOTO 120
150   IF (D%ANDMZ%(X,Y))=1THEN X=X-1◆IF X<0THEN X=DX
160   IF (D%ANDMZ%(X,Y))=2THEN Y=Y+1◆IF Y>DYTHEN Y=0
170   IF (D%ANDMZ%(X,Y))=4THEN X=X+1◆IF X>DXTHEN X=0
180   IF (D%ANDMZ%(X,Y))=8THEN Y=Y-1◆IF Y<0THEN Y=DY
190   GOSUB 210◆IF X=XFANDY=YFTHEN GRAPHIC0◆END
200   GOTO 120
```

Draw Player's View; End Game

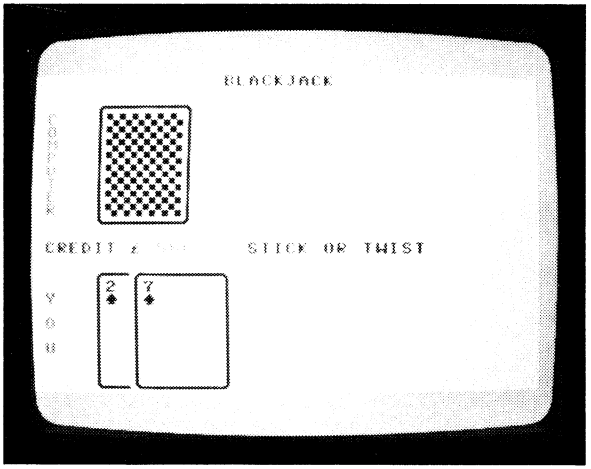
```
210   SCNCLR◆XN=X◆YN=Y◆IF (D%ANDMZ%(X,Y))=0THEN RETURN
220   IF (D%ANDMZ%(X,Y))=1THEN XN=X-1◆IF XN<0THEN XN=DX
230   IF (D%ANDMZ%(X,Y))=2THEN YN=Y+1◆IF YN>DYTHEN YN=0
240   IF (D%ANDMZ%(X,Y))=4THEN XN=X+1◆IF XN>DXTHEN XN=0
250   IF (D%ANDMZ%(X,Y))=8THEN YN=Y-1◆IF YN<0THEN YN=DY
260   DRAW1,0,0 TO 87,57◆DRAW1,0,159 TO 87,130◆DRAW1,319,
      0 TO 232,57◆DRAW1,319,159 TO 232,130
270   IF (MZ%(XN,YN)ANDD%)=0THEN 300
280   BOX1,157,103,162,107◆DRAW1,157,103 TO 130,85◆DRAW1,
      162,103 TO 189,85
```

```
290   DRAW1,157,107 TO 130,116:DRAW1,162,107 TO 189,116:
      GOTO 310
300   DRAW1,130,85 TO 189,85:DRAW1,130,116 TO 189,116
310   IF (MZ%(XN,YN)ANDFNR(D%))=0THEN 340
320   DRAW1,87,57 TO 87,130:DRAW1,130,85 TO 87,85:DRAW1,1
      30,116 TO 87,116
330   IF (MZ%(XN,YN)ANDD%)>0THEN DRAW1,130,85 TO 130,116
340   IF (MZ%(XN,YN)ANDFNL(D%))=0THEN 370
350   DRAW1,232,57 TO 232,130:DRAW1,189,85 TO 232,85:
      DRAW1,189,116 TO 232,116
360   IF (MZ%(XN,YN)ANDD%)>0THEN DRAW1,189,85 TO 189,116
370   IF (MZ%(XN,YN)ANDFNL(D%))>0THEN 400
380   DRAW1,232,57 TO 189,85:DRAW1,232,130 TO 189,116
390   IF (MZ%(XN,YN)ANDD%)=0THEN DRAW1,189,85 TO 189,116
400   IF (MZ%(XN,YN)ANDFNR(D%))>0THEN 430
410   DRAW1,87,57 TO 130,85:DRAW1,87,130 TO 130,116
420   IF (MZ%(XN,YN)ANDD%)=0THEN DRAW1,130,85 TO 130,116
430   IF XN=XFANDYN=YFTHEN CHAR1,18,11,"H O M E "
440   RETURN
```

ChexSum Tables

```
10    =  3085        160   =  3286        310   =  2229
20    =   807        170   =  3284        320   =  3669
30    =   141        180   =  3328        330   =  2914
40    =  2902        190   =  2244        340   =  2215
50    =  4511        200   =   527        350   =  3882
60    =  4500        210   =  3077        360   =  2920
70    =  4520        220   =  3625        370   =  2208
80    =  1252        230   =  3604        380   =  2567
90    =  2764        240   =  3602        390   =  2922
100   =  2229        250   =  3634        400   =  2226
110   =  4926        260   =  4807        410   =  2494
120   =  3210        270   =  1801        420   =  2916
130   =  2600        280   =  3813        430   =  2715
140   =  2589        290   =  3332        440   =   143
150   =  3318        300   =  2561        TOTAL = 125899
```

Blackjack



CLASSIFICATION: Gambling

Play Blackjack, the player versus the computer. You start with $50 and can bet up to your credit on one hand.

Enter your bet and hit return, then wait for the computer to deal your card (face down). Use key S to stick, if you think your hand is good enough, or T to twist a new card over. You bust if the total exceeds 21. Try D to double your stake if you feel lucky.

PROGRAM
Variables

CD$	Array of names of cards (A, 2, 3, J, Q, K)
SS$	Suits of deck
CR	Money
CV	Computer's total card value
PV	Player's total card value
NC	Number of cards computer has
NP	Number of cards player has
B	Amount of bet
DT$	Next card
SQ	Stake
DB	Flag of doubling stake
CO%	Computer's card
P%	Player's card
CN%	Array which indicates which cards dealt
C1$, C2$	Computer's first and second cards

Listing

> Initialise Game Variables
> Draw Screen; Deal First Cards Face Down

```
10   BL$="▚▚▚▚▚▚▚▚▚▚▚▚ ▮▮▮▮▮▮▮"‡CL$="▲▲▲▲▲▲▮
     ▮▮▮▮▮▮▮"‡CN$="▮▮▮▮▮▮▮▮▮▮▮▮▮▮"
20   CA$="▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮"‡NL$="▲▲▲
     ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲"
30   C$="▬▬▬▬▬▬"‡D$="▮▮▮▮▮▮▮▮▮▮▮▮▮▮
     ▮▮▮▮▮▮▮▮"‡CR=500‡DC$="▮▮"
40   VOL 8‡DIMSS$(3)‡DIMPC(9)‡DIMCC(9)
50   DIMCD$(12)‡DIMCN%(12)‡FOR I=0 TO 12‡READCD$(I)‡CD$(
     I)=CD$(I)+"▲ "‡CN%(I)=15‡NEXTI
60   DATAA,2,3,4,5,6,7,8,9,10,J,Q,K
70   CD$(9)="1 0 "‡SS$(0)="▮ ♥ "‡SS$(1)="▮ ♦ "‡SS$(2)="▮
     ♣ "‡SS$(3)="▮ ♠ "
80   PRINT "▮▮▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲B L A C K
     J A C K "
90   PRINT "▮▮▮▮C▮▮O▮▮M▮▮P▮▮U▮▮T▮▮
     E▮▮R▮▮▮▮▮▮▮▮▮▮Y▮▮▲▮▮O▮▮▲▮▮U
     "
100  L=0‡CX$="▮▮▮▮"‡SQ=0‡B=0‡CN=-1‡PN=-1‡DB=0‡S=0
110  CY$=CN$+DC$‡GOSUB 320‡P1$=DT$‡PS=X‡PN=0‡PC(PN)=Y‡
     GOSUB 420
120  CY$=DC$‡GOSUB 320‡C1$=DT$‡CS1=X‡CN=0‡CC(CN)=Y
130  GOSUB 560‡CY$=CN$+DC$‡DT$=P1$‡X=PS‡GOSUB 380‡RC$=CX
     $‡RP$=CX$
```

> Flip Over Player's First Card and Enter Bet
> Deal Next Two Cards

```
140  PRINT CN$;CA$;"▮E N T E R ▲ B E T ▮ ";‡INPUT B
150  PRINT CN$;CA$;NL$
160  IF B<1ORB>CRTHEN 140
170  GOSUB 550
180  CY$=CN$+DC$‡GOSUB 320‡PN=PN+1‡PC(PN)=Y‡P1$=DT$‡PS
     =X
190  CY$=DC$‡CX$=RC$‡GOSUB 320‡C2$=DT$‡CS2=X‡CN=CN+1‡CC(
     CN)=Y
200  CY$=CN$+DC$‡CX$=RP$‡DT$=P1$‡X=PS‡GOSUB 380‡GOSUB 42
     0
210  IF PV=21THEN 290
220  PRINT CN$;CA$;"▮S T I C K ▲ O R ▲ T W I S T ";
230  GETA$‡IF A$=""THEN 230
240  IF A$<>"S "ANDA$<>"T "ANDA$<>"D "THEN PRINT CN$;CA$
     ;NL$‡SOUND 1,350,5‡GOTO 210
```

```
250   IF A$="T "THEN GOSUB 320:PN=PN+1:PC(PN)=V:GOSUB 380
      :GOSUB 420:GOSUB 600:GOTO 210
260   IF A$<>"D "ORDB>0ORB>CRTHEN 280
270   GOSUB 550:DB=1:GOTO 210
280   IF A$<>"S "ORPV<12THEN 210
```

Player Sticks, So Reveal Computer's Hand and Play

```
290   S=1:GOSUB 570:GOSUB 480
300   GOSUB 600
310   GOSUB 320:CN=CN+1:CC(CN)=V:GOSUB 380:GOSUB 480:
      GOTO 300
320   SOUND 3,700,5:V=INT(RND(0)*13):IF CN%(V)=0THEN 320
```

Determine Next Card's Value and Suit; Draw Face Down; Flip Card Over

```
330   DT$=CD$(V):X=INT(RND(0)*4)
340   IF (CN%(V)AND(2↑X))=0THEN 320
350   CN%(V)=CN%(V)-2↑X
360   PRINT "■ ";CV$;CX$;"  ";C$;"  ";D$;"  ";CV$;C
      X$;"  ";D$;"  ";C$;"  ";
370   PRINT "  ";CV$;CX$;"  ";BL$;BL$;BL$;BL$;BL$;BL$;B
      L$;BL$;:FOR I=1 TO 100:NEXT:RETURN
380   CC$=LEFT$(SS$(X),1)
390   FOR I=1 TO 500:NEXT:PRINT "  ";CV$;CX$;"  ";CC$;D
      T$;"                  ";SS$(X);"                  ";
400   PRINT CL$;CL$;CL$;CL$;CL$;CL$;:CX$=CX$+"  "
410   SOUND 1,1000,3:FOR I=1 TO 500:NEXT:RETURN
```

Calculate Player's Hand; Calculate Computer's Hand

```
420   PV=0:AC=0:FOR I=0 TO PN:PV=PV+PC(I)+1:IF PC(I)=0
      THEN PV=PV+10:AC=AC+1
430   IF PC(I)>9THEN PV=PV-PC(I)+9
440   NEXT
450   IF PV>21ANDAC>0THEN PV=PV-10:AC=AC-1:GOTO 450
460   IF PV>21THEN L=1
470   RETURN
480   IF CN<0THEN RETURN
490   CV=0:AC=0:FOR I=0 TO CN:CV=CV+CC(I)+1:IF CC(I)=0
      THEN CV=CV+10:AC=AC+1
500   IF CC(I)>9THEN CV=CV-CC(I)+9
510   NEXT
520   IF CV>21ANDAC>0THEN CV=CV-10:AC=AC-1:GOTO 520
530   IF CV>21THEN L=-1
540   RETURN
```

Draw Credit and Stake

```
550  SQ=SQ+B:PRINT CN$;"▛ ▚ ▜ S T A K E ▲ ▲ £ ▲ ▲ ▲ ▲ ▲
     ▲ ▲ ▲ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▙ ";SQ:CR=CR-B
560  PRINT CN$;"▛ ▜ C R E D I T ▲ £ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▌▌ ▌▌
     ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▌▌ ▙ ";CR:RETURN
570  PRINT "▙ ▚ ▚ ▚ ▜ ▜ ▜ ▜ ▜ ";C1$;"▚ ▌▌ ▌▌ ";SS$(CS1);"▲
     ▚ ▌▌ ▌▌ ▲ ▲ ▚ ▌▌ ▌▌ ▲ ▲ ▚ ▌▌ ▌▌ ▲ ▲ ▚ ▌▌ ▌▌ ▲ ▲ ▚ ▌▌ ▌▌ ▲ ▲
     ▚ ▌▌ ▌▌ ▲ ▲ "
580  SOUND 1,1000,3
590  CY$=DC$:CX$=RC$:DT$=C2$:X=CS1:GOSUB 380:GOSUB 480:
     RETURN
```

Determine Winner and Amount Won or Lost

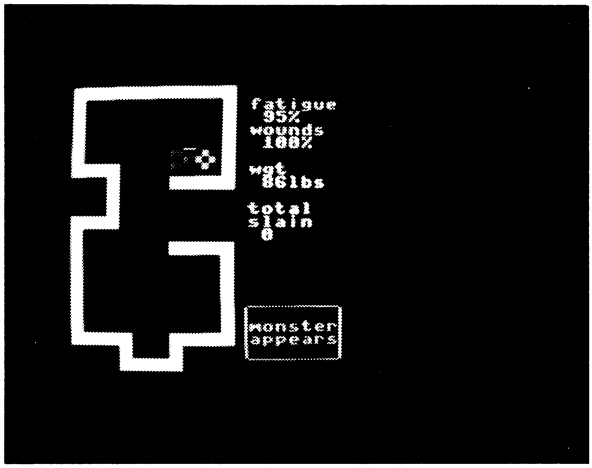
```
600  IF L=1THEN PRINT CN$;CA$;"▙ ▲ ▲ Y O U ▲ ▌▌ B U S T E
     D ! ▄ ▲ ▲ ▲ ":SOUND 1,800,10:SOUND 1,700,20:
     GOTO 780
610  IF L<>-1THEN 640
620  PRINT CN$;CA$;NL$;CN$;CA$;"▜ ▲ ▲ ▲ I ▲ B U S T E D
     ":CR=CR+2*SQ
630  SOUND 1,800,10:FOR I=1 TO 50:NEXT:SOUND 1,900,10:
     GOTO 790
640  IF CV<>21ORCN<>1THEN 670
650  PRINT CN$;CA$;"▪ ▌▌ I ▲ G O T ▲ B L A C K J A C K !
     ▄ ":SOUND 1,900,20:IF PV=21ANDPN=1THEN CR=CR-3*SQ
660  FOR I=1 TO 10:SOUND 1,800+10*I,10:NEXT:CR=CR-SQ:
     GOTO 790
670  IF S=0THEN RETURN
680  IF PV<>21ORPN<>1THEN 710
690  PRINT CN$;CA$;"▪ ▌▌ Y O U ▲ G O T ▲ B L A C K J A C
     K ! ▄ ":CR=CR+3*SQ:GOSUB 570
700  FOR I=1 TO 30:SOUND 1,300+10*I,10:SOUND 2,420+10*I,
     10::FOR J=1 TO 50:NEXTJ:NEXTI:GOTO 790
710  IF CV<17THEN PRINT CN$;CA$;"▛ ▲ ▲ ▲ ▲ I ▲ T W I S T
     . . . . ▲ ▲ ▲ ▲ ":RETURN
720  IF CV<PVTHEN 740
730  PRINT CN$;CA$;"▙ ▲ ▲ ▲ ▲ Y O U ▲ L O S E . . . ":
     SOUND 1,700,10:FOR I=1 TO 50:NEXT:SOUND 1,600,25:
     GOTO 790
740  PRINT CN$;CA$;"▛ ▲ ▲ ▲ ▲ I ▲ L O S E . . . ▲ ▲ ▲ ▲
     ▲ "
750  FOR I=1 TO 10:SOUND 1,900+10*I,10:FOR J=1 TO 50:
     NEXTJ:SOUND 1,1000-10*I,10:NEXT
760  CR=CR+2*SQ
770  GOTO 790
780  GOSUB 570
```

```
790   GOSUB 560:PRINT CN$;"■ ■ ";NL$;CN$;CA$;"■ ■ ▲ A N O
       T H E R ▲ G A M E ▲ ? "
800   GETA$:IF A$=""THEN 800
810   IF A$="N "THEN END
820   IF CR>0THEN 80
830   PRINT CN$;CA$;"■ ■ ▲ ▲ ▲ ▲ B A N K R U P T ! ■ ":
      END
```

ChexSum Tables

```
10    = 6108
20    = 2532
30    = 6598
40    = 1924
50    = 5345
60    = 1682
70    = 5225
80    = 1897
90    = 4377
100   = 4092
110   = 4303
120   = 3533
130   = 4527
140   = 2124
150   =  844
160   = 1392
170   =  303
180   = 4349
190   = 4733
200   = 3668
210   =  940
220   = 2128
230   = 1215
240   = 5092
250   = 4542
260   = 2311
270   = 1372
280   = 1784
290   = 1067
300   =  298
310   = 3279
320   = 3113
330   = 1965
340   = 1750
350   = 1450
360   = 4995
370   = 5023
380   = 1162
390   = 6940
400   = 2948
410   = 1920
420   = 6113
430   = 2235
440   =  131
450   = 3661
460   = 1088
470   =  143
480   =  831
490   = 6061
500   = 2194
510   =  131
520   = 3634
530   = 1244
540   =  143
550   = 5617
560   = 3683
570   = 5388
580   =  635
590   = 3495
600   = 5046
610   = 1155
620   = 3982
630   = 3029
640   = 1882
650   = 6228
660   = 3884
670   =  762
680   = 1905
690   = 4433
700   = 5669
710   = 3046
720   =  996
730   = 5235
740   = 1941
750   = 4780
760   = 1069
770   =  538
780   =  303
790   = 3470
800   = 1211
810   =  895
820   =  809
830   = 2370
TOTAL = 235915
```

Dungeon



CLASSIFICATION: Adventure

You have been placed in a chamber with a monster and have the following attributes:

Fatigue
Wounds
Weight

You are the red object — explore the rooms and battle the evil monsters. Your controls are R to turn your man right and L to turn your man left. The keys 1 to 9 move you forward the corresponding number of places. The T key thrusts the sword at the monster, but be careful, he fights back. Your wound tolerance must not reach zero or you will die.

PROGRAMMING SUGGESTIONS

Alter the game so if a player stays too long in one position a monster will come after him. Also give the player and the monster more than just the one weapon they currently have. Weapons like a spear or a mace would be useful tools to have.

Program Variables

SC	Screen start
RO	Room number
FA	Fatigue value
X, Y	Player's co-ordinates
MX, MY	Monster's co-ordinates
D	Direction
R$	Room
WO	Wounds value
TS	Total slain
WE	Weight value
V	Steps of movement forward
M	Monster flag

Listing

```
10      REM  DUNGEON
20      DIMR$(4)
```

Define Cursor Movement Variables; Set Colours, Data For Mazes

```
30      Y$="{HOME}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}"
        :X$="{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}"
40      COLOR4,6,4:COLOR0,7,5:PRINT CHR$(14):SC=3072
60      SR=INT(RND(1)*11+10)
70      DE=INT(RND(1)*11+10):WE=75+INT(RND(1)*25)
80      TS=0:RO=0:FA=100:WO=100:D=1:X=3:Y=15
90      FOR I=0 TO 4:READR$(I):NEXT
100     DATAO93D7L5ED5R104D7L4D2L4U2L4U9R3U4L3U6
110     DATAD10R5E403D991L4U9D9L8U9E406
120     DATAO3D5RE5U104R4D7E4092L93U994
130     DATAO6D7U7R6D8L2D5R2D8L4E404U91R6D4U4L6U1E40R2L2U6
140     DATAO93D9L9R6D9L1D3L1E403U993
150     ON ROGOTO 170,180,190,200
160     MX=10:MY=3:GOTO 210
170     MX=4:MY=3:GOTO 210
180     MX=3:MY=10:GOTO 210
190     MX=10:MY=18:GOTO 210
200     MX=2:MY=18:GOTO 210
210     M=0:IF RND(1)>.5THEN M=INT(RND(1)*3+1):MS=INT(RND(1
        )*10)+5
220     GOSUB 1060:V=0:F=0:GOTO 260
```

Move Your Player Forward, Rotate Him Left or Right

```
230     GETA$:V=VAL(A$):IF V=0THEN 480
240     FA=FA-INT((V/200)*(100-WO)+(V/200)*WE+.5)
250     GOSUB 970:IF M=1ANDRND(1)>.2THEN F=1
260     SW=0:FOR I=1 TO V:PRINT LEFT$(Y$,Y+1);LEFT$(X$,X)"{UP}
        {UP}{DOWN}{RVS}{RVS}{UP}{UP}"
270     X1=X+(D=3)-(D=1):Y1=Y+(D=0)-(D=2)
310     IF PEEK(SC+Y1*40+X1)<>32ORPEEK(SC+Y1*40+X1+1)<>32
        THEN I=V:GOTO 410
320     IF PEEK(SC+Y1*40+X1+40)<>32ORPEEK(SC+Y1*40+X1+41)
        <>32THEN I=V:GOTO 410
340     X=X1:Y=Y1:IF X>0ANDX<11ANDY>0ANDY<20THEN 410
350     RO=RO+(X=0)-(X=11)+((Y=20)-(Y=0))*2
360     IF X=0THEN X=10
370     IF X=11THEN X=1
380     IF Y=0THEN Y=19
390     IF Y=20THEN Y=1
```

```
400   GOTO 150
410   PRINT LEFT$(Y$,Y+1);LEFT$(X$,X)"■ ";
420   ON D+1GOTO 430,440,450,460
430   PRINT "■ ▲ ■■ ■■ ■■ □■ ";:GOTO 470
440   PRINT "■ ■ ■ ■■ ■■ ■ ■ ▲ ■■ ";:GOTO 470
```

Print the Player and the Monster

