Home Computing WEEKLY

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INSIDE

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Great games to type in for: VIC-20, Dragon and ZX81/Spectrum

Software reviews for: Dragon, Spectrum, Atari, TI-99/4A, VIC-20, Dragon, BBC and ZX81

PLUS: News, Charts and One Man's View

First Microdrives to users 'in days'

SPECTRUM owners will be using Microdrives, Sinclair's new mass storage device, within days.

The promises came from managing director Nigel Searle at the launch on Thursday, when he said details had been mailed to 100,000 Spectrum users on the company's mailing list.

He said however that just 1,000 were ready for dispatch — arriving within 28 days of the order — but there will be more in the following weeks as production was ramped up.

Mr Searle said "Our object is to be supplying 20,00 interfaces per month as soon as we can ramp up in a few months."

Sinclair Research launched three products:

- The ZX Microdrive, costing £49.95, and offering the near equivalent of 5¼-inch disc drive capability.
- The ZX Interface 1, costing £29.95, if bought with a Microdrive. The price if purchased separately is £49.95.
- Tiny cartridges for the Microdrives cost £4.95 each and contain about 20 feet of tape about 3 1/16 of an inch wide.

Mr Seale said: "The user will have the speed, capability and operating system usually associated with a disc drive. It is extremely simple for the first-time user."

Sinclair's chairman, Sir Clive Sinclair, was asked why it had taken so long to bring out the Microdrives.

He said "That's a very good question — it's bloody hard to do. We are making an equivalent to the disc drive.

"We did not anticipate the size of the backup support that would be needed. When we first dreamed it up, the Spectrum had not been launched.

"Instead of the thousands it will be hundreds of thousands — an unbelievable number of cartridges."

Mr Searle said that the first mail order customers would be restricted to two Microdrives each, but there would be no limit on cartridges.

Sinclair was supplying Microdrives to software houses so they could bring out programs on cartridge. He added: "It will take a few months for software on Microdrives to overtake that on cassettes. At presen the new peripherals were being produced at one Thorn EMI Datatech plant. And Timex-Dundee, which makes Spectrums, is being considered as a second manufacturer. Mr Searle would not say where the cartridges are being made, only that the factory was in the Midlands.

He said they did not know how many cartridges each Microdrive user would want, it could be five, it could be ten. He said: "We have planned capability to build at least half a million cartridges per week." And he revealed that there will be a second interface in the autumn, called Interface 2,

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More pictures inside

A Microdrive connected, showing how the cartridge is inserted

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Oric get the Hobbit habit

Soon Oric owners will be able to play The Hobbit, the best-selling adventure game originally produced by Melbourne House for the Spectrum.

Melbourne House has now converted the game for the Oric, and it will be released by Tansoft at the end of September.

All the features of the Spectrum version will be there, including the free paperback of Tolkien's novel and the price of £14.95.

Paul Kaufman, Tansoft's managing director, said: "We're particularly pleased about it because it shows that companies like Melbourne House are taking the Oric seriously."

The Oric Hobbit will be available through retail outlets or direct by post from Tansoft.
Tansoft, 3 Club Mews, Ely, Cambs CB7 4NW

• • •

Three in one tape for the TI

Software-hungry TI owners — Firefly has brought out a games tape for the TI which offers three arcade games for £3.50.

It's called Games Tape One, and the three games on it are Trapt, Star-Storm and Astro-Run.

Firefly has also gone in for selling coals to Newcastle by marketing the tape in America, the TI-99/4A's native land. Apparently the Americans are snapping it up.
Firefly, 48 Dorset Street, London W1H 3FH

• • •

Tap into morse

Now your VIC-20 can teach you the Morse Code. Morse Tutor, from A.B.C. Soft, is said to take you from beginner to expert at your own rate and includes two types of test with score ratings. It needs 3K expansion and costs £4.50 by mail.
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Software aquabatics

If you've got the new Aquarius micro, Apocalypse have got some software for it: Aqua Paks 1 and 2, an arcade pack and an intellectual pack respectively.

Coming up soon are four more games: Aquamarine, an underwater version of Scable, Aquasplat, a Bomber version, Grandprix, a Motor Mania-type game, and Aquaman (no prizes).

All these are for the unexpanded Aquarius and cost £9.95.

Apocalypse hasn't forgotten the expanded Aquarius either. It will be bringing out a Forth cassette — called, naturally, Aquaforth — and some adventure games for it.
Apocalypse Software, 5-7 Sturt Street, Abingdon, Oxford

• • •

Free read

Startech, a Liverpool-based software house, has brought out the first in a series of free brochures on software and peripherals for popular computers.

The first issue, for the VIC-20 and Commodore 64, will be followed by brochures for Spectrum and ZX81, Dragon and BBC micro. Startech says they will contain its own products as well as the best of other makers' software and peripherals. An SAE is needed.
Startech, 208 Aigburth Road, Aigburth, Liverpool L17 9PE

• • •

John's first for the 64

John Shay, 14-year-old partner in Solar Software, is bringing out the first of a series of games for the Commodore 64.

Galaxians, a rewrite of his VIC-20 program, is in machine code and due on sale in three weeks. It will be followed by about 11 more.

Solar is a family affair. John's mother, Brenda, is the other partner and father John, a printer, looks after the partnership's printing needs.
Solar Software, 51 Meadowcroft, Radcliffe, Manchester M26 0JP

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READ-OUT

HCW22

Continued from front page

which will allow the Spectrum to support software on ROM cartridges and joysticks.

In a demonstration, the popular Flight Simulation program was loaded into a Spectrum via a Mirodrive in just under 9 seconds — it would normally take six to seven minutes. Access time is a claimed 3.5 seconds.

The ZX Interface, as well as controlling Microdrives, offers the industry-standard RS-232 Interface — which means other computers and printers can be linked — as well as the chance to network up to 64 Spectrums which are not more than 100 metres apart.

Here the ZX Interface 1 links the Spectrum to two Microdrives and an Epson printer

It was shown linking Spectrums to an IBM Personal Computer and an Epson printer.

Mr Searle said the tape life of the cartridges was in excess of 5,000 read-write operations. The company did advise, however, that users keep backup copies of software.

Sinclair's new Interface 1 can support up to eight Microdrives giving a total storage of 680K.

Each Microdrive stores a minimum of 85K and every order will include a free cartridge with demonstration program.

The Microdrive/Interface 1 manual is available to all customers separately at £5.

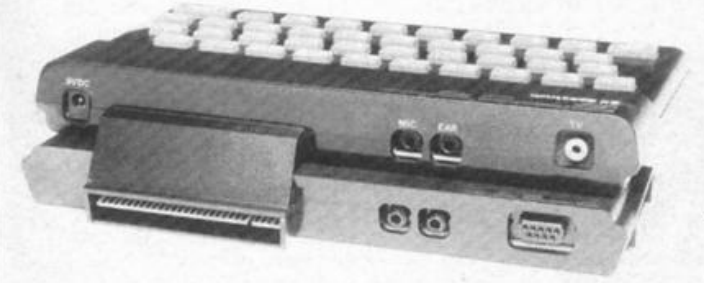
Each cartridge can contain up to 50 files which can be individually identified, sorted automatically, and displayed in alphabetical order or deleted.

The Microdrive controller, inside the Interface, expands Sinclair BASIC to include file handling and communications facilities and introduces BASIS as an operating system as well as a language, says Sinclair Research.

It makes the Spectrum an extremely powerful tool, says Sinclair, particularly for educational and business applications like stock control, word processing, financial modelling and accounting.

- Loading a typical 48K program in as little as 3.5 seconds
- Easy use of SAVE, LOAD and VERIFY commands
- 'FORMAT' to initialise the cartridge
- 'CAT' enables the contents to be read, displays the cartride name, up to 50 files in alphabetical order, and the free space in kilobytes
- Powered by Spectrum's power-supply
- Red light to indicate when running.

Also incorporating an RS232 interface and local network, the ZX Interface 1 attaches to the underside of the Spectrum and duplicates the computer's peripheral port.



The Interface 1, which attaches to the Spectrum at the rear edge connector. It fits under the Spectrum, tilting the computer forward by 20 degrees

Three Microdrives chained together and attached to a Spectrum

The RS232 industry standard serial interface enables the Spectrum to drive full-size printers and to communicate with other computers having the same interface. It also permits transmission of data over telephone lines via modems.

Interface 1 operates at all standard baud rates up to 19,200, with speed software-selectable, and a special RS232 lead is separately available from Sinclair Research at £14.95.

The local area network is a high speed communications link between up to 64 Spectrums, transmitting at 100 kilobaud. A full screen can be transferred in 3 seconds and protocols allow transmitting and receiving stations to be specified by one another, or the data may be broadcast over the network to any open Spectrum.

Sinclair Spectrums can act as printer servers to other Spectrums on the network driving either a ZX Printer or any other printer using the RS232 interface. They may also be dedicated as file-servers, exchanging files from their Microdrives with other Spectrums in the network.

The ZX Network opens up a wide range of possibilities for the user from advanced multi-player games of fun and skill to serious use in the classroom and office.

- Customers who bought Spectrums from shops and wish to be added to the mailing list should send their names and addresses only on a postcard to Sinclair Research, Department M, Freepost, Camberley, Surrey GU15 3BR.

Dragon 32 — Spectrum — Tandy Color

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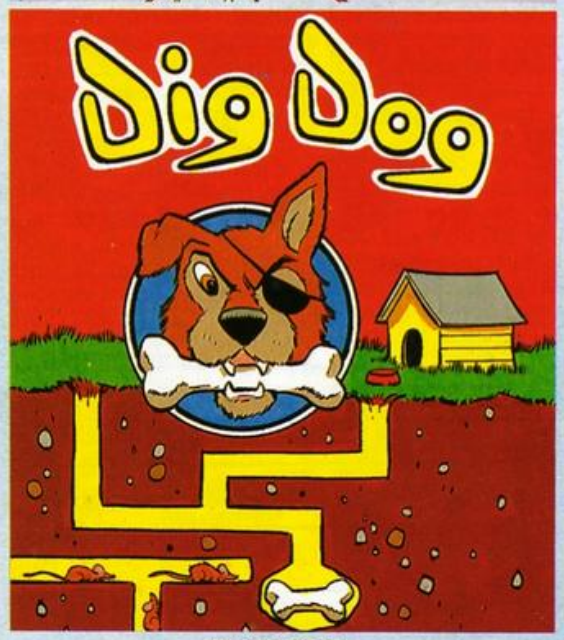

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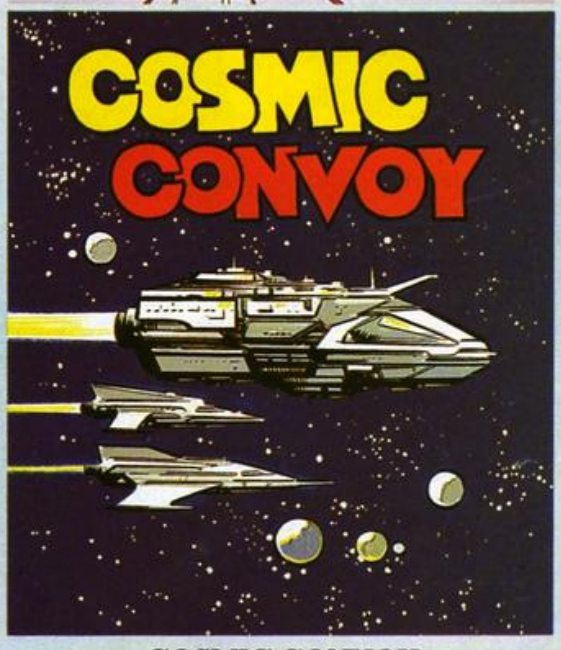

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Runner up Clive Sinclair — is he in need of a little drive?

Micros reward marathon runners

Never mind, Clive. Someone has to come 949th.

Clive Sinclair's time of 1 hr 47 min 43 sec to complete the Sinclair Cambridge Festival Half-Marathon may seem pretty good if you aren't a runner.

But the winner, Bob Treadwell, completed the course in 1 hr 4 min 36 sec. Joyce Smith, the UK marathon team manager, was the first woman home with a time of 1 hr 13 min 53 sec.

Prizes included — you guessed it — computers and software from Sinclair, who sponsored the race. So perhaps it's just as well that newly-knighted Sir Clive was only a runner-up.

Despite the heat, over 1,400 people took part in the race, which was organised by Cambridge City Council and the Cambridge and Coleridge Athletic Club.

The competitors were cheered on by Cambridge residents, who cooled them down with hoses and buckets of water.

PSSed again

PSS has brought out four new titles for the Oric, with another two to come.

No further explanation is needed of Invaders, Centipede and Hopper, which cost £6.95. But Oricmon, costing £8.95, is not, as you might think, a Pacman lookalike — it's a full machine code monitor and dissassembler.

Following shortly are Light Cycle and The Ultra, an arcade game with 16 different levels, which will also cost £6.95.

PSS, 452 Stoney Stanton Road, Coventry CV6 5DG

Calling all computer gamers

Clive Bailey has a problem. He can't find enough computer games enthusiasts to demonstrate their hobby at Games Day '83, the festival of indoor games which will take place on November 5-6.

He's looking for clubs and individuals to present either their own or commercial games, and he'll lay on a stand, a power supply, and insurance for your equipment. The show is at the Royal Horticultural Hall, Westminister, London.

So if you live in the London area, do him a favour — drop him a line.

Clive Bailey, Games Workshop, 27/29 Sunbeam Road, London NW10 6JP

A new toy, or a better world?

On the face of it, home computing seems to be thriving. Every day more and more children and adults are taking to the keyboard. There are waiting lists for every new micro that appears on the scene. The shelves are crammed with computer magazines, and fortunes are being made in software by individuals with business acumen and programming skills. The sky looks appears to be cloudless and the future bright. Why should anybody worry?

Well, I believe that unless action is taken now, home computing will go the way of the skateboard and the rest of yesterday's crazes.

Increasingly, home computing is being pushed into a corner. Its magazines are not read by the computer professionals, and any contribution it might have to make is disgregarded.

Home computer users find themselves being channelled more and more into a small and isolated world in which there is nothing for them but dull instructional software and alien-zapping pap.

The longer this situation continues, the fewer will be the opportunities for true intellectual development in home computing. The more adventurous user will become sidetracked by petty implementation-specific details, instead of looking to the wider potential of home computers in general. The opportunity held out by the low-cost microcomputer will have been missed.

But I don't believe that further progress down this slippery slope is inevitable. As home computer users, the solution is in our own hands.

Firstly we must build a dialogue with the computer profession, and learn from its experience — after all, it has been around for a lot longer than the home computer market. We must explore techniques, used by the professionals, which could expand the frontiers of home computing — techniques such as information systems analysis. We must try to understand the intimate relationship between the computer we encounter at work and those in the home.

Secondly, we must become more discerning as buyers. We must demand from suppliers products which are not aimed at the cheap thrill, but which are genuine state-of-the-art technological developments.

Finally, we must show that we are capable of developing software which solves real problems. For example, what about programs which assist the disabled, educate young children, or contribute to the arts?

But in order to do this, we will have to be assertive and go against the stream, instead of passively accepting what we are given: something which the home computer user generally avoids. We have to abandon the idea of the computer-as-toy and start thinking of the computer-as-tool instead. The choice before us is simple: a new toy, or a better world.

