

# AMSTRAD COMPUTER USER

95p

September  
1985

**On Test**

**Cobol for CP/M**

**Amstrad's RS232C Interface**



**Jet Set Willy**

**Map, Pokes and Playing Hints**

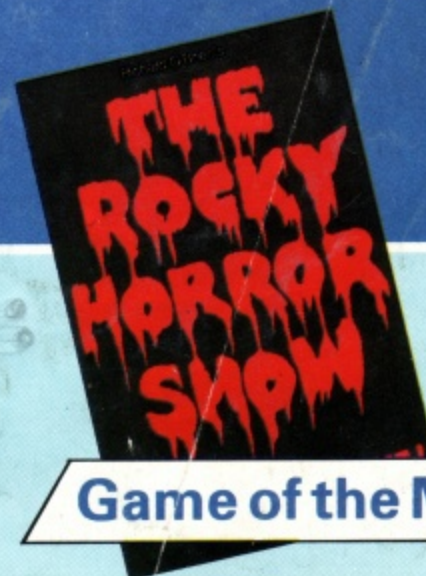
**Program Listings**

**Sabotage - Save the World ( Again )**

**Crazy Legs - Dodge those Lasers**

**Super-Power Rom Board Reviewed**

**Game of the Month**



The Chart Topping Flight Simulation Now On CBM 64.

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BY D.K. MARSHALL  
ADAPTED BY DARRELL D.

## AMSTRAD CPC 464



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- Hall of fame.
- Endorsed by Heavyweight Champion - Frank Bruno.



elite



SPECTRUM SCREEN SHOT

## 0 Amstrad and Amsoft

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Amstrad User is the OFFICIAL magazine for users of the Amstrad CPC464 and CPC664. It is published monthly, the next issue will be on sale from September 11th 1985. Back issues are available from Amsoft Mail Order at £1.20 each (including postage). Issues 1 & 3 are sold out.

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mind, I want a straight answer. I really didn't tough it - I'm not that stupid, I'm experienced you know, I've owned a computer before, that Naval one, you know, the Admiral 64 or something... Not a patch on this machine mind. To show you how experienced I am I've actually managed to make MOST of your listings work. EXCEPT whenever I get programs with more than one listing I cannot for the life of me get the darned things to work! I've got a job to go to, I can't keep staying up until 3 in the morning beating my fingers and my head against the keyboard trying to figure out why the likes of ROCK HOPPER won't run. I know what you're going to say, buy a copy of the firmware manual or whatever it is, I would but I've run out of the green things - that partly caused by being late for work every day! If you'd like to send me one for nothing I'll send you the money sometime, I'm expecting this giro you see? Can't really find any use for the file the User Club sent me, nothing fits in it, stupid piddley little thing, who designed that then? Mind you it's just the right size for holding electricity, gas and telephone accounts, can't pay 'em, I've got all this computer equipment you see!

Seriously... hope you can help with a few of the above points, it's a marvellous machine so from User Club member No 5224008510125745, that's never a membership number is it?, all the best, hope to hear from you and keep up the marvellous work on the magazine.

JW Baldwin  
Bath

## Onto Disc

We have received many letters about Level 9 Adventures on the new Amstrad CPC64. They are not yet available on disc, but we have discovered that the cassette versions work on the CPC664 if you type the underlined commands below (to get "I", press SHIFT and "a").

For Colossal, Quest, Dungeon, Snowball and Lords of Time adventures, type I TAPE : MEMORY & 2FFF and LOAD "ADVENTURE", &3000 Start the tape and press any key. When the tape has loaded, type CALL &3000.

For Eden, Emerald Isle and Red Moon adventures, type I TAPE and RUN"" Start the tape and press any key whenever the computer asks you to.

Disc versions should be available after this year, and owners of cassette games will be able to upgrade to disc versions fairly cheaply. In the meantime, I hope this letter will be of interest to readers.

P. Austin  
Level 9 Computing

ACU

# Efficient, fast programs for small business

(Sunday Times, Australia)

THE AWA Amstrad, already established as the only contender to Commodore in the home computer market, is now building itself a reputation as an excellent small-business machine.

New business software, which arrived this week at VicWest, should consolidate its position.

Camsoft is the umbrella title of some new business packages from a Welsh company called Cambrian Software Works. Programs include a sales ledger, a nominal ledger system, purchase ledger, payroll system, invoicing system, stock control and data base.

## Complete

According to a report, one of the UK's most popular computer magazines listed all the user-friendly features required of business software and the Cambrian software incorporated every single item mentioned.

The Cambrian software seems so complete it leaves other small-business software at the starting post. It is so well thought-out and easy to use it is a credit to Cambrian and must grace the shelves of any small businessman with an Amstrad who takes his business seriously.

For speed and efficiency, the CamSoft packages are written in machine code. And although this is the best space-saving method, the programs still require more

## Camsoft gets highest rating

So this system can run a business package much more powerful than the capabilities of the machine.

In the file management sector of any of the packages, a record can be called by name. For example, if you do not know Fred's account number, you can call it up by typing F and the computer comes back with a list of all Freds on the file for you to choose from. The list is displayed in alphabetical order so sorting is required.

All CamSoft systems can be switched to multi-user access where more than one computer or terminal is required to update a file.

## Help

Although a user Amstrad might not have the power of an Amstrad, it can do a lot of work and is a very powerful terminal.

If required, the password can be associated with any program to prevent access from the menu of a program. It can be changed at any time.

The Camsoft complete range of Business Software for the Amstrad CPC464 and CPC664

## Includes:

- DATABASE
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- STOCK CONTROL
- SALES LEDGER
- PURCHASE LEDGER
- NOMINAL LEDGER ● PAYROLL

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# GEMINI

# SERIOUS SOFTWARE FOR THE AMSTRAD 464/664

The Cash Book Accounting programs described below are designed for the small to medium sized business, whether a sole trader, partnership or limited company. All need an Amstrad 464 or 664, an 80 or 132 column printer and cassette or disk storage.

Each program has been specially written to use the computer's huge memory and is a 'stand alone' program. However, the Cash Book and Final Accounts programs also interface to produce a superb combination pack for really serious business users, as well as practising accountants.

Each program is supported by a comprehensive, easily followed manual, and 'user friendly' screen prompts with error trapping routines, which make a specialised knowledge of accountancy unnecessary for the average user. The software is, however, capable of advanced accounting use, and in order to fully appreciate and interpret the Balance Sheet a discussion with your professional adviser or Bank Manager may be advisable.

We confidently recommend these programs to serious commercial owners of the Amstrad, and hope they will enable you to operate your business on a more effective, efficient and profitable basis.

*D. Hubbard*  
**Dale J. Hubbard, Managing Director**

*P. S. Meherne*  
**Peter S. Meherne MIAP Software Director**

## THE COMPLETE CASH BOOK ACCOUNTING SYSTEM

### Cash Book

(includes VAT file program 1813)



This is a program of enormous scope which allows the Amstrad to be used as a powerful business tool, taking the drudgery out of book keeping, and producing accurate and comprehensive management information.

In its simplest form the program will replace your Cash and Petty Cash books BUT Gemini's program, in effect, does much more. In addition to recording cash and bank transactions, the program will allow you to enter credit sales and purchases, and for all of these entries it will automatically complete the double entry routines, to ensure that your records are always in balance.

Sales and Purchase ledger control accounts are included, which makes the program ideal for integration with an existing manual sales or purchase ledger system.

The program also includes the following features:

1. Balance at Bank for up to 5 separate Bank Accounts.
2. Petty Cash in hand for up to 3 separate Cash Accounts.
3. A listing of all nominal account titles (maximum 199), most of which are user definable).
4. Monthly transaction summaries and departmental analyses of sales and purchases.
5. VAT memo account balances (sales/net purchases), and VAT accounts.
6. Batch printouts of all transactions entered in current program run.
7. Total debtors and creditors, sales, overheads and Trial Balance.

The program is therefore a complete 'stand alone' accounting software package, ideal for both business users, and practising Chartered Accountants, since an infinite number of different Cash Books may be kept on a single Amstrad.

A full audit trail of all data entered in the program is produced and a journal entry routine is incorporated to facilitate adjustments to individual nominal accounts, prior to producing a final Trial Balance. The latter interfaces automatically with Final Accounts program C.1806, so that a Profit and Loss Account and Balance Sheet can be prepared from data held in the Cash Book program.

**Cassette C.1805 £59.95**  
**Disk D.1805 £64.95**

### VAT File

Whilst this program will benefit most VAT registered businesses, it is also designed for those users who are on one of the special retailers schemes for VAT, which requires them to analyse their expenditure invoices over the various rates of VAT, in order to calculate their VAT output tax. The program will provide the following:

1. A means of recording invoices.
2. A printed copy of all invoice details.
3. Accumulated totals of different types of transactions.
4. The facility for coping with a multi-rated VAT system.
5. Information needed for the preparation of VAT returns.
6. The facility to sort and print transactions by date, invoice reference or customer/supplier name.

The package is capable of dealing with up to 140 transactions in a single batch and the different transaction types are processed in separate batches, which are then printed out as a permanent record. Cumulative totals for gross takings, VAT at standard rate etc. are stored in a data file on disk or tape which can be loaded at the start of every session to provide 'brought forward' totals for the program.

**Cassette C.1813 £19.95**  
**Disk D.1813 £25.95**

### Final Accounts

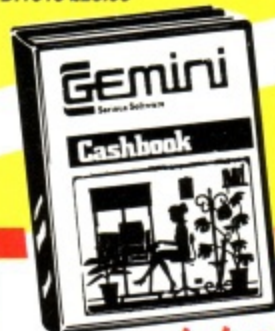
This program is designed to produce a Trading and Profit & Loss Account and Balance Sheet, either from the final Trial Balance produced by Cash Book program 1805 or from any other Trial Balance making it a truly stand alone 'Final Accounts' program. The facility to produce these documents quickly, accurately, and regularly is of enormous help in running any business, large or small, since one shows the true profitability achieved, and the other the exact strength of the business in terms of assets and liabilities.

The program also allows insertion of budget or comparative figures which can be shown alongside the actual figures, together with notes to the accounts, and the opening Trial Balance for the following period.

Whether used by businessmen or practising Accountants, this program allows the Amstrad to be used as a real business computer producing vital information for decision makers with enormous ease and accuracy.

**Cassette C.1806 £59.95**  
**Disk D.1806 £64.95**

Bona fide dealers, distributors and overseas licensees for Gemini software always required. Educational establishments contact us for details of our fuss-free licensing agreements.



### Combination Packs

Designed to offer maximum value and convenience to serious business users, by combining several programs in one handy pack, together with their appropriate manuals.

**Contains:** Cash Book (including VAT file) and Final Accounts.

	Normal List Price of Programs in Pack	Combination Pack Price	Saving
<b>C.1818 Cassette</b>	£119.90	£89.95	£29.95
<b>D.1818 Disk</b>	£129.90	£99.95	£29.95

BEAUTIFULLY PACKAGED AND DOCUMENTED, THESE EXCEPTIONAL PROGRAMS PROMISE TO BECOME 'BEST SELLERS' FOR ALL AMSTRAD STOCKISTS, AND ARE CONFIDENTLY RECOMMENDED AS 'STATE OF THE ART' SOFTWARE FOR THIS POPULAR, COMPETITIVE HOME MICRO,

# Report-Generator 1044 Accoged

Requires Gemini Database Program No. C.1801 and Printer

The Gemini Home Accounts is a suite of two programs offering comprehensive management of home finances. It is quick and easy to use and includes the following main features:

Unleash the data storage capabilities of your Amstrad with this powerful database program Pom Gemini, the market leaders in home computer software'

Your Dement Database will allow you to store, retrieve and manipulate data in a variety of useful ways - just as you would with a manual card index system but with extra capabilities, such as:

- Set up your own user-definable card layout in 40 or 80 column mode
- Up to 20 fields allowed, each with 160 characters - to a maximum of 1000 characters per card. Up to 999 records available making full use of the 4
- Extensive mathematical and field relational expressions may be used, including totals and averages
- Quickly sorts alphabetically or numerically, even names by surname if required. with or without case discrimination. Sorts may be performed on subsets of records on ANY field.
- Integrates with Report Generator (available separately) to produce standard mail-merged form letters, mailing labels up to 3 across page etc
- Change record format at any time, add or delete fields on the set-up
- Completely user-definable field summaries available to both screen and printer - 40 or 80 column display mode
- Delete records.
- Browse with instant edit/print/delete options.
- Simple menu-driven operation.
- Utilises machine code routines - no long 'garbage collection'.
- Fields may be merged enabling the appending of fields without tedious re-typing
- Superbly documented in an easy to understand style - just as you would expect from Gemini!
- Comes with two documented demonstration files to show the extensive capabilities of the software.

Cassette C.1801 £19.95  
Disk 0.1801 £25.95

# GEM 1111

## GEMINI MARKETING LIMITED

Gemini House, Concorde Road, Dinan Way Industrial Estate, Exmouth, Devon EX8 4RS  
Tel. (0395) 265165 Telex 42956 GEMINI

This program will allow you to present and print your Gemini Database data in formats that you design yourself on-screen.

Look at some of the ways in which you can use it:

- Re-arrange your record layout to meet specific printed requirements.
- Create sets of mailing list labels from database records, up to three across your printer.
- Create documents inserting merged fields into the, powerful the expensive word-processors!
- Design field summaries for columnar presentation of data, and total any given column
- Ideal for mail-merged standard letters.
- Create any number of standard documents from one database file
- Will even right-justify documents, automatically adjusting for variable length merged data

### Technical Details

RECORD MODE: 1600 characters of text available, including header and footer. Headers and footers may be entered when using printer paging options

MAILING LABEL MODE: 1-3 labels across page. with automatic compacting of lines to sequence the printer.

DOCUMENT GENERATOR MODE: 3200 characters available per document, with merging of up to 20 fields in any position on document. Any field may be used more than once. Automatic justification.

FIELD SUMMARY MODE: Up to 20 fields may be specified, maximum of 160 characters each.  
Cassette C.1820 (19.95)  
Disk 0.1820 £25.95

- Computer aided budget design.
- Up to 30 expenditure allocations.
- Financial year may start with any month.
- Amendments to budget at any time
- Up to 24 characters per transaction
- Automatic warning if bank charges likely
- Forecasting of balances and expenses.
- Bar /rads of budget actual income & expenditure.
- Various printer routines
- Powerful search routines including
  - Date, or range of dates
  - Allocations
  - Transaction details (specify name)
  - Credits
  - Combinations
- Simple to check account totals and running totals against budget at any time.
- All account entries sorted into date order if required.
- Simple amendment of debent entries.
- Date entry validation.
- Full summary by allocation.
- Four types of monthly summary.
- Automatic entry of standing orders
- Plus more

Cassette C.1807 £19.95

Disk 0.1807 £25.95

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# YOUR AMSTRAD.

## SUPERPOWER ADVICE CENTRES

The following computer specialists stock the SuperPower Rom-card and Rom-based software for the Amstrad and are able to offer you advice and information on current products and the ever-expanding range:-

### AVON

K & K Computers, 32 Alfred Street, Weston Super Mare. 0934 419324.

### BEDFORDSHIRE

Chilton Computers, 76b Dallow Road, Luton. 0582 455684.  
Hobbyte Limited, Unit 1G, Arndale Centre, Luton. 0582 457195.  
Zedem Computers, 2 Kimbolton Road, Bedford. 0234 213645.

### BERKSHIRE

Gadgets, 30 Peascod Street, Windsor. 07535 67211.

### CHESHIRE

Northern Computers, Churchfield Road, Frodsham. 0928 35110.  
Pyramid Micros, 25 Cairo Street, Warrington. 0925 35713

### CLEVELAND

Multicoloured Micro Shop, 8 Dundas Street, Redcar. 0642 486643.

### DEVON

Computerbase, 21 Market Avenue, City Centre, Plymouth. 0752 672128.  
Computer Systems (Torbay), 35 Hyde Road, Paignton. 0803 524284.  
Georges Booksellers, 147 Sidwell Street, Exeter. 0392 71072.  
Open Channel, Central Station Buildings, Queen Street, Exeter. 0392 218187.  
Computerware, 10 Lower North Street, Exeter. 0392 210507.

### EIRE

Bit by Bit, 6 Castle Street, Bray, Co. Wicklow. 001 868 541

### ESSEX

Clarke Coyston Computers, 332 London Road, Southend on Sea. 0702 337161.  
Estuary Personal Computers, 318 Chartwell North, Southend on Sea. 0702 614131.  
Computerama, 88-90 London Road, Southend on Sea. 0702 335443.  
Colchester Computers, 3A Short Wyres Street, Colchester. 0206 47242.  
Mirage Microcomputers, 24 Bank Street, Braintree. 0376 48321.

### HAMPSHIRE

Electronequip, 36-38 West Street, Fareham. 0329 230671.  
Alton Computers, 62 High Street, Alton. 0420 87998.  
Timatic Systems, Fareham Market, Fareham. 0329 236727.

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Computing World, 10 Swaby's Yard, Dyer Lane, Beverley. 0482 881831.  
Ashby Computer Centre, 247 Ashby High Street, Scunthorpe. 0724 871756.

### ISLE OF WIGHT

V M S Computer Centre, Bus Station Complex, Newport. 0983 525450.

### KENT

The Village House of Computers, 87 Beckenham Lane, Bromley. 01 460 7122.  
Microway Computers, 39 High Street, Medway Towns, Rainham. 0634 376702.  
Marlowe Micros, 9 The Friars, Canterbury. 0227 453531.  
Adventurer's Guild, 26 Harmer Street, Gravesend. 0474 334008.  
Nimbus Computing, 6 Station Road, West Wickham. 01 777 3160.  
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### LANCASHIRE

Computer World, 208 Chorley Old Road, Bolton. 0204 494304.  
I M O Computers, 39-43 Standish Street, Burnley. 0282 54299.

### LONDON

Adams World of Software, 779 High Road, North Finchley, London N12. 01 446 7170.  
Colmore & Microtanic, 102 Lordship Lane, Dulwich, London SE22. 01 299 1419.  
Vic Oddens, 6 London Bridge Walk, London SE1. 01 403 1988.  
Computers Inc., 86 Golders Green Road, London NW11. 01 209 0401.  
G & B Computers, 230 Tottenham Court Road, London W1. 01 580 3702.

### LINCOLNSHIRE

M K D Computers, 24 Newlands, Lincoln. 0522 25907.

### MANCHESTER

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Celcom Systems, 203 Corn Exchange, Manchester. 061 834 2808.

### MERSEYSIDE

MicroByte, 71 Sea View, Wallasey. 051 630 6933.  
Hargreaves Computers, 31-37 Warbeck, Liverpool. 051 525 1782.

### MIDDLESEX

J K L Computers, 7 Windsor Street, Uxbridge. 0895 51815.  
Screens Microcomputers, 6 Main Avenue, Moor Park, Northwood. 09274 20664.

### NORFOLK

Abacus, 12 Pottergate, Norwich. 0603 614441.

### NORTHERN IRELAND

Botanic Computer Centre, 5 Botanic Avenue, Belfast. 0232 240798.  
Fun-cational Computers, 28 High St, Lurgan, Co. Armagh. 07622 28543.

### NOTTINGHAM

G A Computers, 1 Willford Road, Ruddington. 0602 211225.  
Computer Market, 27 Goosegate, Nottingham. 0602 586454.

### SCOTLAND

Micro Mart, 304 High Street, Kirkcaldy. 0592 206251.

### STAFFORDSHIRE

Leek Computer Centre, 7 Ball Haye Street, Leek. 0538 387859.  
Computer Cabin, 24 The Parade, Newcastle under Lyne. 0782 636911.

### SURREY

Computerama, 17 Nork Way, Burgh Heath. 07373 54717.  
Computersolve, 8 Central Parade, St Marks Hill, Surbiton. 01 390 5135.

### SUSSEX

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Computermania, Southgate, Chichester. 0243 779263.  
Computermania, 17 The Lanes, Littlehampton. 0903 716187.

### TYNE AND WEAR

Sunderland Computer Centre, 29 Crowtree Road, Sunderland.  
0783 655711/655736.

### WALES

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0286 2610.  
Cardigan Electronics, Chancery Lane, Cardigan, Dyfed. 0239 614483.  
Bucon Ltd, 35/36 Singleton St, Swansea, W Glamorgan. 0792 467980.  
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Trowbridge Computer Shack, 8 Timbrell St, Trowbridge. 02214 67299.