```
450   PRINT "■ ■■ ■■ ■■ ■ ▲ ■■ ■■ ";:GOTO 470
460   PRINT "▲ ■ ■■ ■■ ■■ ■ □ ■■ ■■ ";
470   IF V>0THEN NEXTI
480   IF A$<>"L "ANDA$<>"R "THEN 540
490   IF FA<100THEN FA=FA+1:GOSUB 970
500   SW=0:D=D+(A$="L ")-(A$="R "):IF D<0THEN D=3
510   IF D>3THEN D=0
520   A$=""
530   V=0:GOTO 410
540   IF A$<>"T "THEN 620
550   SW=3:FA=FA-2
560   PRINT LEFT$(Y$,Y+1);LEFT$(X$,X+1);"■ ";:IF D=0
      THEN PRINT "■ ";:GOTO 600
570   IF D=1THEN PRINT "■ ■ ";:GOTO 600
580   IF D=2THEN PRINT "■ ■■ ■ ";:GOTO 600
590   PRINT "■■ ■ "
600   X1=X:Y1=Y:X1=X1+((D=3)-(D=1))*2:Y1=Y1+((D=0)-(D=2))
      *2
610   F=1
620   IF SW>0THEN SW=SW-1:IF SW=0THEN GOSUB 970:A$="":
      GOTO 410
630   IF M=0THEN 930
640   IF MS>=SRANDRND(1)>.7THEN F=1
650   IF F=0THEN 770
660   PRINT LEFT$(Y$,MY+1);LEFT$(X$,MX)"▲ ▲ ■■ ■■ ▲ ▲ ";:
      IF SM>0ANDMX>=XTHEN PRINT "□ □ ■■ ■■ ■■ ▲ "
690   SM=0:DY=MY+(MY>Y)-(MY<Y):IF PEEK(SC+DY*40+MX)<>32
      ORPEEK(SC+DY*40+MX+1)<>32THEN 730
700   IF PEEK(SC+DY*40+MX+40)<>32ORPEEK(SC+DY*40+MX+41)
      <>32THEN 730
720   MY=DY
730   DY=MX+(MX>X+2)-(MX<X-1):IF ABS(DY-X)<=1THEN DY=DY
      +(DY>1)*2
740   IF PEEK(SC+MY*22+DY)<>32ORPEEK(SC+MY*22+DY+1)<>32
      THEN 770
750   IF PEEK(SC+MY*22+DY+22)<>32ORPEEK(SC+MY*22+DY+23)
      <>32THEN 770
760   MX=DY
770   PRINT LEFT$(Y$,MY+1);LEFT$(X$,MX)"■ ■ ■ ■■ ■■ ■
       ";:IF SW=0THEN 820
780   IF  ABS(X1-MX)>1 OR ABS(Y1-MY)>1 THEN  820
```

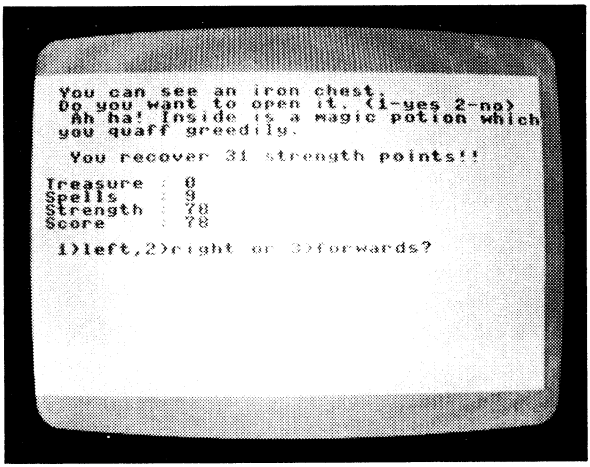
```
790   SW=1:S=SR/4:S=S+(S*DE)/100:MS=MS-INT(S+.5):IF MS>0
      THEN 820
800   PRINT LEFT$(Y$,MY+1);LEFT$(X$,MX)"▲ ▲ ■ ▮▮ ▮▮ ▲ "
810   TS=TS+1:M=0:GOTO 930
820   IF SM>0ORRND(1)>.5ORF=0THEN 890
830   X2=MX:Y2=MY
840   PRINT LEFT$(Y$,MY+1);LEFT$(X$,MX);:IF MX<XTHEN
      PRINT "■ ▮ ■ □ ";:Y2=Y2+1:X2=X2+1:GOTO 880
850   IF MX=0THEN 930
860   IF PEEK(SC+MY*22+MX-1)=160THEN 930
870   PRINT "▮▮ □ ■ □ ";:X2=X2-1
880   SM=4
890   IF SM=0THEN 930
900   SM=SM-1
910   IF ABS(X2-X)>1ORABS(Y2-Y)>1THEN 930
920   SW=1:S=MS:S=S+(S*2*M)/100:WO=WO-INT(S+.5)
930   IF WO>0ANDFA>0THEN 230
940   FOR I=1 TO 1000:NEXT:PRINT "■ ■ ■ ■ ■ T H O U ▲ A R
       T ":PRINT "▲ ▲ ▲ ▲ S L A I N ":M=0
950   GOSUB 970:PRINT "□ □ ";:POKE 198,0:END
960   IF D1=3THEN PRINT "▮▮ ";
970   PRINT LEFT$(Y$,2);LEFT$(X$,14)"◣ F A T I G U E ■ ■
      ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ "FA"▮▮ % ▲ "
980   PRINT TAB(14)"◣ W O U N D S ■ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ■ "WO"▮▮ %
       ▲ "
990   PRINT TAB(14)"■ ◣ W G T ■ ▮▮ ▮▮ ▮▮ ■ "WE"▮▮ L B S ■ "
1000  PRINT TAB(14)"◣ T O T A L ■ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ S L A I N ■ ■
       ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ "TS
1010  PRINT LEFT$(Y$,17);LEFT$(X$,14)"■ □ □ □ □ □ □ □ □ ■ ▮▮
       ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ □ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ □ ■ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮
      ▮▮ ▮▮ ";
1020  PRINT "□ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ □ ■ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ □ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ □ ■ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ □ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ □ "
      ;
1030  PRINT "■ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮ □ □ □ □ □ □ □ □ □ □ □ □ ▮▮ ▮▮
      ▮▮ ▮▮ ▮▮ ▮▮ ";
1040  IF  M>0 THEN  PRINT "■ ▮▮ M O N S T E R ■ ▮▮ ▮▮ ▮▮ ▮▮ ▮▮
      ▮▮ ▮▮ A P P E A R S "
1050  RETURN
1060  PRINT "■ ■ ";:D1=1: FOR I=1 TO LEN(R$(RO))
1070  S$=MID$(R$(RO),I,1):IF VAL(S$)>0THEN FOR J=1 TO
      VAL(S$):GOSUB 1150:NEXT
1080  IF S$="U "THEN D1=0
1090  IF S$="L "THEN D1=3
1100  IF S$="D "THEN D1=2
1110  IF S$="R "THEN D1=1
1120  IF S$="E "THEN PRINT "▬ ";
1130  IF S$="O "THEN  PRINT "■ ";
1140  NEXT:PRINT "■ ":GOSUB 970:RETURN
1150  PRINT "▲ ▮▮ ";
```

```
1160  IF D1=0THEN PRINT "□ ";
1170  IF D1=1THEN PRINT "▌ ";
1180  IF D1=2THEN PRINT "▐ ";
1190  IF D1=3THEN PRINT "▌▐ ";
1200  RETURN
1210  IF S$="0 "THEN  PRINT "▒ ";
```

ChexSum Tables

```
10    =    0
20    =  400
30    = 2820
40    = 2383
60    = 1558
70    = 3210
80    = 3299
90    = 1367
100   = 2802
110   = 2040
120   = 2019
130   = 3664
140   = 1848
150   = 1500
160   = 1540
170   = 1502
180   = 1551
190   = 1591
200   = 1550
210   = 4283
220   = 1735
230   = 1885
240   = 3701
250   = 2158
260   = 3641
270   = 3346
310   = 5600
320   = 5979
340   = 3454
350   = 3425
360   = 1018
370   = 1019
380   = 1020
390   = 1021
400   =  526
410   = 1793
420   = 1648
430   = 2106
440   = 2338
450   = 2308
460   = 1667
470   =  836
480   = 1981
490   = 1810
500   = 3439
510   =  919
520   =  359
530   =  920
540   = 1132
550   = 1181
560   = 4034
570   = 1656
580   = 1810
590   =  549
600   = 5274
610   =  300
620   = 3767
630   =  790
640   = 2144
650   =  773
660   = 5599
690   = 8163
700   = 5195
720   =  508
730   = 5637
740   = 4856
750   = 5193
760   =  507
770   = 4120
780   = 2733
790   = 5240
800   = 2410
810   = 1733
820   = 2194
830   = 1060
840   = 5837
850   =  890
860   = 2490
870   = 1695
880   =  393
890   =  882
900   =  735
910   = 2570
920   = 4045
930   = 1463
940   = 3842
950   = 1696
960   = 1123
970   = 4198
980   = 2958
990   = 2406
1000  = 3615
1010  = 6868
1020  = 5552
1030  = 4377
1040  = 3385
1050  =  143
1060  = 2354
1070  = 4207
1080  = 1166
1090  = 1160
1100  = 1151
1110  = 1166
1120  = 1226
1130  = 1106
1140  = 1031
1150  =  481
1160  = 1117
1170  =  993
1180  =  991
1190  = 1123
1200  =  143
1210  = 1106
TOTAL = 262921
```

Warlock



CLASSIFICATION: Adventure

You have been cast into the world of the warlock, a time of dungeons and dragons. The objective of the game is to live as long as possible but at the same time gather as much treasure as you can. You will be confronted with monsters and creatures of all sorts and you will have one of three alternatives: attack, retreat or use a spell. Beware, spells are not always effective against creatures of the night.

PROGRAM
Variables

S	Strength
SP	Spells
TR	Player's treasures
M	Monsters
CO	Colours of monsters
HA	Next event
Z	Up or down stairs
D	Silently or noisily
E	Angry, friendly or dumb looking
MH	Advance or stop
MT	Coins taken by the monster
SS	Metal spikes
TT	Silver or gold
T	Monster's treasure

Listing

```
10    COLOR4,7,3:COLOR0,2,5:S=100:SP=8+INT(RND(1)*4):TR
      =0
20    PRINT CHR$(14)"■ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ - = * ▲ ● ♠ ▒
      ▙ ▛ ▒ ▒ ▲ * = - "
30    PRINT :PRINT "▲ ▲ ▲ ▐ O U ' V E ▲ B E E N ▲ T R A N
       S P O R T E D ▲ T O ▲ S O M E W H E R E "
40    PRINT "▲ W I T H I N ▲ T H E ▲ ● A R L O C K ' S ▲
      C A V E S . "
50    PRINT :PRINT "▲ ▲ ▲ ▙ I V E ▲ A S ▲ L O N G ▲ A S ▲
       P O S S I B L E ▲ G A I N I N G "
60    PRINT "▲ T R E A S U R E ▲ A N D ▲ K I L L I N G ▲
      M O N S T E R S . "
70    PRINT :PRINT :PRINT :PRINT "▲ ▲ ▲ ▜ L E A S E ▲ P R
       E S S ▲ A N Y ▲ K E Y ▲ T O ▲ S T A R T . "
80    GETA$:IF A$=""THEN 80
90    PRINT "■ "
```

Print Message; Press Any Key to Start

```
100   S=S-INT(RND(1)*5)+1:IF S<1THEN 760
110   PRINT :PRINT "▲ ▐ R E A S U R E ▲ : "TR:PRINT "▲ ♥
      P E L L S ▲ ▲ ▲ : "SP:PRINT "▲ ♥ T R E N G T H ▲ :
      "S
120   PRINT "▲ ♥ C O R E ▲ ▲ ▲ ▲ : "TR*10+S:POKE 198,0
130   M=INT(RND(1)*13)+1
140   T=INT(RND(1)*20)+1
150   CO=INT(RND(1)*7)+1
160   HA=INT(RND(1)*6)+1
170   PRINT :PRINT "▲ ▲ 1 ) L E F T , 2 ) R I G H T ▲ O R
       ▲ 3 ) F O R W A R D S ? "
180   GETA$:IF A$=""ORA$<>"1 "ANDA$<>"2 "ANDA$<>"3 "
      THEN 180
190   PRINT "■ "
200   IF RND(1)<.15THEN GOTO 160
210   ON HAGOTO 220,340,460,460,1010,1370
220   PRINT "▲ ▲ ▲ ▐ O U ▲ C A N ▲ S E E ▲ A ▲ F L I G H
      T ▲ O F ▲ S T A I R S ▲ G O I N G "
```

Check If You Want to Use the Stairs or Move Into a Room

```
230   Z=INT(RND(1)*2)+1
240   IF Z=1THEN PRINT "▲ ▲ U P W A R D S ▲ I N T O ▲ T H
       E ▲ G L O O M . "
```

```
250   IF Z=2THEN PRINT "▲ ▲ D O W N ▲ I N T O ▲ B L A C K
       N E S S . "
260   PRINT ↕PRINT "▲ ▲ ▲ ▒ O ▲ Y O U ▲ W I S H ▲ T O ▲ U
       S E ▲ T H E M ? "↕PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ 1 - Y E S
       ▲ 2 - N O "
270   GETA$↕IF A$=""ORA$<>"1 "ANDA$<>"2 "THEN 270
280   IF A$="2 "ORRND(1)<.8THEN 100
290   PRINT ↕PRINT "▲ ▲ ▲ * * W H O O P S * * "
300   FOR I=1 TO 1000↕NEXT
310   PRINT ↕PRINT "▲ ▲ ▒ O U ▲ F E L L ▲ D O W N ▲ T H E
       ▲ S T A I R S ! "
320   PRINT ↕PRINT "▲ ▲ 5 ▲ S T R E N G T H ▲ P O I N T S
       ▲ T A K E N ▲ A W A Y . "
330   S=S-5↕GOTO 100
340   PRINT "▲ ▲ ▒ O U ▲ C A N ▲ S E E ▲ A ▲ D O O R . "
350   PRINT "▲ ▲ ▒ O ▲ Y O U ▲ W A N T ▲ T O ▲ O P E N ▲
      I T ▲ ( 1 - Y E S ▲ 2 - N O ) ? "
360   GETA$↕IF A$=""ORA$<>"1 "ANDA$<>"2 "THEN 360
370   IF A$="2 "THEN 100
380   PRINT ↕PRINT "▲ ▲ ▒ H E ▲ D O O R ▲ O P E N S ";
390   D=INT(RND(1)*2)+1
400   IF D=1THEN PRINT "▲ S I L E N T L Y . "
410   IF D=2THEN PRINT "▲ W I T H ▲ A ▲ L O U D ▲ C R E A
       K I N G . "
420   FOR I=1 TO 500↕NEXT
430   IF RND(1)<.7THEN 450
440   GOTO 100
```

Print 'Behind a Door You Can See a Creature of Some Sort'

```
450   PRINT "▲ ▲ ▒ E H I N D ▲ T H E ▲ D O O R - "
460   PRINT "▲ ▲ ▒ O U ▲ C A N ▲ S E E ▲ A ";
470   E=INT(RND(1)*3)+1
480   IF E=1THEN PRINT "N ▲ A N G R Y "
490   IF E=2THEN PRINT "▲ F R I E N D L Y "
500   IF E=3THEN PRINT "▲ D U M B "
510   PRINT "▲ ▲ L O O K I N G ▲ ";
520   ON COGOSUB 1300,1310,1320,1330,1340,1350,1360,1370
530   ON MGOSUB 1160,1170,1180,1190,1200,1210,1220,1230,1
      240,1250,1260,1270,1280,1290
540   MH=INT(RND(1)*2)+1
550   IF MH=1THEN PRINT ↕PRINT "▲ ▲ ▒ E ▲ A D V A N C E S
       ! "
560   IF MH=2THEN PRINT ↕PRINT "▲ ▲ ▒ E ▲ S T O P S ! "
570   PRINT ↕PRINT "▲ ▲ 1 ) A T T A C K , 2 ) R E T R E A
       T ▲ O R ▲ 3 ) U S E ▲ A ▲ S P E L L "
580   GETA$↕IF A$<>"1 "ANDA$<>"2 "ANDA$<>"3 "THEN 580
590   IF A$<>"2 "THEN 640
```

```
600   PRINT :PRINT "▲ ▲ ▲ ▲ ▲ ▒ ▒ ▒ ▒ ▒ ▒ ▒ ! ! "
610   FOR I=1 TO 800:NEXT
620   IF RND(1)<.8THEN 100
630   PRINT :PRINT :PRINT "▲ ▲ ▒ E ▲ D O E S N ' T ▲ L E
      T ▲ Y O U ▲ A N Y H O W ! ":GOTO 570
640   IF A$="1 "THEN 730
650   IF SP=0THEN PRINT "▲ ▲ ▒ O U ▲ H A V E ▲ N O N E .
      ":GOTO 570
660   IF RND(1)<.35THEN 700
670   PRINT : PRINT "▒ ▲ ▲ ▒ H E ▲ S P E L L ▲ W O R K E
      D . ":PRINT
680   SP=SP-1:IF SP<5THEN PRINT "▲ ▲ ▒ U T ▲ Y O U ' R E
      ▲ S H O R T ▲ O N ▲ T H E M ▲ N O W . "
690   GOTO 910
700   PRINT :PRINT "▒ ▲ ▲ ▒ H E ▲ S P E L L ▲ D I D N ' T
      ▲ W O R K . "
710   PRINT "▲ ▲ ▒ T ▲ J U S T ▲ M A D E ▲ H I M ▲ A N G
      R Y . "
720   GOTO 570
730   IF RND(1)<.31ANDINT(RND(1)*10)*10<SORRND(1)<.28
      THEN 900
740   IF RND(1)<.8THEN 790
750   PRINT "▒ "
760   PRINT :PRINT "▲ ▲ ▒ O U ' R E ▲ ▒ ▒ ♠ ▒ ! ! "
770   PRINT :PRINT "▲ ▲ ▲ ▲ ▲ ♥ ▒ ▛ ▒ ▒ ▲ : "TR*10+S
780   END
```

'You Are Dead'; 'You Are Wounded'; 'You Have Lost Your Strength'

```
790   PRINT : PRINT "▒ ▲ ▲ ▒ O U ' V E ▲ B E E N ▲ W O U
      N D E D ▲ A N D ▲ Y O U R ▲ S T R E N G T H ":
      PRINT "▲ ▲ H A S ▲ B E E N ▲ H A L V E D . "
800   S=INT(S/2)
810   IF INT(RND(1))<.40RSS<>0THEN 100
820   IF RND(1)<.4THEN 870
830   MT=INT(TR/INT(RND(1)*7)):PRINT "▲ ▲ A L S O ▲ T H E
      ▲ M O N S T E R ▲ S T O L E "MT"C O I N S ▲ F R O
      M "
840   PRINT "▲ ▲ Y O U R ▲ P U R S E . . . "
850   TR=TR-MT
860   TR=0:GOTO 100
870   PRINT "▲ ▲ ▛ H ▲ N O ! ▲ ▒ H E ▲ M O N S T E R ▲ S
      T O L E ▲ A L L ▲ Y O U R "
880   PRINT "▲ ▲ C O I N A G E . ▲ ▒ A D ▲ L U C K . "
890   TR=0:GOTO 100
900   PRINT "▒ "
910   PRINT "▲ ▲ ● E L L ▲ D O N E ! ! "
```

```
920   PRINT :PRINT "  [ O U  K I L L E D  H I M , "
      ;
930   PRINT "  A N D  H I S ";
940   TT=INT(RND(1)*2)+1
950   PRINT T"C O I N S  O F "
960   IF TT=1THEN PRINT "  S I L V E R ";
970   IF TT=2THEN PRINT "  G O L D ";
980   PRINT "  A R E  N O W  Y O U R S . "
990   TR=TR+T
1000  GOTO 100
1010  IF RND(1)<.3THEN 100
1020  PRINT "  * * W H O O P S * * "
1030  FOR I=1 TO 1000:NEXT
1040  PRINT :PRINT "  [ O U  F E L L  D O W N  A  P
       I T ! "
1050  PRINT "  ♠ T  T H E  B O T T O M ";
1060  HN=INT(RND(1)*4)
1070  ON HNGOTO 1080,1090,1110,1130,1130
1080  GOTO 460
1090  PRINT "  I S  N O T H I N G . "
1100  GOTO 100
1110  PRINT "  I S  A  P O O L  O F  A C I D ! ! "
1120  GOTO 760
1130  SS=INT(RND(1)*10)+1
1140  PRINT "A R E "SS"M E T A L  S P I K E S ! ! "
1150  GOTO 790
1160  PRINT "D E M O G O R G O N ! ":RETURN
1170  PRINT "H Y D R A ! ":RETURN
1180  PRINT "S E R P E N T ! ":RETURN
1190  PRINT "G I A N T ! ":RETURN
1200  PRINT "D R A G O N ! ":RETURN
1210  PRINT "J U B I L E X ! ":RETURN
1220  PRINT "Z O M B I E ! ":RETURN
1230  PRINT "W R A I T H ! ":RETURN
1240  PRINT "M I N O T A U R ! ":RETURN
1250  PRINT "D E V I L ! ":RETURN
1260  PRINT "W E R E W O L F ! ":RETURN
1270  PRINT "O R C ! ":RETURN
1280  PRINT "W A R L O C K ! ":RETURN
1290  PRINT "[W H I T E  ";:RETURN
1300  PRINT "[B L A C K  [R ";:RETURN
1310  PRINT "C O L O U R L E S S  ";:RETURN
1320  PRINT "[R E D  [R ";:RETURN
1330  PRINT "[Y E L L O W  [R ";:RETURN
1340  PRINT "[G R E E N [R  ";:RETURN
1350  PRINT "[P U R P L E  [R ";:RETURN
1360  PRINT "[B L U E  [R ";:RETURN
1370  PRINT "  [ O U  C A N  S E E  A ";
1380  Z=INT(RND(1)*2+1)
1390  IF Z=1THEN PRINT "  W O O D E N ";
```

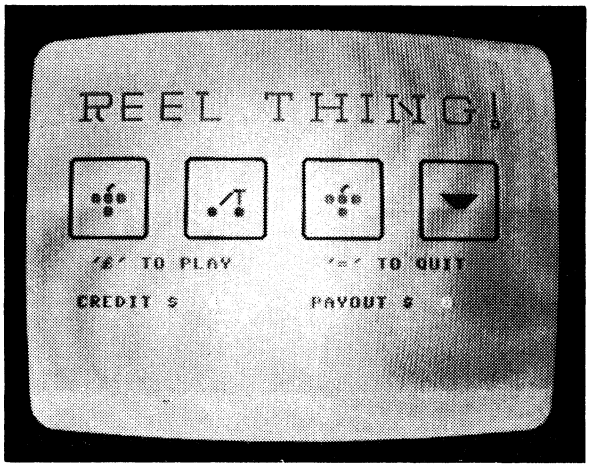
```
1400  IF Z=2THEN PRINT "N ▲ I R O N ";
1410  PRINT "▲ C H E S T . "
1420  PRINT "▲ ▲ ▒ O ▲ Y O U ▲ W A N T ▲ T O ▲ O P E N ▲
      I T . ▲ ( 1 - Y E S ▲ 2 - N O ) "
1430  GETA$:IF A$=""ORA$<>"1 "ANDA$<>"2 "THEN 1430
1440  IF A$="2 "THEN 100
1450  Z=INT(RND(1)*10+1)
1460  IF Z=1THEN ? "▲ ▲ ▛ H ▲ D E A R ! ▲ ▚ T ▲ W A S ▲ B
       O O B Y ▲ T R A P P E D ! ":? "▲ ▲ ▌ O U ▲ C H O K
       E ▲ O N ▲ P O I S O N ▲ G A S . ":S=S-10
1470  IF Z<3THEN 100
1480  IF Z<8THEN PRINT "▲ ▲ ▚ T ▲ W A S ▲ E M P T Y . ":
      GOTO 100
1490  PRINT "▲ ▲ ▲ ♠ H ▲ H A ! ▲ ▚ N S I D E ▲ I S ▲ A ▲
      M A G I C ▲ P O T I O N ▲ W H I C H "
1500  PRINT "▲ ▲ Y O U ▲ Q U A F F ▲ G R E E D I L Y . "
1510  Z=INT(RND(1)*20+16)
1520  PRINT :PRINT "▲ ▲ ▲ ▌ O U ▲ R E C O V E R "Z"S T R
      E N G T H ▲ P O I N T S ! ! ":S=S+Z:GOTO 100
```

ChexSum Tables

```
10    = 3629
20    = 3229
30    = 3938
40    = 2585
50    = 3435
60    = 2770
70    = 3716
80    = 1149
90    =  372
100   = 2472
110   = 4756
120   = 2283
130   = 1389
140   = 1396
150   = 1407
160   = 1401
170   = 2804
180   = 3744
190   =  372
200   = 1551
210   = 2084
220   = 3541
230   = 1333
240   = 2868
250   = 2634
260   = 4119
270   = 2941
280   = 1709
290   = 1287
300   = 1021
310   = 2665
320   = 2955
330   = 1187
340   = 1874
350   = 3163
360   = 2942
370   =  908
380   = 1826
390   = 1316
400   = 1622
410   = 2618
420   =  964
430   = 1120
440   =  525
450   = 1648
460   = 1449
470   = 1317
480   = 1396
490   = 1545
500   = 1225
510   =  952
520   = 2612
530   = 4820
540   = 1408
550   = 2331
560   = 2067
570   = 3340
580   = 3162
590   = 1104
600   = 2204
610   =  971
620   = 1106
630   = 3616
640   =  916
650   = 2956
660   = 1176
670   = 2405
680   = 4646
690   =  534
700   = 2589
710   = 2265
720   =  532
730   = 3747
740   = 1110
750   =  372
760   = 2125
770   = 2560
780   =  129
790   = 6417
800   =  846
810   = 2174
820   = 1113
830   = 5915
840   = 1323
```

