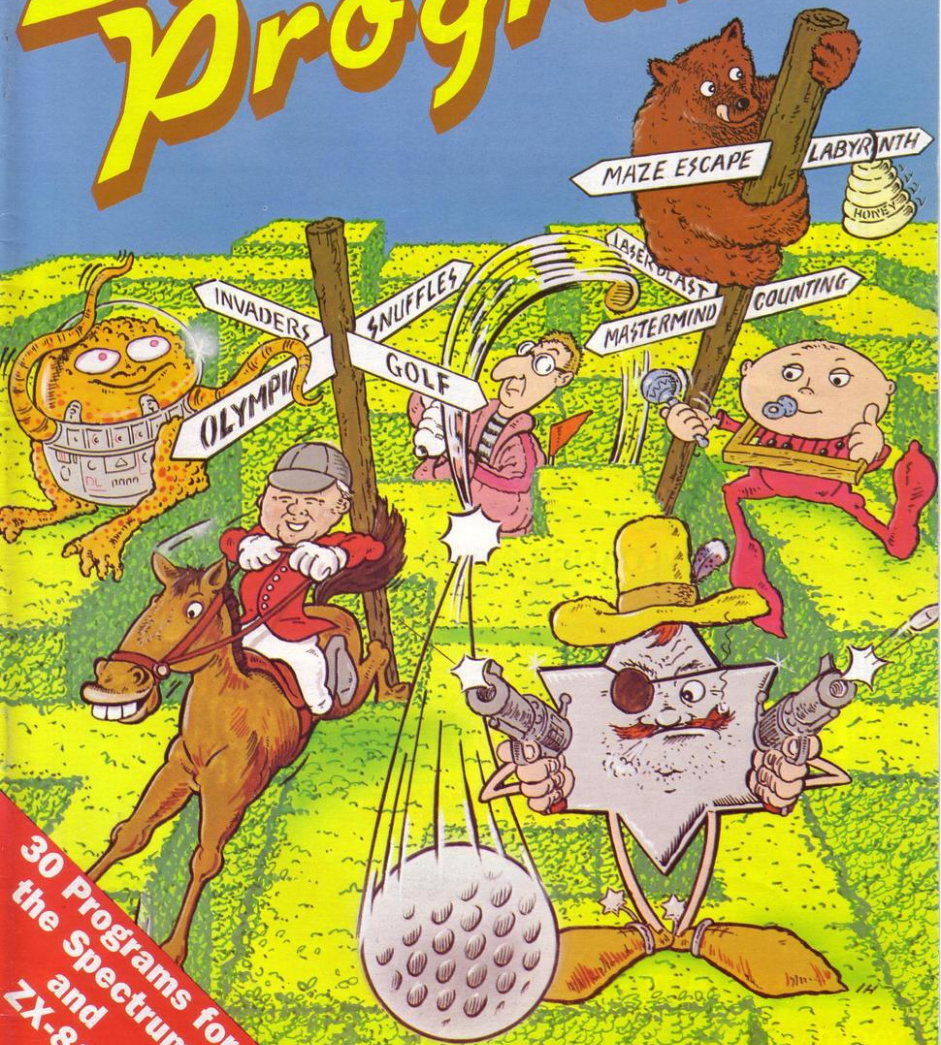


Sinclair Programs



30 Programs for
the Spectrum
and
ZX-81

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32k MEMORY EXTENSION

Plug the chip-set (Issue 2) or circuit board (Issue 1 £35) into the sockets provided by Sinclair and you have a standard 48k Spectrum, fully compatible with all Sinclair add-ons and very low in power consumption. No soldering is required. Fitting and removal are easy. The SP48 carries our full warranty and is upgradeable on a part-exchange basis to the SP80 for £28.

SP^{ECTRUM}80-£46

PAGED 64k MEMORY EXTENSION

Fitting, power consumption and add-on compatibility are identical to the SP48 (Issue 1 version £50). It can be used as a standard 48k, but software instructions can switch to a second page of 32k. Although not recommended for the complete beginner, the SP80 is of tremendous benefit to the serious user.

Fit and Test Service: At our premises £3
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NEW 80K PROGRAMS
For Spectrum with SP80. Enquiries on 01 474 4430. We regret our 48K to 80K part-exchange service is available only to SP48 owners.

ZX SLOWLOADER £10

Loads ZX81 tapes into your Spectrum. A recent letter describes it best.

Dear Sir, Just a line about your excellent Slowloader. I bought it because I was nearing the completion of a project which uses practically everything in 16k RAM including a string array (DIM 629.7) which took 4 hours hard graft to bash in. I really did not fancy doing it all again.

SLOWLOADER twice found a tape-loading error. So I SAVED again onto a short, high-quality tape - and this time it went straight in. Two minutes to take out the SLOW and FAST lines, 10 to renumber the PEEKs and POKEs, 20 to add some colour and a few BEEPs, and the thing was ready to SAVE again. What a little masterpiece!

All products on this order form are in stock at the time of going to press.

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To East London Robotics Ltd. Please send by return (tick items required). £ P

- MAXIMEM 32k. (£39 + ZX81)
- MAXIMEM 64k. (£59 + ZX81)
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- SP80 (Issue 1 £50) (Issue 2 £46)
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Programs should be on cassette and
articles should be typed. We cannot
undertake to return them unless a
stamped-addressed envelope is
included.

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- | 30 | PROGRAM OF THE MONTH | SPECTRUM |
|----|----------------------------|----------------------------|
| 7 | ERRORS AND MISHAPS LETTERS | 11 PETROL CONSUMPTION LOGO |
| 21 | | TOUCH TYPE |
| 22 | | WASHING LINE |
| 8 | INVADERS | 24 HIT STAR |
| 9 | SNUFFLES | 27 NOUGHTS AND CROSSES |
| 12 | GOLF | 30 LABYRINTH |
| 19 | MAZE ESCAPE | 34 POKER |
| 20 | HIGH NOON | 36 STAR CATCH |
| 25 | SPACE MISSION | 37 SPECVADERS |
| 26 | PERISCOPE | 40 ALPHA ATTACK |
| 29 | BLOCK STOP | 41 TANK DUEL |
| 32 | SPACE GRAZE | 47 PATHWAY |
| 33 | LASER BLAST | 50 OLYMPIA |
| 38 | ATLANTIC LANDER | 52 FRYOLITES |
| 39 | FALL THROUGH | 54 COUNTING |
| 48 | CONVERSATION | |
| 51 | MASTERMIND | |

To help with entering graphics characters we have adopted a system of writing the characters for the ZX-81. We indicate inverse characters by the letter *i* and graphics by *g*, so that an inverse letter *W* is shown as *Wⁱ* and the graphics character on key *6* is denoted by *g₆*. Spaces are shown by *sp* and inverse spaces are *isp*. If some occur together, for instance a row of six spaces, they are shown by *6 * sp* and where there is a combination of characters each one is divided by a colon, thus *sp:ispⁱ * g₆* means a space followed by an inverse space and then six characters on the *6* key.
Where whole words are written in inverse letters they appear in the listings as lower-case letters.
In the Spectrum listings, letters to be entered in graphics mode are underlined, while other graphics instructions are underlined and take the form shown above, with the addition that inverse graphics characters are represented by the letters "ig".

The changes continue. Following our decision to publish *Sinclair Programs* monthly and make a special award for the best program each month, we have decided to make another attempt to encourage better programming.

From this issue we shall publish only 30 programs instead of the 40 which have been included previously. The move was made necessary partly by you, our readers, who sent us many programs which, despite their quality, we were unable to use because of their length. With more space for longer programs we will print more complicated listings which your letters tell us are needed.

We also intend to begin publishing machine code listings. We have one in this issue for a Space Invaders game and we will be looking for more in the coming months. Please enclose a complete listing with all machine code programs.

AGF

PROGRAMMABLE JOYSTICK INTERFACE

for

Sinclair

ZX Spectrum 81

TOTAL SOFTWARE COMPATIBILITY!

ABOUT OUR PROGRAMMABLE INTERFACE

Surpassing the outstanding specification of our Interface Module II which still offers the best software support at its price, a Joystick Interface that is compatible with ALL SOFTWARE through its unique hardware programmable design.

The Interface plugs on to the rear connector of your ZX81 or ZX Spectrum.

Quick clip-on connections, which are configured from a reference card supplied, allow you to define which of the forty keys are simulated by which action of the Joystick. A pack of ten Quick Reference Programming Cards makes setting for your favourite games even easier. These can be filled in to show at a glance the configuration required and stored in the cassette case of the particular game. When you change to a game using different keys the module is re-programmed in a few seconds.

As with our Interface Module II the Programmable Interface accepts all standard switch Joysticks that are Atari-compatible. Two sockets are available which are connected together for two player games which use the same keys for both players.

The Interface resides in the keyboard address space and does not affect its operation or interfere with any other add-ons. A rear extension edge connector will accommodate expansion of your system.

The unique AGF key simulation principle makes it extremely easy to incorporate Joystick action in your own programs. All eight directions and fire are read by simple BASIC.

With every order comes a free demonstration program called 'Video Graffiti' plus a full set of instructions.

PACKAGE CONTENTS SUPPLIED

- Programmable Interface Module as illustrated, complete with clip-on programming leads.
- Self adhesive programming chart detailing how to define which key is simulated by UP, DOWN, LEFT, RIGHT, and FIRE. This can be fixed on to the case of your computer or if preferred the protective backing can be left on. The chart is made of a very durable reverse printed plastic and is extremely easy to read.
- One pack of ten Quick Reference Programming Cards for at-a-glance setting to your games requirements. The card allows you to mark the configuration in an easy to read fashion with space to record the software title and company name.
- Video Graffiti demonstration program which is written totally in BASIC to illustrate how all eight directions and fire can be read. This is also a useful high resolution drawing program.
- 12 months guarantee and full written instructions.

JOYSTICKS

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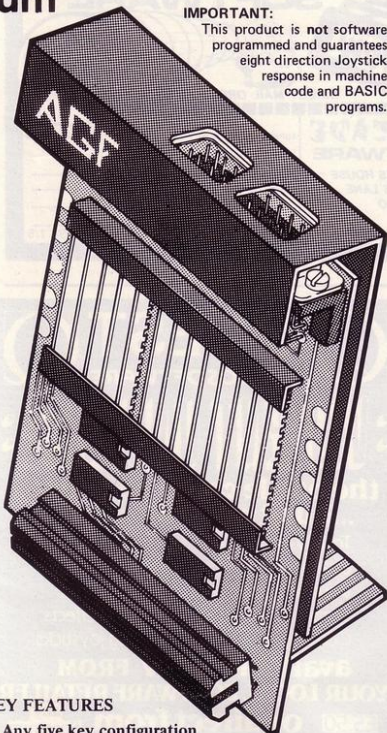
FROM: MR/MRS/MISS			
ADDRESS			
SEND C.W.O. (NO STAMP NEEDED) TO: A.G.F. HARDWARE, DEPT.			
FREEPOST, BOGNOR REGIS, WEST SUSSEX PO22 9BR			
QTY	ITEM	ITEM PRICE	TOTAL
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	PACK(S) QUICK REFERENCE CARDS	1.00	
	INTERFACE MODULE II	20.95	
	JOYSTICK(S)	7.54	
	SOFTWARE AS TICKED ON LIST		
	SOFTWARE AS TICKED ON LIST		
ONE	VIDEO GRAFFITI	FREE	
	ZX81 <input type="checkbox"/>	ZX SPECTRUM <input type="checkbox"/>	Please tick
DEALER ENQUIRIES WELCOME		EXPORT PRICES ON APPLICATION	
		FINAL TOTAL	

NEW!

Sinclair

IMPORTANT:

This product is not software programmed and guarantees eight direction Joystick response in machine code and BASIC programs.



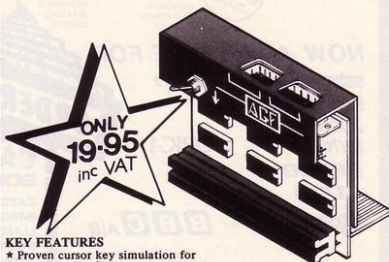
KEY FEATURES

- Any five key configuration programmed onto joystick
- Accepts all Atari-compatible Joysticks
- Rear connector for any other add-ons
- Use will not affect Sinclair guarantee
- Full instructions & 12 month guarantee

JOYSTICK INTERFACE II

for

sinclair ZX Spectrum 81



KEY FEATURES

- * Proven cursor key simulation for maximum software support
- * Accepts Atari, Competition Pro, Wico, Starfighter, Quick Shot, Le Stick, etc.
- * Second Joystick facility
- * Eight directions programmed in simple BASIC
- * Rear extension connector for all other add-ons
- * Free demo program, "Video Graffiti" + full instructions

JOYSTICKS

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INTERFACE II COMPATIBLE SOFTWARE

ZX SPECTRUM	Hewson ...	Nightlite
Abbex ...	* Spookyman	Spevaders
	* Invasion	Mazechase
	* Harrier	Star Trail
	* Cosmos	(Man.Dock)
	* The Android Run	Zzoom
	* High Noon	Ghost's Revenge
	* ETX	Escape £4.95
	* Mazeman	3D Tunnel £5.95
Abersoft ...	The Wizards	Knot in 3D £5.95
	Warriors	Time Bandits
Apocalypse Software ...	Galactic Jailbreak	Spectral Maze
Axis ...	Labyrinth	Flight Simulation
Blaby Comp. & Vid. ...	Chopper Rescue	VU-3D
	Confusion	Meteor Storm
Campbell Systems ...	Gulpmen	Space Intruders
CDS Micro Systems ...	Leapfrog	Gnasher
C.Tech ...	Specman	Spectapead
DIL Software	Froggy	Ground Attack
DK Tronics	3D Tanx £4.95	□ Cyber Rats £5.95
	Meteoroids	Pony Express
		Vec-Man
		LATEST ADDITION
		Digital Integration
		Night Gunner & Fighter Pilot

* State "AGF version"

"PLUS 21 ZX81 Titles"

We are pleased to say that future software support commitment for the AGF Interface II has been negotiated from many of the companies listed above. For example all new titles from Imagine, commencing with Zoom, will be compatible and carry the compatibility logo, shown below, on their packaging. This new logo scheme will help you select software that is guaranteed compatible and is also being adopted by many of the supporting suppliers. At the time of printing it is hoped that pending releases from BugByte will enjoy AGF compatibility.



AGF Hardware, 26 Van Gogh Place, Bognor Regis, West Sussex PO22 9BY

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 SKI JUMP
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 NIM
 TUNNEL ESCAPE
 BARREL JUMP
 CANNONBALL BATTLE
 OVERTAKE
 SITTING TARGET
 SMASH THE WINDOWS
 SPACE SHIP
 JET FLIGHT
 PHASER
 INTRUDER
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 GHOSTS

SUBMARINES
 ROCKET LAUNCH
 PLANETS
 BLACK HOLE
 DYNAMITE
 DO YOUR SUNS
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SP 1/6



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We are a professional marketing company, interested only in obtaining the highest rewards for software writers. We are not connected with any hardware or software manufacturers and deal with writers in total honesty. Most importantly, we can secure deals for them, worldwide, which are way ahead of anything they could negotiate themselves.

If you have written a program, for any Sinclair computer, which you think could be commercial, send it to us on tape for evaluation. We will advise you, free and without the slightest obligation, on the commercial prospects for your program.

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 Suffolk

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ring **0242-583661**

QUEST...
...SIMPLY THE BEST

LETTERS

AS I BROWSED through the magazines at my local newsagent, my eyes clamped on a yellow and pink cover—what great colours. I bought it immediately and ran the mile home in two seconds flat. I went upstairs to my room, ripped off the cassette neatly and peered inside the magazine. At that point disaster struck—more and more 48K Spectrum games.

I read on and found that there were only a few good 16K Spectrum games and all the 48K games were of good quality.

The 16K Spectrum games in your magazine are becoming very rare, so you had better put 16K games in your magazine in equal proportion to the 48K, or my mates and I will give you a good pasting.

**Mark Sargusingh,
London NW9.**

The greatest

YOU ARE the greatest. You brighten me up every month with your programs. I like everything about the magazine. It is the only one which is read nearly every day.

What I think is a good idea would be to have a pull-out poster of a big program.

Yours gratefully for the best computer magazine.

**Carl Marson,
Debenham,
Suffolk.**

Over-stated

I BUY *Sinclair User* and *Sinclair Programs* every month. I would like to know the point of putting such statements as:

10 GOTO VAL "50"

OR

10 GOTO CODE "COS"

Why (in the first example) cannot you print

10 GOTO 50

Why in the second example do you not print

10 GOTO 179—this being the relevant code.

We all know that the longer the statement the more memory it uses, so why use this method?

I would also like to point out that Play School is a programme and Asteroids is a program. Many people are confused with the spelling of these two words.

**Mark Mills (aged 13),
Lytham St. Annes,
Lancashire.**

Misled

I THINK that your advertisement on page 44 in the May issue of *Sinclair Programs* is rather misleading. You say at the top of the advertisement that for 95 pence you can get hours of fun, intellectual satisfaction, and educational programs. At the bottom of the advertisement you wrote *Sinclair Programs*—12 issues—price £13.20. If you multiply 95 times 12 your answer is £11.40.

Can you please tell me where the bonus £2 has gone? Is it postage? If it is, why is that not written somewhere in the advertisement?

**Ian Bryant,
Fleet, Hampshire.**

● *As you suggest, the extra £2 is to cover postage costs, in common with all other magazines. We consider it worthwhile for subscribers to pay the extra amount to ensure receiving their copies of the magazine.*

Plea for more

IN BUYING the new monthly issue of *Sinclair Programs*, I found that most of

the programs were very enjoyable to play and enter. I have a ZX-81 which is a very good computer but I wish that there could be more 16K programs.

I found that the best program was Fruit Collector, which is difficult to master but has easy listing to put in the computer.

I am one of many who are learning how to use the ZX-81. I would be very grateful if you would put in more 16K programs and not as many 1K programs.

The Best of Sinclair Programs was very enjoyable and entertaining.

**Daniel Ferrier (aged 13),
Louth, Lincs.**

Rio bound

REGARDING *Sinclair Programs*, I really feel that I have no need for computer games; after all, it is a computer and not a video games machine, at least not full time.

**Hubert Melin,
c/o General Motors do
Brasil, Av. Augusto Severo
8-8th, 20.021 Rio de
Janeiro, Brazil.**

ERRORS AND MISHAPS

ONE CORRECTION to the May issue was not included in our last issue. The last line of *Climber* on page 29 was omitted. It should have read:

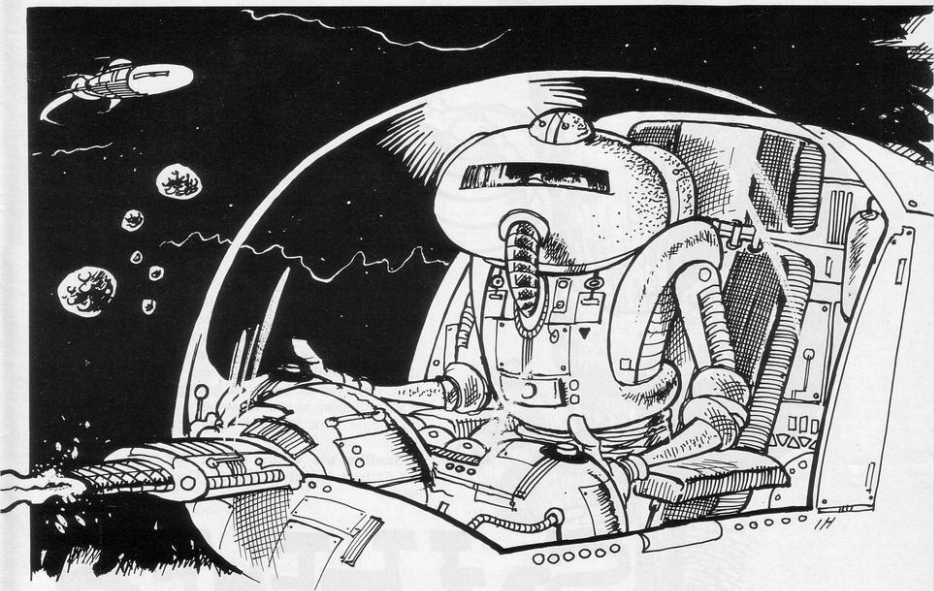
300 PRINT S

A smudge in the listing of *Deployment Strategy*—June, page 47—

caused problems for many of our readers. Line 1030 should have read:
1030 PRINT AS(1+(21-1)/20, 1 TO A(P))

Beat the Barrage—June, page 36—caused problems for people trying to program line 750. It read:
750 READ b: POKE USR a\$+a,b





```

500 PRINT AT 0,0;"FUEL LOW";AT
0,0;"fuel low"
501 RETURN
600 FOR F=1 TO 100
605 PRINT AT 0,15;"LAZER OVERHE
ATED ";AT 0,15;"lazer overheate
d"
606 LET Q=Q+.2
620 NEXT F
630 PRINT AT 0,15;"LAZER OPERAT
IONAL "
635 LET XX=0
640 RETURN
700 PRINT AT 4,0;"
701 FOR Z=26 TO 0 STEP -2
704 PRINT AT 2,Z;"(99:i#:9w:sp:
sp)"
705 LET A=A+(INKEY#="8" AND A<2
9)-(INKEY#="5" AND A>2)
706 PRINT AT 19,A-2;"(sp:93:9w:
sp)";AT 18,A;
707 IF INKEY#="0" THEN LET L=US
R 16514
710 IF L<>0 THEN LET SCORE=SCOR
E+15
711 IF L<>0 THEN PRINT AT 2,Z;"
"
712 IF L<>0 THEN RETURN
720 NEXT Z
721 PRINT AT 2,0;" "
722 RETURN
1000 PRINT AT 0,0;"YOUR TIME IS
UP YOU KILLED ";SCORE;" ALIENS
"
1010 IF SCORE>HS THEN PRINT "YOU
HAVE ATTAINED THE HIGH SCORE"
1015 IF SCORE>HS THEN PRINT "PLE
ASE TYPE IN YOUR NAME FOR OTH
ERS TO LOOK AT AND WONDER"
1016 IF SCORE>HS THEN INPUT H#
1020 IF SCORE>HS THEN LET HS=SCO
RE
1025 FOR F=0 TO 100
1026 NEXT F
1028 CLS
1030 GOTO 10
2000 PRINT "SPACE INVADERS
KILL AS MANY AS YOU
CAN BEFORE YOUR FUEL RUNS OUT
USE TO MOVE
5 LEFT
8 RIGHT
0 TO FIRE LAZER"
7004 PAUSE 2000
7005 CLS
7006 GOTO 3

```



THE OBJECT is to collect as many honeypots as possible from the tree on the left of the screen. To get a honeypot you must jump over the rolling boulders, the hole and the wall. Once you are under the honeypot it will fall down to you. Move left with "5", right with "8" and jump with "0".

Snuffles was written for the 16K ZX-81 by J Hallett of Helston, Cornwall.

SNUFFLES

```

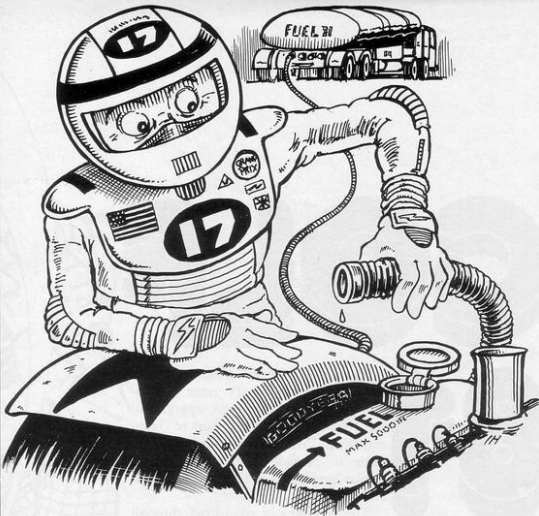
1 DIM A$(12,0)
2 LET SC=0
6 LET Y=23
7 LET F=C
10 LET A$(1)="(2*sP:4*9h:2*sP)
"
11 LET A$(2)="(sP:0*9h:sP)"
12 LET A$(3)="(0*9h)"
13 LET A$(4)="(sP:6*9h:sP)"
14 LET A$(5)="(2*sP:4*9h:2*sP)
"
15 LET A$(6)="(3*sP:98:95:3*sP
)"
16 LET A$(7)="(3*sP:98:95:3*sP
)"
17 LET A$(8)="(3*sP:98:95:3*sP
)"
18 LET A$(9)="(3*sP:98:95:3*sP
)"
19 FOR N=1 TO 9
20 PRINT A$(N)
21 NEXT N
22 PRINT AT 9,0;"(16*97:sP:14*
97)"
23 LET X=8
24 PRINT AT 4,4;"U"
25 PRINT AT 8,F;"0"
26 LET I$=INKEY$
27 IF I$="5" THEN LET Y=Y-1
28 IF I$="0" THEN LET Y=Y-1
29 IF I$="8" THEN LET X=X-1
30 IF I$="0" THEN LET Y=Y+1
31 PRINT AT X,Y;" 8 "
32 LET F=F+1
33 PRINT AT 8,11;"(95)"
34 IF X=8 AND Y=10 OR Y=F THEN
GOSUB 1000
35 PRINT AT X-1,Y;" "
36 IF F>25 THEN LET F=6
37 IF Y=15 AND X=8 THEN GOSUB
2000
38 IF Y=5 THEN GOSUB 3000
39 PRINT AT 8,25;" "
40 GOTO 23
1000 PRINT AT 10,10;"SPLAT.SCORE
=";SC
1020 STOP
2000 PRINT AT X,Y;" " ;AT X+
1,Y+1;"8";AT 10,10;"AACH.SCORE=
";SC
2020 STOP
3000 PRINT AT 4,4;"(9h)";AT 8,5;
"U"
3010 PAUSE 100
3020 LET SC=SC+10
3030 CLS
3040 GOTO 5

```

```

10 LET a$="PETROL CONSUMPTION
CALCULATOR": PRINT AT 9,16-(LEN
a$)/2):a$
20 PRINT AT 11,14:"BY": PRINT
AT 13,10:"GERRY NEARY"
30 PAUSE 100: BORDER 2: PAPER
6: INK 9: CLS
40 PRINT AT 10,0: BRIGHT 1:"Th
is Program Assumes You Fill
Your Tank Each Time
"
45 PAUSE 100: CLS
50 INPUT "Enter start mileage"
a$: PRINT "STARTING MILEAGE ="a$
60 INPUT "Enter finishing mile
age":b: PRINT "FINISHING MILEAGE
="b$
70 LET c=b-a: PRINT "COMPLETED
MILEAGE ="c
80 INPUT "Enter petrol in flow
res only":d: PRINT "PETROL ="d
90 INPUT "Press 1 if Gallon,Pr
ess 2 if litres":e: GO TO e#1
00
100 LET f=c/d: PRINT "MILES PER
GALLON ="f
110 PRINT "or "c/(d#4.546)" M
ILES PER LITRE"
130 GO TO 300
200 LET g=c/d: PRINT "MILES PER
LITRE ="g: PRINT "or "c/(d#
2.2)" "MILES PER GALLON": GO TO 3
00
300 INPUT "enter Price Paid in
 Pence":g
310 LET h=g/c: PRINT "COST PER
MILE ="h/g
320 IF h<5 THEN PRINT FLASH 1:"
CHEAP OR YOU ARE CHEATING"
325 IF h>5 AND h<10 THEN PRINT
FLASH 1:"AVERAGE"
330 IF h>10 THEN PRINT FLASH 1:
"BUY A SMALLER CAR"
340 INPUT "COPY "g$: IF G$="y"
THEN COPY
350 IF G$<>"y" THEN PRINT FLASH
1:"HOPE YOU CHECKED THE OIL"

```



PETROL CONSUMPTION

WHEN PETROL began to be sold by the litre as well as by the gallon, Gerry Neary of Croydon, Surrey, found he had problems calculating his **Petrol Consump-**

tion and so he devised a program for the 16K Spectrum which would calculate it for him.

Input your starting mileage, your finishing mileage and the amount of petrol

in litres or gallons. The computer will display your fuel consumption in gallons per mile and litres per mile, as well as the price per mile.



LOGO

I BILLUPS of Crewe, Cheshire, has written a useful routine for displaying titles, slogans or logos on the 16K Spectrum. Once it is run it requires an input of fewer than 30 characters.