Anthony Finkelstein
Postgraduate student in advanced computer methods
Royal College of Art
Kensington
London SW7

● **This space is for you to sound off about the micro scene, to present bouguets or to hurl brickbats. Share your views by sending them to Paul Liptrot, Opinion, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Please include your occupation and your interest in computing.**

Mr. Chip SOFTWARE

VIC 20 GAMES AND UTILITIES

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Makes Commodore Fruit Machine Cartridge look unbelievably cheap and nasty "Home Computing Weekly"

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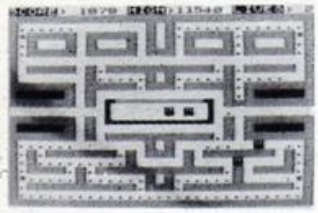

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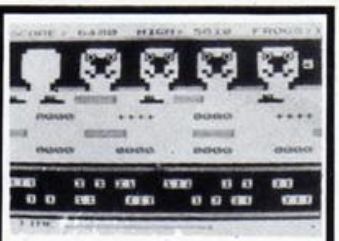

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Software hideaway just for two

Hidden away on the top floor of an office block in a quiet Hampshire village, a two-man team is working on new computer games.

And to keep their minds on their work they have ensured that they cannot be reached by phone or hear any callers.

The two are Quicksilva's technical director John Hollis and the company's 30-year-old chairman Nick Lambert.

Mr Lambert has long wanted to concentrate on software and the recent re-structuring of the company freed him of day-to-day administration.

Another director, Mark Eyles, said: "They had to move right away from our offices in Southampton because it's too hectic here. They wouldn't be able to get anything done."

In the short term, Quicksilva is expecting some top quality games from the two with some long-term ideas to come.

Meanwhile, the company has just released two Spectrum adventures, a BBC graphics tape, a strategy game and two arcade games:

John Hollis

● Beeb-Art, costing £14.95, uses a joystick or cursor keys to draw lines and shapes. Written by Dave Mendes for the BBC model B micro, it can use all 16 colours on mode 2.

● Freddy Vachha, a sort of one-man promotions industry, wrote 3D Strategy, for both models of the Spectrum. Based on 3D noughts and crosses, he claims it is five times as fast as similar programs and the only one in 100 per cent machine code.

● Velnor's Lair is a Dungeons and Dragons-type adventure in which the player can choose to be a wizard, warrior or priest to search for an evil wizard. It was written by Derek Brewster, of Neptune Computing, for the 48K Spectrum.

Dave Mendes

● The second adventure is called Smugglers Cove and involves searching for treasure in a cave system. It runs on the 48K Spectrum and the author was John Kenneally.

● John Hollis — who wrote the best-seller Time-Gate — produced Aquaplane in which boat and skier have to be guided around obstacles. The background uses the whole screen and the game features characters like the G&Ts, rich youngsters in yachts; the Regatta, a group of weekend sailors; and the Great White Shark. Aquaplane runs on the 48K Spectrum.

● Xadom is a 3D arcade adventure with an alien landscape and dangers to avoid, including Vampbats, Num Skulls, Cybots and Antimattoids. It needs a 48K Spectrum.

All the Spectrum tapes cost £6.95.

Quicksilva, which has just formed a U.S. company, has signed a deal to market Jeff Minter's Spectrum programs. Mr Minter, of Llamasoft, had licensed Salamander to produce Spectrum and Dragon versions of his VIC-20 games.

Spectrum versions include Gridrunner, Matrix, Attack of the Mutant Camels and Traxx.

Quicksilva says its new distribution and manufacturing deal with record giant CBS will mean "even more reliable" tapes.

Quicksilva, Palmerston Park House, 13 Palmerston Road, Southampton SO1 1LL

Freddy Vachha

Computing in the city

London is definitely the place to be for computer courses this summer — particularly if you're under 16.

Throughout August, Youth Outreach Service is running one-week courses in which both novices and experienced computer users can get their hands on a micro and improve their skills.

The programme also includes discussions, visits to places where computers are used and video films about computers in business and industry.

The courses will be based at the YOS centre in Leytonstone, and cost £20 for a week, including lunch.

Inter-Action Trust and Atari have got together to organise 40 one-week courses, which will take place throughout August at seven different London locations.

During the course, participants will get expert tuition on the Atari 800, along with advice on how computers can further their educational and employment prospects.

The basic charge for a week is £40, but there are discounts for children of Camden residents or the unemployed.

YOS Computer Camp, YOS Centre, Barclay Road, Leytonstone E11.
Inter-Action, 15 Wilkin Street, London NW5

TI owners — play the political game

Does the state of the economy fill you with gloom? Think you could do better yourself? A group of enterprising TI owners in Hull has produced a program which lets you have a try.

Taking the reins of government, you can control income tax, company tax, and VAT and public spending. The TI will tell you the effect on inflation, unemployment, and — most importantly — how you're doing in the opinion polls. Featuring the Queen's Speech.

This megalomaniac's delight is yours for a mere £5.

C. Cooke, 46 Hooks Lane, Thorngumbald, Hull HU12 9PZ

You could be on our pages

We welcome programs articles and tips from our readers.

PROGRAMS should, if possible, be computer printed to a width of 48 characters (use a new ribbon) and/or sent on cassette. Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.

ARTICLES on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in HCW. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas, possibly with programming examples. We will convert any sketched illustrations into finished artwork.

TIPS are short articles, and brief programming routines which we can put together with others. Your hints can aid other computer users.

Competitive rates are paid.

Keep a copy of your submissions and include an SAE if you want them returned. Label everything clearly and give a daytime and home phone number if you can.

Paul Liptrot, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE

Can you make your skier beat my best time?

Ski Run, for the unexpanded VIC-20, has even beaten the writer, Michael Pritchard. Now it's your turn on the slopes . . . .

My Ski Run game is so challenging that I haven't managed to win without cheating. Can you beat my best time of 1 min 55 secs?

After the instructions, the skier appears at the bottom of the screen and is controlled by keys S and D. You may find them a little sensitive to begin with, but this can easily be stopped by a delay in the program.

The track will scroll down from the top and is drawn at random, although it may not seem like it.

Trees will appear quite often along random positions in the track and the track itself will get narrower. Line 10, FOR D = 1 TO 13, can be changed to suit how many times you want one wideth of track to be repeated.

Altogether there are six different widths of track before the finish, but this can be changed by altering line 140 so that you could go on to the thinnest track possible.

The finish will appear after you have completed all the widths of track. If you can't get that far, try to last as long as possible without crashing into the trees or leaving the track.

The game uses user-defined graphics, colour and sound. I'm afraid the skier doesn't look very human and flickers slightly, but I can't help this.

Hints on conversion

Conversion shouldn't be too difficult as the trees and track are generated by PRINT TAB statements. One problem, though, which may arise is that I have used the VIC's clock, so computers without clocks will have to have their own method of timing.

How it works

0-21 set variables
25-160 main routine, including movement of man and drawing of track and trees
200-310 routine for finish
400-600 set and print messages for crashes
5000-5450 prints how well you did and asks if you want another go
6000-6080 defines graphics
6900-7310 prints instructions

All the control characters are for graphics — the manual will tell you which keys to use.

Main variables

A position of skier
B colour position of skier
H position of flags
M width of track
TI$ the VIC's special clock
NJ best time
Fny(A) position of trees

Warning: the program only just fits into the unexpanded VIC, so any changes would have to be made with care.

Here is a quick run-down on the main locations I've used:

PEEK (197) checks what keys are being pressed

36874-36877 sound channels

36878 volume

36879 colours of border and screen

7680-8185 screen locations

38400-38805 colour locations

36869 switches from normal graphics to user defined

36865 position of the screen

```
0 POKE36878,15:GOSUB6900:GOSUB6000
1 NJ=0
2 PRINT"■":M=11:K=4
3 A=8174:B=38894:TI$="000000":AS=252:FD=1
4 DEFFNY(A)=INT(RND(1)*K)+6
10 FORD=1TO13
21 E=INT(RND(1)*6)+16
25 FORH=11TOE:PRINTTAB(H)"■■":PRINTTAB(H-M)"■A":PR
INT"■■■■ ":POKE218,158
30 IFPEEK(197)=18THENA=A+1:B=B+1:AS=250
31 IFPEEK(197)=41THENA=A-1:B=B-1:AS=251
32 POKE36877,AS:IFA=8185THEN350
33 IFPEEK(A)=1THEN350
34 IFPEEK(A)=2THEN400
35 IFPEEK(A)=0THEN350
40 POKEA,3:POKEB,0:NEXTH
41 UI=FNY(A)
42 POKE7702+H-UI,2:POKE38422+H-UI,5
60 FORH=ETO11STEP-1
63 PRINTTAB(H)"■■":PRINTTAB(H-M)"■A":PRINT"■■■■ "
:POKE218,158
68 IFPEEK(A)=0THEN350
73 IFPEEK(197)=18THEN A=A+1:B=B+1:AS=250
74 IFPEEK(197)=41THENA=A-1:B=B-1:AS=251
75 POKE36877,AS:IFA=8185THEN350
76 IFPEEK(A)=1THEN350
77 IFPEEK(A)=2THEN400
78 IFPEEK(A)=0THEN350
80 POKEA,3:POKEB,0:NEXTH
84 PRINT"■■TIME";TI$:PRINT"■■■■■■■■■■■■■■■■HT";NJ
100 PRINTTAB(H-FNY(A)+6)"■■"
130 NEXTD
131 M=M-1:K=K-1:FD=FD+1
140 IFM=5THEN200
160 GOTO10
200 PRINT"■■■■■■■■■■FINISH":POKE36877,0
210 FORL=1TO21
211 POKE36876,L+200:POKEA,3:POKEB,0:FORH=1TO50:NEX
TH
220 PRINT"■■■■ "
221 POKE218,158
251 IFPEEK(197)=18THENA=A+1:B=B+1
252 IFPEEK(197)=41THENA=A-1:B=B-1
253 IFPEEK(A)=2THEN400
254 IFPEEK(A)=0THEN350
255 IFPEEK(A)=1THEN350
259 NEXTI:GOSUB600
280 C=VAL(TI$)
281 PRINT"■":POKE36869,240
282 BV=128:DE=255
283 FORL=1TO120:BV=BV+1:DE=DE-1
285 PRINT"■■■■■■■■■■■■■■■■■■YOU FINISHED"
286 POKE36879,L:POKE36874,BV:POKE36877,DE
290 NEXTL:GOSUB600
310 GOTO5000
350 C=VAL(TI$):Z=INT(RND(1)*3)+1
351 IFZ=1THEND$="YOU WERE CHOPPED UP":F$="BY A MAD
 AXEMAN"
360 IFZ=2THEND$="YOU WERE ATTACKED BY A":F$="MAN E
ATEN PINE TREE"
361 IFZ=3THEND$="YOU FELL OFF A CLIFF":F$="INTO A
SEWAGE WORKS"
372 POKE36877,200
373 FORL=1TO500:NEXT
```

VIC-20 PROGRAM

```
374 GOSUB600
390 GOTO500
400 C=VAL(TI$)
405 D$="BAD LUCK YOU CRASHED "
410 F$="INTO A TREE"
422 POKE36877,200
423 FORL=1TO500:NEXTL
424 GOSUB600
429 GOTO500
500 BV=255:POKE36869,240
502 PRINT"■■■■■■■■■■■■■";D$"■■■■■■■■■■■■■■■";F$
503 FORL=1TO120
505 POKE36879,L:POKE36877,BV:POKE36875,L+128:BV=BV
-1
512 NEXTL:GOSUB600:GOTO1000
600 FORG=15TO0STEP-1
610 POKE36878,G:FORL=1TO100:NEXTL
620 NEXTG:POKE36878,15:POKE36877,0:POKE36876,0:POK
E36875,0:RETURN
1000 POKE36876,0
5000 PRINT"■"
5010 POKE36879,25
5030 PRINT"■TIME"
5050 PRINT"■■  M S"
5100 IFC>100THENS$="■■■■"
5150 IFC<100THENS$="■■■■■"
5200 PRINTS$;C
5300 IFC>NJTHENNJ=C
5400 PRINT"■■■■■AND GOT ONTO STAGE";FD
5410 PRINT"■■■■■■■ANOTHER GO(Y/N)"
5420 GETM$
5430 IFM$="Y"THENPOKE36869,255:GOTO2
5440 IFM$="N"THENEND
5450 GOTO5420
6000 POKE36869,255
6010 POKE51,0:POKE52,28:POKE55,0:POKE56,28
6020 FORL=7168TO7199
6030 READIU:POKEL,IU:NEXT
6040 DATA1,7,15,7,1,1,1,1
6050 DATA192,240,248,240,128,128,128,128
6060 DATA0,16,56,124,254,16,16,16
6070 DATA60,126,60,24,153,90,36,36
6080 RETURN
6900 PRINT"■■■■■■■■■■■■■■■■■■■■SKI-RUN"
6905 PRINT"■BY MICHAEL PRITCHARD"
6910 POKE36879,25
7000 FORL=140TO88STEP-.5
7010 POKE36865,L:POKE36876,L+100:NEXTL
7030 GOSUB600:POKE36876,0
7035 PRINT"■■■■■■■■■SKI-RUN"
7036 PRINT"■■■■■■■■■■■■■■■■■■■
```

Tools of the programmer's trade

If you're going to write ambitious programs, you need the proper tools. Our reviewers evaluate five of the latest toolkit programs for you

Superfront 4.0 Commodore 64 £6.95

English Software, 50 Newton Street, Manchester M1 2EA

This is a well thought out utility program to enable you to create your own character set.

In the centre of the screen is a 'box' of 8 by 8 dots which represent an enlarged view of a character. You use the normal cursor controls to move the cursor around in the box. When the cursor has been positioned then hitting the F key (Fill) puts a blob in that position.

Altogether the range of commands is enormous. The complete character set is displayed in the lower portion of the screen and you can 'call-up' any character from it into the box. Having displayed it, you can move it up, down and sideways in the box, change it, invert it, reverse it, print it, colour it, swap it, and last of all save it to tape or disk.

Naturally, at a later time you can load back your very own character set to use in your programs.

The suppliers have tried to explain this extensive utility by printing a lot of details in very small print on the cassette card, which unfortunately makes the instructions difficult to read.

But the average user will soon master its use, due to the very good and informative screen display. It is nice to see such a useful utility at a reasonable price.

L.C.

instructions	60%
ease of use	90%
display	80%
value for money	80%

★★★★

White noise and Graphics Spectrum £5.95

Gilsoft, 30 Hawthorn Road, Barry, S. Glamorgan CF6 8LE

This program loads a set of 22 machine code routines, tagging them with names, so that they can be called by 'RAND USR name'. The linkages are set up by a BASIC routine that has to be called at the start of a program which uses any of the machine code routines. This could cause problems during program development, as the Gilsoft program would have to be merged in.

The routines provide: wait for a key press, with and without message; scrolling by one pixel distance up, down, left, right; scrolling by one character distance in eight directions; window definition, with associated clear and invert; sound routines; and assorted oddments.

This is not a program which could readily be grafted on to existing routines. Nor would it mix happily with combined BASIC and machine code programs. Subject to those limitations, it has interesting possibilities. The machine code occupies about 1½K at the top of store.

In general, this sort of 'toolkit' program needs to be approached with care, and more experienced users will often extract the parts they want, building them into their own formats.

D.T.

instructions	70%
ease of use	60%
graphics	n/a
value for money	60%

★★★

Astron Assembler Spectrum £9.95

dk'tronics, Unit 2, Shire Hall Industrial Estate, Saffron Waldon, Essex

Described as an assembler and tool kit, this utility program came complete with a four page booklet. Though the first few lines told me that the assembler could be used both by a beginner (in what?) and the experienced programmer, I have a feeling that the beginner would soon become confused.

It isn't until you get to the last page that you find out that the REM statements that you need for your source code are generated by the tool kit, and even then you are not warned to start the REMs at line 100.