```
850  =  863
860  = 1007
870  = 3290
880  = 1785
890  = 1007
900  =  372
910  = 1196
920  = 1938
930  =  821
940  = 1428
950  =  918
960  = 1608
970  = 1419
980  = 1341
990  =  778
1000 =  525
1010 = 1103
1020 =  994
1030 = 1021
1040 = 2213
1050 = 1510
1060 = 1174
1070 = 2010
1080 =  531
1090 = 1074
1100 =  525
1110 = 1611
1120 =  531
1130 = 1482
1140 = 1806
1150 =  538
1160 = 1272
1170 =  866
1180 = 1045
1190 =  854
1200 =  925
1210 = 1033
1220 =  944
1230 =  951
1240 = 1138
1250 =  857
1260 = 1116
1270 =  702
1280 = 1028
1290 =  948
1300 =  960
1310 = 1379
1320 =  811
1330 = 1222
1340 =  976
1350 = 1224
1360 =  896
1370 = 1449
1380 = 1337
1390 = 1456
1400 = 1379
1410 =  709
1420 = 3190
1430 = 3002
1440 =  908
1450 = 1402
1460 = 7880
1470 =  796
1480 = 2777
1490 = 3723
1500 = 1841
1510 = 1463
1520 = 4723
TOTAL = 279355
```

Reel Thing



CLASSIFICATION: Gambling

Play a four wheel poker machine. You start with ten dollars and can win up to $2000. There are five different symbols — cherries, grapes, pine-apples, watermelons and, for big dollars, dollar signs. Spin the wheels and try your luck. There are different combinations in every game. Controls are £ to spin wheels and = to exit.

PROGRAMMING SUGGESTIONS

The odds of the wheels can be adjusted in this game. New symbols could be designed. Finally, the payout could be changed, for example, if cherry, cherry, dollar, dollar was to pay $3Ø, then this could be inserted after line 63:

If R(Ø) = Ø and R(1) = Ø and R(2) = 4 and R(3) = 4 then W = 3Ø

Program Variables

WH	Weighting of each symbol on each wheel
R	Symbol currently showing
SC	Screen memory
CL	Colour memory
CR	Money
W	Amount won
WT	Weighting of wheel
FT	Random function to select symbol

Listing

Initialise Game and Draw Title Screen

```
10    VOL 8:COLOR0,2,6:COLOR4,2,6:COLOR1,14,4
20    PRINT "■ ■ ▲ ▲ ▲ ▲ ▀ ▀ ▚ ▛ ▀ ▲ ▛ ▀ ▲ ▀ ▲ ▲ ▲ ▲ ▛ ▀
      ▜ ▲ ▀ ▲ ▀ ▲ ▀ ▲ ▀ ▲ ▀ ▟ ▀ ▚ ▲ ▌ "
30    PRINT "▲ ▲ ▲ ▲ ▙ ▀ ▜ ▙ ▀ ▲ ▙ ▀ ▲ ▌ ▲ ▲ ▲ ▲ ▲ ▲ ▌ ▲ ▲
      ▙ ▀ ▟ ▲ ▌ ▲ ▌ ▚ ▌ ▲ ▌ ▲ ▀ ▲ ▌ "
40    PRINT "▲ ▲ ▲ ▲ ▟ ▚ ▲ ▙ ▀ ▲ ▙ ▀ ▲ ▙ ▀ ▲ ▲ ▲ ▲ ▲ ▟ ▲ ▲
      ▟ ▲ ▟ ▲ ▟ ▲ ▟ ▲ ▟ ▲ ▚ ▀ ▜ ▲ ● "
50    DIM■H(3,4):DIMR(3):SC=1024:CL=55296:CR=10:W=0:
      GOSUB 680:FOR I=0 TO 3:R(I)=0:NEXT
60    COLOR1,2,3:PRINT "■ ■ ▲ ▲ ▲ ▟ ▀ ▀ ▀ ▀ ▀ ▚ ▲ ▲ ▟ ▀ ▀
      ▀ ▀ ▀ ▚ ▲ ▲ ▟ ▀ ▀ ▀ ▀ ▀ ▀ ▚ ▲ ▲ ▟ ▀ ▀ ▀ ▀ ▀ ▀ ▚ "
70    PRINT "■ ■ ■ ▌ ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌ ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌
      ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌ ▚ ▚ ▚ ▚ ▚ ▌ "
80    PRINT "■ ■ ■ ▌ ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌ ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌
      ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌ ▚ ▚ ▚ ▚ ▚ ▌ "
90    PRINT "■ ■ ■ ▌ ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌ ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌
      ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌ ▚ ▚ ▚ ▚ ▚ ▌ "
100   PRINT "■ ■ ■ ▌ ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌ ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌
      ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌ ▚ ▚ ▚ ▚ ▚ ▌ "
110   PRINT "■ ■ ■ ▌ ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌ ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌
      ▚ ▚ ▚ ▚ ▚ ▌ ▲ ▲ ▌ ▚ ▚ ▚ ▚ ▚ ▌ "
120   PRINT "■ ■ ■ ▚ ▀ ▀ ▀ ▀ ▀ ▜ ▲ ▲ ▚ ▀ ▀ ▀ ▀ ▀ ▜ ▲ ▲ ▚
      ▀ ▀ ▀ ▀ ▀ ▜ ▲ ▲ ▚ ▀ ▀ ▀ ▀ ▀ ▜ "
130   PRINT :COLOR1,2,4:PRINT "■ ■ ▲ ▲ ▲ ' £ ' ▲ T O ▲ P
      L A Y ▲ ▲ ▲ ▲ ▲ ▲ ▲ ' = ' ▲ T O ▲ Q U I T "
140   GOSUB 210:GOSUB 240
```

Get input

```
150   GETA$:IF A$=""THEN 150
160   IF A$="= "THEN 200
170   IF A$<>"£ "THEN 150
180   CR=CR-1:GOSUB 210:GOSUB 240:GOSUB 280:GOSUB 580:
      IF CR=0THEN 200
190   GOTO 150
```

End Game

```
200 COLOR1,6:PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}
    {DOWN}{DOWN}{DOWN}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}WELL,▲THANK▲YOU▲
    FOR▲PLAYING!":END
```

Print Credit Rating

```
210 COLOR1,13,4:PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}
    {DOWN}{DOWN}▲▲▲▲CREDIT▲$▲▲▲▲▲▲▲{LEFT}{LEFT}{LEFT}{LEFT}{LEFT}
    {LEFT}";CR
220 COLOR1,8:PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}
    {RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}";CR
230 RETURN
```

Print Payout

```
240 COLOR1,13,4:PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}
    {DOWN}{DOWN}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}PA
    YOUT▲$▲▲▲▲▲▲{LEFT}{LEFT}{LEFT}{LEFT}{LEFT}{LEFT}"
250 RETURN
260 COLOR1,8:PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}
    {RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}
    {RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}";W
270 RETURN
```

Spin Wheels

```
280 FOR I=1 TO 4:COLOR1,10
290 PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}";:FOR K=1 TO 5:FOR J=1
    TO 4:IF I<=JTHEN PRINT "{▬}{RIGHT}{RIGHT}{RIGHT}{RIGHT}▚▚▚▚▚";:
    GOTO 310
300 PRINT "{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}";
310 NEXTJ:PRINT :NEXTK
320 PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}";:FOR K=1 TO 5:FOR J=1
    TO 4:IF I<=JTHEN PRINT "{R}{RIGHT}{RIGHT}{RIGHT}{RIGHT}▚▚▚▚▚";:
    GOTO 340
330 PRINT "{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}";
340 NEXTJ:PRINT :NEXTK
350 IF I=1THEN PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{RIGHT}{RIGHT}{RIGHT}{RIGHT}";:
    GOSUB 410
360 IF I=2THEN PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}
    {RIGHT}{RIGHT}{RIGHT}{RIGHT}";:GOSUB 410
370 IF I=3THEN PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}
    {RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}";:GOSUB 410
380 IF I=4THEN PRINT "{CLR}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{DOWN}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}
    {RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}{RIGHT}";:
    GOSUB 410
```

```
390   SOUND 1,200,5:NEXTI
400   RETURN
```

Select and Draw Symbol

```
410   WT=0:FOR J=0 TO 4:WT=WT+WH(I-1,J):NEXT
420   FT=INT(RND(0)*WT+1):J=0
430   FT=FT-WH(I-1,J):IF FT<=0THEN R(I-1)=J:GOTO 470
440   J=J+1:IF J<4THEN 430
450   R(I-1)=4
460   PRINT "■ ▲ ▲ ▲ ▲ ▲ ■ ■ ■ ■ ■ ■ ■ ▲ ▨ + ▩ ▲ ■ ■ ■ ■ ■
      ■ ▲ ▩ + ▩ ▲ ■ ■ ■ ■ ■ ■ ▲ ▩ + ▨ ▲ ■ ■ ■ ■ ■ ■ ▲ ▲ ▲
       ▲ ▲ ":RETURN
470   IF J>0THEN 500
480   COLOR1,10,4:PRINT "▲ ▲ ▲ ▲ ▲ ■ ■ ■ ■ ■ ■ ▲ ▲ ▲ □ ▲
      ■ ■ ■ ■ ■ ■ ▲ ▲ / ▥ ▲ ";
490   COLOR1,3,4:PRINT "■ ■ ■ ■ ■ ■ ▲ ● ▲ ● ▲ ■ ■ ■ ■ ■ ■
       ▲ ▲ ▲ ▲ ▲ ":RETURN
500   IF J>1THEN 530
510   COLOR1,10,4:PRINT "▲ ▲ ▲ ▲ ▲ ■ ■ ■ ■ ■ ■ ▲ ▲ ▨ ▲ ▲
      ";
520   COLOR1,5,4:PRINT "■ ■ ■ ■ ■ ■ ▲ ● ● ● ▲ ■ ■ ■ ■ ■ ■
       ▲ ▲ ● ▲ ▲ ■ ■ ■ ■ ■ ■ ▲ ▲ ▲ ▲ ▲ ":RETURN
530   IF J>2THEN 560
540   COLOR1,6,4:PRINT "▲ ▲ ▲ ▲ ▲ ■ ■ ■ ■ ■ ■ ▲ ▩ V ▨ ▲ "
      ;
550   COLOR1,9,4:PRINT "■ ■ ■ ■ ■ ■ ▲ ▲ ※ ▲ ▲ ■ ■ ■ ■ ■ ■ ■
       ▲ ▲ ※ ▲ ▲ ■ ■ ■ ■ ■ ■ ▲ ▲ ▲ ▲ ▲ ":RETURN
560   COLOR1,3,6:PRINT "▲ ▲ ▲ ▲ ▲ ■ ■ ■ ■ ■ ■ ▲ □ □ □ ▲ "
      ;
570   COLOR1,16,4:PRINT "■ ■ ■ ■ ■ ■ ▲ ◥ ■ ▲ ▬ ◤ ▲ ■ ■ ■
      ■ ■ ■ ▲ ▲ ▥ ▲ ▲ ■ ■ ■ ■ ■ ■ ▲ ▲ ▲ ▲ ▲ ":RETURN
```

Calculate Payout

```
580   W=0
590   IF R(0)=0THEN W=W+1:IF R(1)=0THEN W=W+1:IF R(2)=0
      THEN W=W+4:IF R(3)=0THEN W=W+17
600   IF R(0)=1ANDR(1)=1THEN W=W+3:IF R(2)=1THEN W=W+13:
      IF R(3)=1THEN W=W+80
610   IF R(0)=2ANDR(1)=2THEN W=W+4:IF R(2)=2THEN W=W+60:
      IF R(3)=2THEN W=W+80
620   IF R(0)=3ANDR(1)=3ANDR(2)=3THEN W=W+176:IF R(3)=3
      THEN W=W+154
630   IF R(0)=4ANDR(1)=4ANDR(2)=4THEN W=W+120:IF R(3)=4
      THEN W=W+2000
640   GOSUB 260:P=W
```

```
650   IF WD>10THEN FOR J=1 TO INT(P/10):CR=CR+10:W=W-10:
      GOSUB 220:SOUND 1,990,1:NEXT
660   IF WD>0THEN FOR J=1 TO W:CR=CR+1:W=W-1:GOSUB 220:
      SOUND 1,1000,1:NEXT
670   RETURN
```

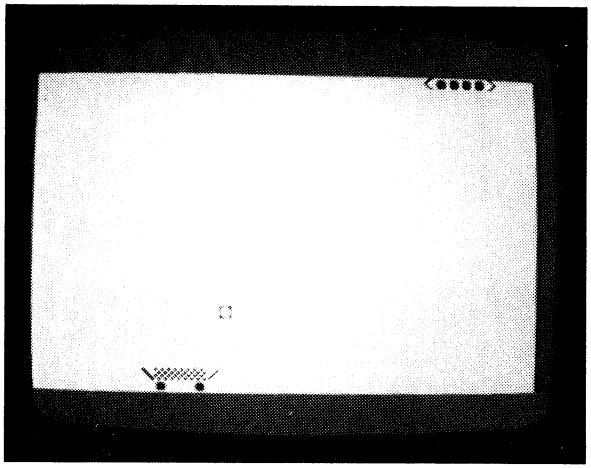
Establish Weighting of Wheels

```
680   WH(0,0)=8:WH(0,1)=8:WH(0,2)=5:WH(0,3)=3:WH(0,4)=1
690   WH(1,0)=4:WH(1,1)=4:WH(1,2)=3:WH(1,3)=3:WH(1,4)=1
700   WH(2,0)=3:WH(2,1)=4:WH(2,2)=3:WH(2,3)=4:WH(2,4)=2
710   WH(3,0)=2:WH(3,1)=4:WH(3,2)=3:WH(3,3)=5:WH(3,4)=1
720   RETURN
```

ChexSum Tables

```
10    = 2040
20    = 5176
30    = 4948
40    = 4709
50    = 5489
60    = 7613
70    = 6157
80    = 6157
90    = 6157
100   = 6157
110   = 6157
120   = 6661
130   = 3334
140   =  672
150   = 1212
160   =  919
170   = 1141
180   = 3207
190   =  526
200   = 4714
210   = 3984
220   = 2028
230   =  143
240   = 5181
250   =  143
260   = 3062
270   =  143
280   = 1179
290   = 5352
300   =  567
310   =  697
320   = 5223
330   =  567
340   =  697
350   = 1670
360   = 1944
370   = 2402
380   = 2962
390   =  858
400   =  143
410   = 2975
420   = 1921
430   = 3786
440   = 1443
450   =  718
460   = 7048
470   =  777
480   = 3756
490   = 3514
500   =  778
510   = 2387
520   = 5044
530   =  779
540   = 2539
550   = 4673
560   = 2570
570   = 5030
580   =  316
590   = 6033
600   = 5293
610   = 5293
620   = 4503
630   = 4556
640   =  725
650   = 4905
660   = 4196
670   =  143
680   = 3673
690   = 3680
700   = 3681
710   = 3684
720   =  143
TOTAL = 222653
```

Road Patrol



CLASSIFICATION: Shoot Up

Move your vehicle left and right along the bottom of the screen, avoiding the aliens' bombs descending upon you. You can fire at the aliens by pressing the SPACE bar. Move left and right using the I and P keys.

PROGRAMMING SUGGESTIONS

Increase the speed of the missiles so that the player's reactions have to be swifter. Occasionally place barriers around the patrol car so that it is paralyzed.

PROGRAM
Variables

PA$	Patrol car
SA$	Alien ship
MS	Missile in flight flag
SV	Start of screen
SC	Score
K1	Start of machine language routine
E	Flag to indicate end of game

Listing

```
10      REM ROAD PATROL
20      RESTORE:FOR I=1 TO 40:LN$=LN$+"▲ ":NEXT:PA$="\ ▒ ▒
        ▒ ▒ / ▯ ▮ ▮ ▮ ▮ ▮ ▮ ▲ ● ▲ ▲ ● ":LT$="▧ "
30      FOR I=1 TO 23:LT$=LT$+"▯ ":NEXT
40      FOR I=1 TO 40:J$=J$+"▮ ":NEXT:FOR I=1 TO 25:H$=H$
        +"▯ ":NEXT
50      RT$="▲ ▲ ▲ ▲ ▲ ▲ ":K1=12000:SV=3072
```

Read In Machine Language Program; Define the Ship and Alien

```
60      FOR I=0 TO 10:READA:POKE 12000+I,A:NEXT
70      PRINT "▙ ";:GOSUB 420:SA$="▲ < ● ● ● ● > ▲ "
80      GOSUB 490:PRINT "▙ ";
90      PRINT "▙ ";:E=0:PO=17:PRINT LT$;LEFT$(LN$,PO);PA$;:
        F=0:F1=0:RO=2
100     MS=0:ML=0
110     PRINT "▧ ";"S C O R E : ▲ ";:PRINT USING"# # # ";SC
        ;:A=PEEK(198):IF A=33THEN GOSUB 190
```

Main Logic Loop; Move Your Ship Backwards and Forwards

```
120     IF A=41THEN GOSUB 220
130     IF A=50THEN F=1
140     IF FTHEN GOSUB 250:IF ETHEN GOTO 90
150     GOSUB 310
160     JC=INT(RND(1)*LV):IF JC=1THEN F1=1
170     IF F1THEN GOSUB 330:IF ETHEN 90
180     GOTO 110
190     PRINT LT$;:SYS K1
200     IF PO>1THEN PO=PO-1
210     PRINT LEFT$(LN$,PO);PA$;:RETURN
220     PRINT LT$;:SYS K1
230     IF PO<35THEN PO=PO+1:PRINT LEFT$(LN$,PO);PA$;:
        RETURN
240     RETURN
250     IF MS=1THEN 270
260     PT=PO+2:R=20:MS=1
270     POKE TM,32:TM=(SV+(R*40)+PT)
280     IF PEEK(TM)<>32THEN GOSUB 390:E=1:MS=0:RETURN
290     IF R=0THEN MS=0:POKE TM,32:F=0:RETURN
300     POKE TM,209:R=R-1:RETURN
310     IF CO=30THEN GOSUB 570
320     PRINT "▧ ";LEFT$(H$,RO);LEFT$(J$,CO);SA$;:CO=CO+1:
        RETURN
```

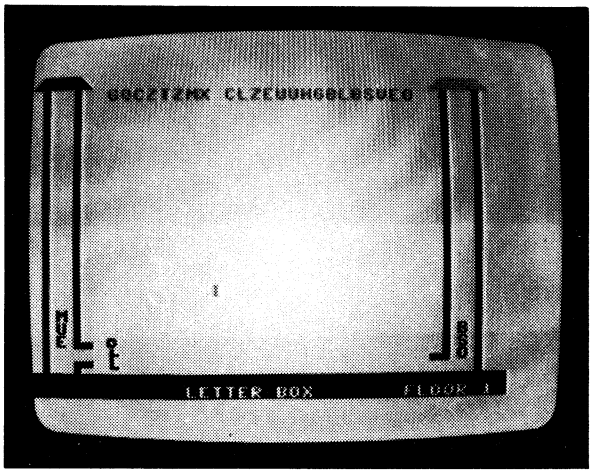
Alien Drops Bombs On You; You Fire Up at Alien, Check for Crash

```
330   IF ML=1THEN 350
340   ZN=CO+2:PF=RO+1:ML=1
350   POKE RD,32:RD=SV+(PF*40)+ZN
360   IF PEEK(RD)<>32THEN GOSUB 540:E=1:RETURN
370   IF PF=24THEN ML=0:F1=0:RETURN
380   POKE RD,209:PF=PF+1:RETURN
390   FOR I=1 TO 15:FOR J=1 TO 20:COLOR4,I,4:NEXT:NEXT:E
      =1
400   FOR I=930 TO 1023:SOUND 3,I,5:NEXT
410   SC=SC+20:COLOR4,1,3:COLOR0,4,5:RETURN
420   PRINT "■ ";TAB(13);"P A T R O L ▲ C A R "
430   PRINT :PRINT :PRINT "A V O I D ▲ T H E ▲ A L I E N
      ▲ U S I N G ▲ T H E ▲ I ▲ K E Y ▲ T O ▲ M O V E ":
      PRINT
440   PRINT "L E F T , ▲ T H E ▲ P ▲ K E Y ▲ T O ▲ M O V
      E ▲ R I G H T ▲ A N D ▲ T H E ▲ ":PRINT
450   PRINT "S P A C E B A R ▲ T O ▲ F I R E ▲ A T ▲ T H
      E ▲ A L I E N . G O O D ▲ L U C K ! ":PRINT :
      PRINT :PRINT
460   PRINT TAB(8);"P R E S S ▲ R E T U R N ▲ T O ▲ S T A
       R T ";
470   GETA$:IF A$<>CHR$(13)THEN 470
480   RETURN
490   PRINT "■ E N T E R ▲ L E V E L ▲ O F ▲ D I F F I C
      U L T Y ▲ 8 - E A S Y ▲ 1 - H A R D ";
500   GETA$:IF A$=""THEN 500
510   IF A$<"0 "ORA$>"9 "THEN 500
520   LV=VAL(A$):RETURN
530   DATA162,79,169,32,157,152,15,202,208,250,96
540   PRINT "■ ";TAB(12);"■■ P A T R O L ▲ C A R ▲ D E S T
       R O Y E D ■■ ";:SC=SC-10
550   FOR I=1 TO 10:SOUND 1,5,8:SOUND 2,5,4:NEXT:FOR I=1
       TO 1000:NEXT:COLOR0,2,5:COLOR0,4,5
560   PRINT "■ ";TAB(12);"▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
       ▲ ▲ ▲ ▲ ";:RETURN
570   PRINT "■ ";LEFT$(H$,RO);LEFT$(J$,CO);RI$;
580   RO=INT(RND(1)*20):IF RO<=1THEN 580:ELSECO=1
590   RETURN
```

ChexSum Tables

```
10    =     0        210   = 1402       410   = 2154
20    = 6267         220   =  770       420   = 1764
30    = 1914         230   = 3153       430   = 4225
40    = 3636         240   =  143       440   = 3485
50    = 2030         250   =  878       450   = 4251
60    = 2122         260   = 1656       460   = 2394
70    = 2476         270   = 2199       470   = 1707
80    =  824         280   = 2644       480   =  143
90    = 4485         290   = 2170       490   = 3682
100   =  855         300   = 1399       500   = 1212
110   = 4004         310   = 1067       510   = 1530
120   =  975         320   = 3192       520   =  936
130   =  973         330   =  872       530   = 2301
140   = 1639         340   = 2026       540   = 3869
150   =  235         350   = 2195       550   = 4361
160   = 2447         360   = 2158       560   = 2126
170   = 1309         370   = 1809       570   = 2084
180   =  526         380   = 1557       580   = 3113
190   =  770         390   = 2392       590   =  143
200   = 1459         400   = 1766       TOTAL = 120540
```

Letterbox



CLASSIFICATION: Educational

Catch the falling letters and post them in the letterbox on the left. If you do not catch them, they will go into the dead-letter box on the right. If you fill the good-letter box before the dead-letter box, then you will go to the next of the five floors. However, should the dead-letter box be filled first, you will go back to the previous floor. The letters fall faster for each higher floor.

Move the mailman left and right with the left and right cursor keys prior to the letter falling. When the letter is falling the mailman can only be moved right by pressing the key that matches the letter that is falling. To move the mailman left, use the same key and the shift key.

PROGRAMMING SUGGESTIONS

Have more than one letter falling to the ground and award bonus points if the player catches the letters.

PROGRAM
Variables

A$(24)	Random letter table
A$(0)	Used for mailman movement with cursor key
C$	Colour table
LM$	Left facing mailman
RM$	Right facing mailman
LV	Floor level
S	Sound register
SL	Good letter stack (number from top)
SR	Missed letter stack (number from top)
X4	Horizontal location of mailman
DX	Direction of mailman
N	Number of dropped letters
K	Row number of dropped letters
M$	Key pressed
M	ASC value of pressed key
K1	Screen location for stacking letters
F	Colour of dropped letters

Listing

```
10      REM LETTER BOX
```

Define Variables; Draw the Post Office

```
20      VOL 8
30      DN$="▣ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙ ◙
        ◙ "
40      BL$="▀ ▌ ▌ ▌ ▌ ▌ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
        ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "
50      RT$="▣ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌
        ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ "
60      DIMA$(24):A$(0)="▌ ":C$="▣ ◣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ "
70      LM$="■ ● ▲ ◙ ▌▌ ▌▌ ┤ ▲ ◙ ▌▌ ▌▌ ▣ ▲ ":RM$="■ ▲ ● ◙ ▌▌ ▌▌ ▲
        ├ ◙ ▌▌ ▌▌ ▲ ▣ ":LV=1
80      SL=20:SR=21:X1=INT(RND(.)*8)+10:DX=1
90      IF LV<1THEN LV=1
100     IF LV>5THEN LV=5
110     GOSUB 340
120     FOR L=1 TO 24:A$(L)=CHR$(INT(RND(.)*26+65)):NEXT
130     PRINT LEFT$(DN$,21)RIGHT$(RT$,X1)RM$;
140     E=INT(RND(.)*4)+1:F=E+6-LV
150     FOR J=E TO F:PRINT "▣ ▌ ▌ ▌ ▌ ▌ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
        ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "
160     N=0:FOR I=1 TO 24
170     GOSUB 440
180     PRINT "▣ ◙ "MID$(C$,J,1)TAB(I+5)A$(I);
190     NEXT:NEXT
200     PRINT "▣ ";:N=INT(RND(.)*24)+1
210     FOR K=1 TO 22
220     PRINT LEFT$(DN$,K)TAB(5+N)"▲ ◙ ▌▌ "MID$(C$,F,1)A$(N)
        "▌▌ ";
230     FOR T=1 TO 85-(LV*12):NEXT:GOSUB 440
240     IF SL=0THEN LV=LV+1:N=SR:GOSUB 700:GOTO 80
250     IF K=23THEN 120
260     NEXT
270     FOR T=4+N TO 32
280     IF T=X1THEN GOSUB 510:T=T+1:GOTO 300
290     PRINT TAB(T)"▲ "MID$(C$,F)A$(N):PRINT "□ ";
300     NEXT
310     GOSUB 760
320     IF SR=0THEN LV=LV-1:N=SL:GOSUB 730:GOTO 80
330     GOTO 120
340     COLOR0,7,5:COLOR4,7,5:PRINT "▣ "
350     PRINT "▣ ▣ ▣ ◤ ▲ ▲ ▲ ◥ ▀ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
        ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▣ ▣ ◤ ▲ ▲ ▲ ◥ "
```