It will then display them at the centre of the screen by "shooting" them in from random directions in different colours and with various notes.

```

10 PAPER 0: BORDER 0: CLS
20 INPUT a$
30 IF LEN a$>30 THEN GO TO 10
40 LET x=INT (31-LEN a$)/2
50 FOR l=1 TO LEN a$
60 LET g=INT (RND#7)*30+120
70 IF (x+1)>20 AND g>200) OR (x
+1<10 AND g>200) THEN GO TO 60
80 GO SUB g
90 BEEP .1+(1=LEN a$)*2.9/10
100 NEXT l: CLS : GO TO 50
110 REM *****Subroutine*****
120 FOR n=1 TO 10: REM N
130 PRINT INK 7/AT n,x+1,a$(l)
AT n-1,x+1) " "

```

```

140 NEXT n: RETURN
150 FOR n=20 TO 10 STEP -1: REM
S
160 PRINT INK 6/AT n,x+1,a$(l)
AT n+1,x+1) " "
170 NEXT n: RETURN
180 FOR n=30 TO x+1 STEP -1: RE
M E
190 PRINT INK 5/AT 10,n,a$(l)+"
"
200 NEXT n: RETURN
210 FOR n=20 TO 10 STEP -1: REM
SW
220 PRINT INK 4/AT n,x+1+10-n)a
$(l),AT n+1,x+1+9-n) " "

```

```

230 NEXT n: RETURN
240 FOR n=1 TO 10: REM NW
250 PRINT INK 5/AT n,x+1+10+n)a
$(l),AT n-1,x+1+11+n) " "
260 NEXT n: RETURN
270 FOR n=20 TO 10 STEP -1: REM
SE
280 PRINT INK 6/AT n,x+1-10+n)a
$(l),AT n+1,x+1-9+n) " "
290 NEXT n: RETURN
300 FOR n=1 TO 10: REM NE
310 PRINT INK 7/AT n,x+1+10-n)a
$(l),AT n-1,x+1+11-n) " "
320 NEXT n: RETURN

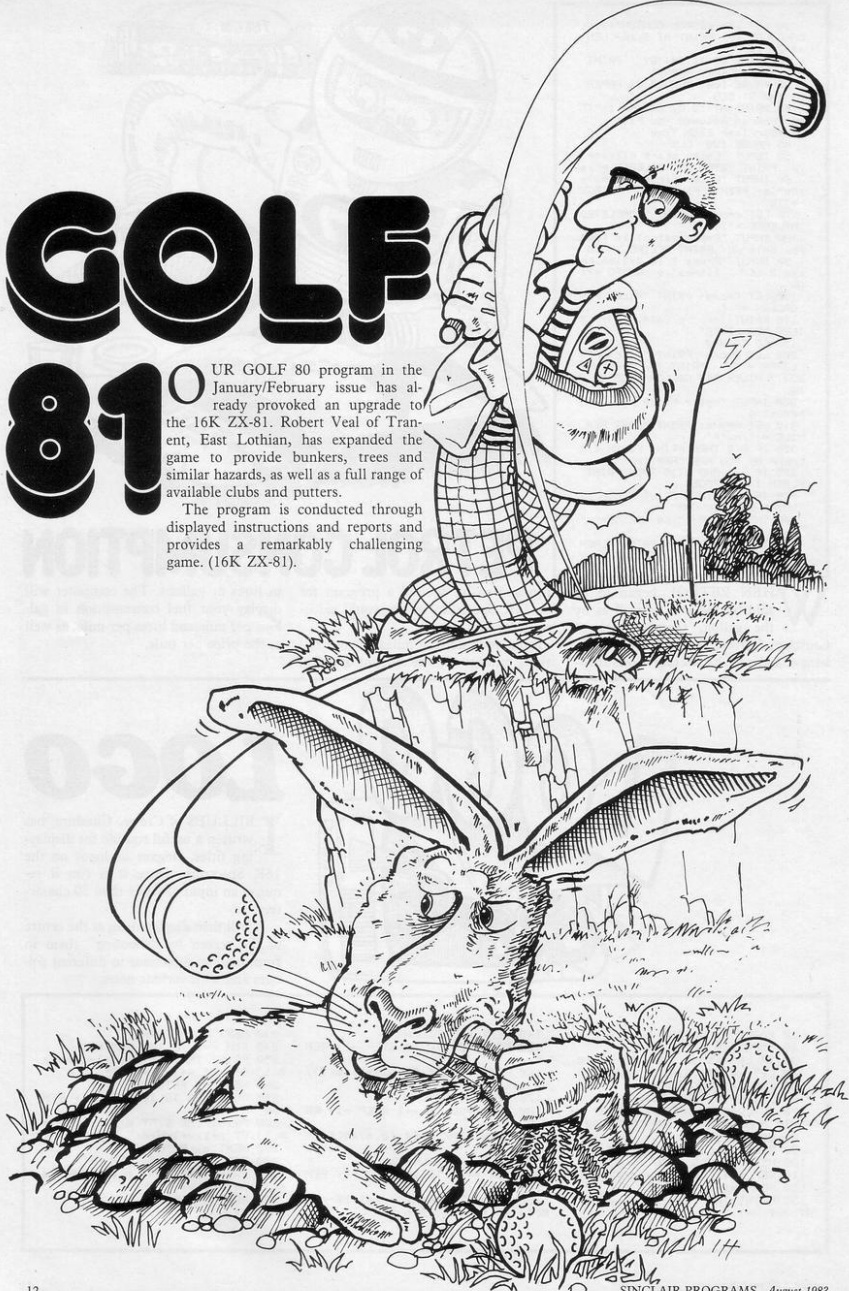
```

GOLF

81

OUR GOLF 80 program in the January/February issue has already provoked an upgrade to the 16K ZX-81. Robert Veal of Tranent, East Lothian, has expanded the game to provide bunkers, trees and similar hazards, as well as a full range of available clubs and putters.

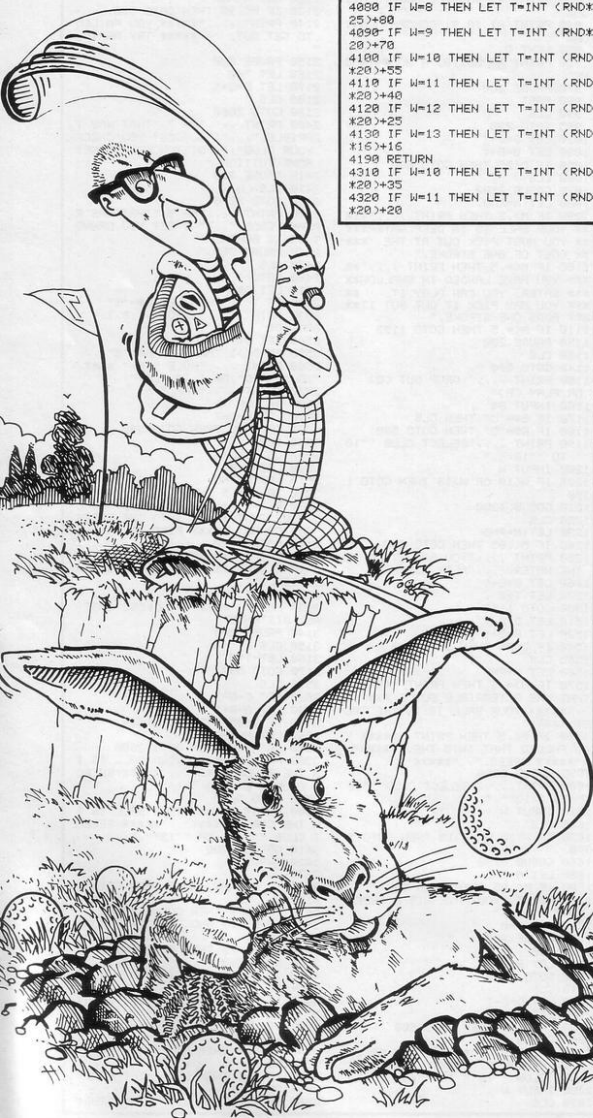
The program is conducted through displayed instructions and reports and provides a remarkably challenging game. (16K ZX-81).



```

30 CLS
40 FAST
50 LET X=0
60 LET A=1
70 LET P=0
80 LET H=0
90 LET B=0
100 LET P=0
120 LET M=RND
130 IF MK.10 THEN LET P=3
140 IF P=3 THEN GOTO 190
150 IF MK.2 THEN LET P=5
160 IF P=5 THEN LET D=INT (RND*
75.4)+476
170 IF M)=.2 THEN LET P=4
180 IF P=4 THEN LET D=INT (RND*
224)+251
190 IF P=3 THEN LET D=INT (RND*
145)+105
220 LET D$=""
230 IF D<>1 THEN LET D$="S"
240 PRINT "HOLE "J,A," *****
"D,J," YARD";D$;" TO PLAY"
250 PRINT "PAR "P
270 IF H<1 THEN PRINT "SEL
ECT CLUB "I;" TO "I+13;"
280 IF H=1 THEN GOTO 340
290 INPUT W
300 CLS
310 IF W>13 THEN GOTO 220
320 GOSUB 4000
330 GOTO 390
340 IF H=1 THEN PRINT "ENTE
R PUTT DISTANCE "I;" TO "I+17;"
350 INPUT E
360 CLS
370 IF E>17 THEN GOTO 220
380 GOTO 4500
390 LET M=RND
400 IF MK.03 THEN GOTO 3000
410 IF MK.05 THEN GOTO 1000
420 IF MK.1 THEN GOTO 1500
430 IF MK.15 THEN GOTO 2000
450 IF MK.2 THEN GOTO 3500
500 LET D=D-T
590 LET B=B+1
600 LET D$=""
610 IF T<>1 THEN LET D$="S"
620 PRINT "STROKE "B,T;" YAR
D";D$
630 IF D>-1 THEN GOTO 680
640 LET D=D-1
650 LET D$=" "
660 IF D<>1 THEN LET D$="S"
670 PRINT "D";" YARD";D$;" P
AST HOLE"
680 IF D=0 THEN GOTO 725
700 IF D<18 AND D>=19 THEN PRIN
T "YOUR BALL IS ON THE GREEN"
710 IF D<18 AND D>=19 THEN LET
H=1
720 GOTO 220
725 IF D=0 AND B=1 THEN GOTO 91
0
730 IF B>P THEN PRINT "BOGI
E "B,B-P;" OVER"
740 IF B=P THEN PRINT "PAR
"B
750 IF B=P-1 THEN PRINT " *
BIRDIE "B;" *
760 IF B=P-2 THEN PRINT " *
* EAGLE "B;" *
780 LET X=X+B
790 LET F=F+P
800 LET A=A+1
810 IF A=19 THEN GOTO 850
820 PAUSE 300
830 CLS
840 GOTO 80
850 PRINT "COURSE PAR",F
860 PRINT "YOUR SCORE",X
870 IF X=F THEN PRINT "LEVE
L PAR"
880 IF X>F THEN PRINT "X-F;"
OVER"
885 IF X>F+5 THEN GOTO 2400
890 IF X<F THEN PRINT "F-X;"
UNDER","HELL DONE"
895 IF X+<F THEN GOTO 2450
900 STOP
910 SLOW
920 FOR Q=1 TO 10
930 PRINT AT 18,9;"CONGRATULATI
ONS"
940 PRINT AT 18,9;"CONGRATULATI
ONS"
950 NEXT Q
960 PRINT AT 20,10;"A HOLE IN O
NE"
970 PAUSE 200
980 FAST
990 CLS
995 GOTO 730
1020 LET D=D-T
1030 LET B=B+1
1050 IF D<25 THEN GOTO 600
1060 CLS
1070 GOSUB 2500
1080 LET M=RND
1090 IF M>.5 THEN PRINT "****
** YOUR BALL IS IN DEEP WATER****
** YOU MUST PICK OUT AT THE ****
** COST OF ONE STROKE."
1100 IF M<=.5 THEN PRINT "****
** YOU HAVE LANDED IN SHALLOWS****
** WATER, YOU CAN PLAY IT. **
** YOU MAY PICK IT OUT BUT IT**
** ADDS ONE STROKE."
1110 IF MK=.5 THEN GOTO 1150
1120 PAUSE 200
1130 CLS
1140 GOTO 590
1150 PRINT "DROP OUT (>
OR PLAY (<)"
1160 INPUT B#
1170 IF B#="0" THEN CLS
1180 IF B#="D" THEN GOTO 590
1190 PRINT "SELECT CLUB ""10
"" TO ""13""
1200 INPUT W
1205 IF W<10 OR W>13 THEN GOTO 1
190
1210 GOSUB 4300
1220 CLS
1230 LET M=RND
1240 IF MK.05 THEN GOTO 500
1250 PRINT "YOU ARE STILL IN
THE WATER,""PLAY AGAIN."
1260 LET B=B+1
1270 LET T=0
1300 GOTO 1190
1510 LET D=D-T
1520 LET B=B+1
1540 IF D<25 THEN GOTO 600
1550 CLS
1560 LET M=RND
1570 IF M>.5 THEN PRINT "*****
THAT WAS A TERRIBLE SLICE,*****"
***** YOUR BALL IS IN THE TRE
ES,*****
1580 IF MK.5 THEN PRINT "***** Y
OU PULLED THAT INTO THE *****",
***** TREES.",*****"
1590 GOSUB 2500
1600 PRINT "SELECT CLUB ""10
"" TO ""13""
1610 INPUT W
1620 CLS
1630 IF W<10 OR W>13 THEN GOTO 1
590
1640 GOSUB 4100
1680 LET M=RND
1690 IF MK.95 THEN GOTO 500
1700 PRINT "YOU HAVE HIT A TREE.
PLAY AGAIN."
1710 LET T=0
1720 PAUSE 200
1730 CLS
1740 LET B=B+1
1750 GOTO 1590
2010 CLS
2020 LET D=D-T
2030 LET B=B+1
2050 IF D<18 THEN GOTO 600
2060 GOSUB 2500
2070 PRINT "***** YOUR BALL
IS IN A BUNKER, *****",***** S
ELECT CLUB ""10"" TO ""13""
2080 INPUT W
2090 CLS
2100 IF W<10 OR W>13 THEN GOTO 2
060
2110 GOSUB 4300
2120 LET M=RND
2130 IF MK.95 THEN GOTO 590
2140 PRINT "***** YOU FAILED
TO GET OUT. ***** TRY AGAIN.
"
2150 PAUSE 200
2160 LET T=0
2170 LET B=B+1
2180 CLS
2190 GOTO 2060
2400 PRINT "TAB 7;"THAT WAS T
ERIBLE." "I SUGGEST YOU CHECK
YOUR CLUB";"DISTANCES. OR GET
SOME TUITION."
2410 PAUSE 300
2420 CLS
2430 GOTO 5100
2450 PRINT "TAB 5;"THAT WAS R
ATHER GOOD," I BET YOU CANNOT
T DO IT AGAIN."
2460 PAUSE 300
2470 CLS
2480 GOTO 1
2510 LET D$=""
2520 IF T<>1 THEN LET D$="S"
2530 PRINT "STROKE "B,T;" Y
ARD";D$
2540 LET D$=""
2550 IF D<>1 THEN LET D$="S"
2560 PRINT "HOLE "J,A," *****
"D,J," YARD";D$;" TO PLAY"
2570 PRINT "PAR "P
2580 RETURN
3010 LET D=D-T
3030 IF D<30 THEN GOTO 590
3040 CLS
3050 LET D=D-T
3060 LET B=B+1
3070 LET M=RND
3080 IF M>.5 THEN GOTO 3110
3090 PRINT "***** YOU HAVE HOOKE
D YOUR SHOT ***** INTO THE TREES
AND CANNOT ***** FIND IT."
3100 GOTO 3120
3110 PRINT "***** YOU HAVE SLICE
D INTO WILD ***** ROUGH, YOUR BA
LL IS LOST."
3120 PRINT "*****
3130 PRINT "***** YOU LOSE SHOT
AND DISTANCE"
3140 PAUSE 200
3150 CLS
3160 LET T=0
3170 GOTO 590
3510 CLS
3520 LET D=D-T
3530 LET B=B+1
3550 IF D<25 THEN GOTO 600
3560 LET M=RND
3570 IF M>.5 THEN GOTO 3600
3580 PRINT "***** YOUR BALL IS I
N THE ROUGH,*****",***** SELEC
T CLUB ""8"" TO ""13""
3590 GOTO 3610
3600 PRINT "***** YOUR BALL IS I
N THE GORSE,*****",***** SELEC
T CLUB ""12"" OR ""13""
3610 GOSUB 2500
3620 INPUT W
3630 CLS
3640 IF W<8 AND MK.9 THEN GOTO 3
610
3650 IF MK.9 THEN GOSUB 4000
3660 IF M>.9 AND W<12 THEN GOTO
3610
3670 IF M>.9 THEN GOSUB 4120
3720 GOTO 500
4010 IF W=1 THEN LET T=INT (RND*
65)+185
4020 IF W=2 THEN LET T=INT (RND*
55)+175
4030 IF W=3 THEN LET T=INT (RND*
35)+160
4040 IF W=4 THEN LET T=INT (RND*
25)+150
4050 IF W=5 THEN LET T=INT (RND*
20)+135
4060 IF W=6 THEN LET T=INT (RND*

```



```

20>+120
4070 IF W=7 THEN LET T=INT (RND*
25)+100
4080 IF W=8 THEN LET T=INT (RND*
25)+80
4090 IF W=9 THEN LET T=INT (RND*
20)+70
4100 IF W=10 THEN LET T=INT (RND
*20)+55
4110 IF W=11 THEN LET T=INT (RND
*20)+40
4120 IF W=12 THEN LET T=INT (RND
*20)+25
4130 IF W=13 THEN LET T=INT (RND
*15)+16
4190 RETURN
4310 IF W=10 THEN LET T=INT (RND
*20)+35
4320 IF W=11 THEN LET T=INT (RND
*20)+20
4330 IF W=12 THEN LET T=INT (RND
*20)+15
4340 IF W=13 THEN LET T=INT (RND
*15)+10
4350 RETURN
4510 IF E=1 THEN LET T=1
4520 IF E=2 THEN LET T=2
4530 IF E=3 THEN LET T=INT (RND*
3)+2
4535 IF E=4 THEN LET T=INT (RND*
3)+3
4540 IF E=5 OR E=6 THEN LET T=IN
T (RND*5)+4
4545 IF E=7 OR E=8 THEN LET T=IN
T (RND*5)+5
4550 IF E=9 OR E=10 THEN LET T=I
NT (RND*5)+7
4560 IF E=11 OR E=12 OR E=13 THE
N LET T=INT (RND*7)+8
4570 IF E=14 OR E=15 THEN LET T=
INT (RND*7)+11
4580 IF E=16 OR E=17 THEN LET T=
INT (RND*8)+12
4600 GOTO 500
5000 PRINT AT 0,12;"G O L F"
5010 PRINT ..;"THIS IS PLAYED ON
A COURSE WHICH,""HAS THE USUAL
HAZARDS: BUNKERS,"".."ROUGH, TRE
ES AND WATER."
5020 PRINT ..;"THE CLUBS ARE
NUMBERED ONE".." TO THIRTEEN.
THEY REPRESENT".." WOODS ONE
TO FOUR AND IRONS".." THREE TO
NINE WITH WEDGE AND".." SAND
WEDGE."
5030 PRINT ..;"THE FOLLOWING LIST
GIVES AVERAGE".."DISTANCE WITH
THE CLUBS."
5040 FOR U=1 TO 22
5050 FOR V=1 TO 10
5060 NEXT V
5070 SCROLL
5080 NEXT U
5100 PRINT AT 0,0;"CLUB      A
VERAGE DISTANCE"
5110 PRINT " 1","215 YDS.," " 2
","200 YDS.," " 3","178 YDS.,"
" 4","162 YDS."
5120 PRINT " 5","145 YDS.," " 6
","130 YDS.," " 7","112 YDS.,"
" 8"," 92 YDS.," " 9"," 80 YDS."
5130 PRINT "10"," 65 YDS.," " 11
"," 50 YDS.," " 12"," 35 YDS.,"
" 13"," 23 YDS."
5140 PRINT ..;"YOU WILL NOT HIT
AS FAR FROM".." SAND OR W
ATER."
5150 PRINT ..;"      ANY KEY TO ST
ART"
5160 PAUSE 4E4
5170 GOTO 1
8999 STOP
9000 SAVE "GOLF 81"
9999 GOTO 5000

```

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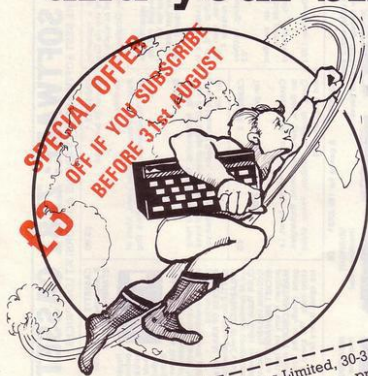
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```

50 GOSUB 9500
60 CLS
61 PRINT AT 7,12;"(Ge:5f97'9r)"
"JAT 8,12;"(G5'5ksp'98)"
62 PRINT AT 12,12;"(G5'5ksp'98
)"JAT 13,12;"(G5u'5f96'99)"
63 LET S=9
70 DIM A$(26,36)
100 LET A$(3)="(2ksp'32fisp)"
110 LET A$(4)="(2ksp'isp'9h'sp'
im'sp'5k9h'sp'5f9h'2ksp'10k9h'3t
'1k)"
120 LET A$(5)="(2ksp'isp'9h'sp'
9h'2ksp'4k9h'3ksp'im'2ksp'is'sp'
10k9h'9h'is'isp)"
130 LET A$(6)="(2ksp'isp'2ksp'2
k9h'5ksp'im'5f9h'2ksp'10k9h'im'9
h'im'isp)"
140 LET A$(7)="(2ksp'isp'9h'sp'
is'6f9h'sp'6k9h'sp'10k9h'9h'is'
isp)"
150 LET A$(8)="(2ksp'isp'2f9h'2k
sp'3k9h'3ksp'6f9h'3ksp'im'3ksp'4
k9h'is'isp)"
160 LET A$(9)="(2ksp'isp'3k9h'is
p'9h'sp'im'sp'9h'sp'6k9h'sp'5k9h
'2ksp'9h'3ksp'9h'sp'isp)"
170 LET A$(10)="(2ksp'isp'9h'5k
sp'3k9h'sp'9h'sp'im'6ksp'im'3k9h
'is'2ksp'3k9h'sp'isp)"
180 LET A$(11)="(2ksp'isp'9h'is
'5f9h'2ksp'is'2f9h'is'2f9h'sp'im
'sp'9h'sp'5k9h'sp'3k9h'sp'isp)"
190 LET A$(12)="(2ksp'isp'9h'sp
'9h'is'sp'4k9h'sp'2k9h'sp'2f9h'1
t'9h'sp'9h'is'5k9h'sp'3k9h'sp'is
p)"
200 LET A$(13)="(2ksp'isp'9h'sp
'9h'sp'im'sp'it'sp'is'3ksp'im'3k
sp'9h'sp'9h'sp'5f9h'it'sp'is'2ksp
p'isp)"
210 LET A$(14)="(2ksp'isp'9h'sp
'9h'2ksp'4k9h'sp'4k9h'3ksp'is'9h
'sp'5k9h'sp'3f9h'im'isp)"
220 LET A$(15)="(2ksp'isp'9h'sp
'7k9h'is'4k9h'sp'2k9h'sp'9h'sp'5
f9h'sp'3k9h'im'isp)"
230 LET A$(16)="(2ksp'isp'9h'it
'2ksp'is'4k9h'sp'3k9h'sp'is'sp'5
k9h'2ksp'it'im'it'sp'is'3k9h'sp'
isp)"
240 LET A$(17)="(2ksp'isp'9h'sp
'2f9h'sp'4k9h'sp'is'im'2ksp'9h's
p'3k9h'sp'5k9h'sp'4k9h)"
250 LET A$(18)="(2ksp'isp'4k9h's
p'4k9h'3ksp'5k9h'it'im'2ksp'
'5k9h'2ksp'is'im'it'isp)"
260 LET A$(19)="(2ksp'isp'4k9h's
p'is'3k9h'is'6k9h'sp'2f9h'sp'7k
9h'sp'2k9h'isp)"
270 LET A$(20)="(2ksp'isp'5k9h'
it'sp'2k9h'sp'6k9h'sp'2k9h'is'7k
9h'sp'2k9h'isp)"
280 LET A$(21)="(2ksp'isp'6k9h'
2ksp'9h'2ksp'is'im'3k9h'sp'2k9h
'sp'9h'im'is'it'4ksp'2k9h'isp)"
290 LET A$(22)="(2ksp'isp'7k9h's
p'im'sp'2k9h'2ksp'it'sp'is'5ksp
'5k9h'it'2k9h'isp)"
300 LET A$(23)="(2ksp'isp'8k9h'
it'2k9h'isp)"
310 LET A$(24)="(2ksp'32fisp)"
400 LET B=14
410 LET B=17
420 LET B$="X"
500 LET A=A+(INKEY$="G")-(INKEY
$="7")
510 LET B=B+(INKEY$="0")-(INKEY
$="5")
800 PRINT AT 9,12;"(G5'sp'JAB
A,1B+1 TO B+3);"(Gsp'98)"JAT 10,
12;"(G5'sp'J)AB(A,B+1 TO B+3);"(
sp'98)"JAT 11,12;"(G5'sp'J)AB(A
,1B+1 TO B+3);"(sp'98)"JAT 12,12
;"(G5'5ksp'98)"
810 PRINT AT 10,15;B$
900 IF A$(A,B+2)="(1)" THEN GO
SUB 1000
910 IF A$(A,B+2)="(1)" THEN GO
SUB 9000
920 IF A$(A,B+2)="(9h)" OR A$(A
,B+2)="(1sp)" THEN GOTO 2000
930 IF A$(A,B+2)="(im)" THEN GO
SUB 1100
940 IF A$(A,B+2)="(it)" THEN GO
SUB 1200

```

MAZE ESCAPE



A NEW PHENOMENON is replacing the squashed frog games which used to dot the pages of *Sinclair Programs*. Happier programmers are being trapped in mazes of great complexity, with an assortment of enemies and handicaps confronting them. The number of ways in which a maze can be used is growing steadily.

Tomas Whitlock of Hull confronts 16K ZX-81 users with a maze of which only a small area can be seen at one time. While scratching for the exit you have the chance to gain points by killing monsters and picking-up treasure. Full instructions are given once the program is RUN.

```

999 GOTO 500
1000 LET B$="(1x)"
1100 LET A$(A,B+2)=" "
1020 RETURN
1100 REM FRIGHT
1110 PRINT AT 10,15;"(JAT 10,15
)"JAT 10,15;"(S)"JAT 10,15;"(+)A
T 10,15;"(JAT 10,15);"(M)"JAT 10,1
5;"(JAT 10,15);"(K)"JAT 10,15;"(E)"
JAT 10,15;"(C)"JAT 10,15;"(JAT 10,
15);"(M)"JAT 10,15;"(C)"JAT 10,15;"
"JAT 10,15;"(JAT 10,15);"(JAT 1
0,15);" "
1120 IF B$="(1x)" THEN GOTO 1140
1130 GOTO 2100
1140 LET A$(A,B+2)=" "
1150 LET B$="X"
1160 LET S=S+100
1165 PRINT AT 9,0;"SCORE=";S
1170 RETURN

```

```

1200 LET S=S+1000
1210 PRINT AT 9,0;"SCORE=";S
1220 LET A$(A,B+2)=" "
1230 RETURN
2000 CLS
2005 PRINT "YOU JUST BLEW YOURSE
LF TO BITS ON THE ELECTRIFIED W
ALLS."
2010 PRINT "YOU SCORED: ";
2020 GOTO 9020
2100 CLS
2110 PRINT "YOU RAN INTO A MONST
ER. YOU DID NOT HAVE A SWORD."
2120 PRINT "YOU SCORED: ";
2130 GOTO 9020
3000 CLS
9010 PRINT "CONGRATULATIONS. YOU
HAVE FOUND YOUR WAY OUT WITH";
9020 PRINT S;" POINTS."
9022 PRINT "ANOTHER GAME. (YES/NO

```



```

? ?"
9023 INPUT Z#
9024 IF Z#(1)="Y" THEN RUN
9025 IF Z#(1)="N" THEN GOTO 9029
9026 GOTO 9023
9029 GOTO 9006
9500 PRINT " maze-monste
      by twhitlo
RS
CK"
9501 PRINT
9502 PRINT
9510 PRINT "YOU HAVE TO FIND YOU
R WAY OUT OFA 22X32 MAZE, WHICH
IS STOCKED WITH TREASURE, SWORD
S, AND
9520 PRINT "YOU START OFF AS AN
X, AND YOU GET A SWORD BY MOVIN
G YOUR X
9525 PRINT
9530 PRINT "THERE IS TREASURE; <
      THERE ARE MONSTER
      THERE ARE SMOR
      S> (<1>),
      D> (<1>),"
9535 PRINT
9540 PRINT "POINTS:"
9550 PRINT "TREASURE: 1000 PTS.;
      KILLING A MONSTER: 1
      00 PTS."
9555 PRINT
9560 PRINT " ANY KEY TO CU
NTINUE."
9570 IF INKEY#="" THEN GOTO 9570
9580 CLS
9590 PRINT "AS YOU MOVE, THE COR
RIDOR WILL SCROLL PAST YOU, DEP
ENDING ON WHICH KEY YOU PRESS.
THIS GIVES THE EFFECT THAT THE
CORRIDOR IS MOVING PAST YOU."
9595 PRINT
9600 PRINT "CONTROLS:"
9610 PRINT "8=RIGHT,"
9620 PRINT "5=LEFT,"
9630 PRINT "6=DOWN,"
9640 PRINT "7=UP."
9645 PRINT
9650 PRINT "<1>=MONSTER,"
9660 PRINT "<1>=SWORD,"
9670 PRINT "<1>=TREASURE,"
9680 PRINT ">=THIS WAY.

```



HEDGE END NOON

```

          2 LET W=VAL "11"
3 LET E=CODE "8"
4 LET F=CODE "-"
5 LET L=CODE "2"
7 LET H=CODE "?"
9 LET T=CODE "<9a>"
9 LET U=CODE "<K>"
10 PRINT AT T,H;"(99:94):AT W
,F;"(99:94:96):AT L,F;"(99:98:9
2):AT E,F;"(sp:95:91)"
30 PAUSE 0
40 CLS
D 70 PRINT AT T,H;"(99:1sp:94)"
AT W,U;"(99):AT L,H;"(9a:1sp:9a
):AT E,H;"(99:1sp:94):AT F,H;"
(99:sp:9a):AT H,H;"(2fsp:1sp)"
60 PAUSE 0
85 CLS
90 PRINT AT T,F;"(2f99):AT W,
E;"(4f1sp:3):AT L,F;"(2k1sp:3):AT
E,F;"(2f9a:3):AT F,L;"(6k1sp:3):AT
H,L;"(1sp:sp:2f1sp:sp:1sp)"
100 PRINT AT U,F;"(2k1sp:3):AT C
ODE "3",E;"(9a:2k1sp:9t):AT CUD
E "3",E;"(1sp:2ksp:1sp)"
105 PRINT AT CODE "<W>,E;"(1sp:12
fsp:1sp)"
110 PAUSE 0#P1
120 IF INKEY#="" THEN STOP
140 PRINT AT CODE "3",E;"(sp:2k
1sp:sp:3):AT U,CODE "E";(10:sp:12
k1sp:sp:10)"
150 FOR Z=PI TO RND#CODE "(9d)"
160 IF INKEY#="" THEN PRINT "G
OT HIM";K
170 NEXT Z
180 PRINT "GOTCHA"

```

TIM DERBY of Hedge End, Southampton has, by devising a relatively simple game, managed to incorporate a very good graphics

display in this program for the IK ZX-81.

The cowboy walks quickly towards you. Once his guns appear in his hands

you must shoot him by pressing any key, before he shoots you. Good reactions are needed; your reviewer managed to shoot the cowboy only once.

