

HOME Computing WEEKLY

**New! Gallup
software chart**
The chart you can
believe in

Party package
Check-out printers,
add-ons, utilities,
business packages.

Learn machine code
the painless way

*It's a cracker!
Special Christmas
edition*

Don't be a turkey!
Read our reviews for:
CBM 64, Spectrum, Amstrad
CPC464, Oric/Atmos, BBC,
Electron, Dragon

**Christmas box - programs
to type in for:** QL, Amstrad
CPC464, TI-99/4A,
Spectrum, CBM 64

TimeZone

The Challenge Remains

By MARK McKEE

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brother

le Action Series



Gremlin
Graphics



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Readers: we welcome your programs, articles and tips.

Software houses: send your software for review to the editorial office at the address below. Contact us for competitions and other promotions, too.

Home Computing Weekly will not be appearing on your news stands on either December 25 or January 1. We will be bouncing back on January 8, and look forward to seeing you then. Have a happy Christmas!

HOME COMPUTING WEEKLY BRITAIN'S BRIGHTEST

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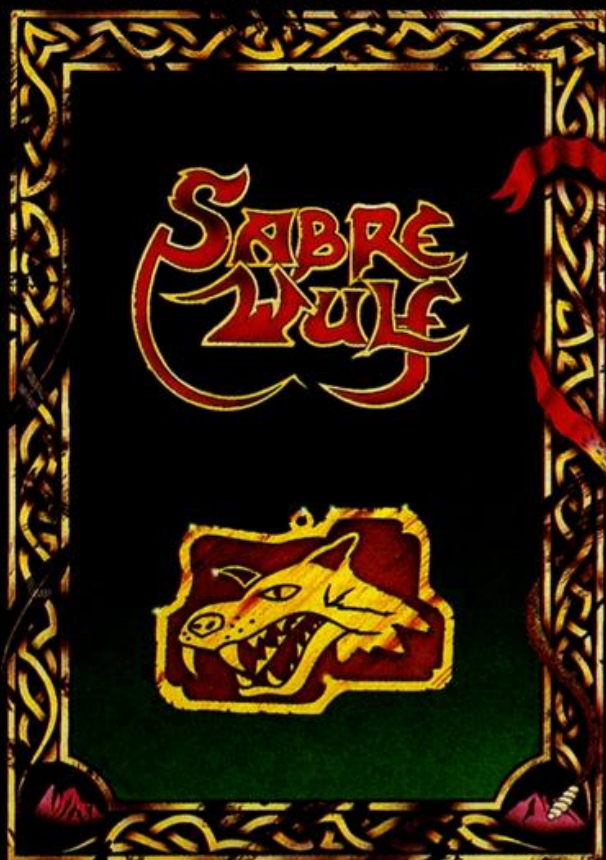
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48K SINCLAIR ZX SPECTRUM

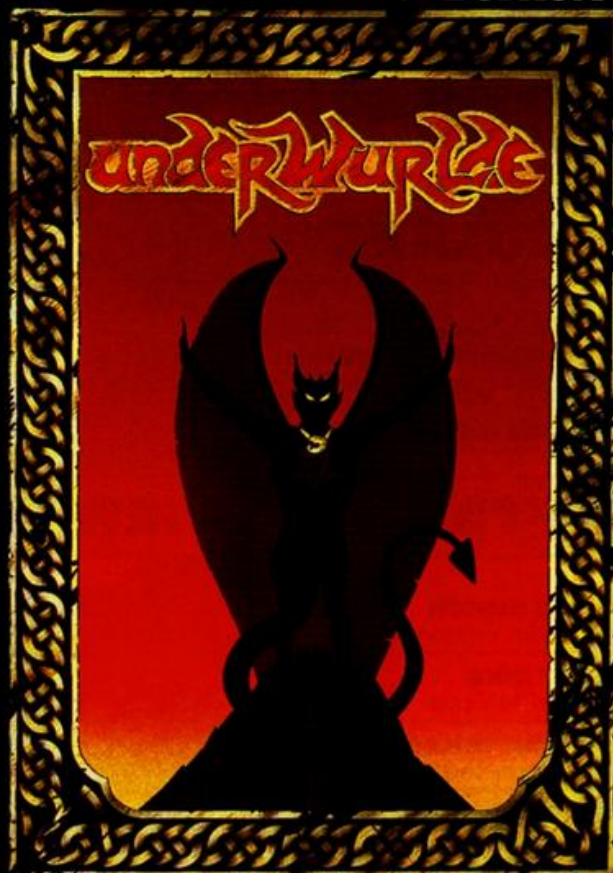


BBC MODEL B 1-2 OS

48K SINCLAIR ZX SPECTRUM



48K SINCLAIR ZX SPECTRUM



COMMODORE 64



"KNIGHTLORE", "UNDERWURLDE", "SABRE WULF", and "STAFF OF KARNATH" recommended retail price £9.95 inc VAT. Available from W.H.SMITH, BOOTS, J.MENZIES, WOOLWORTHS and all good software retail outlets. Also available from ULTIMATE PLAY THE GAME, The Green, Abbey de la Zouch, Leicestershire LE65 1JL (P&P are included). Tel: 0530 411485.

Atari: 'Ours are the best'

Jack Tramiel, Atari chairman of the board, made his first public appearance in Britain recently at a press conference where he spoke of his plans for the company in 1985.

Future plans include an immense range of new products, including games; a family of four different eight-bit machines; a selection of 16-bit machines with 'high grade graphics' retailing at around £300; and in June or July the launch of a 32-bit complete workstation retailing at around £1,000.

'Too many people have got too fat out of this business', declared Mr Tramiel. That's why he has revolutionised Atari's policies and slashed the price of the 800XL to £129.99 and accompanying software to £7.99.

Jack Tramiel was very positive about both Atari computers and software and when asked why he thought customers would opt for Atari instead of one of our own home-grown brands, he replied 'Ours are the best'.

And he doesn't see the shortage of software to be a problem. 'We'll look into that', he said.

A full supporting range of peripherals, printers etc is also planned to back up the campaign, and the company plans to go public in the summer of 1985. It's expected this will bring in an estimated \$150 billion.

Jack Tramiel has so far exerted his authority by streamlining the business in America, axing people not necessary to production. Fully-automated factories are on the cards, to enable Atari to produce machines as cheaply as Hong Kong or Taiwan.

'I place my money where my mouth is', said Mr Tramiel. And personal investments totalling \$75 million dollars support his confidence.

When questioned about the Japanese MSX system, Mr Tramiel said he thought the machines were nice. The mass market is what he's aiming for: 'We're not in the business of competing with IBM, we want to mass produce for the home market'.

Atari will be helping kids fulfill their dreams, according to Jack Tramiel. 'It's every kid's dream to become a millionaire by writing a good program', he said. And Atari will be able to help them on their way by supplying

affordable machines with the back-up support of more educational titles.

Atarisoft is secure and will continue to bring out new titles for other machines, including the Spectrum.

New factories will be built in America to cater for the expansion and a European factory is scheduled to be set up in about three years.

However, the proposed 7800 games machine will be scrapped to make way for more ambitious plans. Staff have been sacrificed: the workforce of 12,000 has been pared down to 3,000. Mr Tramiel commented: 'We want to pass the savings on to the customers'.

The European market is where the company's high hopes lie, since Atari intends to exceed the American there. And the long-term aim is to take Atari into the billion dollar profit margin. To achieve that goal, initial investment of \$150 million is necessary.

Mr Tramiel expressed his concern, or lack of it, for his competitors with the words: 'If someone is producing better computers than me at a lower price then people will buy them'.

And he's certainly making it hard for his rivals with his pricing policy. Mr Tramiel has already had some success with altering Atari's run of losses, speculated as being in the millions weekly. He laughed: 'We were only losing 10 million a month'.

Atari, Atari Hse, Railway Terrace, Slough, Berks SL2 5BZ

Computer credit

Feeling the pinch moneywise? W H Smith has now come up with a credit plan which will enable you to pay off computer purchases over a period of time.

To be eligible for credit you must buy an item of hardware and spend between £400 and £2,000, laying down 10 per cent as a deposit. APR is between 26.5 and 27.2 per cent, depending on the period you choose to pay off the debt, and this is roughly comparable to Access or Barclaycard charges.

'This will help our more serious customers with their purchases, particularly with Christmas approaching', said John Rowland, W H Smith's merchandise controller for personal computers.

You can find out more about the scheme from any one of Smith's computer shops. However, you won't be able to get



Jack Tramiel: 'Too many people are getting fat from this business'

credit from the two W H Smith computer shops at Heathrow airport, or from any of Smith's computer departments.

C for Clever

Now available from Hisoft: Hisoft C — a powerful version of the C systems programming language for the 48K Spectrum, currently used by leading software houses to develop their programs.

Hisoft contains an interactive mode in which C statements are executed as you type them in. Dave Howorth of Hisoft said: 'This makes Hisoft C ideal for beginners and advanced users alike'.

Available on the 48K Spectrum, it costs £25.

Hisoft, 180 High St North, Dunstable LU6 1AT

Game, set and match

Top-selling tennis game Match Point from Psion is now available for the Commodore 64. Released on the Spectrum last summer, Match Point is Psion's first Commodore

release.

You can play against the computer or a friend or just watch the exhibition game.

Match Point includes features like 3D screens with ball boys, backhand and forehand drives and dropshots. The heads of the audience move to and fro.

Available now, it costs £7.95.

Psion, 22 Dorset Sq, London NW1 6QG

Cassette swap deal

Level 9's popular adventure games are now available on disc for the Commodore 64. There are six titles in all including the latest adventure Return to Eden.

If you've already bought the games on cassette but would prefer disc, Level 9 is operating an exchange deal. Send in your cassette plus £2.50 and you will receive the disc.

Price: £9.95 on cassette, £11.95 on disc.

Level 9, 229 Hughenden Rd, High Wycombe, Bucks HP3 5PG

TV quiz game

A new computer quiz game is now available, based on the popular Central TV series Block Busters.

Produced by Macsen software in conjunction with Central TV, it runs on the BBC B, Electron, Commodore 64 and Spectrum.

Two players compete in answering general knowledge questions set by the computer out of the hundreds stored on the program. The object is to complete a path across a 4 x 4 matrix of hexagons.

You can select the number of rounds and level of difficulty and a time factor is involved.

Also available is a follow-up program called Questionmaster, which provides extra questions.

Block Buster costs £7.95 and once you've bought that you can purchase Questionmaster at a special price of £5.95.

Macsen Software, GBA CYF, 17 Nott Sq, Carmarthen, Dyfed SA31 1PQ

Fight the wizard

Quicksilver states it has just released an exciting new game called Black Thunder which is available for the CBM 64 — £12.95 on disc and £7.95 on cassette.

The hero is the super-human Crow-Ther who battles against the evil wizard. You play the part of the hero and travel the roads of a strange country in a futuristic vehicle.

Quicksilver says there are astounding full colour graphics, smooth scrolling and a radar showing your progress. Software-produced speech is a feature: the game is compatible with the Currah Speech Unit.

Quicksilver, Palmerston Park Hse, 13 Palmerston Rd, Southampton

Unearth those secrets

If you've ever wanted to analyse the personalities of your friends then Thorn/EMI has a product which may interest you.

Mind Prober provides users with an insight into anyone's mind, so Thorn/EMI claims.

The program asks the user whether certain characteristics apply to the subject involved. In a few moments the computer returns an overall character assessment. It's claimed that

you can even use it on people you know only slightly.

Now you can understand your boss better or your parents and friends.

Available on the Commodore 64, Mind Prober costs £19.95.

Thorn/EMI, Thomson Hse, 296 Farnborough Rd, Farnborough, Hants

Two to teach

Acornsoft's new range of educational software kicks off with Spooky Manor and Workshop £9.95 (BBC) and £9.20 (Electron). Both are also available on BBC disc for £11.50.

Two more titles, ABC and Talkback will be available in the New Year.

Spooky Manor is an adventure set in a haunted house. Up to four people can compete or co-operate to solve the problems involved. There is a map drawing, language work, exploration and the development of strategies.

Workshop presents the user with coloured shapes to move around the screen and transform using 'machines'. A square can be squashed to make an oblong or even a flat line.

The user can also create motion graphics out of sequences of operations.

Acornsoft, 18 Tower St, Covent Garden, London WC2H 9NN

Helping hotline

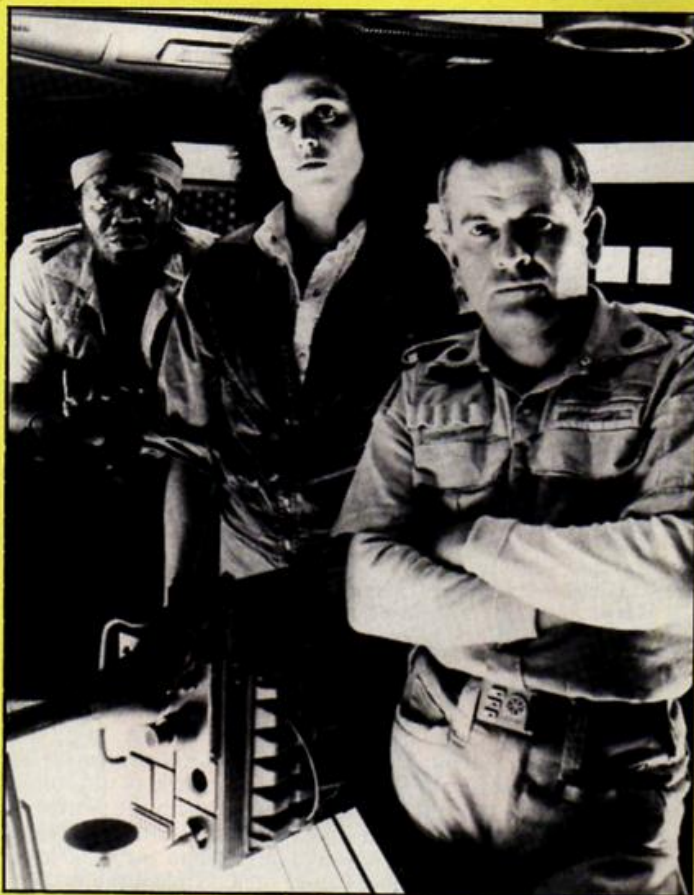
Having heard endless pleas for help and clues, the Argus Mind Games' team has set up the Alien Hotline to cope with the frustration experienced by frantic Alien fans.

The hotline is a counselling service for troubled Spectrum and Commodore owners. These intrepid gamers, having put forward their original fee of £8.99, are now complaining that they are spending ten times this amount in psychiatrist's fees, according to a source at Mind Games.

'A Brahms concerto played on the Commodore synthesizer creates a soothing background for the counsellors, who repeatedly stress that users mustn't panic,' said a spokesman for Mind Games. 'Hints like 'clean the catbox' or 'cats object to not being fed properly' abound.'

If you're completely baffled and tearing your hair out, call Mind Games on 01-437-0626.

Mind Games, No. 1 Golden Sq, London W1R 3AB



Stars of Alien — the film, who feature in Alien — the game.

Round of applause

Here are the results of our Temptation competition, published in issue 76. Seventy-five winners will each receive a copy of The Journey and Admiral Graf Spee.

Alexander Walker, Kilmar-nock; Elliot Mason, Hove; Keith Stonehouse, Warrington; Andrew Morrison, Alloa; David Dew, Rickmansworth; R N Pike, Wakefield; Iain McConnell, Stoke-on-Trent; Darron Tuck, Royston; M J Bateman-Smith, Solihull; C Crane, Stoke-on-Trent; D A Greasby, Wakefield; James Mace, Amesbury; Roy Horslen, Peterborough; Robert Crowe, Preston; Colin Dawn, Chesterfield; Stephen Ackerman, Mitcham; Paul McCann, Luton; S Summerscales, Batley; William Barker, Washington; R Gardiner, Blaby; Jason Parris, Abergavenny; K Betteridge, Warley; Robin Davis, Redruth; Mark Gregg, London; A P Garner, Heywood; M L Gadd, Bargoed; E Stephens, Cardiff; Graham Tappern, Reading; Kim Yarwood, Hatfield; Keith Austin, Billingham; M V Priestman, Birmingham; Steven Rigby, London; H S Lee,

Congleton; Grahame Chidwick, Grimsby; D R Matless, Long Stratton; J Woffenden, St Albans; Alex Darnes, Chelmsford; Denver Riches, Plymouth; P Corbett, London; Alan Hurst, St Helens; Karen Stalker, Fraserburgh; C Dolan, Isleworth; James Brown, Redditch; Mark Ackland, Ilfracombe; Stefan Musgrove, Ipswich; James Cochrane, Ayr; Fred Baxter, Oldham; S Johnson, Liverpool; Paul Evans, Whitley Bay; H W Bray, London; Darren Clarke, Northampton; Lee Foulser, Codicote; Steve Johnson, Sale; George Pimm, Sale; D S Nisbett, Leicester; Brian Hall, Coventry; B Bassingthwaite, Yeovil; Chris Thornton, North Malton; S Guest, Barnsley; Michael Hewitt, Hull; Karl French, Hartlepool; J J Hartoff, Nuneaton; B E Oakes, Rugby; Matthew Goodwin, Bolton; Richard Wharton-Smith, Luton; Andrew Farrell, London; R Oliver, Stamford; Barry Sellers, Crich; Tony Dench, Belfast; Michael Partridge, Barnstaple; Alan Clarke, Dundee; Sgt T Meredith, 94 Loc Regt RA; Dennis Richards, London; Tony Raven, Llanelli; D T Jones, Bovington.

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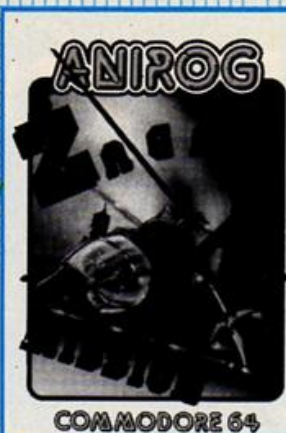
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TOP 20 Gallup Software

Compiled by



Week Ending December 5, 1984

LAST WEEK	MOVE	THIS WEEK	TITLE	PUBLISHER	SPECTRUM	CBM 64	BBC	ELECTRON	VIC-20	AMSTRAD	ATARI	OTHERS
1	●	1	Daley Thompson's Decathlon	Ocean	●	●						
2	●	2	Booty	Firebird	●	●						
3	●	3	Ghostbusters	Activision	●	●						
6	▲	4	Hunchback	Ocean	●	●	●	●	●			
7	▲	5	Manic Miner	Software Projects	●	●	●			●		●
4	▼	6	Knight Lore	Ultimate	●							
6	▼	7	Elite	Acornsoft			●	●				
5	▼	8	Pyjamarama	Mikro-Gen	●	●				●	●	
11	▲	9	Beach-Head	U S Gold	●	●						
48	▲	10	Starstrike 3D	Realtime Software	●							
13	▲	11	Skoldaze	Microsphere	●	●	●					
14	▲	12	Football Manager	Addictive Games	●	●	●					●
12	▼	13	Jet Set Willy	Software Projects	●	●						
21	▲	14	American Football	Mind Games	●	●				●		
17	▲	15	Combat Lynx	Durell	●	●				●		
9	▼	16	Underwulde	Ultimate	●	●						
27	▲	17	Flight Path 737	Anirol	●	●	●	●	●			
□	N/E	18	Staff of Karnath	Ultimate		●						
16	▼	19	Doomdark's Revenge	Beyond	●							
18	▼	20	Monty Mole - Wanted	Gremlin Graphics	●	●						

SPECTRUM

Top Ten

- Daley Thompson's Decathlon
Ocean
- Knight Lore
Ultimate
- Booty
Firebird
- Starstrike 3D
Realtime Software
- Skoldaze
Microsphere
- Underwulde
Ultimate
- Doomdark's Revenge
Beyond
- Beach-Head
US Gold
- Match Day
Ocean
- Pyjamarama
Mikro-Gen

BBC

Top Ten

- Elite
Acornsoft
- Sabre Wulf
Ultimate
- Football Manager
Addictive Games
- Manic Miner
Software Projects
- Jet Pac
Ultimate
- Eddie Kidd Jump Challenge
Martech
- Frak
Aardvark
- The Hobbit
Melbourne House
- Grand Prix 3D
Software Invasion
- Micro Olymics
Micro User

COMMODORE

Top Ten

- Ghostbusters
Activision
- Staff of Karnath
Ultimate
- Daley Thompson's Decathlon
Ocean
- Raid over Moscow
US Gold
- International Football
Commodore
- Combat Lynx
Durell
- Zaxxon
Centresoft
- Summer Games
Quicksilver
- Beach-Head
US Gold
- Booty
Firebird

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At the start/finish line you strap on your helmet, check your instruments, gun your engine and surge onto the course. Through the corners, up the hills, into the ruts and down the straights you manoeuvre for position and try to beat the clock. Stay ahead if you can. But whatever you do, stay on course. If you don't, one of two things will happen. You'll slow down and lose valuable seconds getting back into the race. Or worse, you'll end up on the seat of your pants. Who says computers won't like to get dirty?

Your agents risked their lives to find the enemy's secret headquarters. Now you're risking yours to destroy it. And they know you're coming. There's time to plan, so you're late to fly. But it's too fast, and you'll squander your precious fuel supply. Needless to say, they don't issue parachutes on missions like this. As you soar over hundreds of miles of distinctly unfriendly territory, the action is thick, fast and frighteningly three-dimensional. Fighter aircraft, surface-to-air missiles, helicopter gunships. The attacks come from every direction. Even from behind.