### YORKSHIRE

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Danum Computer Systems, 17 East Laith Gate, Doncaster. 0302 20355.  
The Computer Room, Unit 12, Market Hall, Barnsley. 0226 204000.  
Just Micro, 22 Carver Street, Sheffield. 0742 752732.

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OMISE OF YOUR AMSTRAD.

# Thinking Software? ... think Tasman

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# RS232C

## Computers of the world unite

Lots of companies are now offering RS232C interfaces for Amstrad computers, Simon Rockman and Alex Martin look at the official offering and explore some of the avenues it opens up.

On the back of your Amstrad computer you have two edge connectors which allow you to communicate with the outside world (the 664 has an extra one for a second disc drive). Everyone with a printer will be familiar with the Centronics Printer port, this sends the signals to the printer seven bits at a time, and is known as a parallel port. An RS232C port is SERIAL, this means that the data is sent to and from the computer a bit at a time. In many ways this is not as useful as a parallel port, it is certainly slower. However the RS232C serial interface conforms to a worldwide standard and it is this which makes it so useful. Most computers either have an RS232C port or else someone makes a suitable interface, most manufacturers of computer peripherals offer an RS232C option and so even if you want to connect your computer to a device built before the CPC464 was even thought of there is a good chance that this interface will get you talking.

### Physical Appearance

The Amstrad RS232C Serial Interface is housed in an Amstrad black case to match the computer. A short length of ribbon cable connects the interface to the back of the computer and allows the unit to stand on a desk rather than hang off the back of the computer. This overcomes the problems encountered in designing a box which snugly fits the back of a CPC464 without lifting the back of a 564. Each of the sides of the box has a connector of some sort. The front has the ribbon cable, the back an edge connector so that other peripherals can be plugged in. On one side is an industry standard ID-connector and to the left is a power socket.

The interface comes with a power supply built into the plug. The CPC464 may have been conceived as a one plug system but with the computer, disc drive, printer, serial interface and a modem all set up together it soon starts to grow. The power supply is needed to ensure that the full specification of an RS232C interface is met, some peripherals may need to draw more power than would be available if the device was powered from the computer's supply.

### Documentation

In many ways it is the manual which really makes this package special. The first part of the 'RS232C Serial Interface User Instruction Book' is known as the 'Book of Spells'. This simplifies using the interface. Because the RS232C standard is basically just two wires in each direction (input and output) the devices at each end need to know exactly what is going on. Setting them up is often a matter of trial and error for the experienced user, for the novice it can be a nightmare. The book of spells helps to ease these problems.

Many of the popular applications for the interface are looked at in detail, all you need to do is leaf through the manual until you see the appropriate picture for what you want to do and follow the accompanying instructions. Could this be the Presticon-driven manual? So if you want to transfer a file from a Sinclair ZX Spectrum to your CPC464 you leaf through until you find spell 17, This gives the correct wiring for the plug on the back of a Sinclair Interface 1 and even a short terminal program in ZX Basic.

The style of the manual is quite chatty, it explains why you need to do certain things as well as how to do them. It also suggests the best way to set things up, since the system powers on with a default speed of 9600 baud it recommends that you set your printer up to accept that instead of having to manually re-set the baud rate at the start of each session. The computer buff will appreciate the detailed appendices but I found the switch from the nice friendly 'Book of Spells' to a serious description of what each wire did to be a bit sudden. I would have liked to have seen an index and perhaps a summary of the commands available, however having seen the documentation for the RS232C interfaces on a number of computers the Amstrad manual was much better than I expected.

### Firmware

As with many peripherals an RS232C interface is only as good as the supporting software. The Amstrad device is fully compatible with CP/M so either a commercially available program or one of the packages from the CP/M users group should fit the bill. There is, however, a nicer alternative. The RS232C interface comes complete with its own ROM. This first shows itself when you attach the unit and switch on the computer. Below the usual copyright message is the legend "Amstrad RS232C Serial Interface © 1985 Amstrad Consumer Electronics plc". The ROM contains a whole bunch of goodies to make communication with the outside world easier. Table 1 outlines these commands. Perhaps the most interesting of these is I PRESTEL.

### About Prestel

Prestel is a service run by British Telecom. It consists of several mainframe computers connected to the telephone system which can be dialled up and then, using a micro computer with prestel software and modem, or a dedicated Prestel terminal, 'pages' of text can be downloaded and read from the screen, The pages can contain any information, travel, news, sport etc. They are normally enhanced by colour graphics. If you have the right equipment, ie. an Amstrad computer, RS232C Serial Interface, and modem, it is possible for you to dial up and see Prestel for yourself, using the Prestel firmware in the Serial Interface ROM. Lets









# Microscript

By Derek Wray

When I first bought my CPC464 back in October '84, it was with the idea of turning it into a word processor - one that would not break the bank. Before the disc drives arrived, I had to make do with Easi-Amsword, consoling myself with cups of tea while it loaded from a cassette. Now, with dual disc drives and Intelligence (Ireland) Ltd's Microscript, the machine has the feel, and most of the power of a professional word processor set-up. It is loaded and ready to go in 34 seconds. At the touch of a couple of keys, text can be centered, underlined, underscored, or changed from lower case to CAPITALS, with automatic word-wrap. Words too long for the end of a line are not broken, but transferred intact to the the next line. All this and, most important for text-formatting, all the type is shown in a What-You-See-Is-What-You-Get display (WYSIWYG for short). And, for what you get, the cost is low: only £49.00, or £41.65 for User Club members. What more could you want?

Well, the answer is more. The perfect word processor software has not yet been written, more's the pity, and Microscript has some shortcomings. But, more of that later.

Amsoft recommends the use of twin disc drives, and this certainly makes things easier. It is possible, however, to use Microscript effectively on just one drive. Microscript is not one program but five, from about 20-30K each. Depending on what you pick from the menu, only that particular one is loaded. Therefore, the working copy of your Microscript disc does not need to contain all of its parts. It is possible to split it over two discs and to 'filecopy' (using your CP/M utility disc) the documents between them. Proper management should give you about 100K to play with and, if you erase back-up copies before editing, this is more than enough for most people's needs. With twin discs the problem vanishes, there is the whole 169K of the B drive to satisfy the needs of everyone.

It gives me a problem, though. I really need to do five reviews instead of one. First, though, a general overview, and then I will deal with separate units.

Microscript is a CP/M based word-processor program, that allows continuous documents to be made, up to the space left available on your disc. It uses function keys (a combination of Escape or Control keys plus others) to bring into play its different editing, text formatting and other facilities. To remember all the

combinations of keys is the demanding task of the user - there is no handy reference even in the manual. But once grasped, after about a week of practise, they make the whole business of producing a polished, finished document a very simple and easy process.

The five Microscript programs are:

- Creating and editing a document;
- Reformatting, including a built-in calculator and cut and paste facility;
- Global Search to replace a word or phrase with any other;
- File Management for copying, renaming, erasing etc. your masterworks;
- Printing the masterwork.

## Editing

Overall, the screen presentation is good. It gives a clear, legible and uncluttered layout in 80 columns. there is no provision for 40 columns, so colour-monitor owners beware. The editing and text facilities are numerous: choice of overlay or insert mode; erase a word or line; word search; center text; automatic underline or underscore; plus many others. The cursor movements are fast, and one can move through the text a line at a time or through the entire document.

Text format is by means of rulers placed in the text, (they will not print out) they look a bit like this:

W.....I.....T.....C.....T.....H.....E.....R.....G.....

or this

.....J.....T.....C.....R.....Z.....P.....

There are nine standard rulers, but you can alter these at will by overtyping - a full-stop to get rid of something, or T for tab, I for indented paragraph, C for centering, J for justified paragraph, W for word-wrap (not justified). Taking the cursor through the ruler line makes the letters on that line active. So, using a ruler like:

.....J.I.....R.....

a different format of the text can be made with no difficulty at all. This is not done completely in the editing program. For a complete tidying up of the text - with proper spacing between commas and full-stops, turn to the Reformat function.

## Reformatting

Besides the tidying up of paragraphs before printing, reformatting offers 'Cut and Paste' and a handy calculator. A section of text can be cut out, held in memory, and stuck back in elsewhere. There are two types of people in the world - those who use cut and paste a lot, and those who do not. I do, and it is wonderful. The calculator can do vertical or horizontal addition - only for figures on the screen, though - and can perform full 5 function arithmetic (+, -, \*, /, %) on each number, with memories. It is good, but I cannot say that I have needed it a great deal, though I dare say there are some who would find it invaluable.

## Global Search

When your priceless masterpiece of prose has just been completed, and you notice the dreaded consistent spelling mistake all the way through - 'teh' for 'the', 'Amsift' for 'Amsoft', 'raving madman' when it should have been 'tax inspector'. You may go through the whole thing on edit, or you may use the Search program to find any short string and replace it with any other of your choice. That way you get it done automatically.

I had hoped that I could type in the first letter of a word and then use Search to fill in the rest - very convenient for dyslexics like myself. The string and its replacement should, however, both be about the same number of spaces, otherwise the sentence may be moved past the end of its line and a bit may be lost.

## File Management

Rename, copy, erase, merge, or view documents - File Management manages files. It could be bettered if there were a command to let you know how much space was left on disc, and how long a file was. I have got round this by filecopying 'stat.com' from the CP/M utilities disc onto my working copy of Microscript, but I have to exit from the system each time I want to use it.

## Printing

When it comes to printing up a sizeable document there are some things Microscript makes easy for you. Automatic page numbering, and the position and line for the page number and title can be changed.

This gives you quite a bit of flexibility. One of the things I liked was the chance to stop and start the printing from any page of the document. As I have a daisywheel printer, however, I would have liked some way to stop and start in the middle of a page to let me change wheels.

If you want to produce professional looking, lengthy documents on the Amstrad, Microscript is a must. It wins over the other available word-processing software because of the formatting features, and the larger file length that can be accomodated with a CP/M based system, usually the memory left in your computer after you load the WP program is the maximum limit on the file length - Tasword allows, I believe, 13K, but Microscript stores the file on disc as you progress, leaving lots of memory. The maximum file length is determined by the amount of space left on the disc. There are a few provisos to this that have to be taken into account.

To explain these, let us trace the course of a Microscript file. When you create a file it must be named. Let us say that we give our imaginary document the name 'B:EXAMPLE.DOC'. The 'B:' refers to the

disc drive (it may be 'A:'), the 'EXAMPLE' is any old name, the '.DOC' is a generic suffix of your choice (i.e. DOC for document or LTR for letter etc.). Each time you edit a document, an Editing In Progress file, called 'EDITINP. \$\$\$' is created. You never actually see it, for each time you save, after editing, 'EDITINP. \$\$\$' takes the name of your document. The old file becomes an automatic back-up copy, i.e. 'B:EXAMPLE.BAK'. Thus, it is possible to have three files of the same length on your disc at the same time.

Given this knowledge, it's simple. All you have to do is find some mathematical genius, who can divide by three, and get him to work out the maximum safe file length.

Microscript also wins in its ability to be programmed, it works very much like a computer language. When a document is merged it goes through an interpreter, which can read in-built commands. Thus, it is possible to create your own specific system. You do not have to be a Numero Uno Hacker or one of the semi-legendary 'Power Users' to make use of this, I have a file called LTR.LTR. It is a standard letter heading. When I write a letter, I create a

new file, and then merge in LTR.LTR. Thus, each letter starts with the telephone number and the address. It then stops and waits for me to enter the date, before finishing the rest of the letter head. My REF.LTR file puts automatic reference numbers in. But, that is all very small stuff. A whole business specific, menu-driven WP system is possible. All you have to do is write it, and if you were clever enough to buy a CPC464 that will not be too difficult. In conclusion, Microscript is quite to very good, and very reasonably priced. However, it doesn't support super or sub-scripts, and I would like an automatic footnote facility, automatic word and/or line count during editing. I would like a few other things as well, perhaps including something that actually did all the writing itself. But, failing that, Microscript will do an excellent job. Compare the price with Wordstar, and you'll think, like me, that it does a marvellous job.

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3	DALEY THOMPSON'S DECATHLON Ocean	3				2	71
4	3D STARSTRIKE Real time	5	▲		664	2	70
5	GHOSTBUSTERS Activision	2	▼			3	61
6	COMBAT LYNX Durrell	6				3	59
7	BEACH HEAD US Gold	-	NE	D	664	A	NE 47
8	FIGHTERPILOT Digital Integration	7	▼		664	3	42
9	SORCERY Virgin	9				2	39
10	MR FREEZE BT Firebird	8	▼			1	37
11	MINDER DK'Tronics	11			664	2	35
12	WILD BUNCH BT Firebird	12				3	23
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15	CONFUSION Incentive	18	▲		664	1	17
16	WORLD CUP Artic	17	▲			1	15
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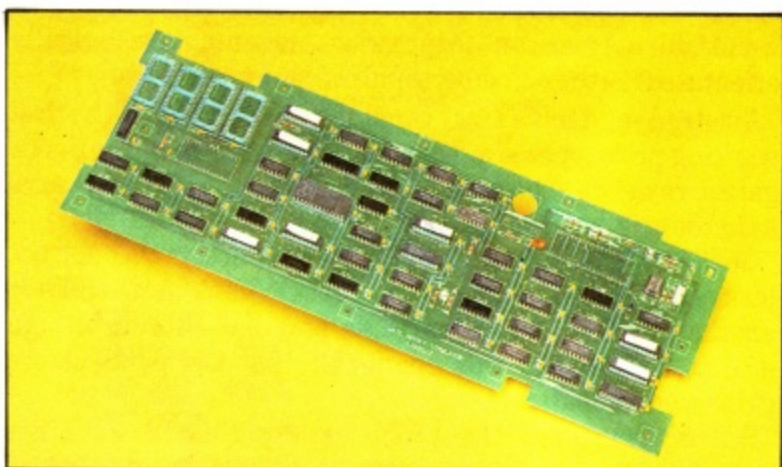
# FEATURE

## On the rails

Locomotive Software saw their first working hardware towards the end of October 1983. A breakneck schedule had been maintained with the assistance of many late nights, and by the start of December, the first systems were being handed over to eager software houses.

From a hardware point of view, the design was well finished by now, although the gate array was some way from completion of production tooling.

Final Gate Arrays arrived in February. So by the time the product was launched in April 1984, everything on show was actually produced from final tooling and final masks. One supplier present at the launch remarked that it was the first time in their experience that they had attended a computer



launch where the equipment on show wasn't a last minute bodge of dubious prototypes.

However, these other notable incomplete products had been the fruits of enthusiastic amateurs, not a company steeped in just what it means to be in the consumer electronics business. The distraction of 'not invented here' never impeded Amstrad's cool commercial judgement of the best way to make things happen.

With Amstrad now firmly established as the most solid force in the UK home computer marketplace, and not far from a similar position in most of Europe, it looks as if Mark Jones and his partner Mike Scase may look forward to many other opportunities to show just what can be done with legendary Cambridge technical talent coupled to the equally legendary commercial flair of Amstrad.

All the while this has been going on, the established home computer manufacturers have been proving Alan Sugar's statement at the launch of the CPC464 that the business had ceased to be a playground for companies without a thorough grasp of the commercial realities of the electronics business. Just as the UK audio and TV business had been started by enthusiastic amateurs and then passed on to commercial businessmen who in turn then abdicated in favour the Japanese, so the computer industry is evolving from infancy to maturity.

Whilst Amstrad wasn't around in force in the days when it might have been able to provide the product to stem the subsequent flood of Japanese audio goods, the combination of technology and commercial instinct will keep Amstrad computers in the reckoning for a long time yet.

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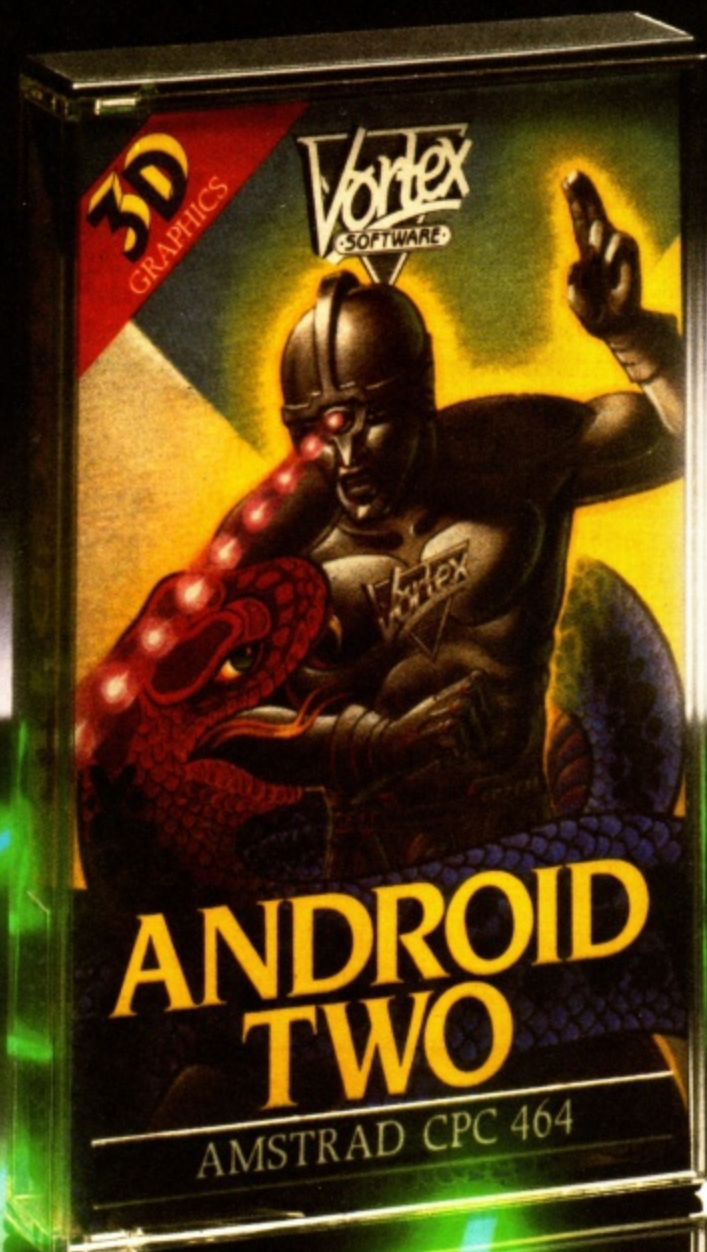


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# Writing Adventures

PART VI

Bill Brock

## Winding up

The time has now come to wind up this short series of articles on writing your own adventure games. If you have been sitting in front of your Amstrad busily typing in the routines given over the last five issues, your own adventure game should now be nearing completion...

Unless otherwise stated, the program lines should be typed in with the line numbers as shown. This will give you an operating system to which you can then 'graft on' your own data for location descriptions, artefacts lying around verbs and objects to be recognised etc.

What has gone before is 'nearly' all you need to know, there are just a few points that we must tidy up before leaving you on your own.

## Important words

There are thirteen single word input commands that are understood by the program at lines 1730-1740 (you may have added more). Generally speaking the single word inputs are fairly important commands and are those words which are most often used.

The first seven are also accepted as single letter commands, which in practise will probably be used most of all (the direction commands and INVENTORY). The final six (with the exception of LOOK) have not yet been covered at all.

Let us look at the remaining five - SCORE, HELP, QUIT, SAVE and LOAD:

## Winning numbers

SCORE is something that 'you' must decide upon. I have included it at line 1000 as the condition for the main 'game loop' continuing (WHILE SCORE < 100). Players may well input SCORE at regular intervals, to see how they are progressing, are you going to oblige them with an answer?

If you are, then the variable 'SCORE' must be incremented at strategic points throughout the game i.e. SCORE = SCORE + 10. This could be added to certain lines where you consider the player has been particularly clever. For instance, if they succeed in making fire, having first obtained the tinderbox, the tinder and the steel.

If you wish the score also to depend upon certain items being taken to a particular place, you will have to have several lines like:

```

1 REM ** List - 34
1744 REM ** Score
1745 IF OP%(1)=4 AND SC%(1)=0 THEN SCORE
    =SCORE+10:SC%(1)=1
1750 IF OP%(1)>4 AND SC%(1)=1 THEN SCOR
    E=SCORE-10:SC%(1)=0
1755 IF OP%(9)=4 AND SC%(2)=0 THEN SCORE
    =SCORE+10:SC%(2)=1
1760 IF OP%(9)>4 AND SC%(2)=1 THEN SCOR
    E=SCORE-10:SC%(2)=0
1765 REM
1770 REM
1775 REM
1780 REM
1785 LOCATE #2,2,10:PRINT #2,"Your score
    is :";SCORE:GOTO 1500
  
```

Note that the lines are all in pairs. One to detect if an object is at a certain location for the first time - thereby incrementing the score. The second to detect if the object has been removed from that location and thereby decrementing the score.