```

1 POKE 23676:R=RESTORE
2 DEF FN TK=(65536+PEEK 2367
4+256)*PEEK 23673+PEEK 23672)/50
3 DEF FN LCA,B)=(A+B)*R/(A-B
)/2
4 DEF FN RCX)=(INT (X*10))/1
0)

```

```

10 LET K$="1234567890MERTYUIO
PQRSDFGHJKL ZMVCBNM
20 LET Y=0: DATA 2,-1,0,-1
50 BORDER 0: PAPER 0: INK 6
100 CLS : FOR R=0 TO 3: LET Y=Y
+3: READ X
110 FOR K=1 TO 10: LET X=X+3
120 PRINT INK 0: PAPER 5:AT Y,X
:K$(R+10); " " :AT Y+1,X; " "
130 NEXT K: NEXT R
140 PRINT PAPER 5:AT 20,1: "J"
:AT 21,1: "J" :AT 20,2: "J" :AT 21,2
: " "
150 GO SUB 9000: PRINT INVERSE
:AT 0,0: PLEASE SELECT "

```

```

175 PRINT "011"-Instructions"
"012"-Training" "013"-Timed t
est" "014"-Quit program"
300 GO TO 200+200K:INKEY$="1")>
1000K:INKEY$="2")>2000K:INKEY$="3")>
4799K:INKEY$="4")>
1000 GO SUB 9000: PRINT INVERSE
: "1" INSTRUCTIONS "

```

```

1010 PRINT " Place the four fi
ngers of eachhand on the flashin
g keys."
1020 PRINT " These are the 'ho
me keys' and your fingers always
return to them when they are
not typing."
1025 LET R=1500
1030 GO SUB 1500: GO SUB 9000
1040 PRINT " Each finger has a
set of keys which only that fing
er touches."

```

```

1050 PRINT " All except the in
dex fingers control the vertica
l row of fourkeys that the fing
er's home key is in."
1060 PRINT "E.g. only the ring
fingers should touch the fl
ashing keys."

```

```

1070 GO SUB 5000
1080 PRINT " The only exception
to this is the index fingers wh
ich must both control eight k
eys."
1090 PRINT " The right hand in
dex finger, for example, uses a
ll eight of the flashing keys."
1100 PRINT "YOU NOW HAVE THE AB
SOLUTE BASICOOF TOUCH-TYPING."
1110 GO SUB 1500: GO TO 150

```

```

1500 DATA 17,2,17,6,17,9,17,12,1
7,21,17,24,17,27,17,30
1510 DATA 11,4,11,25,14,5,14,26,
17,6,17,27,20,5,20,26
1520 DATA 11,16,11,19,14,17,14,2
0,17,18,17,21,20,17,20,28

```

```

1530 LET I=0: OVER 1: FLASH 1: I
NK R: PAPER 5: FOR N=1 TO 2: RES
TORE R: FOR M=1 TO 3:
1540 READ Y,X: PRINT AT Y,X; " "
:AT Y+1,X; " "
1550 NEXT M: IF I=0 THEN INPUT F
LASH 1: Push "ENTER" to conti
nue " : LINE a$: LET I=1
1560 FLASH 0: INK 0: NEXT N: OVE
R 0: INK 6: PAPER 0: LET R=R+10
1570 RETURN
2000 GO SUB 9000: PRINT INVERSE
: "2" TRAINING "

```

```

2010 PRINT " You are required
to type the characters that wil
l appear on the top half of the
screen."
2020 PRINT " Do not look at th
e keys as youpush them although
you can look at the screen below
until you get a feel for thei
r locations."
2030 INPUT FLASH 1: Keyboard vi
sible? (Y/N) : LINE a$: IF a$K
">Y" AND a$K(">N" THEN GO TO 2030
2040 GO SUB 9000
2050 IF a$="N" THEN CLS
2060 LET C=0: LET IC=0

```

```

2080 PRINT " "; INVERSE 1: "TYP
E"
2090 PRINT " " NUMBER CORRECT: 0
" " " NUMBER INCORRECT: 0 "
2095 PRINT " " TYPE " "STOP" " TO
EXIT"
2100 LET B$=K$(RND*37+1): IF B$=
" " THEN GO TO 2100
2110 PRINT FLASH 1:AT 1,7: "B$
" "
2120 LET A$=INKEY$: IF A$=" " THE
N GO TO 2120
2125 IF CODE A$=226 THEN RUN
2130 IF A$=B$ THEN BORDER 6: BEE
P 1,10: BEEP 2,20: BORDER 0: L
ET C=C+1: PRINT AT 4,17:C
2140 IF A$<B$ THEN BORDER 2: BEE
P 1,10: BEEP 2,10: BORDER 0:
LET IC=IC+1: PRINT AT 6,19:IC: C
O TO 2120
2150 GO TO 2100
3000 GO SUB 9000: PRINT INVERSE
: "3" TIMED TEST "
3010 PRINT " Random words will
appear and you must type and "
"ENTER" them as fast as possib
le."
3020 PRINT " After ten words,
your typing speed will be calcu
lated."
3030 PRINT "NO CHEATING & NO KE
YBOARD EITHER"
3040 INPUT FLASH 1: Push "ENTE
R" to begin " : LINE a$: CLS

```

```

3050 DRAW 0,175: DRAW 255,0: DRA
W 0,0:-175: DRAW -255,0
3060 PLOT 0,144: DRAW 255,0
3070 PLOT 127,175: DRAW 0,-175
3080 PRINT AT 1,3: "WORD TO BE" :A
T 2,4: "ENTERED:" :AT 1,22: "WORD:"
:AT 2,20: "ENTERED:"
3090 LET B$=" DEARWALLFACEDRAW
LSTANKEARL FAMEMAILTAPETHIGHFROM
POSTMODEKEYSBOTHLINELINEHOSEPART
"
3095 POKE 23674,0: POKE 23673,0:
POKE 23672,0
3100 FOR N=1 TO 10: LET W=INT (R
ND*20+1): LET B$=W$K$4 TO W$K$4
): PRINT AT N+4,1;N;TAB 6;B$
3110 INPUT LINE A$: PRINT AT N+4
,22;A$; " "
3120 IF A$<B$ THEN GO TO 3110
3130 NEXT N
3140 LET T=FN LCFN T(),FN TK())
3150 BEEP 1,0: CLS
3160 PRINT "TIME":FN RCX: " SEC
ONDS"
3165 PRINT " " "SPEED:" (FN R50/Y
): " CH# SEC" :FN R50/(TK12): " W
ORDS/MIN"
3170 INPUT FLASH 1: Push "ENTE
R" to continue " : LINE a$: RUN
9000: PRINT AT 0,0: FOR N=1 TO 1
0: PRINT INK 0:K$(32): NEXT
N: PRINT AT 0,0: RETURN
9999 BORDER 7: INK 0: PAPER 7: C
LS: STOP

```



TOUCH TYPE

FOR THOSE who have never had typing lessons and consequently feel that typing programs on the Spectrum is more difficult than it should be, T Collins of Enfield, Middlesex has written **Touch Type**, a program designed to be a crash course in typing.

There are three sections between which you can choose—a short series of instructions, an endless series of letters for practice, and a typing test which indicates your speed in words per minute (16K Spectrum).

WASHING LINE

A GAME for one to five players. A washing line is displayed on the screen and you must choose which items of clothing to hang on it until it breaks. Try not to be the person who breaks the line.

Heavier clothes carry high scores; socks score very low. A random element is introduced by the birds of unknown weight which land on the washing line from time to time.

Washing Line was written for the 16K Spectrum by Michael Leach of Blackburn, Lancashire.

```

1 PRINT "STOP THE TAPE": LET
hs=0: GO SUB 1000: DIM b$(2): LE
T b$(1)="p": LET b$(2)="a"
2 DIM t$(2): DIM p$(2): DIM p
$(2,2): DIM j$(2,2): DIM s$(1):
DIM u$(3,2)
3 LET t$(1)="n": LET t$(2)="s"
": LET p$(1)="i": LET p$(2)="u"
": LET u$(2)="l": LET u$(3)="oo"
": LET p$(1)="a": LET p$(2)="o"
": LET j$(1)="f": LET j$(2)="h"
": LET s$(1)="j": LET s$(2)="k"
4 INPUT "Do you want instruct
ions?(y/n)":a$: IF a$="y" THEN G
O SUB 2000
5 BORDER 5: PAPER 7: INK 0: C
LS
6 INPUT "1 TO 5 PLAYERS":p
7 IF p>5 THEN GO TO 50
8 DIM w$(p,4)
9 FOR f=1 TO p: INPUT "Player
":j(f):" name(4 letters)":n$(f):
NEXT f
10 PRINT AT 0,5:"HANG OUT TH
E WASHING!"
15 PRINT AT 1,13:"HI-SCORE":hs
20 PRINT AT 21,0: INK 4:"(22k1
98)"
30 FOR z=10 TO 20: PRINT AT z,
0: INK 3:"(195)":AT z,31: INK 3:
"(95)": NEXT z
40 PLOT 0,96: DRAW 255,0
70 DIM s(f): LET s(1)=0: LET s
(2)=0
80 LET pp=1: LET x=2: LET w=1
90 LET pu=500: LET ju=400: LET
vu=100: LET uv=75: LET su=50
95 LET gt=2500+INT (RND*1000)+
100
96 LET tw=0
100 FOR f=1 TO p
110 PRINT INK 0:AT 2,0:n$(f):"
s 90 "
120 PRINT INK 0:AT 3,0:"Which i
tem? p:pants j:jumper u:mu,pa
nts v:vest s:socks a:scar"
f" s:skirt": INPUT s$
130 IF s$="p" THEN GO TO 200
140 IF s$="j" THEN GO TO 250
150 IF s$="u" THEN GO TO 300
160 IF s$="v" THEN GO TO 350
170 IF s$="s" THEN GO TO 400
171 IF s$="ac" THEN GO TO 500
172 IF s$="ak" THEN GO TO 500
175 GO TO 120
180 IF INT (RND*10)=5 THEN GO T
O 700
185 IF pp=21 THEN GO TO 850
190 NEXT f
195 GO TO 100
200 LET tw=tw+500+INT (RND*20)
201 OVER 1
210 IF tw=ot THEN GO TO 800
220 LET s(f)=s(f)+25+INT (RND*1
1)
230 INK INT (RND*7): PRINT AT 1
0,pp:p$(1):AT 11,pp:p$(2)
235 LET pp=pp+2
236 OVER 0
237 BEEP .1,25
240 GO TO 100
250 LET tw=tw+400+INT (RND*15)
251 OVER 1
260 IF tw=ot THEN GO TO 800
270 LET s(f)=s(f)+20+INT (RND*1
1)
280 INK INT (RND*7): PRINT AT 1
0,pp:j$(1):AT 11,pp:j$(2)
285 LET pp=pp+2
286 OVER 0
287 BEEP .1,20
290 GO TO 100
300 LET tw=tw+100+INT (RND*15)
301 OVER 1
310 IF tw=ot THEN GO TO 800
320 LET s(f)=s(f)+15+INT (RND*1
1)
330 INK INT (RND*7): PRINT AT 1
0,pp:u$(2):AT 11,pp:u$(3)
335 LET pp=pp+2
336 OVER 0
337 BEEP .1,15
340 GO TO 100
350 LET tw=tw+75+INT (RND*15)
351 OVER 1
360 IF tw=ot THEN GO TO 800
370 LET s(f)=s(f)+10+INT (RND*1
1)
380 INK INT (RND*7): PRINT AT 1
0,pp:u$(1)
385 LET pp=pp+1
386 BEEP .1,10: OVER 0
390 GO TO 100
400 LET tw=tw+50+INT (RND*15)
401 OVER 1
410 IF tw=ot THEN GO TO 800
420 LET s(f)=s(f)+5+INT (RND*11
)
430 INK INT (RND*7): PRINT AT 1
0,pp:s$(1)
435 LET pp=pp+1
436 BEEP .1,5: OVER 0
440 GO TO 100
450 LET tw=tw+250+INT (RND*15)
451 OVER 1
460 IF tw=ot THEN GO TO 800
470 LET s(f)=s(f)+17+INT (RND*1
1)
480 INK INT (RND*7): PRINT AT 1
0,pp:t$(1):AT 11,pp:t$(2)
485 LET pp=pp+1
486 BEEP .1,17: OVER 0
490 GO TO 100
490 LET tw=tw+450+INT (RND*25)
501 OVER 1
510 IF tw=ot THEN GO TO 800
520 LET s(f)=s(f)+22+INT (RND*1
1)
530 INK INT (RND*7): PRINT AT 1
0,pp:r$(1):AT 11,pp:r$(2)
535 LET pp=pp+1
536 BEEP .1,22: OVER 0
540 GO TO 100
700 INK 0: LET x=2: LET y=21: L
ET tv=INT (RND*31)
705 LET tx=(31-tv)/5
710 FOR g=31 TO tv STEP -1
720 PRINT AT x,g:"a": PRUSe 5:
PRINT AT x,g:"a"
730 NEXT g
740 FOR g=2 TO 9: PRINT AT g,tv
:"a": PRUSe 5: PRINT AT g,tv:" "
: NEXT g
750 PRINT AT 9,tv:"p"
760 LET tw=tw+50+INT (RND*101)
765 IF tw=ot THEN GO TO 800
770 LET s(f)=s(f)+INT (RND*25)+
25
780 GO TO 100
790 PRINT AT 0,0:"BIRD": GO TO
185
799 STOP

```



```

800 OVER 0: PRINT AT 10,PP+1;"e
"AT 9,PP;"SNAP";DEEP 1,-20: PR
INT "Player ";f;" loses".
001 LET s(f)=s(f)-25
002 PRUSE 100
010 INK 0: FOR f=1 TO p: PRINT
AT 9+f,0;"Player ";f;" ";n*(f);"
";"Score";s(f): NEXT f
015 FOR f=1 TO p: IF s(f)>=5 TH
EN LET h=s*(f)
016 NEXT f
020 INPUT "Another Game?(y/n)";
j$
030 IF j$="y" THEN GO TO 070
040 IF j$="n" THEN STOP
045 GO TO 020

050 PRINT "Line Full. All Playe
rs lose"
050 PRINT AT 9,20;"SNAP";AT 10,
30;"e"; GO TO 010
070 INPUT "Same number of Playe
rs?(y/n)";j$
080 IF j$="y" THEN GO TO 900
090 IF j$="n" THEN GO TO 4
095 GO TO 070
900 INPUT "Instructions? (y/n)";
j$
910 IF j$="y" THEN GO SUB 2000
CLS : GO TO 10
950 IF j$="n" THEN CLS : GO TO
10
960 GO TO 900
1000 FOR u=144 TO 164
1010 FOR f=0 TO 7: READ a: POKE
USR CHR$(u+f): NEXT f: NEXT u
1020 RETURN

1050 DATA 15,15,15,14,14,14,1
4
1050 DATA 240,240,240,240,112,11
2,112,112
1070 DATA 14,14,14,14,14,14,14,1
4
1080 DATA 112,112,112,112,112,11
2,112,112
1090 DATA 145,92,0,0,92,0,74,137
1100 DATA 3,7,63,63,55,55,55,55
1110 DATA 193,224,252,252,236,23
6,236,236
1120 DATA 55,55,7,7,0,0,0
1130 DATA 236,236,224,224,224,0,
0,0
1140 DATA 20,20,20,20,20,20,119,
119
1150 DATA 255,255,255,126,60,24,
0,0
1160 DATA 4,4,6,7,7,7,7,7
1170 DATA 32,32,96,224,224,224,2
24,224
1180 DATA 7,7,7,7,7,0,0,0
1190 DATA 224,224,224,224,224,0,
0,0
1200 DATA 4,4,7,252,124,60,16,25
5
1210 DATA 0,0,66,165,24,24,0,0
1220 DATA 124,124,62,31,62,124,2
49,124
1230 DATA 62,31,62,124,240,160,0,
4,42
1240 DATA 126,126,126,126,126,12
6,126,126
1250 DATA 255,255,170,0,0,0,0,0
2000 CLS : PRINT AT 0,5;"HANG O
UT THE WASHING!"

2001 PRINT "You have to hang as
many items""of clothing out on
the line ""as possible without
the line ""breaking. Each item
has an ""approximate weight and
the ""heavier the item the hig
her ""the score. The score is al
so ""approximate The game ends
when""the line snaps."
2010 PRINT "Also birds can land
on the line""which makes it hea
vier."
2020 PRINT AT 11,0;"SCORING:--";T
AB 16;"POINTS";TAB 25;"WEIGHT"
2030 PRINT AT 12,0;P*(1);" Pant
s";TAB 16;25;"TAB 25;500;"e";TAB
0;P*(2)
2035 PRINT "r*(1);" Skirt";TAB 1
6;22;"TAB 25;450;"e";TAB 0;r*(2)
2040 PRINT "j*(1);" Jumper";TAB
16;20;"TAB 25;400;"e";TAB 0;j*(2)
)
2044 PRINT "Press any key": PAUS
E 0: POKE 23632,255
2045 PRINT "t*(1);" Scarf";TAB
16;17;"TAB 25;250;"e";TAB 0;t*(2)
2050 PRINT "u*(2);" Vest";TAB 1
6;15;"TAB 25;100;"e";TAB 0;u*(3)
2060 PRINT "w*(1);" Underpants";
TAB 16;10;"TAB 25;75;"e"
2070 PRINT "s*(1);" Socks";TAB
16;5;"TAB 25;50;"e"
2075 PRINT "b*(1);" Bird";TAB 1
6;7;"TAB 25;70"
2080 PRINT "Press any key": PAU
SE 0: RETURN

```



HIT STAR

A LONG THE TOP of the screen is a row of stars. You must clear away the stars in as few attempts as possible. Do so by means of the stars at the bottom. By setting them in motion at different times you can make them collide under a specific star, thus sending up a bolt of energy which will destroy that star. **Hit Star** is for the 16K Spectrum and was written by John Lifford of north-west London.

```

10 LET hsc=50: LET b="Spectru
m"
20 GO SUB 2000
60 DATA .15,7,.15,7,.15,7,9,0
,.9,7,.15,5,.15,4,.15,2,9,12,.4
5,7,.15,5,.15,4,.15,2,9,12,.45,
7,.15,5,.15,4,.15,5,1,2
70 RESTORE 60: FOR n=1 TO 19:
READ c,d: BEEP c,d: NEXT n
110 CLS
120 PRINT AT 0,0:"* * * * *
* * * * *
160 PRINT AT 21,ay: INK 1;"*"
170 PRINT AT 21,bx: INK 3;"*"
210 IF a=0 THEN GO SUB 300
220 IF b=0 THEN GO SUB 350
230 IF a=1 THEN GO SUB 400
240 IF b=1 THEN GO SUB 500
290 GO TO 200
310 IF INKEY="z" OR INKEY="Z"
THEN LET a=1
340 RETURN
360 IF INKEY="m" OR INKEY="M"
THEN LET b=1
390 RETURN
410 IF ay<bx THEN PRINT AT 21,
ay: INK 1;"*" : LET ay=ay+1
420 IF ay=bx THEN GO TO 600
490 RETURN
510 IF bx<ay THEN LET bx=bx-1:
PRINT AT 21,bx: INK 3;"*"
520 IF bx=ay THEN GO TO 600
590 RETURN
610 LET s=ay
620 IF SCREEN<0,s>="*" THEN L
ET beep=1
630 FOR n=20 TO 0 STEP -1
640 PRINT AT n,s: INK 4;"a": PR
INT AT n+1,s:""
650 BEEP .02,50-(2*n)

```

```

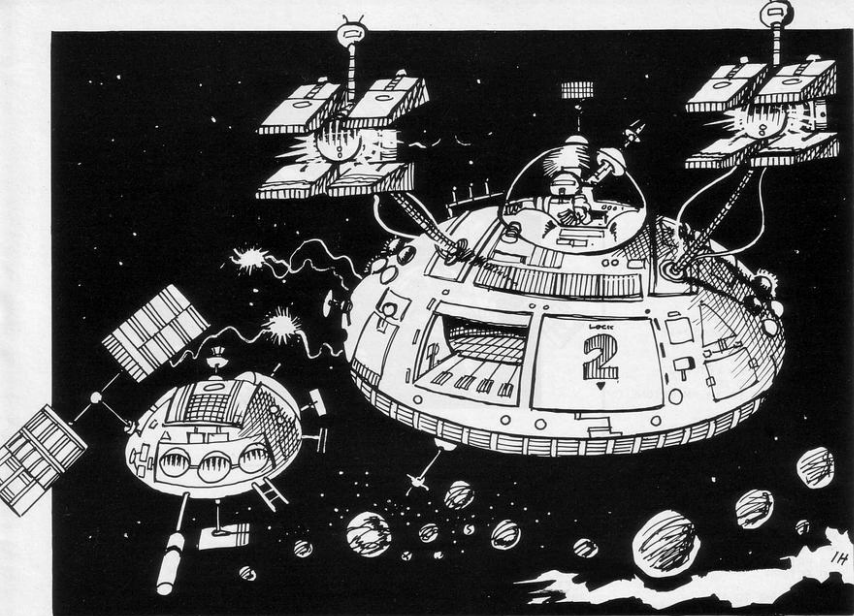
660 NEXT n
670 IF beep=1 THEN PRINT AT 0,s
: INK 2;"b": BEEP .05,24
680 PRINT AT 0,s:""
690 LET sc=sc+1: LET a=0: LET b
=0: LET beep=0: LET ay=0: LET bx
=31
710 FOR n=0 TO 31
720 IF SCREEN<0,n>="*" THEN G
O TO 150
730 NEXT n
740 CLS
750 PRINT AT 0,1: INK 2: PAPER
7: BRIGHT 1: INVERSE 1:"WELL DON
E!" You took ";sc;" goes"
760 PRINT AT 12,8: INK 4:"Best
score = ";hsc
770 PRINT AT 13,8: INK 4;"By ";
INK 3;b%
790 IF sc<hsc THEN GO TO 800
790 GO TO 850
810 INPUT INK 0: PAPER 7: FLASH
1:"Name please";b%
820 IF LEN b%>15 THEN GO TO 810
830 LET hsc=sc
840 PRINT AT 12,21: INK 4;hsc:"
" : AT 13,11: INK 3;b%:"
"
860 PRINT AT 20,3: INK 1: PAPER
6: FLASH 1:"Do you want another
game?"
870 INPUT a%
880 IF a%="n" OR a%="N" THEN ST
OP
890 PRINT AT 20,0:""
900 GO SUB 1000
910 GO TO 50
1010 LET sc=0: LET beep=0
1020 LET ay=0: LET bx=31

```

```

1030 LET a=0: LET b=0
1990 RETURN
2010 PRINT AT 0,0: INK 0: PAPER
5:" HIT-STAR
"
2030 PRINT "" "You have to clear
the stars off the top of th
e screen."
2040 PRINT "" "In order to do this
you have to make your two stars
( the ones on the bottom) collide
and send up a bolt of en
ergy."
2050 PRINT "" INK 2:"Use:-"
2060 PRINT " INK 1:" z - t
o start left one n - t
o start right one"
2540 GO SUB 3000
2950 GO SUB 1000
2960 PRINT AT 21,4: INK 1: PAPER
6: FLASH 1:"Press any key to st
art"
2970 PAUSE 0
2980 PRINT AT 21,0:""
2990 RETURN
2990 RETURN
3010 DATA "a",0,24,24,24,24,2,4
4,0,"b",153,66,36,129,129,36,66,
153
3020 RESTORE 3010
3030 FOR f=1 TO 2
3040 READ e%
3050 FOR n=0 TO 7
3060 READ g
3070 POKE USR e%+n,g
3080 NEXT n
3090 NEXT f
3090 RETURN
3990 RETURN

```

SPACE MISSION

YOUR JOB is to collect as many of the satellites above you as possible. On each journey there are two satellites towards which you to

steer, the easily-reached higher satellite and the more elusive lower satellite. You score extra points for landing correctly on your launch pad.

Space Mission is a game for the 16K ZK-81 written by G B Duncan of Hartfield, East Sussex.

```

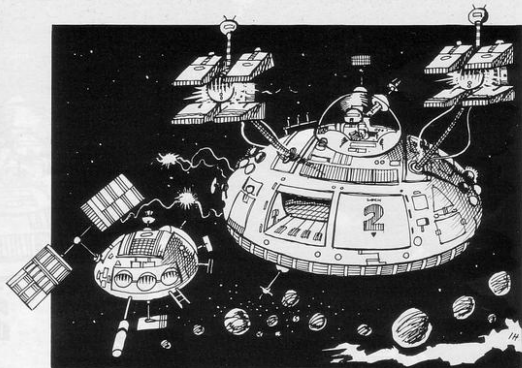
1 REM "SPACE MISSION"
2 LET H=0
3 LET I=0
4 LET M=1
5 LET S=0
6 IF I=0 THEN LET A$="ZX 01"
10 LET A=19
11 LET B=14
18 IF I=0 THEN GOTO 20
19 GOTO 24
20 FOR F=1 TO 20
21 PRINT AT 10,10;"SPACE MISSO
N"
22 PRINT AT 10,10;"
"
23 NEXT F
27 FOR P=1 TO 13
28 PRINT AT P,0;"
"
29 NEXT P
30 IF I=1 THEN GOTO 100
34 PRINT AT 10,5;"DO YOU WANT
";" INSTRUCTIONS (Y/N) ?"
35 IF INKEY$="Y" THEN GOTO 50
37 IF INKEY$="N" THEN GOTO 99
40 IF INKEY$<>"N" THEN GOTO 35
50 PRINT AT 10,3;"YOUR TASK IS
TO ";;"COLLECT THE SATELLITE(S)
";"
51 PRINT
52 FOR F=1 TO 10
53 NEXT F
55 PRINT "200 - TOP SATELLITE"
56 PRINT "300 - MIDDLE SATELLI
TE"
57 PRINT "50 - LANDING CORRECT
LY"
58 PRINT " ANY KEY TO CONTIN
UE"
65 IF INKEY$="" THEN GOTO 65
67 CLS
70 PRINT AT 10,3;"""P"" TO LAU
NCH"
71 PRINT
75 PRINT ""5"" AND ""8"" TO S
TEER"
76 PRINT
78 PRINT "YOU HAVE 5 MISSIONS"
80 PRINT
81 PRINT
82 PRINT " ANY KEY TO CONTIN
UE"
85 IF INKEY$="" THEN GOTO 85
86 CLS
87 PRINT AT 10,6;"good luck"
88 FOR F=1 TO 20
89 NEXT F
99 CLS
100 PRINT AT 21,0;"SCORE=";S;"
";"TAB 21;"MISSION=";M;AT 0,0
";"HI-SCORE=";H;" BY ";A$
107 IF M=6 THEN GOTO 800
110 PRINT AT 20,0;"(13X90;96;99
;15P;90;96;14X90)"
115 PRINT AT A-1,B+1;" "
120 PRINT AT A,B;"(93;15;94)"
130 GOSUB 900
200 IF INKEY$="P" THEN GOTO 210
205 GOTO 200
210 PRINT AT 10,10;"LIFT-OFF"
220 PRINT AT 19,12;"(2X90;93;15
;94;2X90)"
222 PRINT AT A,B;" "
224 LET A=A-1
230 PRINT AT A,B;"(93;15;94)"
240 FOR N=0 TO 15
241 IF N=1 THEN PRINT AT 10,10;
" "
242 PRINT AT A,B-1;" "
245 LET A=A-1
246 IF B=1 THEN LET B=2
250 PRINT AT A,B;"(93;15;94)"
255 IF INKEY$="5" THEN LET B=B-
1
260 IF INKEY$="8" THEN LET B=B+
1
261 IF N=3 THEN PRINT AT 19,12;
" "
262 IF A=2 AND B+1=X THEN LET S
=S+200
264 IF A=2 AND B+1=X THEN GOTO
300
265 NEXT N
266 PRINT AT 21,6;S
267 GOSUB 500
270 GOTO 320
310 GOSUB 500
315 PRINT AT 21,6;S
320 FOR L=17 TO 0 STEP -1
321 IF B=1 THEN LET B=2
322 IF B=29 THEN LET B=28

```

```

323 PRINT AT A,B;"(93:15:94)"
325 PRINT AT A,B:1
330 IF INKEY="5" THEN LET B=B-1
335 IF INKEY="8" THEN LET B=B+1
345 LET A=A+1
350 IF A=C AND B+1=V THEN LET S=S+300
360 NEXT L
362 PRINT AT 21,6:S
365 LET M=M+1
366 IF A=20 AND B=14 THEN LET S=S+50
367 IF A=20 AND B<14 THEN GOSUB 1000
368 LET T=1
370 GOTO 7
500 LET C=INT (RAND*2)+9
505 LET V=INT (RAND*5)+12
530 PRINT AT C,V:"X"
540 RETURN
800 IF S>H THEN LET H=S
802 FOR K=0 TO 20
803 PRINT AT 10,10:"MISSIONS OV
FP"
804 PRINT AT 10,10:"
"
805 NEXT K
806 IF H=S THEN GOSUB 2000
808 GOSUB 3000
809 PRINT AT 12,8:"ANY KEY TO R
LN"
810 IF INKEY=" " THEN GOTO 810
820 GOTO 4
900 LET W=INT (RAND*20)+5
905 LET Z=2
930 PRINT AT Z,W:"E"
940 RETURN
950 RUN
1000 FOR J=0 TO 15
1005 PRINT AT A,B;"(3*17)"
1010 PRINT AT A,B:" "
1020 NEXT J
1030 RETURN

```



```

2000 CLS
2010 PRINT AT 10,6:"YOU HAVE SET
A NEW "
2012 PRINT AT 12,11;"highScore"
2014 PRINT AT 14,6:"PLEASE ENTER
YOUR "
2016 PRINT AT 16,8:"NAME (MAX 10
LETTERS)"
2018 INPUT A$
2019 FOR Z=1 TO 30
2020 NEXT Z
2021 CLS
2022 RETURN

```

```

3000 CLS
3010 IF S<1000 THEN PRINT AT 10,
6:"NOT BAD FOR AN AMATEUR"
3015 IF S<1000 THEN RETURN
3020 IF S<2000 THEN PRINT AT 10,
6:"WELL DONE THATS GOOD"
3030 IF S<3000 THEN RETURN
3035 IF S<3000 THEN PRINT AT 10,
6:"EXCELLENT PLAY "
3040 IF S<3000 THEN RETURN
3045 IF S<4000 THEN PRINT AT 10,
6:"REALLY PROFESSIONAL "
3045 RETURN

```



PERISCOPE

THE COMPUTER prints a ship at random on the screen. Type-in the number of the row and then of the column in which you think the ship is situated. You score one point for hitting the ship and five points for hitting it in the middle.

If you hit the top deck only you score nothing. At the end of the game the number of ships sunk, ships destroyed, and your score are all displayed.

Periscope can be played on the 1K or 16K ZX-81 and was written by Mark Snowshall of Sherwood, Nottingham.