There is an example program given earlier which does start at line 100, but as it's only an example, the beginner may not realise the significance. Again, the example program gives an address for PRINT, and states that this is an established routine, but not at the address given, at least not in my copy.

I put in a very simple program, and found it rather tedious because you have to keep moving from CAPS to lower case, and keep STOPping to get into the next phase of the program, although it did get assembled eventually.

B.B

instructions	70%
ease of use	20%
display	n/a
value for money	40%

★★

Chargen & Demo BBC B £8.50

Rainbow Research, 288 High Street, Enfield, Middx. EN3 4HF.

Chargen is a character generator for mode 2, allowing eight solid and eight flashing colours in an eight by up to 24 pixel matrix. Demo allows you to move the generated character around the screen with the cursor control keys.

I was very impressed with Chargen. The instructions stated you should input an even number between 2 and 24, but if you input an odd number it is not trapped!

Having made up a character you quit by pressing Q. This then displays the byte string required to define the character.

It took several attempts to load Demo, which was recorded at a very low level on my tape. This made using the byte string impossible as it had scrolled off screen!

After some further attempts at both loadings I managed to run the demo program, but after all that effort, the result was very disappointing. The defined character simply moved under cursor key control around the screen.

I fail to see the point of this demo program, and I found the character generator uninteresting. There are better programs at lower costs than this.

J.H.

instructions	65%
ease of use	n/a
display	30%
value for money	20%

★★

Extended Character Definition TI 99/4A (Extended Basic) £4

Stainless Software, 10 Alstone Road, Stockport, Cheshire

Working out hexadecimal codes to define characters or sprites can be both time-consuming and tedious. Using this utility, up to four characters may be defined within minutes, and your TI takes on the job of supplying the hexadecimal codes.

Further options allow characters to be magnified, rotated or redefined, and different colour combinations can be explored.

Although the program was well written I did find small discrepancy by missing the option to redefine, ending the program then running it once more. Previously defined characters would appear on he screen unless redefined in the new run, although the accuracy of the definition code was unaffected.

J.W

instructions	90%
easy of use	80%
display	n/a
value for money	75%

★★★★

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Have you got a date with the hangman?

Gruesome but fun. Keith Lowe's version of the old favourite uses only 4K of the Dragon's RAM, so you can add more words and features

Will you guess the word...or will you have a date with the hangman?.

My version of the old favourite runs in 4K on the Dragon, so there's plenty of room for expansion, like more words.

Full instructions are in the program.

Main variables

A$ word chosen by computer
L$ letter entered by user
CL,CS clear patch in screen
LC number of correct letters entered
H,B,A1,A2,LL head drawn? body drawn? left arm drawn? right arm dawn? left leg drawn? There is no RL because right leg ends the game

How it works

40-80 pick random word
90-210 set up screen
220-260 input letter, check for presence in word, print letter in correct place
270 determine whether to draw body
300 test to see if you have guessed word
320-420 draw head
430-510 draw body
520-550 draw left arm
560-600 draw right arm
610-670 draw left leg
680-1060 draw right leg, end game with lose
1070-1380 win routine
1390-1470 instructions

Preparing to meet his Maker — John Hurt as Timothy Evans in 10 Rillington Place

```
9 ' ######################
10 '####HANGMAN###########
11 '######BY K.LOWE#######
12 '######################
20 CLS
30 GOSUB 1390
40 FOR X=1 TO RND(80):READ A$:IF A$="ZXZX"THEN RES
TORE
50 NEXT X
60 READ A$:IF A$="ZXZX"THEN RESTORE:READA$
70 GOTO 110
80 DATA HELLO,COAL,MONDAY,DEFEAT,SKILL,LEVEL,SPECI
AL,SYSTEM,WITHOUT,QUEST,DIFFICULT,SECOND,DRAGON,TU
ESDAY,KINGDOM,VERSION,PROGRAM,COMPLETE,CONCEAL,VAR
IOUS,COLOUR,RUBBISH,HANGMAN,ALTHOUGH,INTERESTING,I
MAGINATION,LESSON,TUTOR,CAPITAL,MODERATE,SURFACE
90 DATA MISSION,DAMAGE,AUTOMATICALLY,SPECIMEN,REME
MBER,INVITE,GRAPH,CRASH,SOLUTION,ANSWER,QUALITY,EX
CELLENT,COMPETITION,DISCOVER,BRUSH,HARD,LONG,SHAPE
,FIRE,EDITOR,MANAGER,PROBABLY,USEFUL,EQUIPMENT,CRI
TICISM,VERSION,GUESSING,PERFECT,KEYBOARD,POSSIBLE
100 DATA ZXZX
110 CLS
120 PRINT@10,"HANGMAN";
130 PRINT@42,"=======";
140 FOR CL=5 TO 14
150 FOR CS=64 TO 384 STEP 32
160 PRINT@CS+CL,CHR$(128);
170 NEXT CS
180 NEXT CL
190 FOR DT=5 TO LEN(A$)+4
200 PRINT@448+DT,"#";
210 NEXT DT
220 PRINT@116,"LETTER ";:INPUTL$
230 PRINT@116,""
240 FOR CH=1 TO LEN(A$)
250 IF L$=MID$(A$,CH,1) THEN PRINT@452+CH,L$;:LC=L
C+1:GOSUB300:C=1
260 NEXT
270 IF C=0 THEN GOSUB 320
280 C=0
290 GOTO 220
300 IF LC=LEN(A$)THEN LC=0:GOTO 1070
310 RETURN
320 IF H=1 THEN 430
330 FOR H=15 TO 24
340 FOR H1=6 TO 11
350 SET(H,H1,1)
360 NEXT H1:NEXT H
370 RESET(15,6):RESET(24,6):RESET(15,11):RESET(24,
11)
380 RESET(18,8):RESET(21,8)
390 SET(14,8,4):SET(25,8,4)
400 FOR X=18 TO 21:RESET(X,10):NEXT
410 H=1
420 RETURN
430 IF B=1 THEN 520
440 FOR X=12 TO 27
450 FOR Y=13 TO 18
460 SET(X,Y,4)
470 NEXT Y
480 NEXT X
```

Hints on conversion

SET (a,b,c) lights up low resolution pixel at point a,b colour c (usually 1-7)
RESET turns pixel off
CLS (x) clears screen to colour denoted by x (1-7)
PLAY plays music using conventional ABCDEFG notes
SOUND a less flexible noise command using a, tone and b, duration
POINT checks if a pixel is SET
The routine in lines 850-890 clears a small square to black in the left of the screen.

```
490 RESET(19,14):RESET(19,16)
500 B=1
510 RETURN
520 IF A1=1 THEN 560
530 PRINT@197,CHR$(129+32);:PRINT@229,CHR$(133+32)
;:PRINT@261,CHR$(140+32);
540 A1=1
550 RETURN
560 IF A2=1 THEN 610
570 PRINT@192+14,CHR$(130+32);
580 PRINT@224+14,CHR$(138+32);:PRINT@256+14,CHR$(1
40+32);
590 A2=1
600 RETURN
610 IF LL=1 THEN 680
620 FOR Y=19 TO 22
630 SET(15,Y,6):SET(16,Y,6)
640 NEXT
650 SET(12,22,5):SET(13,22,5):SET(14,22,5):SET(15,
22,5)
660 LL=1
670 RETURN
680 FOR Y=19 TO 22
690 SET(23,Y,6):SET(24,Y,6)
700 NEXT
710 SET(24,22,5):SET(25,22,5):SET(26,22,5):SET(27,
22,5)
720 PLAY"T20V3104"
730 FOR ZX=1 TO 50:PLAY"L100V31C£P10"
740 NEXT
750 FOR X=8 TO 30
760 FOR Y=4 TO 25
770 IF POINT(X,Y)()0 THEN SET(X,Y,4)
780 PLAY"T255L1C"
790 NEXT Y
800 PLAY"T255ABCDEFG"
810 NEXT X
820 PLAY"T255O1V31CACDDCDDCDEV25EFCDEFDDDEFDGGV20A
DGCDEDCBCEFBV15GDCDEDEFABEADV10FGCDEAADEBCECV5ADCD
DFDDCGEFCDEADCDCADCD"
830 FOR X=15 TO 23
840 SET(X,12,8)
850 NEXT
860 FOR CL=5 TO 14
870 FOR CS=64 TO 384 STEP 32
880 PRINT@CS+CL,CHR$(128);
890 NEXT CS
900 NEXT CL
910 FOR X=5 TO 14
920 PRINT@64+X,CHR$(143+112);
930 NEXT
940 FOR X=64 TO 384 STEP 32
950 PRINT@X+5,CHR$(143+112);
960 NEXT
970 FOR X=4 TO 10
980 SET(24,X,4)
990 NEXT
1000 PRINT@448+5,"ANSWER '";A$;"'";
1010 PRINT@116,"ANOTHER GO ?";
1020 A$=INKEY$
1030 IF A$="N"THEN END
1040 IF A$="Y"THEN RUN
1050 IF A$=""THEN 1020
```

```
1060 END
1070 PRINT@448+5,"CORRECT!!"
1080 FOR X=1 TO 255 STEP 10
1090 SOUNDX,INT(X/50)+1
1100 NEXT
1110 FOR CL=5 TO 14
1120 FOR CS=64 TO 384 STEP 32
1130 PRINT@CS+CL,CHR$(128);
1140 NEXT CS
1150 NEXT CL
1160 FOR X=5 TO 14
1170 PRINT@64+X,CHR$(143+112);
1180 NEXT
1190 FOR X=64 TO 384 STEP 32
```

```
1200 PRINT@X+5,CHR$(143+112);
1210 NEXT
1220 FOR X=4 TO 18
1230 FOR Y=X TO X+6
1240 SET(24,Y,4)
1250 NEXT
1260 RESET(24,X)
1270 NEXT X
1280 FOR Y=18 TO 24
1290 RESET(24,Y)
1300 NEXT
1310 PRINT@352+11,CHR$(134+48);:PRINT@352+12,CHR$(
134+11);
1320 PLAY"T604CP4L2CL3DO3BO4CDEP4EFL2EL4DCL3DCO3L2
BO4L2C;"
1330 PRINT@116,"ANOTHER GO ?";
1340 A$=INKEY$
1350 IF A$="Y"THEN RUN
1360 IF A$="N"THEN END
1370 IF A$=""THEN 1340
1380 END
1390 '######INSTRUCTIONS#####
1400 PRINT"THE IDEA OF hangman IS TO GUESS A WORD
BY GUESSING LETTERS. IF  THE LETTER IS IN THE WORD
,THEN  IT WILL BE DISPLAYED IN IT S    CORRECT POS
ITION IN THE WORD."
1410 PRINT"IF HOWEVER THE LETTER IS NOT IN THE WOR
D,THEN PART OF YOUR BODY WILL BE DRAWN ON THE SCRE
EN. IF ALL YOUR BODY APPEARS THEN YOU  ARE 'HUNG'
AND THE GAME ENDS."
1420 PRINT"IF YOU GUESS THE WORD,YOU WILL  ESCAPE,
AND THE NOOSE WILL BE    LOWERED."
1430 PRINT@448,"FOR A PRACTICE YOU MUST NOW     HI
T THE CORRECT KEY TO BEGIN!";
1440 A=RND(25)+65
1450 A$=CHR$(A)
1460 IF INKEY$()A$ THEN 1460
1470 RETURN
```


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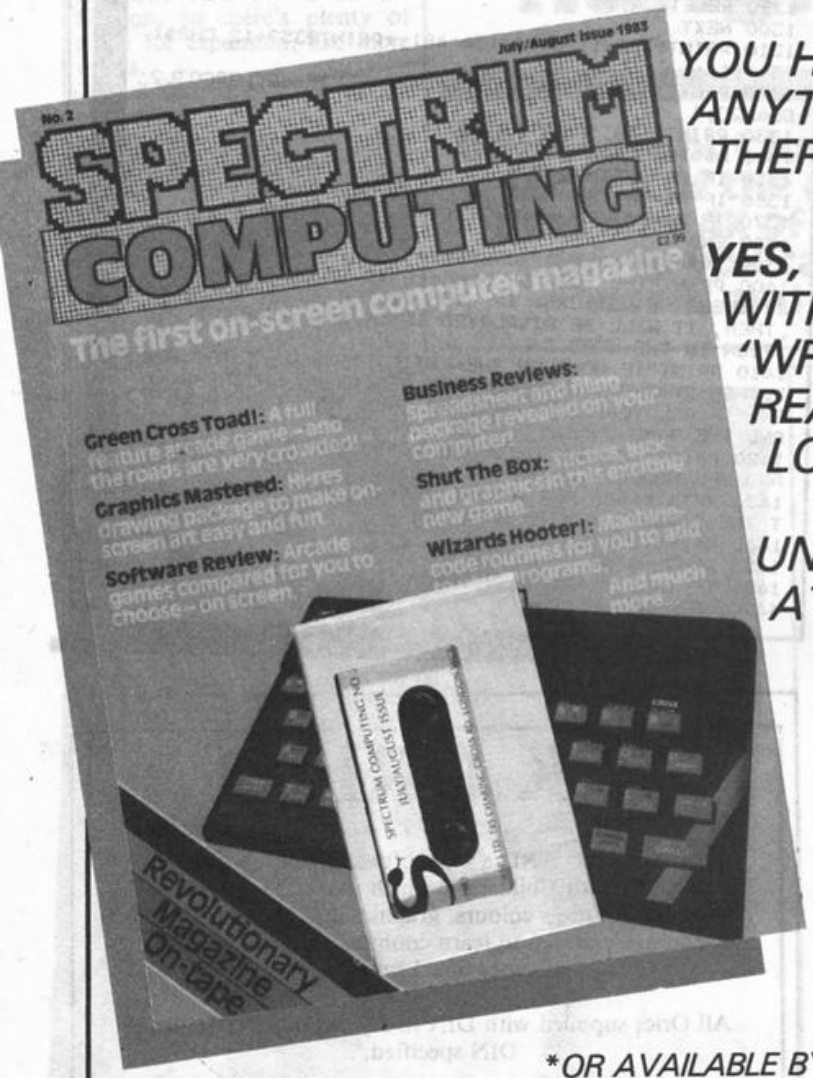

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Try these terrific tips

Peruse these pages and pick up a pointer or two. Got a tip of your own? Send it in and give the world the benefit of your wisdom

Dragon into Tandy Colour won't go

A lot of people seem to think that Tandy Colour software is compatible with Dragon-32 software. But is it really?

Tandy programs will load into the Dragon, but they won't run. For a BASIC program to run on both computers, it must first have been put on to the tape in ASCII code — that's a special way of saving programs, but it's very rarely used.

But the BASIC used by both computers is very similar, so most programs for one can easily be converted for the other.

Here's a tip that will work for both. If you want your computer to work at double speed, add this command after loading a BASIC program:

POKE 65495,0 (ENTER)

then run the program.

P. Barnett

Speaking software

TI-99/4A

Do you know any computer which will read its program to you? The TI-99/4A can do this. You need the Terminal Emulator 2 module and the speech synthesiser. Then, with a program in TI BASIC in the machine, you instruct it: LIST "SPEECH".

Stephen Shaw

Renumber your lines

Oric-1

This routine for the Oric-1 will renumber your program lines starting at 100 in steps of 10. Enter the lines and type RUN 60000 RETURN to renumber the program in memory. GOSUBs and GOTOs must be renumbered separately before the program is run.