If the score chosen in line 1000 is reached then the program will finally proceed to those lines immediately following the WEND at line 3000. The following lines should obviously be in the form of: "RAH, RAH, RAH - YOU'VE WON" etc.

Not all adventures have the facility to give the player a score, but it can often be a useful playing aid, not to mention the side effect of keeping the player's attention from waning.

## Mayday, Mayday!

HELP is another command not always implemented in all adventure programs. If too much help is given then the game becomes too easy and the player's attention is lost. It is sometimes difficult to judge just how much to supply; if in doubt, give less or make the clue ambiguous or difficult to understand.

The 'helpful hints' are accessed from line 5000 and may take several forms. They may simply be linked to the player's location (L%) and so would look like line 5010. This is a straight clue to the use of gloves and will appear every time a clue is sought at location 7.

```

1 REM ** List - 35
4999 REM ** Helpful Hints
5000 CLS #2:LOCATE #2,2,2:IF RND(5)>0.5
    THEN 5090
5005 REM
5010 IF L%=7 THEN PRINT #2,"Gardeners us
    e them":GOTO 5095
5015 REM
5020 IF L%>35 AND OP%(9)=0 THEN PRINT #2
    ,"Better than carrots":GOTO 5095
5025 REM
5030 IF L%<10 AND OP%(30)=0 AND F%(1)=0
    THEN PRINT #2,"Good workmen...":GOT
    O 5095
5090 PRINT #2,"Seek and you may find..."
5095 GOTO 1500

```

Alternatively you may want to link a clue to an object, in which case lines 5020 or 5030 may give you some ideas. I keep my clues as short and as terse as possible, partially to conserve memory and secondly for the reasons given above.

These last two hints are intended to give the player clues to, a) seeing in the dark and, b) cleaning the sword. The latter is also linked to the flag indicating that the sword has not already been cleaned (F%(1)=0).

Once you have decided to include HELP, you may well find yourself with some pretty complex thinking in front of you. By all means include 'HELP' within those words that will be recognized but leave completing the 'helpful hints' until last. In the event of shortage of memory (or ideas), you can always have a one line response saying 'You are on your own here...'

Another ploy is to give the player a fifty-fifty chance of getting a clue with a line such as 5000. This by-passes any possible hint if RND(5) is greater than 0.5. Finally, line 5090 must be included to cover the likely event of there not being a clue for every occasion.

## He who runs away

A good adventure game is not going to be solved at one sitting. Neither is it entirely fair or friendly to expect

players to repeat perhaps dozens of moves or operations to get back to where they were, when they last sat in front on the keyboard.

To be able to SAVE 'the state of play', is an important utility for all adventure buffs. Not only does it save repeating oneself every time the game is played but it is another weapon in the player's armoury. If for instance a potentially lethal move is about to be attempted, it is very useful to be able to SAVE prior to moving.

```

1 REM ** List - 36
15199 REM ** Save
15200 CLS #3:LOCATE #3,2,2
15205 PRINT #3,"Press REC and PLAY then
    any key:"
15210 WHILE INKEY$<>"" :WEND
15215 A$=INKEY$:IF A$="" THEN 15215
15220 PRINT #3," So it shall be..."
15225 OPENOUT "!NAME"
15230 FOR I%=0 TO 31
15235 WRITE #9,OC%(I%)
15240 WRITE #9,OP%(I%)
15245 NEXT I%
15250 FOR I%=0 TO 10
15255 WRITE #9,F%(I%)
15260 WRITE #9,SC%(I%)
15265 NEXT I%
15270 WRITE #9,C%,SCORE,L%,OB$(30),L$(13
    )
15275 REM
15280 REM
15285 REM
15290 CLOSEOUT
15295 IF V%=11 THEN 16010 ELSE GOTO 1500

```

The routine itself is quite straightforward but what you must be careful about is what data is saved. Inspect 'your' program in detail. Note down what objects are movable and what location or object descriptions may be altered as the game is played. Also record all flags that are set and any variables that increase or decrease during the game (like the score).

There is also another point to remember when using cassette files, they take up more memory than you think. This is because 4K (4096 bytes) is allocated as a cassette buffer. If you have less than 4K available when opening a file the computer will probably 'hang up'.

SAVE your program before RUNNING if you are short on memory, better still set MEMORY 4K down from HIMEM so you know where you are.

Line 15205 prints the normal SAVE instruction to window #3, it is assumed that the player knows that a clean cassette tape has to be inserted first. Line 15210 simply clears the keyboard buffer and line 15215 waits for any key to be pressed. 15220 indicates that something is happening.

Line 15225 opens an output file onto the tape with the filename NAME. This suppresses the normal Amstrad cassette messages (telling you to press any key and the number of blocks loaded etc). These would otherwise be printed to window #0 and would be displayed over the top of our location description.

Lines 15230-15245 save the object class array (OC%()) and

# "YOU MUST BE THE BEST SOFTWARE FIRM IN THE WORLD"

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the object position array (OP%()). Lines 15250-15265 the flag and score arrays and finally 15270 saves various variables together with location and object descriptions that alter within the game. C% us how many objects are being carried, and L% is the present location.

Line 15290 closes the file and brings the tape save operation to an end. 15295 checks to see if SAVE or QUIT (V%=11) have been input an directs the program accordingly. After SAVE, the game continues as though nothing had happend. The REM lines are for the additional flags/variables that 'you' may need to save.

Note that WRITE #9 is used and not PRINT #9, this is because some of the object or location descriptions may have commas within the text. If you use PRINT #9 then these are looked at as 'separators' and the descriptions would be truncated at that point...nasty.

Having got a SAVE command then obviously we must have a LOAD routine too. Lines 15100-15195 follow the same pattern as for the SAVE routine above, except that this time data will be read from, rather than written to, the tape.

```

1 REM ** List - 37
15099 REM ** Load
15100 CLS #3:LOCATE #3,2,2
15105 PRINT #3,"Press PLAY then any key:
"
15110 WHILE INKEY$<>"":WEND
15115 A$=INKEY$:IF A$="" THEN 15115
15120 PRINT #3," Let it be as it was..."
15125 OPENIN "!NAME"
15130 FOR IX=0 TO 31
15135 INPUT #9,OC%(IX)
15140 INPUT #9,OP%(IX)
15145 NEXT IX
15150 FOR IX=0 TO 10
15155 INPUT #9,FX%(IX)
15160 INPUT #9,SC%(IX)
15165 NEXT IX
15170 INPUT #9,C%,SCORE,L%,OB$(30),LS(13
)
15175 REM
15180 REM
15185 REM
15190 CLOSEIN
15195 GOTO 1000

```

The VITAL thing to remember is that the order in which data is read FROM the tape must be EXACTLY the same as the order in which it is written TO the tape.

It follows that it might be 'friendly' to ask at the very beginning if the player wishes to "load a saved game?". Such a routine may be put at lines 300-325 (the previous line 300 becomes 400).

```

1 REM ** List - 38
299 REM ** Load previous game?
300 CLS #2:LOCATE #2,2,2
305 PRINT #2,"Do you want to load a save
d game Y/N ?"
310 WHILE INKEY$<>"":WEND

```

```

315 A$=UPPER$(INKEY$):IF A$="" THEN 315
320 IF A$="Y" THEN 15100
325 IF A$<>"N" THEN 300
400 GOTO 1000

```

Very little time is saved by using this routine, as typing in LOAD when the first location is displayed is quite quick - you could probably use this memory for better things too. On the other hand it is friendly.

## Escape clause

However good a game is, people have to sleep, work and eat. So, to remain 'user friendly', provision must be made for players to return to 'this world' for a few hours between sessions. QUIT is the answer.

```

1 REM ** List - 39
14999 REM ** Quit
15000 CLS #3:LOCATE #3,2,2
15005 PRINT #3,"Save your position Y/N ?
";
15010 WHILE INKEY$<>"":WEND
15015 A$=UPPER$(INKEY$):IF A$="" THEN 15
015
15025 IF A$="Y" THEN 15200
15030 IF A$="N" THEN 16010
15035 GOTO 15015

```

Following the accent on 'user friendliness', the QUIT routine first asks players if they want to SAVE the game positions as of that moment (lines 15000-). If the answer is 'YES', then the program jumps to the SAVE routine at line 15200.

If 'NO' then the latter part of the 'death' routine from line 16010 is utilized to enquire if the player wants to play again, YES and the program is RUN again, NO and the program ENDS.

That just about wraps up the writing of a simple adventure game in BASIC. The operating system is all there, go to it and let us see the final result. There has only been space for a few of the Verb Repsonse routines but the examples should give you food for thought.

If you get stuck, look back over those shown, especially at the sort of conditions that have been set with those IF, AND, OR and ELSE commands.

## Room for improvement

What you have already got will work, but as with everything, there are often ways in which various sections may be improved.

We are not talking about the content of the adventure, but about how the system works. So first we have got to decide what would be an improvement.

First there is the area of 'presentation'. This must always be a most important consideration, whether it be a gourmet meal or a computer program. Could we improve on the window system used?

This is partly a matter of individual taste experiment and see what better layout you can come up with. Perhaps the 'visible directions' could be in a separate window, perhaps

they should be represented graphically. There are many possibilities to explore.

Today we must obviously consider the addition of graphics. This would undoubtedly help in selling your adventure but I think you will find that true adventure players will still vote for the contents of the game, rather than for a few pretty pictures. Especially if these take more than a couple of seconds to be 'drawn' on the screen.

If the game is good and maintains interest, forget about the graphics. Any decent graphics will almost certainly have to involve machine code and that is outside the scope of this series.

## Go faster code

An area that is always open to improvement is the speed that a program takes to respond to input command. This we can do something about.

There are a couple of coding changes that will speed up the response time. One is minor and was an oversight on my part (blush, blush) - a small increase in speed can be obtained by making the direction arrays N(), E(), U() etc. integer arrays -N%(), E%(), S%(), U%(), etc. Not many lines need changing but any gain is worthwhile.

On the subject of integers, the more knowing amongst you will have realised that there is no need to continually use the % sign, as we could have defined any integers using DEFINT during the lines of initialisation.

The % sign has been used to hopefully, hammer home the worth of using integer variables in the interest of keeping things going as fast as possible.

A much greater saving can be made elsewhere. Have you noticed the appreciable delay between the display of the visible exits and the printing of "What now?"? This is due to using ERASE in line 1500. This was chosen, if you remember, to reduce the likelihood of a 'garbage collection' when the variable space became full of unwanted variables.

Now the Amstrad will slow down significantly if you continually reassign string arrays, so ERASE is a perfectly valid approach.

But having replaced Q\$(1) with the simple string variable Q\$ (and deleted ERASE) in lines 1500 onwards. I have not had a whiff of a 'garbage collection' or anything else untowards. And, I have filled up the variable space several times over.

Try it you will like it. While you are in the mood for a few changes you may as well do the same for E\$(1) in lines 1400-1440 too. Do not alter the other ERASE in line 1600 - you need that one.

The final answer to speeding up a BASIC program is to use a compiler (converts a BASIC program into pseudo machine code) but as yet I have not seen one offered for the Amstrad.

## Pint pots

One problem that we all have when writing adventure games is that of too little memory. Initially the memory available in the Amstrad seems enormous but very soon we realise that there is not going to be enough.

One of the arts of a good adventure game writer is getting the right balance between descriptive text and a comprehensive plot. Each word that the program has to recognize and take action on entails a routine that again uses hundreds of bytes, it can soon disappear altogether.

There are any number of ways in which you can conserve

this valuable commodity. Keep your eyes skinned for any routine or data statement that may be used for more than our purpose. Look out for any way in which you can cut down the coding for a given purpose.

A few bytes saved here and there can add up over the course of a long program, so every byte saved is worth the effort. So, although all those REMs help you initially, they take up a good deal of space.

There is one way in which you can save thousands of bytes at one fell swoop. Each DATA statement that is put in your program is subsequently to be assigned to either a variable, or an element of an array. Once it has been assigned, that program line just sits there taking up program space and will probably not be accessed again.

There is nothing to stop us having all this DATA saved as a file, separate from the main program, and then reading it into those arrays in the same fashion as we LOAD in, a SAVED game position. The saving in memory could be anything between 10K and 20K. But remember the cassette buffer will require 4K.

You already have a routine for assigning most of the required data at lines 235-290, so if we follow this with a routine to create our main data file we are halfway there.

```

1 REM List - 40
295 GOSUB 25000
24999 REM ** Save data files
25000 OPENOUT "DATA"
25010 FOR I%=0 TO 40:REM ** Number of lo
      cations
25020 WRITE #9,L$(I%)
25030 WRITE #9,N%(I%)
25040 WRITE #9,E%(I%)
25050 WRITE #9,S%(I%)
25060 WRITE #9,W%(I%)
25070 WRITE #9,U%(I%)
25080 WRITE #9,D%(I%)
25090 NEXT I%
25100 FOR I%=0 TO 31:REM ** Number of ob
      jects
25110 WRITE #9,OB$(I%)
25120 WRITE #9,OP%(I%)
25130 WRITE #9,OC%(I%)
25140 WRITE #9,OS$(I%)
25150 NEXT I%
25160 FOR I%=1 TO 16:REM ** Number of ve
      rb synonyms
25170 WRITE #9,SV%(I%)
25180 NEXT I%
25190 FOR I%=1 TO 13:REM ** Number of ob
      ject synonyms
25200 WRITE #9,SN%(I%)
25210 NEXT I%
25220 WRITE #9,VB$(0):REM ** Dictionary
      - Verbs
25230 WRITE #9,VB$(1)
25240 WRITE #9,NN$(0):REM ** Dictionary
      - Objects
25250 WRITE #9,NN$(1)
25260 WRITE #9,ADS:REM ** Dictionary - M
      odifiers

```



```
25270 REM
25280 REM
25290 CLOSEOUT
25300 RETURN
```

Lines 25000-25300 follow a very similar pattern to those already seen in the SAVE routine above. The FOR...NEXT loops in 'your' program will of course reflect the number of 'your' locations, objects etc.

Having made these additions, SAVE the entire program under a new name - say "AAA".

```
1 REM ** List - 41
295 GOSUB 26000
24999 REM ** Load data file
26000 OPENIN "DATA"
26010 FOR IX=0 TO 40
26020 INPUT #9,LS(IX)
26030 INPUT #9,NX(IX)
26040 INPUT #9,EX(IX)
26050 INPUT #9,SX(IX)
26060 INPUT #9,WX(IX)
26070 INPUT #9,UX(IX)
26080 INPUT #9,DX(IX)
26090 NEXT IX
26100 FOR IX=0 TO 31
26110 INPUT #9,OB$(IX)
26120 INPUT #9,OP$(IX)
26130 INPUT #9,OC$(IX)
26140 INPUT #9,OS$(IX)
26150 NEXT IX
26160 FOR IX=1 TO 16
26170 INPUT #9,SV$(IX)
26180 NEXT IX
26190 FOR IX=1 TO 13
26200 INPUT #9,SN$(IX)
26210 NEXT IX
26220 INPUT #9,VBS(0)
26230 INPUT #9,VBS(1)
26240 INPUT #9,NNS(0)
26250 INPUT #9,NNS(1)
26260 INPUT #9,ADS
26270 REM
26280 REM
26290 CLOSEIN
26300 RETURN
```



You still have program "AAA" in memory, so now type in the routine given in list -40. It is quicker (and will be less prone to errors) to alter the existing lines 25000-25300. Delete lines 170, 235-290, 10000-4200 and lines 24999-25300. That is quite a lot of deletions, so you can begin to see where this big memory saving is coming from.

Now SAVE this program onto the beginning of a new tape as "BBB" (or whatever you wish to call 'your' program. BUT when the tape stops, DO NOT rewind it.)

You now have to reLOAD "AAA" and RUN that, but this time SAVE your 'datafile' onto the tape that onto the tape that has "BBB" at the beginning.

You will then have the main program "BBB" with the associated 'datafile' immediately following it. To run the program press SHIFT/CTRL/ESC (to clear the machine) and CHAIN "BBB" and away you (or the players) go.

Obviously you can only perform the above operations once you have finalised ALL your locations, objects etc. Also to make use of the extra memory, you must RUN program "AAA" to SAVE your 'datafile', WITHOUT all the 'action routines' (lines 5000-9999) finished. These can then be added prior to SAVEing the final version of "BBB".

This may call for a bit of tape juggling and merging of programs but for the significant gain in memory it could very well be worth it.

This is one slight snag to loading data into the main program in this manner and that is: what happens if the player quits and wants to start again? If you RUN the program as in line 16030 then the 'datafile' will have to be loaded again.

One way to cut down on this loading time is to recommend to players that they SAVE their position very early in the game and instead of RUNNING in line 16030. direct the program back to somewhere like line 15100. The saving, being that there is no need to reload the data for most of the location or object descriptions or words recognised.

This is a little tiresome but several commercial programs have the same problem; do not, however, offer this way out.

All the routines given here will work if you are using a disc drive but you will have to tailor the "Press PLAY" type of response. Also if using a disc, loading time is so short and access being random, the QUITting problem mentioned above disappears.

## Penultimately

There are other ways of reducing the memory requirements for a long adventure program - one such is to 'crunch' all your text. The idea being to recognise a number of often occurring character strings and replace these with a single 'code character'.

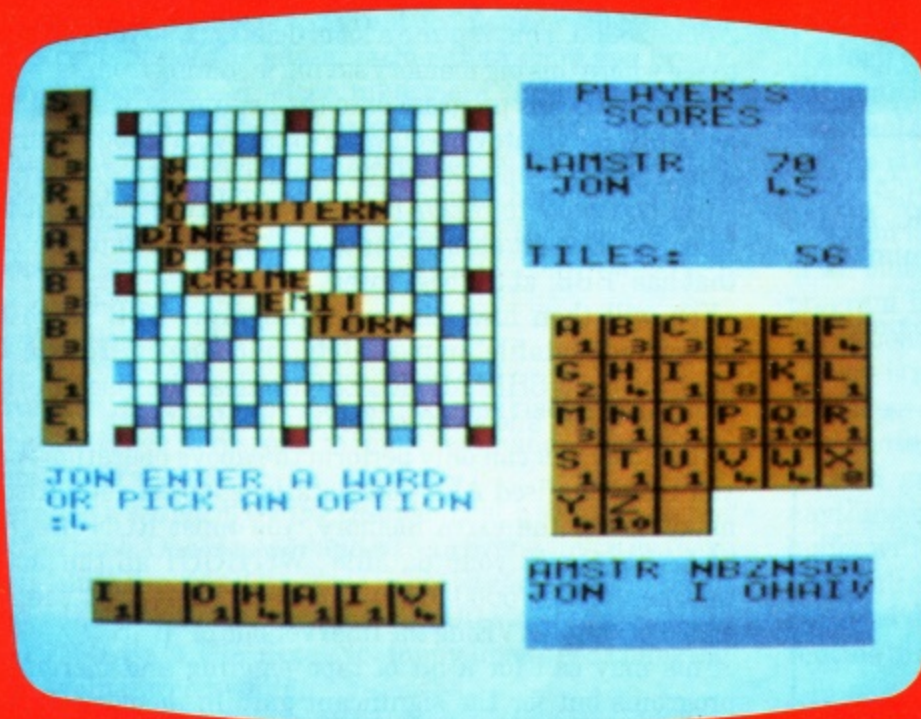
This technique is often used in commercial software and can readily (although laboriously) be done to 'your' program. Perhaps we could follow this up in a future article.

## Ultimately

I hope that enough examples of the various routines have been given to enable you to complete 'your' adventure. We look forward to seeing them.

Just do not forget to remove those 'programmers friends' that were at lines 9-90, or 1299-1320 that told you, the designer, which location you were at.