```

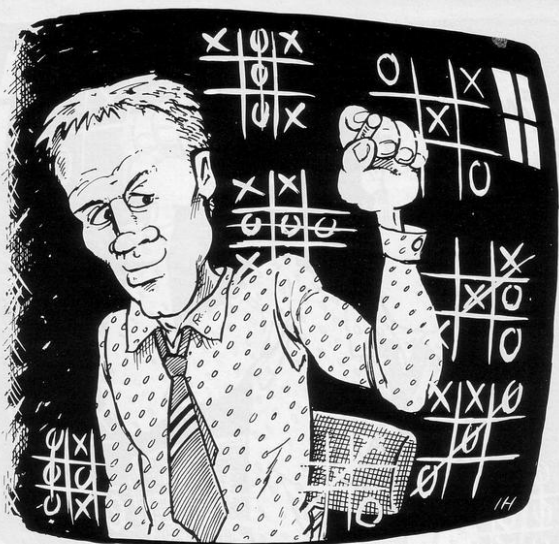
1 LET S=0
2 LET SB=0
3 LET SD=0
9 FOR T=1 TO 10
10 LET H$="(93)"
30 LET A=INT (RAND*20)+1
40 LET B=INT (RAND*26)+1
50 PRINT AT A,B;"(93:3*15P:90)"
60 PRINT AT A-1,B;"C2*SP:9W:2X
SP)"
65 PAUSE 50
70 INPUT D
80 INPUT F
100 IF D=A AND F=B+2 THEN LET H$="(93:3)"
101 IF D=A AND F=B+2 THEN LET S

```

```

S=S+1
110 IF D=A AND F=B+2 THEN LET S=S+5
120 IF D=A AND F=B OR F=B+1 OR F=B+3 OR F=B+4 THEN LET S=S+1
121 IF D=A AND F=B OR F=B+1 OR F=B+3 OR F=B+4 THEN LET SD=SD+1
131 PRINT AT D,F:H$
132 PAUSE 100
133 CLS
134 NEXT T
150 PRINT AT 0,0;"SHIPS SUNK";S
150 PRINT "SHIPS DAMAGED:";SD
170 PRINT "SCORE:";S

```



THE MARCH/APRIL edition of *Sinclair Programs* asked for **Noughts and Crosses** programs in which the computer takes part. The problem with most of the programs which we received was either that the computer could play Noughts and Crosses well, in which case it would never lose, making the game extremely uninteresting, or it could play Noughts and Crosses badly, in which case it was always possible for the player to win.

Richard Sutton of Putney, London produced the solution—a program for the 16K Spectrum in which the computer does not always respond to the same move in the same way, so that, if you watch for an opening, it is occasionally possible to win.

NOUGHTS AND CROSSES

```

2 PRINT AT 11,4:"Press any ke
y to start": PAUSE 9: CLS
10 DATA 192,224,112,56,28,14,7
,3,3,7,14,28,56,112,224,192,7,31
,60,112,96,224,192,192,224,248,6
0,14,6,7,3,3,192,192,224,96,112,
60,31,7,3,3,7,6,14,60,248,224
11 FOR n=0 TO 47: READ a: POKE
USR "a"+n,a: NEXT n
12 LET d=0
13 PRINT AT 8,8:"Noughts & Cro
sses": PAUSE 99
15 PAUSE 5: PRINT AT 8,9: " "A
T 7,9:"O": BEEP .05,0: FOR n=9
TO 20: PRINT AT 7,n:"O": BEEP
.05,0: NEXT n: PAUSE 2: FOR n=7 T
O 0 STEP -1: PRINT AT n,21:"O"/A
T n+1,21:"X"/AT n+2,21:" " : BEEP
.05,0: NEXT n: PRINT AT 0,21:"X
"/AT 1,21:" " : BEEP .05,0: PRINT
AT 0,21:" " : BEEP .05,0
16 PAUSE 20: PRINT AT 0,21:"s"
: BEEP .05,0: PRINT AT 0,21:"o"
AT 1,21:"s": BEEP .05,0: FOR n=0
TO 6: PRINT AT n,21:" " /AT n+1,
21:"o"/AT n+2,21:"s": BEEP .05,0

```

```

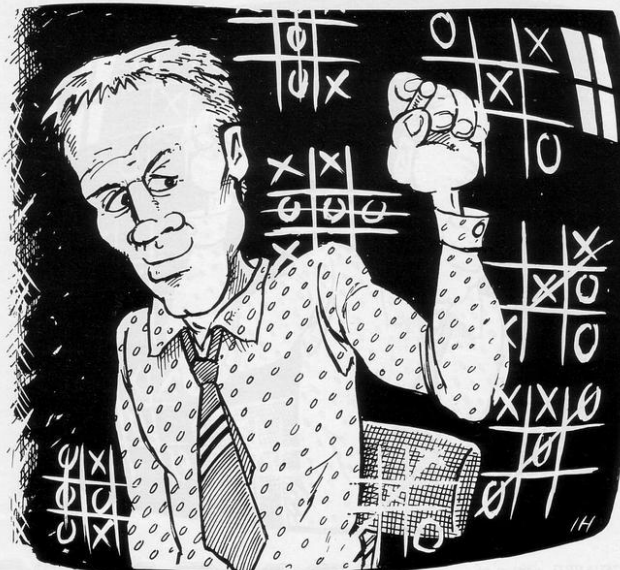
: NEXT n: PAUSE 2: FOR n=21 TO 9
STEP -1: PRINT AT 7,n:"o " : BEE
P .05,0: NEXT n: PAUSE 40: PRINT
AT 7,9: INK 2:"O": PAUSE 60: PR
INT AT 7,9:" " /AT 8,9:"O": BEEP
1:0: PAUSE 15: PRINT AT 8,9: IN
K 0:"O"
20 LET d=0: PRINT AT 14,4:"How
many Players? (1 or 2)": PAUSE
0
25 IF INKEY#="2" THEN GO TO 50
30 IF INKEY#<"1" THEN GO TO 2
0
35 PRINT AT 20,0:"Shall I go f
irst? (Y/N)"
40 IF INKEY#="Y" OR INKEY#="y"
THEN LET FLAG=0: GO TO 200
41 IF INKEY#<"N" AND INKEY#<
"n" THEN GO TO 35
45 LET FLAG=1: GO TO 200
50 INPUT "Name of Player 1? ":
b$
51 INPUT "and name of Player 2
? " : c$
55 CLS : PRINT AT 5,0:"Who sta
rts first? /AT 7,0:b$<"1?Y" OR "

```

```

j$c$<"2?": PAUSE 0
60 IF INKEY#="1" THEN LET D=1
65 IF INKEY#="2" THEN LET D=2
70 IF INKEY#<"1" AND INKEY#<
"2" THEN GO TO 55
200 CLS : PLOT 80,96: DRAW 96,0
201 PLOT 80,64: DRAW 96,0
202 PLOT 112,92: DRAW 96,96
203 PLOT 144,92: DRAW 0,96
210 PRINT AT 21,2:"(select with
<> keys & ENTER)"
250 DIM c(9): DIM p(9)
254 IF d=1 OR d=2 THEN GO TO 50
00
255 IF FLAG=0 THEN GO TO 300
256 IF FLAG=1 THEN GO TO 300
300 DATA 1,2,3,4,3,6,7,8,9,1,4,
7,2,5,6,3,6,2,1,5,9,3,5,7
350 RESTORE 300: FOR n=1 TO 8:
READ a,b,c
355 IF p(a)+p(b)+p(c)=0 THEN GO
TO 300
360 NEXT n
400 RESTORE 300: FOR n=1 TO 8:
READ a,b,c
405 IF c(a)+c(b)+c(c)=2 THEN GO

```



```

SUB 600
410 IF FLAG=1 THEN GO TO 3200
415 NEXT n
430 IF (C(1)+P(1)+C(5)+P(5)+O(9)+
P(9)=) AND (C(2)+P(2)+O(3)+P(3)+
C(4)+P(4)+O(6)+P(6)+O(7)+P(7)+O(8)+
P(8)=) OR (C(3)+P(3)+O(5)+P(5)+
C(7)+P(7)=) AND (C(1)+P(1)+C(2)+
P(2)+O(4)+P(4)+C(6)+P(6)+O(8)+
P(8)=) THEN LET v=2
(CINT (RND*4)+1): LET c(x)=1: GO TO 2200
450 RESTORE 300: FOR n=1 TO 9:
READ a,b,c
455 IF P(a)+P(b)+P(c)=2 THEN GO
SUB 600
460 IF FLAG=1 THEN GO TO 3500
465 NEXT n
500 LET n=5
505 IF P(n)+C(n)=0 THEN GO SUB
700
510 IF FLAG=1 THEN GO TO 3500
550 RANDOMIZE: LET n=C(2)INT (R
ND*5)+1
555 FOR n=1 TO 5
560 IF P(n)+C(n)=0 THEN GO SUB
700
565 IF FLAG=1 THEN GO TO 3500
570 LET n=n+2
575 IF n=11 THEN LET n=1
578 NEXT n
579 FOR n=1 TO 4
590 IF n=10 THEN LET n=2
595 IF P(n)+C(n)=0 THEN GO SUB
700
598 IF FLAG=1 THEN GO TO 3500
595 LET n=n+2: NEXT n
600 IF P(a)+C(a)=0 THEN LET c(a)
=1: LET FLAG=1: LET x=a: GO SUB
1000
605 IF P(b)+C(b)=0 THEN LET c(b)
=1: LET FLAG=1: LET x=b: GO SUB
1000
610 IF P(c)+C(c)=0 THEN LET c(c)
=1: LET FLAG=1: LET x=c: GO SUB
1000
615 RETURN
700 LET c(n)=1: LET x=n: LET FL
AG=1: GO SUB 1000: RETURN
999 STOP
1000 LET v=1: LET h=x-4
1005 IF x>6 THEN LET v=2: LET h=
x-7

```

```

1010 IF x<4 THEN LET v=0: LET h=
x-1
1015 IF FLAG=1 THEN PRINT AT 7+v
x,11+H*4: INK 2:"AB"AT 8+v*4,1
1+H*4:"BB": BEEP ,1,3: BEEP ,2,9
1020 IF FLAG=0 THEN PRINT AT 7+v
x,11+H*4: INK 1:"CD"AT 8+v*4,1
1+H*4:"EF": BEEP ,1,0: BEEP ,2,0
1025 IF FLAG=2 THEN PRINT OVER :
PAPER 6: INK 3:AT 7+v*4,11+H*4:
" "AT 8+v*4,11+H*4:
1030 RETURN
2200 PRINT AT 1,3:"YOUR TURN..."
2210 LET x=1: LET FLAG=2: GO SUB
1000
2212 PAUSE 0
2214 LET a$=INKEY$
2215 PRINT PAPER 7: OVER 1: INK
5:AT 7+v*4,11+H*4: " "AT 8+v*4,
11+H*4: " "
2220 LET x=x+(a$="0")-(a$="5"):
IF x=0 THEN LET x=1
2221 IF x=10 THEN LET x=9
2225 IF a$=CHR$ 13 AND (D=1 OR D
=2) THEN GO TO 5200
2230 IF a$=CHR$ 15 THEN GO TO 23
00
2240 GO SUB 1000
2250 GO TO 3212
2300 IF P(x)+C(x)=1 THEN BEEP ,4
,-10: GO TO 3212
2310 LET FLAG=0: LET P(x)=1: GO
SUB 1000: GO TO 3500
2400 PRINT AT 1,3):
...MY TURN
2410 GO TO 300
3000 PRINT AT 1,3): FLASH 1:
YOU WIN! " " GO TO
3205
3200 PRINT AT 1,3): FLASH 1: "
SPECTRUM WINS! "
3204 LET FLAG=3
3205 LET x=a: GO SUB 1000: GO SU
B 3230
3210 LET x=b: GO SUB 1000: GO SU
B 3230
3215 LET x=c: GO SUB 1000: GO SU
B 3230
3220 GO TO 4000
3230 FOR n=6 TO 9: PRINT PAPER 4
: OVER 1: INK 3:AT n+v*4,10+H*4:
" " NEXT n: BEEP ,1,-9: BEEP

```

```

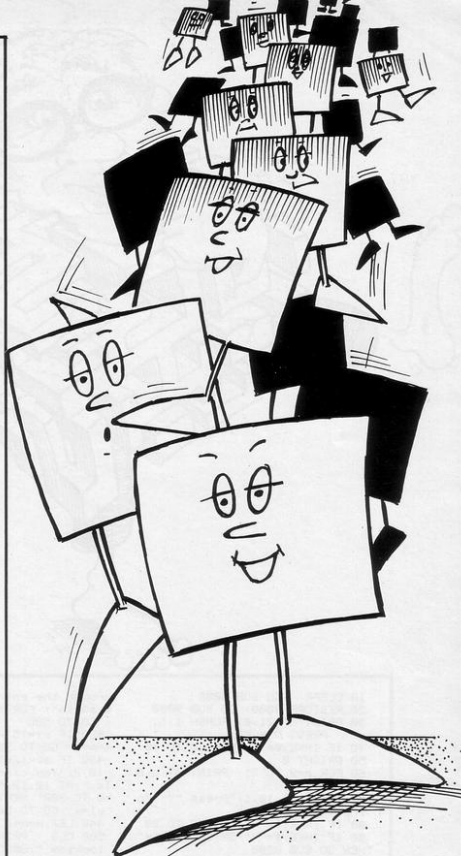
,1,-12: RETURN.
3499 STOP
3500 LET t=0
3510 FOR n=1 TO 9
3515 LET t=t+(P(n)+C(n)): NEXT n
3520 IF t=9 THEN GO TO 4000
3525 IF FLAG=1 THEN GO TO 2200
3530 IF FLAG=0 THEN GO TO 2400
4000 PRINT AT 3,13:"Another game
7 (V/N): INK 5:
4005 IF INKEY$="Y" AND INKEY$<>
"Y" THEN STOP
4010 IF d=0 THEN RUN 30
4020 IF d<0 THEN PRINT AT 4,13:
"Game Player'sT (V/N)": PRUSE 0
4030 IF INKEY$="Y" OR INKEY$="Y"
THEN FOR n=1 TO 9: LET P(n)=0:
LET c(n)=0: NEXT n: CLS: GO TO
55
4040 RUN 20
4093 STOP
5000 IF d=2 THEN GO TO 6010
5010 PRINT AT 1,3:b$:"a turn..."
5020 GO TO 2210
5030 LET P(x)=1: LET FLAG=1: GO
SUB 1000: GO TO 6900
5200 IF P(x)+C(x)=1 THEN BEEP ,4
,-10: GO TO 3212
5205 IF D=1 THEN GO TO 5030
5210 LET c(x)=1: LET FLAG=0: GO
SUB 1000: GO TO 6500
6000 RESTORE 300: FOR n=1 TO 9:
READ a,b,c: IF P(a)+P(b)+P(c)=3
THEN PRINT AT 1,3): FLASH 1: " "
b$: wins! " LET FLAG=3: GO TO
3205
6001 NEXT n
6005 LET t=0: FOR n=1 TO 9: LET
t=t+(P(n)+C(n)): IF t=9 THEN GO TO
4000
6810 LET d=2: PRINT AT 1,3:c$:"
s turn..." GO TO 22
10
6500 RESTORE 300: FOR n=1 TO 9:
READ a,b,c: IF C(a)+C(b)+C(c)=3
THEN PRINT AT 1,3): FLASH 1: " "
c$: wins! " LET FLAG=3: GO TO
3205
6501 NEXT n
6505 LET t=0: FOR n=1 TO 9: LET
t=t+(P(n)+C(n)): IF t=9 THEN GO TO
4000
6510 LET d=1: GO TO 5000

```

```

9GDG 1 REM block stop
 2 LET HC=0
 9 CLS
10 FOR B=1 TO 30
20 PRINT AT 0,B;"(isp)";AT 21,
B;"(gf)"
30 NEXT B
40 FOR A=0 TO 21
50 PRINT AT A,0;"(gf)";AT A,31
;"(gf)"
60 NEXT A
70 LET X=10
80 LET Y=10
90 LET A=1
99 LET SC=0
100 LET B=2
110 PRINT AT A,B+1;
120 LET I=PEEK (PEEK 16390+PEEK
16399*256)
121 LET B=B+1
122 IF B=31 THEN LET B=2
130 IF I=0 THEN LET A=A-1
130~IF I=8 THEN LET A=A-1
SC
290 IF SC<HC THEN GOTO 320
300 PRINT TAB 2;"A NEW HIGH-SCO
RE OF ";SC;TAB 2;" HAS BEEN ACHI
hc; v 130~IF I=8 THEN LET A=A-1
140 IF I=120 THEN LET A=A+1
150 PRINT AT A,B;"(isp)";AT A,B
-1;" "
160 LET Y=Y+(INKEY$="8" AND Y<3
0)-(INKEY$="5" AND Y>1)
170 LET X=X+(INKEY$="6" AND X<2
0)-(INKEY$="7" AND X>1)
180 PRINT AT X,Y;"(9a.)"
190 IF A=21 THEN GOTO 250
200 LET SC=SC+1
210 GOTO 110
250 FOR C=0 TO 20
260 PRINT AT 10,2;"(91:ie:is:ic
ia:ip:ie:92)";AT 10,2;"(9a:ie:i
s:ic:ia:ip:ie:9w)";
270 NEXT C
280 PRINT TAB 2;"YOUR SCORE = "
;SC
290 IF SC<HC THEN GOTO 320
300 PRINT TAB 2;"A NEW HIGH-SCO
RE OF ";SC;TAB 2;" HAS BEEN ACHI
300~PRINT TAB 2;"A NEW HIGH-SCO
RE OF ";SC;TAB 2;" HAS BEEN ACHI
EVED."
310 LET HC=SC
320 PRINT TAB 2;"ANOTHER GAME?
(Y~N)"
330 IF INKEY$="Y" THEN GOTO 9
340 IF INKEY$="N" THEN STOP
350 GOTO 330
900 SAVE "BLOCK STOP"
910 GOTO 1

```



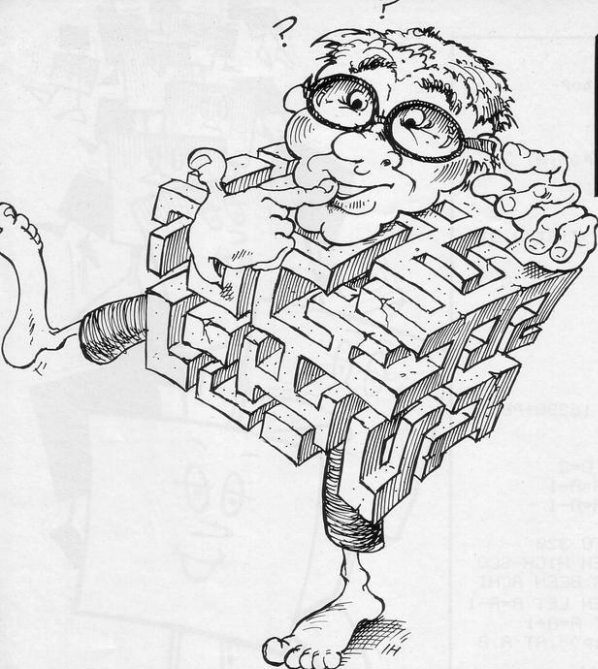
BLOCK

THE BLACK SQUARE moves across the screen, leaving a trail of black squares behind it. Its object is to reach the bottom of the screen and escape. You must prevent that for as long as possible.

You are the grey square, leaving a grey trail. Whenever the black square hits a black square it will move down a row. Whenever it hits a grey square it will move up a row. When finally it reaches the bottom of the screen your score will be given. Avoid crashing into the border of the playing area.

Block Stop was written by M Thompson of Ashford, Kent for the 16K ZX-81.

STOP



LAL

OUR INITIAL reaction on playing **Labyrinth**, by Steven Vignaux of Bridgwater, Somerset was that it surpassed comparable professional software. Perhaps that is not surprising for Vignaux has had more access to computers than the majority of our readers.

His school owns five Spectrums and he was having lessons on them and practising on his ZX-81 at home until he upgraded to a Spectrum last Christmas. He is developing his programming skills and is learning machine code.

On **RUNning Labyrinth** you will find yourself inside the entrance of a large maze, from which it is your object to escape. Three-dimensional views of the maze to north, south, east and west can be obtained at the press of a button. When you are completely lost, press "H" and a plan of the maze will be displayed briefly, but that option is available only five times during your journey (16K Spectrum).

```

10 CLEAR : GO SUB 8000
20 RESTORE 9000: GO SUB 9000
30 PRINT AT 21,0: FLASH 1:
   PRESS ANY KEY
40 IF INKEY$="" THEN GO TO 40
50 BRIGHT 0
60 FOR n=9 TO 21: PRINT AT n,0
   NEXT n
70 PRINT AT 10,1:"Press "Y" fo
  r the instructions"
80 IF INKEY$="" THEN GO TO 80
90 IF INKEY$="Y" OR INKEY$="y"
  THEN GO SUB 8200
100 LET b$="0": LET d=1: LET m=
  0
110 LET p=0: LET x=9: LET y=1
120 LET x1=x: LET y1=y
140 BORDER 7: PAPER 7: CLS : IN
  K 0
150 GO TO 500
220 IF a$="5" THEN LET b$=a$: L
  ET d=-1: BEEP .2,10: GO TO 500
230 IF a$="8" THEN LET b$=a$: L
  ET d=1: BEEP .2,10: GO TO 500
240 IF a$="6" THEN LET b$=a$: L
  ET d=1: BEEP .2,10: GO TO 500
250 IF a$="7" THEN LET b$=a$: L
  ET d=-1: BEEP .2,10: GO TO 500
260 LET a$=INKEY$: IF a$="" THE
  N GO TO 260
270 BEEP .2,0: IF a$="H" OR a$=
  "h" THEN LET p=p+1: IF p<=5 THEN
  BEEP .2,10: GO SUB 1000: GO TO
  500
280 IF a$="0" THEN GO TO 300
290 GO TO 220
300 IF b$="0" THEN LET y1=y1+1
310 IF b$="5" THEN LET y1=y1-1
320 IF b$="6" THEN LET x1=x1+1
330 IF b$="7" THEN LET x1=x1-1
400 BEEP .2,10: CLS
410 IF y1=0 AND x1<>15 THEN LET
  y1=1: PRINT AT 2,3:"You are try
  ing to leave by"AT 4,3:"going t
  hrough the entrance"AT 6,11:"Tr
  y again": FOR n=0 TO 250: NEXT n
  : GO TO 500
420 IF x1=15 AND y1=1 THEN LET
  m=m+1: GO TO 3000
430 IF a(x1,y1)=1 THEN PRINT AT
  10,2:"You cannot go through wal
  ls."AT 12,12:"Try again": FOR n
  =0 TO 200: NEXT n: LET x1=x: LET
  y1=y: GO TO 500
440 LET m=m+1
500 CLS : PRINT AT 1,6:"You are
  looking "d$(VAL b$)-4)
510 PLOT 8,0: DRAW 0,175: PLOT
  247,0: DRAW 0,175
520 IF b$="0" OR b$="5" THEN GO
  TO 800
530 LET x=x1: LET y=y1
540 LET d1=d: FOR i=1 TO 5
550 IF a(x+d,y)=1 THEN GO SUB (<
  i*10)+2000: LET d=d1: GO TO 260
560 IF a(x+d,y-1)=1 THEN GO SUB
  (<i*10)+2060: GO TO 500
570 GO SUB (<i*10)+2210
580 IF a(x+d,y+1)=1 THEN GO SUB
  (<i*10)+2110: GO TO 600
590 GO SUB (<i*10)+2160
610 LET d=d1: NEXT i
620 LET d=d1: GO TO 260
800 LET x=x1: LET y=y1
810 LET d1=d: FOR i=1 TO 5
815 IF y+d=0 AND x<>15 THEN GO
  TO (<i*10)+2490
817 IF y+d=0 OR y+d=32 THEN IF
  x=15 THEN GO TO (<i*10)+2590
820 IF a(x,y+d)=1 THEN GO SUB (<
  i*10)+2000: LET d=d1: GO TO 260
830 IF a(x-1,y+d)=1 THEN GO SUB
  (<i*10)+2060: GO TO 850
840 GO SUB (<i*10)+2210
850 IF a(x-1,y+d)=1 THEN GO SUB
  (<i*10)+2110: GO TO 870
860 GO SUB (<i*10)+2160
880 LET d=d+d1: NEXT i
890 LET d=d1: GO TO 260
1000 BORDER 7: PAPER 7: CLS : IN
  K 0
1010 PRINT AT 0,0:"PLAN OF MAZE
  No. ",p
1020 FOR n=1 TO 20: FOR b=1 TO 3
  1
1030 IF a(n,b)=1 THEN PRINT AT n
  ,b:"█"
1040 NEXT b: NEXT n
1050 IF x=9 AND y=1 THEN PRINT A
  T 9,0:">"
1060 PRINT AT x,y: FLASH 1:"X"
1070 IF x<>9 OR y<>1 THEN PRINT
  AT 9,1:">"
1080 PRINT AT 15,1:"<"
1100 PRINT 11:" YOU ARE WHERE
  THE "x" IS.
1110 PRINT 0:" ENTRANCE = >
  EXIT = <"
1130 FOR n=0 TO 50
1140 BEEP .05,n: BEEP .05,50-n
1150 NEXT n
1160 CLS : RETURN
2010 DRAW -239,0: PLOT 8,0: DRAW
  239,0: RETURN
2020 PLOT 48,32: DRAW 159,0: PLO
  T 48,144: DRAW 159,0: RETURN
2030 PLOT 80,56: DRAW 95,0: PLOT
  80,120: DRAW 95,0: RETURN
2040 PLOT 104,72: DRAW 47,0: PLO
  T 104,104: DRAW 47,0: RETURN
2050 PLOT 120,80: DRAW 15,0: PLO
  T 120,96: DRAW 15,0: RETURN
2060 RETURN
2070 PLOT 0,0: DRAW 48,32: DRAW
  0,111: DRAW -40,32: DRAW
  2080 PLOT 48,32: DRAW 32,24: DRA
  W 0,64: DRAW -32,24: RETURN
2090 PLOT 80,56: DRAW 24,16: DRA
  W 0,32: DRAW -24,16: RETURN
2100 PLOT 104,72: DRAW 16,8: DRA
  W 0,16: DRAW -16,8: RETURN
2110 PLOT 120,80: DRAW 8,8: DRAW
  
```

BRINTH

