

DRAG'N'DROP

April 2013

Volume 4 Issue 3

£3.00

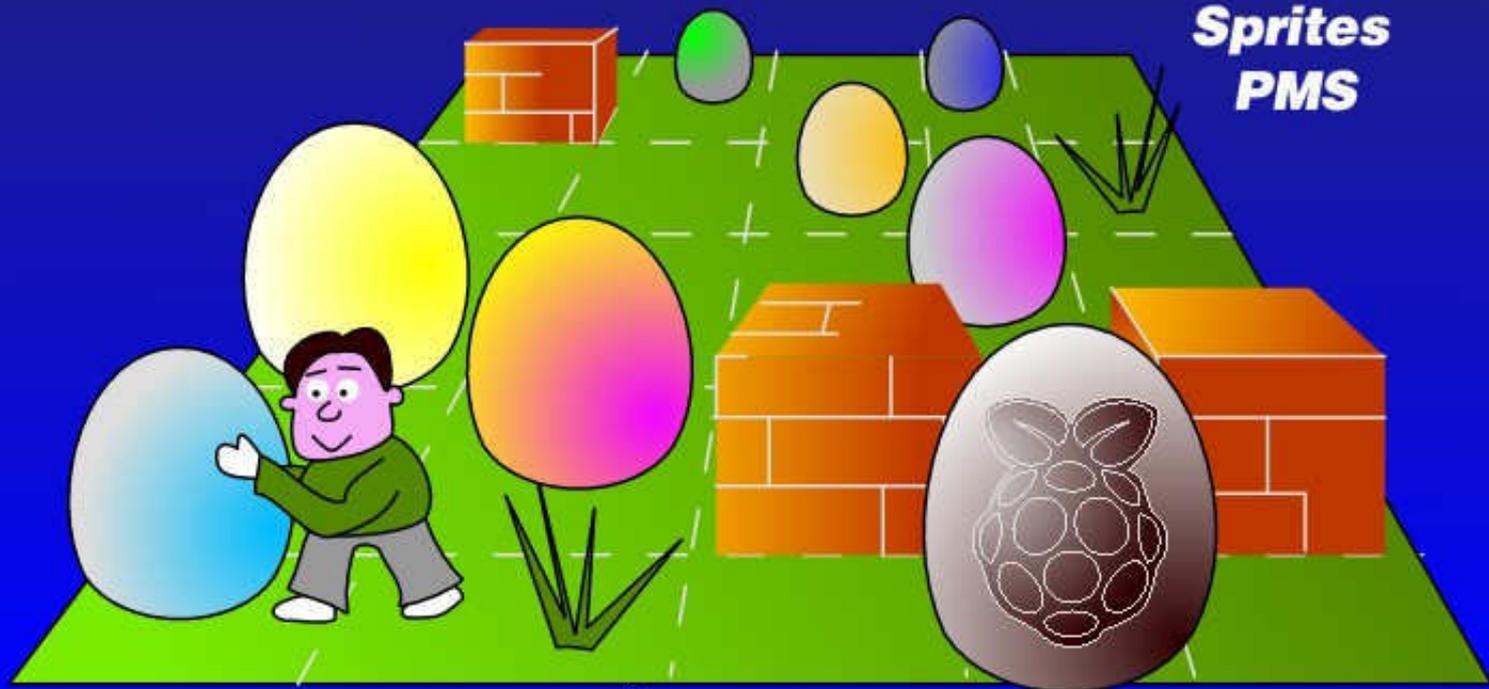
EASTOR

Can you crack the challenge?

SERIES

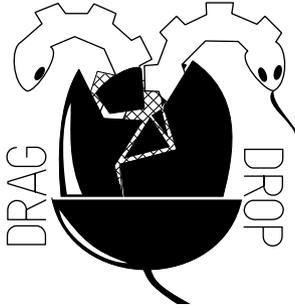
**Using Fireworkz
256 colour modes**

**Sprites
PMS**



PLUS

SBC Micro Games Retrospective



EDITORIAL

It seems like only last week I was putting together the last issue of Drag'nDrop! The magazine is done in my spare time, so with two shows in the space of two months and 'normal' life to get on with I've been *exceedingly* busy!