```
360   FOR I=1 TO 22
370   PRINT "▮ ■ ▐ ▮ ▮ ▐ ▀ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▐ ▮ ▮ ▐ ▀ "
380   NEXT
390   PRINT "▮ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "
400   PRINT "▮ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ L E T T E R ▲ B
      O X ▲ ▲ ▲ ▲ ▲ ▲ ▲ F L O O R ▲ ▲ ▲ ▮▮ ▮▮ ▮▮ "LV"▮ "
410   PRINT LEFT$(DN$,21)"▮ ▮ ▮ ▮ ▄ ▮ ▮▮ ▮▮ ▲ ▮ ▮ ▄ ";
420   PRINT LEFT$(BL$,29)"▢ ▮▮ ▮▮ ▄ "
430   RETURN
```

Move Mailman Left or Right, Depending on Key Pressed

```
440   REM MOVE MAILMAN
450   GETM$:IF M$=""THEN 540
460   IF M$="▮ "THEN PRINT "▮ ":END
470   IF M$=A$(N)THEN MM$=RM$:DX=1:GOTO 510
480   M=ASC(M$):M=M-128
490   IF M=ASC(A$(N)+CHR$(0))THEN MM$=LM$:DX=-1:GOTO 510
500   M$="":GOTO 540
510   PRINT LEFT$(DN$,21)RIGHT$(RT$,X1)MM$;
520   X1=X1+DX:IF X1<5THEN X1=5
530   IF X1>29THEN X1=29
540   IF K<20ORK>22THEN RETURN
550   IF DX=-1AND(X1<(N+3)ORX1>(N+5))THEN RETURN
560   IF DX=1AND(X1<(N+4)ORX1>(N+6))THEN RETURN
570   FOR T=5+N TO 5 STEP -1
580   PRINT LEFT$(DN$,22)TAB(T)MID$(C$,F)A$(N)"▢ "LM$
590   NEXT
600   FOR T=5 TO 2 STEP -1
610   PRINT LEFT$(DN$,22)TAB(T)MID$(C$,F)A$(N)"▲ "
620   NEXT
630   PRINT LEFT$(DN$,22)TAB(5)"▢ "LM$
640   REM GOT LETTER STACK
650   FOR K1=3074+SL*40 TO 3074+20*40 STEP 40
660   POKE K1,PEEK(K1+40)
670   NEXT
680   POKE K1,32:SL=SL-1
690   N=1:GOSUB 700:K=23:X1=5:RETURN
```

Make Sound for Dead and Live Stacks; Put Letter in Dead Stack

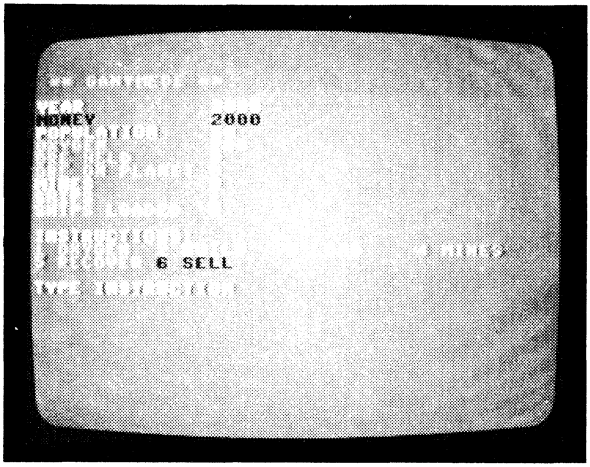
```
700   REM SOUND
710   SOUND 1,25,25
720   RETURN
730   REM SOUND
740   SOUND 2,50,15
```

```
750   RETURN
760   REM MISSED LETTER STACK
770   FOR K1=3105+SR*40 TO 3105+21*40 STEP 40
780   POKE K1,PEEK(K1+40)
790   NEXT
800   POKE K1,32:SR=SR-1
810   N=1:GOSUB 730:RETURN
```

ChexSum Tables

```
10    =     0        280   =  2318        550   =  3050
20    =   277        290   =  1981        560   =  2853
30    =  1061        300   =   131        570   =  1327
40    =  2317        310   =   303        580   =  2576
50    =  2115        320   =  2939        590   =   131
60    =  2588        330   =   527        600   =  1069
70    =  4790        340   =  1528        610   =  2229
80    =  3110        350   =  3171        620   =   131
90    =  1126        360   =   710        630   =  1565
100   =  1128        370   =  2957        640   =     0
110   =   299        380   =   131        650   =  2599
120   =  3090        390   =  2111        660   =  1039
130   =  1826        400   =  3765        670   =   131
140   =  2327        410   =  1859        680   =  1252
150   =  2418        420   =  1529        690   =  1780
160   =  1116        430   =   143        700   =     0
170   =   302        440   =     0        710   =   586
180   =  1888        450   =  1232        720   =   143
190   =   320        460   =  1435        730   =     0
200   =  1767        470   =  2647        740   =   584
210   =   710        480   =  1421        750   =   143
220   =  3059        490   =  3667        760   =     0
230   =  2037        500   =   994        770   =  2609
240   =  2921        510   =  1833        780   =  1039
250   =   839        520   =  1946        790   =   131
260   =   131        530   =  1197        800   =  1284
270   =   984        540   =  1380        810   =   878
                                          TOTAL = 117530
```

Ganymede



CLASSIFICATION: Strategy

The purpose of this game is to run a small moon base on Jupiter's satellite, Ganymede. You must attempt to set up a mine on Jupiter's surface and collect the valuable ore deposited there.

This treasure means life to you as you must sell it to Earth to obtain money to buy supplies and the vital oxygen which your people need. You must also build more mines as they can be destroyed by storms on Jupiter's surface. Can you sell enough ore to Earth to buy the oxygen you need, or will you suffocate?

Commands are:

1. Import oxygen from earth.
2. Build spaceships.
3. Load spaceships with mining equipment and personnel.
4. Send your loaded ship to set up mines.
5. Recover some mined ore from the surface of Jupiter.
6. Sell recovered ore to Earth.

PROGRAM
Variables

MI	Mines
M	Money
S	Ships
L	Ships loaded
OB	Ore held
OM	Ore on planet
P	Population
Y	Year
O	Oxygen
OS	Total ore sold
F	Fuel
N	Number of aliens

Listing

```
10      REM GANYMEDE
20      MI=0:M=2000:S=1:L=0:OBB=0
30      OM=0:P=50:Y=0:O=200
40      DEFFNR(R)=INT(RND(R)*R+1):OS=0
50      COLOR4,7,4:COLOR0,13,3
```

Clear All Variables; Print Instructions and Supplies

```
60      PRINT "■ ■ ▲ * * ▲ G A N Y M E D E ▲ * * "
70      PRINT :PRINT "■ Y E A R ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "2000+Y:
        PRINT "■ M O N E Y ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "M
80      PRINT "■ P O P U L A T I O N ▲ ▲ ▲ "P:PRINT "■ O X
        Y G E N ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "O
90      PRINT "■ O R E ▲ H E L D ▲ ▲ ▲ ▲ ▲ "OB:PRINT "O R E
        ▲ O N ▲ P L A N E T "OM
100     PRINT "■ M I N E S ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "MI
110     PRINT "■ S H I P S ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "S:PRINT "S H I
        P S ▲ L O A D E D ▲ "L
120     PRINT :PRINT "■ I N S T R U C T I O N S : "
130     PRINT "■ 1 ▲ O X Y G E N ","■ 2 ▲ B U I L D ","■ 3
        ▲ L O A D ","■ 4 ▲ M I N E S "
140     PRINT "■ 5 ▲ R E C O V E R ","■ 6 ▲ S E L L ":
        PRINT :PRINT "■ T Y P E ▲ I N S T R U C T I O N "
150     GET A$:IF A$="" THEN 190
160     IF A$<"1 "OR A$>"6 "THEN 150
170     PRINT "■ ":ON VAL(A$)GOSUB 360,430,480,540,670,830:
        PRINT "■ P R E S S ▲ A ▲ K E Y "
180     GET A$:IF A$=""THEN 180
```

Print Report for Game, Amount of Oxygen Left, Supplies Used

```
190     PRINT "■ ■ ▲ ▲ ▲ R E P O R T ▲ F O R ▲ Y E A R "Y
        =Y+1:PRINT
200     R=FNR(P/3):P=P+R:PRINT "■ "R"C H I L D R E N ▲ W E
        R E ▲ B O R N "O=O-P
210     IF O<0THEN PRINT "■ "P-O"P E O P L E ▲ D I E D ":
        PRINT "O F ▲ O X Y G E N ▲ S T A R V A T I O N ":P
        =0
220     IF MI>0ANDFNR(10)=10THEN PRINT "■ M I N E "FNR(MI)"
        W A S ▲ D E S T R O Y E D ":MI=MI-1
230     IF MI>0ANDFNR(10)>5THEN 220
```

```
240   IF P<2THEN PRINT :PRINT "■ L I F E ▲ O N ▲ B A S E
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ E X T I N G U I S H E D ":
      GOTO 920
250   IF MI>0THEN R=FNR(MI*4)*FNR(MI):PRINT "■ "R"K G ' S
      ▲ O F ▲ O R E ▲ W E R E ":PRINT "M I N E D ":OM=OM
      +R
260   IF OS>3000THEN PRINT "◣ T H E ▲ G O V E R N M E N T
      ▲ H A S ▲ A L L ▲ T H E ▲ O R E ▲ I T ▲ W A N T S
      ":GOTO 920
270   R=FNR(P):PRINT "◣ "R"U N I T S ▲ O F ▲ O X Y G E N
      ":PRINT "▲ W E R E ▲ R E C Y C L E D ":O=O+R
280   IF P*1.3<OORFNR(5)<3THEN 330
290   PRINT :PRINT "■ T H E ▲ P E O P L E ▲ R E V O L T E
      D "
300   IF M>200ANDP<75THEN 320
310   PRINT "◣ T H E Y ▲ O V E R - R A N ▲ T H E ▲ B A S
      E ▲ A N D ▲ ■ K I L L E D ■ ▲ Y O U ":GOTO 920
320   PRINT :PRINT "■ Y O U ▲ S T O P P E D ▲ T H E M ":M
      =M-200:P=P-FNR(P/2):PRINT "■ T H E R E ▲ W E R E ▲
      C A S U A L T I E S "
330   PRINT :PRINT :PRINT "■ P R E S S ▲ A ▲ K E Y "
340   GETA$:IF A$=""THEN 340
350   GOTO 60
360   PRINT "■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ O X Y G E N ":PRINT "■ Y O
      U ▲ H A V E "O"U N I T S "
370   R=FNR(15)+15:PRINT :PRINT "■ C O S T "R"F O R ▲ S H
      I P P I N G "
380   R1=FNR(2)+1:PRINT "A N D "R1"P E R ▲ U N I T ":
      PRINT :INPUT "■ B U Y ▲ H O W ▲ M U C H ";N
390   IF N=0THEN RETURN
400   IF N*R1+R>MTHEN PRINT "■ N O T ▲ E N O U G H ▲ M O
      N E Y ":GOTO 370
410   M=M-(N*R1+R):O=O+N
420   RETURN
430   PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ◣ S H I P S ":PRINT "■ Y O U
      ▲ H A V E "S"S H I P S "
440   R=FNR(15)+15:PRINT "■ C O S T "R"I N ▲ L A B O U R
      ▲ A N D ▲ M A T E R I A L S "
450   INPUT "■ B U I L D ▲ H O W ▲ M A N Y ";N:IF N*R>M
      THEN PRINT "■ N O T ▲ E N O U G H ▲ M O N E Y ":
      GOTO 450
460   M=M-R*N:S=S+N
470   RETURN
480   PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ◣ S H I P S ":PRINT "■ Y O U
      ▲ H A V E "S:PRINT L"A R E ▲ L O A D E D "
490   R=FNR(10)+25:PRINT :PRINT "◣ C O S T S "R"T O ▲ L O
      A D ▲ A ":PRINT "S H I P "
500   INPUT "L O A D ▲ H O W ▲ M A N Y ";N:IF N+L>S
      THEN PRINT "■ N O T ▲ E N O U G H ▲ S H I P S ":
      GOTO 500
```

```
510   IF R*N>MTHEN PRINT "N O T ▲ E N O U G H ▲ M O N E Y
      "◆GOTO 500
520   M=M-R*N◆L=L+N
530   RETURN
```

Send Ships to Set Up Mines; Check If Any Ships to Send

```
540   PRINT "■ Y O U ▲ H A V E "L"S H I P S "◆PRINT "L O
      A D E D ▲ A N D ▲ R E A D Y "
550   INPUT "■ S E N D ▲ H O W ▲ M A N Y ";N◆IF N>LORP/2
      <NTHEN PRINT "■ T O O ▲ M A N Y "◆GOTO 550
560   IF N=0THEN RETURN
570   L=L-N
580   PRINT ◆PRINT "■ H O W ▲ M U C H ▲ F U E L ▲ F O R ▲
       ▲ ▲ ▲ ▲ M I S S I O N "◆INPUT F
590   IF F>MTHEN PRINT "■ N O T ▲ E N O U G H ▲ M O N E Y
      "◆GOTO 580
600   M=M-F
610   R=2/(FNR(4)+.5)◆IF R*10*N<=FTHEN 650
620   PRINT "■ N O T ▲ E N O U G H ▲ F U E L "◆R=INT((R
      *10*N-F)/10)◆IF R=0THEN R=1
630   IF R>NTHEN R=N
640   S=S-R◆PRINT "■ "P"S H I P S ▲ A R E ▲ S T R A N D E
       D "◆N=N-R
650   PRINT ◆PRINT "■ "N"M I N E S ▲ W E R E "◆PRINT "E S
       T A B L I S H E D ▲ O N ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ■ J U P I
      T E R "
660   MI=MI+N◆RETURN
670   PRINT "■ Y O U ▲ H A V E "S"S H I P S "
680   INPUT "S E N D ▲ H O W ▲ M A N Y ";N◆IF N>SORP/2<N
      THEN PRINT "■ T O O ▲ M A N Y "◆GOTO 680
690   IF N=0THEN RETURN
700   IF N>S-LTHEN L=S-N
710   PRINT ◆PRINT "■ H O W ▲ M U C H ▲ F U E L ▲ F O R ▲
       ▲ ▲ ▲ ▲ M I S S I O N "◆INPUT F
720   IF F>MTHEN PRINT "■ N O T ▲ E N O U G H ▲ M O N E Y
       "◆GOTO 710
730   M=M-F◆IF OM=0THEN R=0◆GOTO 800
740   R=FNR(OM*2)/OM◆IF R*10*N<=FTHEN 780
750   PRINT "■ N O T ▲ E N O U G H ▲ F U E L "◆R=INT((R
      *10*N-F)/10)◆IF R=0THEN R=1
760   IF R>NTHEN R=N
770   S=S-R◆PRINT "■ "R"S H I P S ▲ A R E ▲ S T R A N D E
       D "◆N=N-R
780   R=INT(N*10*R+.5)
790   IF R>OMTHEN R=OM
800   PRINT "■ "R"K G ' S ▲ O F ▲ O R E ▲ W E R E "◆
      PRINT "R E C O V E R E D "
810   OM=OM-R◆OB=OB+R
```

```
820   RETURN
830   PRINT "▲ ▲ ▲ S E L L ▲ ▲ T O ▲ ▲ E A R T H "
      PRINT :PRINT "Y O U ▲ H A V E "OB"K G ' S "
      PRINT "T O ▲ S E L L "
840   F=FNR(5)+5:PRINT " T H E ▲ G O V E R N M E N T ▲ P
       A Y S "F:PRINT "P E R ▲ K G "R=FNR(20)+25:R1=FNR(
      3)+3
850   PRINT " T R A N S P O R T A T I O N ▲ C O S T S "
      PRINT R"F O R ▲ F U E L "PRINT " A N D "R1"P E R
      ▲ K G ":PRINT "O F ▲ O R E "
860   PRINT " H O W ▲ M U C H ▲ D O ▲ Y O U ▲ W A N T "
      INPUT "T O ▲ S E L L ";N
870   IF N>OBTHEN PRINT " Y O U ▲ D O N ' T ▲ H A V E ▲
      T H A T ▲ ▲ ▲ M U C H ":GOTO 860
880   IF N=0THEN RETURN
890   IF R1*N+R>MTHEN PRINT " N O T ▲ E N O U G H ▲ M O
      N E Y ":GOTO 860
900   OB=OB-N:M=M-(R1*N+R):PRINT " T H E ▲ G O V E R N M
       E N T ▲ O F ":PRINT " E A R T H ▲ T H A N K S ▲
       Y O U "
910   M=M+F*N:OS=OS+N:RETURN
```

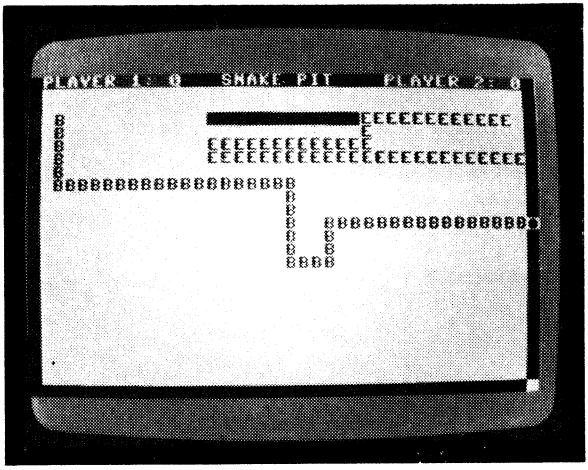
Print Message Thanking Player for Saving the Planet

```
920   FOR I=1 TO 5000:NEXT:PRINT " T H E ▲ G O V E R N
       M E N T ▲ O F ▲ ▲ ▲ ▲ ▲ E A R T H ▲ T H A N K
      S ▲ Y O U "
930   PRINT "F O R ▲ Y O U R ▲ S E R V I C E ▲ O F "Y
      PRINT "Y E A R S "
940   PRINT :PRINT " Y O U ▲ M A D E ▲ £ "M:PRINT
      PRINT " A N D ▲ S O L D "OS"K G ' S ":PRINT "O F ▲
       O R E "
950   END
```

ChexSum Tables

```
10    =    0
20    = 2303
30    = 1710
40    = 2402
50    = 1121
60    = 1401
70    = 3139
80    = 2607
90    = 3125
100   = 1181
110   = 2794
120   = 1706
130   = 3481
140   = 4082
150   = 1311
160   = 1533
170   = 4156
180   = 1212
190   = 2781
200   = 4752
210   = 5301
220   = 5494
230   = 1741
240   = 4583
250   = 6676
260   = 5561
270   = 5198
280   = 2181
290   = 2033
300   = 1497
310   = 4425
320   = 6801
330   = 1587
340   = 1214
350   =  476
360   = 2942
370   = 3411
380   = 4406
390   =  757
400   = 3503
410   = 1969
420   =  143
430   = 3058
440   = 4088
450   = 5259
460   = 1528
470   =  143
480   = 3874
490   = 3873
500   = 4953
510   = 3127
520   = 1502
530   =  143
540   = 3448
550   = 4880
560   =  757
570   =  588
580   = 3116
590   = 2872
600   =  580
610   = 2970
620   = 4671
630   =  992
640   = 3530
650   = 4369
660   =  939
670   = 1640
680   = 4673
690   =  757
700   = 1506
710   = 3244
720   = 2875
730   = 2332
740   = 3016
750   = 4671
760   =  992
770   = 3530
780   = 1440
790   = 1154
800   = 2947
810   = 1580
820   =  143
830   = 4728
840   = 6625
850   = 6084
860   = 2925
870   = 3898
880   =  757
890   = 3502
900   = 6564
910   = 1891
920   = 5508
930   = 2633
940   = 4353
950   =  129
TOTAL = 270053
```

Snakepit



CLASSIFICATION: Evasion

You are one of two snakes placed in a pit, each trying to bite the other's tail off. The other snake can be either the computer or another opponent. Biting your own tail, turning back on yourself and running into the wall are all fatal to you. Try to block the other snake's path so that he runs into your tail. Seven bites of the tail determine the winner of each game. It is not necessary to hold keys down or hold the joystick in a fixed position, as the snake will continue travelling in the last direction it was pointed. For player 1 the keys to move up, left, right and down are W, A, S and Z. For player 2 they are I, J, K and M.

PROGRAMMING SUGGESTIONS

Give the opposing snake intelligence so that he can counteract your moves. Place obstacles on the board at random to make play more difficult.

PROGRAM
Variables

CO	Color offset address
UL	Left joystick
UR	Right joystick
X1	Left joystick X direction increment
Y1	Left snake Y direction increment
X2	Right snake X direction increment
Y2	Right snake Y direction increment
PI	Screen location of left snake
P2	Screen location of right snake
N	Number of players
F	Speed variable
S1	Left snake score
S2	Right snake score

Listing

```
10    REM   SNAKEPIT
20    VOL 8:GOTO 780
30    REM  GET DIRECTION
```

Scan Both Joystick Ports and the Keyboard; Call Move Snake

```
40    IF N=1THEN 60
50    IF JL<>0THEN 130
60    JL=JOY(1)
70    JL=15-(JLAND15)
80    IF JL=0THEN 130
90    IF JL=1THEN X1=0:Y1=-1:GOTO 290
100   IF JL=2THEN X1=0:Y1=1:GOTO 290
110   IF JL=8THEN X1=1:Y1=0:GOTO 290
120   IF JL=4THEN X1=-1:Y1=0:GOTO 290
130   JL=0:JR=JOY(2)
140   JR=15-(JRAND15)
150   IF JR=0THEN 200
160   IF JR=1THEN X2=0:Y2=-1:GOTO 290
170   IF JR=2THEN X2=0:Y2=1:GOTO 290
180   IF JR=8THEN X2=1:Y2=0:GOTO 290
190   IF JR=4THEN X2=-1:Y2=0:GOTO 290
200   GETA$:IF A$=""THEN 290
210   IF A$="I "THEN X2=0:Y2=-1:GOTO 290
220   IF A$="U "THEN X1=0:Y1=-1:GOTO 290
230   IF A$="M "THEN X2=0:Y2=1:GOTO 290
240   IF A$="Z "THEN X1=0:Y1=1:GOTO 290
250   IF A$="K "THEN X2=1:Y2=0:GOTO 290
260   IF A$="S "THEN X1=1:Y1=0:GOTO 290
270   IF A$="J "THEN X2=-1:Y2=0:GOTO 290
280   IF A$="A "THEN X1=-1:Y1=0:GOTO 290
```

Plot the Player on Screen and Check for Collision

```
290   REM PLOT PLAYER POSITION
300   P1=P1+X1+(Y1*40):P=P1:S=1:GOSUB 380
310   IF S=0THEN 990
320   IF N=1THEN GOSUB 610
330   P2=P2+X2+(Y2*40):P=P2:S=2:GOSUB 380
340   IF S=0THEN 990
350   POKE P1,81:POKE P1+CO,2
360   POKE P2,87:POKE P2+CO,5
370   FOR T=1 TO F*F+F*20:NEXT:GOTO 30
380   REM CHECK FOR HIT
390   IF PEEK(P)=32THEN RETURN
```

```
400   FOR I=5 TO 1 STEP -1:COLOR4,I,5:GOSUB 580
410   POKE P,81:FOR T=1 TO 60:NEXT
420   POKE P,81:NEXT
430   IF S=1THEN S2=S2+1:S=0
440   IF S=2THEN S1=S1+1:S=0
450   FOR T=1 TO 200:NEXT
460   IF S1<7ANDS2<7THEN RETURN
```

Print Out Who Won the Game and Prompt For Another