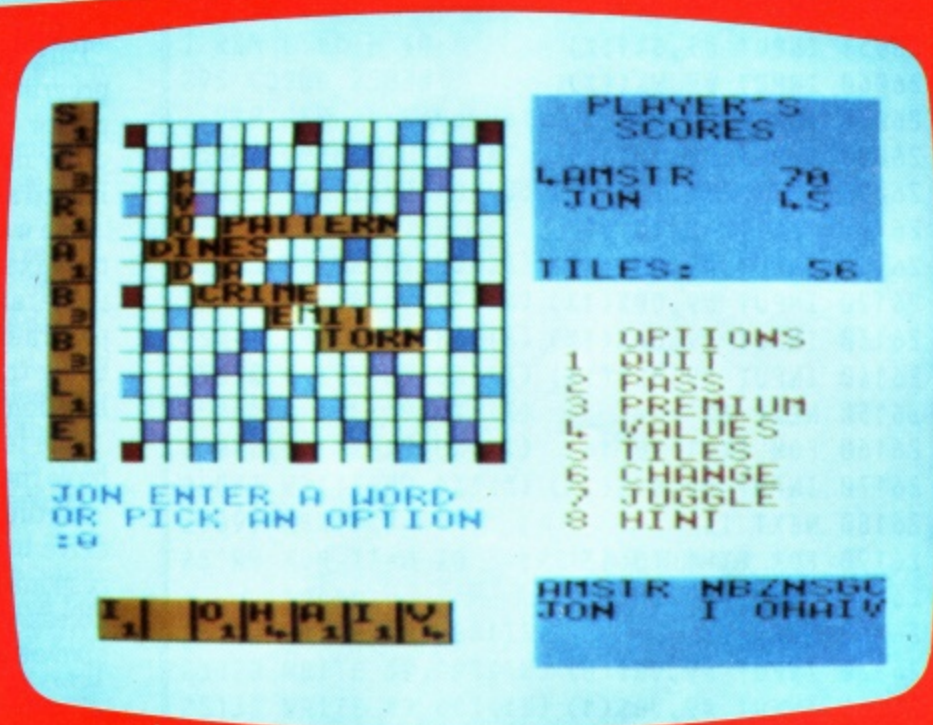
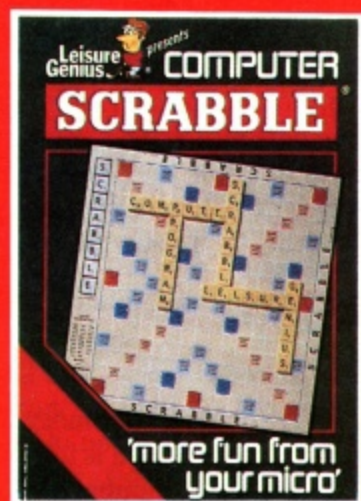
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# SOFTWARE REVIEWS

## Minder

You all know the TV series (a quick word in your shell-like, the next series is destined to be the last) so the game of the show should have a fairly familiar ring to it. This is the DK'Tronics straight up honest guv with none of yer fancy loaders and loading screens version, in conjunction with Thames TV. The plot is as usual but with you as the budding Arthur Daley and a rendition of 'I Could Be So Good For You' constantly in the background. You graft hard all day trying to grasp a few honest (well, almost honest) quid to take back



to 'er indoors. The day starts early, off in yer jam jar, your pockets heavier by two grand, to pull a quick deal with a regular dealer before the rub-a-dub (the highly esteemed cultural centre, the Winchester Arms) opens. There you try to shift such exotic wares as rubber suits, naughty magazines and ejector seats which have all parted company with the back of a lorry. If you can think of something to do with a rubber suit, a naughty magazine and an ejector seat, send your reply on the back of a five quid note to The Editor, c/o Amstrad User. A two pound prize will be awarded to the best reply on an official entry form.

The characters in the game tend to keep to civilised hours -you will not find them willing to answer the door after closing time. They also remember you from last time. If you offered them 25p for a rabbit hutch they get their wind up and give you the big 'E'. Next time you are lucky to be given the time of day. When it is open, the pub is a good place to pull deals but each chat takes an hour and you may not wish to rabbit with some geezer about the quality of his garden gnomes.

Worse still, Sgt. Chisholm frequents the boozier and if he catches you with any nicked goods he will ask you to accompany him to the station (I don't know it officer, you hum and I'll play along). The good natured copper is easily swayed into believing you are innocent by a generous donation to the police benevolent fund.

Terry is sometimes at the pub and you can get him to pick up goods, take them to the lock-up or deliver them. He can even be your minder. A word of warning at this point, do not get nasty with the customers. Not only are they not all playing the same game as you but if you monkey with them

they can get violent. This is not a pretty sight because they are bigger than you.

The idea is to fill your pockets, not the lock-up, so try to shift stuff as fast as possible. In true Arthur Daley style, there is nothing to stop you flogging goods you do not yet have. I like the way the mouths move on the characters as they speak, a nice touch. The problem is, to speak to them you have to hit their number within a few seconds of seeing them. This game does not suffer from the 'I don't understand' problem of most adventure games. If it does not understand you it spouts sales patter. Good game, could be a nice little earner.

Author .....	DK'Tronics
Format .....	Cassette
Price .....	£9.95
Graphics .....	***
Playability .....	**
Addictiveness .....	***
Overall .....	***

## Beach Head

By U.S. Gold, all American software, just like Mom used to make. This is a suitable sort of review this close to the independence of America day, even if the headquarters is in Birmingham.

And now a plea to all software writers from the heart: please, please put the instructions in the game. We reviewers frequently get games in pre-production packaging. If a neat feature is not obvious and we cannot find it then it does not get a mention.

The game is disc based and can afford to load title screens. This one soon disappeared in an impressive confused flurry of graphics to give a choice of difficulty levels. I decided to be easy on the machine and play on level one. First scene is a map of a bay, you have to make it into a sheltered spot in that bay and land an attack force. This is easier said than done. You are bound to get spotted by the enemy aircraft who home in on you and battle stations sounds. One quick flurry of graphics later, you are looking over the barrels of a couple of guns and an aiming computer at a fleet of ships and a few planes droning over them. I am not sure who the ships



belong to but they are not doing much anyway. The planes get bigger and noisier and come towards my guns. I wonder if they will be friends with me? There goes a wonderful relationship. To fire back, you line up on the plane, adjust the angle of the guns until they look right and fire off a few rounds. The guns are quick-firing but do need to be topped up from time to time by some invisible armourer. He is a speedy little chap and you do not really notice him unless you are of the gunfight-at-the-OK-coral mentality who believes in filling the air with lead.

After dealing with the planes you return to the map in yet another flurry of graphics and try to land again. No chance, this time the famous graphicy swirl deposits you in the midst of an enemy fleet who immediately recognise you as the smart Alec who shot down all their planes and earmark you as an instant moving target.

Fortunately, you can shoot at them. Unfortunately, they fire back. You do your bit by lining up on the target, as per the plane shoot, and fire a shell. Your battle computer is very smart and tells you if you are under- or overshooting your mark. It even tells you the odd occasions when you hit anything.

Let us assume that you are lucky and make it this far. You have singlehandedly blown up or otherwise mangled the entire enemy airforce and navy, so why not go for the army too? Good question because this is what the next scene is about.

It is recognised that you are not superhuman so you are given several tanks to do the job. These start off on the shore and move forward one at a time. A design fault in these tanks means that you cannot stop going forwards and that the gun points dead ahead whichever direction the main body of the tank is pointing.

After dodging all the mines, trenches, barricades, minor gun emplacements etc. you get a crack at the really big gun that is causing all the trouble in this part of the world. It is very big and will home in on you quite quickly, but no way is one tank load of shells enough for demolishing it anyway.

After you have failed to do this, you put your name into a relatively modest high score table and have another go - and another and another. A smaller screen than the Commodore version and the colours could have been selected better but this game has interest.

Author .....	Amsoft/US Gold
Format .....	Disc/cassette
Price .....	£13.95/£9.95
Graphics .....	***
Playability .....	***
Addictiveness .....	***
Overall .....	***

## Airwolf

Have you ever wondered what it would be like to fly a helicopter through the caves at Wookey Hole? Daft question really, but this is the general idea of Airwolf. You are in a chopper with an unlimited supply of guns and bombs but a limited supply of rotor blades. When you have smashed up all your magical, self-replacing rotor blades you come to grief and the game starts afresh. This is not much of a problem as the game only has one difficulty level. The basic rules of the game are: don't touch it: if it's blue, shoot it. if it isn't blue, shoot it anyway. Get the picture?



I do not wish to hound this game but it is horrendously difficult to play and to get beyond the second barrier I had to delve into the black art of machine code and find the infinite life poke. Touching anything takes off one of your rotors whether you hit it top or bottom. There are also other bits of scenery, such as radar scanners, that swipe all your lives if you hit them. Maybe it is my imagination, but you seem to stick to the roof for a dispiringly long time and lose an awful lot of rotors in the process.

You take this game a screen at a time. By this I mean that as you leave each screen the complete new screen scrolls on. One annoying point, after you have spent a few minutes happily blasting a way through a barrier and move to the next screen, you get a surprise when you move back. In your absence, some clever soul has rebuilt the wall. This means that you cannot rush through all the tricky bits and then come back for the very tricky ones.

To sum this game up, it is difficult in the extreme and is not fantastically innovative.

Author .....	Amsoft
Format .....	Cassette/Disc
Price .....	£8.95/£12.95
Playability .....	**
Graphics .....	***
Addictiveness .....	**
Overall .....	***

## Danger Mouse in Double Trouble

'Crikey DM, we seem to have got ourselves in a computer game now' That's right Penfold, The power-mad Baron Silas Greenback and his band of international villains have been making an android of me in their jungle hideout. We've got to disable the android mouse to save the world (again)

'Oo Eck....'

Exit the dynamic duo stage left.

First, our heroes must reach the jungle in DM's aero car. A various assortment of robots try to hinder this task. These robots have to be removed by selecting a picture of it on the repeller VDU display. If they match, the repellent tune is played and the robot disappears, DM is after all a hero of the young, and mindless destruction of the bad and just plain evil is just not on.

Once the jungle is reached DM and Penfold must negotiate swamps by using crocodiles as stepping stones. Other perils also lurk here, monkeys, mouse eating pumas and snakes.



When a puma appears DM must climb to the top of the nearest tree and do a Tarzan call to summon help. What follows next is probably the biggest cop-out in the (short) history of computer graphics, but I will spoil not the surprise by spilling the beans. With the puma out of the way our duo can continue on their way through the jungle.

Finally the Baron's jungle hideout is reached. Baron Greenback controls one side of a 4 x 4 matrix and DM an adjacent side. DM must push one of the four buttons on his side of the grid when a cell which intersects on the button the baron is pressing is yellow. If he gets it right the chain of yellow light is reduced by one, otherwise one is added. When all the lights are extinguished the android mouse is disabled and the world can sleep easy in its bed.

The game is fun to play, the children certainly enjoyed it. I get the distinct impression that the game was programmed by committee, the three sections are quite different in feel. In the first section the psuedo-sprites are multicolour and the game easy, whereas in section two the graphics are a lot less inspiring with single colour sprites but the game is harder to play. The programmers had sufficient sense to use palette/mode switching and other tricks of the trade so I do not think this was a lack of skill, probably an expired deadline or lack of thought.

Author .....	Creative Sparks
Format .....	Cassette
Price .....	£7.95
Graphics .....	****
Playability .....	***
Addictiveness .....	**
Overall .....	***



## Moon Buggy

This game has been around before but never with such chunky graphics. Although it shows off Amstrad's colours nicely and has three different scrolling levels of landscape, the whole feel of the game is somewhat 'chunky'.

The plot is a simple one: you roll along a scrolling landscape in a buggy resembling a six wheeler C5, blasting boulders, leaping gaps and shooting rockets that fly overhead for the only purpose of dropping bombs on you.

You can come to grief by meeting a bomb, a carelessly placed boulder or by flying into a pothole worse than any to be found on the A10 arterial. Unlike the arterial where the coppers object to litter being thrown out of the car, the use of weaponry to remove obstacles is permitted. Tough luck for obstacles but good news for moon buggys. Now the bad news; it is not possible to fire a missile in any direction if you are in the process of boulder leaping and guess where the majority of boulders are? You've guessed, just after the potholes. Bad news for moonbuggys, good news for boulders.



On colliding with anything unsavoury, the chassis of the buggy stops dead and does a badly moulded blue jelly impression while your wheels carry on into the distance, curiously travelling through boulders and turning them yellow. How come they make it through and I don't? Like I said, the boulders can be blasted with rockets, to fire these, you press the fire button or whatever the keyboard equivalent is and zap! Out fly two missiles. One goes up to miss the anti-social rockets flying overhead, while the other one flies along the landscape and turns big rocks into little ones. Life is real tough for boulders.

Still, if you can keep this up for long enough you get to the next zone. Your intrepid reviewer showed a marked tendency to drop off and hence crash before getting that far but maybe this is just his lack of prowess with a joystick. The high score table was not beyond me however and I managed to displace a few perfectly harmless comments on Jack Tramiel and poor old Sir Clive.

This game was not very absorbing to me but then I never got beyond level one so there may be some goodies in there if you can hunt them out.

Author .....	Anirog
Format .....	Cassette
Price .....	£7.95
Graphics .....	**
Addictiveness .....	***
Playability .....	***
Overall .....	**

## Freddy Bears Picnic

'Freddy bears pic-nic, an adventure for 4 to 7 year olds' states the label well, more of an electronic story book really. The purpose of this is to help Freddy Bear arrange a picnic. The story starts with an instantly forgettable tune, obviously the music to 'Teddy bears picnic' is not yet out of copyright. A series of questions are asked; who should come to the picnic?, what should they eat? etc. The required answer is fairly obvious and if the 'wrong' answer is given you have to start again from the beginning. At this point you start to realise that the turgid tune is a punishment, and not a reward.

The program was converted from the SHARP MZ-700 computer, and has not travelled well. The 'animated graphics' promised on the front sleeve turn out to be block graphics of the type that used to be acceptable 5 or 6 years ago, but looks rather dated today.

When my eldest daughter started school, able to write quite well having made the transition from my computer keyboard to paper, I was not held in high regard by the teachers because she could only write in upper case. This mistake is repeated here as all the text is in capitals.



The child/machine interface is very simple, just using three keys or the joystick, but for some reason the input is very haphazard. The required key has to be held down for at least half a second before anything happens, and then auto repeat sets in. This makes it difficult for children to select the 'right' option, and usually results in them having to re-start from the beginning.

All in all, the program could be considered quite good if it came free with a packet of corn flakes or was less than £2, but as it is, it can only be considered below average to average.

Author .....	Micro-Wish
Price .....	£3.95
Format .....	Cassette
Graphics .....	**
Playability .....	**
Addictiveness .....	**
Overall .....	**

## Rally II

At last, a half decent car racing game has appeared for the CPC machines, unlike the, dare I say it, diabolical, Grand Prix Driver, this game is very playable and equally addictive. As with any game of this genre, the road is seen



snaking off into the distance and your job is to react to the sudden sharp bends and hazards that come towards you. Unlike some games of this type that are available on other machines, it is not just a case of you against the clock - there are plenty of cars to battle against - they may all look very similar (not unlike white Audi Quattros seen from the back) - but they do wonders to liven the game.

Control of the car is via the joystick. Left and right are obvious, there is no control, however, over the acceleration. The car steadily accelerates until either it reaches the top speed (which, thankfully is not unplayably fast) or until the brakes (FIRE button) are used. The best technique seems to be to allow it to reach top speed and continue at that until a tight bend or another car approaches. A little braking while manoeuvring followed by acceleration to top speed out of the bend or past the car will usually do the trick. Underestimating how tight a bend is causes the car to ride on the red and white striped kerbing for some time - losing valuable time.

Distance to the end of the current stage and the time remaining for the stage are shown by two bar graphs at the top of the screen. The idea is that you should make the full distance before the time runs out. Failure to do so will result in disqualification, while succeeding allows you to go on to the next stage. Too much braking or riding on the kerb will cause the time to ebb away, while, each car passed adds a little to the time remaining gauge. There are nine distinct stages to the game, completing them all will allow access to the high score table.

Having completed the game, one might think, like so many other games, that there would no longer be any challenge and the game would be hidden away in some dark cupboard never to be seen again. This is where RALLY2 really scores when compared with many other games, once you become bored with the game, you can redesign the layouts of each of the stages. Virtually everything is variable: length, number of bends, degree of curvature, left or right, back drops. Editing is done purely with the aid of the joystick and could not be simpler. The backdrops include 'sunny', 'bridge', 'sea-shore', 'night', 'desert', 'snow' and the fiendish 'fog'. The tracks you design in this way can then be saved to tape. Disc users should note that their tracks are also saved to tape, NOT disc. This is, however, not a major disadvantage, it does not take very long and saves cluttering up valuable disc space with one million and one old layouts.

Continued on page 64

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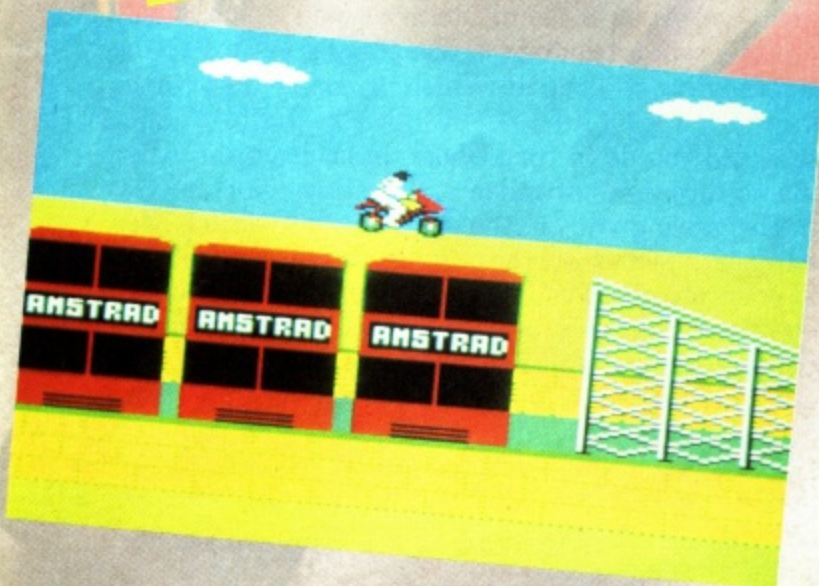
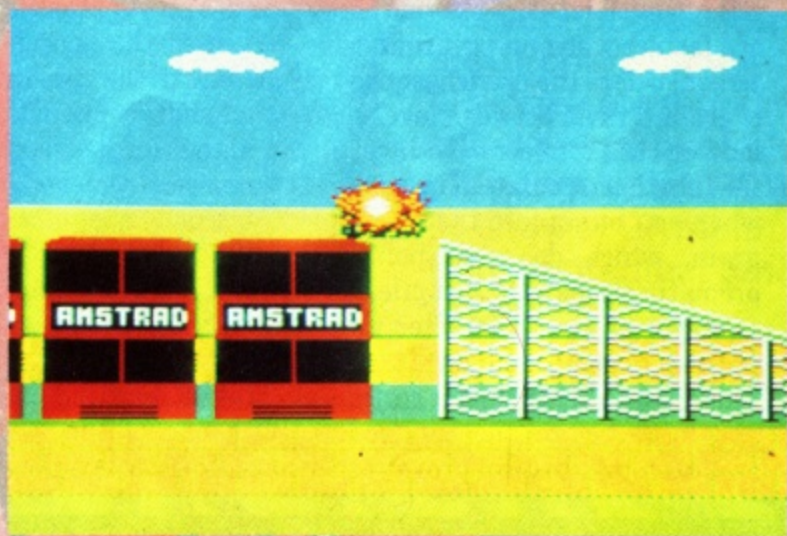
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The graphics, while colourful, do not push the CPC to its limit but are adequate and obviously necessary to enable fast updating to keep the pace of the game at an exciting level. Thankfully, they do not suffer from frame flyback flicker as is the case in some other highly graphic games. The sound is there, but, again, it does not set any new standards - it just serves to let you know the rate at which the engine is ticking over. The obligatory naff tune plays between games. I think I would buy this game if it were just a reasonable car racing game, which it is. The track editing, however, really sells it for me.

Author .....	Amsoft
Format .....	Disc/Cassette
Price .....	£12.95/£8.95
Graphics .....	****
Playability .....	*****
Addictiveness .....	****
Overall .....	*****

## Chuckie Egg

Chuckie Egg is quite a well known game and has been available on several other machines. It consists of that well tried game format: platforms and ladders. You play the part of a farmer who must get round and pick up all the eggs on a screen, before the ostrichesque birds can eat all the red piles of grain. Travel between levels is accomplished by use of the ladders that connect each level, or, on higher level screens, the lifts that circulate. The eggs are automatically picked up when you bump into them - this is also true of the piles of grain, which do score points, but may end your life prematurely once the last pile has been eaten or picked up.

