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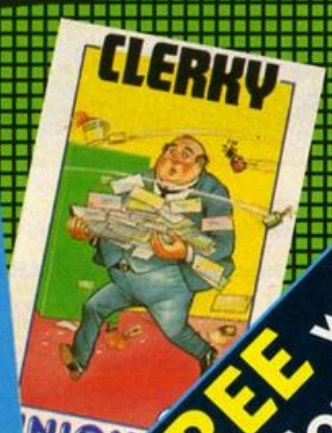
ZX USER

No 4

- Transform your Spectrum into a business machine.
- Software reviews: read what the critics think.
- Games and graphics for you to type in.



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ZX User

Free with Home Computing Weekly

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Welcome to the fourth issue of ZX User. By now, all you regular readers will be used to seeing this free supplement — what do you think of it?

We're interested in your points of view. Send your comments and observations to us — and don't forget your listings and tips.

There's a nice cool, leisurely game in store for you in this week's issue: bowls. Just right for a sweltering hot summer's day. You can also gamble on the luck of the draw, grapple with graphics and pick out nuances of colour — not to mention saving injured passengers after a train crash.

We hope you enjoy this week's issue. Happy reading!

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You can get into print

WE WELCOME programs and articles from our readers. If you feel that your work meets our standards, please submit it to us for consideration for publication.

Programs must always be sent on cassette. Listings are helpful, but not necessary. Check carefully that they are bug-free. Include full details of what your program does, how it works, variables you have used and hints on conversion. See the programs in this issue for guidance on what your paperwork should include.

Articles on using the Spectrum and the ZX81 should be no longer than 2,000 words. Those most likely to be published will help our readers make better use of their computers by giving useful advice, possibly with programming examples, tables and so on. Short hints are also welcome.

All submissions will be acknowledged and the copyright in such works which will pass to Argus Specialist Publications Ltd will be paid for at competitive rates.

Keep a copy of your work and include and SAE. Label everything clearly and give a daytime and home phone number if you can. All work for consideration should be sent to:

Paul Liptrot, ZX User, No. 1 Golden Square, London W1R 3AB

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Now, use your Spectrum as a business machine

Perhaps you don't realise it, but the Spectrum can form the cornerstone of a very professional wordprocessing system at quite a modest cost. More importantly, you can build it up gradually, piece by piece.

The first requirement is software. Undoubtedly, **the** Spectrum wordprocessor is Tasword Two. Recently reviewed in HCW, it received maximum ratings in all departments. It allows you to use the screen as you paper, making amendments, additions and corrections as you go.

No more worrying about ends of lines, forming neat paragraphs, typing the same old letter time after time or messing about with rubbers and correction fluid. Tasword takes care of the lot, and even goes so far as to give the Spectrum 64 characters to a line.

Better still, following the detailed manual supplied, the program can be customised to use a Microdrive (perhaps your first acquisition) which almost eliminates saving and loading time. You can thus easily save all your standard letters, blockbusting novels, essays and business forms. It's simple to run off another copy when you require it.

Although Tasword drives the ZX Printer quite happily, it can also be configured to drive your next major purchase, a full size printer, through a variety of interfaces including Interface 1, Kempston, Tasman, Morex and Cobra Centronics Interfaces.

A full size printer should be selected with care! I got caught out by not spending enough. Having taken the advice of my machine's importers, DRG Business Machines, I bought a complete package of Seikosha GP100A, Tasman Interface and leads from my local branch of Boots.

Having read the detailed instructions supplied, I soon had the system set up, with the traditional little black box hung on the back of my Spectrum.

Almost all Centronics type interfaces for the Spectrum require additional software to recognise the Spectrum's LLIST and LPRINT commands. This is not necessary using Tasword, but must be loaded above RAMTOP for use with your own programs. Unfortunately, the Tasman interface will not recognise COPY, but a RAND USR call can be included in your programs to copy both text and graphics screens.

There are snags, however. A commercial program, other than Tasword, to which is set up drive the ZX printer won't drive any of these interfaces, and perhaps more important, the software to drive the Tasman interface sits in the area of memory which is likely to be used by any toolkit or extended BASIC package you may care to use.

The Kempston interface software sits in the printer buffer, and thus overcomes this problem. However, it disappears when the COPY or NEW commands are used, and has to be reloaded. The interface software can also be loaded from Microdrive.

The Seikosha has proved very reliable, if rather noisy, in use. The problem here is the typeface created by the dot matrix. Whilst it is clear, clean and very uniform, and unlike many cheaper printers it uses ordinary paper at an ordinary price, the tails of letters g, y, q, and p don't descend as on an ordinary typewriter, but rather sit on top of the line. This looks rather peculiar and off-putting.

DRG claims this fact is well known, but they certainly didn't tell me about it! As a result, I have to advise you that, if you want something approaching typewriter quality, don't buy one of the cheaper Seikoshas. Save up a bit longer, and buy a printer which will serve your needs well into the future. After all, it costs more than your Spectrum!

If the bug has bitten you badly, you will soon find that the standard Spectrum keyboard is holding back your typing, and if you are using your Spectrum for business, any self-respecting touch typist will refuse to use it. What you need now is a decent keyboard.

Following the advice contained in a previous ZX supplement, I chose the Fuller FDS. It features a full space bar, properly printed legends on the keys (not just sticky labels) and a number of extra keys. Briefly, you can access full stop, comma, red extended mode and green extended mode with a single keypress, and all the cursor keys and the delete kay work without having to caps shift.

It makes programming much quicker, and typing with Tasword a real dream. They could have been designed to work together.

There are four options for fitting your Spectrum inside the Fuller case. Take the whole Spectrum board out of the original case and screw it in; easy enough but nervewracking, and goodbye Sinclair warranty. Alternatively, do the same again but add Interface 1, in which case an extra lead at additional cost is required.

Or just take the lid off the Spectrum and mount the whole lot, including Interface 1 inside. Finally, using a buffer at extra cost, mount the fully cased Spectrum inside. Being something of a coward, I chose the "lid off mode".

To do this, all the plastic bosses designed to support the circuit board have to be removed, and the holes for the interface and cassette leads must be altered using a drill, saw and a Stanley knife. It's easy enough to do if you're careful, as the plastic is quite soft.

You then need to make two holes in the case bottom through which to bolt the Spectrum and Interface 1. The keyboard is powered from the ZX power supply, and the Spectrum draws its juice from a shortish flying lead attached to the keyboard circuit board. Two ribbon connectors plug into the Spectrum, and away you go!

Fuller says you can mount the power supply inside the case too, but mine wouldn't fit the mountings. Instead, a friend of mine fitted a Reset button, a SAVE/LOAD switch, and proper sockets for power, mic and ear connections, together with a sound amplifier, speaker and volume control. There's plenty of room.

The result is magic; a vast improvement. The only quibbles are that the extended mode legends printed in red are rather difficult to read, and anything plugged into the user port needs to be lifted up a little. Fitting is a bit of a fiddle but the results are well worth it.

So now I have a fully fledged wordprocessing system and a grown up Spectrum. Frankly, it's so good with the Microdrive that I'm thinking of ignoring the QL and sticking to my faithful Spectrum!

Seikosha GP 100A Mk2 complete with Tasman Centronics interface from larger branches of Boots: £229

Fuller FDS keyboard: Fuller Microsystems, The ZX Centre, 71 Dale St, Liverpool 2: £49.95 + £2.50 p&p.