A. Turner

```
60000 REM *** RENUMBER LINES ONLY
60010 A=100
60020 B=1281
60030 REPEAT
60040 DOKE(B+2),A
60050 A=A+10
60060 B=DEEK(B)
60070 UNTIL DEEK(B+2)=60000
```

Scrolling letters

Spectrum

In the Spectrum's memory, location 23606 is "256 less than address of character set." Translated into English, this basically means that you can scroll letters in one PRINT position to create a rolling billboard effect with this mini-program:

```
10 FOR A=1 TO 255 : POKE 23606,A: PRINT AT 10,10; (IN CAPITALS) "SPECTRUM" : NEXT A
```

The Spectrum runs through the character set from 255 less than the character we specified to one less (virtually lower case), scrolling each character up about two pixels at a time.

I have no idea how or why it does this but it is certainly an exciting effect to watch. POKE 23606, 0 will restore normality to your Spectrum!

Try my 'Hypnotic program' using the technique:

```
10 DIM A (704)
20 FOR A=1 TO 255: POKE 23606,A: PRINT AT 0,0; OVER 1; A : NEXT A
```

But don't stare at the screen too long! Literally hours of fun await you if you experiment with such novelties as wobbling letters, and tumbling words; all using the technique above.

Tim Boone

Listing 1: The source code shows how the routine works.

```
 10  033C                 *=$1D00
 20  1D00  A200
 30  1D02  BD421D    L1
 40  1D05  9D001E
 50  1D08  BD471D
 60  1D0B  9D161E
 70  1D0E  A902
 80  1D10  9D0096
 90  1D13  9D1696
100  1D16  E8
110  1D17  E005
120  1D19  D0E7
180  1D1B  A205
190  1D1D  B561      L3
195  1D1F  9D061E
200  1D22  B569
205  1D24  9D1C1E
210  1D27  A906
220  1D29  9D0696
225  1D2C  9D1C96
230  1D2F  CA
240  1D30  10EB
270  1D32  4CBFEA
280  1D35  78
290  1D36  A900
300  1D38  8D1403
310  1D3B  A91D
320  1D3D  8D1503
330  1D40  58
340  1D41  60
400  1D42  010303    M1
410  1D47  010303    M2

      LDX  #0
      LDA  M1,X
      STA  $1E00,X
      LDA  M2,X
      STA  $1E16,X
      LDA  #2
      STA  $9600,X
      STA  $9616,X
      INX
      CPX  #5
      BNE  L1
      LDX  #5
      LDA  $61,X
      STA  $1E06,X
      LDA  $69,X
      STA  $1E1C,X
      LDA  #6
      STA  $9606,X
      STA  $961C,X
      DEX
      BPL  L3
      JMP  $EABF
      SEI
      LDA  #0
      STA  $0314
      LDA  #$1D
      STA  $0315
      CLI
      RTS
      BYT  $01,$03,$03,$23,$31
      BYT  $01,$03,$03,$23,$32
```

Floating points

VIC-20

Most domestic micros operate at an 8-bit resolution. In order to manipulate larger numbers, the VIC-20 uses two six-byte floating point accumulators.

This short routine gives a representation of both accumulators at the top of the screen. The routine uses the interrupt vector call and is performed fifty times a second. As a consequence, you can see the accumulators change during a Basic program.

The routine is located at the top of memory in an unexpanded VIC. Just type it in and RUN it. Owners with memory expansion should type in the following before entering the program:

POKE642,16: POKE644,30: POKE648,30: SYS64824

Allen Webb

Listing 2: The BASIC loader. Type this in.

```
0 POKE56,29
1 DATA 162, 0, 189, 66, 29, 157, 0, 30, 189, 71, 29
2 DATA 157, 22, 30, 169, 2, 157, 0, 150, 157, 22
3 DATA 150, 232, 224, 5, 208, 231, 162, 5, 181, 97
4 DATA 157, 6, 30, 181, 105, 157, 28, 30, 169, 6
5 DATA 157, 6, 150, 157, 28, 150, 202, 16, 235, 76
6 DATA 191, 234, 120, 169, 0, 141, 20, 3, 169, 29
7 DATA 141, 21, 3, 88, 96, 1, 3, 3, 35, 49
8 DATA 1, 3, 3, 35, 50
9 FORI=7424TO7499
10 READX:POKEI,X:NEXT
11 SYS7477
12 REM
13 REM DISPLAY OF FLOATING POINT ACCUMULATORS
14 REM ALLEN WEBB 1983
15 REM
```

Cure the 'faults' in your Spectrum's character

Expand your graphics power with this character designer for the Spectrum, written by Michael Plows after he got annoyed

Two of the things that annoyed me most about the Spectrum were that the SCREEN$ function did not work on user-defined characters and that on some occasions I needed more than 21 graphics for a program.

The answer to both these problems is to redefine the existing character set.

As this is held in ROM the first ting to do is to copy the set into RAM where it can be worked on.

Secondly, you must alter the pointer held in the system variables at locations 23606 and 23607 which points to the start of the character set.

At this point I had better mention that only 96 characters can be redefined, i.e. from CHR$ 32 to CHR$ 127.

However, using this method you can have as many sets as you like, limited only by available RAM, and switch between them by POKEing 23607 with the appropriate value.

The program first transfers the character set to RAM and defines the first two of the normal 21 user defined graphics as arrows.

How it works

60-80 transfer character set to RAM
90-120 define graphics A as down arrow and graphics B as right arrow
150-230 draw 8 x 8 grid
280 checks CHR input to see if it is in range
290 sets pointer (A) to correct place in RAM
320-400 claculate and print decimal values and POKE them into RAM at correct place indicated by A
420 check input
450-520 print out character set
560-700 sub-routine moves indicators and inks in squares. Character in line 680 is graphics shifted 8
710 instructions

It then draws an eight by eight grid in the centre of the screen to design your character on. It prints the instructions on screen and the indicators pointing to the top left hand square of the grid.

It now asks which character you wish to redefine and this must be entered.

You now use the cursor keys 5-8 to move the indicators to point to the square you require inking in and press 0 to ink in that square. When the character is finished you press Q.

The decimal values of each line of the character are now printed at the right hand edge of the grid and the character appears normal size to the right of the grid. The values calculated are POKEd into the appropriate place in RAM and there is your character.

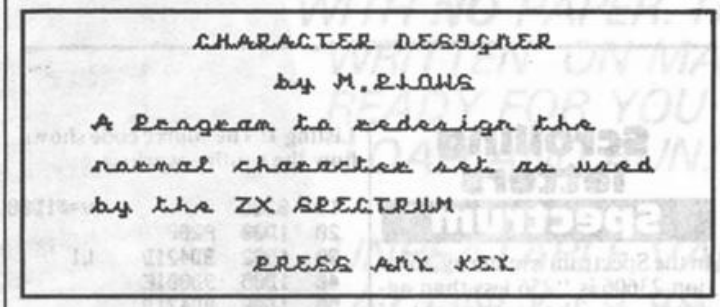
You are now asked to enter either 1 or 2.

Entering 1 draws a fresh grid for you to start on a new character.

Entering 2 prints the existing character set from ROM and your redesigned set below it.

If you wish to inspect your character set at any time then enter 2. To restart the program without destroying the characters already entered type GOTO 150.

When you have completed your character set SAVE it as directed. To use the set simply LOAD " " CODE and POKE 23607,123. You will now find that SCREEN$ works on this set and will be very useful in all applications.



A sample of the new characters you can define

```
  10 BORDER 1: PAPER 1: INK 6: B
RIGHT 1: CLS : CLEAR 31743
  20 PRINT AT 7,7;"CHARACTER DES
IGNER";AT 9,11;"by M.PLOWS"
  30 PRINT AT 11,2;"A Program to
 redesign the"
  40 PRINT AT 13,2;"normal chara
cter set as used"
  50 PRINT AT 15,2;"by the ZX SP
ECTRUM"
  60 FOR N=0 TO 767
  70 POKE 31744+N,PEEK (15616+N)
  80 NEXT N
  90 FOR N=USR "a" TO USR "a"+15
 100 READ A: POKE N,A: NEXT N
 110 DATA 16,16,16,16,124,56,16,
0
 120 DATA 0,0,8,12,254,12,8,0
 130 PRINT AT 18,10;"PRESS ANY K
EY": BEEP .5,20
 140 PAUSE 0
 150 CLS : INK 0
 160 GO SUB 710
 170 FOR N=8 TO 15: PRINT PAPER
 7;AT N,12;"          ": NEXT N
 180 FOR N=48 TO 104 STEP 8
 190 PLOT 96,N: DRAW 63,0
 200 NEXT N: PLOT 96,111: DRAW 6
3,0
 210 FOR N=96 TO 152 STEP 8
 220 PLOT N,48: DRAW 0,63: NEXT
N
 230 PLOT 159,48: DRAW 0,63
 240 PAPER 1: INK 6
 250 LET XO=12: LET YO=8
 260 PRINT AT 7,XO;"↓";AT YO,11;
"→"
 270 PRINT AT 19,3;"CHARACTER TO
 BE REDESIGNED?"
 280 INPUT A$: IF CODE A$<32 OR
CODE A$>127 THEN PRINT #1;"CHARA
CTER OUT OF RANGE": BEEP .1,0: P
AUSE 50: GO TO 260
 290 LET A=31744+8*(CODE A$-32)
 300 PRINT AT 19,3;"
 310 GO SUB 560
 320 LET B=8
 330 FOR Y=107 TO 51 STEP -8
 340 LET N=1: LET T=0:
 350 FOR X=155 TO 99 STEP -8
 360 IF POINT (X,Y) THEN LET T=T
+N
 370 LET N=N*2: NEXT X
 380 POKE A,T: LET A=A+1
 390 PRINT AT 8,21;T: LET B=B+1
 400 NEXT Y: POKE 23607,123: PRI
NT AT 11,25;CHR$ CODE A$: POKE 2
3607,60
 410 PRINT AT 19,0;"ENTER 1 TO R
EDEFINE,2 TO DISPLAY CHARACTER S
ET"
```

```
 420 INPUT Z: IF Z>2 THEN GO TO
 420
 430 PAPER 1: INK 6: CLS
 440 IF Z=1 THEN GO TO 150
 450 PRINT AT 0,5;"YOUR CHARACTE
R SET"
 460 FOR X=0 TO 2: FOR Y=0 TO 31
 470 PRINT AT (X*4)+2,Y;CHR$ (32
+Y+32*X)
 480 NEXT Y: NEXT X
 490 POKE 23607,123
 500 FOR X=4 TO 12 STEP 4: FOR Y
=0 TO 31
 510 PRINT INK 7;AT X,Y;CHR$ (32
+Y+32*INT (X/8))
 520 NEXT Y: NEXT X
 530 POKE 23607,60
 540 PRINT AT 15,4;"SAVE""NAME""
CODE 31744,768"
 550 STOP
```

```
 560 PAPER 6: INK 8
 570 POKE 23658,8
 580 LET XN=XO: LET YN=YO
 590 IF INKEY$<>"" THEN GO TO 59
0
 600 IF INKEY$="" THEN GO TO 600
 610 IF INKEY$="5" AND XO>12 THE
N LET XN=XO-1
 620 IF INKEY$="8" AND XO<19 THE
N LET XN=XO+1
 630 IF INKEY$="6" AND YO<15 THE
N LET YN=YO+1
 640 IF INKEY$="7" AND YO>8 THEN
 LET YN=YO-1
 650 PRINT AT 7,XO;" ";AT YO,11;
"→"
 660 PRINT AT 7,XN;"↓";AT YN,11;
"→"
 670 LET XO=XN: LET YO=YN
 680 IF INKEY$="0" THEN PRINT AT
 YO,XO;"■": BEEP .05,30
 690 IF INKEY$="0" THEN BEEP .05
,20: RETURN
 700 GO TO 590
 710 PRINT INK 6;"Use the cursor
 keys to move the arrows. Press
 0  to ink  in  a square. Press
 0  when you have completed the
character.": RETURN
```

Adventure at the press of a key

Looking for an adventure game? You don't have to venture into the unknown

Alien Oddessy Parts 1 & 2 Dragon-32 £9.95

Bamby Software, Leverburgh, Isle of Harris, PA83 3TX.

Two adventure programs on one cassette. The object is to escape from a castle maze and after many hazards arrive at a harbour. On arrival you have to load the second program to continue your escape, via further hazards, and finally leave the alien planet in a ship.

Any objects, money, etc found in the first game may be input at the start of the second.

Unfortunately, throughout both games there is no way of avoiding random hazards which may end the game suddenly. If this happens you have to restart from the very beginning, instructions and all — a very frustrating experience.

Most of the game is text only with brief excursions into hi-res graphic maps and mazes. If finally successful, you are asked to load Part 3 of Alien Oddessy (their spelling). Parts 3 and 4 are said to be coming soon, free to purchasers of the first two parts.

There are quite a few good adventures now available for the Dragon, and I wouldn't pay more than £4.50 for this one.

E.C.

instructions	70%
playability	30%
graphics	50%
value for money	40%

★ ★ ★

Cells and Serpents 48K Spectrum £6.50

ASP Software, 145 Charing Cross Road, London WC2H 0EE.

This is an a good example of the 'random adventure' type of game, which provides a different scenario every time it is played.

In a given location you can choose one of three directions, which may take you along a passage, into a room, up to a door, down stairs, up stairs, or into a wall. You pick whichever of these you fancy. In the case of a door, you can open it, or listen first in the hope of hearing something that will warn you of what you may find inside.

Now and then, a monster appears, and there is a positive plethora of different kinds, each with its own special characteristics. There is treasure to be picked up, but you are unlikely to be able to take it away with you, as a monster will probably get you first.

With such a game, a nice balance between complexity and pace is desirable. For my taste the delays are just a trifle long, and the combat oversimplified.

Despite these comments, the game has neat coloured displays of the available options and occasional simple sound effects to warn you if you press the wrong key.

D.T.

instructions	50%
playability	80%
graphics	n/a
value for money	80%

★ ★ ★ ★

Grail Quest TI-99/4A (Extended Basic) £6

Stainless Software, 10 Alstone Road, Stockport, Cheshire.

A different labyrinth of rooms at each of the 18 levels of Grail Castle requires a high degree of sustained concentration for Parsifal the bewitched mushroom, whose quest is to seek the Holy Grail and thereby transformation back to human shape.

If in your fungoid role you can outrun or kill the various monsters, the next step is to find and carry three coloured keys to their correspondingly coloured rooms before moving to the next level.

At each level you are given less time to achieve your task.

But if you fail, you are cast back down to level one (unless you know the password) — a frustration heightened by the slow response of the keyboard/joystick.

J.W.

instructions	60%
playability	60%
graphics	80%
value for money	60%

★ ★ ★ ★

Devil's Triangle Dragon-32 £5

Abacus Software, 21 Union Street, Ramsbottom, Nr Bury, Lancs.

Instructions with spelling mistakes don't promise well for the product inside, and while this graphics-adventure in Basic is at least an attempt at something different, it simply can't compete with much of the excellent Dragon software now around.

Your aim is to sail from Miami to Bermuda, and the first low-res screen shows you off the coast of Florida, needing to input compass directions. The type of boat isn't named, but the fact that it can sail across land shows a certain lack of attention to detail, I think.

At this stage you collect weapons, compasses etc to help you through the second map, near the triangle itself.

This is also low-res, and is just a rectangle across which you maneouvre like a mine-field from west to east, avoiding or hitting the hidden storms, time warps, sea monsters and the triangle itself.

Entering the triangle isn't the end of the matter, as you'll be given the chance to survive by playing one of several games, though all of them poorer than you'll find in any magazine.

This variety might appeal to the under-tens, but for the rest of us it will probably disappear into the Software Triangle, destiny of all unexceptional games.

M.G.

instructions	60%
playability	50%
graphics	30%
value for money	50%

★ ★ ★

Golden Apples of the Sun Dragon-32 £8.45

Bamby Software, Leverburgh, Isle of Harris, PA83 3TX.