Control of your character is a little difficult; it is only possible to go up a ladder if you are directly lined up with it. This invariably means a certain amount of shuffling back and forth before one can go up. With one of the birds approaching, this can prove rather hazardous. It is difficult



to say how many screens there are, I never got past number three because I found it very difficult to jump onto the lifts at just the right point. There cannot, however, be that many because the game is only 9K long which does not leave a great amount of room for screen data.

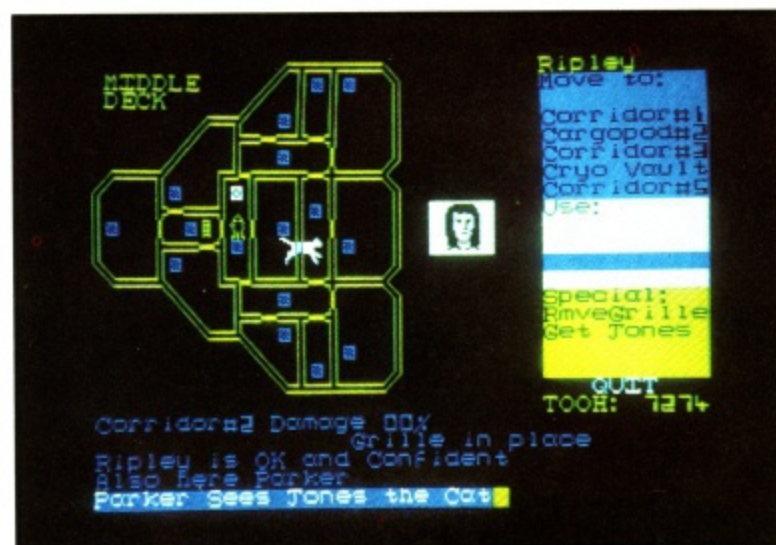
It is a pity that all the screens are the same colour, surely the few extra bytes of colour information would have been worthwhile. The sound is also a disappointment, the game

hardly stretches the machine to its limits so surely a few micro seconds could have been spent in setting up a pretty little background tune. This game is OK as far as it goes but cannot claim to give extraordinary value for money.

Author .....	A & F Software
Price .....	£7.90
Format .....	Cassette
Graphics .....	**
Playability .....	***
Addictiveness .....	**
Overall .....	**

## Alien (Noshed in Space!)

You are the commander of a crew of inter-galactic lorrydrivers, who awake from a deep hypersleep to find their ship diverted from its homeward course. Diverted to investigate a strange planet, the source of a mysterious distress beacon, the crew find a crashed alien spacecraft.



While the crew are poking around in the crashed ship an alien thing attaches itself to one of the crew members. The crew member is brought onboard where the alien thing dies. If you have not seen the film, I will not spoil it for you, but it is enough to say that a new capital Alien hatches out and disappears into the darkest recesses of the ship. The rest of the film is concerned with hunting for the Alien in the vast ship, the eating of ninety percent of the crew, destroying the android which the company sent and finishing the film with a happy ending so that we do not all go home and have nightmares. Oh, didn't I mention the android? Well it seems that the company that own the ship and diverted it off course in the first place, want to get their hands on an Alien. Apparently an Alien is the ultimate weapon which is why they secretly sent an android as one of the crew, to stop the others strangling it at birth. Which brings me back to the game.

What would you do in their shoes, hunt down the Alien with flame throwers? Abandon and destroy the ship? Get eaten? The game gives you the opportunity to decide. You may move each member of the crew around the ship picking up and using objects as you find them. On the screen, one of three levels of the ship is displayed together with a menu of options that can be selected with a cursor. The game operates in real time so that while you are messing about



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looking for the stupid cat, the Alien could be messing about with your life support. Although there are not a large number of locations in the ship, there are maze-like ducts that connect each room making it impossible to be sure where the Alien is. If the character that you are controlling meets the Alien, the screen clears to show you a picture of the evil beast and suitable sound effects are produced to indicate you are being chomped.

The uncertainty of the Aliens whereabouts is very important to the atmosphere of the film and the game follows the story fairly closely in this. However, there is an element of the adventure game, where objects have to be found and used to solve specific problems, that detracts from the strategic interest of the game. The movement of players is also rather cumbersome. Altogether Alien is an interesting, well balanced game, which deserves persevering beyond the unfriendly user interface.

'Tell me Alien. Why do you eat people?' 'In space, nobody sells ice-cream.' Joseph Conrad

Author .....	Argus Press
Format .....	Cassette
Price .....	£8.99
Graphics .....	**
Playability .....	**
Addictiveness .....	***
Overall .....	***



## The Tripods

As its name rightly suggests, this is an adventure game based on the popular BBC television series. The aim is to avoid being seen by the Tripods whilst in search of the White Mountains in the South East of France. My first impressions of it were that it takes an awfully long time to load: about 15 minutes in all. For those of you lucky enough to have the right cassette alignment, Side B of the cassette is 'Speed Load'.

Having loaded the game successfully, I was pleased to find that up to four people can choose to play; which makes a nice change from those lonely adventures that we all get hooked on from time to time. Recruits found, we were off on our travels. Each player started the game in good health, well fed, high Tripod immunity, some move credits, some groceries and some money. There are a choice of six ports

from which to commence the journey. We all chose the same port (the one that looked nearest to the White Mountains on the enclosed map) since we had hoped to learn from each other's experiences.

On the journey you have to cope with the terrain, the weather and the Tripods. It is impossible to avoid any contact with the Tripods but the best course of action is to collect objects which will help if contact is imminent. If you are noticed by a Tripod your immunity to being 'capped' is decreased till eventually you are capped and the game is lost.

The keyboard controls are easy. Most of them are situated on the number pad, which meant that we did not have to keep referring to the instruction booklet which so often happens with adventure games. The game could certainly be played by children with perhaps a little help with the onscreen prompts. Nevertheless all the actions were simple to follow and no actual typing of words was required. When an action is prompted a multiple choice of options appears on the screen from which it is possible to choose an option with just a single keystroke.

Unfortunately, the screen is rewritten each time an action is taken making the game a little slow, but the graphics and perspective are good. We particularly liked the approaching Tripods as they loomed larger and larger on the horizon.

Each player takes his turn after the end of a day's travelling and at the end of seven days a weekend rest is taken. At this point it is possible to save the game for another evening which is essential if the task is to be successfully achieved. Unfortunately, neither of us quite made it to the White Mountains so I am unable to comment on the arrival that awaits you there.

If you like adventure games and have a couple of willing children to play with then this game is well worth looking out for.

Author .....	Watermill Productions Ltd
Price .....	£10.95
Format .....	Cassette
Graphics .....	***
Playability .....	****
Addictiveness .....	***
Overall .....	***



## REVIEW

# Star SG-10 Printer

by Steve Godwin.

Many Amstrad owners find that they would like a printer to attach to their micro, for programming, word processing or a host of other reasons. There are many printers on the market, and the model that each user chooses, differs, depending on what the printer is to be used for, and the amount of money that he wants to spend.

If a programmer wants a printer for listings, then he will be looking for speed and not quality and will probably go for a dot matrix printer. However, if the printer is to be used mainly for word processing, then quality is more important than speed, and he may well plump for a daisy wheel printer that has a typewriter type output. Finally, graphics may be the reason why the printer is wanted. A good choice in this case could be a plotter.

capacity of the SG-15 is mainly of use for graphics work or for printing out results from a spreadsheet.

The pitch for normal characters is 10 characters per inch as is the norm. At this pitch, the SG-10 can print at 120 characters per second which is a respectable speed. The head prints bi-directionally which means that it prints while moving in both directions and therefore does not have to return to the left of the printer every time a new line is printed. The standard characters printed by the SG-10 are nicely formed and very reasonable, but many enhancements also exist. Characters can also be printed, emphasised and with double strike. The first of these prints the character twice, slightly offset to fill in the gaps between the dots and the second prints each line twice to

strike techniques, to produce a very pleasing font that is very easy to read and, unless studied closely, could pass for output from a daisy wheel printer. The price you pay for using this mode is speed, but having said that, it is faster than NLQ on many other printers.

Apart from these print options, you may also use condensed and expanded print, superscripts and subscripts, and to give documents a professional look, proportional spacing. This means that every character printed is given only the amount of space that it needs and not a standard width as would appear on a computer screen.

The SG-10 has a multitude of character sets, which include normal ASCII characters (an industry standard), international characters, NLQ characters, IBM characters and an italic set. As well as this, you can define your own characters which are stored in the printer's own

The SG-10 and SG-15 are two new printers from Star. They are both dot matrix printers, but also have Near Letter Quality and graphics modes that may interest people who may have bought the daisy wheel printer or plotter. The SG-10 can take ten inch paper and prints 80 columns in normal print mode, whereas the SG-15 can take fifteen inch paper and print 132 columns of text. For the average user, the SG-10 would be adequate. The extra

make a stronger impression the paper. The quality of the print produced using this process is very good but is quite chunky and still looks like it was printed on a dot matrix printer.

However, these printers have a Near Letter Quality mode. This mode produces text using a nice character set and double

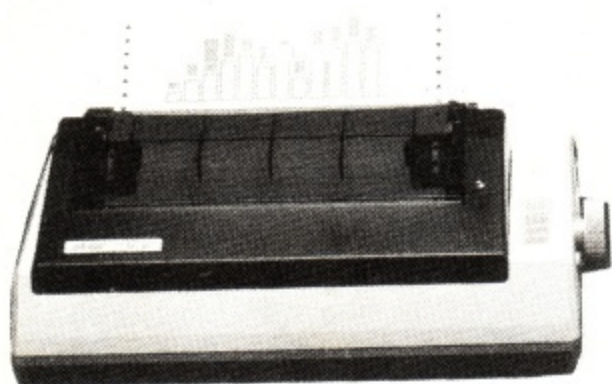
memory. You can define any character and you may also define its size so that, if you want, you can print your own characters in proportional print mode. This means that, for example, a very nice script character set could be defined and used for letters, or you







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- ✧ Friction and tractor feeds.
- ✧ Externally Accessible DIP-Switches
- ✧ High-resolution bit-image graphics
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- ✧ Touch-sensitive control panel.
- ✧ Standard parallel Centronics interface.
- ✧ 2K print buffer — expandable to 10K

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96 Standard ASCII Characters  
 88 Standard International Characters  
 96 Italic Characters  
 88 Italic International Characters  
 96 NLQ Characters  
 88 NLQ International Characters

### Character Matrix

Standard Characters: 9 dot × 11 dot  
 STAR Block Graphics: 6 dot × 6 dot  
 IBM Block Graphics: 12 dot × 11 dot  
 User Defined: 8 dot × 4 to 11 dot  
 Near Letter Quality: 17 dot × 11 dot

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A.R. WHITE.



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The terrorist is just standing there waiting to be caught; but beware, because he has a remote controlled detonating device on him and if you capture him before defusing all the bombs, he blows you up and you lose a life.

You gain points which increase as the game progresses, for defusing each of the bombs. As an added bonus, for every 5000 points, you gain a life.

The game gets progressively more difficult. After the first four mazes have been successfully completed, the next four have the added distraction of a time bomb, which, if not defused within its time limit, will result in the loss of a life. A third dog appears on the next four mazes to make life difficult; and then the next four mazes have you up against three dogs and the time bomb.

Having successfully completed those six mazes, there is now less time to complete the following eight mazes, which are the same as the previous eight, with three dogs.

The art of the game is to trap the dogs, not just to run away (which could get you into terrible trouble), therefore rendering him harmless for a while. You must keep your eyes open the time though.

Movement is by either joystick, cursor keys or Z and X for left and right and ] and \ for up and down.

```
10 DEFINT a-z:DEFREAL s,h
20 SYMBOL AFTER 185
30 DIM scrn$(20,25):game=0:dogs=2:scr=0:
  points=1:lives=3:die=0:char=184:scrn=
  1:tpos=0:dec=0:stme=1001:xtra=0:scrnd
  ata=1:hscr=0:dog=254:nd=0:tbp=0:resta
  rt=0:tbt=0:del=0
40 INK 1,26:INK 2,10:INK 3,3:INK 4,15,16
  :INK 5,2:INK 6,0:INK 7,4:INK 8,3,6:80
  RDER 0:PAPER 1:CLS
50 SYMBOL 255,96,224,33,62,62,34,33,33:S
  YMBOL 254,6,7,132,124,124,68,132,132
```

```
60 SYMBOL 185,0,238,42,234,138,238,0,0:S
  YMBOL 186,0,78,74,78,66,66,0,0:SYMBOL
  187,0,78,74,78,74,78,0,0:SYMBOL 188,
  0,78,66,66,66,66,0,0:SYMBOL 189,0,72,
  72,78,74,78,0,0:SYMBOL 190,0,78,72,78
  ,66,78,0,0:SYMBOL 191,0,72,72,72,74,7
  9,2,0
70 SYMBOL 192,0,78,66,78,66,78,0,0:SYMB0
  L 193,0,78,66,78,72,78,0,0:SYMBOL 194
  ,0,36,36,36,36,36,0,0:SYMBOL 195,0,78
  ,74,74,74,78,0,0:SYMBOL 196,0,56,40,5
  6,8,0,0:SYMBOL 197,0,56,40,56,40,56
  ,0,0:SYMBOL 198,0,56,8,8,8,0,0:SYMB
  0L 199,0,32,32,56,40,56,0,0
80 SYMBOL 200,0,56,32,56,8,56,0,0:SYMBOL
  201,0,32,32,32,40,60,0,0:SYMBOL 202,
  0,56,8,56,8,56,0,0:SYMBOL 203,0,56,8,
  56,32,56,0,0:SYMBOL 204,0,16,16,16,16
  ,16,0,0:SYMBOL 205,0,56,40,40,40,56,0
  ,0:SYMBOL 253,56,56,146,124,16,40,40,
  40
90 GOSUB 770:RESTORE:MODE 0
100 IF game=1 THEN DIM scrn$(20,25):MODE
  0:game=0:dogs=2:scr=0:points=1:live
  s=3:die=0:char=184:scrn=1:tpos=0:dec
  =0:stme=1001:xtra=0:scrndata=1:dog=2
  54:nd=0:tbp=0:restart=0:tbt=0:del=0
110 DI:IF scrn=9 AND dec=1 THEN stme=stn
  e-100:IF stme<200 THEN stme=201
```

```

120 IF scrn=9 THEN dogs=3:scrn=1:dec=1:p
oints=points+1:IF points>10 THEN poi
nts=10
130 IF scrn=5 THEN points=points+1:IF po
ints>10 THEN points=10
140 tme=stme:IF scrn=8 AND stme=201 THEN
stme=1001:dogs=2:points=1:die=0:cha
r=184:scrn=1:tpos=0:dec=0:extra=0:scr
ndata=1:tme=stme:md=0:tbp=0
150 bomb=0
160 CLS:FOR x=1 TO 20
170 READ y
180 LOCATE x,y:PEN 2:PRINT CHR$(207)
190 scrn$(x,y)= CHR$(207)
200 IF y=24 THEN NEXT ELSE GOTO 170
210 FOR a=1 TO 11
220 READ x,y
230 LOCATE x,y:PEN 3:PRINT CHR$(252)
240 scrn$(x,y)= CHR$(252)
250 NEXT
260 READ x,y
270 LOCATE x,y:PEN 4:PRINT CHR$(253)
280 scrn$(x,y)= CHR$(253)
290 READ x,y
300 LOCATE x,y:PEN 5:PRINT CHR$(224):yy=
y:yx=x
310 scrn$(x,y)= CHR$(224)
320 FOR a=1 TO dogs
330 READ x,y
340 LOCATE x,y:PEN 6:PRINT CHR$(255):dy(
a)=y:dx(a)=x
350 scrn$(x,y)= CHR$(255):NEXT
360 IF dogs=2 THEN READ x,y:x=0:y=0
370 LOCATE 1,1:PEN 7:PRINT"SCORE      H
ISCORE":LOCATE 1,25:PRINT"TIME
LIVES":LOCATE 17,25:PRINT lives
380 EI

```

```

390 DI:LOCATE 1,2:PEN 7:PRINT scr:LOCATE
14,2:PRINT hscr:EI
400 REM *** main program loop ***
410 FOR md=1 TO dogs
420 REM *** move you & check if hit
***
430 oyy=yy:oyx=yx:IF INKEY (0)<>-1 OR I
NKEY (19)<>-1 OR JOY (0)=1 THEN yy=y
y-1:GOTO 470
440 IF INKEY (2)<>-1 OR INKEY (22)<>-1 O
R JOY (0)=2 THEN yy=yy+1:GOTO 470
450 IF INKEY (1)<>-1 OR INKEY (63)<>-1 O
R JOY (0)=8 THEN yx=yx+1:GOTO 470
460 IF INKEY (8)<>-1 OR INKEY (71)<>-1
OR JOY (0)=4 THEN yx=yx-1
470 IF scrn$(yx,yy)= CHR$(207) THEN yx=
oyx:yy=oyy:GOTO 500
480 IF oyy+oyx=yy+yx THEN 550
490 DI:LOCATE oyx,oyy:PRINT" ":scrn$(oy
x,oyy)=""
500 EI:IF scrn$(yx,yy)= CHR$(252) THEN
GOSUB 1240
510 IF scrn$(yx,yy)= CHR$(255) OR scrn$
(yx,yy)= CHR$(254) THEN GOSUB 1300:G
OTO 710
520 IF scrn$(yx,yy)= CHR$(253) THEN GOS
UB 1330
530 DI:IF scrn$(yx,yy)>CHR$(184) AND sc
rn$(yx,yy)<CHR$(206) THEN GOSUB 1760
540 DI:PEN 5:LOCATE yx,yy:PRINT CHR$(22
4):scrn$(yx,yy)=CHR$(224):EI
550 IF die=1 THEN GOTO 710
560 IF scr>xtra+5000 THEN lives=lives+1:
xtra=xtra+5000:IF lives>10 THEN live
s=10
570 IF dead=1 THEN GOTO 720
580 IF scr>hscr THEN hscr=scr:DI:LOCATE
14,2:PEN 7:PRINT hscr:EI
590 REM *** move dogs check if hit
***

```

```

600 odx(md)=dx(md):ody(md)=dy(md)
610 IF dx(md)<yx AND (scrn$(dx(md)+1,dy
(md))<CHR$(35) OR scrn$(dx(md)+1,dy(
md))=CHR$(224)) THEN dx(md)=dx(md)+1
:dog=254
620 IF dx(md)>yx AND (scrn$(dx(md)-1,dy
(md))<CHR$(35) OR scrn$(dx(md)-1,dy(
md))=CHR$(224)) THEN dx(md)=dx(md)-1
:dog=255
630 IF dy(md)>yy AND (scrn$(dx(md),dy(m
d)-1)<CHR$(35) OR scrn$(dx(md),dy(m
d)-1)=CHR$(224)) THEN dy(md)=dy(md)-1

```

```

640 IF dy(md)<yy AND (scrn$(dx(md),dy(m
d)+1)<CHR$(35) OR scrn$(dx(md),dy(m
d)+1)=CHR$(224)) THEN dy(md)=dy(md)+1
650 IF odx(md)=dx(md) AND ody(md)=dy(m
d) THEN 690
660 IF scrn$(dx(md),dy(md))=CHR$(224) T
HEN GOSUB 1300
670 DI:PEN 6:LOCATE odx(md),ody(md):PRI
NT CHR$(32):LOCATE dx(md),dy(md):PRI
NT CHR$(dog):scrn$(odx(md),ody(md))=
CHR$(32):scrn$(dx(md),dy(md))=CHR$(d
og):EI
680 SOUND 1,143,7
690 NEXT md
700 IF scrn=4 AND tbp=0 THEN GOSUB 2000
710 IF die=1 THEN GOSUB 1740
720 IF dead=1 OR lives=0 THEN GOSUB 1790
:GOTO 100
730 DI:LOCATE 17,25:PEN 7:PRINT lives:EI
:IF lives=0 THEN dead=1:GOTO 720
740 IF restart=1 OR die=1 THEN ON scrnda
ta GOSUB 1570,1610,1650,1690:restart
=0:die=0:tbp=0:GOTO 110
750 tme=tme-1:DI:LOCATE 5,25:PEN 7:PRINT
tme:EI:IF tme=0 THEN die=1:lives=li
ves-1:GOTO 710