Tasword Two: Tasman Software, 17 Hartley Crescent, Leeds LS6 2LL: £13.90

Well, if not state of the art, then on its way. These programs are a mixed bunch, but they have one thing in common — good reviews. Read why

State of the art reviews

Block Buster
48K £5.95

A quiz based on words for one or two players where correct answers lead to a block being placed on the play board. When sufficient blocks have been won to stretch from one side to the other, you win. If you answer incorrectly, your opponent gets a chance to win the block, thus cutting off your route.

That's the bare bones, but the game is a lot more sophisticated. For a start, sound and graphics are rather fine, and, unusually for a quiz, you have the opportunity to 'interrupt" the question and beat your opponent to a point. So knowledge and timing is important.

The package contains an additional question tape for use when you know the built-in ones. The level of difficulty is set by altering the amount of time. Thankfully, even when playing against your Spectrum you have a reasonable chance of winning, thanks to some clever programming. **D.M.**

instructions	95%
playability	100%
graphics	100%
value for money	100%

★ ★ ★ ★ ★

Moder-80
£6.95

Seven Stars, 15 Gloucester Avenue, London NW1 7AU

A reasonably priced and well packed "all in one" non-symbolic assembler, dis-assembler and monitor for simple machine code development. The blurb says: "ideal for the beginner", and "all you need to get started reading, writing and debugging machine code programs".

Sadly, this was not to be. I know a little about machine code, but this foxed me. The booklet doesn't claim to teach assembly language programming, but you don't find that out until you've paid! While it may indeed tell you all about Moder-80, it's not very friendly to a beginner, and neither are the error messages within the program. After half a dozen inexplicable SYNTAX ERRORS, I gave up on one feature.

If you already know enough to make use of them, it has facilities to write assembly code using hex or decimal, modify it using hex, copy it into another area of memory, assemble it, insert a breakpoint, and step through it. The contents of the registers can be dumped to screen, as can source code, and some full size printers can be used. A notable and welcome first is the facility to copy to Microdrive.

A noble attempt to help the novice, Moder-80 deserves a fuller manual, written simply but with wider scope and greater detail. **D.M.**

instructions	50%
ease of use	50%
display	85%
value for money	70%

★ ★ ★

Linkword French
48K £12.95

Silver Soft, London House, 271/273 King St, London W6

A complete teach-yourself French package using the Gruneberg Linkword Language System, giving a vocabulary 350-plus words with basic grammar in 10 hours. The idea is to link a French word with a visual image of a similar sounding English word.

The package consists of program cassette, audio cassette (providing pronounciation back-up) and instruction manual containing a mini-dictionary of the words.

The program contains five sub-programs per side, part one being Animals, part two Furniture and Fittings, and so on. Each appears on screen as a translation of the English, with phonetic pronounciation and below that a way of remembering it by linking it with an English word. At the end of a section a test appears, requiring you to type in the English meanings — pressing ENTER producing the answer.

Then the words and translations are listed on screen before an introduction to the gender of those words, again using the Linkword method followed by a test and display.

An invitation to choose black and white or colour television produces little use of colour — an omission — and there is no reinforcement by ticks, sound or scoring when correct. However, a useful way to acquire a basic vocabulary. **T.W.**

instructions	95%
ease of use	90%
display	65%
value for money	90%

★ ★ ★ ★

Zipper Flipper
48K £5.95

Sinclair Research, 25 Willis Rd, Cambridge CB1 2AQ

You either like the game of pinball, or you don't, and I do. So when I read on the inlay card that this is pinball as you have never played it before I was a bit sceptical.

But it's true. I've never played a game of pinball like this one. While clocking up pinball scores you have to break down a wall which then gives access to the fruit machine part of the game. When the ball lands on any of the three reels you can nudge that reel to get the symbol of your choice.

When, or rather, if, you manage to score on the fruit machine, that score is added to your pinball score. If you reach 10,000 then you get a free ball and a faster game. **B.B.**

instructions	100%
playability	100%
graphics	100%
value for money	100%

★ ★ ★ ★ ★

World Cup Football
48K £6.95

Artic, Main St, Brandesburton, Driffield YO25 8RL

An amazing piece of machine code programming for the Spectrum! You and your friends can choose any of 40 teams and battle it out. Or the computer will play against you.

Selection over, the field is displayed with line drawn 3D on rather lurid green. Behind, a fully animated crowd shouts and waves to the ref's whistle and a number of well known football chants, some excruciatingly out of tune.

The opposing teams of six players are cleverly animated silhouettes of white or black, something like the characters in Valhalla. Using keys, Sinclair or Kempston joysticks, you control one at a time, nearest the ball, which turns blue when available for play. Action is fast and furious, so you'll need your wits about you and plenty of practice. Kick off, throws in, and goal kicks are all automatic, and as play progresses, a different section of pitch is revealed.

When two or more players occupy the same space for a tackle, they both tend to disappear to be replaced by a moving smudge, which is difficult to make sense of. A must for soccer fans. **D.M.**

instructions	95%
playability	95%
graphics	95%
value for money	80%

★ ★ ★ ★

More reviews in the next issue of ZX User

ACE IS HIGH

Place your bets on the luck of the draw in this game by H. Shaw. High cards win, but don't worry — no money changes hands so you can't lose out

Play your cards right and win against your micro! This isn't only a game of chance: if you can remember which cards have been turned up so far, your odds will be better.

You start with £500. Five cards are dealt face down and you must place your bet, in whole units, and you can't spend more money than you have. You stand to win five times your bet if you can guess whether the next card to be turned up will be higher or lower than the preceding one. The whole hand must be right or you lose your stake.

Ace is high and the odds are weighted in favour of the dealer — if two successive cards are the same value you lose your bet.

After 50 cards (10 hands) have been played, the pack will be reshuffled and you will be notified of this on screen. Start exercising your memory here and increase your chances of winning.

The game ends when you lose your money, which is bound to happen sooner or later. You will be shown the highest amount of money you managed to accumulate throughout the game.

This is a simple but addictive game, and a number of strategies will improve your chances. Of course, the great advantage is that you will not be out of pocket at the end of the game — but neither will you have amassed a fortune.

How it works

30-120 set variables
130-170 load UDGs from data statements in lines 1500-1640
190-210 set colours and print five cards face down
220-330 initial information on your financial position and input of bet
360-540 print each of the five cards as you bet and they are turned face up
560-690 select next card and check if already dealt
700-790 derive the graphics for any numbered card
800-930 title
940-1160 intructions
1180-1200 record highest score
1210-1300 print face down cards
1310-1370 check if selected card still in pack, check number of cards played. Reshuffle when 50 cards played
1380-1490 print face cards
1500-1640 data statements for UDGs
1650-1740 high score, do you want to go again?