Purists may take offence that this game is described as an adventure, as the usual adventure format involves progressing from location to location by solving logical problems, and the places and objects always occupy the same positions.

In this game the random factor is rife, and it is more a question of luck than judgement whether you achieve success.

Seven golden apples need to be recovered from seven locations, with such classic names as Werewolf Forest and Harpie Hill. Each one is described beautifully and then a screen is drawn round which you move your character dot or square.

The game then becomes disappointing. Sometimes you get a chance to avoid death, other times you are told "fell down a pit and died" (or similar) — end of game.

Sometimes moving once produced "you have found the golden apple" and I once found an apple by moving on to quicksand, escaping then moving back to the quicksand position. Logic does not appear to be part of this game and it is far, far too easy to be killed.

R.E

instructions	90%
playability	37%
graphics	51%
value for money	30%

★ ★ ★

It's mind against micro as you try to crack the code

Try to guess the code in David Nowotnik's vesion of Mastermind, for any ZX micro

How it works

10-75 title page
80-190 instructions
200-320 selection of the number of colours and positions
330-345 calculation of the total number of combinations
350-425 initialise and select the colour code
440-515 a reminder of the available colours and their single key abbreviations
520-585 main game — set up the screen
590 start of the loop for 10 guesses
612 reminder of the valid colour letters
615-655 enter a guess, and check of its validity
665-750 calculation of the number of black and white 'pegs'
800-820 quit routine
830-840 correct guess — print a 'well done' message
1000-1040 print the hidden code
1045-1070 'Another game?'

Although the ever-popular Mastermind is a game for two players, the 'codebreaker', who has to guess the code, has a lot more fun that the codemaker, who just devised the code and provides the clues.

Humans find such repetitive tasks boring, but computers thrive on them. So, why not let your home computer take over that boring job of codemaker, and leave the interesting bit to you?

My program listing 1, does just that. It will work on both the ZX81 and ZX Spectrum, but won't of course use the Spectrum's colour and sound facilities.

You can, however, modify listing 1 with the extra lines in listing 2 for a deluxe version with colour and sound.

One way to do this is to enter the lines in listing 2 into your Spectrum, save the lines on tape, then clear with NEW. Now, enter the program in listing 1, and MERGE listing 2 into the program in the computer.

In both variations of Mastermind you can alter the level of difficulty by selecting two factors about the colour code which the computer will produce. You can select the number of colours available to the computer (three to eight), and the number of positions in the code (four to eight) to be filled with these colours.

The level of difficulty is reflected in the total number of possible combinations of the available colours in the selected number of positions. This total is shown on the screen after you have made your selection.

You enter a guess by keying-in the capital letters which correspond to first letter of the available colours. A reminder of these letters appears at the bottom right of the screen.

Your sequence of letters should correspond to your guess of the colour code (left-to-right) which is 'hidden' in the box at the top of the screen. The hidden code will be revealed if you guess the code correctly, or quit, or fail to guess the code after ten tries.

The program checks your guess to ensure that you have entered the correct number of characters, and only permitted characters. Once this is validated, your games is compared with the hidden code. This is done to allow the computer to give you clues as to the accuracy of your guess.

You get one black 'peg' for each colour that you have placed in the correct position in the code. And you get one white 'peg' for every other colour correctly guessed, but which in the wrong position.

The colour version (listing 2) creates four colours which are not available as standard on the Spectrum.

These colours (orange, pink, tan, and violet) are created by mixing PAPER and INK colours (lines 2500-2800) using a user defined graphic character in which pixels are alternatively on and off to create the illusion of a single colour. In lines 2500 to 2800, the letter 'A' in quotes should be entered in graphics mode to obtain this user defined graphic character.

Variables

A$ title name
B$ string of colour code letters
C$ the colour code selected by the computer
D$ an array of all eight colour names
G$ the guess entered by the player
I$, J$, Z$ temporary stores

C number of available colours
P number of colours in the code (positions)
R screen column position to start printing during the game.
M loop counter for the number of guesses.

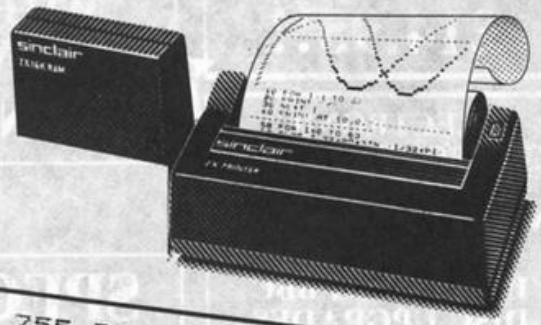
```
  10 REM MASTER MIND
  15 REM BY D.P. NOWOTNIK
  20 REM JUNE, 1983
  25 REM
  30 LET A$="MASTER MIND"
  35 PRINT AT 5,11;A$
  40 FOR I=1 TO 25
  45 NEXT I
  50 PRINT AT 21,0;"DO YOU WANT
INSTRUCTIONS? (Y/N)"
  55 LET Z$=INKEY$
  60 IF NOT (Z$="Y" OR Z$="y" OR
Z$="N" OR Z$="n") THEN GO TO 55
  65 CLS
  70 RANDOMIZE
  75 IF Z$="N" OR I$="n" THEN GO
TO 200
  80 PRINT AT 2,11;A$
  85 PRINT AT 4,1;"IN THIS VERSI
ON OF MASTER MIND,"
  90 PRINT "THE COMPUTER SELECTS
 AT RANDOM"
  95 PRINT "A CODE MADE UP FROM
A NUMBER OF"
 100 PRINT "COLOURS. YOU HAVE TO
 BREAK THE"
 105 PRINT "CODE. YOU ARE ALLOWE
D UP TO 10"
 110 PRINT "GUESSES. WITH EACH G
UESS, THE"
 115 PRINT "COMPUTOR TELLS YOU H
OW CLOSE "
 120 PRINT "YOUR GUESS IS TO THE
 CODE. YOU"
 125 PRINT "WILL BE AWARDED ONE
BLACK PEG"
 130 PRINT "FOR EACH COLOUR IN Y
OUR GUESS"
 140 PRINT "WHICH CORRESPONDS TO
 THE SAME"
 145 PRINT "COLOUR IN THE SAME P
OSITION IN"
 150 PRINT "THE CODE. YOU GET WH
ITE PEGS"
 155 PRINT "IF YOU HAVE CORRECTL
Y GUESSED A"
 160 PRINT "COLOUR WHICH APPEARS
 IN THE CODE"
 165 PRINT "BUT HAVE PLACED IT I
N THE WRONG"
 170 PRINT "POSITION."
 175 FOR I=1 TO 20
 180 NEXT I
 185 PRINT AT 21,3;"PRESS ANY KE
```

```
Y TO CONTINUE""
 190 IF INKEY$="" THEN GO TO 190
 195 CLS
 200 PRINT AT 2,11;A$
 205 PRINT AT 4,1;"YOU CAN VARY
THE DEGREE OF"
 210 PRINT "DIFFICULTY BY CHOOSI
NG THE TOTAL"
 215 PRINT "NUMBER OF AVAILABLE
COLOURS, AND"
 220 PRINT "THE NUMBER OF POSITI
ONS IN THE"
 225 PRINT "CODE."
 230 PRINT
 235 PRINT "SELECT THE NUMBER OF
 COLOURS"
```

```
 240 PRINT "(3-8)"
 245 LET Z$=INKEY$
 250 IF Z$<"3" OR Z$>"8" THEN GO
 TO 245
 255 LET C=VAL Z$
 270 PRINT "   ";C;" COLOURS SELE
CTED"
 275 PRINT
 280 PRINT "SELECT THE NUMBER OF
 POSITIONS"
 285 PRINT "(4-9)"
 295 IF INKEY$=Z$ THEN GO TO 295
 300 LET Z$=INKEY$
 305 IF Z$<"4" OR Z$>"8" THEN GO
 TO 300
 310 LET P=VAL Z$
 320 PRINT "   ";P;" POSITIONS SE
LECTED"
 325 PRINT
 330 PRINT "TOTAL POSSIBLE COMBI
NATIONS OF"
 335 PRINT C;" COLOURS IN ";P;"
POSITIONS IS:-"
 345 PRINT TAB 14;C↑P
 350 LET R=INT (15-P/2)
 355 LET B$="RGBYOPTV"
 360 DIM C$(P)
 365 FOR I=1 TO P
 370 LET C$(I)=B$(INT (RND*C)+1)
 375 NEXT I
 380 DIM D$(8,6)
 385 LET D$(1)="RED    "
 390 LET D$(2)="GREEN  "
 395 LET D$(3)="BLUE   "
 400 LET D$(4)="YELLOW"
 405 LET D$(5)="ORANGE"
 410 LET D$(6)="PINK   "
 415 LET D$(7)="TAN    "
 420 LET D$(8)="VIOLET"
 425 PRINT AT 21,3;"PRESS ANY KE
Y TO CONTINUE"
 427 IF INKEY$=Z$ THEN GO TO 427
 430 IF INKEY$="" THEN GO TO 430
 435 CLS
 440 PRINT AT 2,11;A$
 445 PRINT AT 4,1;"THE AVAILABLE
 COLOURS ARE :-"
 450 PRINT
 455 PRINT "      LETTER
 COLOUR"
 460 IF C<8 THEN PRINT
 465 FOR I=1 TO C
 470 PRINT TAB 6;B$(I);TAB 22;D$
(I)
 475 NEXT I
 480 PRINT
 485 PRINT
 490 PRINT "REMEMBER - ALWAYS EN
TER YOUR "
 495 PRINT "GUESS AS A STRING OF
 THE ABOVE"
```

```
 500 PRINT "LETTERS. IF YOU WANT
 TO GIVE UP,"
 505 PRINT "ENTER 0 FOR QUIT"
 510 PRINT AT 21,0;"PRESS ANY KE
Y TO START THE GAME"
 515 IF INKEY$="" THEN GO TO 515
 520 CLS
 525 PRINT AT 2,11;A$
 530 PRINT
 535 LET E$="■■■■■■■■■■■■■■■■"
 540 LET F$="■■■■■■■■■■■■■■■■"
 542 LET K$="
```

```
 545 PRINT TAB R;E$( TO (P+1))+"
■"
 550 PRINT TAB R;F$( TO (P+1))+"
■"
 555 PRINT TAB R;K$( TO (P+1))+"
■"
 560 LET R=R+1
 565 PRINT
 570 PRINT " GUESS";TAB 23;"PEGS
"
 575 PRINT "NUMBER";TAB 20;"BLAC
K WHITE"
 580 PRINT
 585 LET H$="
                "
 590 FOR M=1 TO 10
 595 FOR T=1 TO 20
 596 NEXT T
 598 IF M>1 THEN GO TO 610
 600 PRINT AT 21,0;"ENTER YOUR F
IRST GUESS
                "
 605 GO TO 612
 610 PRINT AT 21,0;"ENTER YOUR N
EXT GUESS
                "
 612 PRINT AT 21,(31-C);B$( TO C
)
 615 INPUT G$
 620 PRINT AT 21,0;"COMPUTER IS
CHECKING YOUR ENTRY"
 622 IF G$="0" THEN GO TO 800
 625 IF LEN G$<>P THEN GO TO 595
 630 FOR I=1 TO P
 635 FOR J=1 TO C
 640 IF G$(I)=B$(J) THEN GO TO 6
55
 645 NEXT J
 650 GO TO 595
 655 NEXT I
 660 PRINT AT 9+M,2;M;TAB R;G$;
 665 LET I$=G$
 670 LET J$=C$
 675 LET B=0
 680 LET W=0
 685 FOR S=1 TO P
 690 IF I$(S)<>J$(S) THEN GO TO
710
 695 LET B=B+1
 700 LET I$(S)="K"
 705 LET J$(S)="L"
 710 NEXT S
 715 FOR T=1 TO P
 720 FOR S=1 TO P
 725 IF I$(T)<>J$(S) THEN GO TO
745
 730 LET W=W+1
 735 LET I$(T)="K"
 740 LET J$(S)="L"
 745 NEXT S
 750 NEXT T
```




```
 755 PRINT TAB 22;B;"     ";W
 760 PRINT AT 21,0;H$
 765 IF B=P THEN GO TO 835
 770 NEXT M
 780 PRINT AT 21,0;"
OUT OF GUESSES     YOU RAN
 785 FOR I=1 TO 25
 790 NEXT I
 795 GO TO 1000
 800 REM QUIT
 805 FOR I=1 TO 25
 810 NEXT I
 815 PRINT AT 21,0;"
ODE WILL BE REVEALED" QUIT THE C.
```

```
 820 GO TO 785
 830 REM WIN
 835 PRINT AT 21,0;" WELL DONE Y
OU GUESSED THE CODE "
 840 GO TO 785
1000 REM REVEAL THE CODE
1005 PRINT AT 5,R;
1010 FOR I=1 TO P
1015 FOR J=1 TO 10
1020 NEXT J
1025 PRINT C$(I);
1030 NEXT I
1035 FOR M=1 TO 25
1040 NEXT M
1045 PRINT AT 21,0;" DO YOU WANT
 ANOTHER GAME? (Y/N)"
1050 LET Z$=INKEY$
1055 IF Z$="" THEN GO TO 1050
1060 IF NOT (Z$="Y" OR Z$="N") T
HEN GO TO 1050
1065 CLS
1070 IF Z$="Y" THEN RUN
```

```
MASTER MIND

 GUESS                    PEGS
NUMBER                 BLACK WHITE
  1          YOGGB       2     2
  2          OYGRB       2     1

COMPUTER IS CHECKING YOUR ENTRY
```

```
  25 GO SUB 1100
 570 PRINT " GUESS";TAB R;: FOR
I=1 TO P: PRINT I;: NEXT I: PRIN
T TAB 23;"PEGS"
 660 PRINT AT 9+M,2;M;TAB R;: LE
T S$=G$: GO SUB 2000
1005 LET S$=C$: PRINT AT 5,R;
1025 GO SUB 2010
1075 STOP

1100 POKE 23609,255
1110 FOR i=0 TO 6 STEP 2
1120 POKE USR "a"+i,170
1130 POKE USR "a"+i+1,85
1140 NEXT i
1150 INK 0: PAPER 5: BORDER 0: C
LS
1160 RETURN
2000 FOR I=1 TO P: GO SUB 2010:
NEXT I: RETURN
2010 FOR k=1 TO 8
2020 IF S$(I)=B$(k) THEN GO SUB
2000+100*k

2030 NEXT k
2040 RETURN
2100 PRINT PAPER 2;" ";: RETURN
2200 PRINT PAPER 4;" ";: RETURN
2300 PRINT PAPER 1;" ";: RETURN
2400 PRINT PAPER 6;" ";: RETURN
2500 PRINT PAPER 2; INK 6;"▒";:
RETURN

2600 PRINT PAPER 7; INK 2;"▒";:
RETURN
2700 PRINT PAPER 4; INK 2;"▒";:
RETURN
2800 PRINT PAPER 1; INK 2;"▒";:
RETURN
```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Your micro's an education

Or it can be, with the right software to help it. We take a look at five programs designed with education in mind

Sheepdog
BBC B £9.95

Ladybird-Longman Micro Software, 33-35 Tanner Row, York YO1 1JP

This program, produced by major educational publishers, shows how important microcomputers are to be in schools in the near future. The aims of the program are quite wide-learning concepts of space, direction, estimation, number and angle — and it does go some way towards fostering all of them.

The child or children have to steer a number of sheep through a gate by commanding a sheepdog to move towards or away from them, crouching or standing. The sheep don't often move in a straight line, which is true to life at least, and if they hit the fence you must start again.