Edison, the kinetic android, leads a frustrating life. All he really wants to do is build his circuit boards and go with the flow. But things keep getting in the way. Nohms — a negative influence — bug him regularly. They're harmless, but only from a distance. Flash, the lightning bolt, disconnect everything in his path. Which can be frustrating after a hard day on the circuit. And the cunning Killawatt is out to try poor Edison's brains. But our hero simply solders on. Juice! is the ultimate current event. You'll get a charge out of it. And a few jolts too!

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System 3 Software

South Bank House, Black Prince Road, London SE11



Toy Bizarre CBM 64 £9.99

Activision, 15 Harley Hse, Marylebone Rd, Regent Park, London NW1 5HE

You are Merton the maintenance man, and you move around a toy factory and keep law and order.

At the six gas valves balloons are filled up. You must constantly keep all of the valves turned off. Meanwhile, Hefty Hilda turns them back on again.

If the balloons are not popped they release toys which work their way to the bottom of the screen, you should try not to touch them. There are piston platforms — these work in pairs, if you press one down another will go up. If a toy is on a platform as it goes up then it is stunned and can be touched without any danger.

The control over your playing man is good. You may fly up in the air by jumping on a piston platform or simply jump to avoid a toy or Hefty Hilda. The action is colourful, smooth and fast.

My criticism is that it does not hold my attention because it has a simple and repetitive cycle of turning off the valves time after time. A friend, however, is going crazy to get playing it. **K.I.**

instructions	20%
playability	70%
graphics	70%
value for money	50%



Punchlines 48K Spectrum £6.95

Llainlan, Pontyberem, Llanelli, Dyfed SA15 5HP

Based on the popular TV series of the same name this program is a fairly faithful reproduction of the game. The first menu screen offers the ability to load up any of the seven sets of data supplied or one of your own, unfortunately the documentation had no details on how to produce such a file.

When you have loaded the questions and their punchlines you have the game screen displayed. There are the usual eight boxes, with their numbers displayed prominently, right across the screen. The punchlines are then displayed one by one with the number they hold. This

could have been improved with the line being displayed on the box concerned, instead of at the bottom of the screen.

Questions follow one by one, each team has turns to guess the location. This is a fun game and will be ideal for a family get together over Christmas.

The questions cover a good range from original mixtures to special pop and soccer games. I can see this causing almost as much laughter in your living room as the original. **D.C.**

instructions	65%
playability	90%
graphics	75%
value for money	85%



The Run Your Own League System 48K Spectrum £6.95

Silicon Joy, 7a Richmond Hill, Bournemouth BH2 6HE

Rather a specialised utility, which should be a real boon! It allows you to document the structure of a whole sports league simply and effectively: naming the teams, drawing up the fixture list for you, saving the results as they come in, and updating the league table.

Menu driven, all complications, like teams sharing the same pitch and cancellations can be taken into account. The whole thing can be saved to tape or microdrive, and a revised version produced after each week's scores have been added.

Various analyses can be called: fixtures unplayed, each team's results, or total results to date. The program is written in BASIC, so it may take time with a large league. The error trapping is excellent, and the only thing the documentation doesn't tell you is that a printer is essential.

A full size printer can be used because RAMTOP will prevent the BASIC from overwriting its software. This will limit the size of the league which can be handled.

I was most impressed. A real use for the Spectrum, which takes the pain out of a real chore. **D.M.**

instructions	95%
ease of use	100%
display	95%
value for money	100%



Mix and match

There's something here for
everyone. Try these unusual
programs for a change

The Moors Challenge Amstrad CPC464 £6.95

Timeslip, Main St, Stoneyburn, W Lothian EH47 8AP

Although the title gives little away, this program plays a rather mean game of Reversi. This is a board game in which you place counters on a squared board and then try to change all your opponent's counters into your colour.

It is very simple to learn yet difficult to master. The instructions given are entirely on screen, the cassette insert just contains loading instructions and I think that new players will find this a little less than adequate. The problem of difficulty is compounded by the computer setting the level of skill that it

will play in the first game, the player having no control at all over this.

I found that at the Moderate level it plays a good game, with a great deal of the positional and strategic intelligence that makes this game quite addictive.

The biggest disappointment is the graphics, which can only be described as rather sparse and basic. A good game but with very few of the touches of quality that I would expect for this price. **D.C.**

instructions	65%
playability	80%
graphics	65%
value for money	50%



Trio 48K Spectrum £5.95

Silicon Joy, Richmond Hill, Bournemouth BH2 6HE

A compilation of three games. Dracula's Castle features a maze of rooms, several containing lights and garlic. Drac tours the castle, then the clock starts! Steer your man, opening doors and lighting lights. Eat some garlic for protection from Drac. Score by catching bats. But watch out, the garlic only lasts 15 mins... and Drac tours the castle regularly!

Machine code and joystick control feature in Chaotic Caverns. Avoid the chasers, and paint the walls of the deceptively simple looking maze yellow. Succeed, and you will be rewarded with a more difficult maze and more chasers.

Ascot is a horse race simulation for up to six players. It allows the usual bets, with your Spectrum as bookie! The runners, their odds, form, and colours are shown. When the betting's over, it's off to the race, which is shown complete with photo finishes. Your winnings and losses are then calculated.

Though none of these games features graphics of the highest standards, they are animated and quite acceptable. As good as some full price rip-offs, and great fun to play, the concepts behind them are unusually original. Well worth the money, and a useful addition to your collection. **D.M.**

instructions	80%
playability	90%
graphics	80%
value for money	100%



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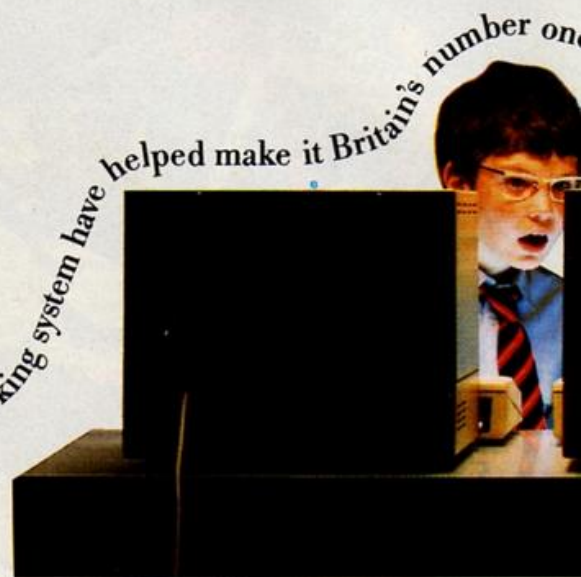
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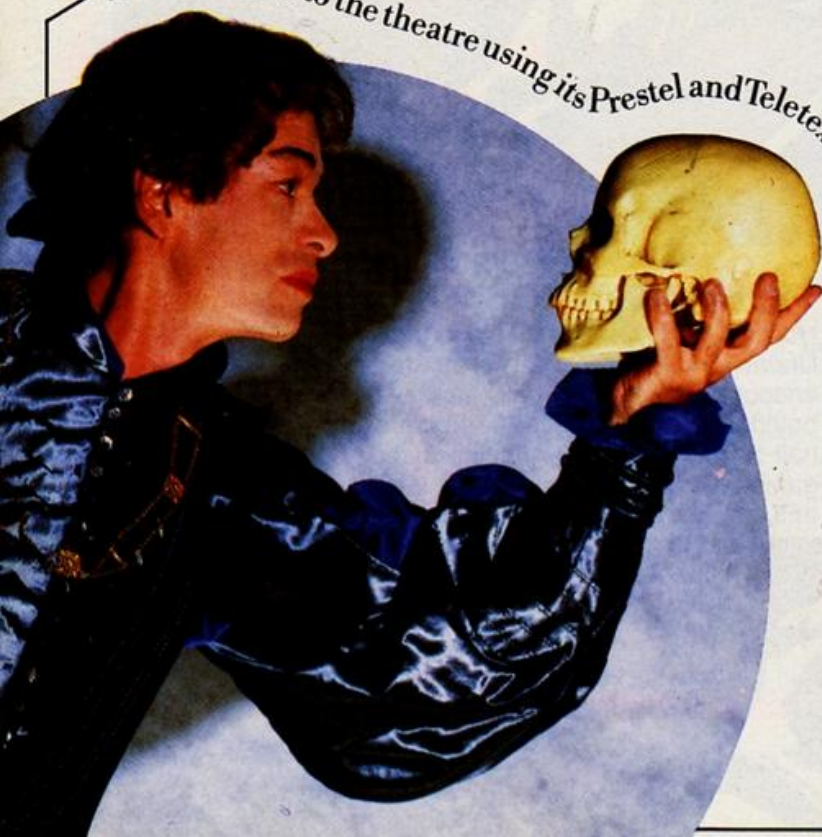


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It stretches into schools where BBC Basic and the Econet networking system have

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educational computer. It's making life easier in the office, and has grown into the country's top micro for small businessmen.

on TV, the star of a series of computer literacy programmes. Its colour graphics and new Bitsik make it welcome in design studios.

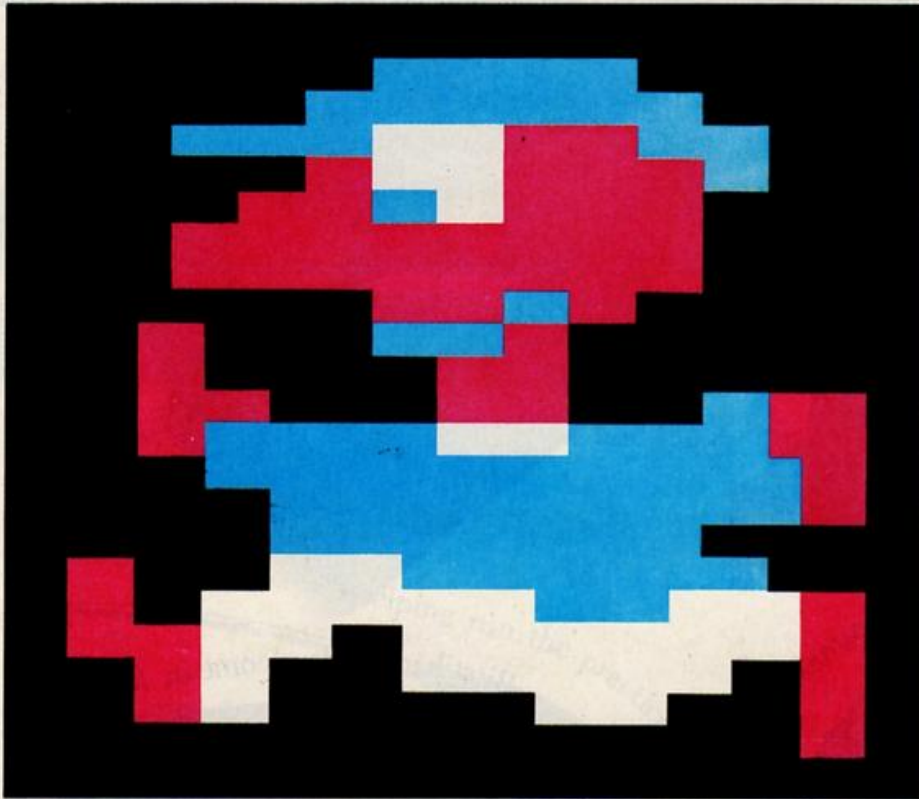
working in space, tracking a satellite it also helped design.

Meanwhile, back on Earth at 49 Acacia Avenue, King's Cross, London, the BBC Microcomputer System is still growing.

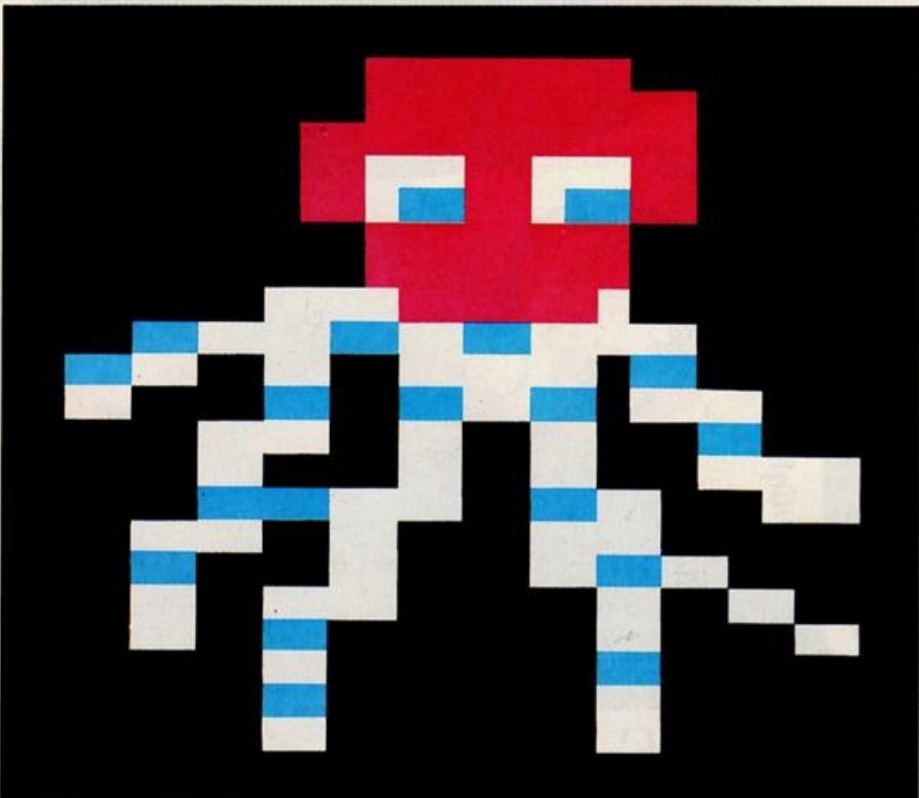
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THIS WEEK our competition is open to owners of both Spectrum and Commodore 64 computers.

We are giving away 45 copies each of Micromega's top-selling games: Jasper and Jinn Genie. Jasper, for the Spectrum costs £6.95 while Jinn Genie for the Commodore 64 costs £8.95.

Micromega mega-sprees

Jasper is a very worried creature. The whole world has been turned upside down and he is in danger on every side. This is all due to the fact that the furt has wangled.

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Jasper is a cartoon adventure with 22 screens. You must help Jasper find his key and get home safe and sound. Achieving this successfully needs a great deal of skill and practice.

Jinn Genie is set in the mystical land of Arabia. The Golden City has been taken over by the wicked Ifreet whose magic guardians watch over the city approaches and keep the passageways in darkness. The Ifreet himself is keeping the wise man behind bars in the Inner Sanctum. You play the part of the young hero whose mission is to liberate the city from the powers of evil.

If you want to experience the amazing adventures of Jasper or explore the realms of ancient Arabia, don't miss this chance. The games sound exciting and they are, combining arcade action and adventure. Can you meet the challenges they present? You won't know until you try, so enter our competition.

The format is somewhat different this week. It's a multiple choice quiz and requires a bit of thought so put your thinking cap on! You could be the proud owner of a fascinating game that will be a credit to your collection.

Hurry up and put pen to paper, we're waiting for your entry!

Questions

1. Micromega's best selling game to date is
a) Braxx Bluff
b) Full Throttle
c) Codename Mat
2. Jasper is
a) a rat
b) a monkey
c) a snake

3. In Jinn Genie you travel by
a) camel
b) magic carpet
c) winged chariot

Think carefully about the questions and write the answers in the space provided on the entry coupon. **Remember:** you must write your answers on the back of your envelope as well.

How to enter

Study the three questions and write the answers in the space provided on the entry coupon. For instance, if you think that the answer to question 1 is a) then put the letter 'a' in the space on the form.

Complete the coupon clearly and fully — if you are a winner it will be used as a label. Send the coupon to us.

Important: write the answers to the questions on the back of your envelope (as explained above).

Send the coupon to: Micromega Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Closing date is first post on Friday January 18, 1985.

You may enter as many times as you wish, but each entry must be on an official coupon — not a copy — and sealed in a separate envelope.

Prizes will arrive from Micromega within 28 days of the publication of the issue containing the results of the competition.

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Entries will not be accepted from employees of Argus Specialist Publications, Micromega and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies.

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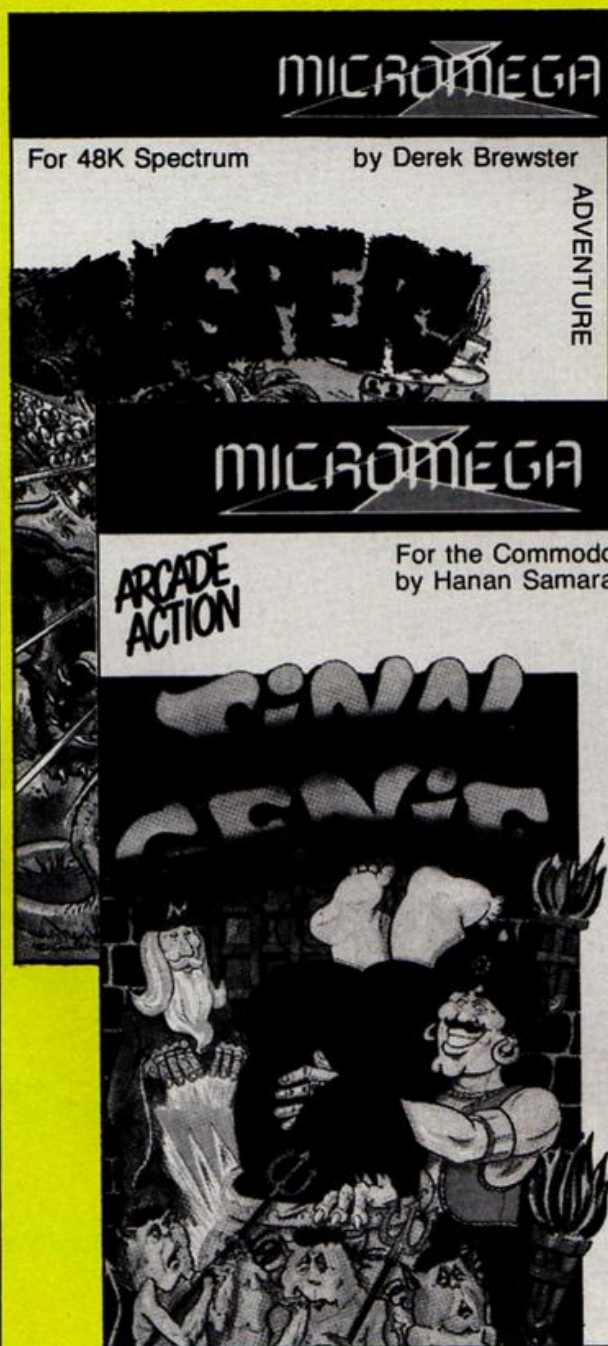
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Joysticks and printers

Quickshot II Joystick £8.95 to £12.95

Spectravideo, 165 Garth Rd, Morden, Surrey

There's no doubt that the latest Quickshot is the best looking joystick around. I put it to a practical test.

The moulded grip fits the hand beautifully, leaving your forefinger exactly on the trigger fire-button at the front. Should you prefer it, however, there's a top mounted button for your thumb. As the spindle is rather longer than the original Kempston Pro, there's more movement for the hand to make in all directions. This feels very smooth, and the stick is self-centering.

Although the Quickshot is very light, the large base has suction cups to stabilise it when table-mounted.

Also incorporated into the base is the auto-fire switch, which, when enabled, removes the need to keep your finger clasped to the trigger, or firing like crazy; the Quickshot does this for you.

If you prefer your joystick hand-held, then mouldings in the base make this more comfortable, though the suction pads get in the way and aren't easily removable.

In use the Quickshot is comfortable and sensitive; the suction cups do their job well. The front-mounted trigger button is great. It makes firing much more precise than the top or base mounted variety. Although no positive contact can be felt in any direction, control is easy, except in the diagonal plane, when quite substantial pressure has to be used and the result is not always predictable. The auto-fire option is only really useful with games which feature a "single shot" firing mode. Indeed, with some games, it slows down other movements.

With the covers off, it soon becomes clear why the Quickshot is so light. It's virtually all plastic, and that includes the insert which strengthens the column. Self centering is provided by a very short length of spiral spring which seats at either end in plastic bushes. Not very substantial.

The contacts are made direct to the circuit board, this appears to flex when under pressure. One crack in this, and your joystick's

We look closely at the Quickshot II joystick and Colour Plotter Printer. Read on to find out how they rated



had it! In addition, the leads which have to take all the movement as they pass from the column into the base are very thin indeed. The method used to make the contacts explains the difficulty with diagonal movement.

In comparison with the Zip-Stick, recently reviewed in HCW, the Quickshot certainly has the edge when it comes to comfort, and is marginally better in terms of sensitivity. Where it falls down completely is in the standard of its construction, which is by no means robust. Perhaps this is why Spectravideo's guarantee is limited to 60 days, and seeks to limit your statutory rights! The Zip-Stick is guaranteed for two years. You pay your money and you make your choice. D.M.

Colour Plotter Printer Centronics Interface

Some time ago, Tandy brought out a small printer plotter operated by four ball-point pens and using four-inch wide paper. This product is a variation of the same idea but this time able to feed A4-size sheets or even rolls of A4-width paper.