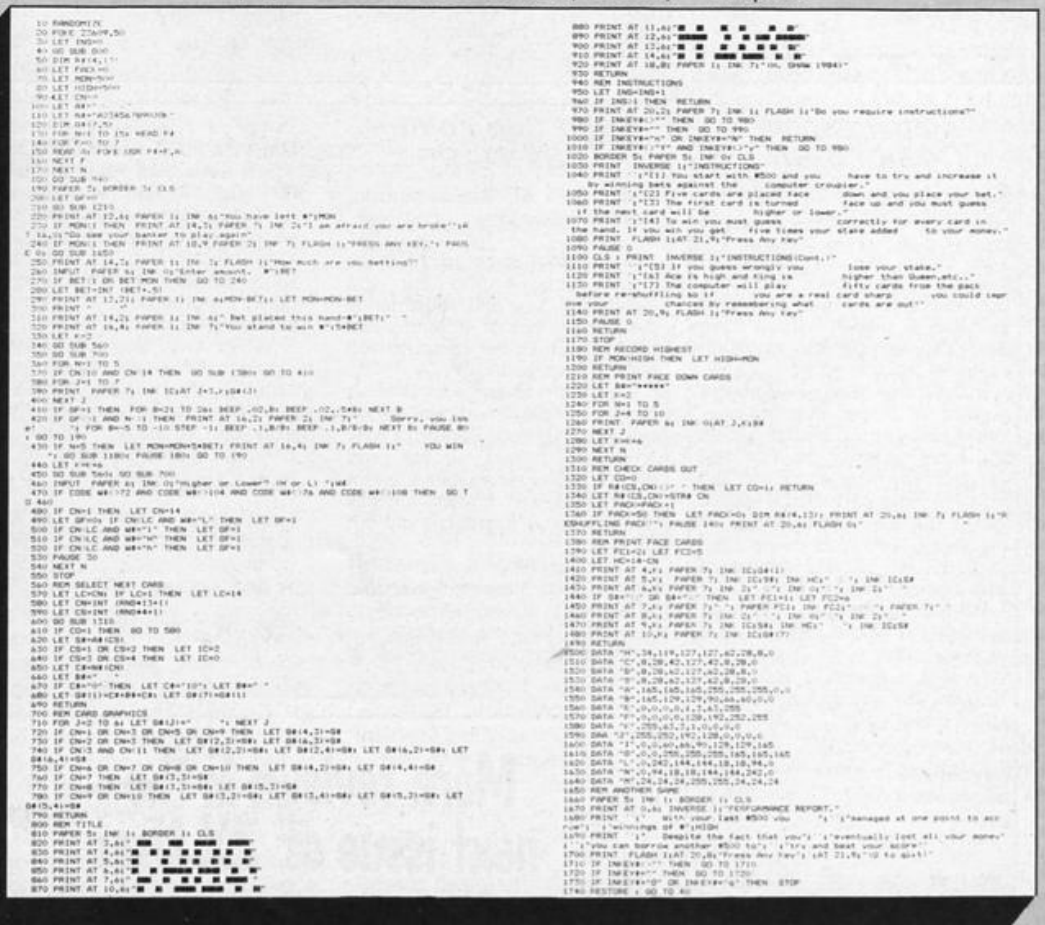
Variables

PACK number of cards played
MON amount of money you have
HIGH highest amount accrued
CN card number (value)
BET your bet
K PRINT AT x value for card being turned face up
IC ink colour for card graphics
LC number (value) of last card turned face up
CS card suit. Value 1-4 to slice the string A$ and select card suit
A$ string of four suits
N$ string of card numbers (ace to king)
S$ symbol of current card suit
Arrays: RS (4,13) your suits of 13 cards; **G$ (7,5)** graphics of card to be printed.

User Defined Graphics

GRAPHICS H heart, **C** club, **D** diamond, **S** spade, **A** upright crown, **B** upright face, **E** upright right shoulder, **F** upright left shoulder, **K** inverted left shoulder, **J** inverted right shoulder, **I** inverted face, **G** inverted crown, **L** tunic squiggle, **N** tunic squiggle, **M** tunic cross.

Until you have run the program, the letters in GRAPHIC mode will reproduce as letters. They will amend when the program is run, but you may find it helpful to type in lines 130-170 and 1500-1640 and RUN, before typing in the rest of the program. This will set the UDGs and as you type in the remainder of the program the correct symbols will print.



Scenes from the silver screen dominate these games. You're a cowboy stopping a runaway train, the Incredible Hulk, a hero from a distant galaxy. Lights, action, sound — roll the cameras!

The Incredible Hulk
48K £9.95

Adventure International, 119 John Bright St, Birmingham B1 1BE

The first of the Questprobe series from Adventure International, featuring characters from Marvel Comics, this is a logical extension of now standard marketing ploys. Find a character that appeals to kids, then produce everything from T-shirts to plastic mugs and computer games. A plastic mug is a plastic mug, whatever its colour, but the quality of adventures varies. How does this measure up?

The graphics window is smaller than Hobbit standard, but the pictures really do have that Marvel quality. Rather fine. The input interpreter is another matter. Basically, it accepts just two words of "verb-noun" variety. Stray from this and the computer doesn't understand. After Valhalla or the Hobbit, it's difficult to return to this low level of sophistication.

As to the story, it's difficult to say after the relatively short time allowed for review. Certainly, the detailed leaflet gives clues to a mixture of sci-fi and sorcery, which starts when you find yourself as Dr Banner, alter ego of the Hulk, tied to a chair. Half an hour later, and two deaths, about four moves had been made successfully! A hints sheet is available.

Overall, I was disappointed with this, coming as it does from Scott Adams. I was expecting something spectacular and different. Instead, a rather ordinary adventure structure is helped along by good graphics and a well known character.

D.M.

instructions	95%
playability	70%
graphics	95%
value for money	70%

★ ★ ★

Energy 3000
48K £4.90

Elm Computers, 52 Bateman Rd, East Leake, Loughborough, Leics LE12 6NN

A simple loading screen of a bulldozer precedes the option of instrucitons followed by keyboard or joystick selection. This fast machine code game is, according to the insert, set in the year 3000 when Dr Minestrone has selected you to remove Pink Tar from the old 20th century mines as an alternative fuel to uranium — the supply of which is running out.

You have to mine the Pink Tar with a bulldozer (so much for the advance of science), driving it to the transformer on the surface. After 10 deposits you are moved to another mine — but watch out for the mutant Creepy Crawlies lurking below, which increase in number and nastiness the harder you work.

Sounds great does it not? Forget it. This game does not live up to its sales pitch. The graphics are poor, use of colour and sound almost negligable. Screen bottom shows lives left, time left and current score — no hall of fame.

I scored 1,275... just by leaving the bulldozer on the surface, where it picked up pearls, while I made a cup of coffee! **T.W.**

instructions	85%
playability	30%
graphics	35%
value for money	40%

★ ★

Clerky
48K £5.99

Unique, 16 Thorney Lane South, Iver, Buckinghamshire

Clerky is a busy office clerk who likes his beer. That much is evident from the shape of his figure!

The only way he can get out to his favourite pub is to collect all the letters and file them away. However, if he gets ink on his shirt, or gets hit by a flying rubber, he has to start all over again. How does he get ink on his shirt? Flying inkpots, that's how. I well remember a certain miner being clobbered by objects more bizarre than flying inkpots. You need very keen eyesight to see these inkpots though because they are black on a dark background, which makes for a very difficult game.

You shouldn't have any loading problems, but there is a problem after you have loaded. The inlay card states either user defined keys, or a joystick, but I can't find any way of defining my own keys. However, Clerky responds to the keyboard quite well, and the movement is quite smooth.

There are 10 levels of play with four lives, and a high score chart. An amusing theme but not my own idea of an addictive game. The game may get better as you progress to higher levels, but I don't think so. **B.B.**

instructions	90%
playability	75%
graphics	80%
value for money	80%

★ ★ ★ ★

Stop the Express
48K £5.95

Sinclair Research, 25 Willis Rd, Cambridge CB1 2AQ

After loading, with no problems, the first thing that you notice is that the hero on the screen doesn't look one bit like the drawing on the inlay card. I much prefer the one on the screen.

It would appear that the scene for this game is the wild and woolly west of America because the villains are called Redmen. The hero is a tousled-haired character who has the task of stopping a train, with a little bit of help from you, of course. If you get really lucky you may capture a Firebird to help you with your task. The race to stop the train starts off in true Western fashion on the top of it.

Hopefully surviving the roof-top chase, you have yet to get into a carriage and make your way to the driver's cabin to stop the train, which is the name of the game.