The game works well and is well error-trapped, so young fingers cannot do too much harm but is its extremely repetitive. The only options are the number of sheep and type of control: either the cursor keys or the points of the compass (cardinal and half-cardinal).

The documentation is excellent and an object lesson to other educational program producers. There are even four workcards for the pupils to use.

D.C.

instructions	95%
playability	50%
graphics	50%
value for money	60%

★ ★ ★

Terrible Tales
BBC B £9.95

Ladybird-Longman Micro Software, 33-35 Tanner Row, York YO1 1JP

The area of creative writing is not an obvious one for the micro computer to be used in, but this package is all the more interesting for that!

The package comprises two programs and an instruction book. The first program is Monster in which you have the chance to read about some monsters of the past and then to design your own and to decide his features. The program then summarises your design of beast for you to copy down and use later (dumping to a printer may have been a better idea).

Giant also follows this formula, but with more detail required of the designer and more meaningful comments on the input, for example, it calculates a reasonable shoe size after you have suggested one.

I'm sure the children will enjoy using this package to design their own creatures and should be able to use their ideas in story writing later. Having said that, you don't need a micro for that; such things have been done, in very much this way for some years now in primary schools.

The documentation is excellent and provides a fund of ideas, but it is a real pity that the program has no graphics at all. **D.C.**

instructions	95%
playability	70%
graphics	n/a
value for money	70%

★ ★ ★ ★

Countries of the World
16/48K Spectrum £5.95

Hewson, 60A, St. Mary's Street, Wallingford, Oxfordshire

After loading, you are shown a map of the world on the screen with the continents and oceans marked on it. Various options are than open to you.

You can scroll the list of countries available either forwards or backwards, and then select the country of your choice.

This is where the two versions differ. The 16K version will just give you the capital of the country, and a very large flashing cursor which pinpoints the selected country.

The 48K version however will give you the country's capital, national currency, area in square kilometres and languages spoken. This is all displayed in a panel alongside the area of the world where your selection is, again with a large flashing pointer.

With 169 countries listed, this is a very compact world atlas, and for the price quoted, the 48K version is good value — though the 16K version isn't.

This is not a game, but one of the more serious educational projects which are gradually pervading the software market. Well written, and well presented. **B.B.**

instructions	80%
ease of use	90%
graphics	100%
value for money	100%

★ ★ ★ ★ ★

Fun to Learn
BBC B £6.95

Shards Software, 10 Park Vale Court, Vine Way, Brentwood, Essex CM14 4UR

Five educational games for the small sum of only £6.95 seems to good to be true, and it is! The educational value of most of the games on this tape is very low, and most of them are old standards in a not particularly new guise. Having said that, they are undoubtedly well error trapped and fun.

In the first game (Count) you have to count the number of letters on the screen as quickly as possible, and you are praised or corrected as required. You are also told if you are getting faster or slower, though I cannot really see why.

Mixer could have been called Anagrams, for such it is.

Calculator gets the prize for the least useful program. It simply takes two numbers, performs the selected operation, and gives you the answer. A one-line Basic program could do that, without the fancy colour and sound though.

Starship is a hangman variant, with good graphics and clues for the slower student, and is probably the best of this bunch of offerings.

Codebreaker is exactly that. A code (letter/letter) is set up, and then words or sentences encoded and decoded as you choose. Not the most educational activity ever devised, but with some value and fun.

D.C.

instructions	50%
playability	70%
graphics	60%
value for money	80%

★ ★ ★

Language Tutor
BBC £5

Rainbow Research, 288 High Street, Ponders End, Enfield EN3 4HF

It's difficult to find anything good to say about this language tutor. The program allows the entry of English words with foreign language equivalents, from the keyboard or cassette, subsequently testing the user.

Two sheets of instructions, aimed at both Atom and BBC users, give only a general description of the program. However, the cassette insert confidently states: "Rainbow software is designed to be....robust in usage." It's a pity this program wasn't.

After considerable effort the program eventually loaded, with an immediate request to enter a language. The main menu was then displayed, but my earlier entry of "Portuguese" made a couple of lines too wide for the screen, resulting in a messy display — sloppy programming!

I then selected option 2 to enter words from the keyboard. In response to "How Many?" I was amazed when my entry of 30,000 was coolly accepted. However, the program crashed out on the 51st entry with a subscript error — sloppy programming again!

The program was littered with other loopholes and deficiencies.

D.H.

instructions	30%
playability	40%
graphics	n/a
value for money	20%

★ ★

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Make a move the easy way

Have fun with graphics, says Allen Webb who wrote these two programs for the Vic-20 plus at least 8K

Most of the software in magazines appears to be either games or utility programs.

Here, as a change, is a program which is designed to simply enable users of all ages to mess about with graphics and have a bit of fun.

The program uses multiple screen storage to give simple animation effects. User defined graphics are not supported since the standard set of characters are sufficient to creat quite complex forms.

Type in each of the two BASIC programs and save them separately. Ensure that you have at least 8K expansion on board. If you have 8K expansion alter line 11 to MS = 16.

Before running the program, you must tweak the memory map. First reset the machine with SYS 64802. Then type in the direct command:
POKE 642,32: POKE 648,30: SYS 64824

Load and run **listing 1** and then load and run **listing 2.**

On running the main listing you should see a clear upper screen with a horizontal line across the screen centre and a menu at the bottom. The top portion is the animation area. The menu options are:

1 CREATE a sequence of screen.

With this option you draw and save a sequence of screens. You will be asked at which screen number you wish to start the sequence. This enables you to extend an existing sequence if you so desire.

An edit cursor will appear in the upper screen. The cursor controls act on this cursor as expected. You can put a character at any point by locating the cursor and pressing the corresponding key (all characters shifted and reversed field are available).

You can scroll the animation area in any direction by using the function keys. This makes life easier if you are creating moving sequences. When the screen is complete, press RETURN to save the screen and move onto the next.

The contents of the previous screen are left on the screen so that you don't have to redraw it. If you don't want it, shift CLR will remove it. Press F8 to return to the main menu.

2 EDIT

This enables you to alter and resave any screen.

3 ANIMATE

This option displays the sequence of screens to give the animation effect. You can repeatedly display the sequence if you want.

As each screen is shown, its number is displayed so that you can pin-point any erroneous screens. The window option enables you to mask out the lower half of the screen.

4 SPEED

This allowed you to change to speed of animation (low number = fast, high number = slow).

The best way to get to know the routine is to experiment and see what happens.

Listing 1 — machine code loader

```
10 REM***********************
20 REM ANIMATION M/C
30 REM A E WEBB 1983
40 REM***********************
50 REM
60 FORI=4096TO4319
70 READX
80 POKEI,X
90 NEXT
100 DATA 76, 82, 16, 76, 163, 16, 76, 187, 16, 24, 170
110 DATA 169, 32, 157, 0, 30, 224, 220, 144, 3, 76
120 DATA 131, 16, 138, 105, 22, 76, 10, 16, 162, 242
130 DATA 189, 255, 29, 157, 0, 30, 202, 208, 247, 169
140 DATA 0, 76, 9, 16, 162, 0, 189, 1, 30, 157
150 DATA 0, 30, 232, 224, 242, 208, 245, 169, 21, 76
160 DATA 9, 16, 162, 220, 189, 255, 29, 157, 21, 30
170 DATA 202, 208, 247, 32, 131, 16, 162, 0, 76, 141
180 DATA 234, 72, 169, 0, 205, 14, 3, 208, 2, 104
190 DATA 96, 104, 72, 106, 144, 5, 72, 32, 45, 16
200 DATA 104, 106, 144, 5, 72, 32, 63, 16, 104, 106
210 DATA 144, 5, 72, 32, 29, 16, 104, 106, 144, 3
220 DATA 32, 142, 16, 104, 206, 14, 3, 76, 82, 16
230 DATA 162, 21, 169, 67, 157, 242, 30, 202, 16, 250
240 DATA 96, 162, 0, 189, 0, 30, 157, 234, 29, 232
250 DATA 224, 242, 208, 245, 32, 131, 16, 162, 10, 76
260 DATA 141, 234, 162, 242, 189, 255, 29, 201, 32, 208
270 DATA 4, 168, 169, 6, 152, 73, 128, 157, 255, 29
280 DATA 202, 208, 237, 76, 131, 16, 162, 242, 169, 32
290 DATA 157, 255, 29, 202, 208, 250, 76, 131, 16, 72
300 DATA 138, 72, 152, 72, 162, 0, 189, 166, 54, 157
310 DATA 0, 30, 232, 224, 242, 208, 245, 104, 168, 104
320 DATA 170, 104, 96
```

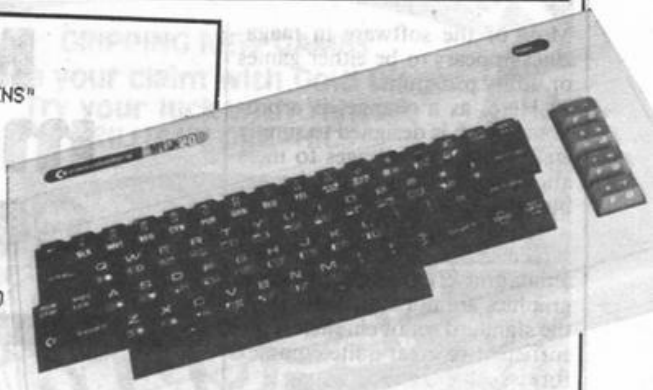
Listing 2 — main routine. This is the 16K version; see text for changes if you have 8K expansion

```
1 REM***************
2 REM ANIMATION
3 REM A E WEBB 1983
4 REM***************
5 REM
6 POKE51,0:POKE52,48:POKE55,0:POKE56,48:CLR
7 DEFFNA(X)=7680+Y*22+X
8 POKE650,128
9 PRINT"J":SYS4227
10 FORI=0TO263:POKE38400+I,6:NEXT
11 MS=50
12 LI=12:GOSUB138:PRINT"MAX NO OF SCREENS";MS
13 LI=14:GOSUB138:PRINT"        ■A■NIMATE"
14 PRINT"M        ■C■REATE"
15 PRINT"M        ■E■DIT"
16 PRINT"M        ■S■PEED"
17 GETI$:IFI$=""THEN17
18 FORI=13TO22:POKE781,I:SYS60045:NEXT
19 IFI$="C"THEN24
20 IFI$="E"THEN90
21 IFI$="S"THEN108
22 IFI$="A"THEN111
23 GOTO13
24 LI=14:GOSUB138:PRINT"    ■CREATE SCREENS"
25 INPUT"MNO. NEXT FRAME";CO
26 LI=16:GOSUB139
27 LI=14:GOSUB139
28 LI=14:GOSUB138:PRINT"■CREATE■ SCREEN";CO
29 PRINT"M■F1■ - LEFT"
30 PRINT"■F2■ - REVERSE WINDOW"
31 PRINT"■F3■ - RIGHT"
32 PRINT"■F5■ - UP"
33 PRINT"■F7■ - DOWN"
34 PRINT"■F8■ - EXIT"
35 X=0:Y=0
36 GOSUB44
37 IFFL=1THENFL=0:I$="":GOTO18
38 SA=12289+(CO-1)*242+CO-1
39 B1=INT(SA/256)
40 B2=SA-B1*256
41 POKE4304,0:POKE4305,30:POKE4307,B2:POKE4308,B1:SYS4296
42 CO=CO+1:IFCO<MSTHEN28
43 CO=CO-1:I$="":GOTO18
44 P1=PEEK(653):P2=PEEK(197)
45 IFP1=4THEN81
46 GETI$
47 IFI$=""THEN70
48 A=ASC(I$)
```

VIC-20 PROGRAMMING

```
49 IFP1=4THEN81
50 IFA=137THENSYS4099:GOTO44
51 IFA=133THEN88
52 IFA=134THEN86
53 IFA=140THENFL=1:CN=CO:RETURN
54 IFA=135THEN132
55 IFA=136THEN135
56 IFA=13THENRETURN
57 IFA=147THENSYS4102:GOTO44
58 IFA=145ANDY>0THENY=Y-1:GOTO70
59 IFA=17ANDY<10THENY=Y+1:GOTO70
60 IFA=157ANDX>0THENX=X-1:GOTO70
61 IFA=29ANDX<21THENX=X+1:GOTO70
62 IFA=19THENX=0:Y=0:GOTO70
63 IFA=1450RA=170RA=1570RA=29THEN44
64 IFA<>20THEN66
65 CH=32:GOTO70
66 IFA>63ANDA<96THENCH=A-64:GOTO70
67 IFA<64ANDA>31THENCH=A:GOTO70
68 IFA>191ANDA<224THENCH=A-128:GOTO70
69 CH=A-64
70 PO=FNA(X)
71 IFRV=1ANDCH<>0ANDA<>20THENCH=CH+128
72 IFCH<>0THENPOKEPO,CH
73 DD=PEEK(PO):POKEPO,102
74 FORL=1TO100:NEXT
75 POKEPO,DD
76 FORL=1TO100:NEXT
77 IFCH=0THEN44
78 IFCH=32ANDX>0ANDA<>32THENX=X-1:GOTO80
79 IFX<21THENX=X+1
80 CH=0:GOTO44
81 IFP2=53THENFL=1:RETURN
82 IFP2=53THENFL=1:RETURN
83 IFP2=4THENRV=1:POKE198,0:GOTO44
84 IFP2=60THENRV=0:POKE198,0:GOTO44
85 GOTO44
86 POKE780,4:POKE782,1:SYS4096
```

```
87 POKE198,0:GOTO44
88 POKE780,1:POKE782,1:SYS4096
89 POKE198,0:GOTO44
90 LI=14:GOSUB138:PRINT"      ■EDIT SCREENS"
91 INPUT"■SCREEN NUMBER";NO
92 SA=12289+(NO-1)*242+NO-1
93 B1=INT(SA/256)
94 B2=SA-B1*256
95 POKE4304,B2:POKE4305,B1:POKE4307,
   0:POKE4308,30:SYS4296
96 LI=16:GOSUB139
97 LI=14:GOSUB139
98 LI=14:GOSUB138:PRINT"■EDIT■ SCREEN";NO
99 PRINT"■■F1■ - LEFT"
100 PRINT"■F2■ - REVERSE WINDOW"
101 PRINT"■F3■ - RIGHT"
102 PRINT"■F5■ - UP"
103 PRINT"■F7■ - DOWN"
104 PRINT"■F8■ - EXIT"
```



```
105 X=0:Y=0:GOSUB44
106 POKE4304,0:POKE4305,30:POKE4307,B2:POKE4308,B1:SYS4296
107 I$="":GOTO18
108 LI=14:GOSUB138:PRINT"          ■SET SPEED"
109 INPUT"■■SPEED";DE
110 I$="":GOTO18
111 LI=14:GOSUB138:INPUT"REPEAT";A$
112 RF=0:IFLEFT$(A$,1)="Y"THENRF=1
113 LI=14:GOSUB139
114 LI=14:GOSUB138:INPUT"JUST WINDOW";A$
115 WF=0:IFLEFT$(A$,1)="Y"THENWF=1
116 LI=14:GOSUB139
117 IFWF=1THENPOKE36867,22
118 PRINT"■PRESS @ TO BREAK"
119 FORZ=1TOCO-1
120 LI=13:GOSUB138:PRINTZ
121 SA=12289+(Z-1)*242+Z-1
122 B1=INT(SA/256)
123 B2=SA-B1*256
124 POKE4304,B2:POKE4305,B1:POKE4307,0:POKE4308,30:SYS4296
```

```
125 FORXX=1TODE:NEXT
126 NEXT
127 IFRF=0THEN130
128 GETI$:IFI$="@"THEN130
129 GOTO119
130 POKE36867,46
131 I$="":GOTO18
132 POKE780,8:POKE782,1:SYS4096
133 FORI=0TO21:POKE38620+I,6:NEXT
134 POKE198,0:GOTO44
135 POKE780,2:POKE782,1:SYS4096
136 FORI=0TO21:POKE38400+I,6:NEXT
137 POKE198,0:GOTO44
138 POKE781,LI:POKE782,0:POKE783,
    0:SYS65520:RETURN
139 POKE781,LI:SYS60045:RETURN
```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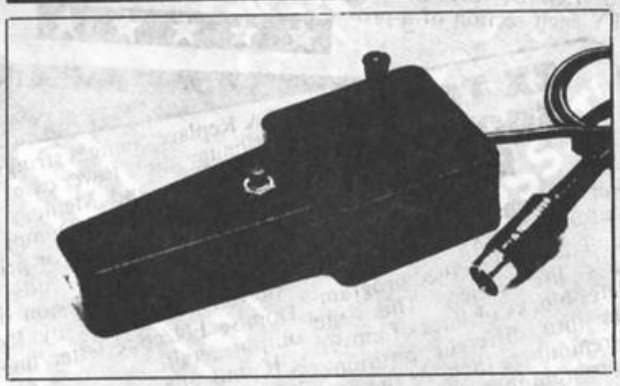

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Programs for programmers

Here's a selection of programs for you to use in your own programming, assessed for you by our panel of reviewers

Doodlebug Atari 400/800 16K plus joystick £6.50

Soflow, 162 Leicester Road, Narborough, Leics

This program could bring out the artist in you. Using a joystick instead of a brush (can you imagine Rubens with a joystick? Such is progress...) you can choose from a palette of 16 colours to paint or just doodle on the silver screen.