Working off the same type of pen mechanism means that it is capable of four-colour print and graphics. The reason for there being no machine mentioned above is because the interface is a

standard centronics-type and as such this printer can be used on a wide variety of computers. If you want to use it with a RS232 interface it is possible to buy an adaptor, according to the manual at least.

The printer has just four main controls, each of which is a little square key on the right hand side of the machine. These are reset, colour select, forward feed and backfeed but by pressing the reset key and one of the others at the same time other functions are possible, including a self test using all four colours to print the full ASCII character set.

I found that the printer is quite tricky to load with the roll-fed paper. Coming from a roll the paper is a little curly and can go everywhere except where you really want it to. The paper is fed using small pinned wheels on either side. These hold the paper most securely and to test the degree of accuracy, I printed the self-test four times on the same piece of paper without any trace of shadow — a real achievement in my opinion.

It has two modes of operation: text mode in which you can print listings using ASCII characters, and graphics mode for drawing and using the machine as a plotter. The modes are selected by sending control codes to the printer and following these with the co-ordinates to be used or the text to be printed. In graphics mode it is possible to set the pen to draw or move using both absolute and relative co-ordinate pairs. The codes are all very logical, D for draw, S for size, L for line type etc. Whilst I could not claim to be proficient yet, it isn't difficult to use the well designed manual to find all the information you need and there is an excellent reference summary at the end.

I find it rather hard to criticise this machine in any way. It is slow (6 cps), but then what can you expect from this type of machine? You have to remember that it might make seven or eight different movements of paper and pen to create one character. It isn't really suitable for screen dumps or for long listings but it is exceptionally good at drawing graphs and in four colours too. By far its worst feature is the rather flimsy and insecure roll feed mechanism which could do with a complete re-design. If you have a use for a flat bed-type plotter you could do much worse than buy this machine. D.C.

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Round-up of printers

Seikosha GP 550A Correspondence Printer

Business Systems, Lynx Crescent, Western-Super-Mare BS24 9DN

Interface: Parallel (Centronics), serial interface available

The market for printers seems swamped at the moment with an ever increasing number of new names, some of which don't have a good name for reliability, even though the price is right. All the more important, therefore, to consider reliability and standard of construction along with versatility.

The mechanism used by Seikosha for this one of their new range, is very similar to that of the now discontinued GP100-A. Unlike the Epsoms, Seikosha uses uni-directional printing, from left to right only, and this brings a penalty in terms of print speed at 50 cps for the standard type faces.

You do get the security of knowing that the mechanism is well proved, however. As usual with Seikosha, the standard of construction and finish is exemplary. Externally, the control panel features stop-reset, line feed and form feed buttons, whilst the large paper feed knob confirms that single sheet paper can be used, in addition to tractor fed continuous stationery.

The most impressive features of the GP 550 A remain hidden until it's hooked up. No less than nine different type faces are available under software control. Together with underline, emphasise, elongate, page length and form feed.

The standard fonts, pica, elite and condensed area all produced by a single pass of the print head, whereas the italic, sub/superscript, proportional, correspondence pica and elite require two passes, with a proportional reduction in print speed. Whilst the quality of the standard faces is good, the correspondence quality is excellent, with a distinct lack of the characteristic dottiness common to all dot-matrix printers. It doesn't quite reach the clarity of a daisy wheel printer, but does retain speed, graphics capability and a large

Four printers under £250 are reviewed here. Printers cost a lot of money — so think carefully before you hand over the readies

cost advantage. As the accompanying samples show, it has to be good value for money.

Seikosha GP550A Correspondence Printer



M-1009 — £199

Brother Computer Peripherals Div, Shepley St, Guidebridge, Audenshaw, Manchester M34 5JD

At £199 this is a budget priced printer, and Brother makes no excuses about that.

If you're using this printer with either a BBC or an Oric, you just need to plug it in, but if you own an Atari you must buy an appropriate interface as this printer uses Centronics, and the Atari doesn't have a Centronics port. I had no trouble setting the M-2009 up with my Atari.

However, I did experience some problems while setting the CR/LF situation, as the DIP switches weren't as explained in the manual. The orientation was quite different.

I soon sorted out that problem and then everything ran very smoothly some printers are more convenient because their DIP switches are more easily accessible, but at least I didn't have to physically wrestle with the printer and take it to bits.

The print quality was acceptable but not brilliant. Ribbons are tricky to obtain as

they are none of the common types. The M-1009 features all normal facilities like hi-res, enlarged (40 columns), condensed (132 columns), emphasised, subscripts and so on.

My general impression was that this printer is easy to use, a bit slow but good value. **M.R.**

LTR-1 £199.95

Letter quality terminal printer from Ibico

Buying a printer is usually a compromise between print quality and price. Recently the price of slow daisywheel printers has dropped to rival the more expensive dot-matrix printers. However at the budget end of the market there has been nothing to rival the basic dot-matrix device; if you wanted quality you had to pay for it. The Ibico letter quality printer provides typewriter quality for less than £200.

The design of the print mechanism is not new. It's the same as can be seen on some very old terminals. However this is no bad thing, and the quality of this mechanism is much better than that of its similar predecessors.

The typeface is spread around the circumference of five little wheels, like the milling on a ten-pence coin. When a letter is to be printed the appropriate wheel spins until the correct letter is facing the paper and then lifts and strikes to make its mark. The letters are kept inked by a messy black roller. The result looks just like an electric typewriter and is ideal for correspondence.

For the advantages of quality at such a low price there are penalties to be paid. These take the form of speed and flexibility. At 10 characters per second the LTR-1 is slow. It's not up to printing mailshots or anything which requires a vast amount of



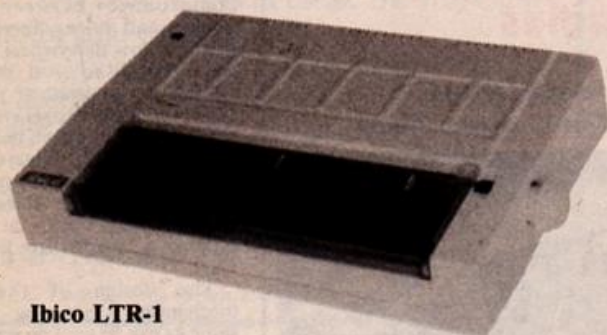
Brother M-1009

PERIPHERAL REVIEWS

printing, but if you do have the time it is quiet enough to be left printing in the background — a claim which cannot be made by some of its more expensive rivals.

The LTR-1 has some major limitations when it comes to doing the flashier things that people expect from a printer. It cannot underline or embolden text and there is no way of changing the line spacing.

The paper is friction fed so that single sheets can be used. However the carriage is not wide enough to take nine-inch fanfold paper with the tear-off strips. If you want to do a lot of listings then this is an annoyance, but then this printer is not designed for that job. It is a cheap correspondence-quality printer and it does that job brilliantly.



Ibico LTR-1

Model 1520 Plotter Printer

Commodore Business Machines,
1 Hunters Way, Weldon, Corby,
Northants NN17 1QX £99.99

Recently Commodore brought down the price of its 1520 plotter printer, and its new price tag of just under £100 makes it a real bargain.

This mode is compatible with VIC-20, 64, 16 and Plus/4. You will probably find this is the cheapest way a Commodore owner can get colour hard copy.

The 1520 is a flexible machine. It writes and draws in four colours and has up to four character sizes. In-built routines enable it to draw both solid and dotted lines, and it can draw in



Commodore 1520

steps of 0.2 mm.

Each item of hardware, except the computer, has a number allocated to it when using the serial connector. Disk drive is device 8 and the dot matrix printer and plotter printer can be used simultaneously — congratulations, Commodore, on such a good implementation.

However, things aren't so good when it comes to listing: 80-column text is difficult to read and the Commodore control characters don't come out in reverse field — all reversed characters are underlined.

You won't strain your eyes so much when reading 40-column mode, but this still isn't up to the standard of proper dot matrix output.

The 1520 isn't so hot on word processing either — you have to use a narrow roll of paper, so use

is limited. Speed is comparable to a slow daisywheel — not bad when you consider how much work the plotter is doing when it draws each character.

Another housepoint for Commodore: the documentation is first rate. Everything is explained in as much detail as you could possibly wish, with some spectacular examples. A screen dump routine is missing, but I suppose that is machine-dependent.

It's surprising that Commodore hasn't announced a version in a charcoal grey case, to match the new computers.

An addition to your system if you already have a Commodore printer, and if you want a cheap printer which will only infrequently be used for listing, this may be a worthwhile alternative to the MPS 801.

MEGA-SOUND

FOR SPECTRUM 48K

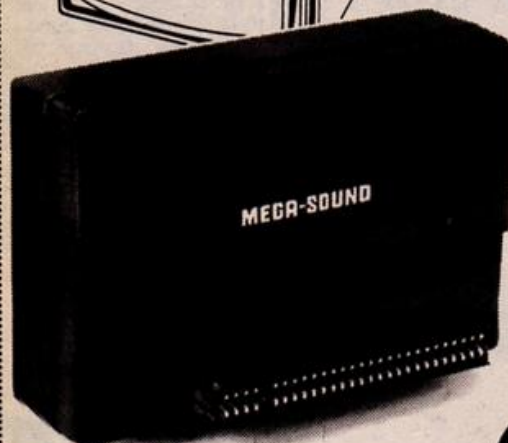
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PCW Games compilation 16 / 48K Spectrum £7.95

Century

This is a collection of twenty BASIC games which were first published in the Personal Computer World magazine.

There are of course, some very interesting programs published in computing magazines, and a lot of not very interesting ones, according to your tastes. To judge from readers letters, and published amendments to the programs, not all of them work first time, for a variety of reasons. However you are assured by the publishers that all the programs on this tape do work.

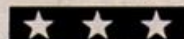
Although the price isn't

mentioned, there is a companion book to this tape. This apparently gives all the program listings, and programming techniques used in the games. For someone new to home computing and BASIC the two together could be of help.

As for the actual games on the tape they are what you would expect. All of them the brain child of some budding programmer, but none of them good enough to be published on their own.

The assessment below is for the tape as a whole, and not for any individual game. **B.B.**

instructions	50%
graphics	75%
playability	75%
value for money	75%



New wheels John? 48K Spectrum £5.00

Automata, 27 Highland Rd,
Portsmouth, Hants PO4 9DA

Anyone who has ever bought a secondhand car should find this game fun to play. You take on the role of the proprietor of a second hand car business.

Given a bank loan you have to choose one of three sites for your business, which range from a back street pitch to very plush top class showrooms.

After choosing your site you must choose which days to work, and an assistant, if you want one. Next comes a visit to the local car auctions, held every Wednesday, where you can bid to build up your car stock, which can range from old bangers to quite

reasonable cars.

Using your skill and judgement you decide how much to bid, and how much to spend on preparation for sale to punters.

Once you have sorted out your stock, and returned to your site, all you need are customers. As the days pass by you not only get customers, but salesmen, insurance inspectors, vandals and police. Every other visitor costs you a few bob.

I found it very entertaining, and a much welcomed relief from bang-bang and walk-walk games. **B.B.**

instructions	100%
graphics	75%
ease of use	100%
value for money	80%



Country Cottages Amstrad CPC 464

Sterling, Garland Hse, 86-88
Edgware Rd, London W2 2YW

It's Christmas time and you are a property tycoon!

Country Cottages is a tongue-in-cheek business game, in which each of two players buy, rent and sell their real estate.

Being hilarious to play and refreshingly different, the length of the game is determined at the start. Each player's financial assets (or otherwise!) are displayed regularly throughout the game.

This menu driven program is simplicity to play. With numerous hazards, including fire, storm and tempest making it infuriatingly difficult to win. The helpfulness of a very friendly Bank Manager is often upset by the weird but funny tenants that occupy your cottages.

Clever use of the sound commands, producing instantly recognizable real-life effects, allied to a new concept in computer graphics all add to the enjoyment of this well designed game for all the family.

Although laughing so much meant missing some of the screen messages, at times adding to the comedy of errors, pressing a key to move on would be more practicable.

This humours program should find it's way into many a Christmas stocking this year. **D.H.**

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



On your bike

More programs reviewed by
our experts. Follow the BMX
craze and stay indoors!

Kikstart CBM 64 £7.50

Mr Chip, 1 Neville Place,
Llandudno, LL30 3BL

Motorcycle and BMX games seem to be all the rage. You play the part of a motor-cyclist and must attempt obstacle courses in the shortest time possible. The obstacles comprise of water jumps or vehicles, rough ground, tyres or barrels and walls or fences.

Each type of obstacle requires different speed or tactics and must be approached with care. You can compete on your own or with another player.

There is a choice of eight courses and you have three attempts over which to average your score. The design is good with neat, colourful graphics, fair animation and ubiquitous smooth scrolling.

On the whole I found this very frustrating and unsatisfying. The control required over some obstacles was not always obvious. Whilst the cassette insert gave hints. I found that some obstacles were impossible to negotiate without incident. Possibly the game is meant to be this tough, but excessively difficult games can have a negative effect.

In spite of my difficulties, I am sure that this is a game which will respond to patience, perseverance and time. **A.W.**

instructions	70%
graphics	85%
ease of use	65%
value for money	60%



BMX Trials 48K & 16K Spectrum £6.95

Llainlan, Pontyberem, Llanelli,
Dyfed SA15 5HP

There seems to be vogue developing for this type of drive and jump type game. I'm sure you know the style.

You pilot a bike and negotiate it over a ridiculously difficult course filled with hazards that would make me get off my bike and walk. You, being much more intrepid and skilled than I, simply jump over, under and around them, until you emerge victorious at the end.

This game is set in the jungle and the hazards are lollipop trees, native huts, deep pits, flying arrows and bouncing bubbles. Strange? Well obviously you don't walk around the same jungles as the programmer!

The graphics are crude, of the stick variety rather than cartoon style. The movement is realistic enough, and as this works on the 16k model, I suppose I can't complain.

If you fancy a new BMX bike you could always play this game on the cold winter evenings, the publishers are offering 10 machines worth £200 each to the first to finish the game and solve the puzzle. On yer bike! **D.C.**

instructions	75%
graphics	70%
ease of use	75%
value for money	80%



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Bug Oric 1/ Atmos 48K £11.95

No Man's Land, 110 bis, av. du
General Leclerc — 3500 Pantin,
France

This Oric utility program offers a fairly standard range of facilities for the machine language programmer. It is a monitor, with 19 commands, and debugger helps the programmer remove the bugs from his machine code program.

The monitor section allows filling areas of memory with selected bytes, searching for one or a string of bytes, displaying on the screen areas of memory, or comparing two areas of memory.

The debug is far more useful; it will allow register contents to be displayed and modified, up to

10 breakpoints can be set, and it will go through a machine code program stepwise, displaying the effect on registers. The step option will allow JSR to be implemented or ignored, depending on the user's wishes.

The program occupies 6K of RAM in the area normally reserved for BASIC programs, so it is not possible to jump from a BASIC program to the monitor.

This is useful, but not essential for machine code programmers, offering a standard range of features.

instructions	60%
display	50%
ease of use	60%
value for money	50%



Adventure into BBC BASIC BBC B £5.25

John Wiley & Sons (Address not supplied)

This is a tape with a few gaps in the explanations that are filled in if you buy the book of the same name. The adventure game and utilities on the cassette are from listings. It is meant to save you hours of typing.

Seen in this light you should expect the book to supply detailed notes on programming and the relevance of the utilities. Unfortunately the review copy did not include the book which has to be bought separately.

The adventure was nicely done given the necessity to keep things simple. The use of mode 7 animated graphics was rewarding and amusing.

You are a knight entering

Camelot to join the Round Table. There are perils, treasures and adversaries chief amongst whom is Morgan Le Fey. Some startling use of sound and light gives a nice atmosphere.

Other helpful utilities are included in order to help you write adventures like Compacter which strips out unnecessary spaces and comments — useful to keep within memory limitations. Envelope helps in creating sounds and shapes in creating your own user defined characters.

M.P.

instructions	60%
graphics	90%
ease of use	90%
value for money	90%



Gener-80 Spectrum £7.95

Seven Stars, 15 Gloucester Ave,
London NW1 7AU

This is the companion assembler to Moder-80 and is certainly packed with facilities.

First, and very important, it is compatible with, and saveable to Microdrives and can access the Spectrum network. Code sections can be saved and loaded to/from either of these.

Second, it is compatible with any printer interface, because, not only can you relocate it in memory, but also determine the location and extent of workspaces for source and object code, leaving room for driver software. It can be co-resident with a monitor/disassembler. Full marks for versatility.

Unlike the normal Spectrum editor, Gener-80 has a 40 column, full screen version, allowing alteration anywhere on the screen, but syntax is checked on entry. Unlike some assemblers where mistakes are only found at assembly time. The usual features of move, find and delete are here, with string find. Assembly is fast.

I struggled with Moder-80 as a result of inexperience, and an unfriendly manual. A more experienced friend recommends it as useful. Gener-80's manual is first class, full of hints and examples. An excellent machine code development program, but you'll still need a book! D.M.

instructions	100%
display	100%
ease of use	100%
value for money	100%



Make your micro work

Here's a bumper page of
utilities for you to get your
teeth into. Make your micro
earn its keep

Starfinder BBC/Electron £12.95

It is going to be hard to find fault in the theory of this program, as it was designed by the president of the British Astronomical Association. It is also going to be hard to criticise the value for money. The package contains not only the cassette but also a 148 page reference book. The book is excellent, about 15 pages devoted to the program and how to run it with the rest providing an excellent introduction and reference text for a beginner.

The program starts with a menu from which you can select three options. The first allows you to decide which part of the sky to look at and on which day of the year, the second gives the option of searching for a particular heavenly body. The

third takes you to the sky display screen.

This is the vital part of the program and has the unique feature of a space probe which will reveal the name of any object you move to.

The graphics aren't exceptional but the features are better than any I've seen. D.C.

instructions	95%
graphics	75%
ease of use	85%
value for money	95%



Categ/Oric Oric 1/ Atmos 48K £7.95

No Man's Land, 100 bis, av. du
General Leclerc — 93500 Pantin,
France

The popularity of Orics in France has given rise to a steady growth of French software for this micro. This offering is a warship simulation pilotage during a Second World War naval battle. You have to fight and destroy as many enemies as possible you can and avoid damages to your ship.

The game is excellent. An arcade game it is not. You are given a number of screens depicting the instruments on a war ship, and from these you have to make decisions on running the ship before and during a sea battle.

The use of colour and sound are excellent, and after a while, it is easy to believe that you are on board a vessel, rather than in front of a keyboard and computer. It is a game that requires the use of tactics, and fast thinking in tight situations.

The only disappointment was the failure of the program to load at FAST speed, despite several attempts to do so. That meant loading at SLOW, which took all of 30 minutes! D.N.

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



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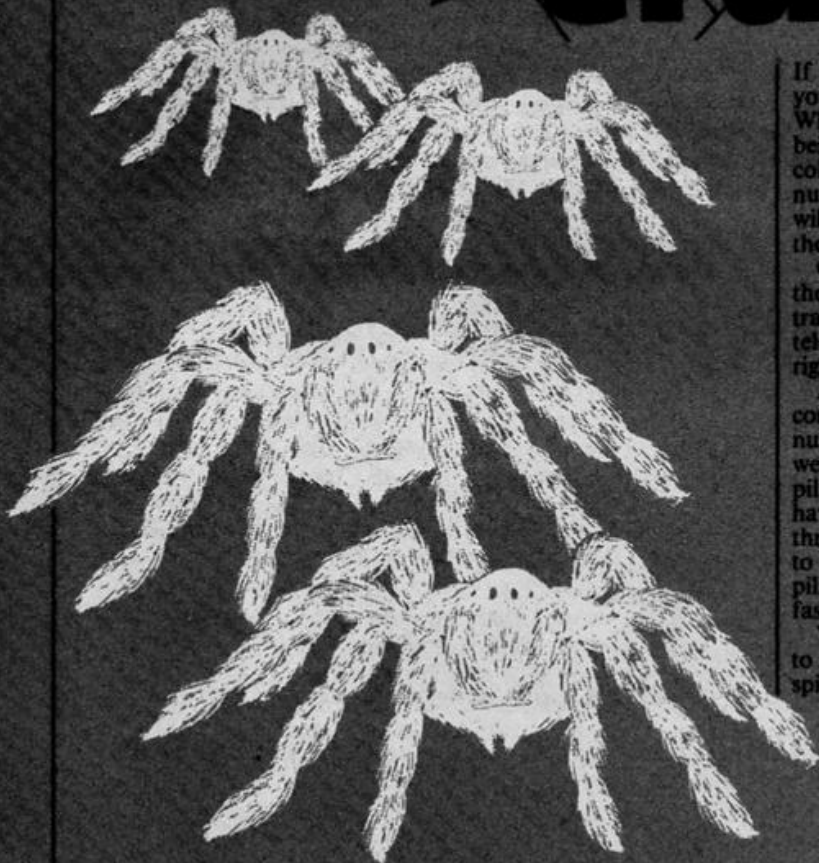


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Those spiders
are out to get
you! Pop those
energy pills
and teleport
yourself on in
this game by
Colin Stone

Steer clear of creepy- crawlies!



If you're scared of spiders, you'll be petrified by this game! What you have to do is avoid being caught by spiders, while collecting energy pills. The number of energy pills you need will be written at the bottom of the screen.

Once you have amassed all the pills you need, you can travel to the next sheet in your teleport, which is in the top right hand corner.