A novel theme, well presented, and quite good graphics. Once you have sorted out the keyboard there is a positive response to your keypress, but using a joystick makes for a better game. **B.B.**

instructions	100%
playability	90%
graphics	100%
value for money	90%

★ ★ ★ ★

City Fighter
48K £5.50

Choice Software, Choice Buildings, 75 Belfast Rd, Carrickfergus, Co. Antrim, Northern Ireland

On average, I would say that less than one per cent of all tapes that I review have loading problems. This one has no such problem. But, if it did, I am informed on the inlay card that I can get a replacement free.

And, with a delightfully impish sense of humour, I am solemnly informed that I am hereby licensed to use this game on any computer I choose, but it will only run on a Spectrum!

The game itself is a battle between you, and the Zygorian battle fleet, and is set in the Earth city of Choiceville. The screen shows a curious mixture of an aerial view of the battle, but not of the buildings, which form a kind of maze.

You are in a four-phase mage-blaster, which initially requires eight keys to control it. Thank goodness you can re-define the keys. Now and again a human form appears, and if you rescue four of them in one screen you get an extra life. **B.B.**

instructions	100%
playability	75%
graphics	75%
value for money	75%

★ ★ ★

Don your whites and bowl along

```
  1 REM  Bowls By A.G.Bird.1984
  2 POKE 23609,30: PRINT AT 10,10;"Please Wait.": GO SUB 9000
  3 GO TO 7000
  5 BORDER 4: PAPER 4: CLS
  6 INPUT "How many bowls do you want ?  ";bowl
  7 FOR f=1 TO 200: NEXT f
  8 LET a=1: LET a=21: LET b=2: LET s=1: LET s$="
 10 PRINT AT 0,6;"  ";AT 1,0;"BOWLS  ";AT 3,0;"By";AT 4,0;"A.G.Bird."
 12 PRINT AT 19,0;"  ";AT 20,0;"  ";AT 21,0;"  "
 15 LET x=INT (RND*14)+1: LET y=INT (RND*17)+13
 20 PRINT AT x,y; INK 7;"  "; PAUSE 50
 25 FOR n=1 TO 5: PRINT AT x+1,y-5;"Jack  ": BEEP .2,n*3: NEXT f: PRINT AT x+1,
y-5;"      ": FOR f=1 TO 25: NEXT f: NEXT n
 29 REM  Main Loop
 30 FOR v=1 TO bowl
 31 REM  Backhand/Forehand
 32 FOR f=1 TO 300: NEXT f: PRINT AT 19,10; BRIGHT 1; PAPER 3;" Type  or  shot
? "
 35 PRINT AT 20,8;"Backhand  or  Forehand"
 45 FOR f=18 TO 12 STEP -1: PRINT AT 21,f; PAPER 6;" (B) or (F) ";AT 21,f+13; P
APER 4;" ": BEEP .02,f: NEXT f
 50 IF INKEY$="b" THEN  LET type=5: GO TO 70
 55 IF INKEY$="f" THEN  LET type=4: GO TO 70
 60 GO TO 50
 70 GO SUB 8000
 79 REM  Angle
 80 PLOT 24,12: DRAW 16,20: PLOT 28,10: DRAW 19,15: PLOT 28,8: DRAW 20,8
 85 PRINT AT 17,5;"1";AT 18,6;"2";AT 19,7;"3"
 90 PRINT AT 19,10; PAPER 3; BRIGHT 1;" Angle  of  Delivery "
 95 FOR f=18 TO 14 STEP -1: PRINT AT 21,f; PAPER 6;" 1,2 or 3 ? ";AT 21,f+13; P
APER 4;" ": BEEP .05,f: NEXT f
100 IF INKEY$="1" THEN  LET angle=1: GO TO 110
102 IF INKEY$="2" THEN  LET angle=2: GO TO 110
104 IF INKEY$="3" THEN  LET angle=3: GO TO 110
106 GO TO 100
110 GO SUB 8000
114 REM  Weight
120 PRINT AT 19,9; PAPER 3; BRIGHT 1;" Strength  of  shot "
125 PRINT AT 20,5;"keep your finger on";AT 21,11;"to alter strength"
130 PRINT AT 21,9; PAPER 5;"5"
135 IF INKEY$="" THEN  GO TO 130
140 FOR f=20 TO 21: PRINT AT f,9;"  ": NEXT f
145 IF s>2 THEN  PRINT AT 21,7;"Press B to deliver bowl."
150 IF INKEY$="b" THEN  GO SUB 8000: GO TO 200
160 IF INKEY$="s" THEN  LET s=s+.25: IF s>10 THEN  LET s=1: PRINT AT 20,15;"
  ": GO TO 145
165 PRINT AT 20,14; INK 2;s$( TO s)
180 GO TO 145
199 REM  Man
200 PRINT AT 19,0;"  ";AT 20,0;"  ";AT 21,0;"  ": FOR f=1 TO 200: NEXT f
210 IF INKEY$="" THEN  GO TO 230
220 GO TO 210
230 PRINT AT 19,0;"  ";AT 20,0;"  ";AT 21,0;"  ": FOR f=1 TO 200: NEXT f
240 PRINT AT 21,1;"  ": BEEP .2,-20
250 PRINT AT 19,0;"  ";AT 20,0;"  ";AT 21,0;"  "
300 GO SUB angle*1000
998 REM  Wood Movements
999 REM  Angle 1
1000 FOR z=1 TO INT s+4
1010 IF ATTR (a,b)=39 THEN  BEEP .01,50: PRINT AT a,b+1; INK 7;"  ": GO TO 1030
1020 IF ATTR (a,b)=33 THEN  BEEP .02,10: PRINT AT a-1,b; INK 1;"  "
1030 PRINT AT a,b; INK 1;"  "; PAUSE p: PRINT AT a,b;"  "
1040 LET a=a-1: LET b=b+1: LET p=p+1
1050 NEXT z
1100 GO TO type*1000
1999 REM  Angle 2
2000 FOR z=1 TO INT s+2
2010 IF ATTR (a,b)=39 THEN  BEEP .01,50: PRINT AT a-1,b; INK 7;"  ": GO TO 2030
2020 IF ATTR (a,b)=33 THEN  BEEP .02,10: PRINT AT a,b+1; INK 1;"  "
2030 PRINT AT a,b; INK 1;"  "; PAUSE p: PRINT AT a,b;"  "
2040 LET a=a-1: LET b=b+2: LET p=p+1
2050 NEXT z
2100 GO TO type*1000
2999 REM  Angle 3
3000 FOR z=1 TO INT s-2
3010 IF ATTR (a,b)=39 THEN  BEEP .01,50: PRINT AT a-1,b+1; INK 7;"  ": GO TO 303
0
3020 IF ATTR (a,b)=33 THEN  BEEP .02,10: PRINT AT a+1,b+1; INK 1;"  "
3030 PRINT AT a,b; INK 1;"  "; PAUSE p: PRINT AT a,b;"  "
3040 LET a=a-1: LET b=b+1: LET p=p+1
3050 NEXT z
3100 GO TO type*1000
3999 REM  Bias 1
4000 GO SUB 4100
4010 LET a=a-1: LET b=b+1: GO SUB 4100
4020 LET a=a-2: LET b=b+1: GO SUB 4100
4030 LET a=a-1: GO SUB 4100
4040 LET a=a-1: GO SUB 4100
4050 LET a=a-1: LET b=b-1: GO SUB 4100
4060 PRINT AT a,b; INK 1;"  "
4070 LET a=21: LET b=2: LET p=1: LET s=1: NEXT v
4090 PAUSE 500: GO TO 7000
4100 IF ATTR (a,b)=39 THEN  BEEP .01,50: PRINT AT a-1,b; INK 7;"  ": GO TO 4130
4120 IF ATTR (a,b)=33 THEN  BEEP .02,10: PRINT AT a-1,b+1; INK 1;"  "
4130 PRINT AT a,b; INK 1;"  "; PAUSE p: PRINT AT a,b;"  ": RETURN
4999 REM  Bias 2
5000 GO SUB 5100
5010 LET a=a-1: LET b=b+2: GO SUB 5100
5020 LET b=b+1: GO SUB 5100
5030 LET b=b+1: GO SUB 5100
5040 LET a=a+1: LET b=b+1: GO SUB 5100
5050 LET a=a+1: GO SUB 5100
5060 PRINT AT a,b; INK 1;"  "
5070 LET a=21: LET b=2: LET p=1: LET s=1: NEXT v
5090 PAUSE 500: GO TO 7000
5100 IF ATTR (a,b)=39 THEN  BEEP .01,50: PRINT AT a,b+1; INK 7;"  ": GO TO 5130
5120 IF ATTR (a,b)=33 THEN  BEEP .02,10: PRINT AT a+1,b+1; INK 1;"  "
5130 PRINT AT a,b; INK 1;"  "; PAUSE p: PRINT AT a,b;"  ": RETURN
6999 REM  Title
7000 PAPER 1: BORDER 1: INK 7: CLS
7005 FOR f=0 TO 15: PRINT AT 21-f,f;"Bowls": BEEP .02,f: NEXT f
7010 PRINT AT 5,17;"Bowls": BEEP .02,16: PRINT AT 4,19;"Bowls": BEEP .02,17
7020 FOR f=0 TO 24: PRINT AT 3,f;"Bowls": BEEP .02,f-3: NEXT f
7030 PRINT AT 4,25;"Bowls": BEEP .02,22
7040 PRINT AT 5,26;"Bowls": BEEP .02,23: PRINT AT 6,26;"Bowls": BEEP .02,24
7050 PAPER 6: INK 0: PRINT AT 8,11;"By A.G.Bird.";AT 17,10;" Hit any key  ";AT 19,
16;" for a game. "
7060 PAUSE 0: BEEP .5,10: GO TO 5
7999 REM  Clear screen routine
8000 BEEP .5,10: FOR f=17 TO 21: PRINT AT f,5;"                              ": N
EXT f: RETURN
8999 REM  Graphics
9000 FOR a=65368 TO 65479
9010 READ a: POKE d,a: NEXT d
9100 DATA 0,0,3,3,3,3,1,3
9110 DATA 0,0,128,64,128,128,0,128
9120 DATA 7,11,11,11,11,11,11,3
9130 DATA 192,160,160,160,160,160,160,128
9140 DATA 3,3,3,3,3,3,3,14
9150 DATA 128,128,128,128,128,128,128,224
9160 DATA 192,160,167,151,151,14 ,128,128
9170 DATA 0,0,0,0,0,3,4,9
9180 DATA 0,4,14,26,26,224,224,224
9190 DATA 128,128,128,0,240,159,159,159
9200 DATA 208,..44,..,40,..,159,..,..
9210 DATA 144,136,..28,..,64,128,..,..
9220 DATA ..,..,128,128,128,128,..,..
9230 DATA 29,46,86,174,149,42,84,136
9500 BORDER 5: PAPER 5: CLS
9510 PRINT '''AT 12; PAPER 6;" BOWLS " '' PAUSE 5;" It's a sunny afternoon on the
 village green, and conditions  are perfect for a gentle  relaxing game
of bowls."
9520 PRINT '' " The jack will be placed for you " " somewhere on the green and yo
u " " may have as many woods as you " " like to test your skill and " " judgeme
n t."
9530 PRINT AT 21,8; PAPER 6;" Press any key "
9540 PAUSE 0
9550 RETURN
```