```

```

760 GOTO 400
770 MODE 1
780 PEN 3:PRINT:PRINT
790 CLS:PRINT" *** ***** **
** * ***** **
800 PRINT" * * * * * * * * * *
* *
810 PRINT" * *** ***** * * * * *
**** *
820 PRINT" * * * * * * * * * *
* *
830 PRINT" * **** * * * * * * *
**** *
840 PRINT:PRINT:PRINT
850 PRINT" *** ** * * * * * *
**
860 PRINT" * * * * * * * * *
**
870 PRINT" *** * * * * * * *
**
880 PRINT" * * * * * * * *
**
890 PRINT" * * * * * * * *
**
900 PRINT:PRINT:PRINT" BY A
R WHITE":PRINT" 25\9\1
984"
910 GOSUB 1130:PRINT:PRINT:PRINT"
INSTRUCTIONS (Y\N)"
920 in$=INKEY$:IF in$="" THEN 920
930 IF in$="Y" OR in$="y" THEN 950
940 IF in$="N" OR in$="n" THEN RETURN
950 MODE 0:CLS:LOCATE 4,1:PEN 3:PRINT"IN
STRUCTIONS"

```

```

960 PRINT:PRINT:PRINT"the idea of the ga
me is to gain points bydefusing bombs
and then capturing the TERRORIST"
970 a2$="HIT ANY KEY":GOSUB 1100
980 LOCATE 3,1:PRINT"THE TERRORIST":PRI
T:PRINT TAB(9) CHR$(253):PRINT:PRINT
"he has planted 11 BOMBS and has a
remote control whichwill set th
e BOMBS off if captured before
all BOMBS aredefused, including a T
IME BOMB which is randomly set
990 PRINT"he also has let loose init
ially 2 DOGS, to hinder you"
1000 GOSUB 1100

```

```

1010 LOCATE 6,1:PRINT"THE DOGS":PRINT:PR
INT TAB(9) CHR$(254):PRINT:PRINT"ar
e out to get you. if bumped into a
life is lost.":PRINT:PRINT TAB(2
) "A HELPFUL HINT":PRINT "is TO tra
p the DOGS rendering them harm-les
s FOR a WHILE"
1020 GOSUB 1100
1030 LOCATE 4,1:PRINT"THE BOMBS":PRINT:P
RINT TAB(9) CHR$(252):PRINT:PRINT"y
our task is to defuse them in t
he time given."
1040 GOSUB 1100
1050 LOCATE 3,1:PRINT"THE TIME BOMB":PRI
NT:PRINT TAB(9) CHR$(185):PRINT:PRI
NT"it decrements to 0 and must be
e defused before then or you
lose a life. it randomly appears in
every other set of 4 mazes."
1060 GOSUB 1100
1070 LOCATE 8,1:PRINT"YOU":PRINT:PRINT T
AB(9) CHR$(224):PRINT:PRINT"have 3
lives, but can increase them ev
ery 5000 points.":PRINT:PRINT TAB(6
)"MOVEMENT":PRINT"is EITHER BY :-":
PRINT"JOYSTICK":PRINT"CURSOR KEYS":
PRINT"Z,X LEFT,RIGHT":PRINT"],\ UP,
DOWN"
1080 a2$=a2$+" to play":GOSUB 1100
1090 RETURN

```

```

1100 LOCATE 2,24:PRINT a2$
1110 a1$=INKEY$:IF a1$="" THEN 1110
1120 CLS:RETURN
1130 REM *** play beginning tune ***
1140 RESTORE 2250
1150 READ note:IF note=-1 THEN WHILE SQ(
1)<>4:WEND:RETURN
1160 SOUND 1,note,20,7
1170 GOTO 1150
1180 REM *** pick up terrorist tune
***
1190 RESTORE 2290
1200 READ note,ti:IF note=-1 AND ti=-1 T
HEN WHILE SQ(1)<>4:WEND:RETURN
1210 IF ti=1 THEN SOUND 1,note,15,7
1220 IF ti=0 THEN SOUND 1,note,25,7
1230 GOTO 1200
1240 REM *** pick up bomb ***
1250 bomb=bomb+1:ENV 2,5,3,1,1,0,90,5,-3
,2:ENT 2,25,10,2,60,-10,1:SOUND 1,6
0,100,0,2,2
1260 DI:scr=scr+(10*points):LOCATE 1,2:P
EN 7:PRINT scr:EI
1270 IF scr>hscr THEN hscr=scr:DI:PEN 7:
LOCATE 14,2:PRINT hscr:EI
1280 RETURN
1290 REM *** a dog got you ***
1300 die=1:lives=lives-1
1310 lost= REMAIN (3):tbp=0:char=184

```

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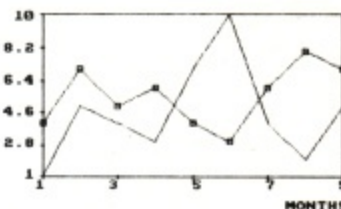
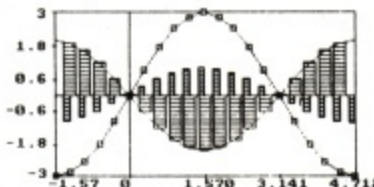
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# LISTING

```

1320 RETURN
1330 REM *** pick up terrorist ***
1340 lost=REMAIN(3):IF bomb<11 OR tpb
=2 THEN lives=lives-1:tpb=0:GOSUB 1
920:restart=1:RETURN
1350 tpb=0
1360 GOSUB 1180
1370 scrn=scrn+1:scr=scr+(30*points):DI:
LOCATE 1,2:PEN 7:PRINT scr:EI
1380 IF scr>hscr THEN hscr=scr:DI:PEN 7:
LOCATE 14,2:PRINT hscr:EI
1390 scrndata=scrndata+1:IF scrndata=5 T
HEN scrndata=1
1400 restart=1
1410 RETURN
1420 REM *** find position for time
bomb ***
1430 RANDOMIZE (TIME):tpos=INT (RND (5)*
10):IF tpos<1 OR tpos>5 THEN 1430
1440 IF tpos=1 THEN tx=16:ty=4:GOTO 1490
1450 IF tpos=2 THEN tx=6:ty=9:GOTO 1490
1460 IF tpos=3 THEN tx=4:ty=14:GOTO 1490
1470 IF tpos=4 THEN tx=6:ty=22:GOTO 1490
1480 IF tpos=5 THEN tx=16:ty=23
1490 IF scrn$(tx,ty)=CHR$(224) OR scrn$(
tx,ty)=CHR$(254) OR scrn$(tx,ty)=CH
R$(255) THEN 1430

```

```

1500 EVERY 70,3 GOSUB 1520
1510 RETURN
1520 REM *** run countdown ***
1530 tpb=2:char=char+1:PEN 8:LOCATE tx,t
y:PRINT CHR$(char):scrn$(tx,ty)=CHR
$(char)
1540 SOUND 1,60,5,7
1550 IF char=205 THEN tpos=0:lost=REMAI
N(3):lives=lives-1:restart=1:char=
184:tpb=0:GOSUB 1920
1560 RETURN
1570 REM *** restores to first scree
n ***
1580 ERASE scrn$:DIM scrn$(20,25)
1590 restart=1
1600 lost=REMAIN(3):RESTORE:RETURN
1610 REM *** restores to second scree
n ***
1620 ERASE scrn$:DIM scrn$(20,25)
1630 restart=1
1640 lost=REMAIN(3):RESTORE 2130:RETUR
N

```

```

1880 IF a$="y" OR a$="Y" THEN RESTORE:ga
me=1:ERASE scrn$:CALL &BCA7:RETURN
1890 GOTO 1860
1900 fini=1:RETURN
1910 REM *** explosion ***
1920 lost=REMAIN(3):tpb=0:FOR z=1 TO 1
000:NEXT z:ENV 1,1,15,1,1,0,100,5,-
1,10,5,-1,10,5,-1,10:ENT -1,5,1,1,1
0,-1,1,5,1,1
1930 ENV 2,1,15,1,1,0,100,5,-1,10,5,-1,1
0,5,-1,10:ENT -2,5,1,1,10,-1,1,5,1,
1
1940 ENV 3,1,0,50,1,15,1,1,0,100,5,-1,10
,5,-1,10:ENT -3,5,1,1,10,-1,1,5,1,1
1950 SOUND 65,100,251,0,1,1,15
1960 SOUND 66,678,251,0,2,2,15
1970 SOUND 68,1000,251,0,3,3,15
1980 RELEASE 7
1990 FOR n=1 TO 5:INK 1,6:FOR z=1 TO 200
:NEXT z:INK 1,26:FOR z=1 TO 200:NEX
T z:NEXT n:RETURN
2000 REM *** initialise time bomb **
*
2010 tpb=1
2020 RANDOMIZE (TIME):tbt=INT (RND (4)*
10):IF tbt<1 OR tbt>5 THEN 2020

```

```

1650 REM *** restores to third scree
n ***
1660 ERASE scrn$:DIM scrn$(20,25)
1670 restart=1
1680 lost=REMAIN(3):RESTORE 2170:RETUR
N
1690 REM *** restores to forth scree
n ***
1700 ERASE scrn$:DIM scrn$(20,25)
1710 restart=1
1720 lost=REMAIN(3):RESTORE 2210:RETUR
N
1730 REM *** you've lost a life ***
1740 char=184:ENV 1,5,3,1,1,0,90,5,-3,2:
ENT 1,50,20,2,50,20,1:SOUND 2,60,0,
0,1,1:RETURN
1750 REM *** pick up time bomb ***
1760 DI:lost=REMAIN(3):scr=scr+(50*poi
nts):char=184:DI:LOCATE 1,2:PEN 7:P
RINT scr:EI:tpb=0
1770 ENT 13,127,-1,1,127,-1,1,127,1,1,
127,1:SOUND 1,300,250,15,0,13:WHILE
SQ(1)<>4:WEND:RETURN
1780 REM *** end of game play again
? ***

```

```

1790 GOSUB 1920
1810 fini=0:CLS:IF scr>hscr THEN hscr=scr
r
1820 LOCATE 1,1:PEN 6:PRINT"score ";scr:
LOCATE 1,4:PRINT"hi score ";hscr
1830 LOCATE 3,12:PEN 14:PRINT"TERRORIST
ATTACK"
1840 LOCATE 5,14:PEN 15:PRINT"by A.R.WHI
TE"
1850 LOCATE 2,18:PEN 6:PRINT"another gam
e (y/n)"
1860 a$=INKEY$:IF a$="" THEN 1860
1870 IF a$="n" OR a$="N" THEN MODE 1:CLE
AR:END

```

```

2030 IF tbt=1 THEN del=300:GOTO 2080
2040 IF tbt=2 THEN del=600:GOTO 2080
2050 IF tbt=3 THEN del=1500:GOTO 2080
2060 IF tbt=4 THEN del=1000:GOTO 2080
2070 IF tbt=5 THEN tbt=0:tpb=0:del=0:RET
URN
2080 AFTER del,3 GOSUB 1420:RETURN
2090 DATA 3,4,5,6,7,8,9,10,11,12,13,14,1
5,16,17,18,19,20,21,22,23,24,3,6,10
,24,3,6,10,19,24,3,10,12,13,15,16,1
9,24,3,8,9,10,12,16,19,24,3,4,5,6,8
,12,14,16,21,24,3,8,12,16,21,24,3,5
,6,7,8,10,11,12,13,15,16,17,19,20,2
1,24
2100 DATA 3,8,10,13,15,21,24,3,4,5,6,8,1
3,15,21,24,3,8,10,11,13,14,15,16,17
,19,24,3,11,19,24,3,7,8,9,11,13,14,
15,16,19,24,3,11,13,16,24,3,4,5,6,7
,8,9,10,11,13,16,17,18,19,20,21,22,
23,24
2110 DATA 3,6,10,13,24,3,6,8,13,17,18,19
,20,21,24,3,8,9,17,24,3,5,6,7,8,11,
12,13,14,15,16,17,19,20,21,24,3,4,5
,6,7,8,9,10,11,12,13,14,15,16,17,18
,19,20,21,22,23,24
2120 DATA 2,4,2,7,2,14,9,4,9,11,9,16,10,
14,14,10,19,4,19,9,19,18,8,23,19,23
,2,22,11,4,16,4
2130 DATA 3,4,5,6,7,8,9,10,11,12,13,14,1
5,16,17,18,19,20,21,22,23,24,3,10,1
9,21,24,3,4,6,7,8,10,12,14,15,16,17
,19,21,22,24,3,8,12,17,24,3,4,5,6,8
,9,10,11,12,13,14,15,17,17,18,19,20
,21,22,24

```

```

2140 DATA 3,24,3,6,7,8,9,10,11,12,14,15,
16,17,18,19,20,24,3,6,20,21,22,24,3
,6,8,9,10,11,12,13,14,15,16,17,18,2
0,24,3,6,8,18,20,24,3,6,8,10,11,12,
14,15,16,18,24,3,6,8,18,20,24
2150 DATA 3,6,10,11,12,14,15,16,18,20,24
,3,6,8,18,20,22,23,24,3,6,8,9,10,11
,12,13,14,15,17,18,20,24,3,6,20,24,
3,6,7,8,9,10,11,12,13,14,15,16,17,1
8,19,20,21,22,24,3,24,3,24,3,4,5,6,
7,8,9,10,11,12,13,14,15,16,17,18,19
,20,21,22,23,24
2160 DATA 2,4,2,20,4,16,6,4,8,7,10,15,12
,13,14,4,15,23,16,13,19,14,11,23,2,
22,4,4,15,22,12,14
2170 DATA 3,4,5,6,7,8,9,10,11,12,13,14,1
5,16,17,18,19,20,21,22,23,24,3,24,3
,5,6,7,8,9,10,11,13,14,15,16,17,18,
19,20,21,22,24,3,5,11,16,17,18,19,2
0,21,22,24,3,5,6,7,8,9,11,13,14,19,
20,21,22,24

```

```

2180 DATA 3,13,14,15,16,17,24,3,4,5,6,7,
8,9,10,11,17,18,19,20,21,24,3,12,13
,14,15,19,24,3,5,6,7,8,9,10,15,16,1
7,19,21,24,3,10,12,13,17,19,21,24,3
,6,7,8,9,10,13,14,15,17,19,21,22,24
,3,5,10,11,24
2190 DATA 3,5,6,7,8,11,12,13,14,15,16,17
,18,19,21,22,24,3,8,11,12,13,14,22,
24,3,5,6,7,8,20,21,22,24,3,5,10,11,
12,13,14,15,16,17,19,24,3,5,10,13,1
9,20,21,22,24,3,7,8,10,12,13,14,15,
16,17,19,24
2200 DATA 3,5,6,7,8,10,19,21,22,24,3,4,5
,6,7,8,9,10,11,12,13,14,15,16,17,18
,19,20,21,22,23,24,4,6,5,16,7,16,9,
13,10,9,12,6,14,7,16,20,17,12,17,14
,19,4,8,23,19,20,2,7,19,9,11,12
2210 DATA 3,4,5,6,7,8,9,10,11,12,13,14,1
5,16,17,18,19,20,21,22,23,24,3,6,8,
12,24,3,6,8,10,12,13,14,15,16,18,20
,21,22,24,3,6,8,10,12,16,18,20,24,3
,6,8,10,14,18,20,21,24,3,8,10,11,12
,13,14,15,16,17,18,21,24

```

```

2220 DATA 3,5,6,7,8,19,21,22,24,3,10,11,
12,13,14,16,17,18,19,22,24,3,5,6,7,
8,14,16,20,22,24,3,5,6,8,10,11,12,1
4,16,18,19,20,22,24,3,5,6,8,12,14,1
6,22,24,3,5,6,8,12,14,16,17,18,19,2
0,21,22,24
2230 DATA 3,5,6,8,10,11,12,14,24,3,8,14,
16,17,18,19,20,21,22,23,24,3,5,6,7,
8,9,10,11,12,13,14,24,3,8,13,14,16,
18,19,20,21,22,24,3,8,10,11,12,13,1
4,16,22,24,3,5,6,7,8,10,11,12,13,14
,16,17,18,19,20,21,22,24
2240 DATA 3,24,3,4,5,6,7,8,9,10,11,12,13
,14,15,16,17,18,19,20,21,22,23,24,2
,7,2,13,4,21,5,17,9,19,10,7,11,11,1
6,12,17,7,17,21,19,4,5,23,2,4,2,23,
13,15,5,15
2250 DATA 113,106,190,106,113,106,113,12
7,113,127,142,127
2260 DATA 113,106,190,106,113,106,113,12
7,113,127,142,150
2270 DATA 113,106,190,106,113,106,113,12
7,113,127,142,127
2280 DATA 142,127,113,106,113,127,113,12
7,142,113,127,142,-1
2290 DATA 142,1,190,1,169,1,169,0,142,1,
190,1,169,1,169,0,106,1,113,1,127,1
,142,1,-1,-1

```

ACU

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# Nevada Cobol

REVIEWED by Steven Godwin.

Around 1966, Grace Hopper (who coined the phrase "bug", when she found that the reason for a program crash was a dead insect shorting out a relay) created a high level language for the American Department of Defence and called it Cobol; an acronym for Common Business Oriented Language. Its main advantage is that the program source code is very close to English, which makes it very easy to read and therefore de-bug. This, among other reasons is why Cobol is still widely used for writing business applications.

Unlike most implementations of Basic, which are interpreted. Cobol is compiled. The difference being, that interpreting a program means turning every instruction of the program into machine code as it is run, as opposed to turning the whole program into machine code before running it, as compiling does. The main difference between these two methods is speed. As no conversion work has to be done during the running of a compiled program, it executes much faster.

Cobol is available only for a few home micros, but due to the availability of CRM on the Amstrad machines, it is now another language option, open to the serious Amstrad user. Although Cobol is faster than Basic, do not go and buy it thinking that you will be writing super fast, graphics and arcade games. Cobol is a business language and has little or no support for graphics.

The implementation of Cobol available on the Amstrad, is Nevada Cobol. It is one of the more popular versions of the language, if not the most complete. Other versions, such as CIS and Microsoft have larger and more powerful instruction sets, but do cost many times more.

Cobol is quite a verbose language and at first sight seems over complicated. To demonstrate, a program to input and then print a person's name would be.

```

81 I t PRINT-.T.
12816 I S PRINI-NESS P I E 1 0 8 1 .
      81 POIRI-NSOI P R W C .
eNINhdNNNN-SEONNSE SECTION.
w o 0 1 M E N E C M I T .
VIII PROCEDURE DIVISION.
8821 MIEN SECTION.
0822 R I O .
8123 D I S P L A Y "PLEASE ENTEIPOOR NAM
1829 A C C E P T NAME.
0825 O P E N W P C PNINT-OUT.
0826 M O R E "TOWNNAME IS ¥ TO PRINT
1821 R O V E NINE TOPRINS-SORE.
082e W R I T E PRINT-IT.
8829 C L O S E PRINT-OUT.
0831 S I O P NUN.
Aro ENO M O M OEROOSTIAION.
    
```

(Please note. The line numbers are only for de-bugging and are not used like Basic line numbers within the program.)

As you can see, this is a bit more long winded than it would be in Basic, but do not be intimidated. The start of the program (The IDENTIFICATION DIVISION contains data for anyone looking at the source code and shows what the program is, and who wrote it. This is followed by the ENVIRONMENT DIVISION that contains more data for the programmer about what computer the software was written on and what hardware is needed to run it. This division may also have an input-output section containing details about any Ples to be used in the program. The above example also contains "Ple-control" that tells the computer facts about Ples to be used. This information includes the type of Ple (usually disc or printer) and for disc Ples, the type of Ple to be used, be it Sequential or Relative, the access type, be it sequential or random, as well as relative Plekey, and Ple status variable assignments.

Cobol differs from Basic in that all data used must be declared at the start of the program, in the next division, the DATA DIVISION. As well as dePning all internal data, all Ples (disc, printer etc.) must also be dePned in detail. This makes structuring of data clear and easy to read. The Prst part of the Data division only exists if there are any Ples and is, not unexpectedly, called the File section. As an example, a Ple that had records containing a name, a three line address and a post code would look like this.

```

AAME-ADANESS-FILE LABEL RECORDS AIt SIANA.At
      VALLE OF FIL(¥ED IS
      "4:APOIESS.AAT
A m A n t
41 MANE.
      IS 10ALAAAt PIC
      AI IRE O VALLE 'IUD".
      IS FALLEN PIE
      IS SLIONANT PIC 1E 11/.
SS A I b I E I S
IA POST-CODE P I E M a i .
    
```

The Prst two lines are the Ple dePnition and give more information about the Ple including the name to be used when accessing the disc. The number at the start of each line is a level number. The higher the number is, the lower the level. Above, the level NAME-AND-ADDRESS, which is a level 01, contains all the other data, and by the same token, all the data from the FORENAME to the SURNAME is contained within NAME. Therefore, referring to NAME would include the forename and surname( together with a separating space). The X(number) on most of the lines refers to the data to be held in each data name. The X tells the compiler that the data is alphanumeric, and could be replaced by such characters as 9,Z or t o denote numeric data, leading zero supression and a decimal point respectively. Other options include holding numbers in packed decimal or in binary form.