As the number of sheets completed increases, so does the number of spiders after you, as well as the number of energy pills you must collect. Once you have completed the sheet with three spiders on it, you go back to one spider and seven energy pills, but the spiders move much faster!

You can use the mushrooms to trap the spiders. Beware, as spiders eat energy pills, so don't

let them get there before you do.

Each time you collect an energy pill you get 20 points, and you start with three lives. Use cursor keys to move.

How it works

7-40 graphics routine
50-98 titles routine
100-125 instructions
136-140 variables
150-203 setting up screen
250-365 movement of spiders
370-405 movement of man
410-415 checks if man is in
teleport and has enough
energy pills
450-490 teleporting routine
500-550 man killed, game over
routine

Variables

spa to spc, dera to dere position
of spiders
up, ac position of man
lim controls speed of spiders
sc score
hi hi score
sh sheet
col number of pills collected
pil number of pills needed
liv lives

```

1 REM chase
2 REM *****
3 REM WRITTEN BY C STONE 1984
4 REM *****
5 REM **man**
6 BORDER 1
7 REM **GRAPHICS**
10 POKE USR "p",BIN 00111100: POKE USR "p"+1,BIN 00111100: POKE USR "p"+2,BIN
00011000: POKE USR "p"+3,BIN 11111111: POKE USR "p"+4,BIN 00011000: POKE USR "p"
+5,BIN 00100100: POKE USR "p"+6,BIN 00100100: POKE USR "p"+7,BIN 01100110
15 REM **energy pill**
20 POKE USR "o",BIN 0: POKE USR "o"+1,BIN 00111100: POKE USR "o"+2,BIN 0111111
0: POKE USR "o"+3,BIN 11111111: POKE USR "o"+4,BIN 11111111: POKE USR "o"+5,BIN
01111110: POKE USR "o"+6,BIN 00111100: POKE USR "o"+7,BIN 0
25 REM **spider**
30 POKE USR "i",BIN 11000011: POKE USR "i"+1,BIN 00100100: POKE USR "i"+2,BIN
00011000: POKE USR "i"+3,BIN 11111111: POKE USR "i"+4,BIN 00011000: POKE USR "i"
+5,BIN 01100110: POKE USR "i"+6,BIN 10000001: POKE USR "i"+7,BIN 01000010
35 REM **mushroom**
40 POKE USR "u",BIN 00011000: POKE USR "u"+1,BIN 01111110: POKE USR "u"+2,BIN
11111111: POKE USR "u"+3,BIN 11111111: POKE USR "u"+4,BIN 10011001: POKE USR "u"
+5,BIN 00011000: POKE USR "u"+6,BIN 00111100: POKE USR "u"+7,BIN 00011000
50 FOR b=1 TO 9 STEP 2: FOR n=1 TO 31 STEP 2

```



```

53 PRINT INK INT (RND*7);AT b,n;" "
55 NEXT n: NEXT b
57 FOR m=11 TO 21 STEP 2: FOR n=1 TO 31 STEP 2
60 PRINT INK INT (RND*7);AT m,n;" "
70 NEXT n: NEXT m
80 FOR n=0 TO 9 STEP 2
90 PRINT FLASH 1; INK 4;AT n,10;"INSECT-CHASE"
95 NEXT n
96 FOR n=10 TO 21 STEP 2
97 PRINT INK 0;AT n,2;"WRITTEN BY COLIN STONE 1984."
98 NEXT n
99 FOR n=1 TO 450: NEXT n: CLS
100 PRINT INK 0;AT 0,8;" INSECT-CHASE "
110 PRINT AT 2,0;"The object of the game is to      collect energy pills      witho
ut being caught by the spiders  !!"
115 BEEP .05,10
120 PRINT AT 5,0;"but you      must collect at least the number of pills the
computer tells you to collect      to be able to travel onto the      next sheet i
n the teleport!!"; FLASH 1; INK 4;AT 21,5;"PRESS ANY KEY TO PLAY!!"
121 BEEP .05,15: PRINT FLASH 1; INK 4;AT 15,0;" start on right side of scree
n.";AT 16,0;" .....left.....";AT 17,0;"TELEPORT top right hand
corner."
122 BEEP .05,20: LET hi=0: PRINT INK 2;AT 10,0;"BEWARE! spiders eat energy pil
ls as well so don't hang about!!"; FLASH 1; INK 2;AT 18,4;"ALL INFORMATION IS AT
THE";AT 19,6;"BOTTOM OF THE SCREEN!!"
123 BEEP .05,25: PRINT FLASH 1; INK 4;AT 14,5;"USE CUSOR KEYS TO MOVE."
124 BEEP .05,30: PRINT INK 1;AT 12,0;" =YOU =SPIDER =PILL "; FLASH 1;"#";
FLASH 0;"=TELEPORT"
125 BEEP .05,35: PRINT AT 13,0; INK 2;"
"
130 IF INKEY$="" THEN GO TO 130
131 CLS
132 PRINT AT 10,27;" =YOU"; FLASH 1;AT 1,23;"#"; FLASH 1;AT 2,23;"#"; FLASH 0;
"TELEPORT";AT 10,0;" =SPIDER";AT 8,13;" =PILL";AT 13,11;" =MUSHROOM"; INK 2;
FLASH 1;AT 20,10;"GET READY!!"
133 FOR n=0 TO 400: NEXT n
135 CLS
136 REM **VARIABLES**
138 LET a=0: LET b=0: LET c=0: LET z=3: LET x=3: LET pil=14: LET sc=0: LET liv=
3: LET sh=1: LET lim=3
140 LET fl=0: LET ti=0: LET nu=1: LET sp=10: LET der=0: LET spa=1: LET dera=0:
LET spb=18: LET derb=0: LET col=0: LET co=0: LET up=10: LET ac=28
150 PRINT INK 2;AT INT (RND*19),INT (RND*31);" "
151 IF sh>=3 THEN LET nu=nu+1
152 LET nu=nu+1
153 IF sh>=10 THEN LET z=2
154 IF sh>=13 THEN LET x=2
155 IF sh>=2 AND nu=z THEN LET nu=1: PRINT INK 2;AT INT (RND*19),INT (RND*31)
;" "
156 IF sh>=3 AND nu=x THEN LET nu=1: PRINT INK 2;AT INT (RND*19),INT (RND*31)
;" "
157 BEEP .005,INT (RND*40)
160 PRINT INK 4;AT INT (RND*19),INT (RND*31);" "
170 LET co=co+1
180 IF co=pil THEN GO TO 200
190 GO TO 150
200 IF col>=pil/2 THEN LET fl=1
202 IF col<pil/2 THEN LET fl=0
203 PRINT INK 2;AT 19,0;"SHEET:";sh;" :";liv;" SCORE:";sc;" HI:";hi;AT 20,0;
"NUMBER OF PILLS NEEDED:";pil/2;" ";AT 21,0;"NUMBER OF PILLS COLLECTED:"; FLASH
fl;col; FLASH 0;" "
205 LET a=1
210 PRINT INK 0;AT up,ac;" "
215 PRINT INK 3; FLASH 1;AT 1,31;"#";AT 2,31;"#";AT 1,30;"#";AT 2,30;"#": BEEP
.003,20
220 PRINT INK 1;AT sp,der;" "
222 IF b=1 THEN PRINT INK 1;AT spa,dera;" "
224 IF c=1 THEN PRINT INK 1;AT spb,derb;" "
230 LET ti=ti+1

```


PROGRAM

```

240 IF ti=lim THEN LET ti=0: GO TO 250
245 GO TO 370
250 IF a=1 AND sp<up AND ATTR (sp+1,der)<>60 AND ATTR (sp+1,der)<>57 THEN PRIN
T AT sp,der;" ": LET sp=sp+1: PRINT INK 1;AT sp,der;" "
251 IF col>=pil/2 AND up=1 AND ac=31 THEN GO TO 450
252 IF col>=pil/2 AND up=1 AND ac=30 THEN GO TO 450
253 IF col>=pil/2 AND up=2 AND ac=30 THEN GO TO 450
254 IF col>=pil/2 AND up=2 AND ac=31 THEN GO TO 450
255 IF a=1 AND sp=up AND der=ac THEN GO TO 500
260 IF a=1 AND sp>up AND ATTR (sp-1,der)<>60 AND ATTR (sp-1,der)<>57 THEN PRIN
T AT sp,der;" ": LET sp=sp-1: PRINT INK 1;AT sp,der;" "
265 IF a=1 AND sp=up AND der=ac THEN GO TO 500
270 IF a=1 AND der>ac AND ATTR (sp,der-1)<>60 AND ATTR (sp,der-1)<>57 THEN PRI
NT AT sp,der;" ": LET der=der-1: PRINT INK 1;AT sp,der;" "
275 IF a=1 AND sp=up AND der=ac THEN GO TO 500
280 IF a=1 AND der<ac AND ATTR (sp,der+1)<>60 AND ATTR (sp,der+1)<>57 THEN PRI
NT AT sp,der;" ": LET der=der+1: PRINT INK 1;AT sp,der;" "
285 IF a=1 AND sp=up AND der=ac THEN GO TO 500
290 IF b=1 AND dera<ac AND ATTR (spa,dera+1)<>60 AND ATTR (spa,dera+1)<>57 THEN
PRINT AT spa,dera;" ": LET dera=dera+1: PRINT INK 1;AT spa,dera;" "
295 IF b=1 AND spa=up AND dera=ac THEN GO TO 500
300 IF b=1 AND dera>ac AND ATTR (spa,dera-1)<>60 AND ATTR (spa,dera-1)<>57 THEN
PRINT AT spa,dera;" ": LET dera=dera-1: PRINT INK 1;AT spa,dera;" "
305 IF b=1 AND spa=up AND dera=ac THEN GO TO 500
310 IF b=1 AND spa>up AND ATTR (spa-1,dera)<>60 AND ATTR (spa-1,dera)<>57 THEN
PRINT AT spa,dera;" ": LET spa=spa-1: PRINT INK 1;AT spa,dera;" "
315 IF b=1 AND spa=up AND dera=ac THEN GO TO 500
320 IF b=1 AND spa<up AND ATTR (spa+1,dera)<>60 AND ATTR (spa+1,dera)<>57 THEN
PRINT AT spa,dera;" ": LET spa=spa+1: PRINT INK 1;AT spa,dera;" "
325 IF b=1 AND spa=up AND dera=ac THEN GO TO 500
330 IF c=1 AND spb<up AND ATTR (spb+1,derb)<>60 AND ATTR (spb+1,derb)<>57 THEN
PRINT AT spb,derb;" ": LET spb=spb+1: PRINT INK 1;AT spb,derb;" "
335 IF c=1 AND spb=up AND derb=ac THEN GO TO 500
340 IF c=1 AND spb>up AND ATTR (spb-1,derb)<>60 AND ATTR (spb-1,derb)<>57 THEN
PRINT AT spb,derb;" ": LET spb=spb-1: PRINT INK 1;AT spb,derb;" "
345 IF c=1 AND spb=up AND derb=ac THEN GO TO 500
350 IF c=1 AND derb<ac AND ATTR (spb,derb+1)<>60 AND ATTR (spb,derb+1)<>57 THEN
PRINT AT spb,derb;" ": LET derb=derb+1: PRINT INK 1;AT spb,derb;" "
355 IF c=1 AND spb=up AND derb=ac THEN GO TO 500
360 IF c=1 AND derb>ac AND ATTR (spb,derb-1)<>60 AND ATTR (spb,derb-1)<>57 THEN
PRINT AT spb,derb;" ": LET derb=derb-1: PRINT INK 1;AT spb,derb;" "
365 IF c=1 AND spb=up AND derb=ac THEN GO TO 500
370 IF INKEY$="5" AND ATTR (up,ac-1)<>60 AND ac>0 AND ATTR (up,ac-1)=58 THEN L
ET col=col+1: PRINT AT up,ac;" ": LET sc=sc+20: LET ac=ac-1: PRINT INK 0;AT up,
ac;" ": GO TO 200
375 IF INKEY$="5" AND ATTR (up,ac-1)<>60 AND ac>0 THEN PRINT AT up,ac;" ": LET
ac=ac-1: PRINT INK 0;AT up,ac;" ": GO TO 200
380 IF INKEY$="8" AND ATTR (up,ac+1)<>60 AND ac<31 AND ATTR (up,ac+1)=58 THEN
LET col=col+1: PRINT AT up,ac;" ": LET sc=sc+20: LET ac=ac+1: PRINT INK 0;AT up
,ac;" ": GO TO 200
385 IF INKEY$="8" AND ATTR (up,ac+1)<>60 AND ac<31 THEN PRINT AT up,ac;" ": LE
T ac=ac+1: PRINT INK 0;AT up,ac;" ": GO TO 200
390 IF INKEY$="6" AND ATTR (up+1,ac)<>60 AND up<18 AND ATTR (up+1,ac)=58 THEN
LET col=col+1: LET sc=sc+20: PRINT AT up,ac;" ": LET up=up+1: PRINT INK 0;AT up
,ac;" ": GO TO 200
395 IF INKEY$="6" AND ATTR (up+1,ac)<>60 AND up<18 THEN PRINT AT up,ac;" ": LE
T up=up+1: BEEP .005,0: PRINT INK 0;AT up,ac;" ": GO TO 200
400 IF INKEY$="7" AND ATTR (up-1,ac)<>60 AND up>0 AND (up-1,ac)=58 THEN LET co
l=col+1: LET sc=sc+20: PRINT AT up,ac;" ": LET up=up-1: PRINT INK 0;AT up,ac;"
": GO TO 200
405 IF INKEY$="7" AND ATTR (up-1,ac)<>60 AND up>0 THEN PRINT AT up,ac;" ": LET
up=up-1: BEEP .005,0: PRINT INK 0;AT up,ac;" ": GO TO 200
410 IF col>=pil/2 AND up=1 AND ac=31 THEN GO TO 450
411 IF col>=pil/2 AND up=1 AND ac=30 THEN GO TO 450
412 IF col>=pil/2 AND up=2 AND ac=30 THEN GO TO 450
415 IF col>=pil/2 AND up=2 AND ac=31 THEN GO TO 450
420 GO TO 200
450 LET sh=sh+1: LET b=1
451 IF sh>=4 AND sh<7 THEN LET pil=pil+10

```


SPECTRUM PROGRAM

```

452 IF sh>=7 THEN LET pil=pil+10
455 IF sh<=3 THEN LET pil=pil+10
456 LET b=1
457 IF sh=6 THEN LET c=1
458 IF sh=9 THEN LET c=1
460 IF sh=3 THEN LET c=1
475 PRINT AT sp,der;" ";AT spa,dera;" ";AT spb,derb;" "
478 LET l=0
479 FOR n=-40 TO 0: LET l=l+1: BEEP .005,n: NEXT n: FOR n=0 TO 40: BEEP .005,n:
NEXT n: PRINT FLASH 1;AT up,ac;" ": FOR n=1 TO 30: NEXT n
480 IF l<2 THEN GO TO 479
481 IF sh=4 THEN LET pil=14
482 IF sh=7 THEN LET pil=14
483 IF sh=10 THEN LET pil=14
485 LET col=0: LET sp=10: LET der=0: LET spa=1: LET dera=0: LET spb=18: LET der
b=0: LET up=10: LET ac=31
487 IF sh=7 THEN LET lim=1: LET a=0: LET b=0: LET c=0: CLS : GO TO 137
488 IF sh=4 THEN LET lim=2: LET a=0: LET b=0: LET c=0: CLS : GO TO 137
490 CLS : LET co=0: GO TO 150
500 PRINT FLASH 1; INK 2;AT up,ac;" "
505 PRINT AT sp,der;" ";AT spa,dera;" ";AT spb,derb;" "
510 BEEP .8,-30: LET liv=liv-1
515 IF liv=0 AND sc>hi THEN LET hi=sc
520 IF liv=0 THEN PRINT FLASH 1; INK 4;AT 8,10;"GAME-OVER"; FLASH 0;AT 10,1;"
DO YOU WANT ANOTHER GAME?(Y/N)!" : GO TO 540
523 PRINT AT up,ac;" "
525 LET up=10: LET ac=31: LET sp=10: LET der=0: LET spa=1: LET dera=0: LET spb=
18: LET derb=0
530 GO TO 200
540 IF INKEY$="y" THEN CLS : FOR n=1 TO 30: GO TO 135
550 IF INKEY$="n" THEN CLS : STOP
560 GO TO 540
    
```



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HCW - 12/84

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With this program by Mike Poskitt you can keep all the records you need. All you require is your unexpanded TI and a cassette player

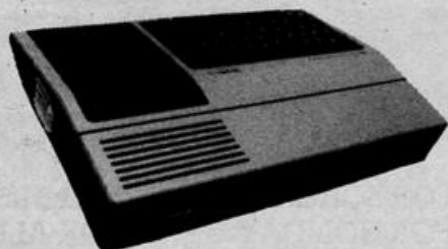
This is a simple record-keeping program requiring only the expanded TI-99/4A and a cassette player for storing the records

The program is menu-driven and the following selection is available:

- 1 Load file from cassette
- 2 Display file
- 3 Display file
- 4 Search file
- 5 Add a record
- 6 Modify a record
- 7 Save file on cassette
- 8 Exit

Hints on conversion

This program is quite straightforward and conversion should not present a problem.
Peculiarities of TI BASIC

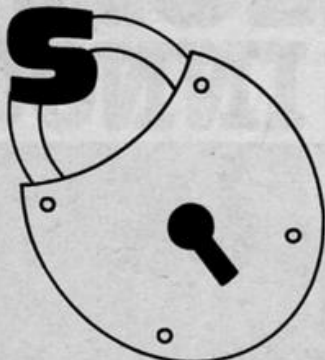


```

100 REM *****
110 REM * RECORD KEEPER *
120 REM *
130 REM * M.G.P. 6/84 *
140 REM *****
150 REM
160 CALL CLEAR
170 DIM R$(200), I$(200)
180 CALL CHAR(128, "0000FF")
190 CALL COLOR(13, 9, 1)
200 CALL SCREEN(12)
210 N=1
220 CALL CLEAR
230 REM *****MENU*****
240 PRINT TAB(8); "RECORD KEEPER"
250 PRINT "1. LOAD FILE FROM CAS

```

Save those records



include single statement lines and built-in subroutines by using the CALL statement:

CALL CLEAR clears screen
CALL SCREEN sets screen colour, in this case yellow
CALL CHAR defines character, in this case a thin horizontal line, used to enhance the display
CALL COLOR (char set, foreground color, background color) sets colour of character, in this case a red line
CALL HCHAR (row, col, char code, no of repeats) place char on screen horizontal
CALL KEY (O,K,S;0 = key-unit, K = return variable, S = status variable) detects input from keyboard

Variables

Subscripted variable
RS(R) records
ISS(R) information
N number of records on file
RECS when searching for record, record name input from keyboard is stored in this variable

```

SETTE":
260 PRINT "2. CREATE NEW FILE":
270 PRINT "3. DISPLAY FILE":
280 PRINT "4. SEARCH FILE":
290 PRINT "5. ADD A RECORD":
300 PRINT "6. MODIFY A RECORD":
310 PRINT "7. SAVE FILE ON CASSE
TTE":
320 PRINT "8. EXIT":
330 CALL HCHAR(23,1,128,32)
340 CALL HCHAR(5,1,128,32)
350 PRINT "SELECT 1 TO 8"
360 CALL KEY(O,K,S)
370 IF (K<49)+(K>56) THEN 360
380 ON K-48 GOTO 400,500,710,860
,1020,1160,1380,1460
390 REM ***LOAD FILE***
400 CALL CLEAR
410 N=1
420 OPEN #1:"CS1",INTERNAL,INPUT
,FIXED 128
430 INPUT #1:R$(N),I$(N)
440 IF R$(N)="END" THEN 470
450 N=N+1
460 GOTO 430
470 CLOSE #1
480 GOTO 220
490 REM *CREATE NEW FILE*
500 CALL CLEAR
510 PRINT "WARNING! YOU ARE CREA
TING A": "NEW FILE. IF A FILE ALR
EADY":
520 PRINT "EXISTS, IT WILL BE":
"ERASED.": "CONTINUE? (Y/N)"
530 CALL KEY(3,K,S)
540 IF S=0 THEN 530
550 IF K<>89 THEN 220
560 CALL CLEAR
570 N=1

```



```

580 PRINT "ENTER RECORD AND INFO
RMATION":;"SEPARATELY.":;
590 PRINT "(TYPE ""END"" TO FINI
SH.)":;
600 PRINT :;"RECORD":;
610 CALL HCHAR(23,3,128,6)
620 INPUT R$(N)
630 IF R$(N)<>"END" THEN 650
640 GOTO 220
650 PRINT :;"INFORMATION":;
660 CALL HCHAR(23,3,128,11)
670 INPUT I$(N)
680 N=N+1
690 GOTO 600
700 REM **DISPLAY FILE**
710 CALL CLEAR
720 IF N>1 THEN 750
730 PRINT "NO FILE IN MEMORY":;
:::::
740 GOTO 820
750 FOR R=1 TO N
760 PRINT :;R$(R):;
770 IF R=N THEN 790
780 PRINT I$(R):;
790 INPUT "PRESS ENTER TO CONTIN
UE ":NUL$
800 CALL HCHAR(23,1,128,32)
810 NEXT R
820 FOR D=1 TO 600
830 NEXT D
840 GOTO 220
850 REM **SEARCH FILE**
860 CALL CLEAR
870 PRINT :;"FIND WHICH RECORD?"
:;"(TYPE ""END"" TO FINISH)":;
880 INPUT REC$
890 IF REC$="END" THEN 220
900 FOR R=1 TO N
910 IF R$(R)=REC$ THEN 970
920 NEXT R
930 PRINT :;"RECORD NOT FOUND"
940 FOR D=1 TO 600
950 NEXT D
960 GOTO 860
970 CALL CLEAR
980 PRINT :;R$(R):;I$(R):;
990 INPUT "PRESS ENTER TO CONTIN
UE ":NUL$
1000 GOTO 860
1010 REM **ADD A RECORD**
1020 CALL CLEAR
1030 PRINT "ADDITIONS TO EXISTIN
G FILE.":;
1040 PRINT "(TYPE ""END"" TO FIN
ISH.)":;
1050 PRINT :;"RECORD":;
1060 CALL HCHAR(23,3,128,6)