```
470   REM WINNERS ROUTINE
480   GOSUB 720:PRINT "■ ■ ■ P L A Y E R ▲ 1 : ▲ ▲ ■ ■
      ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ P L A Y E R ▲ 2 : ▲ ▲
       "
490   PRINT "■ ■ ■ "SPC(10)S1SPC(24)"■ "S2
500   IF S1<S2THEN N=2:PRINT "■ ■ ■ "
510   IF S2<S1THEN N=1:PRINT "■ ■ ■ "
520   PRINT "■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ W I N N E
      R . . . P L A Y E R ▲ ";
530   PRINT N
540   PRINT "■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ A N O T H E
      R ▲ G A M E ? ▲ ( Y / N ) "
550   GET A$:IF A$="Y "THEN RUN
560   IF A$<>"N "THEN 550
570   END
580   REM SOUND
590   FOR T=1 TO 10:SOUND 2,15,2:SOUND 1,30,4:NEXT
600   RETURN
610   REM COMPUTERS MOVE
620   IF PEEK(P2+X2+Y2*40)=32ANDRND(.)<.85THEN RETURN
630   XN=X2:YN=Y2:Y2=0
640   X2=1-(INT(RND(.)*3)):IF X2=0THEN 640
650   X=PEEK(P2+X2+Y2*40):IF X=32THEN IF X2=1THEN A$="K "
      :RETURN
660   IF X=32THEN IF X2=-1THEN A$="J ":RETURN
670   X2=0
680   Y2=1:X=PEEK(P2+X2+Y2*40):IF X=32THEN A$="M ":
      RETURN
690   Y2=-1:X=PEEK(P2+X2+Y2*40):IF X=32THEN A$="I ":
      RETURN
700   X2=XN:Y2=YN
710   RETURN
720   COLOR4,11,4:COLOR0,4,5
```

Draw Pit, Print Player Instructions and Enter Number of Players

```
730   PRINT "■ ■ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ S N A K
      E ▲ P I T ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "
```

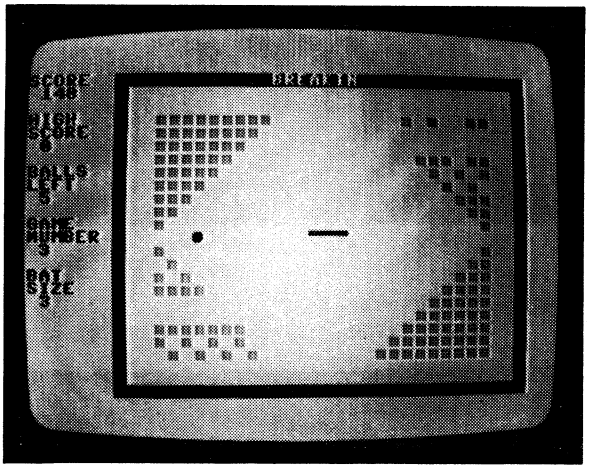
```
740   FOR I=1 TO 22:PRINT "▐▐ ▣ ▲ ▲ ":NEXT
750   PRINT "▣ ▐▐ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▣ ";"▣ "
760   POKE 4031,160
770   RETURN
780   GOSUB 720
790   PRINT "▌ ▌ ▌ ▌ ▌ P L A Y E R ▲ 1 ' S ▲ K E Y S ▲ ▲
      ▲ P L A Y E R ▲ 2 ' S ▲ K E Y S "
800   PRINT "▌ ▌ U P "SPC(9)"W "SPC(17)"I "
810   PRINT "▌ ▌ L E F T "SPC(7)"A "SPC(17)"J "
820   PRINT "▌ ▌ R I G H T "SPC(6)"S "SPC(17)"K "
830   PRINT "▌ ▌ D O W N "SPC(7)"Z "SPC(17)"M "
840   PRINT "▌ ▌ ▌ J O Y S T I C K ( P O R T ▲ B ) ▲ ▲ ▲
      J O Y S T I C K ( P O R T ▲ A ) "
850   PRINT "▌ ▌ ▌ E N T E R ▲ N U M B E R ▲ 1 ▲ O R ▲ 2
      ▲ F O R "
860   PRINT "▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ N U M B E R ▲ O F ▲ P L A
      Y E R S . "
870   PRINT "▌ ▌ ▌ T H E ▲ C O M P U T E R ▲ W I L L ▲ B
      E ▲ P L A Y E R ▲ 2 "
880   PRINT "▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ W H E N ▲ O N L Y ▲ 1 ▲ P
      L A Y E R ▲ A V A I L A B L E . "
890   PRINT "▌ ▌ ▌ N U M B E R ▲ O F ▲ P L A Y E R S : ▲
      ";
900   PRINT "▣ ▲ ▀ ";:FOR T=1 TO 80:NEXT:POKE 3072+999,16
      0
910   GETA$:IF A$="1 "ORA$="2 "THEN 930
920   PRINT "▐▐ ▲ ▐▐ ";:FOR T=1 TO 80:NEXT:GOTO 900
930   N=VAL(A$)
940   PRINT "▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣ ▣
      ▣ ▌ ▌ E N T E R ▲ S P E E D ▲ ( 1 : F A S T ▲ - ▲ 9
       : S L O W ) ▲ ";:GOTO 970
950   PRINT "▣ ▲ ▀ ";:FOR T=1 TO 80:NEXT
960   PRINT "▐▐ ▲ ▐▐ ";:FOR T=1 TO 80:NEXT
970   GETA$:IF A$<"1 "ORA$>"9 "THEN 950
980   F=VAL(A$):GOSUB 1140
990   GOSUB 720:PRINT "▣ ▣ ▌ ▣ P L A Y E R ▲ 1 : ▲ ▲ ▌ ▌
      ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▌ ▣ P L A Y E R ▲ 2 : ▲ ▲
       "
1000  PRINT "▣ ▣ ▣ "SPC(10)S1SPC(24)"▣ "S2
1010  REM SET RANDOM WALLS
1020  NW=INT(RND(.)*4):PRINT "▣ ";
1030  IF NW=0THEN 1090
1040  FOR I=1 TO NW
1050  FOR J=1 TO RND((.)*6)+3
1060  PRINT :NEXT
1070  PRINT SPC((RND(.)*8)+8):FOR K=1 TO RND(.)*16+8:
      PRINT "▪ ▣ ▲ ";:NEXT
1080  NEXT
1090  REM SET INITIAL POSITIONS
```

```
1100  P1=3154:P2=3189:X1=0:X2=0:Y1=1:Y2=1:S=9
1110  IF N=2THEN 1120
1120  REM
1130  GOTO 150
1140  RETURN
```

ChexSum Tables

```
10    =    0
20    =  882
30    =    0
40    =  725
50    = 1051
60    =  686
70    = 1151
80    =  865
90    = 2348
100   = 2183
110   = 2190
120   = 2350
130   = 1151
140   = 1169
150   =  866
160   = 2355
170   = 2190
180   = 2197
190   = 2354
200   = 1213
210   = 2426
220   = 2435
230   = 2231
240   = 2247
250   = 2232
260   = 2241
270   = 2400
280   = 2393
290   =    0
300   = 2746
310   =  802
320   =  928
330   = 2753
340   =  802
350   = 1252
360   = 1251
370   = 2249
380   =    0
390   = 1117
400   = 2026
410   = 1431
420   =  590
430   = 1727
440   = 1729
450   =  974
460   = 1398
470   =    0
480   = 3236
490   = 1402
500   = 1493
510   = 1493
520   = 2208
530   =  231
540   = 2193
550   = 1263
560   = 1129
570   =  129
580   =    0
590   = 2164
600   =  143
610   =    0
620   = 3073
630   = 1521
640   = 2436
650   = 3915
660   = 2285
670   =  370
680   = 3666
690   = 3858
700   = 1061
710   =  143
720   = 1109
730   = 2724
740   = 1495
750   = 2530
760   =  584
770   =  143
780   =  299
790   = 3003
800   = 1460
810   = 1604
820   = 1719
830   = 1619
840   = 3196
850   = 2075
860   = 2004
870   = 2652
880   = 3023
890   = 1854
900   = 2568
910   = 1919
920   = 2307
930   =  654
940   = 4313
950   = 1534
960   = 1680
970   = 1924
980   = 1084
990   = 3236
1000  = 1402
1010  =    0
1020  = 1576
1030  =  932
1040  =  766
1050  = 1487
1060  =  342
1070  = 3752
1080  =  131
1090  =    0
1100  = 3408
1110  =  842
1120  =    0
1130  =  526
1140  =  143
TOTAL = 179337
```

Break-In



CLASSIFICATION: Co-ordination

You are inside a four-walled container with a series of brick walls, a moving ball and a bat. The ball is bouncing off the bricks and you must use your bat to stop it getting past you and hitting the wall. You are given nine balls for each game and you lose a ball each time one gets past your bat. The bat can be moved left and right using the I and P keys. There are three different brick wall configurations and two bat sizes. The smaller the bat, the more points scored.

PROGRAMMING SUGGESTIONS

Add more courts to the game so that the player has a greater choice of games. Make the ball change speed in midflight, i.e. accelerate or decelerate.

PROGRAM Variables

SC	Start address of screen
CB	Color offset value
GM	Game number
BS	Bat size
GS	Game score
HS	High score
BV	Vertical position of bat
BH	Horizontal position of bat
BY	Vertical position of ball
BX	Horizontal position of ball
BA	Screen position of ball
DX	Horizontal movement value of ball
DY	Vertical movement value of ball
SW	Switch to allow screen refresh

Listing

```
10    REM  BREAKIN
```

Set Volume, Move Bat Left or Right; Check If Ball Hits Boundary

```
20    DN$="[S][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q][Q]
      [Q][Q][R][R][R][R][R][R][R][R][R][R][R][R][R][R][R][R][R][R][R][R][R][R][R][R]
       [R][R][R][R][R][R][R][R][R][R][R][R][R][R][R] "
30    SC=3072:NB=9:GOTO 330
40    GOTO 20
50    VOL 8:SOUND 2,1,5:RETURN
60    REM  MOVE BAT
70    GETA$:IF A$=""THEN A=64
80    IF A$="I "THEN A=12
90    IF A$="P "THEN A=36
100   IF A=64THEN 170
110   PRINT LEFT$(DN$,BV)RIGHT$(DN$,BH);:FOR I=1 TO BS:
      PRINT "▲ ";:NEXT
120   BH=BH+((A=12)-(A=36))*2
130   IF BH<8THEN BH=8
140   IF BH>38-BSTHEN BH=38-BS
150   PRINT LEFT$(DN$,BV)RIGHT$(DN$,BH);:FOR I=1 TO BS:
      PRINT "■ ▔ ";:NEXT:
160   REM CHECK BOUNDARY HIT
170   BX=BX+DX:BY=BY+DY:FF=21
180   IF BX<9THEN DX=-DX:GOSUB 50:GOTO 230
190   IF BX>36THEN DX=-DX:GOSUB 50:GOTO 230
200   IF BY<1THEN BY=1:DY=-DY:GOSUB 50:GOTO 230
210   IF BY>23THEN BY=23:DY=-DY:GOSUB 50
220   REM CHECK BAT/BRCK HIT & PRINT BALL
230   POKE BA,32:BA=SC+BY*40+BX
240   IF PEEK(BA)=120THEN BA=B1:DY=-DY:FF=133:GOSUB 50:
      GOTO 60
250   IF PEEK(BA)=207THEN DY=-DY:FF=35:GOSUB 50:GS=GS+1:
      PRINT "[S] ■ [Q] "GS
260   POKE BA,81
270   REM CHECK FOR MISSED BALL
280   IF GM=1ANDBY>22ANDDY=-1THEN NB=NB-1:PRINT "[S][Q][Q][Q]
      [Q][Q][Q][Q][Q][Q] ■ "NB
290   IF GM<>1ANDBY=12THEN NB=NB-1:PRINT "[S][Q][Q][Q][Q][Q][Q][Q]
       [Q][Q] ■ "NB
300   IF NB<1THEN 1090
310   IF INT(GS/100)-(GS/100)<>0THEN 60
320   ON GMGOSUB 830,900,990
```

Draw Title Screen; Select the Game Number and Bat Size

```
330   REM TITLE SCREEN
340   COLOR4,3,6:COLOR0,3,6:PRINT "▽ ▯ ▯ ▯ ▯ ■ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ● "
350   FOR T=1 TO 100:NEXT
360   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ◪ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ● ■ ● ◪ ● "
370   FOR T=1 TO 100:NEXT
380   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◪ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ● ▲ ■ ● ▲ ◪ ● "
390   FOR T=1 TO 100:NEXT
400   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◪ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ● ◪ ● ▲ ■ ● ▲ ◪ ● ◩ ● "
410   FOR T=1 TO 100:NEXT
420   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◪ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ● ▲ ◪ ● ▲ ■ ● ▲ ◪ ● ▲ ◩ ● "
430   FOR T=1 TO 100:NEXT
440   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◩ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ● ◪ ● ▲ ◪ ● ▲ ■ ● ▲ ◪ ● ▲ ◩ ● ▣ ● "
450   FOR T=1 TO 100:NEXT
460   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◩ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ● ▲ ◪ ● ▲ ◪ ● ▲ ■ ● ▲ ◪ ● ▲ ◩ ● ▲ ▣ ● "
470   FOR T=1 TO 200:NEXT:FF=35:GOSUB 50
480   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◩ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ B ▲ ◪ ● ▲ ◪ ● ▲ ■ ● ▲ ◪ ● ▲ ◩ ● ▲ ▣ ● "
490   FOR T=1 TO 200:NEXT:FF=21:GOSUB 50
500   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◩ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ B ▲ ◪ R ▲ ◪ ● ▲ ■ ● ▲ ◪ ● ▲ ◩ ● ▲ ▣ ● "
510   FOR T=1 TO 200:NEXT:FF=35:GOSUB 50
520   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◩ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ B ▲ ◪ R ▲ ◪ E ▲ ■ ● ▲ ◪ ● ▲ ◩ ● ▲ ▣ ● "
530   FOR T=1 TO 200:NEXT:FF=21:GOSUB 50
540   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◩ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ B ▲ ◪ R ▲ ◪ E ▲ ■ A ▲ ◪ ● ▲ ◩ ● ▲ ▣ ● "
550   FOR T=1 TO 200:NEXT:FF=35:GOSUB 50
560   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◩ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ B ▲ ◪ R ▲ ◪ E ▲ ■ A ▲ ◪ K ▲ ◩ ● ▲ ▣ ● "
570   FOR T=1 TO 200:NEXT:FF=21:GOSUB 50
580   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◩ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ B ▲ ◪ R ▲ ◪ E ▲ ■ A ▲ ◪ K ▲ ◩ I ▲ ▣ ● "
590   FOR T=1 TO 200:NEXT:FF=35:GOSUB 50
600   PRINT "▽ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ◩ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ B ▲ ◪ R ▲ ◪ E ▲ ■ A ▲ ◪ K ▲ ■ I ▲ ▣ N "
610   FOR T=1 TO 200:NEXT:FF=21:PRINT "▯ ▯ "
620   GOSUB 50
630   PRINT "■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▣ S E L E C T ▲ G A M E ▲
      N U M B E R ( 1 - 3 ) "":FOR T=1 TO 90:NEXT
```

```
640   PRINT "□ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ S E L E C T ▲ G A M E ▲
      N U M B E R ( 1 - 3 ) ";:FOR T=1 TO 90:NEXT
650   GETGM$:IF GM$<"1 "THEN PRINT :PRINT "□ ";:GOTO 620
660   IF GM$>"3 "THEN PRINT :PRINT "□ ";:GOTO 620
670   GM=VAL(GM$):PRINT "▲ "GM:PRINT :FF=35
680   GOSUB 50
690   PRINT "■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ R S E L E C T ▲ B A T ▲
      S I Z E ( 2 - 3 ) ":FOR T=1 TO 90:NEXT
700   PRINT "□ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ S E L E C T ▲ B A T ▲
      S I Z E ( 2 - 3 ) ";:FOR T=1 TO 90:NEXT
710   GETBS$:IF BS$<"2 "THEN PRINT :PRINT "□ ";:GOTO 680
720   IF BS$>"3 "THEN PRINT :PRINT "□ ";:GOTO 680
```

Draw Court, Print Score, High Score, Balls Left and Game Number

```
730   BS=VAL(BS$):PRINT "▲ "BS
740   NB=3:GS=100*(4-BS)
750   FOR T=1 TO 500:NEXT
760   PRINT "■ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ R ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      B R E A K I N ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ "
770   FOR I=1 TO 23:PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ R ▲ ■ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ R
      ▲ "":NEXT
780   PRINT "■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ R ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ S "
790   PRINT "S S C O R E ":PRINT GS:PRINT "U H I G H ":
      PRINT "S C O R E ":PRINT HS:PRINT "U B A L L S "
800   PRINT "L E F T ":PRINT NB:PRINT "U G A M E ":
      PRINT "N U M B E R ":PRINT GM
810   PRINT "U B A T ":PRINT "S I Z E ":PRINT BS
820   ON GMGOTO 830,900,990
```

Print Out the Courts for Games One, Two and Three

```
830   REM   GAME 1
840   PRINT "S U U F "
850   FOR J=1 TO 4:PRINT "U U U U U U U U U R ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌
      ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ┌ ":
      NEXT
860   IF GS>0THEN GS=GS+1
870   IF SW>0THEN 60
880   SW=1:BV=21:BH=17:BY=15:BX=18:BA=SC+BY*40+BX:DX=-1:D
      Y=-1
890   GOTO 110
900   REM GAME2
910   PRINT "S U U Z "
```

```
920   FOR J=1 TO 3:PRINT "■■■■■■■■▢┌┌┌┌┌┌┌
       ┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌";:
      NEXT
930   PRINT "▢▢▢▢▢▢▢▢▢▢▢▢▢▢ "
940   FOR J=1 TO 3:PRINT "■■■■■■■■▢┌┌┌┌┌┌┌
       ┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌┌";:
      NEXT
950   IF GS>0THEN GS=GS+1
960   IF SW>0THEN 60
970   SW=1:BV=13:BH=20:BY=10:BX=21:BA=SC+BY*40+BX:DX=1:DY
      =-1
980   GOTO 110
990   REM GAME3
1000  PRINT "▣▢▢ "
1010  FOR I=0 TO 8:PRINT "■■■■■■■■■■ ";:FOR J=9
      -I TO 1 STEP -1:PRINT "▢■┌ ";:NEXT
1020  PRINT SPC(I*2+8);:FOR J=9-I TO 1 STEP -1:PRINT "┌ "
      ;:NEXT:PRINT :NEXT:PRINT
1030  FOR I=0 TO 8:PRINT "■■■■■■■■■■ ";:FOR J=1
       TO I+1:PRINT "▢■┌ ";:NEXT
1040  PRINT SPC(((8-I)*2)+8);:FOR J=1 TO I+1:PRINT "┌ ";:
      NEXT:PRINT :NEXT:PRINT "▣ "
1050  IF GS>0THEN GS=GS+1
1060  IF SW>0THEN 60
1070  SW=1:BV=13:BH=16:BY=9:BX=24:BA=SC+BY*40+BX:DX=1:DY
      =-1
1080  GOTO 110
```

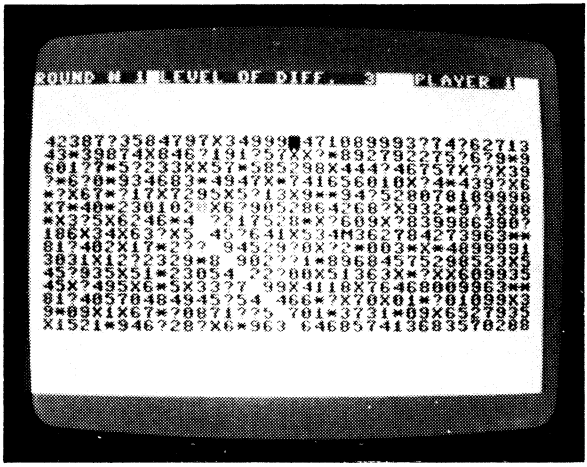
Check for Another Game

```
1090  REM END GAME
1100  PRINT "▣▢▢▢▢▢▢▢▢▢▢▢▢▢▢■■■■■■■■
      ■■▲▲▲▲A N O T H E R▲G A M E ( Y / N ) "
1110  GETA$
1120  IF A$="N "THEN PRINT "▢ ":END
1130  IF A$<>"Y "THEN 1110
1140  IF GS>HSTHEN HS=GS
1150  SW=0:GOTO 600
```

ChexSum Tables

```
10   =    0
20   = 3703
30   = 1603
40   =  472
50   = 1020
60   =    0
70   = 1421
80   = 1139
90   = 1146
100  =  834
110  = 3210
120  = 2108
130  = 1079
140  = 1914
150  = 3604
160  =    0
170  = 2291
180  = 2336
190  = 2373
200  = 2844
210  = 2332
220  =    0
230  = 2008
240  = 3889
250  = 4413
260  =  444
270  =    0
280  = 4078
290  = 3307
300  =  913
310  = 2400
320  = 1056
330  =    0
340  = 2812
350  =  975
360  = 2337
370  =  975
380  = 2495
390  =  975
400  = 3037
410  =  975
420  = 3147
430  =  975
440  = 3941
450  =  975
460  = 4073
470  = 1821
480  = 3945
490  = 1817
500  = 3816
510  = 1821
520  = 3676
530  = 1817
540  = 3532
550  = 1821
560  = 3396
570  = 1817
580  = 3252
590  = 1821
600  = 3232
610  = 1853
620  =  247
630  = 3625
640  = 3827
650  = 2596
660  = 2123
670  = 2072
680  =  247
690  = 3391
700  = 3593
710  = 2610
720  = 2128
730  = 1325
740  = 1644
750  =  975
760  = 2593
770  = 3324
780  = 2264
790  = 3959
800  = 2957
810  = 1488
820  = 1282
830  =    0
840  =  317
850  = 8437
860  = 1448
870  =  821
880  = 5693
890  =  526
900  =    0
910  =  317
920  = 8438
930  =  534
940  = 8438
950  = 1448
960  =  821
970  = 5500
980  =  526
990  =    0
1000 =  286
1010 = 3802
1020 = 3941
1030 = 3397
1040 = 4143
1050 = 1448
1060 =  821
1070 = 5463
1080 =  526
1090 =    0
1100 = 2726
1110 =  267
1120 = 1359
1130 = 1199
1140 = 1328
1150 = 1015
TOTAL = 248333
```

Minotaur



CLASSIFICATION: Educational

You are placed at the bottom centre of a matrix of numbers and symbols which you can move through by pressing keys as follows: W-up, X-down, A-left, D-right, Q-up left, E-up right, Z-down left and C-down right. It is easy to remember the keys because they form a diamond round the S key and each key points in the correct direction with reference to the S key. Your objective is to guess an integer (a whole number) in the range of Ø to 1ØØØ. You can get clues by moving over the X squares but in the least number of moves. Each number you move over is added to your score. If the number is too large, you are pursued by a minotaur which is placed in the centre of the screen at the start of each game, and which gradually creeps closer as you play. If he catches you, the game ends and you lose. When you think you have the number, move to the white block at the top of the matrix.

PROGRAMMING SUGGESTIONS

Make the board multilevel, and give the player and minotaur the ability to travel from level to level by landing on an appropriate spot.

PROGRAM

Variables

LD%	Level of difficulty
R%	Round
SN%	Secret number
D1%, D2%, D3%	Digits of a secret number (SN%)
PP%	Players' position
M%	Minotaur position
LS%	Last score
TS%	Total score
CU	Character under minotaur
NC%	Number of clues
T% ( )	Truth array for clues
MR%, MC	Minotaur row, colour
PR%, PC%	Player's row, colour

Listing

```
10    REM MINOTAUR
```

Set Screen Colours; Input the Difficulty Level; Print Board