Take it easy and have a break from violent games

What better for a sweltering hot summer's day than a nice cool game of bowls. You play on luscious green grass, sporting whites which keep out the heat and retain your serenity. That's why you often see bowls being played by those of more mature years.

Why don't you take it easy and have a break from violent games? Even if you can't play the real thing, here's a great game so that you can pretend you're really there. Soak up the atmosphere, sip the barley water, stay cool and develop your skills while maintaining friendly relationships with those around you.

Variables

a,b position of bowl
x,y position of jack
p slows down bowls
s strength of shot
s$ strength indicator
Bowl number of bowls
type shot type (backhand or forehand)
angle angle of delivery (1, 2 or 3)
z used in delivery of bowl loop
f general purpose loop

How it works

1-5 GOSUB graphics, instructions, keyboard BEEP
6-8 set up variables
10-25 set up screen
30 start of main loop
35-70 backhand or forehand
80-110 angle of shot
120-180 strength of shot
200-300 main bowling routine
1000-1100 delivery of bowl, angle 1
2000-2100 delivery of bowl, angle 2
3000-3100 delivery of bowl, angle 3
4000-4130 bias of forehand shot
5000-5130 bias of backhand shot
7000-7060 start of new game routine
8000 clear screen routine
9000-9230 graphics
9500-9900 introduction

There's no stress or strain in this game of bowls, written for you by Andrew Bird. Take your time, aim carefully and be a good sport

Don't get

This game gives us all a pleasant break from alien-zapping and fast finger work. What's required here is fine judgement and an eye for colour.

It will particularly tell you whether you're colour blind or not, as you have to distinguish between shades of green and tints of orange.

You also have to be able to manoeuvre carefully through a packed stockroom whilst you search out the elusive ball of wool. Let me explain — you're an assistant in a wool shop and each customer comes in and shows you a sample of the ball of wool she needs. You have to test your powers of observation and memory by retaining the colour in your head and finding it from the stockroom.

You will no doubt improve your skills as the game progresses, and the program has taken this into account. Gradually the time each customer shows you her sample is reduced, so you must absorb the information much quicker.

Don't get too harrassed — your job doesn't depend on it, as it's only a game. At the end of this game you should really be spot on for colour recognition.

Variables

Dim p array for 18 paper colours
pa,in paper and ink colours of customers' wools
pp,ii other paper and ink colours
c,cc number of customers
sc score of correct guesses
time time sample shown for
v vertical position of customer
z counter for whether wool chosen
x,y position of girl
w ball of wood used for customers' sample
s counter for paper and ink array
att ATTR number of correct ball of wool
a ATTR number of wool chosen
a$,b$,c$ girl character
f,n general purpose loops

How it works

3-5 variables
8-90 set up wool colours
100-122 inside shop
124-160 customer routine
170-190 girl walks to stock-room
195-270 inside stockroom
310-895 move girl
1000-1050 check ATTR of wool chosen
5000-5050 compare wool chosen with sample
6000-6050 end of game routine
7000-7100 instructions
9000-9130 graphics

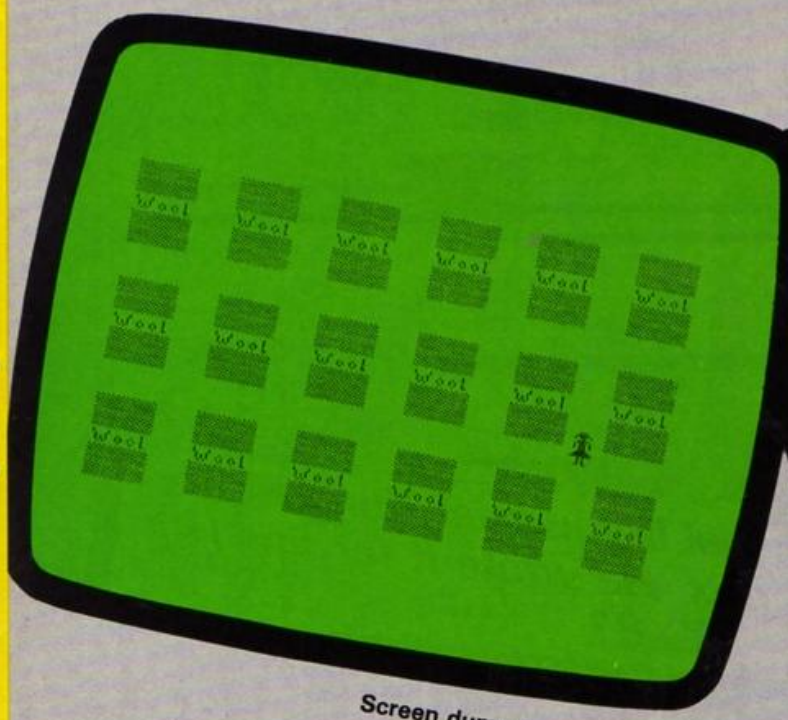
Develop your observational skills in Andrew Bird's fun game.