```

```

1070 INPUT R$(N)
1080 IF R$(N)<>"END" THEN 1100
1090 GOTO 220
1100 PRINT :;"INFORMATION":;
1110 CALL HCHAR(23,3,128,11)
1120 INPUT I$(N)
1130 N=N+1
1140 GOTO 1050
1150 REM *MODIFY A RECORD*
1160 CALL CLEAR
1170 PRINT "MODIFY WHICH RECORD?
":;(TYPE ""END"" TO FINISH)":;
1180 INPUT REC$
1190 IF REC$="END" THEN 220
1200 FOR R=1 TO N
1210 IF R$(R)=REC$ THEN 1270
1220 NEXT R
1230 PRINT :;"RECORD NOT FOUND"
1240 FOR D=1 TO 600
1250 NEXT D
1260 GOTO 1160
1270 CALL CLEAR
1280 PRINT :;"RECORD: ";R$(R):;"
INFORMATION: ";I$(R):;
1290 PRINT "ENTER MODIFICATION..
":;
1300 PRINT "RECORD":;
1310 CALL HCHAR(23,3,128,6)
1320 INPUT R$(R)
1330 PRINT :;"INFORMATION":;
1340 CALL HCHAR(23,3,128,11)
1350 INPUT I$(R)
1360 GOTO 1160
1370 REM ***SAVE FILE***
1380 CALL CLEAR
1390 OPEN #1:"CS1",INTERNAL,OUTP
UT,FIXED 128
1400 FOR R=1 TO N
1410 PRINT #1:R$(R),I$(R)
1420 NEXT R
1430 CLOSE #1
1440 GOTO 220
1450 REM ****EXIT****
1460 CALL CLEAR
1470 PRINT "WARNING! ANY FILE IN
MEMORY":;"WILL BE ERASED.":;
:::::
1480 PRINT "CONTINUE? (Y/N)"
1490 CALL KEY(3,K,S)
1500 IF S=0 THEN 1490
1510 IF K<>89 THEN 220
1520 CALL CLEAR
1530 PRINT TAB(10);"GOODBYE!":;
:::::
1540 FOR D=1 TO 600
1550 NEXT D
1560 END

```


Potty Pigeon 48K Spectrum £

Gremlin, Alpha Hse, 10 Carver St, Sheffield, S1 4FS

Not having seen any other products from this company I have to remark at how good the screens are visually. This is a fetch and carry game with eleven screens and each one has its features and surprises.

You are transformed into a pigeon called Percy and a difficult life it is, trying to bring up four young fledglings and with so many predators to overcome.

The movement of Percy is nothing less than excellent, I cannot get over how like a pigeon he looks. The first screen shows the tree and nest and you must return here to deposit the worms that you gather.

The major problem is that flying is a very energetic exercise and after a few seconds you have to rest on a ledge. The predators vary from eagles to helicopters and cars but all are hard to avoid. Your only means of defense being the exploding eggs that you drop. Levels are available for super pigeons but you have to eat a great deal of dirt to get that far.

This is a great game and bound to be a winner. D.C.

instructions	75%
graphics	100%
ease of use	100%
value for money	95%



Time Zone Commodore 64 £6.95

Channel 8, 51 Fishergate, Preston, Lancs PR1 8BH

Well, good old Planet earth is under attack yet again. This time it's a race called Terrilons attempting to scare or confuse by impersonating objects and creatures from different time periods. You are the brave hero attempting to repulse the nasties in your space ship. By using a Time Vector Tracker (good stuff this) you can enter any of the time zones and do battle.

You are given the usual side view with right to left scrolling. You can move to any position on the screen giving a useful degree of manoeuvrability. There are five screens with interesting meanings, each with its own

method of attack. The design of the nasties is very nice and highly reminiscent of the style of a certain Llama loving software author. The movement of the stars gives a feeling of depth. Whilst the earlier screens are fairly easy, things get rather evil by the time you reach screen five.

Generally, rather a ripping game which is pretty to watch and exhausting to play. Not too original but good fun all the same. A.W.

instructions	80%
graphics	80%
ease of use	80%
value for money	85%



New Cylon attack 48K Spectrum £5.75

A&F, Unit 8, Canal Side, Woodbine St East, Rochdale, Lancs OL16 5LB

The first thing that you notice when loading this tape is that it won't! The inlay card states 'LOAD"', but in actual fact you must 'LOAD"'CODE, which can confuse newcomers to computing.

Once loaded you do have a menu from which to choose, such as re-define the keyboard, or look at the instructions. All the text uses a re-defined character set which looks a bit spacey, but is not the easiest to read.

The theme of the game is to shoot down waves of attacking space ships which have been sent by the Cylons. There are the now usual status displays: fuel, energy shields, RADAR etc.

When you find yourself running out of fuel you must find the mother ship and attempt a docking. The response to the keyboard controls is very positive, with very smooth movement of everything on the screen. If you have not yet had your fill of the shoot-'em-up type games then you might like to try this one.

Not what I would call addictive, but then so very few are. B.B.

instructions	100%
graphics	85%
playability	75%
value for money	85%



Here they come again

Yes, there are more beasties
coming at you from outer
space. Kill or be killed

Borzak Commodore 64 £6.95

Channel 8, 51 Fishergate, Preston, Lancs PR1 8BH

Well folks, it's cuddly bug-eyed beastie from Betelgeuse time. Borzak, the afore-mentioned illegal immigrant has crashed on earth and you must help him to survive the deadly fauna of earth.

These are frogs, dragon flies, ducks, spiders, ditches, walls and other appalling hazards.

You get a side view of our friend as the scenery scrolls smoothly right to left. You avoid the opposition by jumping, ducking and accelerating or decelerating. You also have an anti-grav device to extend jumps. There are six levels with varying difficulty

The graphics are fair and

Borzak is a rather twee with a reciprocating nose. The animation is tolerable but unspectacular. The background is remarkably sparse with just a simple green bit of grass. A few trees and houses would have helped maintain interest. I found the control awkward. The duration of jump is unpredictable, particularly with anti-grav. This leads to an increasing sense of frustration resulting in overwhelming irritation.

Overall this game is a nice idea with a weak implementation. It doesn't really offer anything unusual or out of the ordinary.

instructions	90%
graphics	60%
ease of use	60%
value for money	60%



Jet-Boot Jack BBC B £7.95

English, Box 43, Manchester M60 3AD

This is a game that has you jumping, ducking, running, sliding, rolling and going up and down lifts. There are going to be the inevitable comparisons but, of its type, it is quite well done.

The graphics are good but limited. There are ten screens but there is not much difference between them. The colours change and the positions of the lifts, rollers etc. move but you are playing the same background all the time.

As Jet-Boot Jack, so called because of this method of propulsion, you have been placed in the record pressing plant suitably manitured.

You collect fuel for your boots from pods hanging from the ceiling, collect musical notes and protect yourself from bugs and gremlins.

There is a practice option which allows you to play without the bugs. This allows you to make speedy progress through the screens and may eliminate a lot of the frustration. An additional good point is the ability to start afresh from the screen you last tackled. This is always reset to screen 1 when you start a new session so you could be tied to the screen for some time.

An exciting game with nice features but without the quality to make it a lasting favourite. M.P.

instructions	95%
graphics	70%
playability	90%
value for money	80%

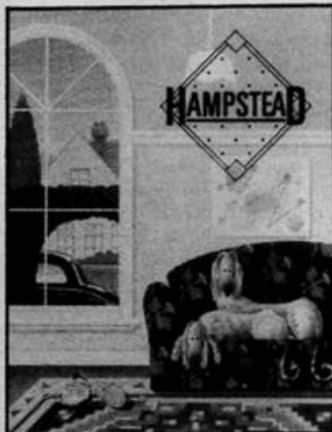


First in a regular series of adventure columns for enthusiasts written for you by Peter Sweasey

Welcome to Ventures, HCW's new regular column designed to keep you in touch with everything going on in the world of adventures and arcade-adventures (arcventures, as I call them). Ventures will also help you out if you are stuck or want to tell the world how brilliant you are at a certain point in a game. We need your letters: so if you want help, can provide help, or simply want to express your opinions on the games covered in Ventures, write now!

In future issues I hope to be taking a look at specific new software releases, but to start with, here's an overview of some of the best games around, starting with adventures. Fortunately, many adventures are released on several machines, which makes a feature like this much easier to write.

One company who does this is Melbourne House, who wrote the most famous British game of all, *The Hobbit*, which has been a best-seller, although personally I find it boring. Recently *Sherlock Holmes* shot



into the charts on two machines — despite some terrible punctuation — as has the much better and funnier *Hampstead*.

Level 9 produces less well known but brilliant, large, sensibly priced and atmospheric adventures, including a version of the original mainframe game. Other personal favourites include the Artic A-G range, all at low prices; Bug-Byte's *Twin Kingdom Valley*; a new game

from RamJam, *Valkyrie 17*, and the Scott Adams' games, *The Hulk*, *Sorcerer of Claymourage Castle* and *Adventureland*.

Arcventures are much newer and constantly improving. They more or less started with *Manic Miner*, came of age with *Jet Set Willy* and are now much more popular and complex. Kokotoni Wilf from Elite has proved popular, as has *Interceptor's* original *Tales Of The Arabian*

shot writes: 'In Valhalla, the left hand numbers are locations. There are 81. The right hand numbers are where the ringway will take you. The objects are at the following locations: Ofnir 73, Drapnir 37, Skornir 4, Skalar 44, Felstrong 6, Grinnir 81. This would be very useful if only I could find the numbers. Maybe they are only on the CBM version?'

The Hulk is proving very tricky to a lot of people. Kim



Nights and its' not so original China Miner.

Melbourne House entered the field with *Sir Lancelot* as did *Micromega* with *Braxx Bluff* and the complicated *Jasper*. By far the best of this genre, however, is *Pyjamarama* by MikroGen, which really combines arcade elements with the problem solving strategy of adventures.

There are many new adventures/arcventures being released in the run up to Christmas, and I hope to look at these in future issues.

Now for this week's help. As I said, we really need your letters — it's difficult to work without them, but here's a selection from the HCW postbag. I have not coded solutions (not that there are many this week) and will not do so unless you request me to do so.

Firstly, J W Rundle of Alder-

Vidal of Antwerpen in Belgium amongst them. Here are some general hints, but I'm afraid I am one of the many when it comes to those ants. There are three domes, each different inside. Dr Strange is in one, but will only appear to the Hulk. Sometimes he is silent, but at other times he might show you something worth further examination... I would be interested to hear from anyone who has further solutions with this popular game.

Kim Vidal also asks about how to open the chest in the tower in the fifth circle in *Richard Shepherd Software's Inferno*. Any ideas, anyone?

Moving on to arcventures, Tony Cini writes from London to give hints on *Blogger*. Apparently pressing CTRL and any key from A to colon will allow you to access any of the screens. A similar hint comes from James Collis of Byfleet,

who would like to inform all Kokotoni Wilfers that pressing 2 or 3 at the title screen of the game will take you to the appropriate time zone. This relieves the boredom of playing the dinosaur screens which always annoyed me.

N White of Harrogate asks for help with sheet three of *Tales Of The Arabian Nights*. R Foster of Doncaster thinks he can help: his solution would, however, take up the whole magazine, so here is just how to get the second 'A' which seems to be the problem. When standing by the ladder, wait for the genie to come near you, then jump off the edge on to the thick rock. When the genie has passed, run until you drop off the brick wall, jump left and arrive under the ladder. When the genie is very close, climb up, jump off the edge and there's your 'A'. Simple...!

John Webster is having problems with Virgin's *Sorcery* on the CBM. Well, you need to use the objects, which will either kill the monsters, club down trapdoors or open the door. Your energy can be recharged by standing on the cauldron.

Finally, some requests for help for which you might be able to provide solutions. Maureen Ashworth from Lancs is finding an icehound rather nasty in *Strange Odyssey* on the TI-99/4A, whilst Michael Chowbury is stuck with a sting scorpion in *Richard Shepherd's Super Spy*. Can anyone help?

So that's the first Ventures column. Remember: write in if you are stuck, or have solved any type of venture, or simply want to express opinions. Mark your letters Ventures to save non-venturing staff being confused by dragons, and make sure you put your full name and address on your letters. Bye for now!



Baffled by jargon? Confused by terminology? Dave Carlos leads you gently into the world of the machine code programmer and points you on your way

If you want to communicate with other people for some reason, you need to understand their language, or communication is difficult to say the least. If you've stepped off the usual tourist tracks, when on holiday, you will have found difficulty in communicating and may well find resorting to wild gestures and picture language. This can work, but what would happen if the person you were speaking to was blind?

We have the same sort of problems in communication with computers, since they "speak" a language completely different to our own and this makes the interchange of information between us quite difficult. In order to give us any change at all, the designers of our machines "taught" them to speak a language we can learn reasonably easily, called BASIC (short for Beginners' All-Purpose Symbolic Instructional Code).

This is done by placing in the machine a special type of program called an interpreter which works like the interpreters you see at the United Nations. It takes the language you give the machine, probably by typing at the keyboard, and interprets each part, turning it into machine language or machine code as it is often known. This comprises a sequence of electrical signals at different levels, offs and ons you might say, which have particular meanings for the type of processor you are using.

As you might have guessed, interpreting costs the UN lots of money because it takes so much time. Whilst it doesn't cost us much, it still takes a great deal of computer time, as every word is translated each time it is found, no matter how many times a particular word crops up in a program.

It's rather like using a

French/English dictionary for every word, never learning even a few common words. It would save us all that time if we could only speak the same language as the machine in the first place. Unfortunately it would be very difficult for us to input electrical signals direct to the machine, so a series of intermediate stages are necessary.

This is where we start to see the need for binary numbers in a computer. These numbers can be changed very quickly into a series of ons and offs, because they each translate to a single on or off signal. This means we could program our machine by inputting a number of ones and zeros but it would take us until doomsday to input a large program; what happens if you make even a single mistake?

To help us further, we group

these binary numbers into 16s (because 16 will divide exactly by two and 10 won't) and call these numbers hexadecimal numbers. These are often mistakenly referred to as machine code: they aren't real, proper machine code because they aren't electrical signals but they are very easily translated into such signals and this makes them ideal for our use. All we need to do now is learn a whole series of hexadecimal numbers and the task is done.

Not the easiest of problems, I'm sure you'll agree. Fancy having the learn the meaning of up to 255 different numbers and then write them down in order to make the computer do anything. So, to make the whole operation a little simpler, some of the early programmers developed a series of mnemonics, or memory aids, to

remind us of the meanings of the numbers.

You probably used a mnemonic at school to remember the names of the colours of the rainbow — Richard Of York Gave Battle In Vain. This system was successful and much easier to learn than the series of numbers and so programmers started to use a series of look-up tables where the mnemonic was listed along with its number equivalent.

Some bright spark got fed up of this and one day decided to write a program, in mnemonics of course, which would be able to translate straight from mnemonics to hexadecimal numbers without having to look up the values in between. He did this and called the program an "assembler" because it took the mnemonics and assembled

Machine code — a beginner's guide



the hexadecimal numbers with the necessary action into a working program.

Using an assembler is how most people, nowadays, write machine code. Assembler mnemonics are much easier to learn than the numbers themselves because they have some meaning, and psychologists believe that it is in meaningful groups that we store information in the brain. At last we have a simple way of making the machine do what we want without having to make it interpret our language on each occasion.

So, if you still want to write machine code, or to be more exact, assembler, how do you go about it? Firstly, you need to find out what type of processor there is inside your machine. This is because the "instruction sets", i.e. the kind of actions the processor can take, differ from processor to processor and therefore the machine mnemonics change too. The common processors are 6502 (BBC, Electron, Commodore, Oric/Atmos) and Z80 (Spectrum, Amstrad, Tandy) but there are a number of others, e.g. 6809 in the Dragon.

Once you have done this you should look for three more things. Firstly, you need an assembler and a disassembler (which helps sort out your mistakes) with as many features as possible. The types available differ greatly from machine to machine, to pass assembly is vital but if possible also get one with a "macro" facility. BBC and Electron owners really only need a disassembler as an assembler is built into the BASIC in those machines.

Secondly, you should buy a good book on learning machine code for your particular machine as information varies from machine to machine, such as the location of the screen and the memory free for your program. These books will probably tell you all you need to know. Finally, you should consider buying one of the manuals for the particular processor your machine contains. This isn't essential, but if you are serious it can help explain the various instructions in full detail.

When you've got all these things together you need time to read and test what you've learned. Machine code isn't easy but it does have its rewards, and it's difficult to stop yourself running around the house when you've put a letter on the screen for the very first time. What you then realise is the amount of work the BASIC interpreter does when

you tell it to 'PRINT "A"'.

You need to remember that after the assembler has "compiled" your program, it must be saved separately to the assembler program, or "source code", from which it came. This is because the new program, a series of numbers, can now be run without the assembler. You LOAD the program and CALL it from the machine and it starts its execution.

It is this way of avoiding any intermediate that makes machine code so fast. You do need to be meticulous about file naming though, since it is very easy to save a new compiled program over your source code, only to find that there is a mistake in the program and you have to start again from scratch. If you'd been more careful you could have just looked at the source code again and a minor alteration would have provided the solution.

One major idea must be considered in this introduction — the concept of language level. The reason BASIC is easy to learn is because it is a high level language. This is defined in computing circles as a language in which one instruction can be translated into more than one machine language instruction.

The word PRINT, for example, needs the computer to take a whole range of actions in order for anything to appear on the screen. It involves finding out what to print, where the screen or printer is in memory, putting the information in the right place and then returning to see what the next instruction is. All this happens because you used the one word PRINT.

Assembler is known as a low level language because a single instruction in the language is turned into a single action for the processor. As an example, the instruction 'LDO 0' is short for Load the Accumulator with the value of 0. Notice that only one action is taken for the word. The accumulator becomes 0 and then the machine goes on to the next instruction.

This difference in level between assembler and BASIC means you must know much more about the nature of micro processors (CPUs) if you are to program in assembler than if you are content to use just BASIC. Your reward is very fast programs which can be made to do more than BASIC programs, because everything is written for a single purpose and not for a whole range.

You might picture a machine code program as a fully

developed Formula One racing car, built for the job and with just one purpose — speed. However, it can't be used like a production saloon car for a whole range of purposes,

including racing. Here the speed is sacrificed in order to be able to have a generally more useful vehicle. You wouldn't take your granny to the sea-side in a Matra Ford!



We're proud to present this Bootstrap Loader as our first QL program. It's written for you by Jersey resident C C Wilton-Davies

Many aspects of Microdrive operations on the QL have much in common with their Spectrum counterparts. Unfortunately, cumbersome syntax is one of these resemblances; thus, to load a program called "beeper" on Drive No.1, one must type "LOAD mdv1_beeper" and ENTER.

The space and the underline character are vital. Just as the QL's mdv1_ replaces the Spectrum "m";1; so the Spectrum's CAT command is replaced by DIR to list the contents of a cartridge.

As soon as you have more than 18 files stored on a cartridge, you will find that the top names disappear off the top of the screen without any polite "Scroll?" from the QL. You have to be very fast to stop this with CTRL/SPACE in just the right place!

This utility is written, not only to overcome this uncontrolled scrolling, but to enable single-key loading of any program. When the QL is switched on and has tested its memory, it invites you to tell it whether you are using a TV or a monitor for display by selecting one of two function keys.

When you do this, the QL will load and run any program called "boot" which is on the cartridge in Drive 1. Psion has taken advantage of this on the cartridges supplied with the QL, but this program is specific to a particular cartridge.

Incidentally, the QL User Guide will tell you that Drive 2 is searched; this is one of very many mistakes in the manual.

Make sure that no cartridges are in the QL when it is switched on or off, or data may be corrupted/lost. Switch on, put a cartridge in Drive 1 (left), and if it is blank, enter "FORMAT mdv1_name", where "name" is your choice of almost anything.

When the cursor reappears at the bottom of the screen, you can start keying in this program. Formatting seems to

First HCW QL program!