```
20    PRINT "■ ";:COLOR4,9,4:COLOR0,7,5:PRINT TAB(10);"■
      M I N O T A U R ▲ M A S T E R - M I N D "
30    PRINT :PRINT :PRINT
40    PRINT :PRINT "L E V E L ▲ O F ▲ D I F F I C U L T Y
       ? ( 1 - 9 ) ";
50    GET X$:IF X$=""THEN 50
60    IF VAL(X$)<1ORVAL(X$)>9THEN 50
70    LD%=VAL(X$):PRINT LD%
80    FOR T=1 TO 1000:NEXT
90    GOTO 250
100   FOR I=3273 TO 3833 STEP 40
110   FOR J=0 TO 37
120   K1=INT(RND(0)*13)
130   IF K1>9THEN 160
140   POKE I+J,K1+48
150   GOTO 220
160   IF K1<>10THEN 190
170   POKE I+J,24
180   GOTO 220
190   IF K1<>11THEN 210
200   POKE I+J,63:GOTO 220
210   POKE I+J,42
220   NEXT:NEXT
230   POKE 3292,160
240   RETURN
250   R%=1:SN%=INT(RND(0)*999+1)
260   D1%=INT(SN%/100):D2%=INT((SN%-D1%*100)/10):D3%=SN%
      -D1%*100-D2%*10
270   PRINT "■ ";:COLOR4,4,3:COLOR0,7,5:GOSUB 100
280   PP%=3852:M%=3572:IF PEEK(3852)>48THEN LS%=PEEK(3852
      )-48
290   IF PEEK(3852)=63ORPEEK(3852)=42ORPEEK(3852)=24
      THEN LS%=0:POKE 3852,48
300   TS%=TS%+LS%:CU=PEEK(3572):POKE 3572,13:POKE 3292,16
      0
```

Print Difficulty Level, Score and Total Score; Scan Keyboard

```
310   PRINT "■ R O U N D ▲ # ";R%;"■ L E V E L ▲ O F ▲
      D I F F . ▲ ";LD%;"■ ";TAB(30);"■ P L A Y E R ▲ 1 ■
       "
320   FOR I=1 TO 21:PRINT :NEXT:PRINT "■ ▲ T O T A L ▲ S
      C O R E ▲ ";TS%;TAB(21);"L A S T ▲ S C O R E ";LS%;
```

```
330   C=0:Q=1
340   GETX$:C=C+1
350   IF C=7THEN Q=1-Q:C=0
360   IF Q<>0THEN 390
370   IF PEEK(PP%)>63THEN POKE PP%,PEEK(PP%)-128:Q=1:
      GOTO 390
380   POKE PP%,PEEK(PP%)+128:Q=1
390   IF X$=""THEN 340
400   GOSUB 1940:IF PEEK(PP%)>64THEN POKE PP%,PEEK(PP%)
      -128
410   IF X$="U "THEN 510
420   IF X$="A "THEN 550
430   IF X$="D "THEN 590
440   IF X$="X "THEN 630
450   IF X$="E "THEN 670
460   IF X$="Q "THEN 710
470   IF X$="Z "THEN 750
480   IF X$="C "THEN 790
490   IF X$="T "THEN 830
500   GOTO 340
510   IF PEEK(PP%-40)=32THEN 340
520   LS%=PEEK(PP%)-48
530   POKE PP%,32:PP%=PP%-40
540   GOTO 850
550   IF PEEK(PP%-1)=32THEN 340
560   LS%=PEEK(PP%)-48
570   POKE PP%,32:PP%=PP%-1
580   GOTO 850
590   IF PEEK(PP%+1)=32THEN 340
600   LS%=PEEK(PP%)-48
610   POKE PP%,32:PP%=PP%+1
620   GOTO 850
630   IF PEEK(PP%+40)=32THEN 340
640   LS%=PEEK(PP%)-48
650   POKE PP%,32:PP%=PP%+40
660   GOTO 850
670   IF PEEK(PP%-39)=32THEN 340
680   LS%=PEEK(PP%)-48
690   POKE PP%,32:PP%=PP%-39
700   GOTO 850
710   IF PEEK(PP%-41)=32THEN 340
720   LS%=PEEK(PP%)-48
730   POKE PP%,32:PP%=PP%-41
740   GOTO 850
750   IF PEEK(PP%+39)=32THEN 340
760   LS%=PEEK(PP%)-48
770   POKE PP%,32:PP%=PP%+39
780   GOTO 850
790   IF PEEK(PP%+41)=32THEN 340
800   LS%=PEEK(PP%)-48
810   POKE PP%,32:PP%=PP%+41
```

```
820   GOTO 850
830   PR%=INT((PP%-3072)/40) :PC%=PP%-PR%*40-3072:
      GOSUB 1590:IF PP%<>M%THEN 830
840   GOTO 1770
850   PR%=INT((PP%-3072)/40) :PC%=PP%-PR%*40-3072
860   K1=PEEK(PP%):IF K1=63THEN GOSUB 950
870   IF PP%=M%THEN 1770
880   IF K1=24THEN GOSUB 970
890   IF K1=42THEN GOSUB 1440
900   IF K1=160THEN 1490
910   K1=PEEK(PP%)-48:IF LS%+K1>=10-LD%THEN GOSUB 1590
920   TS%=TS%+K1:GOSUB 1860
930   IF PP%=M%THEN 1770
940   GOTO 330
950   I=INT(RND(1)*10):POKE PP%,I+48
960   RETURN
970   POKE PP%,48
980   IF NC%>=9THEN GOTO 1430
990   K2=INT(RND(0)*9+1):IF T%(K2)=1THEN 990
1000  T%(K2)=1:NC%=NC%+1
```

At Random, Print a Clue at the Top of the Screen

```
1010  ON K2GOTO 1020,1050,1090,1130,1170,1210,1260,1290,1
      340
1020  GOSUB 1890:PRINT "S U M ▲ O F ▲ D I G I T S ▲ O F ▲
       S E C R E T ":PRINT TAB(9);"N U M B E R ▲ E Q U A
      L S ▲ ";
1030  PRINT D1%+D2%+D3%
1040  GOSUB 1910:RETURN
1050  GOSUB 1890:PRINT "S E C R E T ▲ N U M B E R ▲ I S ▲
       ";
1060  IF SN%/2=INT(SN%/2)THEN PRINT "E V E N ":GOTO 1080
1070  PRINT "O D D "
1080  PRINT :GOSUB 1910:RETURN
1090  K=INT(RND(1)*200)+SN%:J=K-200:IF J<0THEN J=0
1100  IF K>1000THEN K=1000
1110  GOSUB 1890:PRINT "N U M B E R ▲ I S ▲ B E T W E E N
       ";J:PRINT TAB(9);"A N D ";K
1120  GOSUB 1910:RETURN
1130  GOSUB 1890:PRINT "N U M B E R ▲ I S ▲ ";
1140  IF SN%/5=INT(SN%/5)THEN PRINT "D I V I S I B L E ":
      GOTO 1160
1150  PRINT "N O T ▲ D I V I S I B L E "
1160  PRINT TAB(9);"B Y ▲ 5 ":GOSUB 1910:RETURN
1170  L=D1%:IF D2%<LTHEN L=D2%
1180  IF D3%<LTHEN L=D3%
1190  GOSUB 1890:PRINT "L A R G E S T ▲ D I G I T ▲ I N ▲
```

```
 T H E "◆PRINT TAB(9);"S E C R E T ▲ N U M B E R ▲
I S ";L
1200  GOSUB 1910◆RETURN
1210  GOSUB 1890◆PRINT "F I R S T ▲ D I G I T ▲ I N ▲ T H
 E ▲ S E C R E T "◆PRINT TAB(9);"N U M B E R ▲ I S
▲ ";
1220  IF D1%>5THEN PRINT "L A R G E R ▲ T H A N ▲ 5 "◆
GOTO 1250
1230  IF D1%<5THEN PRINT "L E S S ▲ T H A N ▲ 5 "◆GOTO 12
50
1240  PRINT "E Q U A L ▲ T O ▲ 5 "
1250  GOSUB 1910◆RETURN
1260  GOSUB 1890◆PRINT "S U M ▲ O F ▲ F I R S T ▲ A N D ▲
 T H I R D "◆PRINT TAB(9);"D I G I T S ▲ I S ▲ ";
1270  PRINT D1%+D3%
1280  GOSUB 1910◆RETURN
1290  GOSUB 1890◆PRINT "O N E ▲ O F ▲ T H E ▲ D I G I T S
 ▲ I N ▲ T H E "◆PRINT TAB(9);"S E C R E T ▲ N U M
B E R ▲ I S ▲ ";
1300  K=INT(RND(1)*3)◆IF K=0ANDSN%>99THEN PRINT D1%◆
GOTO 1330
1310  IF K=1ANDSN%>9THEN PRINT D2%◆GOTO 1330
1320  PRINT D3%
1330  GOSUB 1910◆RETURN
1340  GOSUB 1890◆PRINT "P R O D U C T ▲ O F ▲ T H E ▲ N O
 N - Z E R O "◆PRINT TAB(9);"D I G I T S ▲ I S ";
1350  IF D1%=0ANDD2%=0THEN PRINT D3%◆GOTO 1420
1360  IF D1%=0ANDD3%=0THEN PRINT D2%◆GOTO 1420
1370  IF D1%=0THEN PRINT D2%*D3%◆GOTO 1420
1380  IF D2%=0ANDD3%=0THEN PRINT D1%◆GOTO 1420
1390  IF D2%=0THEN PRINT D1%*D3%◆GOTO 1420
1400  IF D3%=0THEN PRINT D1%*D2%◆GOTO 1420
1410  PRINT D1%*D2%*D3%
1420  GOSUB 1910◆RETURN
1430  GOTO 1090
1440  POKE PP%,48
1450  IF TS%<11THEN RETURN
1460  I=INT(RND(0)*100)◆IF I>50THEN TS%=TS%-10◆RETURN
1470  IF I<10THEN TS%=TS%+50◆RETURN
1480  TS%=TS%+10◆RETURN
```

Input the Secret Number; If Wrong, Then Give Player Clue

```
1490  GOSUB 1890◆PRINT "G U E S S ▲ A T ▲ T H E ▲ S E C R
 E T ▲ N U M B E R "◆PRINT TAB(9);
1500  INPUT "A N D ▲ H I T ▲ ■ R E T U R N ■ ";K$
1510  I=VAL(K$)◆IF I=SN%THEN 1770
1520  G1%=INT(I/100)◆G2%=INT((I-G1%*100)/10)◆G3%=I-G1%*10
0-G2%*10
```

```
1530  PRINT "▯ "▲PRINT ▲IF D1%=G1%THEN PRINT "F I R S T ▲
      D I G I T ▲ C O R R E C T "▲PRINT
1540  IF D2%=G2%THEN PRINT "S E C O N D ▲ D I G I T ▲ C O
      R R E C T "▲PRINT
1550  IF D3%=G3%THEN PRINT "T H I R D ▲ D I G I T ▲ C O R
      R E C T "
1560  IF D1%<>G1%ANDD2%<>G2%ANDD3%<>G3%THEN PRINT "N O ▲
      D I G I T S ▲ C O R R E C T "
1570  FOR T=1 TO 2000▲NEXT
1580  R%=R%+1▲GOTO 270
1590  MR%=INT((M%-1024)/40)▲MC%=M%-MR%*40-3072
1600  IF MC%<>PC%THEN 1630
1610  IF MR%>PR%THEN MR%=MR%-1▲GOTO 1700
1620  MR%=MR%+1▲GOTO 1700
1630  IF MR%<>PR%THEN 1660
1640  IF MC%>PC%THEN MC%=MC%-1▲GOTO 1700
1650  MC%=MC%+1▲GOTO 1700
1660  IF M%>PP%THEN 1690
1670  IF MC%<PC%THEN MC%=MC%+1▲GOTO 1700
1680  MC%=MC%-1▲GOTO 1700
1690  MR%=MR%-1
1700  K=3072+40*MR%+MC%▲IF PEEK(K)=160THEN RETURN
1710  POKE M%,CU%▲IF CU=63THEN GOTO 1740
1720  IF CU>=48THEN GOTO 1740
1730  IF CU=24THEN GOTO 1740
1740  M%=K▲CU=PEEK(M%)
1750  POKE M%,13
1760  RETURN
1770  PRINT "▯ ";▲IF M%=PP%THEN 1810
```

Print the Score and Who Won, You or Minotaur; Print Magic Number

```
1780  FOR I=1 TO 18▲PRINT "▲ ▲ ▲ C O N G R A T U L A T I
      O N S ! ▲ ▲ ▲ C O N G R A T U L A T I O N S ! "▲
      NEXT▲PRINT
1790  PRINT "Y O U ▲ H A V E ▲ D E F E A T E D ▲ T H E ▲
      M I N O T A U R ! ! "▲PRINT "Y O U R ▲ S C O R E ▲
      I S ▲ ";TS%;
1800  PRINT "I N ▲ ";R%;"▲ R O U N D S "▲GOTO 1830
1810  FOR I=1 TO 18▲PRINT "■ ▲ ▲ ▲ M I N O T A U R ▲ W I
      N S ! ▲ ▲ ▲ ▲ M I N O T A U R ▲ W I N S ! "▲NEXT▲
      PRINT
1820  PRINT "T H E ▲ S E C R E T ▲ N U M B E R ▲ W A S ▲
      ";SN%
1830  PRINT ▲PRINT "H I T ▲ A N Y ▲ K E Y ▲ F O R ▲ A N O
      T H E R ▲ G A M E "
1840  GETX$▲IF X$=""THEN 1840
1850  RUN
```

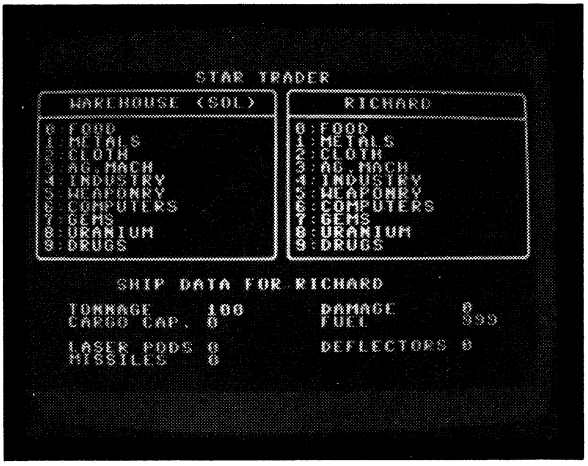
```
1860  PRINT CHR$(13);CHR$(145);"▲ T O T A L ▲ S C O R E ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ";TAB(21);"L A S T ▲ S C O R E ▲ ▲
      ▲ ▲ ▲ ";
1870  PRINT CHR$(13);CHR$(145);"▲ T O T A L ▲ S C O R E ▲
      ";TS%;TAB(21);"L A S T ▲ S C O R E ";LS%;
1880  RETURN
1890  PRINT CHR$(13);:FOR I=1 TO 21:PRINT CHR$(145);:
      NEXT:PRINT "■ ";
1900  PRINT TAB(9);:RETURN
1910  FOR I=1 TO 18:PRINT CHR$(17);:NEXT
1920  PRINT TAB(35);"▙ ";
1930  RETURN
1940  FOR I=3160 TO 3186:POKE I,32:NEXT
1950  FOR I=3200 TO 3226:POKE I,32:NEXT
1960  RETURN
1970  K1=INT(RND(0)*14):PRINT K1,:GOTO 1970
```

ChexSum Tables

```
10    =     0      310   =  4779      610   =  1451
20    =  4621      320   =  4912      620   =   534
30    =   585      330   =   680      630   =  1571
40    =  2389      340   =   903      640   =  1181
50    =  1196      350   =  1587      650   =  1505
60    =  1953      360   =   971      660   =   534
70    =  1204      370   =  3514      670   =  1570
80    =  1032      380   =  1638      680   =  1181
90    =   526      390   =   872      690   =  1513
100   =  1312      400   =  2944      700   =   534
110   =   709      410   =   969      710   =  1571
120   =  1207      420   =   957      720   =  1181
130   =   848      430   =   952      730   =  1507
140   =   943      440   =   978      740   =   534
150   =   527      450   =   959      750   =  1570
160   =  1089      460   =   971      760   =  1181
170   =   629      470   =   982      770   =  1512
180   =   527      480   =   955      780   =   534
190   =  1091      490   =   964      790   =  1571
200   =  1246      500   =   525      800   =  1181
210   =   629      510   =  1571      810   =  1506
220   =   320      520   =  1181      820   =   534
230   =   589      530   =  1506      830   =  5454
240   =   143      540   =   534      840   =   584
250   =  2063      550   =  1513      850   =  3533
260   =  5528      560   =  1181      860   =  1955
270   =  1987      570   =  1452      870   =  1060
280   =  3734      580   =   534      880   =  1043
290   =  4346      590   =  1513      890   =  1104
300   =  3293      600   =  1181      900   =  1022
```

```
910  =  3336        1270  =   656        1630  =  1347
920  =  1338        1280  =   562        1640  =  2405
930  =  1060        1290  =  5167        1650  =  1447
940  =   528        1300  =  3577        1660  =  1061
950  =  2055        1310  =  2268        1670  =  2407
960  =   143        1320  =   311        1680  =  1448
970  =   515        1330  =   562        1690  =   810
980  =  1543        1340  =  4265        1700  =  2898
990  =  2619        1350  =  2330        1710  =  1928
1000 =  1484        1360  =  2329        1720  =  1571
1010 =  3081        1370  =  2066        1730  =  1370
1020 =  4787        1380  =  2328        1740  =  1195
1030 =  1009        1390  =  2067        1750  =   421
1040 =   562        1400  =  2066        1760  =   143
1050 =  2128        1410  =  1009        1770  =  1569
1060 =  2977        1420  =   562        1780  =  4920
1070 =   441        1430  =   587        1790  =  4976
1080 =   779        1440  =   515        1800  =  2036
1090 =  3495        1450  =   956        1810  =  4653
1100 =  1286        1460  =  3178        1820  =  2254
1110 =  3349        1470  =  1812        1830  =  2713
1120 =   562        1480  =  1086        1840  =  1321
1130 =  1513        1490  =  3464        1850  =   139
1140 =  3423        1500  =  1673        1860  =  4669
1150 =  1236        1510  =  1723        1870  =  4697
1160 =  1472        1520  =  5020        1880  =   143
1170 =  1700        1530  =  3812        1890  =  2969
1180 =  1168        1540  =  3022        1900  =   688
1190 =  4879        1550  =  2710        1910  =  1619
1200 =   562        1560  =  4953        1920  =   828
1210 =  4573        1570  =  1031        1930  =   143
1220 =  2670        1580  =  1271        1940  =  1682
1230 =  2519        1590  =  3341        1950  =  1683
1240 =   941        1600  =  1316        1960  =   143
1250 =   562        1610  =  2469        1970  =  2328
1260 =  4211        1620  =  1477        TOTAL = 346832
```

Star Trader



CLASSIFICATION: Strategy

You are the pilot of an interstellar merchant vessel. Using all of your charm and intelligence, you secure a loan from the Solar Interstellar Bank (Sol branch) to purchase a second-hand merchant ship. With the little cash left over, you decide to enter the hazardous world of interstellar speculation. Use your cash to purchase various items at cheap prices, then travel to worlds where the demand for these items is great and sell them at a profit. You must repay the bank your massive loan or risk repossession. Beware of pirates and space storms. Full instructions are contained within the game. May you make a gigabuck or two!

PROGRAMMING SUGGESTIONS

Limit the supply of goods available on each planet. Introduce random patrols searching for gems, drugs or uranium among the inner worlds. Add random events such as black holes, or robbers who attack you and try to steal your cash.

PROGRAM Variables

S$	Ship name
GD	Goods in warehouse and ship
TP	Trade prices
T$	Trade items
CC	Cargo capacity
SS	Ship size
LP	Laser pods
MS	Missiles
DF	Deflectors
P%	Planetary data
PL$	Planetary names
CS	Cash
CR	Bank balance
DM	Damage to ship
DR	Current real damage
PF	Pirate fleet
SN	Number of pirates in fleet
SD	Star data
L	Current planetary system

Important Note

Star Trader is such a large program that it leaves no room for ChexSum to be merged with it.

You must therefore type in Star Trader in two sections, run ChexSum on each half in turn, then merge the two halves:

1 Enter lines 10 to 1440 of the first half of Star Trader which follow.

Listing

Initialise Game Variables

```
10    N$="╚■▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲S T A R▲T R A
       D E R ":S$="B O L T▲B I N▲▲":VOL 8
20    PRINT "■ ";N$:PRINT "Ш▲▲▲▲▲▲▲▲▲▲▲▲▲P
      L E A S E▲W A I T . . . "
30    RC$="ШШШШШШШШШШШШШШШШШШШШШШ"
40    NL$="▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲
      ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲"
50    CY$="ÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜ":L$="≡≡≡≡≡≡
      ≡≡≡≡≡≡≡≡≡≡≡≡":CD$="ÜÜÜÜÜÜÜÜÜ
      "
60    L1$="≡≡≡≡≡≡≡≡≡≡≡≡+≡≡≡≡≡≡≡≡≡≡≡≡≡+
      ≡≡≡≡≡≡≡≡≡≡≡≡≡≡≡≡"
70    LP=0:MS=0:DF=0:DIMW%(9,1):DIMP(9,6):DIMPL$(9):SS=10
      0:L=0
80    DIMPF(9,3):DIMGD(8,1):DIMTP(8)
90    DEFFNX(D)=INT(RND(0)*D*8-D*3)
100   DEFFNDS(D)=INT(SQR(ABS(P(D,0)-P(L,0))↑2+ABS(P(D,1)
      -P(L,1))↑2+ABS(P(D,2)-P(L,2))↑2))
110   RESTORE
120   DATASIRIUS,PROCYON,WESEN,ALTAIR,DENEB,DUBHE,VEGA,CA
      PELLA,CASTOR,POLLUX,ANTARES
130   DATAZOSMA,RIGEL,MEGREZ,MINTAKA,SAIPH,KOCHAB,PHAEDA
140   DATAETAMIN,ERIDANE,WOLF,HAMAL,ARIADNE
150   FOR I=1 TO 9:IF RND(0)<.333THEN READPL$(I):READD$:
      GOTO 180
160   IF RND(0)<.333THEN READD$:READPL$(I):GOTO 180
170   READD$:READPL$(I)
180   P(I,0)=FNX(I):P(I,1)=FNX(I):P(I,2)=FNX(I)
190   P(I,3)=91-10*I+INT(RND(0)*15)+INT(RND(0)*15)
200   P(I,4)=21-2*I-INT(RND(0)*3):P(I,5)=INT(2000/(P(I,3)
      *P(I,4))+1)
210   P(I,6)=FNDS(I)
220   NEXTI:PL$(0)="S O L ":P(0,3)=110+INT(RND(0)*20):P(0
      ,4)=20:P(0,5)=1
230   DIMT$(9):T$(0)="╟ 0 : F O O D▲▲▲▲":T$(1)="╟ 1
      : M E T A L S▲▲"
240   T$(6)="╟ 6 : G E M S▲▲▲▲"
250   T$(2)="╟ 2 : W E A P O N S▲":T$(3)="╟ 3 : C Y B O
       R G S▲"
260   T$(4)="╟ 4 : U R A N I U M▲":T$(5)="╟ 5 : D R U G
       S▲▲▲"
270   T$(7)="╟ 7 : F U E L▲▲▲▲":T$(8)="╟ 8 : R E P A
       I R S▲"
```

```
280   COLOR0,2:COLOR4,2
290   PRINT "■ ▲ ▲ ▲ ▲ ▲ ▲ W E L C O M E ▲ T O ▲ S T A R
      ▲ T R A D E R ! "
300   INPUT "■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ E N T E R ▲ N A M E ▲ O F ▲ Y
      O U R ▲ S H I P ";S$:PRINT"■ "
310   GD(7,1)=10:CS=5000:CR=-5000:SD=5+INT(RND(0)*200)/10
      0:GOSUB 2200:GOSUB 690:B=2*CS+500
```

Get Player's Command and Help Table