in a tangle

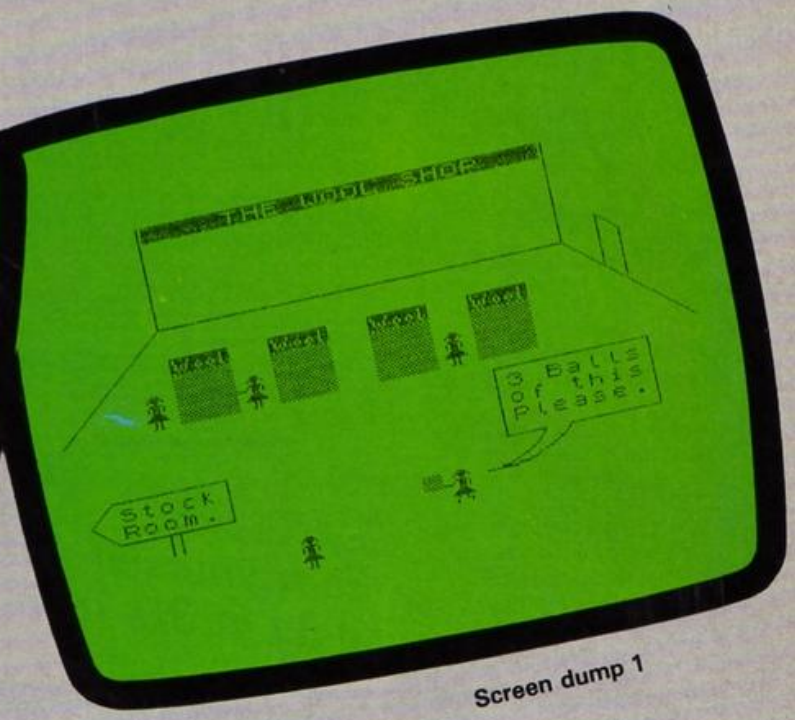
You're in a wool shop and you have to track down matching yarns — but it's not as easy as it sounds

```
  1 REM  The Wool Shop                    By A.G.Bird 1984
  2 GO SUB 9000: GO SUB 7000
  3 LET sc=0: LET time=400
  4 LET c=c-1: IF c<0 THEN  GO TO 6000
  5 LET v=27: LET z=0: LET x=20: LET y=10: LET a$="EE": LET b$="GH": LET c$="
"

  8 BRIGHT 0: BORDER 7: PAPER 7: INK 0: CLS
  9 REM  Wool colours
 10 DIM p(18): DIM i(18)
 20 LET w=INT (RND*18)+1
 25 LET pa=INT (RND*6)+2: LET in=INT (RND*7)+1
 30 FOR f=1 TO 18
 40 LET pp=INT (RND*6)+2
 50 LET ii=INT (RND*7)+1
 60 IF pp=pa AND ii=in OR pp=in AND ii=pa THEN  GO TO 40
 70 LET p(f)=pp: LET i(f)=ii
 80 NEXT f
 90 LET p(w)=pa: LET i(w)=in
 99 REM  Inside shop
100 PRINT AT 0,6; INK 2; INVERSE 1;"    THE WOOL SHOP   "
102 INK 0: PLOT 46,175: DRAW 0,-48: PLOT 209,175: DRAW 0,-48
104 PLOT 0,80: DRAW 46,46: DRAW 163,0: DRAW 46,-46: PLOT 224,112: DRAW 0,24: DR
AW 8,-8: DRAW 0,-24
106 FOR f=6 TO 21 STEP 5
108 BRIGHT 1: PRINT AT 8,f; INK 1; INVERSE 1;"BCD"
110 PRINT AT 9,f; PAPER RND*6+1; INK RND*6+1;"AAA";AT 10,f; PAPER RND*6+1; INK

RND*6+1;"AAA";AT 11,f; PAPER RND*6+1; INK RND*6+1;"AAA"
112 NEXT f
114 BRIGHT 0: PRINT AT 10,4;a$;AT 11,4;b$;AT 10,9;"ME";AT 11,9;b$;AT 10,19;a$;
A
T 11,19;b$
116 PRINT AT 16,2;"Stock";AT 17,2;"Room.": PLOT 4,40: DRAW 10,10: DRAW 46,0: DR
AW 0,-20: DRAW -46,0: DRAW -10,10
118 PLOT 34,20: DRAW 0,10: PLOT 38,20: DRAW 0,10
120 PRINT AT 21,0; PAPER 5;"                "
122 PRINT AT 20,10; PAPER 8;a$;AT 21,10;b$
124 FOR f=9 TO 18: PRINT AT f,v;a$;AT f+1,v;b$: BEEP .06,-20: PRINT AT f+1,v;c$
: BEEP f/200,-f
126 IF v=18 THEN  GO TO 130
128 PRINT AT f,v;"  ";AT f+1,v;"  ": LET v=v-1: NEXT f
130 PLOT 162,28: DRAW 26,14,1: PLOT162,28: DRAW 36,14,1: PLOT 198,42: DRAW 36,0
: DRAW 0,32: DRAW -62,0: DRAW 0,-32: DRAW 16,0
135 PRINT AT 13,22;INT (RND*4)+2;" Balls";AT 14,22;"of this";AT 15,22;"Please."
140 PRINT AT 18,18;"M";AT 18,17; PAPER pa; INK in; BRIGHT 1;"A"
145 LET time=time-40: IF time<0 THEN  LET time=0
150 FOR f=1 TO time: NEXT f
160 FOR f=12 TO 18: PRINT AT f,20;"          ": NEXT f: PRINT AT 18,17;" E"
170 PAPER 8
175 IF y=0 THEN  GO TO 195
180 IF INKEY$="5" THEN  PRINT AT x+1,y;c$: FOR f=1 TO 10: NEXT f: BEEP .02,-20:
```

```
 LET y=y-1: GO TO 190
 185 GO TO 175
 190 PRINT AT x,y+1;"  ";AT x+1,y+1;"  ";AT x,y;a$;AT x+1,y;b$: FOR f=1 TO 10: N
EXT f: BEEP .02,-15: GO TO 175
 194 REM  Inside Stockroom
 195 CLS : LET y=30: PRINT AT x,y;a$;AT x+1,y;b$
 200 PAPER 7: LET s=0
 210 FOR f=0 TO 14 STEP 7
 220 FOR n=2 TO 27 STEP 5
 230 LET s=s+1
 240 BRIGHT 1: PRINT AT f,n; PAPER p(s); INK i(s);"□□□";AT f+1,n;"□□□";AT f+3,
n;
"□□□";AT f+4,n;"□□□"
 250 PRINT AT f+2,n; PAPER 1; INK 7;"□□□"
 260 NEXT n: NEXT f
 270 LET att=64+8*pa+in
 290 BRIGHT 0
 299 REM  Move girl
 310 IF INKEY$="" THEN  PRINT AT x,y;a$;AT x+1,y;b$
 320 IF INKEY$="5" THEN  GO SUB 500
 330 IF INKEY$="6" THEN  GO SUB 600
 340 IF INKEY$="7" THEN  GO SUB 700
 350 IF INKEY$="8" THEN  GO SUB 800
 370 GO TO 300
 500 LET c$="□□": LET y=y-1
 510 IF y<0 THEN  LET y=0
 520 GO SUB 1000
 550 PRINT AT x,y;a$;AT x+1,y;c$;AT x,y+2;" ";AT x+1,y+2;" "
 560 FOR f=1 TO 10: NEXT f: BEEP .01,-20
 570 PRINT AT x+1,y;b$
 580 FOR f=1 TO 10: NEXT f: BEEP .01,-15
 590 IF z=1 THEN  GO TO 5000
 595 RETURN
 600 LET x=x+1
 610 IF x>20 THEN  LET x=20
 620 GO SUB 1000
 650 PRINT AT x,y;a$;AT x+1,y;c$;AT x-1,y;"  "
 660 FOR f=1 TO 10: NEXT f: BEEP .01,-20
 670 PRINT AT x+1,y;b$
 680 FOR f=1 TO 10: NEXT f: BEEP .01,-15
 690 IF z=1 THEN  GO TO 5000
 695 RETURN
 700 LET x=x-1
 710 IF x<0 THEN  LET x=0
 720 GO SUB 1000
 750 PRINT AT x,y;a$;AT x+1,y;c$;AT x+2,y;"  "
 760 FOR f=1 TO 10: NEXT f: BEEP .01,-20
 770 PRINT AT x+1,y;b$
 780 FOR f=1 TO 10: NEXT f: BEEP .01,-15
 790 IF z=1 THEN  GO TO 5000
 795 RETURN
 800 LET c$="□□": LET y=y+1
 810 IF y>30 THEN  LET y=30
 820 GO SUB 1000
 850 PRINT AT x,y;a$;AT x+1,y;c$;AT x,y-1;" ";AT x+1,y-1;" "
 860 FOR f=1 TO 10: NEXT f: BEEP .01,-20
 870 PRINT AT x+1,y;b$
 880 FOR f=1 TO 10: NEXT f: BEEP .01,-15
 890 IF z=1 THEN  GO TO 5000
 895 RETURN
 999 REM  ATTR Wool check
1000 IF ATTR (x,y)<>56 THEN  LET a=ATTR (x,y): LET z=1
1010 IF ATTR (x+1,y)<>56 THEN  LET a=ATTR (x+1,y): LET z=1
1020 IF ATTR (x,y+1)<>56 THEN  LET a=ATTR (x,y+1): LET z=1
1030 IF ATTR (x+1,y+1)<>56 THEN  LET a=ATTR (x+1,y+1): LET z=1
1050 RETURN
5000 IF a<>att THEN  GO TO 5030
5010 PRINT AT 21,2; INK 4; FLASH 1;" Correct ": FOR n=1 TO 3: FOR f=0 TO 20: BEE
P .02,n*f: NEXT f: NEXT n: LET sc=sc+1
5020 PRINT AT 21,12; INK 2;"Customer Satisfied": FOR f=1 TO 200: NEXT f: GO TO 4
```