Don't expect too much else; Doodlebug is for recreation only, it is not a utility.

Depending on the shape of cursor chosen you can either draw from point to point, or draw from last line to cursor position. Cursor shape can be altered at any time. Your masterpiece can be saved and reloaded during and after composition.

The instructions supplied are minimal although sufficient. Written in BASIC, Doodlebug does what it sets out to do, but in a bread and butter way. If that is for you, then fine.

T.A.

instructions	40%
ease of use	70%
display	70%
value for money	90%

★ ★ ★

Cloneit & Renumber 16K Spectrum £5.99

ASP Software, 145 Charing Cross Road, London WC2 0EE

These two powerful machine code utility programs come in a lavish package with clear and detailed instructions.

Cloneit is a tape back-up system. It allows you to make copies of BASIC programs, arrays and machine code stored as bytes. This is particularly useful for those unBREAKable programs and is much easier than tape-to-tape recording.

The Cloneit commands allow you to LOAD, SAVE, and VERIFY each section of a program and display its length.

Renumber is a fast line renumbering utility. It is stored above RAMTOP so you can LOAD Renumber before or after your BASIC programs.

You can specify the first line number and a step value between 1 and 255 (the default value is 10) for your renumbered program.

C.C.

instructions	90%
ease of use	80%
display	80%
value for money	80%

★ ★ ★ ★ ★

Superdraw 16 16K Spectrum £5.00

Video Software, Stone Lane, Kinver, Stourbridge, W.Mids DY7 6EQ

Superdraw 16 lets you make pictures, combining text, graphics and hi-res drawing; save or load back for re-work or load in sequence.

An eight direction cursor selects print position or controls the drawing line, single key commands call colour, circles and fill, and colour can be changed after printing.

There's a large size, redesignable character set and well-written instructions, audio guide and pad of planning charts are included. So, unfortunately, are a lot of bugs!

"Alter Colour" comes on, but not off. Cursors disappear and intrude in other modes. The Pixel cursor is just visible (on a 23-inch TV screen). The current command is printed on screen (and on your picture). Text becomes corrupted by lines and colour change.

Ingenious users can probably surmount these faults, but why should they have to?

D.C.

playability	95%
graphics	50%
value for money	50%
	60%

★ ★ ★

ZX Toolkit Spectrum £9.95

Star Dreams, 17 Barn Close, Seaford, Sussex

Toolkits make the programmer's life easier. This one deletes blocks or lines of moves them into different positions and renumbers them or the entire program into any line spacing you desire.

It automatically changes any GOSUBs or GOTOs affected by the renumbering, excepting GOTO expressions, which it leaves flashing, for your adjustment.

The ability to merge lines or delete REM statements saves valuable program space. Search & Replace changes strings, Case Change alters lower case to caps or reverse and Memory Map, Rex and Variables Dumps print full details to screen or printer.

A trace facility aids bug detection — 48K version only. All functions called by RANDomise FN/code letter/line or output detail.

If only the trace slowed the program even more, the loading title used colours I could read when listing, and the well-written instructions were on something more durable.

D.C.

instructions	90%
ease of use	95%
display	n/a
value for money	95%

★ ★ ★ ★ ★

Grafvic VIC-20 £8

Mossoft, 10 Garden St, Norwich, Norfolk

This is a character designing package for the unexpanded VIC. As such it is the best commercial package I've seen.

On running the program asks you which block of 64 characters you wish to change, out of the eight blocks in ROM.

You have seventeen commands available offering a wide range of ways of manipulating the characters, including operation in multicolour mode. You can save the character set on tape and load it at a later date.

A nice touch is that most commands use machine code and are almost instantaneous.

There appear to be one or two bugs involving multicolour mode. If you change the screen colour or the character colour, the multicolour characters revert to high resolution.

Secondly, the display command used for designing shapes does not directly display multicolour characters. You must reset them to multicolour before the display is right.

A.W.

instructions	80%
ease of use	80%
display	n/a
value for money	80%

★ ★ ★ ★

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Push your Atari's screen to its limits

Mark Freebury explains how the Atari's Display List Interrupt can be used to do some surprising things

The Display List Interrupt is one of the many screen facilities which gives the Atari the edge over the competition. With a DLI, you can make one colour register do the work of twenty, make one player into four, or (in theory) produce an unlimited number of colours on-screen at one time.

However, a DLI has its limits in terms of what it can and cannot do, and how long it can take to do it — the amount of CPU time it can safely take. Push it too far, and the result it likely to be a mess of unco-ordinated colour on your screen.

Anyway, enough of the commercial. How do we put one together and what do we do with it? Well, first we go back to our map of the use of the different bits in a DLI operation code — the '02' bytes in a mode 0 display list.

The DLI is flagged by setting the most significant bit, bit 7 in the instruction — 128 in decimal or 80 in hex. Any ordinary mode opcode — those without the LMS bit set can have the DLI bit set. Do not set the DLI bit on the LMS opcodes and operands, as firstly it would be pointless, as these are not mode display lines, and secondly, it won't work.

Setting the bits in BASIC mode 0 can be done like this:

```
10 DL=PEEK(560)+
   PEEK(561)*256+6
20 FOR I=0 TO 22:POKE DL
   +1,130:NEXT I
```

The 130 value is BASIC mode 0 = Operating System mode 2 plus 128.

This will have absolutely no effect o n its own, since we do not have a DLI routine, nor have we enabled it. So, first the routine:

```
PHA
LDA COUNT
CLC
ADC 02
STA COUNT
STA WASYNC
STA BACK
PLA
RTI
```

Now that probably looks like a lot of nonsense. So, in plain language this is what happens. First we save the accumulator, since the interrupt handler does not do this for us. Next, we find the current value of the colour count — the start-up value does not matter, we just use whatever happens to be in the location at the time.

We add 2 to its (Atari colours do not use the right hand bit, as they are always even). We save the count, then STA WASYNC. This merely assures that we store the colour at the end of a line.

Next we store the colour at the background register — the true one, not the operating system one at 712. Finally, we regain our old accumulator value and return from the interrupt RTI. Simple. The BASIC equivalent is as follows:

```
30 RESTORE
40 DATA 72,173,37,6,24,105,2,
   141,37,6
50 DATA 141,10,212,141,24,
   208,104,64
60 FOR I=0 TO 17:READ A:
   POKE 1555+I,A:NEXT I
```

Now we can set the whole process in motion. First, we inform the computer of the location of the DLI, by poking the low and high bytes respectively into locations 512 and 513 decimal (200,201 Hex.).

Lastly, we tell the computer we want the DLI running by setting the DLI enable bit on the Non Maskable Interrupt ENable register, NMIEN, at 54286 decimal.

This is bit 7, and must be masked onto the existing contents (ie. they must not change except for our bit). The existing contents are 64. We add 128 giving 192 decimal, C0 hex.

```
70 POKE 512,19:POKE 513,6
80 POKE 54286,192
```

Running all this gives you a working DLI. Unfortunately it also gives us a headache. The work is being done at such a speed that all we see is a blur of colours.

The stabilising of this is a problem, since DLIs have to be fast and small, so putting in branches and checks is not feasible.

The answer is apparent if you consider the problem: we want to reset a colour counter to a base value at the end of every screen refresh. Aha. This sounds like a job for VBI. A simple deferred VBI such as this:

```
LDA $00
STA BACK
JMP $E45F
```

This will be implemented as set out in a previous article. The BASIC to add or change is as follows:

```
 80 DATA
169,0,141,37,6,76,98,
   228
 90 DATA 104,162,6,160,0,169,
   7,32,92,228,96
100 FOR I=0 TO 18:READ
   A:POKE 1536+I,A:NEXT I
110 X=USR(1544)
120 POKE 54286,192
```

Now run it. You now have 23 colours on a text screen. This is more colours than any micro can have on screen at one time, and more than most have to choose from. The 0 in line 80 controls the starting value, the 2 in line 40 controls the step.

In higher resolutions the effect is even more devastating. The Atari manuals state that all you can have in GRAPHICS mode 8 is a border colour, a background colour and a PLOT colour of varying luminances on the background colour. Wrong. Make these alterations to the program you now have:

```
  5 GRAPHICS 8
 20 IF PEEK(DL)=65 THEN 30
 22 IF PEEK(DL)=15 THEN
    POKE DL,143:REM MODE
    15+128
 24 DL=DL+1:GOTO 20
155 COLOR 1: SETCOLOR
    1,0,0
160 FOR I=1 TO 40:PLOT
    RND(1)*320,RND(1)*170:
    DRAWTO 160,96
170 NEXT I
```

Run this. Now type in the following line in immediate mode:

```
FOR I=0 TO 255 STEP
.5:POKE 1537,I:NEXT I
```

By running the colours through the Base Register we have created, we achieve an impressive animation effect. By the way, you are now looking at all 128 Atari colours on screen at once. Beat that.

Experimentation is the best method of discovering uses of the DLI. As an example, consider this: I wanted to create a periscope-style view of the sea-blue sky, then light blue water darkening downwards towards the bottom of the screen.

Using mode 0, and a simple DLI, we can do it all with the background register. First, the DLI:

```
PHA
DEC COUNT
LDA COUNT
STA WASYNC
STA BACK
PLA
RTI
```

This will force the background to darken. However, it is not needed on the first few lines of the screen, so our DLI will only affect lines after a certain point. The BASIC is as follows:

Delete lines 5,155,160,170

```
 10 DL=PEEK(560)+PEEK
    (561)*256+13
 22 IF PEEK(DL)=2 THEN
    POKE DL,130
 40 DATA
72,206,37,6,173,37,6,
   141,10,212
 50 DATA 141,24,208,104,64
 60 FOR I=0 TO 14:READ
    A:POKE 1555+I,A:NEXT I
130 SETCOLOR 1,0,0:
    SETCOLOR
    2,5,10:?CHR$(125)
140 POSITION 11,7:?"NYU":
    POSITION 10,8:?"J(3
    spaces)H"
150 REM LINE 140,ALL
    LETTERS TYPED WITH
    CONTROL KEY PRESSED
160 REM SECOND PRINT,
    ALL CHARACTERS IN-
    VERSE
```

Lastly, change the 0 in line 80 to a 159. The VBI will remain unchanged.

Some final notes. First, beware of using GRAPHICS commands. These reconstitute the display list without the DLI bits set. Also, the only way to turn the VBI off is by hitting system reset or by turning off — don't worry, it won't do any harm if you leave it in place.

That's all there is to it. Next time you see an advert for a 16 colour micro, you can relax. There is still no competition for the Atari — yet. ■

Games compendiums more for your money?

We take a look at some of the new games collections — are they really such good value?

Super Cassette A & Super Cassette B Dragon-32 £5.95 each

Melbourne House, Glebe Cottage, Glebe House, Station Road, Cheddington, Beds

You've read the book, now buy the cassette! Melbourne House's Enter the Dragon paperback was a winner from the start.

The cassettes mean that you don't have to go through the book laboriously typing in each bit. In many cases I've still gone back to the book as an insight into a game's construction.

I can only mention a few of the games and give you a flavour of the contents. On cassette A, 3-D Treasure Hunt is beautifully conceived.

As with all the games, the graphics were very good but the games themselves needed some extra work. That's where you come in.

Chopper was similarly very good on graphics but poor on interest. Flight Simulator required a joystick and provided a challenging hop round the airfield followed by a landing viewed from the cockpit.

On cassette B there were 14 items, including the fascinating Talking Dragon.

With so many good games (fifteen on cassette A) these tapes have to be a good buy and I recommend both of them.

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

★ ★ ★ ★ ★

Blaster, Smuggler's Cave, Hangman Dragon 32 plus joystick £6.45

Alton, 21 Crossbanks, Shipley, W. Yorks BD18 3RW

A curious mixture of different types of games: the space zapper, the adventurer, the educationalist are all aimed at.

Blaster puts you in charge of the space stations. A cross hair is moved around by your joystick and you destroy the hostile attackers. Written in BASIC, it's a little jerky, but a well-constructed game. Good fun for a while, but lacking in variety.

Smugglers Cave is an introduction to adventures which even duffers like me can get the hang of. Not too many locations and therefore quite quickly solved. A good illustration of the basic technique.

Hangman is always good fun. Maybe if you have other versions in other compilations the novelty will have worn off, but at least it's another word bank. I certainly feel happier letting the children spend time on this.

Compared with other compilations, this one seems to me overpriced for games which aren't particularly novel. **M.P.**

instructions	80%
playability	90%
graphics	60%
value for money	40%

★ ★ ★

Rescuer, Rings of Saturn, Space Trial Dragon-32 £6.45

Alton, 21 Crossbanks, Shipley, W Yorks BD18 3RW

Three programs written in BASIC, each requiring one joystick. The object of Rescuer is to climb up and down ladders, rescue Dr Livingstone at the bottom and get back to the top without being killed. This a very slow-moving game and I found it boring.

In Rings of Saturn you move your spacecraft to left and right to avoid the dust particles coming your way. After a crash your time is displayed, and there is a top score facility. I didn't like this very much either — no skill is needed and there's very little action.

The first two games loaded with no problems but the third, Space Trial, would not oblige. After many attempts I finally succeeded, and found that this game has a bit more go in it.

There are three stages to this game. You need 1000 points in each stage to progress to the next and you start with four lives. Firstly you blow up alien mines, secondly you travel through a tunnel shooting aliens, and finally stage you are back to shooting aliens, but this time they can shoot back. **J.M.**

instructions	30%
playability	20%
graphics	30%
value for money	25%

★ ★

Super Nine ZX81 £9.99

Romik, 24 Church Street, Slough SL1 1PT

Asteroids, Defender, Scramble, all familiar names to us slot machine freaks... Trying to program them into 1K is like teaching a lizard to play billiards.

Good old Romik has a bash, and a good job it makes of it too. I wouldn't go so far as to say that these games are actually fun, but at least they work, and should give ZX81 owners some idea of why memory expansion is de rigeur in all the best circles.