```
320   GETA$:IF A$=""THEN 320
330   IF A$="Q "THEN 530
340   IF A$="I "THEN GOSUB 690:GOTO 320
350   IF A$="M "THEN GOSUB 870:GOTO 320
360   IF A$="J "THEN GOSUB 990:GOTO 320
370   IF A$="B "ANDL=0ANDB>0THEN GOSUB 2400:GOTO 320
380   IF A$="D "ANDL=0ANDCS>0THEN GOSUB 2480:GOTO 320
390   IF A$="T "THEN GOSUB 1270:GOTO 320
400   IF A$="U "ANDL=0THEN GOSUB 570:GOTO 320
410   IF A$="L "ANDL=0THEN GOSUB 630:GOTO 320
420   IF ASC(A$)=13THEN 320
430   PRINT N$;"■ ■ ■ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ V A L I D ▲ C
       O M M A N D S ▲ A R E ▲ : ":PRINT "■ ▲ ' I ' ▲ ▲ C
       A R G O ▲ A N D ▲ S H I P ▲ S T A T U S "
440   PRINT "■ ▲ ' J ' ▲ ▲ H Y P E R ▲ J U M P ▲ C H A R
      T ":PRINT "■ ▲ ' T ' ▲ ▲ T R A D E ▲ T A B L E "
450   PRINT "■ ▲ ' M ' ▲ ▲ S Y S T E M ▲ L I B R A R Y "
460   PRINT "■ ▲ ' Q ' ▲ ▲ T O ▲ Q U I T ▲ G A M E "
470   PRINT "■ ▲ ' U ' ▲ ▲ U N L O A D ▲ S H I P ▲ T O ▲
      W A R E H O U S E "
480   PRINT "■ ▲ ' L ' ▲ ▲ L O A D ▲ S H I P ▲ F R O M ▲
      W A R E H O U S E "
490   PRINT "■ ▲ ' B ' ▲ ▲ B O R R O W ▲ C A S H ▲ F R O
      M ▲ B A N K "
500   PRINT "■ ▲ ' D ' ▲ ▲ D E P O S I T ▲ C A S H ▲ I N
      ▲ B A N K "
510   GETA$:IF A$=""THEN 510
520   GOTO 330
530   PRINT "■ ■ ■ ▲ ▲ ▲ Q U I T T I N G : ▲ A R E ▲ Y O
      U ▲ S U R E ▲ ? ";
```

Quitting, Loading and Unloading, Inventory

```
540   GETA$:IF A$=""THEN 540
550   IF A$="Y "THEN 2860
560   GOSUB 690:GOTO 320
```

```
570   IN=-1:I$="":PRINT "■ ";CY$;NL$
580   PRINT CY$;"▪ ▲ U N L O A D I N G ▲ ";
590   GOSUB 1620:IF IN>6THEN SOUND 1,200,5:GOTO 590
600   PRINT RIGHT$(T$(IN),8);:INPUT N:IF INT(N)>GD(IN,1)
      ORN<0THEN SOUND 1,200,5:GOTO 570
610   GD(IN,0)=GD(IN,0)+INT(N):GD(IN,1)=GD(IN,1)-INT(N)
620   PRINT CY$;NL$:GOSUB 2360:GOSUB 850:RETURN
630   IN=-1:I$="":PRINT CY$;NL$
640   PRINT CY$;"▪ ▲ L O A D I N G ▲ ";
650   GOSUB 1620:IF IN>6THEN SOUND 1,200,5:GOTO 650
660   PRINT RIGHT$(T$(IN),8);:INPUT N:IF INT(N)>GD(IN,0)
      ORN<0THEN SOUND 1,200,5:GOTO 630
670   GD(IN,1)=GD(IN,1)+INT(N):GD(IN,0)=GD(IN,0)-INT(N)
680   PRINT CY$;NL$:GOSUB 2360:GOSUB 850:RETURN
690   PRINT N$:PRINT "▒ ";L$;"▒ ▒ ";L$;"▒ ";
700   PRINT "▌ ▲ ▲ W A R E H O U S E ▲ ( S O L ) ▲ ▌ ▌ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▌ ";
710   PRINT "■ ■ ■ ■ ■ ■ ■ ■ ";RC$;S$
720   PRINT "├ ";L$;"┤ ├ ";L$;"┤ ";
730   FOR I=0 TO 6:PRINT T$(I);"▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▌ ";T$(I)
      ;"▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▌ ":NEXT
740   PRINT "■ ▒ ";L$;"▒ ▒ ";L$;"▒ ":PRINT "■ ■ ■ "
750   GOSUB 2360:GOSUB 840:GOSUB 2460:GOSUB 850
760   PRINT CY$;"■ ■ ■ ■ ■ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ S H I P ▲ D A
      T A ▲ F O R ▲ ";S$
770   PRINT "■ ■ ▲ ▲ T O N N A G E ▲ ▲ ▲ ▪ ";:PRINT
      USING"# # # # # # # ";SS;
780   PRINT "■ ▲ ▲ ▲ D A M A G E ▲ ▲ ▲ ▲ ▪ ";:PRINT
      USING"# # # # # ";DM
790   PRINT "■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
      ■ F U E L ▲ ▲ ▲ ▲ ▪ ";:PRINT USING"# # # # # . # ";
      GD(7,1)
800   PRINT :PRINT "■ ▲ ▲ L A S E R ▲ P O D S ▲ ▲ ▪ ";:
      PRINT USING"# # # # # ";LP;
810   PRINT "■ ▲ ▲ ▲ D E F L E C T O R S ▪ ";:PRINT
      USING"# # # # # ";DF
820   PRINT "■ ▲ ▲ M I S S I L E S ▲ ▲ ▪ ";:PRINT USING"#
       # # # # # # ";MS;
830   RETURN
840   PRINT CY$;"■ ▲ ▲ ";PL$(L);"▲ S T A R D A T E ▲ ";:
      PRINT USING"# # # # # . # # ";SD;:RETURN
850   CC=SS:FOR I=0 TO 6:CC=CC-GD(I,1):NEXT:CC=CC-INT(GD(
      7,1))-10*(LP+DF)-MS
860   PRINT CY$;"■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ C A R G O ▲ C A P
      . ▪ ";:PRINT USING"# # # # # # # ";CC:RETURN
870   PRINT N$:PRINT :PRINT "S Y S T E M ","P O P L . ▲ ▲
       ▲ ▲ T E C H . ▲ ▲ ▲ ▲ A G R I C U L T U R E ":
      PRINT
```

Library Information

```
880   FOR I=0 TO 9:PRINT :IF L=ITHEN PRINT "* ";
890   PRINT PL$(I),P(I,3),P(I,4),P(I,5):NEXT
900   RETURN
910   PRINT N$:L1=L
920   PRINT "■■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ D E S T I N A T I O N ▲ S
      Y S T E M ▲ ■ ";PL$(L1)
930   FOR I=0 TO 4:PRINT "■ ■ ";CHR$(I+48);": ■ ";:IF I
      =LTHEN PRINT "■ ";
940   PRINT PL$(I);"■ ■ ";,P(I,6),;
950   PRINT "■ ";CHR$(I+53);": ■ ";:IF I+5=LTHEN PRINT "■
       ";
960   PRINT PL$(I+5);"■ ■ ";,P(I+5,6):NEXTI
970   PRINT "■■■ ▲ ▲ ' 0 ' . . ' 9 ' ▲ T O ▲ S E L E C
      T ▲ D E S T I N A T I O N ":PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ T
      H E N ▲ R E T U R N ▲ T O ▲ L A U N C H . "
980   RETURN
990   IF CC<00RGD(7,1)<=0THEN SOUND 1,200,5:RETURN
```

Hyperjump Table and Random Interstellar Events

```
1000  GOSUB 910
1010  GETA$:IF A$=""THEN 1010
1020  IF A$="Q "THEN 530
1030  IF L1=LANDASC(A$)=13THEN GOSUB 690:GOSUB 840:
      RETURN
1040  IF ASC(A$)<>13THEN 1110
1050  K=P(L1,6):L=L1:FOR Z=1 TO K:GOSUB 1140:SD=SD+.01:
      IF CR>0THEN CR=CR+CR/500
1060  IF CR<0THEN CR=CR+CR/150
1070  NEXTZ
1080  FOR I=0 TO 9:P(I,6)=FNDS(I):NEXT:GOSUB 2200:
      SOUND 1,1000,10
1090  IF RND(0)*CR*CR/1000000>50000/SDTHEN PRINT "■ ■ ▲ ▲
       ▲ Y O U R ▲ S H I P ▲ W A S ▲ R E P O S E S S E D
      . . . ":GOTO 2860
1100  B=2*CS+500:GOSUB 2540:GOSUB 690:RETURN
1110  IF ASC(A$)<48ORASC(A$)>57THEN 1010
1120  L1=VAL(A$):PRINT "■ ■ ■ ■ ■ ■ ■ ■ ■ ";RC$;"▲ ▲ ▲ ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ■■ ■■ ■■ ■■ ■■ ■■ ■■ ■■ ■■ ";PL$(L1);
1130  GOTO 1010
1140  GD(7,1)=GD(7,1)-0.1
1150  IF GD(7,1)<0THEN PRINT "■ ■ ▲ ▲ ▲ Y O U ▲ R A N ▲ O
       U T ▲ O F ▲ F U E L ▲ I N ▲ M I D - F L I G H T .
      . . ":GOTO 2860
```

```
1160  IF RND(0)>.06THEN RETURN
1170  IF RND(0)>.3THEN 1220
1180  DM=DM+INT(RND(0)*5+1)‡SOUND 3,400,20
1190  PRINT CY$;"◘ ◘ ◘ ◘ ◘ ◘ ▲ ▲ ▲ ▲ ▌▌S P A C E ▲ D E B
      R I S ! ! ▀ "‡FOR J=1 TO 400‡NEXTJ
1200  IF DM>=SSTHEN PRINT "◙ ◘ ◘ ◘ ■ Y O U R ▲ S H I P ▲
      W A S ▲ D E S T R O Y E D ▲ B Y ▲ A ▲ M E T E O R"
      ‡GOTO 2860
1210  RETURN
1220  IF RND(0)>.1THEN 1250
1230  GD(7,1)=GD(7,1)-INT(RND(0)*10)-1‡SOUND 3,1000,20
1240  PRINT CY$;"◘ ◘ ◘ ◘ ◘ ◘ ◘ ◘ ▲ ▲ ▲ ▲ ▌▌M I S - J U M
      P ! ! ▀ "‡FOR J=1 TO 400‡NEXTJ‡RETURN
1250  IF RND(0)>L↑2/120THEN RETURN
1260  GOSUB 1710‡RETURN
```

Trading Goods and Trade Table

```
1270  PRINT N$‡PRINT "◘ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ T R A D E
      ▲ P R I C E S ▲ F O R ▲ ";PL$(L)
1280  PRINT "╒ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ╤ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═
      ═ ╤ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ╕ "
1290  PRINT "║ ▲ I T E M ▲ ▲ ▲ ▲ ▲ ▲ ║ ▲ ▲ ▲ ▲ P R I C E ▲
      ▲ ║ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ O W N E D ▲ ║ ";
1300  PRINT "╞ ";L1$;"╡ "
1310  FOR I=0 TO 6‡PRINT LEFT$(T$(I),3);‡IF IX=ITHEN
      PRINT "◙ ";
1320  PRINT RIGHT$(T$(I),8);"▀ ║ ";‡PRINT  USING"# # # #
      # # # . # # ";TP(I);
1330  PRINT "▲ ║ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ║ "‡NEXT
1340  PRINT "╞ ";L1$;"╡ "
1350  PRINT T$(7);"║ ";‡PRINT USING"# # # # # # # . # # "
      ;TP(7);‡PRINT "▲ ║ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ║
      ";
1360  PRINT "╞ ";L1$;"╡ "
1370  PRINT T$(8);"║ ";‡PRINT  USING"# # # # # # # . # #
      ";TP(8);‡PRINT "▲ ║ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ║
      ";
1380  PRINT "╘ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ╧ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═
      ═ ╧ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ═ ╛ "
1390  PRINT "' B ' - B U Y ▲ ▲ ' S ' - S E L L ▲ ▲ ' Q '
      - Q U I T ▲ ▲ ' R ' - R E P A I R "‡DN$=""‡GOSUB 16
      50
1400  IN=-1‡I$=""‡GD(8,1)=0
1410  PRINT CY$;CD$;NL$
1420  GETA$‡IF A$=""THEN 1420
1430  IF A$="Q "THEN GOSUB 690‡RETURN
1440  IF A$<>"R "THEN 1480
```

ChexSum Tables

```
10    =  4035
20    =  2726
30    =  1068
40    =  2271
50    =  6608
60    =  8724
70    =  4329
80    =  1711
90    =  2395
100   =  6929
110   =   141
120   =  7007
130   =  4197
140   =  2885
150   =  3352
160   =  2623
170   =   809
180   =  3216
190   =  3436
200   =  4968
210   =  1033
220   =  4463
230   =  3695
240   =  1382
250   =  3317
260   =  3173
270   =  3178
280   =   834
290   =  2455
300   =  3124
310   =  6440
320   =  1216
330   =   946
340   =  1678
350   =  1678
360   =  1674
370   =  2779
380   =  2869
390   =  1750
400   =  2204
410   =  2194
420   =  1189
430   =  5673
440   =  3722
450   =  1733
460   =  1507
470   =  2564
480   =  2563
490   =  2285
500   =  2184
510   =  1212
520   =   528
530   =  2406
540   =  1212
550   =  1015
560   =   919
570   =  1958
580   =  1547
590   =  2379
600   =  4649
610   =  3794
620   =  1664
630   =  1760
640   =  1338
650   =  2384
660   =  4645
670   =  3794
680   =  1664
690   =  2221
700   =  3328
710   =   922
720   =  1673
730   =  3377
740   =  2311
750   =  1548
760   =  2503
770   =  2757
780   =  2507
790   =  3349
800   =  3023
810   =  2675
820   =  2783
830   =   143
840   =  3658
850   =  5941
860   =  3364
870   =  4202
880   =  1975
890   =  2077
900   =   143
910   =   723
920   =  2927
930   =  3492
940   =  1505
950   =  2925
960   =  2162
970   =  5823
980   =   143
990   =  2539
1000  =   303
1010  =  1276
1020  =   946
1030  =  2523
1040  =  1440
1050  =  5688
1060  =  1880
1070  =   221
1080  =  3244
1090  =  7374
1100  =  2022
1110  =  2124
1120  =  4628
1130  =   579
1140  =  1339
1150  =  5499
1160  =  1133
1170  =  1171
1180  =  2455
1190  =  3551
1200  =  5688
1210  =   143
1220  =  1168
1230  =  3139
1240  =  3513
1250  =  1636
1260  =   558
1270  =  3231
1280  =  8840
1290  =  3482
1300  =   970
1310  =  2902
1320  =  3126
1330  =  1562
1340  =   970
1350  =  4031
1360  =   970
1370  =  4037
1380  =  8830
1390  =  4214
1400  =  1743
1410  =   856
1420  =  1275
1430  =  1294
1440  =  1194

TOTAL= 385287
```

2 Save the first half of Star Trader by entering SAVE "STAR TRAD FIRST" for tape or SAVE "STAR TRAD FIRST", 8 for disk.

3 Load and run the Merge program by typing LOAD "MERGE" for tape or LOAD "MERGE",8 for disk, and then entering RUN.

4 From your games tape or disk, load the first half of Star Trader: enter LOAD "STAR TRAD FIRST" for tape or "LOAD STAR TRAD FIRST",8 for disk. Do not RUN the program at this time.

5 Enter SYS16331.

6 Load ChexSum by entering LOAD "CHEXSUM" for tape or LOAD "CHEXSUM", 8 for disk.

7 Enter SYS16355 to merge the first half of Star Trader with ChexSum.

8 Enter RUN 62000 to activate ChexSum.

9 The program will respond with the prompt:

LINE NUMBER: ?

Pressing the RETURN key at this point will cause ChexSum to start with the first line of Star Trader, first half. Entering a line number will start ChexSum at that line.

10 ChexSum next prompts with:

PRINTER (Y/N) ?

A 'Y' will send the ChexSum table to the printer or an 'N' will send it to the screen.

11 Check your grand total for the first half with that printed above. If they differ, a line has been typed incorrectly. Compare line numbers until you locate the bad lines and then edit them.

12 Repeat steps 8 to 10 until the games program is debugged. In step 8, enter the number of the first bad line to avoid ChexSum verifying the games program from the first line.

13 Erase ChexSum from the end of the first half by entering DELETE 62000-62196.

14 Save the first half as "STAR TRAD OK1".

15 Enter the second half of Star Trader, lines 1450 to 2880 (which follow), and save it: SAVE "STAR TRAD SEC" or SAVE "STAR TRAD SEC",8.

```
1450  PRINT CY$;CD$;"▪ ▲ ▲ R E P A I R S ▲ ";DM;:INPUT N:
      IF N>DMTHEN N=DM
1460  IF INT(N)*TP(8)>CSTHEN N=INT(CS/TP(8))
1470  DM=DM-INT(N):CS=CS-INT(N)*TP(8):GOSUB 1650:GOTO 141
      0
1480  IF A$<>"B "THEN 1560
1490  PRINT CY$;CD$;"▪ ▲ ▲ B U Y I N G ▲ ";
1500  IF IN<0THEN GOSUB 1620
1510  PRINT RIGHT$(I$,8);"( ";
1520  PRINT  USING"# # # # # # ";INT(CS/TP(IN));:PRINT ")
       ";
1530  PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪
      ";
1540  INPUT N:IF TP(IN)*INT(N)>CSTHEN N=INT(CS/TP(IN))
1550  CS=CS-TP(IN)*INT(N):GD(IN,1)=GD(IN,1)+N:GOSUB 1650:
      IN=-1:GOTO 1410
1560  IF A$<>"S "THEN SOUND 1,200,5:GOTO 1410
1570  PRINT CY$;CD$;"▪ ▲ ▲ S E L L I N G ▲ ";:IF IN>=0
      THEN PRINT "▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ";:GOTO 1590
1580  GOSUB 1620:PRINT RIGHT$(I$,8);:IF IN>7THEN SOUND 1,
      200,5:IN=-1:GOTO 1410
1590  PRINT "▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▪▪ ▪▪ ▪▪ ▪▪
      ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ";
1600  INPUT N:IF INT(N)>GD(IN,1)THEN N=GD(IN,1)
1610  CS=CS+TP(IN)*INT(N):GD(IN,1)=GD(IN,1)-N:GOSUB 1650:
      IN=-1:GOTO 1410
1620  GETA$:IF A$=""THEN 1620
1630  IF ASC(A$)>=48ANDASC(A$)<=55THEN IN=ASC(A$)-48:I$
      =T$(IN):RETURN
1640  SOUND 1,200,5:GOTO 1620
1650  GOSUB 850:PRINT CY$;"▪ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▲ ▲ C A S H ▲
      ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ▪▪ ";
1660  PRINT USING "$ # # # # # # # # # # # # . # # ";CS
1670  DN$="":FOR I=0 TO 6:PRINT "▪ ▪ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯
      ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ";DN$;RC$;
1680  PRINT  USING"# # # # # # # # # ";GD(I,1):DN$=DN$+"▯ "
      :NEXT:DN$=DN$+"▯ ▯ ▯ ▯ ▯ ▯ ▯ "
1690  PRINT "▪ ▪ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ";DN$;RC$;:
      PRINT USING"# # # # # . # ";GD(7,1):
1700  PRINT "▪ ▪ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ▯ ";DN$;RC$;
      :PRINT USING"# # # # # # ";DM:RETURN
```

Ambushed By Pirates!

```
1710  PRINT "▪ "COLOR1,8:COLOR0,2,4:DR=0:PS=480:SK=0:OS
      =0
1720  SN=0:BT=500:FOR I=1 TO INT(SS/100):SN=SN+INT(RND(0)
      *2):BT=BT+500+INT(RND(0)*600):NEXT
```

```
1730  PF(0,0)=SS+INT(RND(0)*SS/100+2)*100:IF SN>9THEN PF(
      0,0)=PF(0,0)+(SN-9)*100:SN=9
1740  PF(0,1)=INT(RND(0)*SS/100+2)+INT(RND(0)*L/2)
1750  FOR J=1 TO 9:PF(J,0)=INT(RND(0)*SS/10+SS/10):PF(J,1
      )=INT(RND(0)*SS/500+1)
1760  IF J>SNTHEN PF(J,0)=0
1770  NEXT
1780  FOR J=0 TO 9:PF(J,3)=30+INT(RND(0)*9):PF(J,2)=8+
      INT(RND(0)*6):NEXT:TG=0:OS=SN+1
1790  DR=DR-10*DF:IF DR<0THEN DR=0
1800  DM=DM+INT(DR):DR=DR-INT(DR)
1810  IF GD(7,1)<=0THEN PRINT "■■■■YOU ▲ RAN ▲ O
      UT ▲ OF ▲ FUEL . . . ":DM=SS+1:FOR I=1 TO 1000
      :NEXT
1820  IF DM>=SSTHEN PRINT "▗ ■ ■■■■■LOOTED ▲ B
      Y ▲ PIRATES! ":FOR I=0 TO 6:GD(I,1)=0:NEXT:C
      S=0:GOTO 2860
1830  PRINT N$:PRINT "■ ▲ 'E' ▲ EVADE ▲ 'C' ▲ CL
       OSE ▲ '0'. . '9' ▲ TARGET ":PRINT "▲ '
      M' ▲ NUKE ▲▲ 'L' ▲ LASER "
```

Get Player's Combat Instructions
Draw Combat Display and Resolve Combat

```
1840  GOSUB 760:GOSUB 2050
1850  IF SN=-1THEN 1930
1860  PRINT CV$;RC$;CD$;"■■ ▲▲ TARGET ▲▲▲▲▲▲
      ▲ ";:PRINT USING"# # ";TG;:GETA$:IF A$=""THEN 1860
1870  IF A$="L "ANDLP>0ANDPF(TG,0)>0THEN GOSUB 1970:
      GOTO 1790
1880  IF A$="M "ANDMS>0ANDPF(TG,0)>0THEN GOSUB 2000:
      GOTO 1790
1890  IF A$="E "ANDGD(7,1)>0THEN GOSUB 2040:GOTO 1790
1900  IF A$="C "THEN IF RND(0)<.7THEN EV=-3:GOTO 1790
1910  IF ASC(A$)>47ANDASC(A$)<58THEN TG=ASC(A$)-48:
      GOTO 1860
1920  GOTO 1860
1930  COLOR0,2:PRINT "▗ ":IF OS<>SKTHEN RETURN
1940  PRINT "▗■■■ YOU ▲ DEFEATED ▲ THE ▲ P
      IRATE ▲ FLEET "
1950  CS=CS+BT:PRINT "■ AND ▲ COLLECTED ▲ ";:
      PRINT USING"# # # # # # # # ";BT;:PRINT "▲ IN ▲ B
      OOTY! "
1960  FOR I=1 TO 2000:NEXT:PRINT "▗ ":RETURN
1970  SOUND 3,1020,2:SOUND 1,970,8:PF(TG,0)=PF(TG,0)-(150
      *LP)/PF(TG,3)
1980  IF PF(TG,0)<=0THEN SOUND 3,900,20:SN=SN-1:SK=SK+1
1990  RETURN
```

```
2000  SOUND 3,600,20:MS=MS-1:IF RND(0)*100<PF(TG,3)
      THEN RETURN
2010  SOUND 3,800,30:PF(TG,0)=PF(TG,0)-INT(RND(0)*50)-
      INT(RND(0)*50)
2020  IF PF(TG,0)<=0THEN SOUND 3,950,20:SN=SN-1:SK=SK+1
2030  RETURN
2040  GD(7,1)=GD(7,1)-.1:EV=INT(RND(0)*3+1):RETURN
2050  POKE 3072+PS,42:POKE 2048+PS,127
2060  FOR J=9 TO 0 STEP -1:IF PF(J,0)<=0THEN 2180
2070  MV=INT(RND(0)*3):IF PF(J,3)+EV-MV>=1THEN PF(J,3)=PF
      (J,3)+EV-MV
2080  IF PF(J,3)>39THEN PF(J,0)=0:SN=SN-1:GOTO 2180
2090  IF INT(PS/40)>PF(J,2)ANDRND(0)<.3THEN PF(J,2)=PF(J,
      2)+1
2100  IF INT(PS/40)<PF(J,2)ANDRND(0)<.3THEN PF(J,2)=PF(J,
      2)-1
2110  IF J=0THEN POKE 3072+PF(0,2)*40+PF(0,3),65:POKE 204
      8+PF(0,2)*40+PF(0,3),127:GOTO 2140
2120  POKE 3072+PF(J,2)*40+PF(J,3)-40,J+48:POKE 2048+PF(J
      ,2)*40+PF(J,3)-40,113
2130  POKE 3072+PF(J,2)*40+PF(J,3),87:POKE 2048+PF(J,2)
      *40+PF(J,3),127
2140  IF RND(0)<PF(J,3)/40THEN 2180
2150  SOUND 3,1020-10*J,5:DX=(PF(J,1)*400)/(PF(J,3)↑2)
2160  DR=DR+DX:IF RND(0)<DX/(SS-DM+DX)ANDDF>0THEN
      SOUND 3,1020,10:SOUND 3,990,15:DF=DF-1
2170  IF RND(0)<DX/(SS-DM+DX)ANDLP>0THEN SOUND 3,1000,10:
      SOUND 3,900,10:LP=LP-1
2180  NEXTJ
2190  EV=0:RETURN
2200  TP(0)=20/SQR(P(L,5))
2210  TP(1)=2000/(5*P(L,4)+P(L,5)/5)
2220  TP(2)=40000/(10*P(L,4)+P(L,3))
2230  TP(3)=(12000+INT(RND(0)*2000))/SQR(10*P(L,4))
2240  TP(4)=100000/SQR(4*P(L,4))
2250  TP(5)=100000/SQR(P(L,5)/2)
```

Determine Trade Value of Goods