How it works

160-180 initialises memory and screen, deletes any old temporary file
190-220 opens temporary file and reads directory into it
230-280 reads temporary file into array
290-390 displays directory and instructions
400-430 waits for keypress in right range
440 gets pointer
450 toggles Auto-Run if / pressed
460-470 increments drive number if 0 pressed
480-530 tests that key corresponds to a file, and LORDS if OK
540 gives error message and retry on wrong key

cartridge in Drive 1, and press F2 if you are using a TV display, F1 for a monitor. The program will load and run, displaying "Microdrive Number 1" followed by the Directory formatted in four columns, and three lines of instructions. Drive 1 will run for a bit (writing a temporary file), but you don't have to wait for it to stop. In front of each file name is a different flashing character (1 for the first et seq.); if you press the corres-

Variables

drive\$ contains the number of the drive you are looking at. Although it is a string, the "coercion" of QDOS allows you to do arithmetic with it, as in line 470. Because of this, you must use "&" instead of "+" to concatenate strings.
flag decides whether programs are to be just LOADED (flag=0) or LRUN (flag=1).
dir\$ is the array to hold the filenames. I have allowed for up to 47 names of up to 255 characters each. Probably not necessary, and if every name was as long as this, you would certainly overflow the screen. But you do

not have the penalty of unused parts of the array being filled with spaces as you would in the Spectrum. The first two items contain the cartridge name and the free/available sectors on it. dir\$ is a temporary file to hold the filenames before they are read into the array. The last string entered is to mark the end of file. The word EOF is reserved by QDOS, but the Manual doesn't tell you why you can't use it in the normal way. hit is the CODE of the key you press, and if it is in range, is modified to point to the action you wish to take.

ponding key (or shift/key combination if necessary), then the corresponding program will LOAD. If you press the 0 key, the directory on Drive 2 will be displayed in the same way.

Press the / key, and the words "Auto-Run OFF" in the top RH corner will change to "Auto-Run ON"; and programs will RUN on loading. Of course, if you try to LOAD and RUN a data file, QDOS will crash you with an error message.

```
100 REMark *****
110 REMark ***Bootstrap Loader for QL ***
120 REMark * (c) WDSOFTWARE 1984 *
130 REMark *Written by C.C.Wilton-Davies*
140 REMark *SAVE mdv1_boot when complete*
150 REMark *****
160 drive$="1":flag=0:PAPER 7:INK 0
170 CLS:PRINT "Microdrive Number ":drive$
180 DIM dir$(50,255):DELETE mdv1_dirf
190 OPEN_NEW #6,mdv1_dirf
200 DIR #6,"mdv" & drive$ & "_"
210 PRINT #6,"%%%%"
220 CLOSE #6
230 OPEN_IN #7,mdv1_dirf
240 FOR c=0 TO 50
250 INPUT #7:dir$(c)
260 IF dir$(c)="%%%%" THEN EXIT c
270 END FOR c
280 CLOSE #7
290 c=c-1
300 PRINT dir$(0),dir$(1)
310 FOR n=1 TO c-1
320 FLASH 1:PRINT CHR$(n+48):
```



```

330 FLASH 0:PRINT dir$(n+1),
340 END FOR n
350 PRINT "\"Key / to toggle Auto-Run,\" \"0 for Next Microdrive,\"
      "\"on Flashing Character to LOAD Program"
360 AT 0.24:PRINT "Auto-Run ";FLASH 1
370 IF NOT flag THEN PRINT "OFF"
380 IF flag THEN PRINT "ON "
390 FLASH 0
400 REPEAT key
410 hit=CODE(INKEY$)
420 IF hit>46 AND hit<128 THEN EXIT key
430 END REPEAT key
440 hit=hit-48
450 IF hit=-1 THEN flag=NOT flag:GO TO 360
460 IF NOT hit THEN
470 drive$=drive$+1
480 GO TO 170
490 ELSE
500 IF (hit<c AND NOT flag) THEN LOAD "mdv" & drive$ & "_" &
      dir$(hit+1)
510 IF (hit<c AND flag) THEN LRUN "mdv" & drive$ & "_" &
      dir$(hit+1)
520 END IF
530 END IF
540 FLASH 1:PRINT "ERROR":FLASH 0:GO TO 400

```

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A rat has escaped from its cage and you have been given the task of finding it.

It is reported to be in hiding somewhere on the 10 x 8 grid displayed on the board.

You have just five attempts to locate it by sending in your tracker to a given square. If it is not at that location, you will be told the compass direction you need to go in to find it.

Notes

- 1 The co-ordinates will only be accepted by the computer in the form letter number e.g. A5
- 2 The program was written to help children learn about compass directions and you may find that increasing the value of s% in line 50 (to give more lives) helps

Hints on conversion

It would be rather complex to convert this program to run on other machines because many of the specialised facilities available in Amstrad BASIC are used. The following hints should help:

- 1 LOWER\$(a\$) converts a\$ into lower case
- 2 INK selects the colours available in the colour palette

```
10 REM ** Hide the Rat **
20 REM ** a game for the Amstrad CPC 464 **
30 REM ** Steve Lucas July 1984 **
40 RANDOMIZE TIME: REM set random number generator to r
andom start
50 s%=6: REM alter this number to suit number of lives
you want !
60 BORDER 8
70 MODE 1
80 GOSUB 1130 : REM titles
90 REM ** define characters **
100 SYMBOL AFTER 238
110 SYMBOL 239,255,255,255,255,255,255,255
```

How it works

- 30 set random number generator to random start
- 60-80 instructions
- 90-300 define characters
- 320-480 draw board
- 500 hide rat
- 520-560 main control loop
- 570-680 lose game, display where it was
- 690-700 define windows
- 710-930 guess location
- 940-1110 win game
- 1120-end instructions

Variables

a%,b%, location of rat
c%,d% your guess
a\$ keyboard input
aa\$,ab\$,ac\$ graphics characters
e\$,f\$,g\$,h\$ graphics for board

(equivalent to VDU19 on BBC/Electron)

3 PEN, PAPER are used to select the foreground and background colours

4 PRINT £2 is used to send printing into the text window defined as number 2

5 WINDOW is used to define text windows. Three different text windows are used in this program. Window 0 = whole screen, Window 1 = lower right hand side (where input is displayed) and Window 2 = top right hand side.

6 The WHILE WEND loop will need to be replaced with a REPEAT UNTIL loop or simply a conditional GOTO (remembering that the condition in a WHILE WEND loop is tested at the beginning, unlike a REPEAT UNTIL loop).

7 DRAW x,y,z commands draw from current or graphics cursor position to location x,y in colour z

8 The spaces between keywords in Amstrad BASIC are essential!

9 LOCATE places the text cursor at the x,y co-ordinates specified similar to PRINT AT, PLOT (Oric) and PRINT TAB (x,y) (BBC)

10 UPPER\$(a\$) converts the string a\$ to upper case

Find the missing rat!

```
120 SYMBOL 240,192,128,156,191,255,255,65,113
130 SYMBOL 241,0,96,112,88,204,252,0,192
140 SYMBOL 242,48,32,32,32,32,31,15
150 SYMBOL 243,1,3,7,7,3,1,255,255
160 SYMBOL 244,0,128,192,240,176,240,248,136
170 SYMBOL 245,7,3,1,1,0,1,1,0
180 SYMBOL 246,255,255,253,129,128,129,193,0
190 SYMBOL 247,134,128,428,128,128,128,192,0
200 SYMBOL 248,7,4,13,12,4,6,1,1
210 SYMBOL 249,240,16,88,152,16,48,192,192
220 SYMBOL 250,0,3,6,12,9,9,9,9
230 SYMBOL 251,128,224,176,216,72,72,72,72
240 SYMBOL 252,29,21,21,3,3,3,6,4
250 SYMBOL 253,92,212,212,224,224,224,48,16
260 SYMBOL 254,4,6,4,28,28,0,0,0
270 SYMBOL 255,16,48,16,28,28,0,0,0
280 aa$=CHR$(242)+CHR$(243)+CHR$(244)+CHR$(10)+CHR$(8)+
CHR$(8)+CHR$(8)+CHR$(245)+CHR$(246)+CHR$(247)
290 ab$=CHR$(240)+CHR$(241)
300 ac$=CHR$(248)+CHR$(249)+CHR$(10)+CHR$(8)+CHR$(8)+CH
R$(250)+CHR$(251)+CHR$(10)+CHR$(8)+CHR$(8)+CHR$(252)+CH
R$(253)+CHR$(10)+CHR$(
8)+CHR$(8)+CHR$(254)+CHR$(255)
310 REM ** select colours **
320 INK 0,24:INK 1,20:INK 2,6:INK 3,2
330 PEN 1
340 REM ** draw board **
350 t%=4:d$=STRING$(3,CHR$(143))
360 e$=STRING$(3,CHR$(143))
370 f$=d$+STRING$(3,CHR$(32))
380 g$=e$+e$+e$+e$+e$
390 h$=f$+f$+f$+f$+f$
400 FOR t=1 TO 4
410 FOR x=1 TO 3:PRINT g$:NEXT
420 FOR x=1 TO 3:PRINT h$:NEXT
430 NEXT
440 MOVE 0,18:DRAW 480,18,3
450 DRAW 480,400,3
460 LOCATE 1,25: PEN 2:PRINT " A B C D E F G H I
J"
470 MOVE 515,400: DRAW 515,0,3
480 FOR y=1 TO 8: LOCATE 32,Y*3-1:PRINT CHR$(48+y): NEX
T :LOCATE 1,1
490 REM ** hide rat somewhere on the board **
500 a%=INT(RND(1)*10)+1:b%=INT(RND(1)*8)+1
510 REM ** main control loop **
520 WHILE a%>0
530 GOSUB 690
540 a%=a%-1
550 t%=a%-1
560 WEND
570 CLS #2: PRINT#2,"You didn't find it"
580 a$="abcdefghij"
590 b$=MID$(a$,a%,1)
600 PEN #2,3
610 PRINT#2,"It was in "
620 IF a%=1 OR a%=3 OR a%=5 OR a%=7 OR a%=9 THEN GOSUB
1390 ELSE GOSUB 1410
630 PEN #2,2:PRINT#2,b$:b%
640 LOCATE a%*3-2,b%*3-1:PEN 3:PRINT aa$
650 PRINT #2:PRINT#2:PRINT#2
660 PRINT#2,"Press Space Bar."
670 a$=INKEY$: IF a$<>" " THEN 670
680 RUN
690 WINDOW #1,34,40,18,25
700 WINDOW #2,34,40,1,16: PEN #1,2
710 PEN #1,3: PAPER #1,1: CLS #1:PRINT#1," Enter guess
now"
720 a$=INKEY$:IF a$="" THEN 720
730 a$=UPPER$(a$):LOCATE 36,22:PRINT a$+" "
740 c%=ASC(a$)
750 IF c%<65 OR c%>74 THEN 720
760 c%=c%-64
770 a$=INKEY$:IF a$="" THEN 770
780 d%=ASC(a$)-48:IF d%>8 OR d%<1 THEN 770
790 LOCATE 38,22: PRINT d%
800 IF c%=1 OR c%=5 OR c%=9 OR c%=7 THEN GOSUB
B 1350 ELSE GOSUB 1370
810 LOCATE c%*3-1,d%*3-1:PEN 2: PRINT ab$: LOCATE 4,10
:PRINT CHR$(7)
820 b$=""
```

You'll need to know the points of the compass and find your bearings in this game by HCW regular Steve Lucas. Track down that rampant rodent

164 PROGRAM

```

830 IF aX=cX AND dX=bX THEN 940
840 IF dX>bX THEN 80SUB 890 ELSE 80SUB 910
850 CLS #2: PRINT#2, "Lives: "; aX-1
860 PRINT#2: PRINT#2, aX: PRINT#2: PRINT#2
870 PEN #2, 2: PRINT#2, " Go": PRINT #2: PRINT #2: PEN #2
880 RETURN
890 bX="N": IF cX<aX THEN bX=bX+"E" ELSE IF cX>aX THEN
bX=bX+"W"
900 RETURN
910 IF bX>dX THEN bX="B"
920 IF aX>cX THEN bX=bX+"E" ELSE IF cX>aX THEN bX=bX+"W"
930 RETURN
940 CLS
950 LOCATE 1,4: PEN 2: PRINT ac$
960 LOCATE 20,4: PRINT ac$
970 LOCATE 4,22: PEN 3: PRINT ac$
980 LOCATE 20,22: PRINT ac$
990 LOCATE 2,10: PEN 2: PRINT "Well Done. You have found t
he rat !"
1000 RESTORE
1010 FOR x= 1 TO 34
1020 READ d: SOUND 5,d,20,15
1030 FOR t=1 TO 10: NEXT t
1040 NEXT x
1050 LOCATE 2,15: PEN 3: PRINT "Would you like another g
ame <Y/N> ?"
1060 a$=INKEY$: IF a$="" THEN 1060
1070 a$=LOWER$(a$)
1080 IF a$="y" THEN RUN
1090 IF a$<>"n" THEN 1060
1100 CLS: LOCATE 5,15: PRINT "Goodbye..Thank you for pla
ying !"
1110 END
1120 DATA 239,239,213,239,190,239,239,213,190,179,159,2
39,239,213,190,179,159,239,239,213,239,159,239,142,239,
127,239,127,142,159,17
9,190,213,239
1130 BORDER 15: INK 0,0: INK 1,24: INK 2,6: INK 3,26
1140 PAPER 0
1150 CLS: PEN 1: LOCATE 12,5: PRINT "Catch The Rat"
1160 PRINT: PRINT: PRINT: PEN 2: PRINT "A game of skill for
the Amstrad CPC 464"

```

```

1170 PRINT: PRINT: PRINT: PEN 3: PRINT" by Steve W. L
ucas July 1984"
1180 PRINT: PRINT: PRINT: PEN 1: PRINT "A rat has escaped a
nd you have been sent to track it down !"
1190 PRINT "It is hiding somewhere on the 10x8 board whic
h is displayed on the screen. You have only five turn
s in which to try to l
ocate it."
1200 RESTORE
1210 FOR x= 1 TO 34
1220 READ d: SOUND 5,d,20,15
1230 FOR t=1 TO 10: NEXT t
1240 NEXT x
1250 PEN 2: PRINT: PRINT "Press the <Space Bar> to cont
inue."
1260 a$=INKEY$: IF a$<>" " THEN 1260
1270 CLS: PEN 3
1280 PRINT "The board is labelled and you must send in t
racker cats to see if it is hiding there. After each a
ttempt you will be t
old a compass direction which you will need to go in fo
r your next turn !"
1290 PRINT: PRINT: PRINT: PEN 1: PRINT "The coordinates of t
he square you want to search must be entered in the fo
rm letter number (e
g. E4)."
1300 LOCATE 2,24: PEN 2: PRINT "Press <Space Bar> to st
art game."
1310 a$=INKEY$: IF a$<>" " THEN 1310
1320 CLS
1330 BORDER 8
1340 RETURN
1350 IF dX=1 OR dX=3 OR dX=5 OR dX=7 THEN PAPER 0 ELSE
PAPER 1
1360 RETURN
1370 IF dX=2 OR dX=4 OR dX=6 OR dX=8 THEN PAPER 0 ELSE
PAPER 1
1380 RETURN
1390 IF bX=1 OR bX=3 OR bX=5 OR bX= 7 THEN PAPER 0 ELSE
PAPER 1
1400 RETURN
1410 IF bX=2 OR bX=4 OR bX=6 OR bX=8 THEN PAPER 0 ELSE
PAPER 1
1420 RETURN

```



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BASIC. It's
simply logical**

Logical thought

Logic commands form a very important part of BASIC, as you can manipulate numbers in a new variety of ways, and make your decision commands (e.g. IF/THEN) more versatile.

The first hurdle to overcome is to understand what these commands do. AND and OR are the most commonly used logic commands, and their function can be seen in the circuits in Fig.1 if the two switches represent the input bits, with the light representing the result.

In the first circuit, either one switch OR the other can be closed to light the lamp. In the second circuit, both the first switch AND the second have to be closed to light the lamp.

In mathematics, if one bit OR the other bit in the sum numbers is on, the result will be an on bit, e.g.:

12 OR 6 = 1100 OR 0110 =
1110 = 14

Alternatively, only if one bit AND the other bit is on will the resulting bit be on, e.g.:

12 AND 6 = 1100 AND 0110 =
0100 = 4

In decision commands such as IF/THEN, statements will give results of a similar nature.

Take the statement:

IF A = 1 OR B = 3 THEN END

The routine will end if A = 1 OR B = 3 OR when both of the statements are true. If an AND statement had replaced the OR statement, both A = 1 AND B = 3 would have to be true for the routine to end.

Another statement of Commodore BASIC is NOT. This can be used both as a command and as an adjunct to AND and OR. NOT inverts numbers so an on bit becomes an off bit and vice versa. In an IF/THEN statement, a NOT command gives the meaning 'execute the command if the statement is not true'. For example:

IF NOT A = 3 THEN PRINT A

will print A if A is not equal to three.

If the NOT command is executed after the AND or OR command, you can create two new logic commands, NAND and NOR, giving answers

completely opposite to those of the original commands.

The final command is less well known and is called EOR (exclusive OR) with its opposite ENOR (exclusive NOR). This is a sadly neglected command, and can only be found in machine code on Commodore machines. To use the command, POKE these figures into consecutive memory locations:

169,251,69,2,133,2,96

To operate the routine, POKE the two numbers to be EORed into locations 2 and 251, SYS to the start of the machine code and user PEEK (2) to find the answer. Basically, what EOR does is, if one bit which is on otherwise all

other combinations give off bits. Its greatest use is for flashing colours and objects (such as cursor) without effecting the object itself.

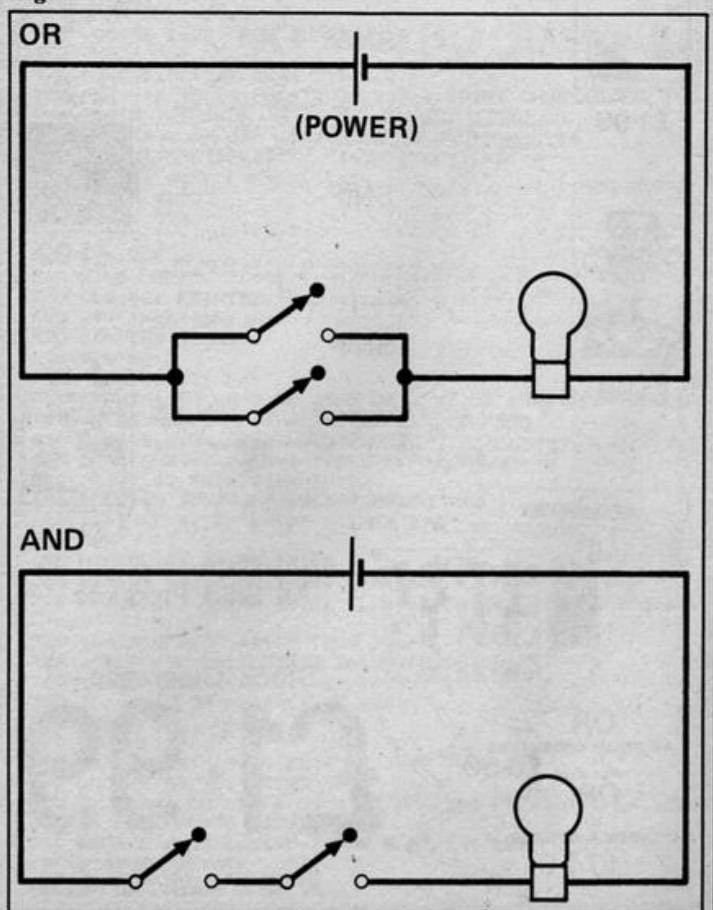
Finally, logic may be used extensively in sprite control. Using AND and OR commands bits in the sprite registers can be changed while leaving others intact. For example, to set just the high x position of sprite 3 on, use the following:

POKE 53264, PEEK (53264)
OR (2 3)

To switch the bit off, AND the memory of every bit except the fourth bit:

POKE 53264, PEEK (53264)
AND (255 - 2 3)

Fig. 1



GOODE BYTE

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This drum program isn't like other commercial drum packages. R.F.A. Brown gives you a comprehensive explanation of how it works

Use this program to turn your Commodore 64 into a fully programmable drum machine. You will find that the programming is different from most commercial drum machines — a realistic drum sound is obtained using the SID chips' noise. It sounds especially good through an amplifier.

Any number of sections may be defined. By section, we mean a few steps or beats of the overall pattern. For example, you may define one section as a straight 4/4 rhythm and another as a "break" of some sort. Each section length is user-defined and does not necessarily need to make musical sense, so it could be 17 beats long.

You can then string these sections together into a pattern. The pattern is the order in which the sections are to be played. For example, the verse for the song for which the drums are being programmed may require one section played 16 times, and the chorus another section played eight times.

Each section is split up into steps, and in each step any combination of the three drum sounds can be played.

RUN the program and you should enter the menu with the following four options:

- 1 CLEAR SYSTEM
- 2 DEFINE SECTION
- 3 DEFINE PATTERN
- 4 PLAY PREDEFINED PATTERN

Type '2' (and Return) to enter the define section mode. The screen should now look like this:

SECTION 0
1 ?...

with the flashing cursor above the first of the three dots. The number 1 means step 1 and the three dots represent drums 1, 2 and 3 respectively. Normally these are set to bass drum, snare drum and hi hat respectively but this can be altered by changing lines 4090-4130 — see reference manual.

If you want a particular drum to be played at that step, position the cursor above the appropriate dot and press 'X'. For example, if you wanted drums one and three (bass and hi hat) played at step 1, you would put an 'X' over dots 1 and 3 and then press Return.

If you don't want any drums to be played at a particular step you would press Return without putting any Xs over any dots. You will then be presented with step 2 and the three dots and the whole process repeats. If you only want eight steps in the section you set the eight steps however you desire, and for step 9 you type "END" over the dots.