Six of the nine programs are of the "shoot when you see the yellow of their eyes" type, aliens zapped and capowed in various unspeakable ways. Squash is a slow and flickering tennis type simulation, Sketch is a simple drawing program which can produce copy on the ZX Printer, and Four Thought displays a grid into which two players are supposed to place counters alternately, with the aim of getting four in a row. **T.D.**

instructions	90%
playability	50%
graphics	30%
value for money	20%

★ ★

Best for software — every week

The IJK of software

Home computing's other Mr Sinclair told Dave Carlos about a software experiment that worked

Ian Sinclair's present position as managing director of IJK Software is a far cry from his university studies of metal chemistry. In fact the only common thread between the two is his interest in computers and their use.

IJK was the first company to offer software for the then very new and scarce BBC computer. "We even beat Acornsoft by a few weeks," he claims. But this venture was in the nature of "an experiment to see what the interest was" and it certainly worked.

According to Ian: "During the first month we sold 500 cassettes and we have never sold less than this to the present day. Currently, due partly to the interest of the big retail chains, we are selling thousands of cassettes per month and exporting to 23 countries."

John Sinclair, IJK's senior programmer

Ian Sinclair and artist Trevor Allison discuss the finer points of a cassette insert

The only aspect of the experiment which was not a resounding success was IJK's original name. "We tried the name Sinclair Software, but despite explicit advertising we could not stop the flow of requests for ZX programs. After three phone calls in one day requesting ZX machines, we gave up and decided to use some of our families' initials."

The J part of IJK is Ian's nephew John, who is the company's senior programmer at the age of 16. All the original four releases were John's and his latest Xenon 1, is to be used to show off the Oric's graphics in certain High Street stores.

The Oric is the second machine to join the IJK catalogue. Ian believes the machine's critics have been unfair. "They make far too much of the bugs in the machine and do it no justice in terms of its fantastic capabilities.

"We bought five Orics fairly early, and after spending a month finding its idiosyncracies, we knew it had better graphics, keyboard and a more standard Basic than the ZX Spectrum and was the machine for us.

"We have several new programs for the Oric due soon: a version of the ever-popular Space Invaders, an Othello game which has so far beaten all the other computer players we have tried and an adventure game. But our company policy is not to advertise these products until we have the duplicated tapes to sell".

This is something which the buying public finds it hard to accept, according to Ian. "You wouldn't believe the number of people who expect to have to wait weeks for their tapes."

For the BBC there are new programs too. "We have just released our five-a-side Soccer, Pontoon and Patience games and there is a new version of Caterpillar due soon." Sales for this machine are "ticking over" at the moment, "but we are looking forward to the Electron.

"Although we like to be first on the scene with programs for the new machines this is most unlikely with the Electron due to the fact that no machines are to be released to software houses prior to the launch. We expect to have some programs within two months, though, if at all possible."

The rest of the company which is based at 9 King Street, Blackpool, comprises Pat Cridland, who deals with the secretarial side and the mail order, Ian's wife Noelle, who is concerned with the accounts, and Jackie, John's mother, who runs the production side of the company. "John will be a director when he is 18, but at present he cannot be appointed so by law," said Ian.

Currently over a third of Ian's time is taken up with packaging and presentation. "We have adopted the new video style cases and have had full colour art work done for each one", he said. We believe in giving the customer as much information as possible, so we include screen shots and a written description too."

All but 10 per cent of production now goes to dealers, and Ian believes customers should get a better deal this way. "They can see the programs and decide which to buy on an informed basis. But we don't intend to give up mail order." He doesn't however approve of the increase in software libraries. "I cannot see how someone who has spent a month playing a game will ever buy it — they will want to go on to something new. We should be able to live in harmony but only if some agreement on royalties is forthcoming."

The programs are all written by freelance programmers, but most are known to the family and have a strong bond with the company. This means the quality can be maintained, claims Ian. He was strong feelings about reviews too. "There seems to be a difference between the public and reviewers' opinions of programs.

"The public loves arcade copies, while reviewers hate them, and original games have the opposite effect. I would like to see more comparative reviews with all the Space Invaders, for example, compared and the good and bad points of each shown. It is always important to realise that reviews are only personal preferences".

Send your letter to Letters, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE. Don't forget to name your computer — the best letter could win £5-worth of software. Queries cannot be answered on this page

A switch in type

Four printing errors appeared in my article A switch in time for your Oric (HCW No. 18). In case they caused any problems to readers, please could you print this list of corrections.

1 Six lines up from the bottom of the left hand column should read: IF PEEK (524)<128THEN
2 Line seven of the right hand column; the POKE should read DOKE.
3 Similarly, line 17 of that column should read: IF DEEK(630)<65535-100*....
4 Nine lines up from the end — this should be: IF PEEK(520) <>56

I'd be interested to hear from other Oric owners if they have found useful system variables.

David Nowotnik

Woman's touch on the keyboard

Catherine Clunies-Ross's One Woman's View (HCW 10) stirred me into action. I would like to say that I was up until midnight yesterday typing in a program for my husband.

It is rather painful watching him trying to find the various keys and numbers while programming our BBC micro — much easier for me to type in the program, since typing is my one redeeming skill, and O-level maths is not a necessity!

Initially I admit I was sceptical, and frightened by the various gadgets, wires etc. Even the word "chip" sounded ridiculous. And I imagine lots of other women feel the same; whereas men regard computers as something to conquer, and most become addicts in the end.

Our two children are allowed to play on the computer. But not many games are written for six-year-old girls, and our daughter soon got tired of a flower pattern program my husband wrote for her.

Our son, on the other hand, can easily pass a wet afternoon playing a space game or trying his hand at the chess program.

Concentration is essential; perhaps women are not endowed with much patience when it comes to staring a screen for hours on end. However, the concept of typing in your own program is quite exciting. Go on with the computer, ladies — if your husbands will let you!

M. Rayfield, Combe Down, Bath

Those cheating charts

As a proud Spectrum owner with a particular interest in games software, I find reading reviews and program charts in magazines such as yours useful. But one thing I find disturbing is the lack of movement in the charts and the bias in them.

Reading HCW 19, I was amazed to find the top 18 places exactly the same as the week before for the Spectrum. This also happens in other computer magazines, and to the consumer represents a decline in the software industry — which of course is not true.

One of the main problems seems to be relying on one shop for chart sales, which represents only a small selection of software. For example, if Softek's games were sold at Smiths, they would probably reach the Top Ten, but at the moment, to the neutral buyer, they cannot be seen as a good purchase.

David Sandhu, Mapperley, Notts

We realise that it isn't entirely satisfactory to use charts and based on one source only. But the outlets for software are so many and various that it would be an impossible task for a mere magazine to keep track of them. Until such time as the software industry gears itself up to produce its own standard chart, we feel our best course is to look at sales in the large retail chains.

Unsolicited testimonial

Congratulations on all the programs you have printed so far for the TI-99/4A. I have had my computer since December 1982, and have found that your programs have been accurate and good fun compared with those in many other magazines.

The software reviews are very interesting, and I now know which software I will buy in the future.

Rachel Hambling, Shipton Oliffe, Gloucs

Computing round the clock

I am a retired aero engineer of nearly 70 and felt the need to stretch my brain, so I brought a 16K Spectrum almost four months ago.

Whether I will get to understand how to write games programs is in the lap of the gods. But it's quite a breakthrough for me to be able to tinker with published games.

I have a friend who, like me, lives on his own in a flat nearby, who bought his 48K Spectrum only a month ago and I am teaching him all I know (?!) He is a few months older than me, so can be excused for making a bosh (poor old chap).

I am more enthusiastic than him and usually start playing with my Spectrum when the last interesting TV film finishes and carry on till 3 am.

Stan Barlow, Kingston, Surrey

★ *Software winner*

TI programs? No comment

As an advertiser in your magazine and a writer of TI-99/4A programs, I felt that I must write in reply to John Woods (Letters, HCW 19). He complains bitterly about the lack of good TI software. Well, I am trying to provide good TI software, but come up against apathy on the part of TI-99/4A owners.

They send off for software lists but don't place orders or make further enquiries. When they do order programs, they don't give any comments, even when a post paid envelope is supplied.

This lack of secondary response means that I don't know whether my programs are considered good, bad or indifferent, or even what type of games, utilities etc people want.

It is therefore my opinion that the software shortage Mr Woods described is in part due to people like Mr Woods complaining to magazines like yourselves, instead of making comments or suggestions to people like me who are trying to meet their requirements.

In three months trading I have never had a letter saying how good our product is, and only one letter of complaint, and it is this which causes people like me to stumble in the dark.

Unless I am told, I can only guess what is required — I don't have ESP!

I. Godman, Christine Computing, Watford, Herts

Top Ten programs for the ZX81

1	Football Manager	Addictive Games (2)
2	Flight Simulation	Sinclair (1)
3	Scramble	Quicksilva (10)
4	1K Chess	Sinclair (8)
5	Fantasy Games	Sinclair (3)
6	1K Games	Sinclair (6)
7	ZX81 Chess	Sinclair (5)
8	Defender	Quicksilva (7)
9	Space Raiders	Sinclair (4)
10	Espionage	Sinclair (–)

Compiled by Boots. Figures in brackets are last week's positions

Top Ten programs for the VIC-20

1	Arcadia	Imagine (1)
2	Catcha Snatcha	Imagine (–)
3	Cosmiads	Bug Byte (2)
4	Wacky Waiters	Imagine (3)
5	Race	Commodore (6)
6	Panic	Bug Byte (4)
7	Asteroids	Bug Byte (5)
8	Amok	Audiogenic (7)
9	Blitz	Commodore (8)
10	Kaktus	Audiogenic (10)

Compiled by Boots. Figures in brackets are last week's positions

Top Ten programs for the Dragon-32

1	The King	Microdeal (1)
2	Space War	Microdeal (2)
3	Talking Android Attack	Microdeal (3)
4	Planet Invasion	Microdeal (4)
5	Nightflight	Salamander (5)
6	Dragon Trek	Wintersoft (10)
7	Katerpillar Attack	Microdeal (6)
	Mined Out	Quicksilva (–)
9	Graphics System	Salamander (–)
10	Chess	Dragon (9)

Compiled by Boots. Figures in brackets are last week's positions

Top Ten programs for the Spectrum

1	Jet Pac	Ultimate (3)
2	Flight Simulation	Psion (4)
3	Transylvanian Tower	Richard Shepherd (2)
4	Horace Goes Skiing	Psion/M. House (–)
5	3D Tanx	dk'tronics (6)
6	Horace and the Spiders	Psion/M. House (–)
7	Monsters in Hell	Softek (–)
8	The Hobbit	Melbourne House (5)
9	Chess	Psion (7)
10	Penetrator	Melbourne House (1)

Compiled by W. H. Smith. Figures in brackets are last week's figures

Atari: the rumours come true

No sooner do I mention it as a rumour (HCW 21) than I read about it as fact. Atari has jumped headlong into the hardware wars with not one but four new home computers. Spokesmen from the company indicate that Atari will be competing on the basis of features rather than price. We'll see about that.

The new computers are the (yes) 600XL, 800XL, 1400XL, and 1450XL. The 600XL was announced with a list price of $199; no prices have been announced for the other three. However, one piece of good news is that all of the new machines will be compatible with previously existing Atari software. Although there has been no official announcement on the fate of the 1200XL, it may be reasonable to assume that it may be quietly phased out when the present supply is gone.

The 600XL replaces the 400, includes a built-in Atari BASIC, is styled similarly to the 1200XL, has a regular keyboard, offers built-in Help and Diagnostic functions, comes with 24K ROM and 16K RAM (readily expandable to 64K with an optional board), and has a TV output. It is expected to be delivered to dealers here this month.

The 800XL shares the 600XL's basic features, but comes with 64K RAM and offers both a TV output as well as a monitor output. It should be out next month.

The 1400XZ is also a 64K machine but comes with a built-in direct-connect modem and relevant software. It also has a voice synthesizer and commands in BASIC enabling users to write their own speech output routines. The speech capability will be featured in games that Atari offers for the XL machines. Expect to see this one around September.

The 1450XL is similar to the 1400 but comes with a built-in 5.25 inch disc drive that is slimline in design and holds up to 256K, being double-sided with double-density. When Atari releases DOS 3.0 later this year, double density operation will be available to the entire line.

It is hard to determine, because prices have not been announced, but if they are price and feature competitive it will be obvious that Atari has not completely given up on that segment of the market dominated by the Apple II line and the IBM PC. I might as well say it: there is another rumour that Atari is working hard on a machine that will sell for about $1400, be fully loaded, and compatible with BOTH the Apple II and the IBM PC, and run CP/M. I certainly hope that is true. If so, we should hear about it in a month or two.

★★★★

An electronic spreadsheet program has been recently introduced for the VIC-20 and Commodore 64. Called Practicalc, it allows the user to enter titles and numbers into rows and columns which can then be used to make various computations and projections.

Its capabilities include more than 20 mathematics operations including all functions found in BASIC, and allows operations to be combined. Numerical data can be formatted into floating point, integer, or dollar (pound) format. Additionally, rows and columns can be inserted. The basic VIC program supports 600 cells; 2000 cells are available for VICs with 24K. The VIC-20 version costs $39.95, and the 64 version costs $10 more. The program is available from MicroSoftware International, 50 Teed Drive, Randolph MA 02368, (617) 961-5700.

See you next week.

Bud Izen
Fairfield, California

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by J. S. Bailey
Oric 1. £5.00

Fun while learning with this dual program cassette. Full colour and excellent graphics combine in a shoot-them-down concept. Only the correct answer will bring success. This cassette serves as an ideal method of introduction into computer assisted education.

Hummer house of horror

superb 3d graphics

by STEPHEN CURTIS
ZX Spectrum 48K £7.00

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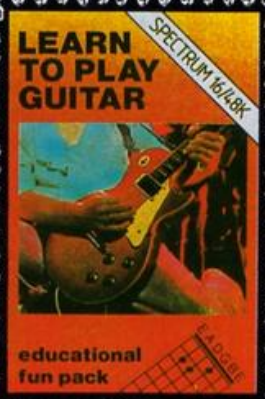

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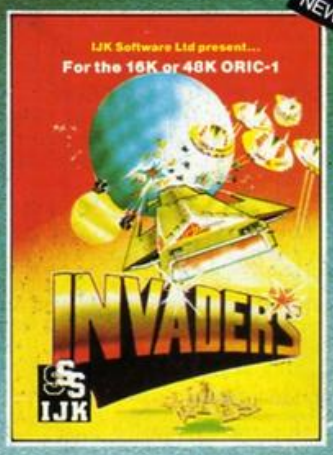

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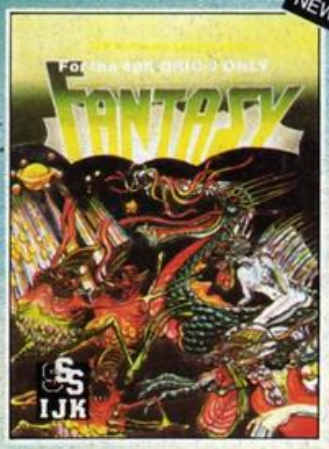

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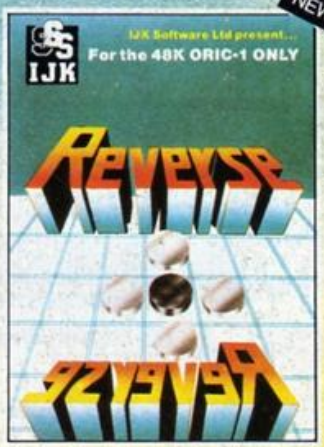

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