Screen dump 2



Screen dump 1

```
5030 PRINT AT 21,2; INK 1; FLASH 1;" WRONG ": FOR n=1 TO 3: FOR f=40 TO 0 STEP -
2: BEEP .02,f-n*10: NEXT f: NEXT n
5040 PRINT AT 21,12; INK 1;"Customers Sample "; BRIGHT 1; INK in; PAPER pa;"B"
5050 BEEP .2,10: BEEP .4,0: BEEP .6,-10: FOR f=1 TO 200: NEXT f: GO TO 4
5999 REM  End of game routine
6000 BORDER 3: PAPER 3: INK 0: CLS
6010 PAPER 6: PRINT AT 4,7;" You have had ";sc;" ";AT 6,5;" satisfied customers
"
6020 IF sc=cc THEN  GO TO 6050
6030 FOR f=1 TO 300: NEXT f: PRINT AT 10,11;" HOWEVER ";AT 15,0;" ";cc-sc;"  Com
plained to the manager! "
6040 BEEP 2,-30
6050 PRINT AT 21,0;" Hit a key for another days work": PAUSE 0: RUN
6999 REM  Instructions
7000 BORDER 5: PAER 5: INK 0: CLS
7010 PRINT AT 0,0; PAPER 2; INK 7;" The Wool Shop By A.G.Bird 1984 "
7020 PRINT ''" Your job in the wool shop is"''" fetch balls of the correct"''" c
oloured wool from the stock"''" room for your customers."
7030 PRINT '" However, as the day goes on,"''" they seem to be in more & more"''
" of a hurry, and only show you"''" thier sample of wool breifly."
7040 PRINT AT 19,1;"Use keys 5,6,7 & 8 to move"
7050 FOR f=-30 TO 30: BEEP .02,f+RND*30: NEXT f
7060 INPUT ; PAPER 6;" How many customers do you want?";c
7070 LET cc=c
7100 CLS : RETURN
8999 REM  Graphics
9000 FOR g=65368 TO 65471: READ r: POKE g,r: NEXT g: RETURN
9010 DATA 170,85,170,85,170,85,170,85
9020 DATA 0,65,65,34,42,42,20,0
9030 DATA 0,0,0,16,41,41,16,0
9040 DATA 0,8,8,136,72,72,140,0
9050 DATA 3,7,11,1,7,11,11,11
9060 DATA 128,192,160,0,192,160,160,160
9070 DATA 3,7,15,31,2,2,2,6
9080 DATA 128,192,224,240,128,128,128,192
9090 DATA 3,7,15,31,4,8,8,24
9100 DATA 128,192,224,240,128,224,32,0
9110 DATA 3,7,15,31,2,14,8,0
9120 DATA 128,192,224,240,64,32,32,48
9130 DATA 3,7,11,1,7,11,243,3
```

Here's your chance to be a hero. There's been a train crash and many people need your help.

See how many you can rescue. But be warned, there are fast-moving trains on the tracks whose drivers are not aware of the disaster.

Full instructions are in the program.

My highest score so far is 17,940. If you can beat that, please write in to ZX User.

How it works

5 GOSUB for instructions
6-130 main variables and strings
40-140 go into fast mode and then draw screen display, then return to slow mode
170-370 main routine
400-570 game over and high scorers are asked to input their names in inverse
700-710 SAVE program and autostart when LOADed

Variables

A,B your position
C,D position of moving train
T position of unconscious people (*) on each track at random
F used for loops
S score
HS high score
A$ graphic of train
B$** and **H$ name of high scorer in inverse letters

Hints on conversion

This program should convert very easily. The FAST statement will go into fast mode and print the scren display quickly and SLOW will change it back to normal. You could ignore that.

But the PEEK on line 160 will have to be changed. It is there so that if your character (A) touches any part of the train you will lose a life.