You would then be asked if you wanted to define another section. Answering "Y" would start the next section at step 1 and "N" would return you to the main menu.

Stop the program using RUN/STOP and RESTORE, and re-RUN it. Type '2' to enter the define section mode and define sections 0 and 1 as shown.

sections 0 and 1 inserted here

Return to main menu and type '3' and Return to enter the define pattern mode.

If you wanted to play section 0 seven times and section 1 once, you would enter the following for the pattern:

```
Pattern 0
1 0
2 0
3 0
4 0
5 0
6 0
7 0
8 1
9 END
```

As when you define a section, alter your typing and you will be asked if you wish to define another pattern. For now, type 'N' and Return, and go back to the menu.

We may as well hear the drum pattern now, so type '4' and Return to enter play mode. You will now be asked:

"DEFAULT VALUES (Y/N)". This means, do you want the default drum decay values as defined in line 4090 or do you wish the default drum decay values as defined in line 4090 or do you wish to alter them? For now, we'll keep them as they are, so type 'Y' and Return.

You will then be asked for the speed. Speed is between 1 and 255, where 1 is the fastest and 255 the slowest. Normally you only need values between about 50 and 150. For this we'll use 60. You are then asked for the pattern number, which in this case is 0. There will then be a short delay while numbers for use with the machine code are set up.

Now begin play by pressing any key other than the various shift and control keys and F1, as F1 is used to stop play. The speed can be altered during play by moving the joystick in port 2 up and down.

Using this method of programming, patterns of a very high complexity can be built up. A maximum of 128 sections and 128 patterns can be held in memory at any one time.

Here are a few more sections which may come in handy:

enter off-beat, 3/4, disco here

Once you have the pattern you want, you could record the drums on some sort of cassette or reel-to-reel and play back with instrument accompani-

```
100 rem*****
101 rem    drum machine
102 rem    r.f.a. brown
103 rem*****
104 :
105 :
110 rem menu+initialisation
111 :
115 gosub 10000
120 clr:poke53280,11:poke53281,12:is=54272:ix=20480:se=0:ip=0:iy=49664
130 dima(999):dimp(127):dimsc(127)
134 rem clr
135 print "■"
```


64 PROGRAM

ment. This is preferable to carrying your computer with you to band practices or live performances, if you're in a group, and is how I use the program.

The best way for you to get used to this program, and make

the most of it, is to sit down and tinker around with it.

Conversion to other home computers is rather difficult as the backbone of the program is the SID chip, which is unique to the Commodore 64.



```

139 rem blk
140 printtab(12)"drum machine"
141 printtab(12)"EEEEEEEEEEEE":poke646,11
149 rem 4*crd
150 print"1) clear system"
159 rem 2*crd
160 print"2) define section"
169 rem 2*crd
170 print"3) define pattern"
179 rem 2*crd
180 print"4) play predefined pattern"
209 rem blk- 2*crd
210 print"enter command (1-4)":inputc
220 ifc<lorc>4thengoto135
230 oncgosub300,1000,2000,4000
240 goto135
300 clr:run
1000 rem define section
1001 :
1009 rem clr- 2*crd crd
1010 print"section":se:"":q=0
1020 zz=0:q$=str$(q+1):iflen(q$)=1thenq$=" "+q$:goto1040
1030 iflen(q$)=2thenq$=" "+q$
1039 rem 5*crl
1040 printq$")...":inputbn$:gosub1900
1045 ifdd=255thena(q)=255:goto1100
1049 rem cru 2*cru
1050 ifzz=1thenprint"":print"":goto1020
1060 ifq<255thena(q)=dd:q=q+1:goto1020
1070 print"section too large"
1080 input"do you wish to redefine (y/n)":in$
1084 rem 2*cru
1085 ifin$<>"y"andin$<>"n"thenprint"":goto1080
1090 ifin$="y"thenreturn
1095 goto1000
1100 input"define another section? (y/n)":in$
1109 rem 2*cru
1110 ifin$<>"y"andin$<>"n"thenprint"":goto1100
1120 ifin$="y"thengosub1130:se=se+1:goto1000
1130 sc(se)=x:q=0
1140 pokex,a(q):ifa(q)=255then1160
1150 q=q+1:x=x+1:goto1140
1160 x=x+1:ifin$="n"thense=se+1
1170 return
1900 ifbn$="end"thendd=255:return
1910 iflen(bn$)<>3thenzz=1:return
1920 ifbn$="..."thendd=0:return
1921 ifbn$="..x"thendd=1:return
1922 ifbn$=".x."thendd=2:return
1923 ifbn$=".xx"thendd=3:return
1924 ifbn$="x.."thendd=4:return
1925 ifbn$="x.x"thendd=5:return
1926 ifbn$="xx."thendd=6:return
1927 ifbn$="xxx"thendd=7:return

```



```

1928 zz=1: return
2000 rem define pattern
2001 :
2009 rem clr- 2*cru crd
2010 print "Pattern"; p; "q=0"
2020 q$=str$(q+1): if len(q$)=1 then q$=" " + q$: goto 2040
2030 if len(q$)=2 then q$=" " + q$
2040 print q$; " "; input n$: if n$="end" then n=255: a(q)=255: goto 2200
2044 rem 2*cru
2045 if val(n$)=0 and n$<>"0" then print "0": goto 2040
2045 rem 2*cru
2046 if val(n$)>255 then print "255": goto 2040
2050 n=val(n$): a(q)=n: if q<999 then q=q+1: n$="": goto 2020
2060 print "pattern too large"
2070 input "do you wish to redefine (y/n)"; in$
2074 rem 2*cru
2075 if in$<>"y" and in$<>"n" then print "0": goto 2070
2080 if in$="y" then 2000
2090 return
2100 pa(p)=y: q=0
2110 pokey, a(q): if a(q)=255 then p=p+1: return
2120 y=y+1: q=q+1: goto 2110
2200 gosub 2100
2205 input "define another pattern? (y/n)"; in$
2209 rem 2*cru
2210 if in$<>"y" and in$<>"n" then print "0": goto 2205
2220 if in$="y" then goto 2000
2230 return
4000 rem play
4001 :
4009 rem clr
4010 print "0"; for l=0 to 24: poke s+1, 0: next
4019 rem 2*cru
4020 input "Default values? (y/n)"; in$
4030 if in$="y" then 4090
4039 rem 2*cru
4040 if in$<>"n" then print "0": goto 4020
4049 rem 2*cru
4050 input "Bass drum decay (0-15)"; bd
4054 rem 2*cru
4055 if bd<0 or bd>15 then print "0": goto 4050
4059 rem crd
4060 input "Snare drum decay (0-15)"; sd
4064 rem 2*cru
4065 if sd<0 or sd>15 then print "0": goto 4060
4069 rem crd
4070 input "Hi hat decay (0-15)"; hd
4074 rem 2*cru
4075 if hd<0 or hd>15 then print "0": goto 4070
4080 goto 4100
4090 bd=5: sd=6: hd=4
4100 poke s+24, 79: poke s+23, 44: poke s+22, 100
4110 poke s, 128: poke s+1, 1: poke s+5, bd: poke s+6, bd
4120 poke s+8, 15: poke s+12, sd: poke s+13, sd
4130 poke s+14, 255: poke s+15, 255: poke s+19, hd: poke s+20, hd
4139 rem 2*cru 2*cru
4140 input "Speed"; sp: if sp<1 or sp>255 then print "0": goto 4140
4150 poke 2, sp
4160 input "pattern number"; pn
4169 rem 2*cru

```



```

4170 ifpn>porpn>127orpn<0thenprint "END":goto4160
4180 v=pa(pn):poke251,(v/256-int(v/256))*256:poke252,int(v/256)
4190 forr=0to50:sc(r)
4191 poke52992+r*2,(v/256-int(v/256))*256
4192 poke52993+r*2,int(v/256):next
4200 forde=0to500:next
4209 rem 2*crd
4210 print "READY....press any key to go"
4220 sys49273
4225 forde=0to1000:next
4230 forl=0to24:poke5+l,0:next
4240 return
10000 rem data for m/c
10001 forr=49152to49342:readd:poke r,d:next:return
10010 data216,160,0,177,251,201,255,240,111,10,168,185,0,207,133,253,185
10011 data1,207,133,254,160,0,177,253,133,215,201,255,240,80,41,4,240
10012 data9,162,128,142,4,212,232,142,4,212,165,215,41,2,240,9,162
10013 data128,142,11,212,232,142,11,212,165,215,74,144,9,162,128,142,18
10014 data212,232,142,18,212,165,197,201,4,240,41,173,0,220,74,176,2
10015 data198,2,74,176,2,230,2,164,2,162,255,202,208,253,136,208,248
10016 data230,253,208,171,230,254,24,144,166,230,251,208,142,230,252,24,144
10017 data137,96,165,197,201,64,240,250,76,0,192
10018 data32,253,174,32,138,173,76,247,183
10019 data169,1,44,169,,133,10,32,212,225,32,130,192,165,10,166,20,164,21
10020 data76,117,225
10021 data32,212,225,32,130,192,165,20,72,165,21,72,32,130,192,166,20
10022 data164,21,104,133,21,104,133,20,169,20,76,95,225

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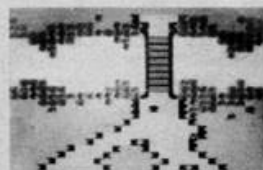
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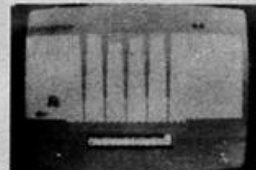
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Fisher-Price Learning Software, St John's Hse, Leicester LE1 6EB.

Fisher-Price have for many years had a reputation for selling quality toys at a reasonable price. Now they are entering the software market with four educational packages.

It aims to teach numbers up to ten with a variety of dancing animals. There are four levels of difficulty. In the first the child picks a number and guides an animal to the balloons illustrating that number. If the child is correct the balloons lift the rabbit, kangaroo or penguin up into the clouds and part of a rainbow will appear. The child continues until there is a

complete rainbow. The rabbit then dances for joy. The fourth level has simple sums and the same rainbow format.

This is a very good program. It's delightful graphics and music kept my four year old entertained for some time and helped him learn. It's well worth looking at. It needs a joystick.

M.W.

instructions	80%
graphics	90%
ease of use	90%
value for money	95%



Time Trucker CBM 64 £7.95

ASK, London Hse, 63 Upper Richmond Rd, London SW15

This game has the advantage of being educational as well as being fun. You are a truck driver collecting produce from farms and delivering it to a depot.

There are three different games on the cassette. In the first you log your arrival time (displayed on the screen by means of an analogue clock), on to a digital display. Only then can you pick up your order. A completed order at the depot earns a bonus.

In the second you don't have to log in but the farms open and close at certain times and you plan your route accordingly.

The third has the aggravation that the farms only open for 15 minute periods.

You choose from three levels of difficulty. In the first you use the map in the booklet, second has a secret map and the third has road blocks on the secret map.

Overall this is a good package incorporating time skills training with an entertaining game. At trucker and super trucker levels a partner was desirable to help work out the best routes. It needs a joystick.

M.W.

instructions	95%
graphics	95%
ease of use	95%
value for money	95%



Number Tumblers CBM 64 £9.95

Fisher-Price Learning Software, St John's Hse, East St, Leicester LE1 6EB.

This is an example of Fisher-Price's initial foray into the software market. It's a mathematics based game aimed at the eight to 12 year age group but which will probably be attractive to older users (and even adults).

It is cartridge based and is easy to plug into the computer and use; it is instantaneously loaded, beating even Nova-load.

The game opens with a comprehensive options page through which you can vary many of the game's parameters, including an option to play either alone, against an opponent or the computer. You must also decide whether to use + and - or * and / or a combination of all four. Decide on your speed and whether the product of your labours will be two, three, four or five digit numbers and you are ready to play.

The aim is to bounce around a grid using the numbers thereon with the arithmetic signs to create one of a series of five pre-determined numbers. It is a game of fast and furious fun and quick-thinking. I have found it to be highly addictive.

It needs a joystick. M.W.

instructions	85%
graphics	90%
ease of use	95%
value for money	95%



Boffin bonanza

A page full of educational programs. Read on to find out the quality of the latest in educational software

Know Your Own Psi-Q BBC B £9.95

If you have ever imagined yourself as a clairvoyant, you may be tempted to find out exactly what mental powers you have. This package lets you test out your Psi ability over a range of tests.

The program is a fairly detailed personality quiz, to assess your 'psychic potential'. This must be completed, before carrying on the Psi-games which measure your ability. Each game consists of guessing the position of a hidden object, or guessing suits or colours of playing cards.

You may control the number of guesses, but generally the more guesses the more accurate your rating is. You may also choose between the type of ESP tested — clairvoyance or

precognition, which determines when the computer places an object, before or after your guess. Also included is a relaxation routine to help you 'get in the mood', and you have the option of saving your data for long-term testing.

Whether or not you believe in parapsychology or not, this program is well written and presented, and in my opinion well worth buying if you are at all curious about this.

D.A.

instructions	75%
playability	60%
graphics	70%
value for money	55%



Flashcards and Spelling CBM 64 £4.50

Toddlersoft 1 Cat Lane Cottage, Ewelme, Oxon OX9 6HX

Learning to read is one of the most important lessons we learn. Without this acquisition many doors would be closed. You would not be able to decipher the words on this page and the program would be lost to you.

The program is easy to use and a simple idea executed in such to make it work well. Many parents and teachers have used the flashcard technique to teach specific words either about the house or as part of the build-up to reading a first book. This cassette takes the same approach and uses the computer to add a new dimension.

There are three main parts, alphabet training, spelling and the flashcard sequence. The words used fall into four categories: Baby's first words, words for toddlers, colours and words from the pre-reading Griffin series.

When the flashcard option is chosen a word is shown on the screen and to help the young reader the word is illustrated with a cartoon type moving picture and appropriate sound. The program is simple but can lead on to greater things. My son was soon telling me tales of pirates, islands and hidden treasure whilst we played the game together.

instructions	85%
graphics	80%
ease of use	80%
value for money	100%

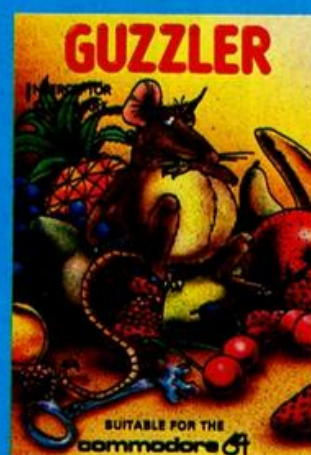
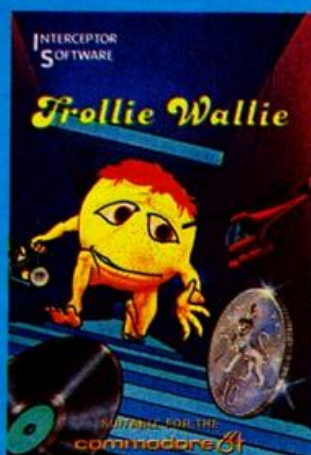
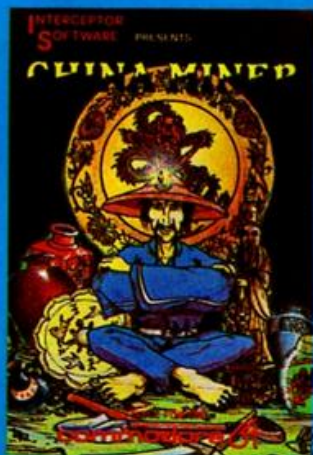


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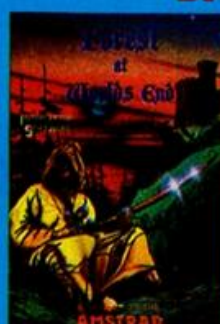
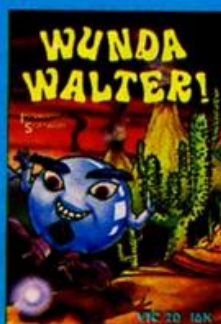
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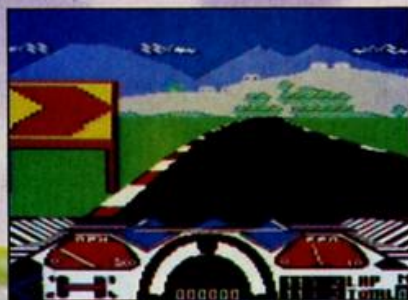
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In this maze game by Alasdair Jarvie you must guide your ship around a maze, picking up crystals while you go. You'll need skill and a good sense of timing

In this game of speed and good timing you must guide your ship around a maze. The object is to gather up crystals while you go. Each time you pick up a crystal you get 50 points, and once you finish a screen, you move on to the next one.

Variables

A,B,C, position of pointer
Dot number of dots eaten
Time time taken
Mark score

Labyrinthine labour

How it works

- 1 switches cursor and keyclick off
- 2 ensures in text mode
- 40-100 menu
- 100-180 main game
- 200-300 ship left
- 300-400 ship right
- 400-500 ship down
- 500-600 ship up
- 10000-20000 redefinition
- 20000-30000 volume control
- 30000-40000 instructions
- 40000-45000 set up screen
- 45000-50000 if successful
- 50000-end if unsuccessful, check high score

```
250 CURSET20,140,3
260 N$="by Alasdair Jarvie"
270 FORA=1TOLN(N$)
280 CHAR ASC (MID$(N$,A,1)),0,1
290 CURMOV7,0,0
300 NEXTA
310 FORA=46560T046880STEP40:POKE A,5:NEXTA
320 CLOAD""
```

Listing 2

```
1 POKE 618,10
2 TEXT
10 REM **** SPEED POINTER ****
20 GOSUB 10000 ' REDEFINITION
40 CLS:PAPER0:INK1:PLOT 0,1,20:PLOT0,2,22
50 PLOT 1,1,10:PLOT 1,2,10:PLOT 5,1," SPEED POINTER":P
LOTS,2," SPEED POINTER"
60 PLOT 3,5," PRESS....."
65 PLOT 3,7," ( 1 ) INSTRUCTIONS"
70 PLOT 3,9," ( 2 ) TO PLAY "
75 PLOT 3,11," ( 3 ) TO SET VOLUME LEVEVL"
80 GETA$:IF A$="1"THENGOTO30000
90 IF A$="2"THENGOTO40000
95 IF A$="3"THENGOTO 20000
100 GOTO80
110 PLOT A,B,Q$:PLOT A,C,W$
120 A$=KEY$
130 IF A$=CHR$(8)THEN GOTO 200
140 IF A$=CHR$(9)THENGOTO300
150 IF A$=CHR$(10)THENGOTO400
160 IF A$=CHR$(11)THENGOTO500
170 TIME=TIME+1:IF TIME=210THENGOTO50000
180 GOTO110
200 REM *** LEFT ***
205 Q$="r":W$="tu"
210 IF SCRN(A-1,B)=ASC("g")THENGOTO110
212 IF SCRN(A-1,B)=ASC("a")THENGOTO110
215 IF SCRN(A-1,B)=ASC("c")THENMARK=MARK+50:DOT=DOT+1
216 TIME=TIME+1:IF TIME=210THENGOTO50000
217 IF DOT=133THENGOTO45000
220 PLOT A,B," ":PLOT A,C," ":A=A-2:PLOT A,B,Q$:PLOT
A,C,W$
225 GOSUB 600
230 A$=KEY$
235 IF A$=CHR$(9)THENGOTO300
240 IF A$=CHR$(10)THENGOTO400
245 IF A$=CHR$(11)THENGOTO500
250 GOTO 200
300 REM ** RIGHT **
305 Q$="jk":W$="lm"
307 IF SCRN(A+2,B)=ASC("a")THENGOTO110
310 IF SCRN(A+2,B)=ASC("f")THENGOTO110
311 IF SCRN(A+2,B)=ASC("b")THENMARK=MARK+50:DOT=DOT+1
312 TIME=TIME+1:IF TIME=210THENGOTO50000
313 IF DOT=133THENGOTO45000
315 PLOT A,B," ":PLOT A,C," ":A=A+2:PLOT A,B,Q$:PLOT
A,C,W$
325 GOSUB 600
330 A$=KEY$
335 IF A$=CHR$(8)THEN GOTO200
340 IF A$=CHR$(10)THENGOTO400
345 IF A$=CHR$(11)THEN GOTO500
350 GOTO 300
400 REM ** DOWN **
405 Q$="vw":W$="xy"
407 IF SCRN(A,C+1)=ASC("a")THENGOTO110
410 IF SCRN(A,C+1)=ASC("f")THENGOTO110
415 IF SCRN(A,C+1)=ASC("b")THENMARK=MARK+50:DOT=DOT+1
416 TIME=TIME+1:IF TIME=210THENGOTO50000
417 IF DOT=133THENGOTO45000
420 PLOT A,B," ":PLOT A,C," ":B=B+2:C=C+2:PLOT A,B,Q
$:PLOT A,C,W$
425 GOSUB 600
430 A$=KEY$
435 IF A$=CHR$(8)THENGOTO200
440 IF A$=CHR$(9)THENGOTO300
```



Listing 1