```

-8,8: RETURN
2120 PLOT 247,175: DRAW -40,-32:
  DRAW 0,-111: DRAW 40,-32: RETUR
N
2130 PLOT 207,32: DRAW -32,24: D
RAW 0,64: DRAW 32,24: RETURN
2140 PLOT 175,55: DRAW -24,15: D
RAW 0,32: DRAW 24,15: RETURN
2150 PLOT 151,72: DRAW -16,8: DR
AW 0,16: DRAW 16,8: RETURN
2160 PLOT 135,80: DRAW -8,0: DRA
W 8,8: RETURN
2170 PLOT 247,32: DRAW -40,0: DR
AW 0,112: DRAW 40,0: RETURN
2180 PLOT 207,55: DRAW -32,0: DR
AW 0,64: DRAW 32,0: RETURN
2190 PLOT 175,72: DRAW -24,0: DR
AW 0,32: DRAW 24,0: RETURN
2200 PLOT 151,80: DRAW -16,0: DR
AW 0,16: DRAW 16,0: RETURN
2210 PLOT 127,80: DRAW 8,0: RETU
RN
2220 PLOT 8,32: DRAW 40,0: DRAW
0,112: DRAW -40,0: RETURN
2230 PLOT 40,55: DRAW 32,0: DRAW
0,64: DRAW -32,0: RETURN
2240 PLOT 80,72: DRAW 24,0: DRAW
0,32: DRAW -24,0: RETURN
2250 PLOT 104,80: DRAW 16,0: DRA
W 0,16: DRAW -16,0: RETURN
2260 PLOT 127,80: DRAW -7,0: RET
URN
2500 PLOT 8,160: DRAW 239,0: PLO
T 8,151: DRAW 239,0: PRINT AT 2,
8: "E N T R A N C E": LET d=d1: G
O 0 TO 260
2510 PLOT 48,136: DRAW 159,0: PL
OT 48,127: DRAW 159,0: PRINT AT
5,12: "ENTRANCE": LET d=d1: GO TO
260
2550 LET d=d1: GO TO 260
2610 PLOT 48,136: DRAW 159,0: PL
OT 48,127: DRAW 159,0: PRINT AT
5,14: "EXIT": LET d=d1: GO TO 260
2700 GO TO 260
3000 BORDER 1: PAPER 1: CLS : IN
K 7: BRIGHT 1
3010 PRINT AT 21,0: FLASH 1: ("cp
:195:2ksp:196:93:105:95:2k93:197
:196:sp:94:92:194:93:96:91:97:93:
95:197:sp:195:93:194:92:195:sp:95
:5:sp"): RANDOMIZE USR 3200
3020 PRINT AT 21,0: FLASH 1: ("cp
:195:2ksp:191:193:192:95:2k93:19
7:sp:95:92:sp:191:193:196:sp:95:
sp:95:91:197:195:sp:195:sp:194:9
3:97:sp"): RANDOMIZE USR 3200
3030 PRINT AT 21,0: FLASH 1: ("cp
:191:193:197:195:sp:2k95:2k193:9
2:sp:95:2ksp:195:sp:96:94:192:19
3:95:sp:91:195:sp:195:sp:195:sp:
95:sp"): RANDOMIZE USR 3200
3035 PRINT AT 21,0: FLASH 1: "
"
3040 FOR n=0 TO 16
3050 RANDOMIZE USR 3200
3060 NEXT n
3070 BRIGHT 1
3080 PRINT AT 8,3: "You managed t
o get out in"
3090 PRINT AT 9,3:n" moves."
3100 IF p=8 THEN PRINT AT 11,0: "
You did not ask for help at all"
:
3110 IF p=1 THEN PRINT AT 11,3: "
You asked for help once."
3120 IF p=2 THEN PRINT AT 11,3: "
You asked for help twice."
3130 IF p>2 THEN PRINT AT 11,2: "
You asked for help "p;" times"

```

```

3140 PRINT AT 15,0: "Would you li
ke to see the maze you have con
quered again ?"
3150 PRINT AT 18,8: "Press ~Y~ if
YES"
3160 IF INKEY#="" THEN GO TO 316
0
3170 IF INKEY#="Y" OR INKEY#="y"
THEN GO SUB 4000
3180 FOR n=15 TO 18: PRINT AT n,
0:,, NEXT n
3190 PRINT AT 15,0: "Would you li
ke to Play again ?"
3200 PRINT AT 18,8: "Press ~Y~ if
YES"
3210 IF INKEY#="" THEN GO TO 321
0
3220 IF INKEY#="Y" OR INKEY#="y"
THEN GO TO 3240
3230 BRIGHT 0: BORDER 7: PAPER 7
: CLS : INK 0: STOP
3240 GO TO 10
4000 BRIGHT 0: BORDER 7: PAPER 7
: CLS : INK 0
4005 PRINT AT 0,10: "PLAN OF MAZE
"
4010 FOR n=1 TO 20
4020 FOR i=1 TO 31
4030 IF a(n,i)=1 THEN PRINT AT n
,i: "█"
4040 NEXT i: NEXT n
4050 PRINT 20: "PRESS ANY KE
Y TO RETURN "
4060 IF INKEY#="" THEN GO TO 406

```

```

0
4070 CLS : RETURN
8000 BORDER 1: PAPER 1: CLS : IN
K 7: BRIGHT 1
8005 PRINT AT 21,0: FLASH 1: "
"
RANDOMIZE USR 3200
8010 PRINT AT 21,0: FLASH 1: ("cp
:195:2ksp:196:93:96:95:2k93:197:
96:sp:94:92:194:93:96:91:97:93:9
5:197:sp:195:93:194:92:195:sp:95
:sp"): RANDOMIZE USR 3200
8020 PRINT AT 21,0: FLASH 1: ("cp
:195:2ksp:191:193:192:95:2k93:19
7:sp:95:92:sp:191:193:196:sp:95:
sp:95:91:197:195:sp:195:sp:194:9
3:97:sp"): RANDOMIZE USR 3200
8030 PRINT AT 21,0: FLASH 1: ("cp
:191:193:197:195:sp:2k95:2k193:9
2:sp:95:2ksp:195:sp:96:94:192:19
3:95:sp:91:195:sp:195:sp:195:sp:
95:sp"): RANDOMIZE USR 3200
8035 PRINT AT 21,0: FLASH 1: "
"
8040 FOR n=0 TO 16
8050 RANDOMIZE USR 3200
8060 NEXT n
8070 PRINT AT 9,0: "By Steven Via
naux"
8080 PRINT AT 12,2: "Please wait
while I work out"
8090 PRINT AT 14,12: "the maze"
8100 RETURN
8210 PRINT AT 10,1: "

```



```

8220 PRINT AT 6,2;"The object of
the game is to,""find your way
out of the maze."
8230 PRINT "If while trying to
find your way out of the maze
you find you are completely lost
then you can get some help by pre
ssing "H". Once you have presse
d the key the screen will clea
r and you will be shown a plan
of the maze. This will indi
cate your position in the maze
the exit and the entrance. Ho
wever the plan will only remai
n on view for a short period o
f time."
8240 PRINT AT 21,0;" PRESS ANY
KEY TO CONTINUE "
8250 IF INKEY#="" THEN GO TO 825
0
9260 BEEP .2,0: BEEP .2,10
8270 FOR n=5 TO 21: PRINT AT n,0
;;; NEXT n
8275 PRINT AT 6,0;" Another thi
ng about the plan of the maze i
s that you are only given access
to it five times."
8280 PRINT "Once the game star
ts you will be given a three dim
ensional representation of th
e maze as you would see it. Th
is view is governed by the dire
ction in which you are lookin
g. You can look either north,so
uth,east or west."
8290 PRINT "When you move you
move one place forward in the
direction you are looking."
8300 PRINT AT 21,0;" PRESS ANY
KEY TO CONTINUE "
8310 IF INKEY#="" THEN GO TO 831
0
8320 BEEP .2,0: BEEP .2,10
8330 FOR n=6 TO 21: PRINT AT n,0
;;; NEXT n
8340 PRINT AT 6,0;"Keys for look
ing in different directions."
8350 PRINT " WEST SOUTH N
ORTH EAST "
8360 PRINT " 5 6
7 g"

```

```

8370 PRINT "As indicated by the
arrows above the key."
8375 PRINT "Press "0" to move o
ne place forward in the dire
ction you are looking."
8380 PRINT " Press "H" fo
r HELP"
8390 PRINT AT 21,0;" PRESS A
NY KEY TO PLAY"
8400 IF INKEY#="" THEN GO TO 840
0
8410 BEEP .2,0: BEEP .2,10
8420 BORDER 7: PAPER 7: CLS : IN
K 0
8430 RETURN
9000 DIM a(20,31): DIM d$(4,5)
9010 FOR n=1 TO 20
9020 READ b#
9030 FOR i=1 TO 31
9040 LET a(n,i)=VAL b$(i)
9070 NEXT i
9080 NEXT n: BEEP .2,0
9090 BEEP .2,10
9095 FOR n=1 TO 4: READ d$(n): N
EXT n: RETURN
9100 DATA "11111111111111111111
1111111111"
9110 DATA "10100100010100000000
1010010001"
9120 DATA "10001101010101110111
0010001101"
9130 DATA "101001011101010101000
10101000001"
9140 DATA "101110100001010001010
1010111111"
9150 DATA "10000000011101111010
1000100001"
9160 DATA "10101011000000000000
1010101101"
9170 DATA "1010101000110101010
1010000011"
9180 DATA "00101010101000101010
1010111001"
9190 DATA "10110000000110101011
1010101111"
9200 DATA "101010111110010100010
0010000001"
9210 DATA "11100010101100011011
1110101101"
9220 DATA "10001110101011100010
0000101001"
9230 DATA "11110000000101001111

```



```

1111101011"
9240 DATA "001011101011101010000
001001001"
9250 DATA "101000001000001010111
0101110101"
9260 DATA "101011111101111110001
0100000001"
9270 DATA "100001000001000001111
0111011101"
9280 DATA "10101001010001100000
001000001"
9290 DATA "11111111111111111111111
1111111111"
9300 DATA "WEST", "SOUTH", "NORTH"
"EAST"

```

```

DDT 1 LET L=VAL "9"
2 LET S=SGN P1
3 CLS
10 FOR N=11 TO 20 STEP .03
20 IF RND>.5 THEN PRINT AT N,R
ND*(15+2); "+"
30 LET L=L+(INKEY#="A" AND L<1
7)-(INKEY#="I" AND L>2)
40 PRINT AT 21,L-2;"(SP:90:isP
:94:sp)"
50 IF INKEY#="0" THEN GOSUB 13
0
60 NEXT N
100 PRINT AT N,0:S
110 PAUSE VAL "4E4"
120 RUN
130 FOR A=CODE "=" TO CODE "<9d
)" STEP -CODE "<91)"
131 PRINT AT A,L;
132 IF PEEK (PEEK 16398+256*PEE
K 16399)=21 THEN GOTO 140
133 PRINT "<95)"
133 PRINT "<95)"
134 PRINT AT A,L;" "
136 NEXT A
137 GOTO VAL "100"
140 LET S=S+CODE "<91)"
141 PRINT " "
142 RETURN

```

WHEN THIS GAME IS RUN you find yourself at the bottom of the screen with a horde of dark shapes above you in the air. Maddened by that intrusion on your airspace, you rush from side to side, using keys "I" and "A", shooting at the shapes with key 0. The game ends with your score if you shoot an empty space or if you run out of time.

Space Craze was written for the IK ZX-81 by P Roberts of Leominster, Herefordshire.

SPACE CRAZE





LASER BLAST

STOP THE ALIENS landing at their base on the planet Krypton. You have six laser bases, each of which is activated by the correspondingly-numbered key on your 16K ZX-81. As the aliens do not move smoothly but jump it is not sufficient to press one key continuously.

Laser Blast was written by Philip Cole of Rickmansworth, Hertfordshire.

```

A 100 LET I$=""
INSTRUCTIONS?
110 PRINT AT 5,0;I$
120 LET I$=I$(2 TO *)+I$(1)
130 IF INKEY$="N" THEN GOTO 150
140 IF INKEY$="Y" THEN GOTO 110
150 IF INKEY$="Y" THEN GOSUB 700
160 CLS
164 LET L$=""
165 LET O$=""
170 LET C$=""
1800 REM ***LANDSCAPE***
1805 REM ,
1810 PRINT AT 16,0;"(9w)";AT 16,
31;"");AT 17,0;"(ispX)";AT 17,30
;"\<isp)";AT 18,0;"(2kisp)";AT 1
8,30;"(2kisp)";AT 19,0;"(2kisp)";
AT 19,30;"(2kisp)";
1820 PRINT AT 20,0;"(2kisp)20k9f
2kisp)";
1830 PRINT AT 2,0;"(11)";AT 7,0
;"(12)";AT 12,0;"(13)";
1840 PRINT AT 4,30;"(14)";AT 9,
30;"(15)";AT 14,30;"(16)";
1850 PRINT AT 21,0;"SCORE=";AT 2
1,14;"FUEL=500"
1860 LET T=0
1870 LET F=500
2000 REM ***ALIENS***
2005 REM ,
2010 LET A$="(9f)"
2020 LET B$="7n"
2030 LET C$="F"
2040 LET S=0
2050 LET K=0
2047 REM
2049 REM ***PLAY***
2049 REM
2500 LET X=0
2510 LET A=INT (RND*6)+1
2520 LET S=INT (RND*24)+8
2530 IF A=1 OR A=2 OR A=3 OR A=4
THEN LET P$="H"
2540 IF A=5 THEN LET P$=B$
2550 IF A=6 THEN LET P$=C$
2697 REM
2698 REM ***CONTINUE***
2699 REM
2700 IF F<=0 THEN GOTO 6000
2705 PRINT AT X,S+K;S$
2710 LET K=INT (RND*5)-6
2720 LET Z=INT (RND*5)+1
2730 LET X=X+Z
2740 IF X>20 THEN GOTO 3200
2750 PRINT AT X,S+K;P$
2760 LET Y=0
2770 IF INKEY$="1" THEN LET Y=2
2780 IF INKEY$="2" THEN LET Y=7
2790 IF INKEY$="3" THEN LET Y=12
2800 IF Y=2 OR Y=7 OR Y=12 THEN
GOTO 3000
2810 IF INKEY$="4" THEN LET Y=4
2820 IF INKEY$="5" THEN LET Y=9
2830 IF INKEY$="6" THEN LET Y=14
2840 IF Y=4 OR Y=9 OR Y=14 THEN
GOTO 3100
2850 GOTO 2700
2997 REM
2999 REM ***FIRE***
3000 PRINT AT Y,2;L$;AT Y,2;O$
3010 LET F=F-10
3020 PRINT AT 21,19;S$;AT 21,19;
F
3030 IF X=Y THEN GOTO 5000
3040 GOTO 2700
3099 REM
3100 PRINT AT Y,0;L$;AT Y,0;O$
3110 LET F=F-10
3120 PRINT AT 21,19;S$;AT 21,19;
F
3130 IF X=Y THEN GOTO 5000
3140 GOTO 2700
3197 REM
3198 REM ***LANDED***
3199 REM
3200 LET T=T-10
3210 PRINT AT 21,6;S$;AT 21,6;T
3220 GOTO 2500
4997 REM
4998 REM ***ZAP***
4999 REM
5000 PRINT AT X,S+K;"(12;13;1P)"
5010 IF A=1 OR A=2 OR A=3 OR A=4
THEN LET T=T+25
5020 IF A=5 THEN LET T=T+INT (R
ND*100)+1
5030 IF A=6 THEN LET F=F+70
5040 FOR N=0 TO 20
5050 NEXT N
5060 PRINT AT 21,6;S$;AT 21,6;T
5070 PRINT AT 21,19;S$;AT 21,19;
F
5080 PRINT AT X,S+K;S$
5090 GOTO 2500
5999 REM
6000 REM ***THE END***
6010 REM
6020 CLS
6025 PRINT AT 2,1;"YOU SCORED- "
;T
6030 IF T<=100 THEN PRINT AT 2,1
;AT 10,4;"WHAT AN EMBARRASMENT.
."
6035 IF T<500 AND T>100 THEN PRI
NT AT 10,4;"NOT BAD I SUPPOSE.
."
6040 IF T>=500 THEN PRINT AT 10,
4;"WELL DONE"
6050 PRINT AT 20,0;"DO YOU WANT
TO HAVE ANOTHER GO?"
6060 IF INKEY$="N" THEN GOTO 699
9
6070 IF INKEY$="Y" THEN GOTO 10
6080 GOTO 6060
6999 STOP
7000 REM ***INSTRUCTIONS***
7010 REM ,
7015 CLS
7020 PRINT TAB 10;"INSTRUCTIONS"
;"TAB 9;"*****
7030 PRINT AT 2,2;"THE AIM OF TH
E GAME IS TO STOP THE ALIENS FROM
LANDING AT THEIR SPACE STATION O
N KRYPTON."
7040 PRINT AT 6,1;"USE KEYS 1,2,
3,4,5,6 TO FIRE."
7050 PRINT AT 0,1;"THE ALIENS AR
E-";
7060 PRINT AT 10,0;"1. (9f)-WORTH
H 25 POINTS";AT 12,0;"2. ?-WORTH
0-100 POINTS";AT 14,0;"3. F-WOR
TH 70 FUEL POINTS"
7070 PRINT AT 17,7;"GOOD LUCK...
";AT 20,16;"ANY KEY TO START"
7080 IF INKEY$="" THEN GOTO 7080
7090 RETURN

```

```

1 PAPER 7: BORDER 7: INK 0: C
LS
2 LET go=0
5 FOR p=1 TO 4: READ as: FOR
n=0 TO 7
10 READ m: POKER USR as+n,m
15 NEXT m: NEXT p
20 DATA "a",0,16,56,124,254,12
4,56,16
25 DATA "b",0,56,56,16,214,254
,214,16
30 DATA "c",0,108,254,254,124,
124,56,16
35 DATA "d",0,16,56,124,254,25
4,214,16
40 PRINT AT 1,9: "P O K E R"
42 PRINT AT 4,0: "The compute
r will deal you a""five card PO
KER hand and you""delete as man
y cards as you wish""in an at
tempt to obtain a good""winning h
and."
44 PRINT AT 10,0: "The comput
er gives you 20""credits to sta
rt with and you""bet (LIMIT 10
credits) before""each hand is d
ealt."
46 GO SUB 1400
49 CLS: PRINT AT 2,0: "Winni
ng hands are Paid:"; AT 4,5: "2 P
AIR -- Even"; AT 5,5: "3 OF
-- 2"; AT 6,5: "RUN
-- 4"; AT 7,5: "FLUSH -- 5
/1"
50 PRINT AT 8,5: "FULL HOUSE --
9/1"; AT 9,5: "POKER -- 14/1
"; AT 10,5: "ST FLUSH -- 20/1"; A
T 11,5: "ROYAL FLUSH-- 50/1"

56 GO SUB 1400
60 CLS: PRINT AT 2,0: "The k
eys used are:"; AT 4,5: "0 -- bet
(repeat key); AT 5,5: "9 -- deal
"; AT 6,5: "8 -- draw"; AT 7,5: "7 --
stand"; AT 8,5: "6 -- cancel"; AT
9,5: "1 to 5 -- delete cards"
62 GO SUB 1400
71 DIM as(4): DIM z(4): DIM t
(5): DIM w(5): DIM c(5): DIM k(8
): DIM p(8,11)
72 FOR i=1 TO 4: READ as(i): R
EAD z(i): NEXT i
73 DATA "a", "R", "b", "k", "c", "g
", "d", "j"
74 FOR i=1 TO 9: READ k(i): NE
XT i: DATA 1,2,4,5,9,14,20,50
75 FOR i=1 TO 8: READ p(i): N
EXT i: DATA "2 PAIR", "3 OF", "RUN
", "FLUSH", "FULL HOUSE", "POKER", "
ST FLUSH", "ROYAL FLUSH"
76 LET credit=20: LET bet=0
77 PAPER 4: CLS: GO SUB 2600
79 IF credit=0 THEN GO SUB 400
8: GO TO 76
80 FOR i=1 TO 5
85 GO SUB 1810
92 NEXT i
93 LET bet=0
94 PRINT AT 20,16: "
"
95 PRINT INK 7; AT 21,23: "
BET"
97 LET as=INKEY$: IF as="0" TH
EN PAPER 4: CLS: GO TO 105
100 GO TO 97
104 PRINT INK 7; AT 21,27: "DEAL"
GO SUB 1500

105 IF as="0" AND credit>0 AND
bet<10 THEN LET bet=1: LET c
redit=credit-1: GO SUB 2600: BEE
P 1,15: GO TO 104
111 IF as<"9" THEN GO TO 104
112 LET x=0: LET f=7: FOR p=1 T
O 13 STEP 3: GO SUB 500: GO SUB
559: NEXT p: PRINT INK 7; AT 20,1
8: "DELETE < DRAW"; AT 21,23: "OR S
RAND": LET set=1: GO SUB 3000: L
ET set=0

115 GO SUB 1500
117 IF as="7" THEN GO SUB 3000:
GO TO 79

```

```

118 IF as="8" THEN PAPER 4: CLS
: GO SUB 2600: FOR i=1 TO 5: GO
SUB 1010: NEXT i: LET x=0: FOR
p=1 TO 13 STEP 3: GO SUB 500: GO
SUB 559: NEXT p: GO SUB 3000: G
O TO 79
119 GO SUB 2000
120 GO SUB 1500
121 IF as="8" AND i=1 THEN GO T
O 118
122 IF as<"8" THEN GO TO 127
123 GO SUB 1700: GO SUB 2500: G
O SUB 3000
126 GO TO 79
127 IF as="6" AND i=0 THEN GO S
UB 2500: GO SUB 2000
128 FOR i=1 TO 5
129 IF as=STR$ i THEN LET i=0:
LET j(i)=1: LET f=4: LET p=i-2
: GO SUB 500: GO TO 120
130 NEXT i
135 GO TO 120

500 FOR m=2 TO 9
520 FOR a=0 TO 4
530 PRINT PAPER f; AT m,2; a; "
"

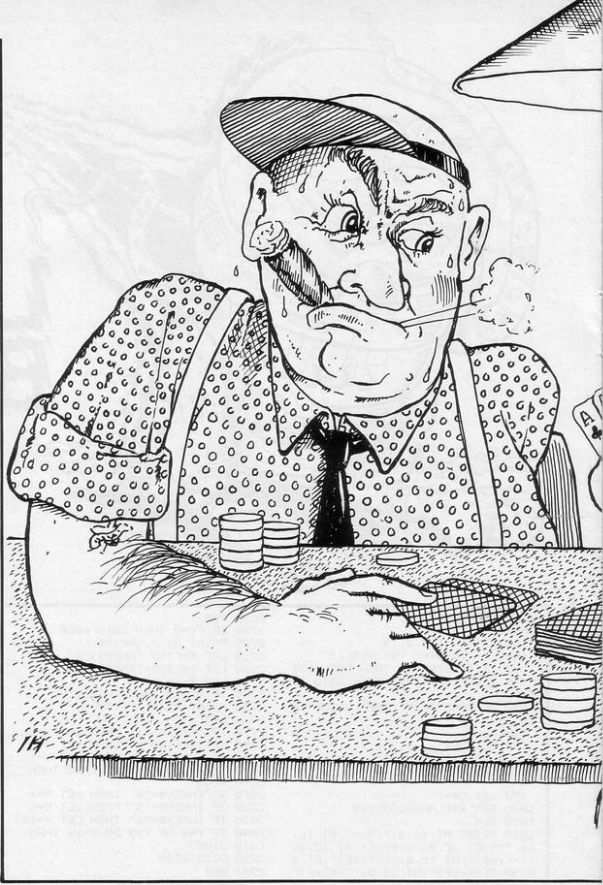
```

```

540 NEXT a: NEXT m
550 RETURN
559 LET xxx=1
560 IF xxx<=9 THEN PRINT PAPER
7; AT 2,27; xxx+1
570 IF xxx>=16 THEN PRINT PAPER
7; AT 2,27; #8(14+xxx)
575 IF t(x)=1 OR t(x)=2 THEN LE
T z=2
576 IF t(x)=2 OR t(x)=4 THEN LE
T z=0
580 PRINT PAPER 7: INK z; AT 3,2
; p; as(t(x))
585 REPEAT 10,5
590 RETURN
1010 LET c=i: PRINT (RND*52+1)
1020 IF i=1 THEN GO TO 1050

1050 FOR m=1 TO i-1: IF c(i)>c(m)
) THEN GO TO 1010
1060 NEXT m
1050 LET t(i)=PRINT ((c(i)-1)/13)+
1
1060 LET w(i)=c(i)-c(i-1)+1
1070 RETURN
1400 PRINT AT 21,2: FLASH 1: "Pre
ss any key to continue"

```



POKER



DANNY O'REILLY of Belfast has sent a version of the arcade **Poker** routine. You are given 20 credits and must bet whatever you dare. Your cards are dealt and you can hit keys 1 to 5 to change them. Key 8 will deal an entire new hand. You are playing, not against the computer, but against certain fixed odds which are displayed at the start of the program.

Full instructions are given and the program induces the same sleepy-eyed fascination as a fruit machine (16K Spectrum).

Graphics notes: 73—graphic A; graphic B; graphic C; graphic D.

```

1500 LET a$=INKEY$: IF a$="" THEN
N GO TO 1500
1505 RETURN
1700 FOR i=1 TO 5: IF k(i)=0 THEN
N GO TO 1705
1701 LET c(i)=INT (RND*52)+1
1702 FOR m=1 TO 5: IF i=m THEN G
O TO 1704
1703 IF c(i)=c(m) THEN GO TO 170
0
1704 NEXT m: GO SUB 1050
1705 NEXT i: RETURN
2000 DIM k(5): LET i=1
2001 RETURN
2500 FOR i=1 TO 5: IF k(i)=0 THEN
N GO TO 2502
2501 LET p=i: LET p$=i: LET v
i=1: GO SUB 500: GO SUB 550
2502 NEXT i
2600 RETURN
2600 PRINT INK 7:AT 6,0:"CREDITS
":TAB 20:"BET"
2601 PRINT INK 7:AT 1,4:credit:T
AB 20:bet
2610 RETURN
3000 DIM r(13): DIM c(4): DIM p(
9): LET r(1)=1: LET s=0

```

```

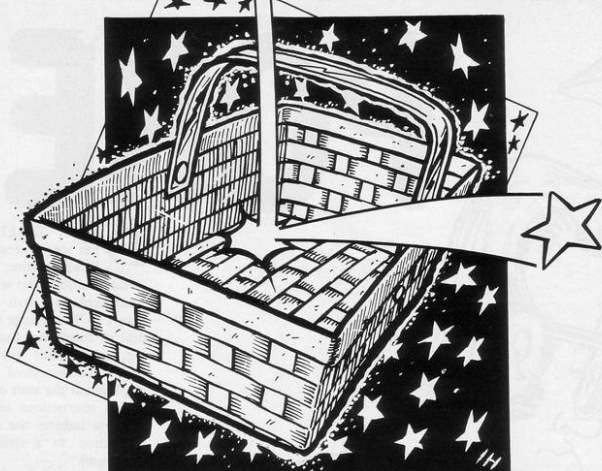
3002 FOR i=1 TO 5: LET w=(RND*100
r(i)+1): LET c(i)=w-r(i)+1:
NEXT i
3005 FOR i=1 TO 12
3010 IF r(i)=2 THEN LET r(i)=r(i
)+1
3020 IF r(i)=3 THEN LET r(i)=1
3025 IF w<=4 THEN LET r(i)=1
3030 NEXT i
3040 FOR i=1 TO 10
3045 IF r(i)=1 THEN GO TO 3055
3050 LET s=s+1: IF s=5 THEN GO T
O 3065
3052 IF i=4 AND s=4 AND r(13)=1
THEN GO TO 3065
3055 NEXT i
3060 LET s=0: NEXT i: GO TO 3080
3065 LET r(3)=1
3070 IF s=5 AND i=13 THEN LET r(
9)=1
3080 IF r(2)=1 AND r(1)=0 THEN L
ET r(5)=1
3090 FOR i=1 TO 4: IF c(i)=5 THEN
N LET r(4)=1
3100 NEXT i
3110 IF r(3)=1 AND r(4)=1 THEN L

```

```

ET r(7)=1
3120 IF r(9)=1 AND r(4)=1 THEN L
ET r(8)=1
3130 FOR i=8 TO 1 STEP -1
3140 IF r(i)=1 THEN GO TO 3160
3150 NEXT i: RETURN
3160 PRINT FLASH 1: INK 7:AT 13,
12:"WINNER"
3163 PRINT INK 7:AT 15,12:p*(1)
3165 IF s=1 THEN RETURN
3170 LET win=h(i)*bet+bet
3180 FOR i=1 TO win
3190 LET credit=credit+1: PRINT
INK 7:AT 1,4:credit: BEEP .2,15:
PAUSE 30
3200 NEXT i: RETURN
4000 PAUSE 100: PAPER 7: CLS: L
ET go=90+1: PRINT AT 11,2:"You h
ave run out of credits":AT 12,3:
"Do you wish to play again?":AT
13,11:"Y OR N"
4001 INPUT a$: IF a$="Y" OR a$="
y" THEN RETURN
4002 CLS: PRINT AT 11,0:"You ha
ve lost "go*20:" money units":A
T 12,4: FLASH 1:"THANK YOU FOR P
LAYING": STOP

```



STAR CATCH

CATCH THE falling star in your basket. Move left with key "1" and right with key "2". When no key is being pressed the basket will move steadily to the right. Movement is limited because the game takes place in a small area surrounded by a frame and colliding with the right-hand side of the frame will cause you to explode.

Star Catch was written by P D Lodge of Chelmsford, Essex for the 16K ZX-81.

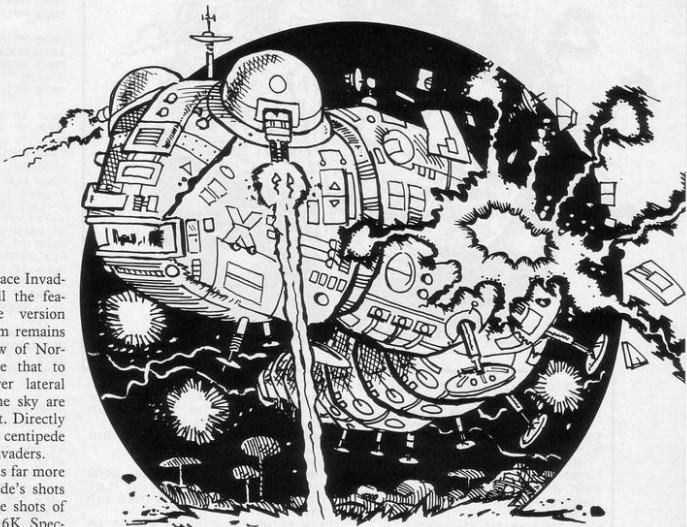
```