Apart from that, you could add some sounds, colours and defined graphics.

```
 1 REM **********************
 2 REM *****3D TRAIN TRAX*****
 3 REM ******BY HUNG NGO******
 4 REM **********************
 5 GOSUB 600
 6 LET HS=0
 7 LET H$="ZX81"
10 LET S=0
15 LET A$="
                              "
20 LET A=14
30 LET B=23
40 FAST
50 FOR F=0 TO 5
60 PRINT AT F,0;"
                              "
70 NEXT F
```

Earn yourself a medal if you beat Hung Ngo's score in 3D Train Trax. He wrote it for the 16K ZX81

```
  80 PRINT AT 6,0;"
                  ";AT 21,0;"
                  "
  90 PRINT AT 1,8;"3D TRAIN TRAX
";AT 3,5;"SCORE";AT 3,19;"HI-SCO
RE";AT 21,1;H$
 100 PRINT AT 7,0;A$;AT 12,0;A$;
AT 17,0;A$
 110 FOR F=1 TO 5
 115 LET T=INT (RND*15)+6
 120 PRINT AT 9,T;"*";AT 14,T;"*
";AT 19,T;"*"
 130 NEXT F
 140 SLOW
 170 LET V=INT (RND*3)
 180 IF V=0 THEN LET C=7
 190 IF V=1 THEN LET C=12
 200 IF V=2 THEN LET C=17
 210 LET U=INT (RND*2)
 220 IF U=0 THEN FOR D=0 TO 24 S
TEP 3
 230 IF U=1 THEN FOR D=0 TO 24 S
TEP 4
 250 PRINT AT C,D;"
";AT C+
1,D;"
";AT C+2,D;"
";A
T C+3,D;"
"
 260 PRINT AT A,B;
 265 LET P=PEEK (PEEK 16398+256*
PEEK 16399)
 270 IF P=23 THEN GOSUB 350
 280 IF P=1 OR P=139 OR P=136 TH
EN GOTO 400
 289 PRINT AT A,B;"A",AT A,B;" "
 290 LET A=A+(5 AND A<18 AND INK
EY$="6")-(5 AND A>3 AND INKEY$="
7")
 300 LET B=B+(INKEY$="8" AND B<=
28)-(INKEY$="5")
 310 NEXT D
 320 GOTO 100
 350 LET S=S+10
 360 PRINT AT 4,6;S;AT 4,21;HS
 370 RETURN
 400 PRINT AT 11,11;"GAME  OVER"
```

```
 410 IF S>HS THEN GOSUB 500
 420 PRINT AT 16,0;"
                  "
 430 PRINT AT 16,0;"DO YOU WANT
ANOTHER GAME ? (Y/N)"
 435 PRINT AT 17,0;A$
 440 IF INKEY$="Y" THEN GOTO 470
 450 IF INKEY$="N" THEN STOP
 460 GOTO 420
 470 CLS
 480 GOTO 10
 500 PRINT AT 16,0;"HI-SCORE-PLE
ASE ENTER YOUR NAME"
 501 PRINT AT 17,7;"IN INVERSE L
ETTERS"
 510 INPUT B$
 520 LET HS=S
 530 LET H$=B$
 570 RETURN
 600 PRINT AT 3,0;"
                  3D T
RAIN TRAX
 605 PRINT "
                  "
```

```
 610 PRINT "YOU ARE AT THE RAIL
WAY TRACKS.  YOU MUST TRY TO SAV
E AS MANY    UNCONSCIOUS PEOPLE
AS YOU CAN."
 615 PRINT "
                  "
 620 PRINT "YOU MUST AVOID THE
TERRIBLE     FAST MOVING TRAINS.
THE TRAINS   MOVE RANDOMLY."
 625 PRINT "
                  "
 630 PRINT "THE KEYS YOU REQIRE
ARE :-                    7
                        5+8
                          6
 635 PRINT "
                  "
 640 PRINT "PRESS ANY KEY TO ST
ART PLAYING"
 645 PRINT "
                  "
 650 IF INKEY$="" THEN GOTO 650
 660 CLS
 670 RETURN
 700 SAVE "3D TRAIN TRA"
 710 RUN
```

If you're grappling with graphics, here's help. Just type in M.V. Zajac's program and user-defined graphics will be simple

Create great graphics the easy way

```
 10 POKE 23658,8
 20 LET N=1: DIM V$(21): DIM W$(21)
 30 LET T=0: LET P=1: DIM F(8)
 40 LET X=6: LET Y=11
 50 CLS : PRINT AT 10,0;"PLEASE ENTER PAPER COLOUR (0-7)"
 60 INPUT V$(N): IF V$(N)<"0" OR V$(N)>"7" THEN  GO TO 50
 70 CLS : PRINT AT 10,2;"PLEASE ENTER INK COLOUR (0-7)"
 80 INPUT W$(N): IF W$(N)<"0" OR W$(N)>"7" THEN  GO TO 70
 90 CLS : PRINT AT 2,2;"0=BACKGROUND COLOUR (PAPER)";AT 3,2;"1=FOREGROUND COLOU
R (INK)": PLOT 87,128: DRAW 65,0: DRAW 0,-65: DRAW -65,0: DRAW 0,65: FOR I=95 TO
 143 STEP 8: PLOT 1,127: DRAW 0,-64: NEXT I: FOR I=72 TO 120 STEP 8: PLOT 88,1:
DRAW 63,0: NEXT I
 100 IF INKEY$="0" THEN  GO TO 200
 110 IF INKEY$="1" THEN  GO TO 210
 120 PAUSE 50: GO TO 100
 130 IF Y+1>18 THEN  GO TO 160
 140 LET Y=Y+1
 150 GO TO 120
 160 PRINT AT X,Y+2;T: GO SUB 300
 170 LET Y=11: LET X=X+1: LET T=0: PAUSE 50
 180 IF X>13 THEN  GO TO 330
 190 GO TO 100
 200 PRINT  PAPER VAL V$(N);AT X,Y;" ";: GO TO 130
 210 PRINT  INK VAL W$(N);AT X,Y;" ";: GO TO (Y+11)*10
 220 LET T=T+128: GO TO 130
 230 LET T=T+64: GO TO 130
 240 LET T=T+32: GO TO 130
 250 LET T=T+16: GO TO 130
 260 LET T=T+8: GO TO 130
 270 LET T=T+4: GO TO 130
 280 LET T=T+2: GO TO 130
 290 LET T=T+1: GO TO 130
 300 LET F(P)=T
 310 LET P=P+1
 320 RETURN
 330 PRINT AT 21,5;"PRESS 'C' TO CONTINUE"
 340 IF INKEY$="C" THEN  GO TO 360
 350 GO TO 340
 360 FOR I=0 TO 7
 370 POKE USR CHR$ (143+N)+I,F(I+1)
 380 NEXT I
 390 CLS : PRINT AT 10,5;"PRESS 'C' TO CONTINUE"
 400 FOR I=1 TO N
 410 PRINT  PAPER VAL V$(I); INK VAL W$(I);AT 21,I;CHR$ (143+I);:
 420 NEXT I
 430 LET N=N+1: IF N=21 THEN  PRINT  FLASH 1;AT 19,0;"YOU ONLY HAVE ONE CHR SPAC
E LEFT"
 440 IF INKEY$="C" THEN  GO TO 460
 450 GO TO 440
 460 IF N=22 THEN  RUN
 470 GO TO 30
```

My Graphic Creator program runs on any Spectrum and is very easy to use.

All you have to do is to follow the on-screen instructions.

How it works

10 set CAPS lock
20-40 set up variables
50-80 input colour routine
90 draw grid
100-120 read keyboard for input
130 detects a completed row
140 advances to next square
150 return to read keyboard
160 prints value of each row or byte
170 advances to next row
180 detects whether the whole grid is filled
190 returns to read keyboard
200-210 print routine
220-290 calculates value of each bit printed
300-320 stores value of each byte
330-350 screen prompt

Variables

N number of character currently being defined
T value of each byte in the grid
P counter
I used in loops
x, y position of first byte
DIM F(8) stores each of eight bytes which make up the character
DIM V$, DIM W$ stores colours for each character