```
2260  TP(6)=15000*P(L,3)/(5*P(L,4))
2270  TP(7)=100/SQR(2*P(L,4))
2280  TP(8)=500-P(L,4)*22
2290  FOR I=0 TO 7:IF RND(0)<.4THEN TP(I)=TP(I)-RND(0)*(T
      P(I)/(7+L/2)):GOTO 2310
2300  TP(I)=TP(I)+RND(0)*TP(I)/(10+2*L)
2310  NEXT:IX=INT(RND(0)*7):IF INT(RND(0)*10)<>LORRND(0)
      <50/(SD*10)THEN IX=-1:RETURN
2320  NS=(RND(0)*P(L,3)+8)/4:G$="S H O R T A G E ":IF
      RND(0)<.5THEN G$="G L U T ":NS=4/NS
```

```
2330  PRINT "▙ ◙ ◙ ◙ ◘ T H E R E ▲ H A S ▲ B E E N ▲ A ▲
      ";G$;"▲ O F ▲ ";RIGHT$(T$(IX),8);". "
2340  PRINT "P R I C E S ▲ A R E ▲ ▌▌ ";:PRINT USING"# # .
       # # ";NS;:PRINT "▀ ▲ T I M E S ▲ N O R M A L ! ! !
       "
2350  FOR I=1 TO 2500:NEXT:TP(IX)=TP(IX)*NS:RETURN
2360  DN$=""
2370  PRINT "◘ ":FOR I=0 TO 6:PRINT "◙ ◙ ◙ ◙ ◙ ◙ ▐ ▐ ▐ ▐ ▐
      ▐ ▐ ▐ ▐ ▐ ▐ ";DN$;:PRINT  USING"# # # # # # # ";G
      D(I,0)
2380  PRINT "◙ ◙ ◙ ◙ ◙ ◙ ▐ ▐ ▐ ▐ ▐ ▐ ▐ ▐ ▐ ▐ ▐ ▐ ";RC$;DN$;:
      PRINT  USING"# # # # # # # ";GD(I,1)
2390  DN$=DN$+"◙ ":NEXT:RETURN
2400  PRINT CY$;NL$
2410  PRINT CY$;"▚ ▲ ▲ ▲ B O R R O W I N G ▲ ";
2420  INPUT N:IF INT(N)>BTHEN N=B
2430  CS=CS+INT(N):CR=CR-INT(N):B=B-INT(N):GOSUB 2460
2440  PRINT CY$;NL$
2450  RETURN
2460  PRINT CY$;"▣ ◙ ◙ ▲ ▲ ▲ ▲ C A S H ▲ ▲ ▲ $ ▲ ";:
      PRINT  USING"# # # # # # # # # # # # # . # # ";CS
2470  PRINT CY$;"▣ ◙ ◙ ◙ ▲ ▲ ▲ ▲ C R E D I T ▲ $ ▲ ";:
      PRINT  USING"# # # # # # # # # # # # # . # # ";CR
      :RETURN
2480  PRINT CY$;NL$
2490  PRINT CY$;"▚ ▲ ▲ ▲ D E P O S I T I N G ▲ ";
2500  INPUT N:IF INT(N)>CSTHEN N=CS
2510  CS=CS-INT(N):CR=CR+INT(N):B=B+INT(N):GOSUB 2460
2520  PRINT CY$;NL$
2530  RETURN
2540  IF RND(0)>P(L,4)/40THEN RETURN
2550  IF RND(0)>.2THEN 2620
2560  CT=P(L,4)*100+1000*RND(0)+RND(0)*(CS/1000)+CS/1000
2570  IF CT>CSTHEN RETURN
2580  PRINT "▙ ◙ ◙ ◙ ◘ Y O U ▲ H A V E ▲ B E E N ▲ O F F
      E R E D ▲ A ▲ B I G G E R ▲ S P A C E - "
2590  PRINT "◙ S H I P ▲ F R O M ▲ A ▲ C O M P A N Y ▲ O
      N ▲ ";PL$(L)
```

Special Offers When Arriving at a New Planet

```
2600  PRINT "◙ I T ▲ C O S T S ▲ ";:PRINT USING"# # # # #
       # # # ";CT;:PRINT "▲ C R . ";
2610  PRINT "▲ W I T H ▲ A ▲ T R A D E - I N . ":GOSUB 28
      20:SS=SS+100:RETURN
2620  IF RND(0)>.25THEN 2680
2630  CT=160*(25-P(L,4))+RND(0)*(CS/1000)+CS/1000
2640  IF CT>CSTHEN RETURN
```

```
2650  PRINT "■ ■ ■ ■ ■ T H E R E ▲ I S ▲ A ▲ N E W ▲ L A
      S E R ▲ P O D ▲ F O R ▲ S A L E ▲ H E R E . "
2660  PRINT "■ I T ▲ C O S T S ▲ A ▲ M E R E ▲ ";:
      PRINT USING"# # # # # # # # ";CT;:PRINT "▲ C R . "
2670  GOSUB 2820:LP=LP+1:RETURN
2680  IF RND(0)>.15THEN 2740
2690  CT=200*(25-P(L,4))+RND(0)*(CS/800)+CS/800
2700  IF CT>CSTHEN RETURN
2710  PRINT "■ ■ ■ ■ ■ T H E R E ▲ I S ▲ A ▲ D E F L E C
      T O R ▲ S H I E L D ▲ A V A I L A B L E "
2720  PRINT "■ C O S T I N G ▲ J U S T ▲ ";:PRINT USING"#
       # # # # # # # # ";CT;:PRINT "▲ C R . "
2730  GOSUB 2820:DF=DF+1:RETURN
2740  CT=70*(25-P(L,4))+RND(0)*(CS/1000)+CS/1000:N=INT(
      RND(0)*P(L,4)/2+P(L,4)/3+1)
2750  IF CT*N>CSTHEN N=INT(CS/CT)
2760  IF N=0THEN RETURN
2770  PRINT "■ ■ ■ ■ ";N;"■ ▲ N U C L E A R ▲ M I S S I L
       E S ▲ A R E ▲ O F F E R E D . "
2780  PRINT "■ T O T A L ▲ C O S T ▲ I S ";:PRINT USING"#
       # # # # # # # # ";CT*N;:PRINT "▲ C R . "
2790  INPUT "■ H O W ▲ M A N Y ▲ D O ▲ Y O U ▲ W I S H ▲
      T O ▲ B U Y ";NM:IF NM<0THEN NM=0
2800  IF NM>NTHEN NM=N
2810  MS=MS+NM:CS=CS-NM*CT:RETURN
2820  PRINT "■ A R E ▲ Y O U ▲ W I L L I N G ▲ T O ▲ M A
      K E ▲ T H E ▲ P U R C H A S E ▲ ? "
2830  GET A$:IF A$<>"Y "ANDA$<>"N "THEN 2830
2840  IF A$="Y "THEN CS=CS-CT
2850  PRINT "■ ":RETURN
2860  PRINT "■ ■ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ C A S H ▲ P O S E S S
      E D ▲ ";CS:PRINT "■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ B A N K ▲ B A L
       A N C E ▲ ";CR;
2870  PRINT "■ ■ ■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ G O O D S ▲ P O S E S
      S E D ■ "
2880  FOR I=0 TO 6:PRINT "■ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ";T$(I);"■ ■
      ";GD(I,0)+GD(I,1):NEXT
```

ChexSum Tables

```
1450  =  3658
1460  =  2807
1470  =  3822
1480  =  1180
1490  =  1643
1500  =  1076
1510  =   916
1520  =  2438
1530  =  2484
1540  =  3302
1550  =  5255
1560  =  2248
1570  =  4274
1580  =  4000
1590  =  4136
1600  =  2517
1610  =  5255
1620  =  1277
1630  =  4538
1640  =  1272
1650  =  4444
1660  =  1404
1670  =  2863
1680  =  4046
1690  =  2764
1700  =  2685
1710  =  3461
1720  =  6817
1730  =  6856
1740  =  3505
1750  =  5764
1760  =  1410
1770  =   131
1780  =  6138
1790  =  2300
1800  =  2334
1810  =  5485
1820  =  6726
1830  =  5470
1840  =   739
1850  =  1112
1860  =  4851
1870  =  3416
1880  =  3414
1890  =  2665
1900  =  3018
1910  =  3736
1920  =   589
1930  =  2110
1940  =  3022
1950  =  4983
1960  =  1711
1970  =  4502
1980  =  3710
1990  =   143
2000  =  3560
2010  =  4207
2020  =  3715
2030  =   143
2040  =  3074
2050  =  1926
2060  =  2550
2070  =  5346
2080  =  3278
2090  =  3964
2100  =  3965
2110  =  6128
2120  =  5555
2130  =  4562
2140  =  1767
2150  =  3597
2160  =  6243
2170  =  5188
2180  =   205
2190  =   591
2200  =  1433
2210  =  2520
2220  =  2398
2230  =  3319
2240  =  1953
2250  =  1956
2260  =  2318
2270  =  1786
2280  =  1504
2290  =  5425
2300  =  2910
2310  =  5699
2320  =  6025
2330  =  3796
2340  =  4387
2350  =  2804
2360  =   445
2370  =  3773
2380  =  2783
2390  =  1247
2400  =   611
2410  =  1671
2420  =  1541
2430  =  3644
2440  =   611
2450  =   143
2460  =  3028
2470  =  3369
2480  =   611
2490  =  1762
2500  =  1717
2510  =  3644
2520  =   611
2530  =   143
2540  =  1647
2550  =  1173
2560  =  4246
2570  =   941
2580  =  3700
2590  =  2570
2600  =  3003
2610  =  3151
2620  =  1234
2630  =  3663
2640  =   941
2650  =  3790
2660  =  3507
2670  =  1382
2680  =  1234
2690  =  3558
2700  =   941
2710  =  3761
2720  =  3373
2730  =  1352
2740  =  7065
2750  =  2154
2760  =   757
2770  =  3406
2780  =  3654
2790  =  3988
2800  =  1144
2810  =  2362
2820  =  3452
2830  =  2405
2840  =  1640
2850  =   577
2860  =  4582
2870  =  2001
2880  =  3675
TOTAL =  419602
```

16 Load Merge if you have reset or switched off your computer — see step 3.
17 From your tape or disk, load the second half of Star Trader: LOAD "STAR TRAD SEC" or LOAD "STAR TRAD SEC",8.
18 Perform steps 5 to 13 to run ChexSum on the second half of Star Trader.
19 Save the second half as "STAR TRAD OK2".
20 Load Merge if necessary — see step 3.
21 Load the first half by entering LOAD "STAR TRAD OK1" for tape or LOAD "STAR TRAD OK1",8 for disk.
22 Enter SYS16331.
23 Load the second half by entering LOAD "STAR TRAD OK2" for tape or LOAD "STAR TRAD OK2",8 for disk.
24 Enter SYS16355 to complete the merge.
25 The program will now run!

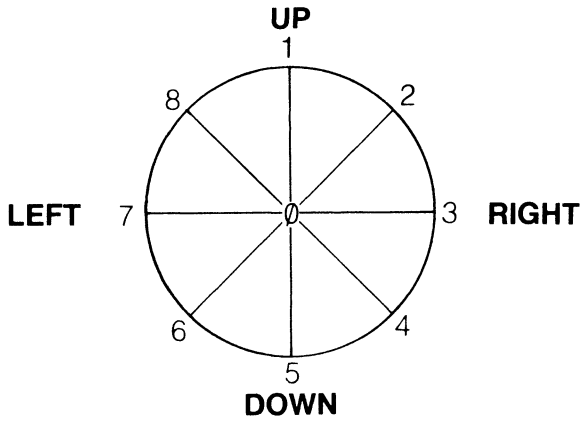
Appendix A
Using Joysticks

All the games in the book are designed to be played from the keyboard, usually using the following scheme:

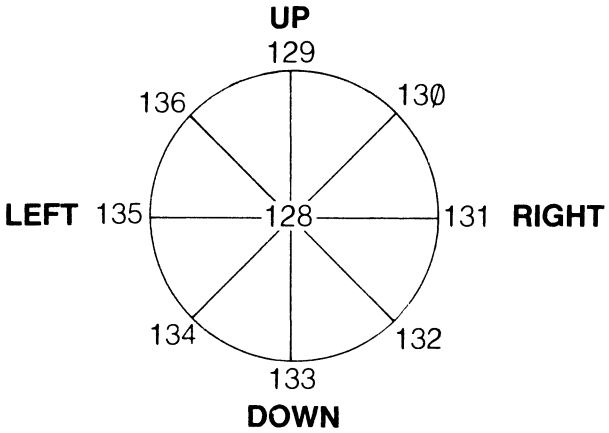
KEY	ACTION
I	Left
P	Right
Q	Up
Z	Down
Space	Fire

The Commodore 16 has an inbuilt function JOY(N) which is used to read joystick input. The variable N is set to 1 to read joystick Ø and to 2 to read joystick 1. When the fire button is not depressed, the JOY(N) function returns values from Ø to 8 to indicate the deflection of the joystick; when the joystick is deflected and the fire button is depressed, values from 128 to 136 are returned (see diagram below and overleaf).

JOYSTICK VALUES, NOT FIRING



JOYSTICK VALUES, FIRING



Thus, the statement

```
10 IF JOY(2) = 130 THEN (action)
```

would cause the appropriate action to take place when the joystick was moved to half-past two and the firing button depressed. Armed with this information, you should be able to alter the GET A$ statements in the programs so that they will operate with the joysticks.

Appendix B
Software Sprite Utility

WHAT IT IS AND HOW IT WORKS

This utility allows the user to move a block of characters in a 3 × 3 square around the screen. To use this program simply POKE the X and Y co-ordinates of the block into locations 16357, 16358 and then do a SYS16Ø5Ø. To move the block round the screen just change the X and Y co-ordinates and repeatedly call the SYS routine.

For this program to work correctly the screen must not scroll. Type in the program and save it to disk or tape, then run ChexSum on it.

When executed it will place a machine language program at 16Ø3Ø decimal and set the top of memory pointer to this location to prevent BASIC from overwriting it. Once executed, the program will sit there until you overwrite it, reset the top of BASIC pointers or switch off the computer. You can either tack it onto the ends of your programs and use it as a subroutine or load it in, run it and load in another program which calls it.

Sprite Utility

```
10    POKE 55,158:POKE 56,62:CLR
20    FOR I=16050 TO 16050+321:READA:POKE I,A:C=C+A:
      NEXT
30    IF C<>44960THEN  PRINT "C H E C K ▲ S U M ▲ E R R O
       R ▲ I N ▲ P R O G R A M ";C:STOP
40    STOP
50    DATA165,240,141,241,63,165,241,141,242,63
60    DATA173,232,63,201,0,208,7,173,231,63
70    DATA201,0,240,3,32,160,63,32,23,63
80    DATA32,92,63,173,230,63,141,232,63,173
90    DATA229,63,141,231,63,173,242,63,133,241
100   DATA173,241,63,133,240,96,169,0,133,240
```

```
110   DATA169,12,133,241,172,234,63,152,240,16
120   DATA24,165,240,105,40,133,240,169,0,101
130   DATA241,133,241,136,208,240,165,240,24,109
140   DATA233,63,133,240,169,0,101,241,133,241
150   DATA96,173,230,63,141,234,63,173,229,63
160   DATA141,233,63,32,234,62,160,0,140,235
170   DATA63,140,236,63,162,3,142,237,63,162
180   DATA3,142,238,63,174,235,63,172,236,63
190   DATA177,240,157,162,62,238,235,63,238,236
200   DATA63,206,238,63,208,234,173,236,63,105
210   DATA37,141,236,63,206,237,63,208,216,96
220   DATA173,229,63,141,233,63,173,230,63,141
230   DATA234,63,32,234,62,160,0,140,236,63
240   DATA169,127,141,240,63,162,3,142,237,63
250   DATA162,3,142,238,63,172,236,63,173,240
260   DATA63,145,240,238,236,63,238,240,63,206
270   DATA238,63,208,237,173,236,63,105,37,141
280   DATA236,63,206,237,63,208,219,96,173,232
290   DATA63,141,234,63,173,231,63,141,233,63
300   DATA32,234,62,160,0,140,235,63,140,236
310   DATA63,162,3,142,237,63,162,3,142,238
320   DATA63,174,235,63,189,162,62,172,236,63
330   DATA145,240,238,235,63,238,236,63,206,238
340   DATA63,208,234,173,236,63,105,37,141,236
350   DATA63,206,237,63,208,216,96,0,0,0
360   DATA0,0,0,0,0,0,0,0,0,0
370   DATA 0,130
```

ChexSum Tables

```
10    =   1207
20    =   3160
30    =   3991
40    =    145
50    =   2175
60    =   1992
70    =   1824
80    =   2025
90    =   2151
100   =   2096
110   =   2144
120   =   2086
130   =   2245
140   =   2128
150   =   2088
160   =   2016
170   =   2010
180   =   2032
190   =   2211
200   =   2127
210   =   2079
220   =   2144
230   =   1959
240   =   2100
250   =   2090
260   =   2144
270   =   2140
280   =   2157
290   =   2075
300   =   2014
310   =   1978
320   =   2093
330   =   2205
340   =   2157
350   =   1817
360   =   1120
370   =    390
TOTAL =  74515
```

SPRITE DEMONSTRATOR

Type in the sprite utility and run it to place the utility in upper memory, then enter NEW to clear the BASIC loader. Now type in the following demonstration program:

```
10 PRINT CHR$(147);
20 FOR I=1 TO 20
30 POKE 16357, I    :REM SET X CO-ORDINATE
40 POKE 16358, I    :REM SET Y CO-ORDINATE
50 SYS 16050        :REM MOVE SPRITE
60 NEXT
70 GET KEY A$ : GOTO 20
```

When you run the program, the screen will clear and a block of characters will go from the top of the screen to the bottom. Hitting any key will move the block again. The characters in the block are from 127 ASCII to 135.

SHAPE DEMONSTRATION

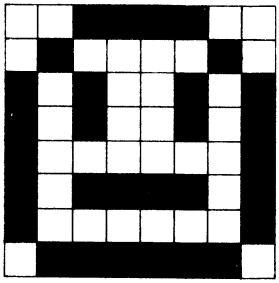
It is possible to create differently shaped 'sprites' by redefining the characters in the 3 × 3 block. Enter this program:

```
10 POKE 55,255: POKE 56, 47 :REM SET TOP OF
15 B=12                     :REM MEMORY TO 12287
20 POKE 65298, 192          :REM POINT AT NEW
30 POKE 65299, 192+4*B      :REM CHARACTER DEFINITION
40 P=1024*B
50 SP=P+32*8                :REM DEFINE SPACE
60 FOR I=SP TO SP+7:POKE I, 0 : NEXT
70 IN=P+(127*8) :REM Define charsacters 127 - 135
80 FOR I=IN TO IN+71=POKE I, 255 : NEXT
90 POKE 16357, 5
100 POKE 16358, 5
110 SYS 16050
```

A solid 3 × 3 block will appear at co-ordinates 5, 5 on the screen.

In the program, lines 20 to 40 tell the computer to get its character set from memory starting at 12288. Each character is stored as eight bytes of memory and each bit in the byte represents one pixel (or dot) of the character. The first byte of the character represents the top pair of eight dots, while the second byte represents the next row of dots down and so on.

CHARACTER SHAPE



VALUES

Binary								Hex	Decimal
Ø	Ø	1	1	1	1	Ø	Ø	3C	6Ø
Ø	1	Ø	Ø	Ø	Ø	1	Ø	42	66
1	Ø	1	Ø	Ø	1	Ø	1	A5	165
1	Ø	1	Ø	Ø	1	Ø	1	A5	165
1	Ø	Ø	Ø	Ø	Ø	Ø	1	81	129
1	Ø	1	1	1	1	Ø	1	BD	189
1	Ø	Ø	Ø	Ø	Ø	Ø	1	81	129
Ø	1	1	1	1	1	1	Ø	7E	126

To restore the normal character set, hold down the RUN/STOP key, then press reset. This will land you in the monitor! To escape, just press the X and then the RETURN key.

To find out the order of characters in memory, check the ASCII table in your reference manual. Use the formular SP=P+(A*8) to calculate the position of a character in memory, where A is the ASCII value of the character, and P is the start of character memory.

CAUTIONS

Please note these important facts:

1 The range of movement of the sprite is Ø to 37 for the X axis and Ø to 22 for the Y axis. The routine does no range testing, so it is up to you to make sure that the X and Y co-ordinates are in range.

2 The screen must not scroll.

3 Do not let your program place a sprite in location (Ø, Ø), which is reserved.

Appendix C
Merging Programs

The Merge program can be used to join other programs besides ChexSum and games programs, overcoming the lack of a MERGE command in Commodore BASIC. An important limitation to remember is that the smallest line number in the second program must be greater than the largest in the first program.

1. Load the Merge program by entering
   LOAD "MERGE" for tape or
   LOAD "MERGE", 8 for disk.
2. Enter RUN to cause Merge to place a machine language routine in high memory and to protect it by changing the top-of-memory pointer for BASIC.
3. Load the first program by entering
   LOAD "first program" for tape or
   LOAD "first program", 8 for disk.
4. Enter SYS16331.
5. Load the second program by entering
   LOAD "second program" for tape or
   LOAD "second program", 8 for disk.
6. Enter SYS16355 to complete the merge.

Appendix D
Printout Symbols

To aid clarity, the graphic symbols of the Commodore 16 computer have been represented in this book by special symbols designed to look like the pictographs which appear on the Commodore 16 keyboard.

COLOUR AND CONTROL CHARACTERS *

Symbol in book	Key
	CLR
	HOME
	CURSOR DOWN
	CURSOR UP
	CURSOR RIGHT
	CURSOR LEFT
	CTRL 1
	CTRL 2
	CTRL 3
	CTRL 4
	CTRL 5
	CTRL 6
	CTRL 7
	CTRL 8
	CTRL 9
	CTRL 0
	C= 1
	C= 2
	C= 3
	C= 4
	C= 5
	C= 6
	C= 7
	C= 8
	CTRL .
	CTRL .

* These characters are designed to emulate the characters which appear on the screen.

KEYBOARD CHARACTERS *

Symbol in book	Key	Symbol in book	Key
	C= E		C= ↑
	C= W		C= R
	C= D		C= Q
	C= C		C= F
	C= B		C= V
	C= T		C= +
	C= U		C= Y
	C= O		C= I
	C= @		C= P
	C= G		C= -
	C= J		C= H
	C= L		C= K
	C= M		C= N
	C= S		C= £
	C= A		C= X
	C= *		C= Z
	SHIFT L		SHIFT @
	SHIFT O		SHIFT P
	SHIFT I		SHIFT U
	SHIFT K		SHIFT J
	SHIFT W		SHIFT Q
	SHIFT +		SHIFT V
	SHIFT M		SHIFT N
	SHIFT Z		SHIFT S
	SHIFT X		SHIFT A
	SHIFT E		SHIFT D
	SHIFT *		SHIFT C
	SHIFT F		SHIFT R
	SHIFT T		SHIFT G
	SHIFT B		SHIFT -
	SHIFT H		SHIFT Y
	SHIFT £		SHIFT =
	SHIFT ZERO		

* These characters are designed to emulate the pictographs which appear on the front of the keys. The C= symbol is the special shift key located to the left of the left hand shift key.

Unfortunately different keyboard characters can produce identical symbols on the screen and printout. If a program doesn't work, these symbols may have been interchanged in a string:

	CTRL ,	CURSOR LEFT
	SHIFT *	SHIFT C
	SHIFT B	SHIFT -

Appendix E
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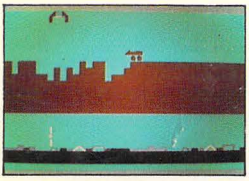

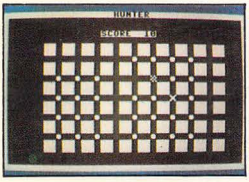

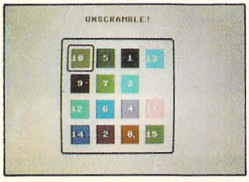

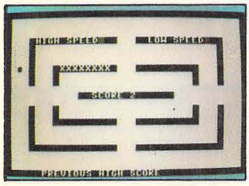

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