10 LET A=0
20 LET B=0
30 LET C=4
40 LET D=5
50 LET E=26
60 FOR F=D TO E
70 PLOT E+10,F+10
80 PLOT F+10,E+10
90 PLOT D+10,F+10
100 PLOT F+10,D+10
110 NEXT F
120 FOR G=0 TO 17
130 PRINT AT 13,G;"(gh)"
140 NEXT G
150 LET H=INT (RND*17)+1
160 IF H<0 THEN GOTO 150
170 FOR I=4 TO 12
180 PRINT AT I,H;"*"
190 PRINT AT I,H;" "
200 IF INKEY#="1" THEN LET A=A-
2
210 IF INKEY#="2" THEN LET A=A+
1
220 IF A<5 THEN LET A=5
230 PRINT AT 12,7;"(90)"
240 PRINT AT 12,10;"(95)"
250 PRINT AT 13,20;"GOES LEFT="
;C-1
260 PRINT AT 12,A;"(<2*SP:90:90:
95:SP)"
270 IF I=12 AND A+3=H OR I=12 A
ND A+4=H THEN LET B=B+1
280 IF A-1>12 THEN GOTO 330
290 LET A=A+1
300 PRINT AT 10,20;"CORE=";B
310 NEXT I
320 GOTO 150
330 PRINT AT 11,14;"(<SP:94:95:9
t)"
340 PRINT AT 12,14;"(<2*94:98:9t
)"
360 PRINT AT 11,15;"(<SP:2*90)"
370 PRINT AT 12,15;"(<SP:94:9r)"
390 PRINT AT 12,14;"(<3*SP:94)"
410 PRINT AT 12,14;"(<4*SP)"
430 PRINT AT 11,14;" "
440 LET C=C-1
450 IF C=0 THEN GOTO 480
460 LET A=7
470 GOTO 150
480 PRINT AT 21,2;"* PRESS ANY
KEY TO RESTART *"
490 PAUSE 10000
500 CLS
510 RUN

```

THE SEARCH for a Space Invaders-type game with all the features of the arcade version continues. The major problem remains one of speed. Timothy Shaw of Norwich, Norfolk has overcome that to some extent by some clever lateral thinking. The invaders in the sky are unaggressive and do not shoot. Directly above you, though, is a giant centipede which shoots to defend the invaders.

Because of its proximity it is far more difficult to avoid the centipede's shots than it would be to avoid the shots of the more distant invaders (16K Spectrum).



SPECVADERS

```

15 CLS : PAPER 0 : INK 7 : BORDE
R 1: CLS
30 LET HS=0
40 CLS : PAPER 0 : INK 7 : BORDE
R 1: CLS
50 GO SUB 3050
90 LET C=0
100 LET I=3
150 CLS
200 LET A=0
205 RESTORE 200
210 FOR M=1 TO 8
220 READ D#
230 FOR U=0 TO 7
240 READ A: PUKE USR D#+U:A: NE
XT U
250 NEXT R
260 DATA "a",231,36,126,126,126
,126,36,231
270 DATA "b",0,85,127,55,62,20,
34,65
280 DATA "c",60,102,102,219,219
,126,90,129
290 DATA "d",0,0,24,60,126,255,
255,255
300 DATA "e",0,24,60,90,153,153
,255,90
310 DATA "f",0,24,60,126,255,25
5,66,66
320 DATA "g",0,85,255,251,251,0
,223,223
330 DATA "h",129,0,33,4,80,4,16
0,9
400 LET A=15
402 PRINT INK 0 : PAPER 3:AT 0,2
3:"HIGH-":HS
403 PRINT AT 0,0 : INK 0 : PAPER
3:"SCORE:"

```

```

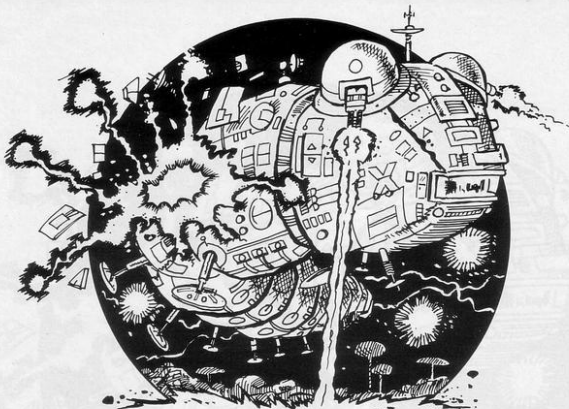
405 PRINT INK 4:AT 21,0:"LIVES
d d d"
410 LET X=6: LET Y=6: LET Z=6
412 LET H=20
415 DIM X*(3,h)
420 LET X*(1)=" a a a a a a a a
430 LET X*(2)=" b b b b b b b b
b b "
440 LET X*(3)=" c c c c c c c c
c c "
470 IF H<0 THEN LET H=2
500 PRINT INK 4 : PAPER 0 : BRIGH
T 1:AT 1,x:Y*(1,2 TO h)
520 PRINT INK 2 : PAPER 0 : BRIGH
T 1:AT 3,y:Y*(2,2 TO h)
540 PRINT INK 6 : PAPER 0 : BRIGH
T 1:AT 5,z:Y*(3,2 TO h)
560 IF I<=0 THEN PRINT AT 21,6:
" " : GO TO 9000
600 PRINT INK 6 : PAPER 0:AT 20,
a) " d "
640 IF INKEY#"a" THEN GO TO 70
00
650 IF INKEY#" " THEN GO SUB 5
000
660 IF INKEY#"a" AND A>2 THEN
LET A=A-1
665 IF INKEY#"d" AND A<27 THEN
LET A=A+1
670 PRINT INK 6 : PAPER 0:AT 20,
a) " d "
680 GO SUB 2000
690 LET G=INT (RND*3) : IF G=0 T
HEN LET X=X+1
700 IF G=1 THEN LET Y=Y+1
710 IF G=2 THEN LET Z=Z+1

```

```

720 IF X>7 THEN LET X=6
730 IF Y>7 THEN LET Y=6
740 IF Z>7 THEN LET Z=6
750 PRINT INK 5 : PAPER 2:AT 20,
0:"99":AT 20,30:"99"
760 GO TO 470
2000 PRINT INK 2 : PAPER 0:AT 16,
c) " fff" "
2005 PRINT AT 16,26 : INK 5 : PAPE
R 0 : "999999"
2007 PRINT AT 16,0 : INK 5 : "99999
99"
2010 LET C=C+1 : BEEP ,001,20 : IF
C>25 THEN LET C=6
2020 LET D=INT (RND*3)
2025 INK 7
2030 IF D<=0 THEN GO TO 3000
2040 PLOT OVER 1,C*8+32,39 : DRAW
OVER 1,0,-25 : BEEP ,009,30 : PLO
T OVER 1,C*8+39,39 : DRAW OVER 1,0
,-25 : PLOT OVER 1,C*8+32,39 : DRA
W OVER 1,0,-25 : PLOT OVER 1,C*8+
8,39 : DRAW OVER 1,0,-25
2050 PRINT INK 4 : PAPER 0:AT 16,
c) " fff" "
2055 PRINT AT 16,26 : INK 5 : PAPE
R 0 : "999999"
2060 IF C>25 THEN LET C=0
2070 IF CODE SCREEN (20,C+4)<>3
2 THEN GO SUB 8000 : GO TO 3000
2080 IF CODE SCREEN (20,C+1)<>3
2 THEN GO SUB 8000 : GO TO 3000
3010 RETURN
5000 IF SCREEN (16,A+1)="" THEN GO
TO 5100
5010 PLOT OVER 1,A*8+12,16 : DRAW
OVER 1,0,150 : BEEP ,02,40 : PLOT

```

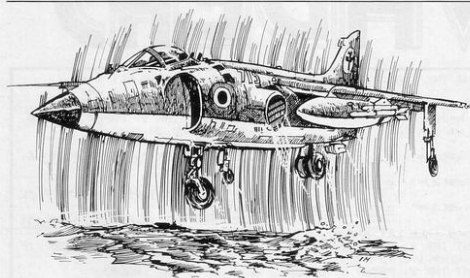


```
N GO TO 450
7020 IF CODE SCREEN# (5,b)=0 THE
N GO TO 450
7022 NEXT b
7025 PRINT AT 10,0;"
"
7030 PRINT FLASH 1;AT 10,0;"****
***BONUSKENDOFHSHEET*****"
7033 BEEP .5,10; BEEP .5,7; BEE
P .2,35
7035 PRINT AT 10,0;"
"
```

```
7037 IF I=0 THEN LET s=s+100
7038 IF I=2 THEN LET s=s+75
7039 IF I=1 THEN LET s=s+50
7040 PRINT INK 0; PAPER 3;AT 0,0
;"SCORE:";s; GO TO 410
9000 FOR g=1 TO 5: PRINT INK 0;A
T 20,x+1;"d": BEEP .1,g*2; NEXT
0;"LET I=FL: PRINT INK 3;AT 21,
1,7;" ": BEEP .5,10; BEEP .2,-1
0; BEEP .5,35; RETURN
9000 PRINT FLASH 1;AT 10,0;"****
LLKLVESKLOSTKENDOFGAME****"
9005 IF s>hs THEN LET hs=s
9007 PRINT INK 0; PAPER 3;AT 0,2
2;"HIGH:";hs
9010 BEEP .5,0; BEEP .5,0; BEEP
.5,10
9020 INPUT "PRESS ENTER FOR ANOT
HER GAME"; LINE z#
9030 CLS : GO TO 40
9050 PRINT AT 0,0; INK 0; PAPER
4;" "
SPECTRUM INVADERS
"
```

```
OVER 1;A#B+12,16; DRAW OVER 1;0
,150
5020 IF CODE SCREEN# (5,a+1)<32
THEN LET s=s+10; LET h=h-2; GO
TO 5050
5030 IF CODE SCREEN# (3,a+1)<32
THEN LET s=s+20; LET h=h-2; GO
TO 5060
5040 IF CODE SCREEN# (1,a+1)<32
THEN LET s=s+30; LET h=h-2; GO
TO 5070
5042 FOR I=1 TO 30: NEXT I
5045 RETURN
5050 PRINT INK 7;AT 5,a+1;"h": B
EEP .2,7; PRINT PAPER 0;AT 3,a+1
;" " : GO TO 5080
5060 PRINT INK 7;AT 3,a+1;"h": B
EEP .2,7; PRINT PAPER 0;AT 3,a+1
;" " : GO TO 5080
;" " : GO TO 5080
5070 PRINT INK 7;AT 1,a+1;"h": B
EEP .2,7; PRINT INK 7; PAPER 0;A
T 1,a+1;" " : GO TO 5080
5080 PRINT INK 0; PAPER 3;AT 0,0
;"SCORE:";s
5090 RETURN
5100 PLOT OVER 1;A#B+12,16; DRAW
OVER 1;0,24; BEEP .01,-15; PLOT
OVER 1;A#B+12,16; DRAW OVER 1;0
,24
5110 PRINT INK 6;AT 10,8;"HIT BA
RRIER"; BEEP .01,35; PRINT AT 10
,8;" " : RETURN
7000 FOR b=0 TO 31
7010 IF CODE SCREEN# (1,b)=0 THE
N GO TO 450
7012 IF CODE SCREEN# (3,b)=0 THE
```

```
9960 PRINT "In this version of
spaceinvaders"" you must dest
roy the invaders"" but watch o
ut for the moving"" centipede
with its double lazer""The inv
aders sometimes disappear"" to
o so destroy them fast""These
are the keys"" A-to move th
e base left" D-to move the b
ase right"" SPACE=fire Q
-New sheet"
9065 PRINT FLASH 1;AT 21,10;"GOO
D LUCK!!!"
9070 INPUT "Press enter to play"
; LINE z#
9075 RETURN
```



LAND YOUR small aircraft on an aircraft carrier in the Atlantic. To do it successfully you must bear in mind that your fuel is running out rapidly, your airspeed increases with your level and the number of times you land, and that the ship below you is also moving. Move upward with key "6", and down with key "7".

Atlantic Lander runs on the IK ZX-81 and was written by A Powell and T Goodhand of Bracknell, Berkshire.

ATLANTIC LANDER

```
20 LET S=VAL "0"
25 PRINT "INPUT LEVEL(1-5)"
27 INPUT Z
20 IF Z<VAL "0" OR Z>VAL "5" T
HEN GOTO VAL "27"
30 LET A=INT (RND*VAL "15")
40 LET F=VAL "50"
50 LET B=F-F
60 FOR C=VAL "25" TO VAL "0" S
TEP VAL "-1"
70 PRINT AT VAL "20",0;"(94:3#
SP:90)"
80 PRINT AT VAL "21",0;"(9#3#
13P:9e)"
90 PRINT AT A,B;"(2:9w)"
100 LET F=F-VAL "1"
105 IF F<VAL "0" THEN GOTO VAL
"240"
109 IF A=VAL "20" THEN GOTO VAL
"170"
110 LET A=A+(INKEY#="6")-(INKEY
#="7")
120 LET B=B+(Z/2)+(3 AND Z-1)
121 IF INT B>VAL "30" THEN LET
B=VAL "0"
140 CLS
150 NEXT C
160 GOTO VAL "60"
170 IF INT B<C+VAL "1" OR INT B
=C+VAL "2" THEN GOTO VAL "200"
```

```
180 PRINT AT 20,0;"CRASH"
185 PRINT AT 0,0;"SCORE=";S
190 PRINT "FUEL=";F
195 STOP
200 PRINT "LANDED...(ANY KEY)"
210 LET S=S+INT (F/2)
215 LET Z=2+.8
220 PRUSE 4E4
230 GOTO VAL "30"
240 FOR N#A TO VAL "21"
250 PRINT AT N,B;"(2K9w);AT N,
B;"
260 NEXT N
270 GOTO VAL "180"
```

FALL THROUGH

```

D 1 FIRST
2 CLS
3 DIM S(2)
10 DIM A$(8,10)
15 DIM A$(8)
20 DIM D$(8,10)
21 DIM M(2,8)
25 DIM D(8)
30 FOR N=1 TO 8
40 FOR H=1 TO 5
60 LET A$(N,2*H-INT (RND*.5))=
"(1SP)"
65 LET D$(N,2*H+(RND*.5))="(1S
P)"
70 NEXT H
71 LET H=2+INT (RND*10)
72 LET A$(N)=A$(N,H TO )+A$(N,
1 TO H-1)
73 LET H=2+INT (RND*10)
74 LET D$(N)=D$(N,H TO )+D$(N,
1 TO H-1)
75 LET A(N)=INT (RND*3)
76 LET D(N)=INT (RND*3)
80 NEXT N
90 SLOW
100 FOR H=1 TO 8
110 PRINT AT 2*H,4;
120 FOR M=1 TO 8
130 PRINT "(1SP)"CHR$(128)A$(
N,M)=" "+131K(D$(M,N))" " AND
A$(N,M)="(1SP)";
140 NEXT M
141 FOR D=1 TO A(N)
142 PRINT "(1SP1SP)"
142 NEXT D
150 FOR D=1 TO D(N)
151 PRINT AT 16+2*D,2*H+3;"(1SP
)"
152 NEXT D
160 NEXT N
170 LET S(1)=8
180 LET S(2)=8
200 FOR H=1 TO 8
210 FOR P=1 TO 2
220 LET X=1
230 LET Y=1
270 PRINT AT 2*Y-1,3+2*X:CHR$(
23+128)M(1,X,Y)>>(M(2,X,Y))
280 GOSUB 2500
305 IF D=11 THEN GOTO 390
307 PRINT AT 2*Y-1,3+2*X:CHR$(
307 PRINT AT 2*Y-1,3+2*X:CHR$(
28K(M(1,X,Y)<<(M(2,X,Y)))+(M(1,X,Y)
)+(M(2,X,Y))
310 LET Y=Y-(D=6)+(D=2)
320 IF Y<1 THEN LET Y=1
330 IF Y>8 THEN LET Y=8
340 LET X=X+(D=6)-(D=4)
350 IF X<1 THEN LET X=1
360 IF X>8 THEN LET X=8
370 GOTO 270
390 IF D$(X,Y)+A$(Y,X)="(2*1SP)
" OR M(1,X,Y)<<(M(2,X,Y)) THEN GOTO 7
0 290
400 PRINT AT 2*Y-1,3+2*X:P
405 LET M(P,X,Y)=P
410 NEXT P
420 NEXT H
500 LET X=8
510 LET Y=8
520 LET P=1+(P=1)
530 PRINT AT 2*Y,3+2*X;"X"
540 GOSUB 2500
565 PRINT AT 2*Y,3+2*X;" "
570 IF (D=2 OR D=8) AND X) OR
(D=4 OR D=6) AND Y) THEN GOTO 7
80
580 LET Y=Y+(D=2)*Y<8)-(D=8)*Y<
8)
590 LET X=X+(D=6)*X<8)-(D=4)*X<
8)

```

A BOARD is displayed, comprising horizontal and vertical strips, each with several holes in it. Each strip can be moved to three positions and the markings at the bottom and right-hand side indicate where they start.

If a horizontal strip has a hole in the play area it is shown as a gap in the line. If a vertical strip has a hole in the play area it is visible only when it coincides with a hole in the vertical strip, in which case it appears as a hole.

The game begins with the two players taking turns to set their numbers on the board. Player one moves the cursor with keys 2,Q,W and A and sets a number with Z. Player two moves the cursor with 0, O,P and L and sets a

number with. When each player has set eight numbers the cursor will move to a slightly higher position on the screen. Players must then take turns to choose a strip to move. The cursor then moves along the left and top of the board, so that a control key in line with the edge will move the cursor, and a control key in line with a strip will move that strip. line with a strip will move that strip.

When the strips are moved so that a number stands on a hole it will fall through and vanish. The object of the game is to remove all your opponent's numbers.

Fall Through was written for the 16K ZX-81 by R Entwistle and son of Cheltenham.



```

100 GOTO 150
700 IF NOT X THEN GOTO 784
701 IF <D=2 AND D<X>=2> OR <D=8
AND D<X>=0> THEN GOTO 530
704 IF NOT Y THEN GOTO 710
705 IF <D=4 AND A<Y>=0> OR <D=6
AND A<Y>=2> THEN GOTO 530
710 IF D<2 THEN GOTO 750
720 LET D<X>=D<X,10>+D<X,1 T
0 9)
730 LET D<X>=D<X>+1
740 GOTO 800
750 IF D<8 THEN GOTO 900
760 LET D<X>=D<X,2 TO 7>+D<X,
1)
770 LET D<X>=D<X>-1
800 FOR N=1 TO 2
810 PRINT AT 2*N+16,2*X+3;CHR#
<128*(N<D<X)>)
820 NEXT N
900 FOR N=1 TO 8
840 PRINT AT 2*N,3+2*X;CHR# <12
8*(A<N,X>)" "+131*(D<X,N>)" "
AND A<N,X>="(1SP)">
850 IF D<X,N>=" " OR A<N,X>="
" THEN GOTO 800
859 IF NOT M<1,X,N> THEN GOTO 8
65
860 LET S<1>=S<1>-1
861 LET M<1,X,N>=0
865 IF NOT M<2,X,N> THEN GOTO 8
70
866 LET M<2,X,N>=0
867 LET S<2>=S<2>-1
870 PRINT AT 2*N-1,3+2*X;" "
880 NEXT N
890 GOTO 2000
900 IF D<76 THEN GOTO 950
920 LET A<Y>=A<Y,10>+A<Y,1 T
0 9)
930 LET A<Y>=A<Y>+1
940 GOTO 1000
950 IF D<4 THEN GOTO 2000
960 LET A<Y>=A<Y,2 TO 7>+A<Y,
1)
970 LET A<Y>=A<Y>-1
1000 FOR N=1 TO 2
1010 PRINT AT 2*Y,2*N+20;CHR# <1
28*(N<A<Y)>)
1020 NEXT N
1030 FOR N=1 TO 8
1040 PRINT AT 2*Y,3+2*N;CHR# <12
8*(A<Y,N>)" "+131*(D<X,N,Y>)" "
AND A<Y,N>="(1SP)">
1050 IF D<X,N,Y>=" " OR A<Y,N>="
" THEN GOTO 1000
1060 IF NOT M<1,N,Y> THEN GOTO 1
065

```



```

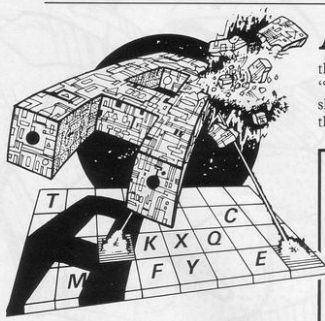
1051 LET M<1,N,Y>=0
1052 LET S<1>=S<1>-1
1055 IF NOT M<2,N,Y> THEN GOTO 1
070
1066 LET M<2,N,Y>=0
1067 LET S<2>=S<2>-1
1070 PRINT AT 2*Y-1,3+2*N;" "
1080 NEXT N
2000 IF S<1>=0 OR S<2>=0 THEN
GOTO 2020
2010 GOTO 500
2020 IF S<1>=0 THEN PRINT AT 20
,0;"PLAYER 1 HAS LOST"
2030 IF S<2>=0 THEN PRINT AT 21
,0;"PLAYER 2 HAS LOST"
2040 PRINT AT 0,10;"PRESS N/L TO

```

```

REPLAY"
2050 INPUT K#
2060 RUN
2500 LET K#=INKEY#
2510 IF P=1 THEN LET D=2*(K#="A"
)+4*(K#="Q")+6*(K#="M")+8*(K#="2"
)+11*(K#="2")
2520 IF P=2 THEN LET D=2*(K#="L"
)+4*(K#="O")+6*(K#="P")+8*(K#="G"
)+11*(K#="1")
2530 IF NOT D THEN GOTO 2500
2540 RETURN
3000 CLEAR
3010 SAVE "FAIL THROUGH"
3020 RUN

```



ALPHA ATTACK

A STRING of random characters is printed at the top of the screen and one of them also appears at the bottom. Using the keys "Q"—left, "E"—right, and "P"—fire, you must shoot the character from the string at the top.

and decreases after each shot. When the inverse "X" reaches the right of the screen your time has expired. The game ends when you miss for the third time.

Alpha Attack was written for the 16K Spectrum by Laurence Wood of Northampton.

```

Your time to achieve that is limited

9 PRINT AT 10,10;"Any key": P
AUSE 0
10 LET y=40: LET j=2: LET m=0:
LET s=0: LET l=15
20 CLS
30 BORDER 6: PAPER 7: INK 1
40 CLS : IF m=3 THEN GO TO 500
50 FOR f=3 TO 25
60 PRINT AT 3,f;CHR# <<RND*(100
)>+27)
70 NEXT f
75 LET y=y+2
80 GO TO 100
90 FOR t=y TO 100
100 IF t>70 THEN PRINT AT 5,t-7
0;"(SP:IX)"
110 BEEP .009,t-40
120 PRINT AT 20,1;"(SP:196:1+9
5:SP)"
130 LET l=1+(INKEY#="e")-(INKEY
#="q")+l*(0)-(1=28)
140 IF INKEY#="p" THEN BEEP .00
5,10: BEEP .007,3: GO TO 220
150 NEXT t
160 BEEP 1,-50
170 LET m=m+1: GO TO 40
180 LET s=SCREEN# <3,INT <RND#
20>+3)
190 PRINT AT 0,22;"SCORE=";s;A
T 0,0;"Misses:";m
200 PRINT AT INT <RND*(10)+10,1N
T <RND*(30)>);s#
210 GO TO 90
220 FOR z=19 TO 4 STEP -1: PRIN
T AT z,1+2*(z=1): NEXT z
230 IF SCREEN# <3,1+2)>=s# THEN
BEEP .2,-30: BEEP .2,-60: LET m
=m+1: GO TO 40
240 LET s=s+1
250 BEEP .01,10: BEEP .01,20
260 GO TO 40
500 BEEP .7,-30: BEEP .7,-60: C
LS
510 PRINT AT 10,9: FLASH 1;" Th
ird miss 1" : FLASH 0;AT 2,11;"S
core=";s;AT 18,5;"Any key to P
lay again"
150 PAUSE 0
530 GO TO 10

```



```

100 REM Define Graphics
105 RESTORE 140d cc
110 FOR n=144 TO 149: FOR m=0 T
U 7: c=c+d: c=c
120 READ i: PAPER USR CHR# n+m,a
130 NEXT m: NEXT n
140 DATA 0,0,63,120,255,255,126
,0
150 DATA 0,0,252,30,255,255,126
,0
160 DATA 16,56,84,56,84,106,16
,16
170 DATA 0,0,0,24,24,0,0,0
180 DATA 0,0,56,0,0,0,0,0
190 DATA 137,82,44,96,189,44,82
,137
200 REM Set-up Game
210 BORDER 0: PAPER 0: INK 6: C
LS
220 PRINT AT 0,4;"a T A N K
D U E L b" PRINT
230 PRINT TAB 9;"@ T. COLLINS":
PRINT
240 PRINT TAB 6;"GENERAL INSTRU
CTIONS": PRINT
250 PRINT " A Game for two Pla
yers, try to shoot your oPponents
tank first."
260 PRINT " Avoid tank obsta
les [ ] which can be shot"
270 PRINT " Trees Lc] are harm
less but can block shots."
280 PRINT " Avoid mines Ld] wh
ich cannot be shot."
290 PRINT TAB 12;"CONTROLS": PR
INT
300 PRINT " Player 1";TAB 23;"P
layer 2"
310 PRINT "1-5:Move up";TAB 21;
"6-8:Move up"
320 PRINT "0-T:Move down";TAB 1
9;"Y-P:Move down"
330 PRINT "Bottom row:Fire";TAB
17;"Bottom row:Fire"
340 FOR c=7 TO 1 STEP -1
350 PRINT INK c;AT 0,0;"T A N K
D U E L"
362 PRINT INVERSE 1; INK c;AT 2
1,0;" PUSH ANY KEY "
365 IF c=7 THEN PAUSE 10
360 IF INKEY#<"" THEN GO TO 40
0
365 PAUSE 5
370 NEXT c
380 GO TO 340
400 BORDER 7: PAPER 4: INK 1: C
LS
410 INPUT "HOW MANY TANKS FOR P
LAYER 1? ";t1: IF t1>99 THEN GO
TO 410
420 INPUT "HOW MANY TANKS FOR P
LAYER 2? ";t2: IF t2>99 THEN GO
TO 420
430 PRINT INK 0: PAPER 7;"TANKS
LEFT: ";t1;TAB 16;" TANKS LEFT:
";t2;TAB 31;" "
440 PRINT INK 0: PAPER 7;AT 21,
0;"SHOTS LEFT: 5";TAB 16;"SHOTS
LEFT: 5";TAB 31;" "
450 FOR n=5 TO 24 STEP 19: FOR
m=2 TO 19
460 IF RND>.3 THEN GO TO 490
470 LET o=INT (RND*.3+n)
480 PRINT INK 0;AT m,0;CHR# 143
;AT m-1,0;CHR# INT (RND*.4+140);A
T m+1,0;CHR# INT (RND*.2+138);A
T m,c-1;CHR# INT (RND*.2+140);AT m,
c+1;CHR# INT (RND*.3+136)
490 NEXT m: NEXT n
500 FOR n=9 TO 10 STEP 9: FOR m
=1 TO 20: FOR o=m TO n+4
510 IF RND<.3 THEN PRINT INK 7;
AT m,0;CHR# 146
520 NEXT o: NEXT m: NEXT n
530 FOR n=1 TO 20: FOR m=14 TO
17
540 IF RND<.3 THEN PRINT INK 2;
AT n,m;CHR# 147
550 NEXT m: NEXT n
560 LET k=0
600 REM New Tanks
605 FOR n=1 TO 100: NEXT n
610 LET a1=0: LET a2=5
615 PRINT INK 0: PAPER 7;AT 21,
0;"SHOTS LEFT: 5";TAB 16;"SHOTS
LEFT: 5";TAB 31;" "
620 LET a=INT (RND*.19+1): LET b
=1
630 LET c=INT (RND*.19+1): LET d
=30
640 PRINT INK 1;AT a,b;CHR# 144
;AT c,d;CHR# 145
650 BEEP .25,-10: BEEP .5,-5: P
AUSE 10: BEEP .25,-10: BEEP .5,-
5
1800 REM Player 1 Move
1005 IF k=1 THEN LET k=0: GO TO
7000

```

TANK DUEL

WE ARE BECOMING increasingly surprised and delighted at the quality of listings emerging as Spectrum owners become more and more skillful in the use of their machines. **Tank Duel** is yet another excellent listing to set alongside several others in this issue. It requires skill, luck and speed and is played on a stylised but convincing battleground.

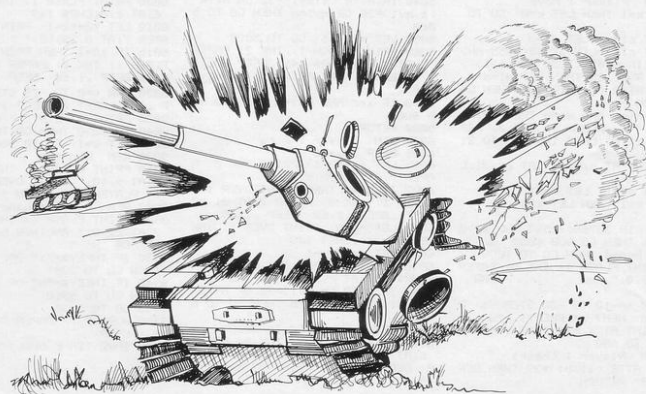
Full instructions are given with the program but briefly the game requires two players to control a series of tanks travelling across varied terrain towards the final showdown.

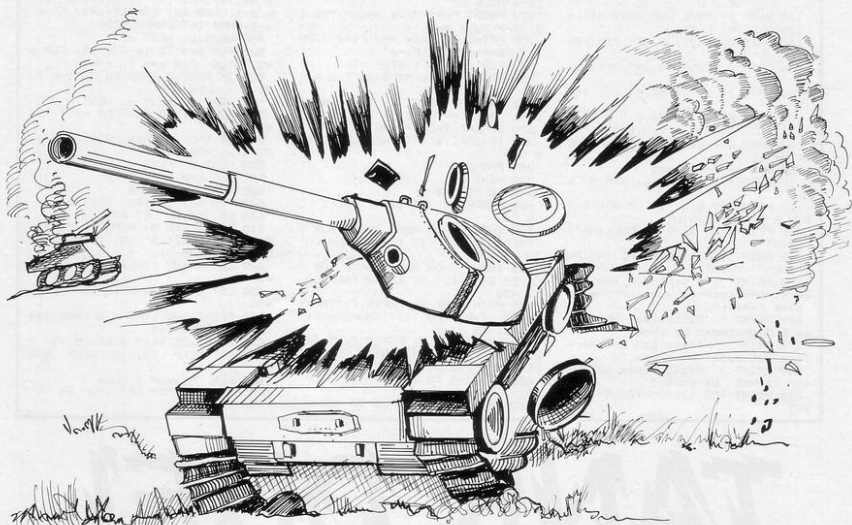
Three types of obstacle are encountered — tank traps which can disable your vehicle but which can be blasted away; trees which can be pushed over but which will block your shells; and

mines which can neither be pushed over nor destroyed by gunfire but which will not impede your shooting. The game was sent by A R P Collins of Enfield, Middlesex. (16K Spectrum).

Graphics notes:

- 220—Graphic A, graphic B
- 260—Graphic shifted 1
- 270—Graphic C
- 280—Graphic D.