The number in the brackets is just shorthand. Instead of a ten character data name being dePned by PIC XXXXXXXXXXX, you can put PIC X(10). The data name FILLER is commonly used in Cobol and is recognised by the compiler as memory that must be reserved (in this case for a space between the two names), but which does not have to be speciPcally referenced. There is also a VALUE verb that could be used to Pll any data names with speciPc data at the start of the program. The variable FRED, is an 88 level, which is an exception to the rule of level numbers, and will be explained later.

As you can see, there is only one address line mentioned, although there should be three. This is due to the OCCURS statement. It is similar to a Basic subscript and means that the data may be referred to in the main code as ADDRESS(X), where X is the line of the address that you are referring to.

This File section is followed by a WORKING-STORAGE SECTION. This has exactly the same structure (without the FD's) and dePnes all the data to be used within the program (the same is a variable in Basic).

After all the data has been dePned, the actual program code is entered in the Pnal program division, called the PROCEDURE DIVISION. Apart from the actual instructions, there are SECTION and PARAGRAPH headers. These are two levels of label used by Cobol. A section may contain many paragraphs and is shown as a label followed by the word SECTION. The compiler can differentiate between labels and program statements by their position.

```

8.81 IDENTIFICATION DIVISION.
P012 PROBRAP-ID. REMONSTRATION.
800S AUTHOR. N O D .
/414 ENVIRONMENT DIVISION.
1115 CONFIBUATION SECIION.
/116 SOURCE-CONROTER. ANSTRAD CPE464.
10/7 o m e l
8083 INPUT-OUTPUT SECTION.
RA89 FILE - CONTROL.
      SELECT PRINT-OUT ASSIGN PRINTER,
8011 DATA DIVISION.
1112 FILE SECTION.
DITS F D PRINT-RUT LABEL RECORDS ARE STANDAID
1814 V A L U E OI FILE-11 ¥
    
```



















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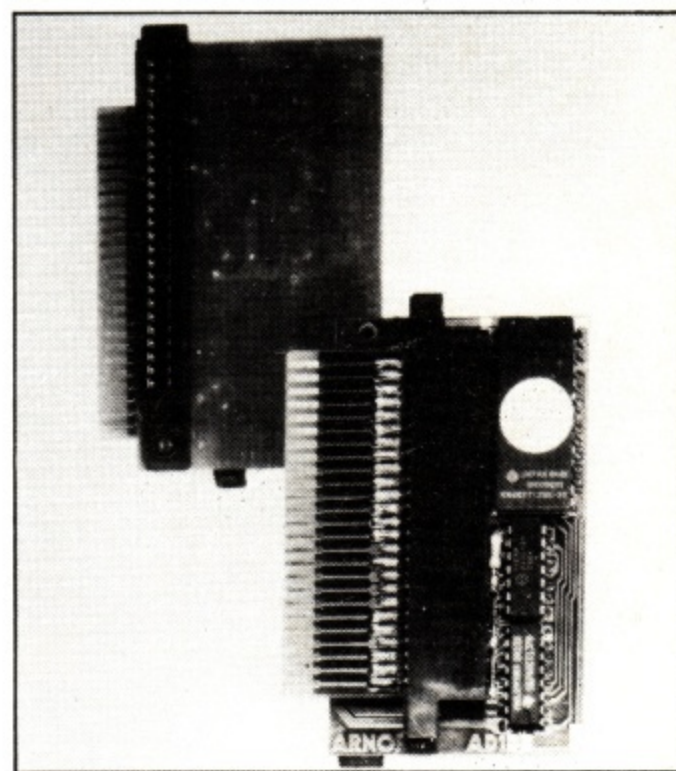
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# LISTING

```

2430 IF lev/4=lev\4 AND in=10 THEN stim=
stim-100
2440 IF lev/4=lev\4 AND in>10 THEN in=in
-10
2450 GOTO 150
2460 ' ***** SCROLL WINDOW UP *****
2470 LOCATE 1,20:PRINT CHR$(10):SOUND 4,
100,5,5:RETURN
2480 ' ***** DEATH ROUTINE *****
2490 SOUND 135,100,-1,15,1,0,31:r=REMAIN
(0):FOR f=1 TO 400:r=RND*7:BORDER r
:INK 0,r:NEXT
2500 INK 0,0:BORDER 0
2510 l=640:h=320:x=0:y=0
2520 FOR f=1 TO 81:SOUND 1,200+f*2,1,7:S
OUND 2,f,1,7:MOVE x,y:DRAWR l,0,0:D
RAWR 0,h:DRAWR -l,0:DRAWR 0,-h:x=x+
4:y=y+2:l=l-8:h=h-4:NEXT
2530 men=men-1:IF men>0 THEN 150
2540 ' ***** GAME OVER ROUTINE *****
2550 l=0:h=0:x=320:y=160:FOR f=1 TO 81:S
OUND 1,200+f*2,1,7:SOUND 2,f,1,7:MO
VE x,y:DRAWR l,0,2:DRAWR 0,h:DRAWR
-l,0:DRAWR 0,-h:x=x-4:y=y-2:l=l+8:h
=h+4:NEXT

```

```

2560 LOCATE 6,16:PEN 9:SPEED INK 40,40:P
APER 2:PRINT"GAME OVER"
2570 FOR g=31 TO 0 STEP -1:INK 9,f MOD 2
6:FOR f=0 TO g:SOUND 1,f,1,7:SOUND
2,f*g,1,7,0,0:NEXT f,g
2580 PAPER 0:CLS:INK 5,6,2:INK 15,2,6
2590 nhs=0:FOR f=0 TO 4:IF sc<hi(f) THEN
NEXT:nhs=1:GOTO 2630
2600 IF f=0 THEN a=1 ELSE a=f
2610 FOR g=4 TO a STEP -1:hi(g)=hi(g-1):
hi$(g)=hi$(g-1):NEXT g
2620 hi(f)=sc:hi$(f)="-----"
2630 PEN 9:LOCATE 5,2:PRINT"HIGH SCORES
"
2640 FOR g=0 TO 4:LOCATE 1,g+4:PEN 8:PRI
NT g+1:LOCATE 3,g+4:PRINT":":PEN 4
:PRINT hi$(g):LOCATE 14,g+4:PEN 3:P
RINT hi(g):NEXT g
2650 MOVE 12,393:DRAWR 615,0,5:DRAWR 0,-
130:DRAWR -615,0:DRAWR 0,130:MOVE 1
6,391:DRAWR 607,0,15:DRAWR 0,-126:D
RAWR -607,0:DRAWR 0,126
2660 IF nhs THEN FOR f=1 TO 8:LOCATE 1,1
:PRINT CHR$(11):NEXT f:en=1:t1=0:t2
=0:EVERY 10 GOSUB 2940:GOTO 2890
2670 PEN 6:LOCATE 2,11:PRINT"USE ";CHR$(
255);" & FIRE/SPACE":LOCATE 4,12:PR
INT"TO ENTER NAME:"
2680 a$="ABCDEFGHIJKLMNPOQRSTUVWXYZ.,*"
2690 PEN 14:LOCATE 3,15:PRINT"A B C D E
F G H":LOCATE 3,17:PRINT"I J K L M
N O P":LOCATE 3,19:PRINT"Q R S T U
V W X":LOCATE 3,21:PRINT"Y Z . , *
"CHR$(1)CHR$(8) "CHR$(1)CHR$(13)
2700 LOCATE 3,24:PRINT CHR$(1)CHR$(13);:
PEN 13:PRINT"=ENTER ";:PEN 14:PRINT
CHR$(1)CHR$(8);:PEN 13:PRINT"=DELE
TE"

```

```

2710 FOR g=1 TO 20:k$=INKEY$:NEXT
2720 LOCATE 4,f+4:INK 11,20,1:PEN 11:PRI
NT hi$(f);hi(f)
2730 le=1:x=48:y=182:na$=""
2740 MOVE x,y:DRAWR 56,0,1:DRAWR 0,-28:D
RAWR -56,0:DRAWR 0,28
2750 t1=0:t2=0:en=1:EVERY 10 GOSUB 2940

```

```

2760 k$=INKEY$:j=JOY(0)
2770 IF k$<>" " AND k$<>"z" AND k$<>"x"
AND j<4 AND j<8 AND j<16 THEN 27
60
2780 MOVE x,y:DRAWR 56,0,0:DRAWR 0,-28:D
RAWR -56,0:DRAWR 0,28
2790 IF (k$=" " OR j=16) AND le=31 AND n
a$<>" " THEN na$=LEFT$(na$,LEN(na$)-
1):LOCATE 4,f+4:PRINT na$;"-":WHILE
k$=" " OR j<0:k$=INKEY$:j=JOY(0):
WEND
2800 IF (k$=" " OR j=16) AND le=32 THEN
2850
2810 IF k$="x" OR j=8 THEN x=x+64:le=le+
1:IF x=560 THEN x=48:y=y-32:IF y=54
THEN x=48:y=182:le=1
2820 IF k$="z" OR j=4 THEN x=x-64:le=le-
1:IF x=-16 THEN x=496:y=y+32:IF y=2
14 THEN x=496:y=86:le=32
2830 IF k$=" " OR j=16 AND le<31 THEN na
$=na$+MID$(a$,le,1):LOCATE 4,f+4:PR
INT na$:WHILE k$=" " OR j<0:k$=INK
EY$:j=JOY(0):WEND:IF LEN(na$)>9 THE
N 2850
2840 MOVE x,y:DRAWR 56,0,1:DRAWR 0,-28:D
RAWR -56,0:DRAWR 0,28:GOTO 2760
2850 WINDOW 1,20,10,25:CLS:WINDOW 1,20,1
,25:FOR g=1 TO 20:k$=INKEY$:NEXT
2860 LOCATE 4,f+4:PRINT" " :hi$(
f)=na$

```

```

2870 PEN 4:LOCATE 4,f+4:PRINT na$:LOCATE
14,f+4:PEN 3:PRINT sc:FOR f=1 TO 8
:LOCATE 1,1:PRINT CHR$(11):NEXT
2880 FOR f=1 TO 5000:NEXT
2890 LOCATE 1,25:PAPER 13:PEN 9:PRINT"
PRESS SPACE/FIRE ";
2900 IF INKEY$<>" " AND JOY(0)<16 THEN
2900
2910 re=REMAIN(0):SOUND 135,0:GOTO 110
2920 ' ***** TUNE 2 INTERRUPT *****
2930 ' ***** SUBROUTINE *****
2940 IF t2=29 THEN en=4
2950 IF NOT SQ(1) AND 2 THEN SOUND 1,p1(
t1,0,0),p1(t1,1,0),15,en:t1=t1+1
2960 IF NOT SQ(4) AND 2 THEN SOUND 4,p1(
t2,0,1),p1(t2,1,1),15,en:t2=t2+1:IF
t2=56 THEN t1=0:t2=0:en=1
2970 RETURN
2980 ' ***** READ TUNE DATA *****
2990 MODE 1:BORDER 0:INK 0,0:PAPER 0:CLS
:INK 1,4,17:SPEED INK 15,15:LOCATE
15,12:PEN 1:PRINT"PLEASE WAIT"
3000 DIM t1(105,1,2),nn(4),hi$(4),hi(4):
RESTORE 3270:cr=40:nn(0)=83:nn(1)=1
04:hi$(0)=" * MITCH *":hi$(1)="FODS
LAP":hi$(2)="ARNOLD":hi$(3)="CLUMSY
":hi$(4)="FAG ASH":FOR f=0 TO 4:hi(
f)=(5-f)*100:NEXT

```

```

3010 FOR n=0 TO 1
3020 FOR f=0 TO nn(n):READ t1(f,0,n),dur
$
3030 IF dur$="q"THEN dur=cr/2
3040 IF dur$="c"THEN dur=cr
3050 IF dur$="dc"THEN dur=cr+cr/2
3060 IF dur$="m"THEN dur=cr*2
3070 IF dur$="s"THEN dur=cr*4
3080 t1(f,1,n)=dur
3090 NEXT f,n
3100 DIM p1(56,1,1)
3110 FOR f=0 TO 53:READ p1(f,0,0),dur$
3120 IF dur$="q"THEN dur=20
3130 IF dur$="c"THEN dur=40

```

```

3140 IF dur$="dc"THEN dur=60
3150 IF dur$="m"THEN dur=80
3160 IF dur$="dm"THEN dur=160
3170 p1(f,1,0)=dur:NEXT f
3180 FOR f=0 TO 55:READ p1(f,0,1),dur$
3190 IF dur$="q"THEN dur=20
3200 IF dur$="c"THEN dur=40
3210 IF dur$="dc"THEN dur=60
3220 IF dur$="m"THEN dur=80
3230 IF dur$="dm"THEN dur=160
3240 p1(f,1,1)=dur:NEXT f

```

```

3250 RETURN
3260 ' ***** DATA FOR TUNE 1 *****
3270 DATA 284,m,319,q,358,q,284,q,319,q,
358,c,179,c,213,q,179,dc,239,m,284,
c,358,c,319,s,284,m,319,q,358,q,284
,q,319,q,358,c,179,c,213,q,179,dc,2
39,c,284,q,358,q,319,c,319,c,358,s
3280 DATA 284,m,319,q,358,q,284,q,319,q,
358,c,179,c,213,q,179,dc,239,m,284,
c,358,c,319,s,284,m,319,q,358,q,284
,q,319,q,358,c,179,c,213,q,179,dc,2
39,c,284,q,358,q,319,c,319,c,358,s
3290 DATA 190,dc,179,q,159,c,239,c,239,d
c,213,q,239,c,179,c,179,c,213,c,253
,c,213,c,239,s,284,m,319,q,358,q,28
4,q,319,q,358,c,179,c,213,q,179,dc,
239,c,284,q,358,q,319,c,319,c,358,s
3300 DATA 716,m,478,c,379,c,358,c,568,c,
536,q,426,dc,716,m,478,c,568,c,478,
q,536,q,478,q,379,q,239,q,253,q,284
,q,319,q,358,c,478,c,536,q,568,q,56
8,c,568,c,426,c,506,m,478,c,478,q,5
68,q,536,c,536,c,568,q,716,q,568,q,
478,q,358,q,568,q,478,q,358,q
3310 DATA 716,m,478,c,379,c,358,c,568,c,
536,q,426,dc,716,m,478,c,568,c,478,
q,536,q,478,q,379,q,239,q,253,q,284
,q,319,q,358,c,478,c,536,q,568,q,56
8,c,568,c,426,c,506,m,478,c,478,q,5
68,q,536,c,536,c,568,q,716,q,568,q,
478,q,358,q,568,q,478,q,358,q

```

```

3320 DATA 319,dc,319,q,319,c,379,c,358,d
c,358,q,358,c,358,c,358,c,426
,c,358,c,379,s,358,c,478,c,536,q,56
8,q,568,c,568,c,426,c,506,m,478,c,4
78,q,568,q,536,c,536,c,568,s
3330 ' ***** DATA FOR TUNE 2 *****
3340 DATA 319,q,284,q,253,dc,239,q,239,c
,213,c,213,m,253,c,213,c,239,dc,253
,q,239,c,284,c,253,dc
3350 DATA 319,q,284,q,253,dc,239,q,239,c
,213,c,213,m,253,c,213,c,239,dc,253
,q,239,c,284,c,319,dc
3360 DATA 213,c,159,dc,169,c,190,c,213,c
,213,m,253,c,213,c,239,dc,253,q,239
,c,284,c,253,dc,213,c,159,dc,169,c,
190,c,213,c,213,m,253,c,213,c,239,d
c,253,q,239,c,284,c,319,dc
3370 DATA 506,q,426,q,319,dc,284,q,284,c
,253,c,253,m,319,c,253,c,284,dc,319
,q,284,c,338,c,319,dc
3380 DATA 506,q,426,q,319,dc,284,q,284,c
,253,c,253,m,319,c,253,c,284,dc,319
,q,284,c,426,q,478,q,506,dc
3390 DATA 253,c,253,dc,213,c,239,c,253,c
,253,m,319,c,253,c,284,dc,319,q,284
,c,338,c,319,dc,253,c,253,dc,213,c,
239,c,253,c,253,m,319,c,253,c,284,d
c,319,q,284,c,426,q,478,q,506,dc

```



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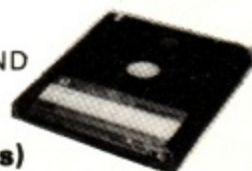
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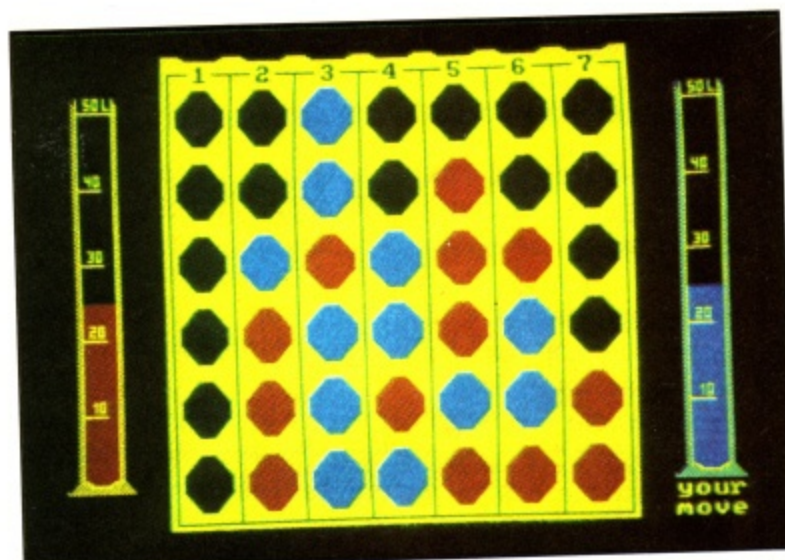
This month's Software Competition was surprisingly rewarding to judge. There were fewer entries than usual, probably due to the exam season and all the budding programmers being away on holiday, the entries we did have turned out to be very good.

First prize goes to K. N. Khaleque who submitted a first rate ladders and platforms game called "Miner Mania". In this you have to guide 'Miner Tim' through thirty caverns, this may sound familiar to 'Manic Miner' fans and the game does bear more than a passing resemblance to the Software Projects game. This, however, was the best entry we have had for the competition so Mr Khaleque wins £1000. Miner Mania is technically very good, there are some beautiful sprites and continuous music. All the speed-critical bits are written in machine code with the general dressing and instructions in Basic. Even more impressive is that the author wrote the game without an assembler, instead he wrote and used his own monitor.



K. N. Khaleque - Miner Mania

Second Prize of £600 goes to Frank De Mayer for "Droppy Disc". He owns an Okimate 20 colour printer and has put it to good use with his documentation. The program is based on the 'Connect 4' game, you have to arrange four counters in a row whilst stopping your opponent from doing the same. Mr De Mayer has added a gambling element to Droppy Disc. You stake a given number of litres of water on winning the next game. The winner is the first player to either fill a tube or empty the opponents tube. The computer can be set to play at different levels, from good to unbeatable (well almost). The use of colour planes and some nifty sound routines add great finishing touches to this program.