```
10 PAPER0:INK1:HIRES
20 N$="TO HOME COMPUTING WEEKLY"
30 CURSET20,20,1
40 FORA=1TOLN(N$)
50 CHARASC (MID$(N$,A,1)),0,1
60 CURMOV 7,0,0
70 NEXTA
80 FORA=41760T042000STEP40:POKE A,1:NEXTA
90 CURSET120,100,1
100 FORA=1T040STEP5:CIRCLEA,1:NEXTA
110 CURSET 70,96,0
120 FORA=1T04
130 DRAW100,0,0:DRAW0,1,0:DRAW-100,0,0:DRAW0,1,0
140 NEXTA
150 CURSET20,96,1
160 DRAW200,0,1
170 DRAW0,8,3
180 DRAW-200,0,1
190 N$="S P E E D P O I N T E R"
200 CURSET20,97,0
210 FORA=1TOLN(N$)
220 CHAR ASC (MID$(N$,A,1)),0,1
230 CURMOV8,0,3
240 NEXTA
```



```

445 IF A#=CHR$(11) THEN GOTO 500
450 GOTO 400
500 REM ** UP **
505 C$="no":W$="po"
510 IF SCRN(A,B-1)=ASC("a") THEN GOTO 110
510 IF SCRN(A,B-1)=ASC("h") THEN GOTO 110
515 IF SCRN(A,B-1)=ASC("d") THEN MARK=MARK+50:DOT=DOT+1
516 TIME=TIME+1:IF TIME=210 THEN GOTO 50000
517 IF DOT=133 THEN GOTO 45000
520 PLOT A,B," ":PLOT A,C," ":B=B-2:C=C-2:PLOT A,B,D
525 PLOT A,C,W$
525 GOSUB 600
530 A$=KEY$
535 IF A#=CHR$(8) THEN GOTO 200
540 IF A#=CHR$(9) THEN GOTO 300
545 IF A#=CHR$(10) THEN GOTO 400
550 GOTO 500
600 RETURN
10000 REM *** REDEFINITION ***
10010 FOR A=0 TO 199:READ D:POKE 46080+A+(8*ASC("a")),D:NEXT A
10020 DATA 63,33,33,33,33,33,33,63
10030 DATA 00,00,00,00,00,01,03,06
10040 DATA 00,00,00,00,00,32,48,24
10050 DATA 06,03,01,00,00,00,00,00
10060 DATA 24,48,32,00,00,00,00,00
10080 DATA 15,31,56,48,48,48,48,48
10090 DATA 60,62,07,03,03,03,03,03
10100 DATA 48,48,48,48,48,56,31,15
10110 DATA 03,03,03,03,03,07,62,60
10120 DATA 14,14,15,15,15,15,15,60
10130 DATA 00,00,00,00,32,48,60,63
10140 DATA 60,45,15,15,15,15,14,14
10150 DATA 63,60,48,32,00,00,00,00
10160 DATA 01,01,01,03,03,07,07,15
10170 DATA 32,32,32,48,48,56,56,60
10180 DATA 14,60,63,63,01,01,07,07
10190 DATA 28,15,63,63,32,32,56,56
10200 DATA 00,00,00,00,01,03,15,63
10210 DATA 28,28,60,60,60,60,45,15
10220 DATA 63,15,03,01,00,00,00,00
10230 DATA 15,45,60,60,60,60,28,28
10240 DATA 07,07,01,01,63,63,60,14
10250 DATA 56,56,32,32,63,63,15,28
10260 DATA 15,07,07,03,03,01,01,01
10270 DATA 60,56,56,48,48,32,32,32
19999 RETURN
20000 REM *** VOLUME CONTROL ***
20010 CLS:PAPER0:INK1
20020 PLOT 0,1,20:PLOT 0,2,22
20030 PLOT 2,1,10:PLOT 2,2,10
20040 PLOT 5,1," VOLUME CONTROL"
20050 PLOT 5,2," VOLUME CONTROL"
20060 FOR A=1 TO 15:PLOT 10,5+A,CHR$(127):PLOT 11,5+A,CHR$(127)
20070 Q=INT(RND(1)*7)+1
20080 PLOT 0,5+A,Q:NEXT A
20090 Q$="->":A=0:B=5
20100 GETA$
20110 IFA$=CHR$(10) THEN PLOT B,6+A," ":A=A+1:IFA>15 THEN
20100 ELSE PLOT B,6+A,Q$
20120 IFA$=CHR$(11) THEN PLOT B,6+A," ":A=A-1:IFA<0 THEN
20100 ELSE PLOT B,6+A,Q$
20130 V=A
20140 PLOT 0,26,20:PLOT 5,66,"PRESS M FOR MENU"
20150 IF A$="M" THEN GOTO 40
30000 REM **** INSTRUCTIONS ****
30010 CLS:PAPER0:INK3
30020 PLOT 0,1,20:PLOT 0,2,22:PLOT 1,1,10:PLOT 1,2,10:PLOT 2,1,1:PLOT 2,2,1
30030 PLOT 5,1," INSTRUCTIONS":PLOTS 2," INSTRUCTIONS"
30040 PLOTS 5," YOU MUST GUIDE THE SHIP AROUND THE "
30050 PLOTS 3,7," MAZE WHILST GATHERING UP THE "
30060 PLOTS 3,9," CRYSTALS. YOU GET 50 POINTS FOR "
30070 PLOTS 3,11," EACH CRYSTAL GATHERED AND IF YOU "
30080 PLOTS 3,13," FINISH A SCREEN YOU AUTOMATICALLY"
30090 PLOTS 3,15," GO ONTO ANOTHER ONE.."
30100 PLOTS 3,17," TO MAKE THINGS A LITTLE BIT HARDER "
30110 PLOTS 3,19," THERE IS A TIME LIMIT !"
30120 PLOTS 3,21," SO REMEMBER SPEED IS ESSENTIAL ."
30130 PLOT 0,26,20:PLOT 1,26,1:PLOTS 3,26,"PRESS ANY KEY FOR MENU"
39998 GETA$
39999 GOTO 40
40000 REM *** SET UP SCREEN ***
40001 DOT=0:TIME=0
40010 CLS:PAPER0:P=INT(RND(1)*6)+1:INKP
40040 PLOT 1,1,"aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa"
40050 PLOT 1,2," abcbcbcbcbcbcbcbcbcbcbcbcbcbcbcbcbca"
40060 PLOT 1,3," adedededededededededededededededeadea"
40070 PLOT 1,4," abcfgfgfgfgfgfgfqbcbcfqfgfqfgfqfbca"

```

[illegible]

REALTIME



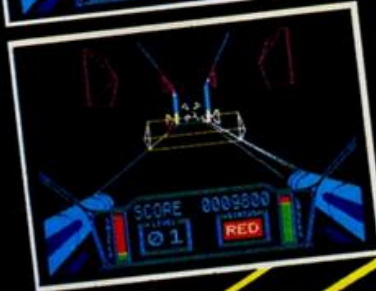
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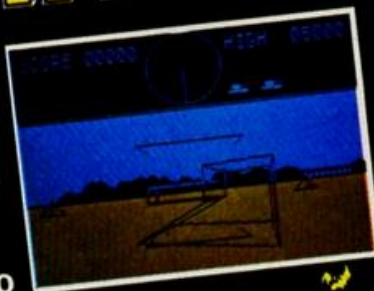


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SuperBASIC Commodore 64 £9.95

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As everyone knows, the one nasty part of the 64 is the lack of commands for sound or graphics control. This has resulted in many software houses bringing out extensions to the resident BASIC. This cassette based system offers 36 new commands aimed at making life a little easier.

For code loads into the free area between the ROMs and boots up leaving a full compliment of 38K available. The nice aspect of this package is that even when hi-resolution graphics are used you still have the full amount of RAM available. This means that the authors have had the sense to use the RAM behind the ROMs for the high resolution screens (presumably behind the Kernal ROM).

The extra commands can be split into four categories. First we have utilities and programming aids. There are 12 commands including the usual RENUMBER, AUTO, DEEK, DOKE, HIMEM etc. Overall quite a standard collection without any surprises. I was pleased to see the RENUM did actually renumber GOTO's and GOSUB's.

Some 11 commands for the manipulation of graphics are provided. Both hi-resolution and multicolour modes are supported and commands are common to both. With this system you can plot points, draw lines and draw filled blocks. All drawing actions can be performed with the text screen active so that complex drawing activities need not be on screen. Generally the graphics commands worked effectively. I was surprised to see the absence of CIRCLE and FILL. There is no reason why such useful commands should be omitted.

Probably the fiddliest job to perform on the 64 is the manipulation of sprites. Most operations involve the tweaking of a specific bit and can be rather tedious. SuperBASIC provides six commands which deal with all aspects of sprites including positioning on the screen, colours, priority and expansion. There is not, unfortunately, any help with design of sprites. The usual method of DATA statements is really a nuisance and I hoped to see some help. Similarly, collisions are not catered for.

Finally we have sound. The seven commands cover the majority of areas such as frequency, wave form, filtering, ADSR, volume and there is a music command. The latter enables you to play notes directly rather than hunting out the correct frequency. Again important areas such as Ring Modulation, and voltage control appear to have been omitted.

Sound and Vision

Detailed reviews of two really useful programs for the Commodore 64. Our experts give you the information you need

Overall, I get the impression that the authors have tackled most of the job but have stopped at 80% completion. If space was the problem, they could have pinched 2 or 3K of RAM to finish the job without too many howls of outrage from the punters.

As it stands this is a fair package which, at this price, is good value. The fact that you don't lose any user RAM is an added bonus. **A.W.**

instructions	90%
graphics	N/A
ease of use	80%
value for money	80%



Music Master CBM 64 £17.95

Supersoft, 91 Manor Rd,
Higham Hill, London E17 5RY

The latest masterpiece from Supersoft takes the form of a music synthesiser/editor. The facilities are quite extensive and allow you full control over the CBM-64 sound.

A range of present instruments are available as soon as the program is loaded. You may change the preset definitions and save these for future use if required. These may be allocated to any of the three voices at the users discretion. You may also modify the voice parameters manually until the required sound is achieved.

Entering music is done using the normal CBM 64 keyboard which works in a similar manner to a piano type keyboard. Other special keys are used to control which voice(s) you are playing, the octave you are in, current tempo, etc.

You may set up a list of notes into any of the voices when in record mode. These may then be played back simultaneously to create quite wonderful pieces of synthesised music. Alternatively you may use a voice to play either a predefined or user defined background beat.

The edit mode will allow you to delete, insert and change notes in your recorded music. The editing facilities are very good and make changing your mistakes extremely easy.

Before I received a copy of Music Master I could not tell one note from another or even read music. After some experimenting

and looking up a few of the basic principles in books I am now able to enter some quite impressive pieces of music. As an example: it only took about 1½ hours to enter God Rest You Merry Gentlemen so that it played in all three voices. I should imagine that with some more practice at reading music this will become much quicker.

All music and user defined parameters may be saved to either tape or disc and retrieved at a later date and played again. The manual explains a method of using these saved files to play music in your programs. I would advise that this is left to Music Master because it seems quite complicated to re-create some of the features.

For those of you who like zapping space invaders and creating wierd and far out

sounds there is a special effects screen. The various options on this are very impressive and sound quite wonderful.

The manual is well written and seems to explain most of the program details quite well.

My version was supplied on tape. Loading seemed to work perfectly everytime although it takes about ten minutes. The demo supplied gives a sample of what can be achieved although I think that they could have done better. The music is 'Air On A G String', most of you will associate this with a popular cigar advert on TV. **K.I.**

instructions	90%
graphics	80%
ease of use	95%
value for money	95%



AGF Protocol 4 Spectrum £29.95

AGF Hardware, 26 Van Gogh Place, Bognor Regis, West Sussex

If you have games with facilities for joysticks then you will probably find that a joystick interface is a real must. The question then becomes which one? There are so many on the market that it would be easy to feel you are never going to be able to find the ideal one. This interface tries to overcome these problems by allowing you to decide which type of interface to have for each game.

The design concept which has made this possible is a programmable card which can be set to give a response as if almost any of the keys on the keyboard had been pressed. These cards are made from black plastic and have to be fairly strong and thick as they are pressed down in to a touch sensitive areas of the unit.

You set the keys you wish the joystick to simulate by putting little plastic pegs into this card and then inserting it into the interface itself.

Fitting the pegs is quite simple once you have discovered which key needs a peg in which hole. The answers are provided by the chart on the unit, each key requiring two pegs to be inserted. As you can imagine, it would be very tedious having to remove and replace these pegs every time you changed your game so all you have to do is keep one card for your favourites. There are cards provided so that the interface will simulate the popular standards: AGF, Sinclair Interface and Kempston, plus one black card.

The system also supports other peripherals with the provision of another edge connector at the rear. Added to all this there is a reset switch which effectively does a power down but without the need to remove the plug and thereby loosen the Spectrum's power socket. Fitting the unit is simplicity itself and there is very little chance of wobble, although

Extras to add on and make life easier

We've reviewed for you AGF's joystick interface and Micro Power's BASIC Extensions ROM — read on to find out if they're value for money

it looks rather ridiculous on a Spectrum+ with the legs in the down position. Programming the interface is very simple — the unit is well cased and with all the possibilities it offers I cannot believe that the price is excessive. This will be the answer to a number of game players' prayers. D.C.

BASIC Extensions ROM BBC £19.95

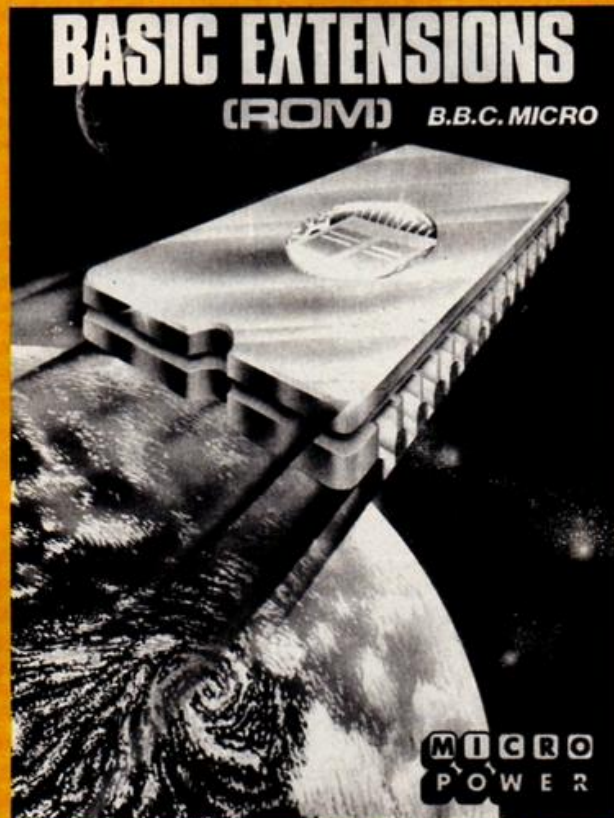
Micro Power, Northwood Hse, North St, Leeds LS7 2AA

If you're a believer in structured programming, you will probably like the type of BASIC which the BBC machine has as standard. For the purists however there are a number of structures which are conspicuous by their absence. This ROM is an addition to the standard BASIC and integrates fully with it to give you a whole range of new "words". Some of these are meant as utility programming aids, others meant to make BASIC even better and there are even a couple to help make program filing more

the FIF/ENDIF gives multiline IF/THEN type structure. All good stuff, easy to use and of great value to serious programmers, particularly those in education.

The programmer's utilities include the ability to FIND any string as well as globally or selectively REPLACE any string. The string can even include keywords and wildcards. There is a program compacter to remove unwanted wildcards. There is a program compacter to remove unwanted bits, a SHIFT command to allow the moving around of lines in a program and variable DUMPing options. CONT is rather like a Spectrum command in that it allows you to restart a program after an error as if the error hadn't occurred.

The file utilities are: VERIFY, to check that a program has been saved correctly, an essential for cassette users; VIEW, which



foolproof.

The first set of words cover the new structures and give you the ability to use WHILE/ENDWHILE loops for the first time. These loops are not always executed because the test for a terminating condition comes at the beginning of the loop, not at the end, as is the case with both REPEAT/UNTIL and FOR/NEXT loops.

There is also a full implementation of the CASE statement which allows you to specify a whole range of actions to be taken if a single variable holds particular values or none of those specified at all. Two other, slightly less useful structures are also provided: a LOOP/EXITIF structure allows you to finish a loop at any position during its execution if a particular test is passed, while

allows a program to be read from file and then displayed on screen without altering the contents of memory, and two utilities which make the joining of one program to another very simple indeed, as well as 13 more commands.

This ROM is a real boon to those who like to write with a good degree of structure but also provides utilities which any programmer will find useful. The 44-page manual is well written and easy to follow with examples of the action taken by most of the commands. Its only drawback is that it "steals" an extra page of memory, but you never get anything for nothing.

Programs written using the extra commands can even be used by those without the ROM with a copy of the Run Time System which is available for just £1. Great value all round. D.C.



AVAILABLE FOR CBM 64, C 16, VIC 20

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Word games with the Mr Men 48K Spectrum £9.95

Mirrosoft, Holborn Circus,
London EC1P 1DQ

The Mr Men characters are taken from a cartoon strip in a National daily, and every child who is introduced to them adores them, at least the children I know do.

There are two tapes with a separate program on each. One program is Mr Noisy's word game, and the other is Read with Mr Bounce. A notice on the package states 'for ages 5 to 8 years', a likely story.

If the parents do decide to let the children play there is a booklet for their guidance, the

parents that is. To help little fingers find the correct keys there is a plastic overlay strip.

After trying the Mr Bounce game for about an hour I decided to invite a lady friend round to try it. It took me nearly two hours to wrest the keyboard from her, she is a very determined five year old.

Her verdict is: funny, luvly, nice, etc. My verdict is: good value for money if you have children, a bit pricey if you don't. Oh, and you need a Spectrum of course.

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



CW — Morse Oric 1/ Atmos 48K £14.95

No Man's Land, 110 bis, av. du
General Leclerc — 93500 Pantin,
France

Programs to simulate morse code appear with boring regularity on the pages of magazines. So, it is surprising to find one marketed commercially. This production seems to offer just about everything in a morse program.

It will translate morse code to and from the alphabet. You can connect it to a transmitter, type in a sentence, and the message will be sent in morse. The speed of transmission and audio frequency can be selected by the user. Several preset messages can be stored, and transmitted by pressing appropriate keys.

It can also translate morse from a receiver. An audio connection is made between the receiver and computer. The characters appear on the screen as they are translated, which is immediate. Messages can be stored on tape, as can the screen display itself, or a copy obtained on a printer.

Instructions appear on a cassette insert and at the start. For the user not conversant in radio amateur's jargon, they are hard to follow, but I doubt if this would be of much use or interest to anyone but a short wave radio enthusiast.

instructions	50%
ease of use	80
display	%70
value for money	60%



Snow Queen Dragon 3264 £5.95

Cambrian Computersolve, 15
Derwent Cl, Prestatyn, Clwyd
LL19 7TT

This is an odd program. It describes itself as a fun spelling/pattern recognition game. You have to pick the letters which spell a given three or four letter word from the ice surrounding the Snow Queen's palace. The spelling part is trivial, as the words are printed on the screen for you, but spotting the letters among the jumble of black and white squares which represent the ice is rather trickier.

The concept is good, and once I got the hang of it I found the game entertaining, though I have doubts about its educational value. It is too difficult to be played by children young enough to need practice in letter recognition.

The weakest points are the clumsy method used for controlling the cursor, and the poor graphics and sound effects. After each word is completed you have to sit through a sequence of dull graphics screens — geometrical patterns drawn slowly in several different colours. As the program is written in BASIC I felt very tempted to delete the lines which produce these.

It's an interesting idea marred by confused objectives and poor presentation.

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



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The Complete Cocktail Maker BBC B £9.95

Acornsoft, Betjeman Hse, 104
Hills Rd, Cambridge CB2 1LQ

For the dipsomaniacs a taste of varied delights that may refresh parts other drinks cannot reach. Cocktails can be an expensive way to experiment and this may help.

There are four options. You can browse through the selection which includes over 300 drinks; you can find a cocktail containing certain ingredients; find cocktails using given ingredients; or describe the cocktail and have it searched out.

The third one I found most useful and realistic. Pick out what you've got and it tells you what to make! The last option was limited because some names are idiosyncratic hence I couldn't

find Freddie Fudpucker. It is also limited in size.

The program is well organised with a menu and graphic representation of the cocktail in its glass with accompanying text and instructions.

A manual describes the workings and some information on types of glasses best used.

A good book on the subject is easier cheaper and probably contains more information. You gain a novel approach to an ancient pursuit (hic! or is it, sic!).

instructions	100%
display	60%
ease of use	100%
value for money	50%



Paul Daniel's Magic Show BBC B £9.95

Acornsoft, Betjeman Hse, 104
Hills Rd, Cambridge CB2 1LQ

You have the cassette, a manual, a pack of special cards and a printed sheet that helps with one trick. There are ten tricks altogether and a few other props will be needed: a pack of cards and some coins.

It soon becomes clear that you will need practice because you are the magician and not the computer! One or two are self explanatory and the audience follow instructions on the screen.

The presentation of the tricks varies enormously. The first one which defines a playing card and a person's date of birth lacked sound effects. Perhaps what was missing was Paul's patter!

My favourite was Clue based on the game Cluedo. In your absence the audience commit the crime: they choose a name, a weapon and a room using good graphic sequences. When you return you guess all three. My family were amazed and couldn't see how it was done.

An important aspect is the ability to customise the sequence to create a show. Ultimately success will depend on the presenter and not the computer leaving a lot for the imaginative magician to do.

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



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