```

1010 LET a1=a: LET b1=b
1020 LET a1=a+IN 64510<>255 AND
a(20)<-IN 63406<>255 AND a(1)
1030 IF RND<.25 THEN LET b1=b+1
1040 IF ATTR (a1,b1)>33 THEN GO
SUB 3000
1045 IF a1=c AND b1=d THEN PRINT
"AT a,b:" ; FLASH 1; INK 2; PAPER
6;AT a1,b1;CHR# 149; GO TO 21
00
1050 PRINT AT a,b:" ;"AT a1,b1;C
HR# 144
1060 LET a=a1: LET b=b1
1070 IF k=1 THEN LET k=0: GO TO
7000
1080 IF (IN 63278<>255) AND s1>0
AND b<d THEN GO SUB 5000
2000 REM Player 2 Move
2005 IF k=1 THEN LET k=0: GO TO
8000
2010 LET c1=c: LET d1=d
2020 LET c1=c+IN 7342<>255 AND
c(20)<-IN 61438<>255 AND c(1)
2030 IF RND<.25 THEN LET d1=d+1
2040 IF ATTR (c1,d1)>33 THEN GO
SUB 4000
2045 IF c1=a AND d1=b THEN PRINT
"AT c,d:" ; FLASH 1; INK 2; PAPER
6;AT c1,d1;CHR# 149; GO TO 21
00
2050 PRINT AT c,d:" ;"AT c1,d1;C
HR# 145
2060 LET c=c1: LET d=d1
2070 IF k=1 THEN LET k=0: GO TO
8000
2080
2090 IF (IN 32766<>255) AND s2>0
AND d>b THEN GO SUB 6000
2090 IF b<d+4 THEN GO TO 1000
2100 PRINT FLASH 1; INK 0; PAPER
7;AT 21,0: " DRAW
"
2105 FOR n=-10 TO -20 STEP -1: B
EEP .1;n: NEXT n: BEEP 1,-20
2110 PRINT AT a,b:" ;"AT c,d:" "
2120 GO TO 600
3000 REM Player 1 Checks
3010 IF ATTR (a1,b1)>39 THEN BEE
P .1,-20: RETURN
3020 LET k=1: RETURN
4000 REM Player 2 Checks
4010 IF ATTR (c1,d1)>39 THEN BEE
P .1,-20: RETURN
4020 LET k=1: RETURN
5000 REM Player 1 Fire
5001 BEEP .1,-30
5005 LET s1=s1-1: PRINT INK 0; P
APER 7;AT 21,12;s1
5007 IF s1=1 THEN PRINT OVER 1:
FLASH 1; INK 0; PAPER 7;AT 21,12
;" " ; BEEP .1,60: BEEP .1,40
5010 LET m=w+b: PRINT OVER 1; INK
0;AT a,m;CHR# 148
5020 LET m1=m+1
5030 PRINT OVER 1; INK 0;AT a,m;
CHR# 149;AT a,m;CHR# 149
5040 IF ATTR (a,m;CHR# 149) OR ATTR
(a,m;CHR# 39) OR m1=d THEN GO TO 5
060
5050 LET m=m+1: GO TO 5020
5060 PRINT FLASH 1; INK 2; PAPER
6;AT a,m;CHR# 149; BEEP .05,2
0: BEEP .1,-10: PRINT AT a,m;1:"
"
5070 IF a=c AND m1=d THEN GO SU
B 8000
5080 RETURN
6000 REM Player 2 Fire
6001 BEEP .1,-30
6005 LET s2=s2-1: PRINT INK 0; P
APER 7;AT 21,20;s2
6007 IF s2=1 THEN PRINT OVER 1:
FLASH 1; INK 0; PAPER 7;AT 21,20
;" " ; BEEP .1,60: BEEP .1,40
6010 LET m=d: PRINT OVER 1; INK
0;AT c,m;CHR# 148
6020 LET m1=m-1
6030 PRINT OVER 1; INK 0;AT c,m;
CHR# 148;AT c,m;CHR# 149
6040 IF ATTR (c,m;CHR# 39) OR ATTR
(c,m;CHR# 39) OR m1=b THEN GO TO 6
060
6050 LET m=m+1: GO TO 6020
6060 PRINT FLASH 1; INK 2; PAPER
6;AT c,m;CHR# 149; BEEP .05,2
0: BEEP .1,-10: PRINT AT c,m;1:"
"
6070 IF c=a AND m1=b THEN GO SU
B 7000
6080 RETURN
7000 REM Death of Player 1
7005 PRINT FLASH 1; INK 2; PAPER
6;AT a,b;CHR# 149
7010 LET t1=t1-1: PRINT INK 0; P
APER 7;AT 0,12;t1;" "
7015 IF t1=1 THEN PRINT OVER 1:
FLASH 1; INK 0; PAPER 7;AT 0,12:
;" " ; BEEP .1,60: BEEP .1,40
7020 FOR n=0 TO -10 STEP -1: BEE
P .1;n: NEXT n: BEEP 1,-20
7030 PRINT AT a,b:" ;"AT c,d:" "
7040 IF t1>0 THEN GO TO 600
7050 LET w=2: GO TO 9000
8000 REM Death of Player 2
8005 PRINT FLASH 1; INK 2; PAPER
6;AT c,d;CHR# 149
9010 LET t2=t2-1: PRINT INK 0; P
APER 7;AT 0,29;t2;" "
9015 IF t2=1 THEN PRINT OVER 1:
FLASH 1; INK 0; PAPER 7;AT 0,29:
;" " ; BEEP .1,60: BEEP .1,40
9020 FOR n=0 TO -10 STEP -1: BEE
P .1;n: NEXT n: BEEP 1,-20
9030 PRINT AT c,d:" ;"AT a,b:" "
9040 IF t2>0 THEN GO TO 600
9050 LET w=1: GO TO 9000
9060 REM Winner
9010 PRINT FLASH 1; INK 2; PAPER
6;AT 9,10:" GAME OVER ;"AT 11,
9:" PLAYER ;"w;" WIN "
9900 REM Another Game?
9920 PRINT FLASH 1; INK 0; PAPER
7;AT 21,0;" ANOTHER GAME? PRESS
"Y" OR "N"
9930 IF INKEY="Y" OR INKEY="y"
THEN GO TO 200
9940 IF INKEY="N" OR INKEY="n"
THEN GO TO 9900
9950 GO TO 9900
9960 BORDER 7: PAPER 7: INK 0: C
L5: STOP
9990 SAVE "TANK DUEL" LINE 100

```

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Avoid missiles and bombs to become the ruler. 16K RAM

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Spectrum version of the ever-popular arcade game. 16K or 48K RAM

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Popular space program brought to life by excellent graphics. 48K RAM

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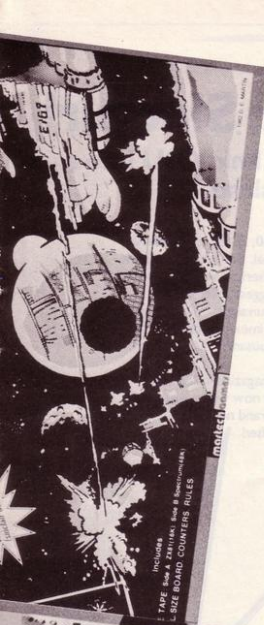
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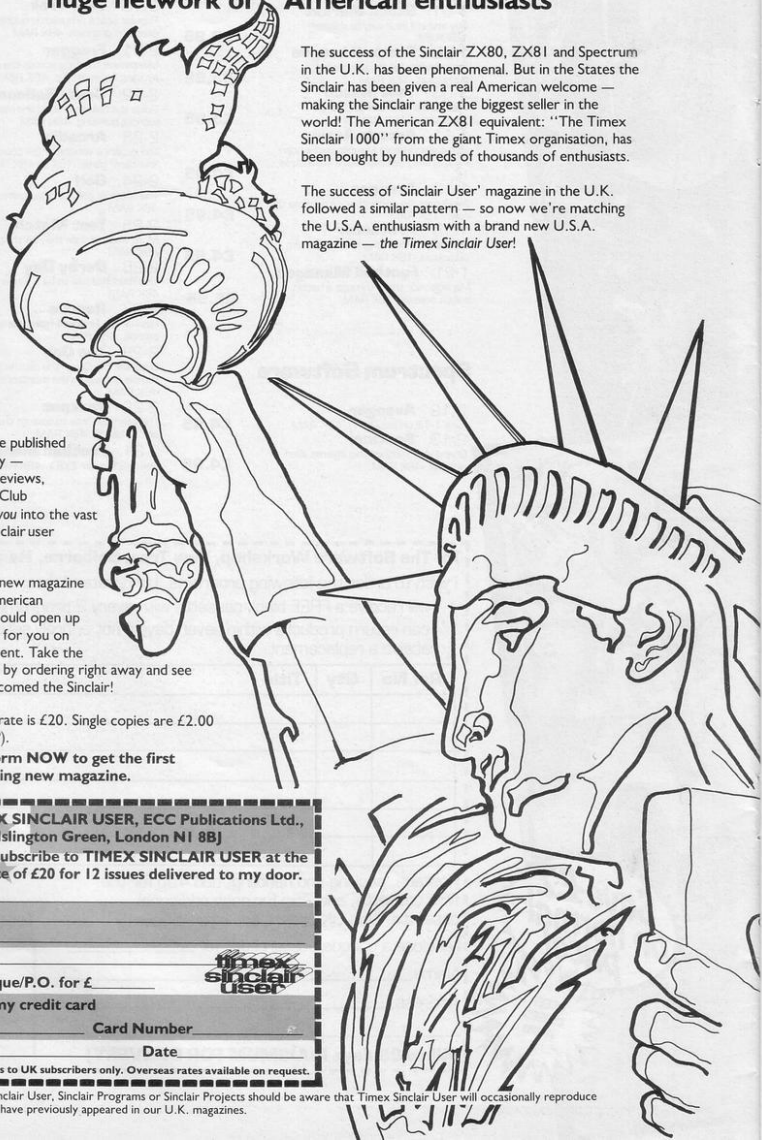
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PATHWAY

MOVE AROUND the grid avoiding the blue squares but being sure to cross all the yellow squares before leaving by the exit. The catch is that all moves must be entered in advance. Enter them as "F"—forward, "B"—backward, "L"—left, "R"—right, and "S" when you have entered your moves to start your arrow moving.

Pathway runs on the 16K Spectrum and was written by Kevin Macdonald of Sheffield.

```

40 POKE 23658,8
50 LET Y=1
60 LET SC=0
70 LET J=0
80 LET PH=10
90 GO SUB 760
100 FOR a=USR "a" TO USR "D"+7
110 READ q: POKE a,q: NEXT a
120 DATA BIN 11111111,BIN 10000
001,BIN 10000001,BIN 10000001,BI
N 10000001,BIN 10000001,BIN 1000
0001,BIN 11111111
130 DATA BIN 00000000,BIN 00010
00,BIN 00000100,BIN 01111110,BIN
00000100,BIN 00001000,0,0
140 DATA 0,BIN 00010000,BIN 001
00000,BIN 01111110,BIN 00100000,
BIN 00010000,0,0
150 DATA 0,BIN 00001000,BIN 000
01000,BIN 00001000,BIN 00101010,
BIN 00011100,BIN 00001000,0
160 FOR b=0 TO 10
170 PRINT AT B,0: INK 0: BRIGHT
1: "AAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAA": BRIGHT 0
180 NEXT b
200 FOR A=1 TO 80*(X#K#10)
210 LET A1=INT (RND#13)
220 LET A2=INT (RND#32)
230 PRINT AT A1,A2: INK 1: PAPER
R 1: "
240 NEXT A
250 FOR A=1 TO 3
260 LET Y1=INT (RND#31)+1
270 LET Y2=INT (RND#17)
280 PRINT AT Y2,Y1: PAPER 6: IN
K 6: "T"
290 NEXT A
295 PRINT AT 0,0: INK 0: PAPER
0: "+"
300 REM ENTER DIRECTIONS
310 DIM D$(200,1)
320 PRINT AT 21,0: FLASH 1: "
PRESS ENTER TO START
330 PAUSE 0
340 PRINT AT 21,0: "
350 LET PV=INT (RND#31)+1
360 PRINT AT 10,PV: FLASH 1: "T"
370 PRINT AT 20,0)
380 FOR A=1 TO 200
390 PAUSE 0
400 IF INKEY$="L" OR INKEY$="S"
OR INKEY$="R" OR INKEY$="F" OR
INKEY$="B" THEN GO TO 430
410 IF INKEY$=" " THEN GO TO 39
0
420 GO TO 390
430 IF INKEY$="S" THEN GO TO 40
0
440 LET D$(A)=INKEY$
450 PRINT INKEY$: IF A=31 OR A
=62 OR A=93 OR A=124 OR A=165 TH
EN PRINT AT 20,0: "
:0: " PRINT AT 20
:0:
460 BEEP .05,-10: BEEP .05,10
470 NEXT A
480 LET A1=A
490 PRINT AT 20,0: "
500 FOR A=1 TO 200
520 LET PHL=PH: LET PVL=PV
530 IF A=A1 THEN GO TO 670
540 IF D$(A)="F" THEN LET PH=PH
+1: LET 0$="D"
550 IF D$(A)="R" THEN LET PV=PV
+1: LET 0$="B"
560 IF D$(A)="L" THEN LET PV=PV
-1: LET 0$="C"
570 IF D$(A)="B" THEN LET PH=PH
+1: LET 0$="D"
580 IF SCREEN$(PH,PV)="" THEN LET
Y=0
590 IF SCREEN$(PH,PV)="T" THEN
LET SC=SC+1: BEEP .5,40
600 IF SCREEN$(PH,PV)="+ AND
SC=3 THEN GO TO 710
610 PRINT OVER 1 AT PH,PV:0$
620 PRINT AT 19,0:D$(A)
630 PRINT AT PHL,PVL: BRIGHT 1:
PAPER 7: "A"
640 IF Y=0 THEN GO TO 670
650 BEEP .03,30: BEEP .03,0: BE
EP .03,30
660 NEXT A
670 PRINT AT 21,0: FLASH 1: PAP
ER 6: INK 0: " YOU HAVE CR
ASHED
680 BEEP .3,10: BEEP .3,20
690 IF INKEY$="" THEN GO TO 670
700 RUN
710 PRINT AT 21,0: FLASH 1: INK
1: PAPER 6: " WELL DO
NE
720 BEEP .3,30: BEEP .3,35
730 IF INKEY$="" THEN GO TO 710
740 PRINT AT 20,11: "SCORE="A
750 RUN
760 CLS
770 PRINT " ENTER DIFFICULT
Y NO.": PRINT
780 PRINT " 1-EASY": PRINT "
2-HARD": PRINT " 3-IMPOSSIBLE"
790 PAUSE 0
800 LET A=VAL INKEY$
810 RETURN

```

```

5 GOTO 6000
7 CLS
10 RAND
20 LET B$=""
30 PRINT "WHAT IS YOUR NAME PL
EASE?"
40 INPUT C$
50 PRINT "WHAT DO YOU WANT TO
SAY " C$ " ?"
60 PRINT
70 INPUT A$
75 IF PEEK 16396+256*PEEK 1639
9:PEEK 16396+256*PEEK 16397+693
THEN CLS
80 IF A$="" THEN GOTO 70
85 IF A$<LEN A$>," " AND A$<L
EN A$>>"?" THEN LET A$=A$+"."
90 PRINT "YOU -"/A$
100 IF A$<LEN A$>="." OR A$<LEN
A$>="?" THEN LET A$=A$( TO LEN
A$-1)
105 IF A$="CHANGE USERS" THEN G
OTO 7
110 LET K=0
120 IF A$="GOOD" THEN LET B$="T
HANK YOU"
130 IF A$="HI" OR A$="HELLO" OR
A$="GOOD" OR LEN A$<2 THEN LET
K=1
140 IF LEN A$<2 THEN LET B$=""
+A$<K>" IS NOT A SENTENCE"
150 IF A$="HI" OR A$="HELLO" TH

```

```

EN LET B$="HELLO THERE"
160 LET D$="LO"
170 IF LEN A$<3 THEN GOTO 330
180 IF A$( TO 2)="A " AND LEN A
$<10 THEN LET B$="WHAT IS "+A$
190 IF LEN A$<7 THEN GOTO 270
200 IF A$( TO 4)="FOR " OR A$(
TO 7)="BECAUSE" OR A$( TO 3)="TO
" OR A$( TO 3)="SO " THEN LET B
$="I SEE"
210 IF A$( TO 4)="STOP" THEN LE
T B$="ALL RIGHT"
220 GOSUB 4000
230 IF A$( TO 4)="THE " OR A$(
TO 4)="HIS " OR A$( TO 4)="HER "
THEN LET B$="REALLY"
240 IF B$="" THEN GOSUB 5000
250 IF A$( TO 2)="ME " THEN LET
B$="WHO DO YOU MEAN BY ME"
260 IF A$( TO 2)="I " THEN GOSU
B 1000
270 IF LEN A$<5 THEN GOTO 290
280 IF LEN A$>8 AND A$( TO 4)=""
THEY" THEN GOSUB 7000
290 IF LEN A$>7 AND A$( TO 3)=""
ME " OR A$( TO 2)="IT" OR A$( TO
3)=""SHE" THEN GOSUB 2000
300 IF LEN A$>8 AND A$( TO 3)=""
YOU" THEN GOSUB 3000
310 IF LEN A$<4 THEN GOSUB 400
330 IF A$="NO" THEN LET B$="WHY
NOT"

```

```

335 IF A$="YOU" THEN LET B$="WH
AT ABOUT ME"
340 IF A$="YES" THEN LET B$="WH
Y"
345 IF A$="ME" THEN LET B$="WHA
T ABOUT YOU"
350 IF A$="THANK ME" THEN LET B
$="I AM ONLY FOLLOWING ORDERS"
360 IF A$="I KNOW" THEN LET B$=
"GOOD"
370 IF B$="" THEN LET B$=B$
375 IF PEEK 16396+256*PEEK 1639
9:PEEK 16396+256*PEEK 16397+693
THEN CLS
380 PRINT " ME:-)"
390 IF A$<LEN A$ AND RND<.7 OR RND<
.2 AND LEN B$<LEN C$(18 THEN PR
INT "ER."
400 PRINT B$
410 IF B$="REALLY" AND RND<.5 O
R RND<.65 AND LEN B$<LEN C$(25 T
HEN PRINT " (C$)
420 IF A$<>"THANK ME" AND B$<>
"GOOD" AND B$<>"I SEE" AND B$<>"A
LL RIGHT" AND K<>1 THEN PRINT " ?
"
430 IF A$="THANK ME" OR B$="I S
EE" OR B$="ALL RIGHT" OR B$="Goo
D" OR K=1 THEN PRINT "."
440 LET B$=""
450 GOTO 70
460 IF A$( TO 4)="YOUR" THEN LE

```

HOLDING an intelligent conversation with your 16K ZX-81 may seem a remote possibility but this program by Simon Parker of Leeds makes that possibility

closer than any other which has been submitted to *Sinclair Programs*.

Type-in your side of a **Conversation** and the computer responses will be displayed on the screen. The program

will give a sensible answer to the majority of your questions and can even cope with philosophical points such as "What is the meaning of life?" or "Why did the chicken cross the road?"

CONVERSE

```

T B$="I KNOW"
470 IF A$( TO 4)="YOUR" THEN LE
T K=1
480 IF A$( TO 4)="LOTS" THEN LE
T B$="SUCH AS"
490 IF A$( TO 3)="MY " THEN LET
B$="YOUR"+A$( TO 3)
500 IF A$( TO 3)="ME " THEN LET
B$="YOU"+A$( TO 3)
500 RETURN
1000 IF A$( TO 4)="AM" THEN LET
B$="WHY ARE YOU"+A$( TO 4)
1002 IF A$( TO 3)="CAN" THEN LE
T B$="HOW CAN YOU"+A$( TO 3)
1005 IF A$( TO 3)="WAS" THEN LE
T B$="WHY WERE YOU"+A$( TO 3)
1007 IF A$( TO 3)="DID" THEN LE
T B$="WHY DID YOU"+A$( TO 3)
1008 IF A$( TO 4)="DO" AND B$=""
" THEN LET B$="WHY DO YOU"+A$( TO
4)
1020 IF A$( TO 7)="COULD" THEN
LET B$="HOW COULD YOU"+A$( TO 7)
1030 IF A$( TO 6)="HAVE" THEN L
ET B$="WHY HAVE YOU"+A$( TO 6)
1040 IF A$( TO 7)="WROTE" THEN
LET B$="WHY DID YOU WRITE"+A$( TO

```

```

TO >
1890 IF B$="" THEN LET B$="WHAT
+D$+" YOU"+A$( TO 2) "+> FOR"
1900 RETURN
1910 IF A$( TO 6)=""IS" THEN LET
B$="WHAT IS IT THAT MAKES HER"
+A$( TO 2)
2030 IF A$( TO 7)="DOES" THEN L
ET B$="WHY DOES "+A$( TO 2)+A$( TO
3)
2035 IF A$( TO 8)="DOES" THEN L
ET B$="WHY DOES SHE"+A$( TO 3)
2040 IF A$( TO 6)="CAN" THEN LE
T B$="HOW CAN "+A$( TO 2)+A$( TO
3)
2050 IF A$( TO 7)="CAN" THEN LE
T B$="HOW CAN SHE"+A$( TO 3)
2060 IF B$="" THEN LET B$="WHY I
S IT THAT "+A$
2300 RETURN
3000 IF A$( TO 7)="ARE" THEN LE
T B$="WHY AM I"+A$( TO 3)
3010 IF A$( TO 8)="WERE" THEN L
ET B$="WHY WAS I"+A$( TO 3)
3020 IF A$( TO 8)="HAVE" THEN L
ET B$="WHY HAVE I"+A$( TO 3)
3030 IF A$( TO 9)="WOULD" THEN

```

```

LET B$="WHY WOULD I"+A$( TO 3)
3040 IF A$( TO 7)="DO " THEN LE
T B$="WHAT DO I"+A$( TO 7) "+> FOR
"
3050 IF A$( TO 7)="CAN" THEN LE
T B$="HOW CAN I "+A$( TO 3) TO >
3060 IF B$="" THEN LET B$="WHAT
+D$+" I"+A$( TO 4) "+> FOR"
3090 RETURN
4000 IF A$( TO 4)="WHAT" OR A$(
TO 3)="WHO" THEN LET B$="I DO NO
T KNOW"
4005 IF A$( TO 3)="WHY" THEN LET
B$="BECAUSE THAT IS THE WAY IT
IS"
4010 IF A$( TO 3)="WHERE" THEN L
ET B$="OVER THERE SOMEWHERE"
4020 IF A$( TO 3)="ARE" OR A$( TO
0 5)="WILL " THEN LET B$="PROBAB
LY"
4030 IF A$( TO 5)="COULD" OR A$(
TO 4)="CAN " THEN LET B$="I DOU
BT IT"
4040 IF A$( TO 5)="DO YOU" THEN L
ET B$="I MIGHT DO"
4050 IF A$( TO 3)="HOW" OR A$( TO
0 4)="WHEN" THEN LET B$="WHAT DO

```




RSATION

```

1 YOU WANT TO KNOW THAT FOR"
4950 IF B$="" THEN RETURN
4970 IF B$(1)<"W" THEN LET K=1
4990 RETURN
5000 DIM A$(LEN A$)
5005 LET B$=""
5010 FOR F=5 TO LEN A$-1
5015 LET A$(F)=0
5020 IF A$(F) TO F+1)="MY" THEN L
ET A$(F)=1
5021 IF A$(F-1 TO F+1)" ME" THE
N LET A$(F)=3
5023 IF A$(F-3 TO F+1)"LIKE " O
R A$(F-3 TO F+1)"LOVE " THEN LE
T K=F
5025 IF A$(F-2 TO F+1)"YOUR" TH
EN LET A$(F)=2
5027 IF A$(F-1 TO F+1)"YOU" THE
N LET A$(F)=4
5029 IF A$(F-1 TO F+1)" I " THE
N LET A$(F)=-1
5030 IF A$(LEN A$-1 TO )="ED" OR
A$(F-1 TO F+1)"=EN" OR A$(F-3
TO F+1)"=UGHT " THEN LET B$="AR
VE"
5032 IF A$(F-1 TO F+1)"=OFF" THE
N GOTO 3000
5035 NEXT F

```

```

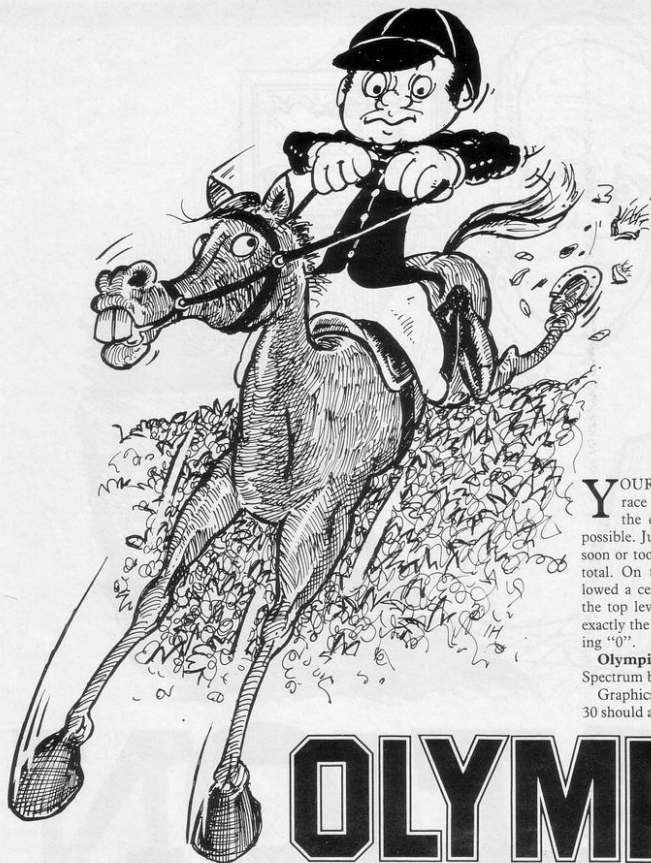
5040 LET L=LEN A$
5050 FOR F=4 TO L
5055 IF A$(F)=1 THEN LET A$=A$(
TO F-1)+""YOU"+A$(F+1 TO )
5060 IF A$(F)=1 THEN LET A$=A$( T
O F-1)+""YOUR"+A$(F+2 TO )
5062 IF A$(F)=3 THEN LET A$=A$( T
O F-1)+""YOU"+A$(F+2 TO )
5065 IF A$(F)=2 THEN LET A$=A$( T
O F-3)+""MY"+A$(F+1 TO )
5067 IF A$(F)=4 THEN LET A$=A$( T
O F-2)+""ME"+A$(F+2 TO )
5070 NEXT F
5075 IF K>2 THEN LET B$="WHAT IS
"+A$(K+1 TO )+" LIKE"
5077 LET K=0
5080 IF A$(LEN A$)=""$ AND B$( T
O 4)="WHAT" THEN LET B$="WHAT AR
E"+A$(8 TO )
5080 IF B$(1)=" " THEN LET B$=""
5080 RETURN
7000 IF A$(6 TO 9)="HAVE" THEN L
ET B$="WHY HAVE THEY"+A$(10 TO )
7010 IF A$(6 TO 8)="ARE" THEN LE
T B$="WHY ARE THEY"+A$(9 TO )
7020 IF B$="" THEN LET B$="WHY "
+""THEY"+A$(5 TO )
7090 RETURN

```