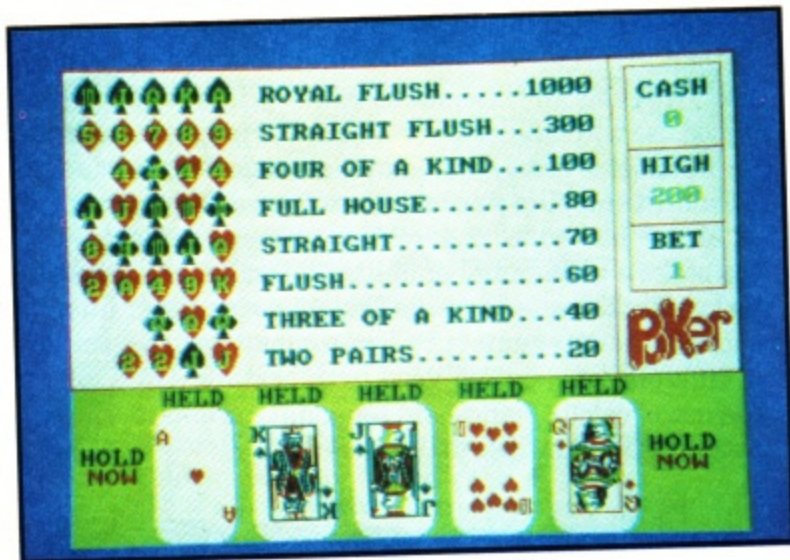


Frank De Mayer - Droppy Disc

Third Prize goes to Peter Wiseman for "Poker" This was not the first time we had seen a poker program but it was the execution of this version which won it £400. Both the display and the presentation of the documentation would shame

# COMPETITION

some so-called professional poker programs. Careful use of user defined symbols provides an accurate and colourful display. The computer plays a fair game with user friendly inputs. Once again this winner was turned from being 'Just another entry' into a top program by a host of little touches, a pretty 'Poker!' logo, a neat inlay card and comprehensive instructions.



Peter Wiseman - Poker

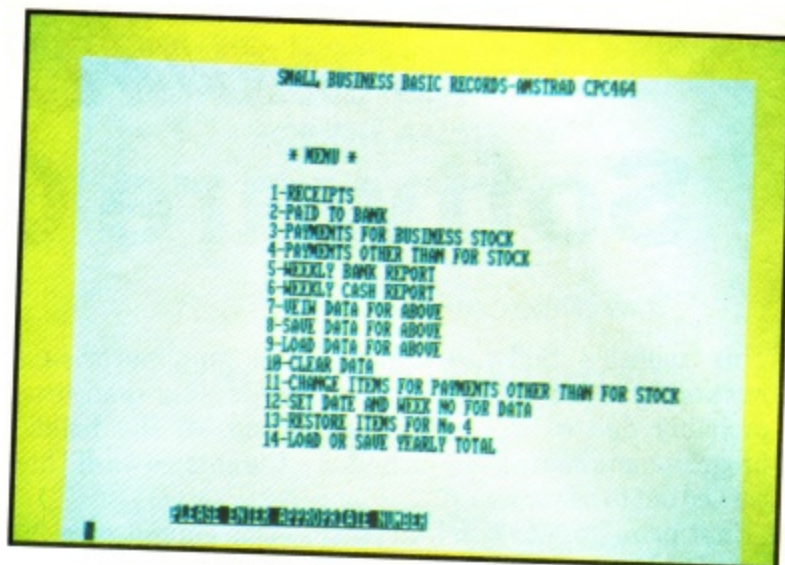
As usual there were many good entries which did not make it into the prize-winning league. Some of these will go into a compilation of listings we are planning to produce for the end of the year. If you have submitted an entry to any competition and have not heard from us then please be patient, the huge backlog is being worked on now and you should hear from us soon.

On the whole, arcade games were a bit thin on the ground, John Wright's "Caverns of Skeltor" was an exception to this rule, a nice maze game written in Basic with multi-colour characters.

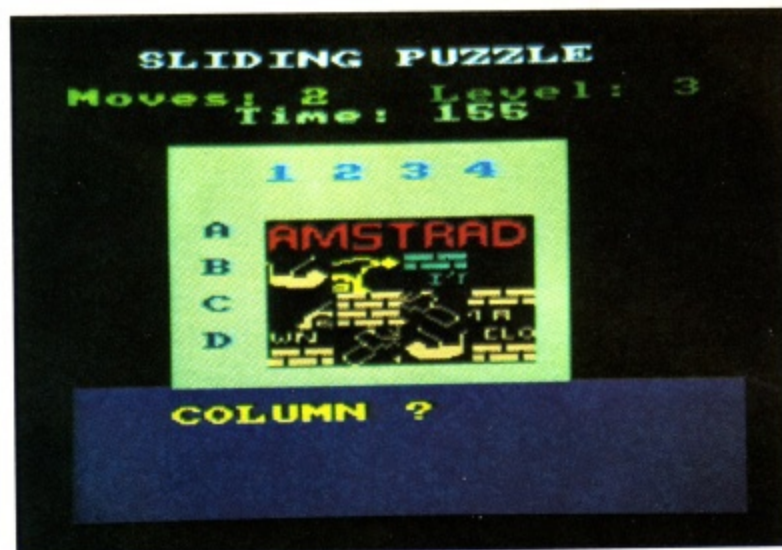
Sliding Block puzzle by Said Shadi is only 133 lines long and shows how a neat bit of Basic can make a very playable game. There are options which allow you to watch the computer shuffle the tiles and, if you give up, to watch the computer unscramble the titles.



John Wright - Caverns of Skeltor



Tim Gilbert - Business



Said Shadi - Sliding Block Puzzle



Meat - G Steen

Overall a good set of entries this month, keep them coming, preferably on disc and only if you are a member of the user group.

ACU

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- |   |   |   |
|---|---|---|
| <p>1 The winner(s) will be the entrant or entrants who submit the best program. It may be any piece of software that runs on the CPC464 or CPC664</p> <p>2 The name of all the winners will be printed in the next available issue of Amstrad User.</p> <p>3 All entries must arrive by October 1st 1985. Entries arriving after that date will be included in the next issue's competition.</p> <p>4 All entries must INCLUDE a disc or cassette copy of the program (plus loading instructions where necessary!), AND A SIGNED COMPETITION ENTRY FORM. A full listing would be helpful, but not essential. A brief summary of the program and its purpose should accompany all entries.</p> | <p>5 All entries will be treated in strict confidence.</p> <p>6 Neither AMSOFT nor AMSTRAD can be held to be responsible for any loss or damage to any submission.</p> <p>7 No correspondence can be entered into concerning programs submitted for the cash prize competition.</p> <p>8 The decision of the judges is final.</p> <p>9 It is a condition of entry that all entrants have exclusive ownership of the copyright of the material submitted, and that the winners agree to assign all copyright in the winning program to Amstrad. All entrants must undertake not to submit the same or a similar program to any other magazine,</p> | <p>publisher or organisation until after the announcement of the winning entry.</p> <p>10 Amsoft may offer to publish programs either in Amstrad User or as commercial software, in which case Amsoft will agree the terms on an individual basis with the author(s) concerned. Amsoft reserves the right to amend, alter or revise any program that is published.</p> <p>11 No employees of Amsoft or Amstrad, or their relatives may enter this competition.</p> <p>12 All entries must have the name and address of the programmer as REM's in the first few lines of the program or loader.</p> |
|---|---|---|

## HOW TO ENTER:

Think about your program, and map it out in a series of events or features. Write the program onto cassette, based around these events and check that the program runs as intended. Once you are satisfied, send a copy of the cassette in a suitable envelope along with the following:

- 1) A brief summary of the program in 500 words or less.
- 2) The completed competition entry form, which must be signed.
- 3) Program listings, if available.
- 4) SAE if you want your entry returned.

## SOFTWARE COMPETITION

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I am over 18 years of age. YES/NO: Age if under 18 .....

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# Least Significant Bit

## The Lumbering Giant

It's as well to remind ourselves from time to time that the Amstrad BASIC benchmarks are actually considerably faster than those of an almighty IBM PC. Indeed, much else that Arnold does is rather better conceived and elegantly executed. Your scribe was reminded of this fact the other day when laboriously formatting and copying discs on a PC. I had to go back to the 664 to confirm that it wasn't my imagination after all, and that an IBM PC is actually ludicrously slow despite all its grandeur.

In comparison, the CPC664 is a positive delight to use.

## The Great Free Software Bonanza

The program listings disc offered via Garwood has been acquiring a little extra spice in the shape of some of the material from the Public domain software libraries for CP/M users. After all, if you have 70k or so going spare after the material from the issue is implanted thereon, why not fill 'er up with some of the selected morsels from the CPMUG?

Part of the catalogue of software available is included on this month's disc (the contents of the indices themselves fill over 4 discs!), and no doubt more index next month. The useful MFT file transfer utility is also provided to simplify single drive copying (and tell you what's going on at the same time).

It's all more evidence that by choosing to follow the CP/M route from day one, Amstrad have thrown the system wide open to the broadest possible following and now there's over 30MBytes of material there for the browsing.

Since much of the material is available in source form, it provides a valuable opportunity to learn by browsing other's work. Let's hope that Amstrad computer owners will rapidly start contributing to the library so that we will have our own

fully fledged subsection. If you don't mind if your old competition submissions are donated to this worthy cause, then please let us know.

## Creative Competitors

When Amsoft throws its great pile of £1 notes up in the air every other month in the name of the software competition, it would be nice to have a little more direction for at least part of the entry.

The trouble is, how to come up with a suitable plot every time.

The answer occurred in a blinding flash. Take an item from the CP/M software library, and customise it for Amstrad use! Wonderful. All those obscure Microsoft and RML BASIC programs can be levered into the CPC system, sprayed with LOCATEs and SOUNDs, and suddenly good ole Startrek, Biorythms and the like spring to life.

The core of the program is there already, all (all?) you need do is correct the syntax for the cases where AMSTRAD BASIC diverges from MS, and add a little colour and sound.

The next listing disc contains a public domain Biorythm program, although if you already have access, don't let this delay you from picking a subject and crafting it for Amstrad BASIC. Advanced users might like to have a go at installing things like screen editors and compilers. Or polishing the Z80 assembler included on the issue 8 listings disc.

## Socks on tight?

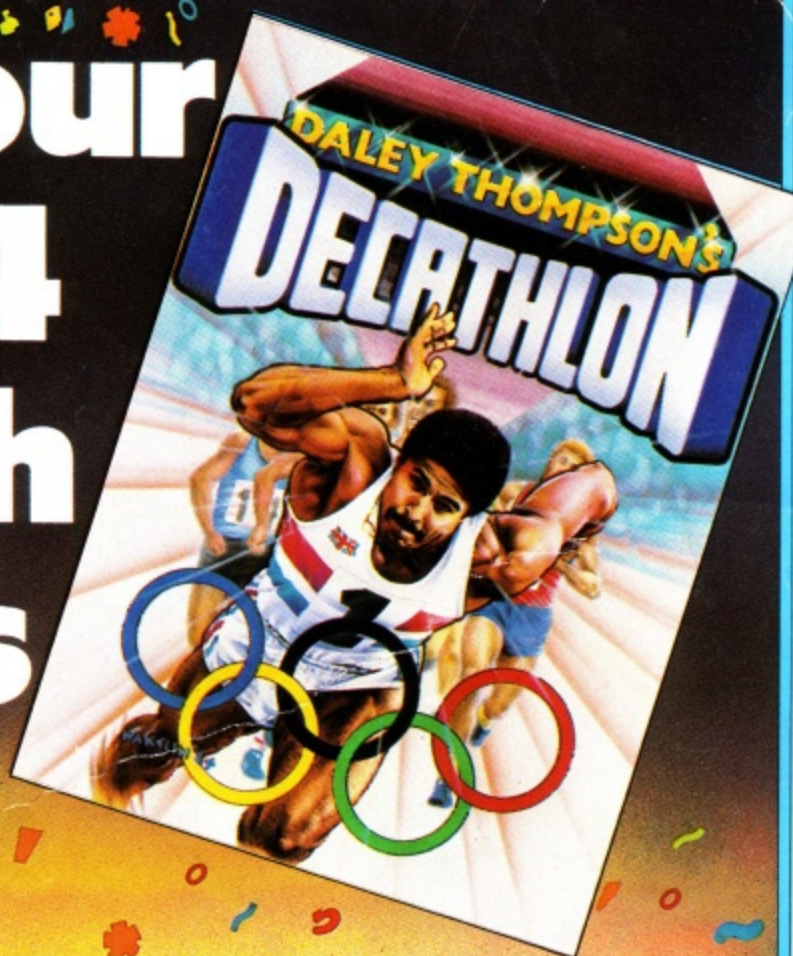
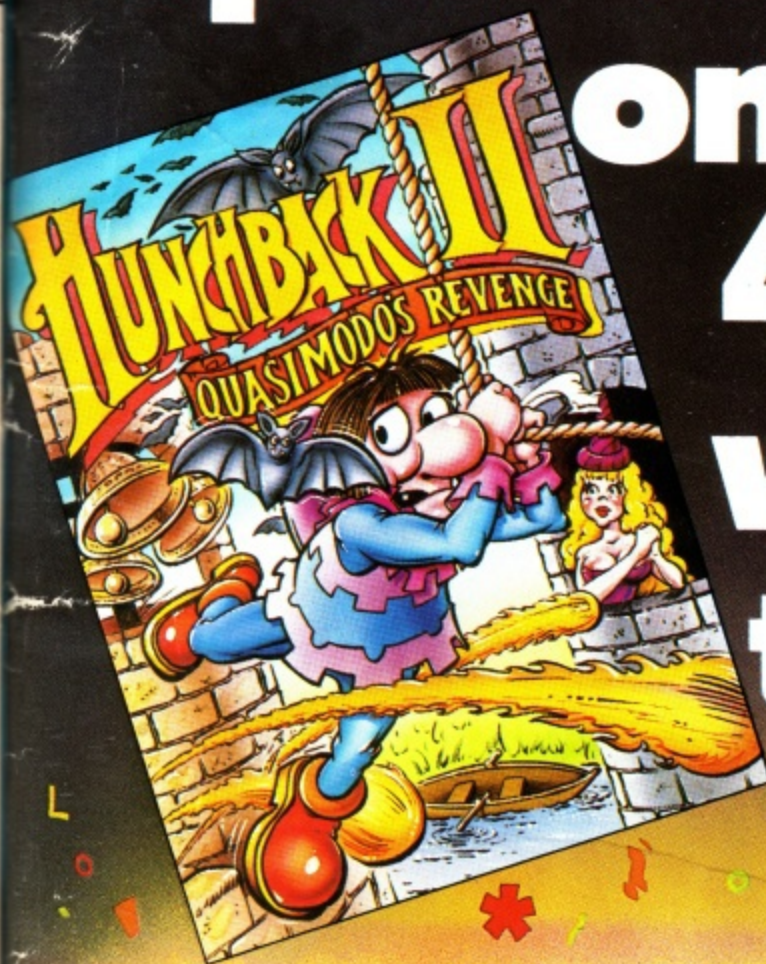
Watch out for our next issue. There's a couple of events being planned that will blow your hoisery off.

ACU

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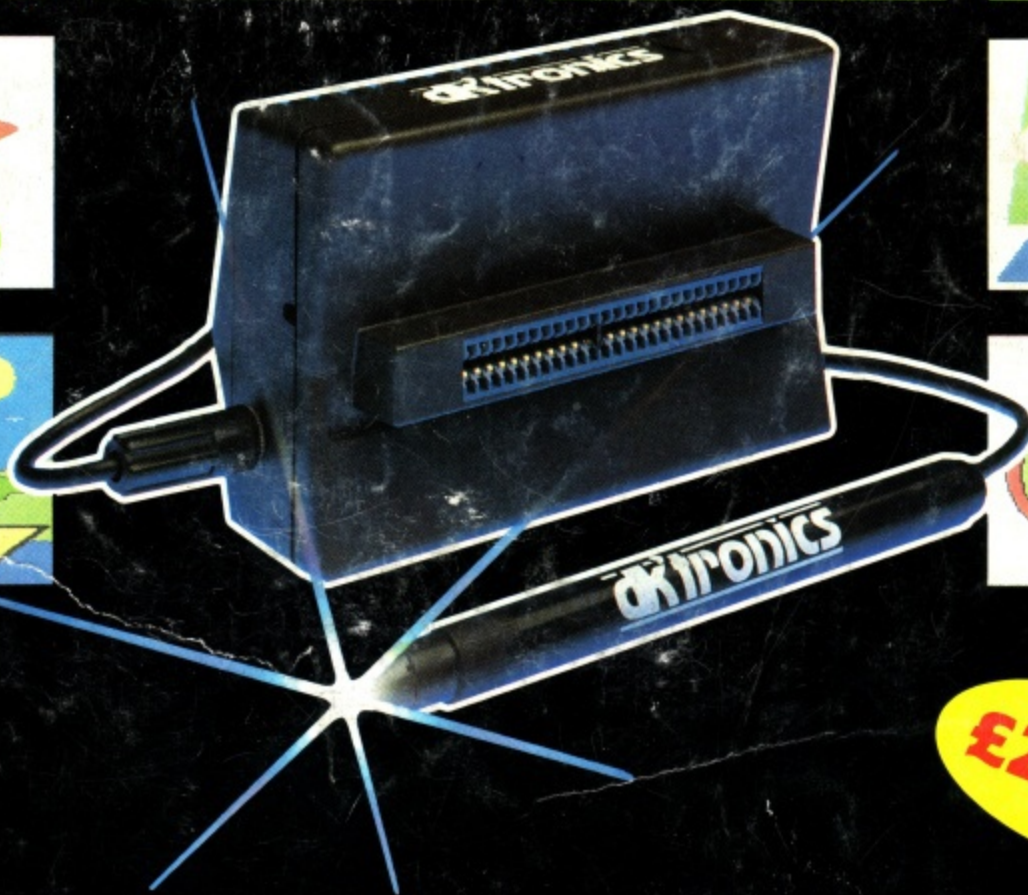
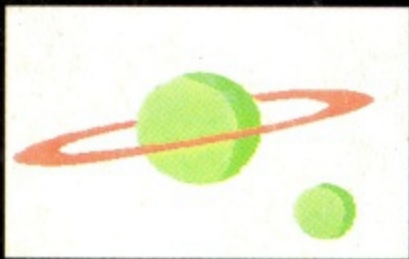
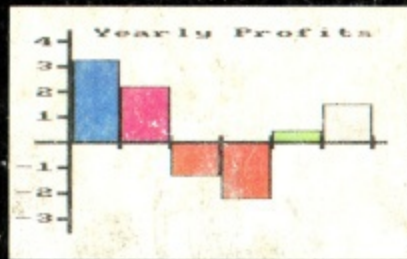
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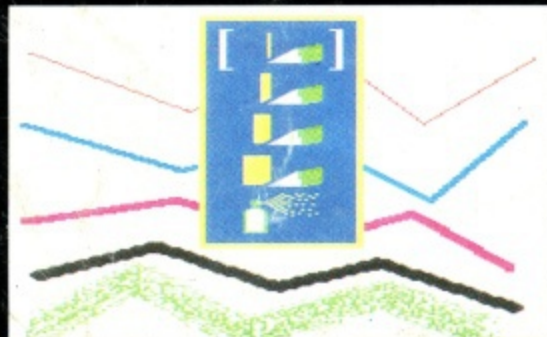
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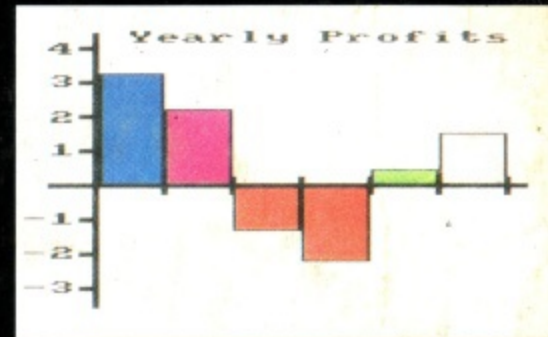
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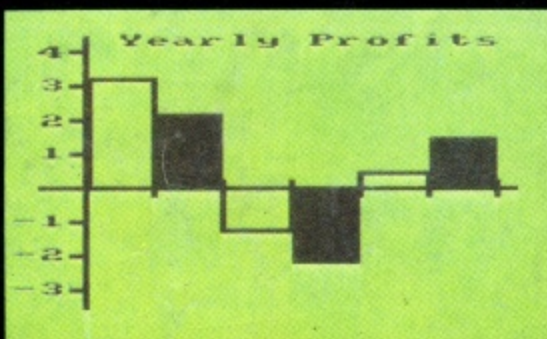
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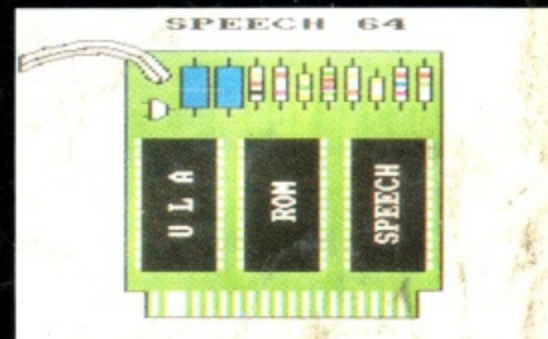
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