```

8000 DIM A$(8,30)
8010 LET A$(1,0)=" I AM YOUR 2X81,
AND I AM HERE"
8020 LET A$(2,0)="TODAY TO COMMUNI
CATE WITH YOU,"
8030 LET A$(3,0)="AND MAKE YOU REA
LISE JUST HOW"
8040 LET A$(4,0)="MUCH THE WORLD O
F THE USERS"
8050 LET A$(5,0)="INTERESTS ME,"
8060 LET A$(6,0)=" I HOPE I DO NOT
SHARE YOU'RS"
8070 LET A$(7,0)="I AM A VERY FRIE
NDLY COMPUTER,"
8080 LET A$(8,0)="AS YOU SHALL SOO
N SEE,"
8110 FOR F=1 TO 8
8115 FOR B=1 TO 30
8117 PRINT AT F*(2+1,B);""
8120 PRINT AT F*(2+1,B);A$(F,B)
8130 NEXT B
8150 NEXT F
8240 RUN ?
9000 CLS
9010 PRINT AT 10,1;"I DO NOT LIK
E YOUR LANGUAGE"
9030 PAUSE 150
9035 NEW

```



YOUR HORSE gallops round the race track, aiming to complete the course with as few faults as possible. Jumping over fences either too soon or too late adds four faults to your total. On the lower levels you are allowed a certain margin of error but on the top level you must always jump in exactly the proper place. Jump by pressing "0".

Olympia was written for the 16K Spectrum by D Newton of Warrington.

Graphics note: The "£" signs in line 30 should all be entered as shifted "3"s.

OLYMPIA

```

15 BORDER 7: PAPER 6: INK 0
18 GO SUB 1000
21 PRINT "          OLYMPIA"
"
23 LET b:=002: LET hs=00: LET
y=4: LET a=17
25 PRINT AT 5,0: "          LEVEL (H
ARD)1-9(EASY)          ": PAUSE 0: IF
INKEY<="1" OR INKEY>="9" THEN G
O TO 25
26 LET p=VAL INKEY$
27 CLS : LET s=0: LET f=0
28 PRINT AT 8,0: FLASH 1: "## I
NTERNATIONAL SHOWJUMPING ##"
29 PRINT AT 4,5: "WINNING ROUND
50 FAR": "s":hs
30 PLOT 0,31: DRAW 255,0: PRIN
T AT 14,0: "EEEEEEEEEEEE OLYMPIA £
EEEEEEEEEEEE"
32 FOR c=0 TO 31: FOR v=9 TO 1
3: PRINT AT v,c: INK 0: PAPER 5:
"D": NEXT v: NEXT c
33 FOR l=0 TO 31: PRINT AT 19,
1: INK 4: "E": NEXT l
35 FOR x=30 TO 0 STEP -1: PRIN
T AT 17,x+1: "£"AT 17,x: INK 2:
"C"
40 PRINT AT 17,0: "          "
45 IF s=20 THEN GO TO 700: IF
x=0 THEN GO TO 35

```

```

50 PRINT AT a,y: "BA"
60 IF x=5 THEN GO SUB 300
200 BEEP b,10: PAUSE 1: BEEP b,
5: NEXT x: GO TO 35
300 IF INKEY#="0" THEN PRINT AT
20,0: "TOO EARLY 4 FAULTS": LET
f=f+4: GO TO 500
305 PAUSE p*1.5
310 IF INKEY#="0" THEN PRINT AT
20,0: "JUST RIGHT": GO TO 500
315 PAUSE p*1.5
320 PAUSE 0: IF INKEY#="0" THEN
PRINT AT 20,0: "TOO LATE 4 FAULTS
": LET f=f+4: GO TO 500
500 LET s=s+1
505 PRINT AT a,y: "          ": LET a=a-
1: LET y=y+1: PRINT AT a,y: "BA"
507 PAUSE 5
510 PRINT AT a,y: "          ": LET y=y+
1: PRINT AT a,y: "BA"
517 PAUSE 5
520 PRINT AT a,y: "          ": LET y=y+
1: LET a=a+1: PRINT AT a,y: "BA"
530 PAUSE 5
535 PRINT AT a,y: "          "
540 LET y=y-3: PRINT AT a,y: "BA"
"
545 PRINT AT 20,0: "          "
"
547 PRINT AT 17,x: "          ": LET x=x-

```

```

3: NEXT x
550 GO TO 35
700 IF f=0 THEN PRINT AT 1,0: "Y
OU HAD A CLEAR ROUND, WELL DONE"
720 PRINT AT 1,1: "HARD LUCK: YOU
COMPLETED THE ROUND WITH ",
f: " FAULTS"
725 IF f<hs THEN PRINT AT 5,1: "
YOUR ROUND WAS THE BEST TODAY":
PAUSE 50: LET hs=f
730 PRINT AT 10,2: "PRESS ANY KE
Y TO START AGAIN! ": PAUSE 0
740 GO TO 25
1000 FOR a=0 TO 7: READ s: POKE
USR "a"+a,s: NEXT a
1010 FOR a=0 TO 7: READ s: POKE
USR "b"+a,s: NEXT a
1020 FOR a=0 TO 7: READ s: POKE
USR "c"+a,s: NEXT a
1030 FOR a=0 TO 7: READ s: POKE
USR "d"+a,s: NEXT a
1040 FOR a=0 TO 7: READ s: POKE
USR "e"+a,s: NEXT a
1100 DATA 120,136,254,254,246,22
4,96,160,0,1,49,15,31,15,26,34,2
4,96,36,60,36,60,102,255,0,238,1
70,170,255,17,05,85,24,36,60,90,
126,36,60,24
1500 RETURN

```

```

10 PRINT AT 10,0;"MASTERMIND"
20 FOR N=0 TO 100
21 NEXT N
30 FOR F=0 TO 7
40 PRINT AT F,14;" ";TAB 14
;" 00 ";TAB 14;"(c;t:2*k97'9v)"
50 NEXT F
60 FOR N=0 TO 40
61 NEXT N
62 PRINT AT 0,15;"-"
63 FOR N=0 TO 40
64 NEXT N
67 PRINT AT 0,15;"0"
70 FOR C=0 TO 9 STEP -1
80 PRINT AT G,14;" 00 ";TAB 14
;"(c;t:2*k97'9v)";TAB 14;"DIMN";TA
B 14;" "
90 NEXT G
100 PRINT AT 0,14;" ";TAB 14
;" ";TAB 14;" "
110 FOR N=0 TO 40
111 NEXT N
120 FOR J=0 TO 7
130 PRINT AT J,14;" ";TAB 14
;" 00 ";TAB 14;"(c;t:2*k97'9v)";TA
B 14;"MIND"
140 NEXT J
150 FOR N=0 TO 40
151 NEXT N
152 PRINT AT 0,16;"-"
153 FOR N=0 TO 40
154 NEXT N
155 PRINT AT 0,16;"0"
160 FOR K=7 TO 0 STEP -1
170 PRINT AT K,14;" 00 ";TAB 14
;"(c;t:2*k97'9v)";TAB 14;" "
180 NEXT K
190 PRINT AT 0,14;" ";TAB 14
;" "
200 FOR N=0 TO 100
201 NEXT N
210 CLS
213 PRINT AT 0,1;"(28*k96)"
220 PRINT AT 9,1;"DO YOU WANT T
O SEE THE RULES"
Y/N)"
222 PRINT AT 11,1;"(28*k97)"
223 IF INKEY#(">") AND INKEY#("<")
"N" THEN GOTO 223
225 IF INKEY#="Y" THEN GOTO 225
230 IF INKEY#="N" THEN GOTO 600
236 PRINT AT 12,0;" "
"
237 CLS
240 LET A=INT (RND*35)+20
250 LET B=INT (RND*35)+28
260 LET C=INT (RND*35)+28
261 PRINT AT 11,10;"(c;0'07'9r's
P:5*k96'90'97'9r)";TAB 10;"(c;p:08
'97'sp:95'3'ksp:98'sp:98'97)";TAB
10;"(c;p:92'2'ksp:5*k97'sp:92)";TA
B 10;"(c;p:93'8'ksp:93)"
270 PRINT AT 12,15;"..."
275 LET S=0
280 INPUT E#
281 IF E#="2" THEN GOTO 480
290 IF LEN E#<>3 THEN GOTO 280
291 LET S=S+1
300 IF E#(1)=CHR# A THEN GOTO 4
00
310 IF E#(2)=CHR# B THEN GOTO 4
30
320 IF E#(3)=CHR# C THEN GOTO 4
60
330 IF E#(1)=CHR# C THEN GOTO 5
00
340 IF E#(1)=CHR# B THEN GOTO 5
00
350 IF E#(2)=CHR# A THEN GOTO 5
00
360 IF E#(2)=CHR# C THEN GOTO 5
00
370 IF E#(3)=CHR# A THEN GOTO 5
00
380 IF E#(1)=CHR# A THEN GOTO 4
00
310 IF E#(2)=CHR# B THEN GOTO 4
30
320 IF E#(3)=CHR# C THEN GOTO 4
60
330 IF E#(1)=CHR# C THEN GOTO 5
00
340 IF E#(1)=CHR# B THEN GOTO 5
00
350 IF E#(2)=CHR# A THEN GOTO 5
00

```



MASTERMIND

THE COMPUTER chooses a series of three numbers and letters. It is then for you to discover, in as few turns as possible, the computer's series of numbers.

Unlike conventional Mastermind games, this version, written by D Shaw of Nether Poppleton, York for the 16K ZX-81, relies as much on luck as on your skill in logic.

```

360 IF E#(2)=CHR# C THEN GOTO 5
00
370 IF E#(3)=CHR# A THEN GOTO 5
00
380 IF E#(3)=CHR# B THEN GOTO 5
00
391 IF E#(1)<>CHR# A AND E#(1)<
>CHR# B AND E#(1)<>CHR# C AND E#
(2)<>CHR# A AND E#(2)<>CHR# B AND
E#(2)<>CHR# C AND E#(3)<>CHR#
A AND E#(3)<>CHR# B AND E#(3)<>C
HR# C THEN GOTO 9000
390 GOTO 280
400 PRINT AT 12,15;CHR# A
430 IF E#(2)=CHR# B THEN PRINT
AT 12,16;CHR# B
460 IF E#(3)=CHR# C THEN PRINT
AT 12,17;CHR# C
470 GOTO 330
485 GOSUB 8000
490 PRINT AT 15,0;"DO YOU WANT
ANOTHER GAME (Y/N)"
491 IF INKEY#="Y" THEN GOTO 491
492 IF INKEY#="N" THEN GOTO 210
493 IF INKEY#="X" THEN GOTO 700
500 PRINT AT 19,0;"ONE RIGHT IN
WRONG PLACE"
505 FOR N=0 TO 40
506 NEXT N
508 PRINT AT 19,0;" "
"
510 GOTO 280
600 PRINT AT 0,4;"-----"
610 PRINT AT 1,4;"THE GAME OF M
ASTERMIND"
620 PRINT AT 2,4;"-----"
"
630 PRINT AT 5,0;"THE COMPUTER
THINKS OF A SERIES OF THREE NUM
BERS FROM 0 TO 9) AND LETTERS F
ROM A TO Y"
635 PRINT " "
"
640 PRINT AT 9,0;"YOU MUST GUE
S THE COMBINATION IN AS FEW GUE
S AS POSSIBLE.WHEN INVITED YOU M
UST ENTER A THREE NUMBER AND/OR
LETTER SERIES AND FIND THE HIDE
EN NUMBERS AND LETTERS"
645 PRINT AT 14,7;" "
"
650 PRINT AT 16,0;"IF YOU ENTER
"2" WHEN YOU HAVE DISCOVERED

```

```

THE SERIES THE CLEVERCOMPUTER W
ILL TELL YOU YOUR SCORE"
660 PRINT AT 21,0;" Press a
ny key to start "
670 FOR N=0 TO 5
671 NEXT N
672 IF INKEY#("<") THEN GOTO 230
680 PRINT AT 21,0;"**** PRESS A
NY KEY TO START ****"
690 FOR N=0 TO 5
691 NEXT N
692 IF INKEY#("<") THEN GOTO 235
695 GOTO 660
700 CLS
710 PRINT AT 12,2;"***** AUF WI
EDERSEHEN *****"
720 FOR N=0 TO 50
730 NEXT N
740 GOTO 740
8000 CLS
8001 PRINT AT 5,5;"YOU HAD '1';"
GOES"
8005 IF S=4 THEN PRINT AT 10,0;
"DOES MAGNUS MAGNUSON KNOW ABOUT
YOU..."
8006 IF S=4 THEN RETURN
8008 IF S=8 THEN PRINT AT 10,0;'
VERY GOOD EFFORT"
8009 IF S=8 THEN RETURN
8010 IF S=11 THEN PRINT AT 10,0;
"PRETTY GOOD"
8011 IF S=11 THEN RETURN
8012 IF S=11 OR S=12 THEN PRINT
AT 10,0;"NOT TOO BAD I SUPPOSE..
"
8013 IF S=13 THEN RETURN
8015 IF S=17 THEN PRINT AT 10,0;
"PERHAPS A LITTLE UNLUCKY"
8017 IF S=17 THEN RETURN
8030 IF S=20 THEN PRINT AT 10,0;
"PRETTY BAD REALLY...COULD DO
BETTER"
8033 IF S=19 THEN PRINT AT 10,0;
"DO YOU REMEMBER YOUR NAME ?"
8035 RETURN
9000 PRINT AT 19,0;"SORRY,NONE O
F THOSE PLEASE TRY AGAIN"
9001 FOR F=0 TO 40
9002 NEXT F
9003 PRINT AT 19,0;" "
"
9004 GOTO 280
9998 SAVE "MASTERMIND"
9999 RUN

```

FRYOLITE

```

1 BRIGHT 1: INK 7: PAPER 0: B
ORDER 0: CLS : PLOT 0,0: DRAW 25
5,0: DRAW 0,175: DRAW -255,0: DR
AW 0,-175: LET hc=0
2 LET cd=20: LET men=3
3 LET c=0: LET x=0
5 LET w=1
10 DATA 0,0,BIN 00011000,BIN 0
0111100,BIN 01011010,BIN 0101101
0,BIN 01111110,BIN 01111110
20 DATA 0,BIN 11110000,BIN 110
01000,BIN 11111100,BIN 11111100,
BIN 11111000,BIN 11110000,0
30 DATA BIN 01111110,BIN 01111
110,BIN 01011010,BIN 01011010,BI
N 00111100,BIN 00011000,0,0
40 DATA 0,BIN 00001111,BIN 000
10011,BIN 00111111,BIN 00111111,
BIN 00011111,BIN 00001111,0
50 DATA 0,BIN 00111100,BIN 011
11110,BIN 01111110,BIN 01111110,
BIN 01111110,BIN 00111100,0
60 RESTORE 10: FOR d=144 TO 14
8: FOR e=0 TO 7: READ a: POKE US
R CHR$(d)+e,a: NEXT e: NEXT d
65 FOR f=1 TO 20: PRINT AT INT
(RND*20)+1,INT (RND*30)+1: FLAS
H 1:"e": BEEP .004,(f-INT (RND*4
)))+10: NEXT f
70 LET a=INT (RND*20)+1: LET b
=INT (RND*30)+1
75 PRINT AT a,b: FLASH 1:"a":
FOR f=1 TO 200: NEXT f: PRINT AT
a,b:" "
80 LET z$="a"
90 LET a$=INKEY$
95 IF a$="" THEN LET a$=z$
97 LET c=c+1: LET x=x+1: IF x=
300 THEN GO TO 300
100 IF INKEY$="7" THEN LET z$="
a"
110 IF INKEY$="8" THEN LET z$="
b"
120 IF INKEY$="6" THEN LET z$="
c"
130 IF INKEY$="5" THEN LET z$="
d"
140 PRINT AT a,b: OVER 1:z$: BE
EP .006,15-w+10
150 FOR g=1 TO cd: NEXT g
165 IF z$="a" THEN LET a=a-1: P
RINT AT a+1,b:"e"
170 IF z$="b" THEN LET b=b+1: P
RINT AT a,b-1:"e"
175 IF z$="c" THEN LET a=a+1: P
RINT AT a-1,b:"e"
180 IF z$="d" THEN LET b=b-1: P
RINT AT a,b+1:"e"
185 IF a=21 OR a=0 OR b=0 OR b=
31 THEN GO TO 210
190 IF POINT (b*8+5,175-a*8-4)=
1 THEN GO TO 210
192 LET w=w+1: IF w=7 THEN LET
w=1
193 INK w
200 GO TO 90
210 PRINT AT a,b:z$
220 FOR f=1 TO 30: BEEP .004,IN
T (RND*20): PRINT AT a,b: FLASH
1:"0": NEXT f: CLS : LET men=men
-1
230 IF men=0 THEN GO TO 260
240 INK 7: PLOT 0,0: DRAW 255,0
: DRAW 0,175: DRAW -255,0: DRAW
0,-175
250 LET w=1: LET x=0: GO TO 65
260 INK 7: PRINT INK 7:"BAD LUC
K!!! You scored ";c:
Points": IF c>hc THEN PRINT
AT 13,0:"Well done anyway... You
have a high score of ";c: LET
hc=c
265 IF c<hc THEN PRINT INK 7:AT
13,0:" The high score is ";hc
270 INK 7: INPUT "Do you want a
nother go ?":a$
280 IF a$="y" OR a$="Y" THEN CL
S : PLOT 0,0: DRAW 255,0: DRAW 0
,175: DRAW -255,0: DRAW 0,-175:
GO TO 2
290 STOP
300 LET cd=cd-3: IF cd<0 THEN G
O TO 340
310 FOR f=1 TO 100: NEXT f: CLS
: PRINT INK 7:"Well done you sc
ored enough Points to escape
the frevolites. You must now try
at a faster speed"
320 FOR f=1 TO 700: NEXT f: CLS
: INK 7: PLOT 0,0: DRAW 255,0:
DRAW 0,175: DRAW -255,0: DRAW 0,
-175

```

ES



THIS PROGRAM was written for the 16K Spectrum by G Sweeten of Poulton-le-Fylde, Lancashire. You are a rainbow-coloured snake whose aim is to cover as much of the screen as possible. You are opposed by the evil flashing blobs as **Fryolites**. Each time you land on one of them you are fried and you lose one of your three lives.

If you land on your tail you scare yourself to death, thinking that you have met a Fryolite. Move using the usual cursor keys.

Graphics letters to be used are: 75-A: 80-A: 100-A: 110-B: 120-C: 130-D: 165-A,E: 170-B,E: 175-C,E: 180-D,E.

```
325 LET x=0
330 GO TO 65
340 PRINT INK 7:AT 5.0:"Well do
ne !!! You have beaten all the
fryolites..."
350 BEEP .15,0: BEEP .15,2: BEE
P .15,4: BEEP .15,2: BEEP .15,0:
BEEP .15,2: BEEP .3,4: PAUSE 2:
```

```
BEEP .3,0: PAUSE 2: BEEP .3,0
360 PRINT : PRINT : PRINT AT 10
,0: INK 7:"Do you want another g
ame ?"
370 INPUT a#: IF a#="Y" OR a#="
y" THEN CLR : INK 7: PLOT 0,0: D
RAW 255,0: DRAW 0,175: DRAW -255
,0: DRAW 0,-175: GO TO 2
```

```

20 BORDER 6: INK 1: BRIGHT 1
25 CLS
27 GO SUB 6000: REM ** U.D.G.
routine **
30 PRINT AT 4,3: " ** Learning
to Count ** "

```

```

32 PRINT AT 10,0:"Press the co
rrect number key, or "a" if
you want to know the answer..."
35 PRINT AT 16,0: PAPER 3:"
Press any key to start
40 PRINT E1:"@ R.M. Harris
1983"

```

```

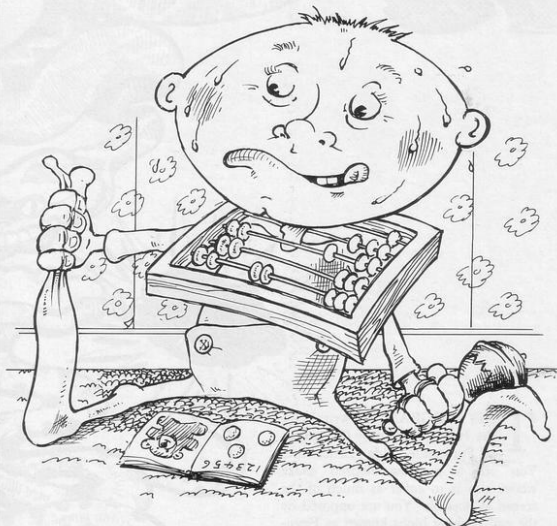
50 PAUSE 0: CLS
60 RESTORE 100: FOR z=1 TO 10:
READ a#
65 LET a=INT (RND*10)
70 IF a<1 OR a>9 THEN GO TO 65
100 DATA "lonnies","cups","flow
ers","houses","giraffes","boats"
,"trees","people","clocks","keys"
105 PRINT "How many "a#:" are
there ?"
110 GO SUB 7000
114 IF INKEY#<>" " THEN GO TO 11
2
115 IF INKEY#=STR# a THEN GO TO
1000
117: IF INKEY#"a" THEN GO TO 20
00

```

```

118 GO TO 115
120 STOP
150 NEXT a
1000 PRINT AT 21,0: FLASH 1:a#
is CORRECT !"
1001 GO SUB 1002: GO TO 1005
1002 FOR q=5 TO 50: BEEP .015,q:
NEXT q
1003 RETURN
1005 CLS
1010 NEXT z
1012 GO TO 9000
2003 PRINT AT 20,0:"THERE ARE "
a#:" "a#:" FOR i=1 TO 150: NEXT i
9000 CLS
2005 CLS
2010 NEXT z
2012 GO TO 9000
5999 STOP
6000 PRINT FLASH 1:AT 10,0:"STOP
THE TAPE": RESTORE 6100
6010 FOR d=1 TO 18: READ g# FOR
e# TO 7: READ f: POKE USR g#e
f: NEXT e: NEXT d
6100 REM ***JUDG HERE***
6200 DATA "a",0,0,62,30,126,126,
127,40
6210 DATA "b",0,0,254,254,254,25
4,254,102
6220 DATA "c",0,0,124,127,125,12
7,124,56
6230 DATA "d",24,36,74,186,154,8
4,36,24
6240 DATA "e",0,16,16,200,54,24,
16,16
6250 DATA "f",1,7,31,127,32,45,3
6,63
6255 DATA "g",128,228,252,254,4,
180,132,252
6260 DATA "h",0,48,112,16,16,16,
16,16
6265 DATA "i",16,16,16,30,31,17,
18,18
6270 DATA "j",0,0,0,60,31,31,15,
7
6275 DATA "k",128,128,128,128,25
2,240,248,232
6280 DATA "l",24,60,126,255,255,
254,126,104
6285 DATA "m",0,0,0,0,0,0,0,20
6290 DATA "n",56,56,56,16,254,18
6,186,186
6295 DATA "o",186,186,56,56,40,4
0,40,108
6300 DATA "p",255,145,145,145,12
7,133,131,235
6305 DATA "q",24,62,62,119,119,6,
2,62,24
6310 DATA "r",0,0,0,255,255,7,5,
5
6320 PRINT AT 10,0:"

```



COUNTING

COUNTING is an educational program designed to help young children to learn to count. Pictures are displayed on the screen and the child is asked to count them and to press the appropriate key. If the ques-

tion proves too difficult, pressing "a" will provide the correct answer. Richard Harris of Eastbourne, Sussex, wrote the program for the 16K Spectrum and he says his three-year-old sister enjoys playing it.

```

6350 RETURN
7000 IF z=1 THEN LET g#="ab"
7005 IF z=2 THEN LET g#="c"
7010 IF z=3 THEN LET g#="d": LET
h#="a"
7015 IF z=4 THEN LET g#="f"
7020 IF z=5 THEN LET g#="h": LET
h#="i"
7025 IF z=6 THEN LET g#="jk"
7030 IF z=7 THEN LET g#="l": LET
h#="m"
7035 IF z=8 THEN LET g#="n": LET
h#="o"
7040 IF z=9 THEN LET g#="p"
7050 IF z=10 THEN LET g#="q"
7100 IF z=1 OR z=2 OR z=4 OR z=6
OR z=9 OR z=10 THEN PRINT AT 9,
0: " : PLOT 0,75: DRAW 255,0: PL
OT 0,98: DRAW 255,0: FOR x=1 TO
a: PRINT : INK INT (RND*6):g#:"

```

```

: : NEXT x: RETURN
7190 LET g=10: LET h=0
7195 PLOT 0,75: DRAW 255,0: PLOT
0,98: DRAW 255,0
7200 FOR y=1 TO a: PRINT AT 9,h:
INK INT (RND*6):g#:AT 9+1,h+h#:
LET h=h+3: NEXT y: RETURN
8999 STOP
9000 FOR s=0 TO 9: BEEP .1,s: NE
XT s: BEEP .5,15: PAPER 6: CLS :
PRINT AT 11,10: FLASH 1:"WELL O
ONE !"
9020 PRINT ""Another 90 ? <y
yes or
no"
9025 IF INKEY#"y" OR INKEY#"Y"
THEN RUN 30
9030 IF INKEY#"n" OR INKEY#"N"
THEN STOP
9040 GO TO 9025

```

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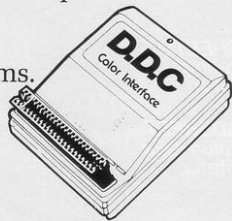
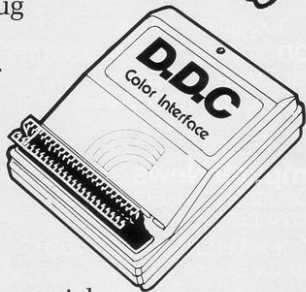
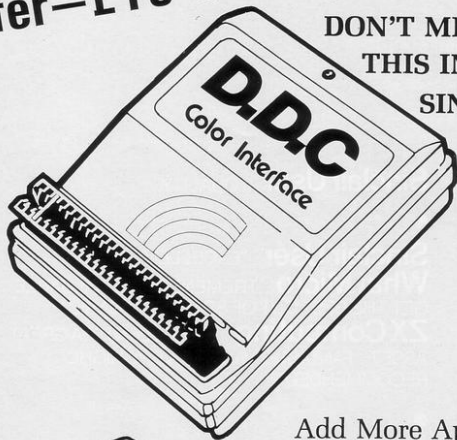
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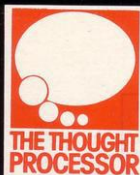
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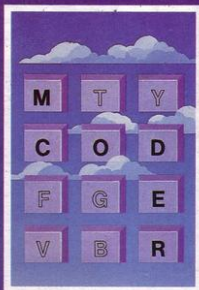
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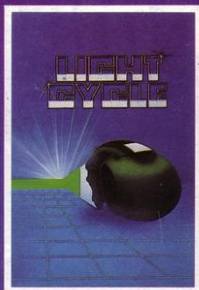
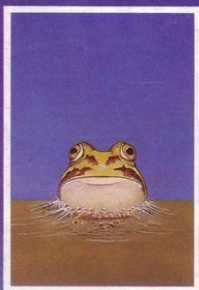
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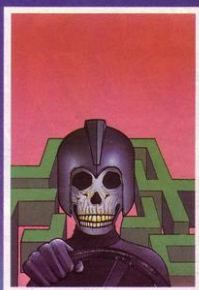
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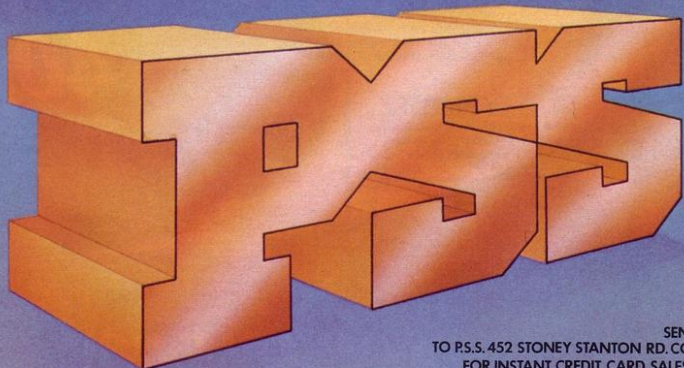
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