But it has all been fun. By the time you read this the Wakefield RISC OS Show will be upon us and I look forward to seeing you there. All of the back issues of your favourite magazine including this one will be on CD-Rom, for sale at £10 (thereafter £12 through the website). This is likely to be the last time this year the CD-Rom is updated so grab yourself a bargain! Your custom is very much appreciated as the money goes back into the magazine, attendance at shows, third party product testing and so on.

Also you can buy the '55 BBC Micro Books' CD-Rom. This is a culmination of about 10 years of work on my part. It started with an interest in making programming books available in a modern format (not just scanned in and packaged up as PDFs) along with my interest in typography. Little did I know how relevant it would be to BBC Basic programming on the Raspberry Pi as many programs in those books will run with little or no modification. It was a great way to learn how to use new DTP applications. I had to move onto Easiwriter as Impression looked like it was dead but after meeting Richard Keefe at the South West show I am hopeful once more. My savings are definitely earmarked for any new commercial version!

Thanks to the contributors in this issue but we need more! Perhaps someone can write about using the GPIO port of the Raspberry Pi? It seems to have a lot of potential, just like the old BBC Micro's user port. Go on, write something: it could your humble beginnings as a journalist !

Chris.

Christopher Dewhurst

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Produced on RISC OS computers

This issue has been blessed with contributions from the following people:

Matthew Thompson (BBC Games Retrospective)
Christopher Dewhurst (everything else)

The views expressed in this magazine are not necessarily those of the editor. Alternative views are always welcome and can be expressed by either writing an article or a short editorial.

All articles and advertisements are published in good faith. No materials in this publication are meant to be offensive or misleading. If you come across something you believe is either of the above please contact the editor using the details below.

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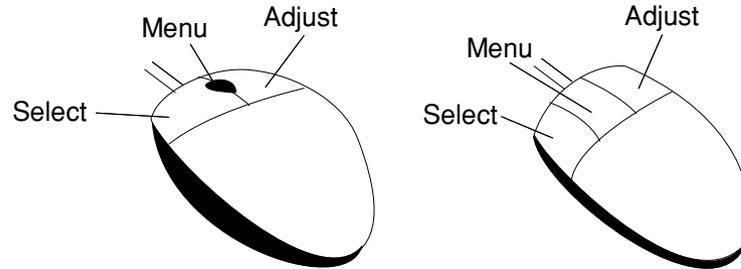
BBC Games Retrospective

Community Contacts

Beginner's Tips: Know your Mouse



The mouse used with RISC OS is a three-button variety. We call the buttons Select, Menu and Adjust. If your mouse has a scroll wheel then the scroll wheel doubles up as the menu button.



Scroll wheel mouse

3 button mouse

When we say "select click" we mean click the left button. The "Menu" button is used to call up the menu. RISC OS applications do not need to litter the screen with icons whose function can be accessed through the menu. That means more room to work.

When we say "select click" we mean click the right hand button. If you have called up a menu (with the menu button) you will frequently find options can be turned on or off with the adjust button whilst the menu is still on the screen. That means you don't have to go back and click the menu button again. Less mouse mileage, more efficient.

Do you have a question? Don't be afraid to ask! Write to editor@dragdrop.co.uk

NEWS



Wakefield Show

By the time you read this the [Wakefield show](#) will be in full swing. Look forward to seeing you there! We'll have the *Back issues* CD-Rom on sale (15 issues for a tenner) and also the 55 BBC Books CD-Rom (see below) at the special show price of just £10 each.

55 BBC Books

This HUGE collection of digitally remastered BBC Micro books is finally going to be released at the Wakefield Show.

Working so hard on the Drag 'N Drop *Back Issues* CD-Rom we ran out of time in February so it never got released at the SW Show – sorry!

Remember, you won't find anything of it's kind anywhere elsewhere. The internet is chock full of scans packaged up as PDFs but nothing completely revamped and, what's more, done entirely on your favourite operating system !

Pick up your copy of *55 BBC Books* from Wakefield for just £10 or via the website for £12 including P&P thereafter.

RISC OS Ltd under new management

[RISC OS Ltd](#) was a company developing a RISC OS variant called RISC OS SIX – essentially a RISC OS in which the built-in applications were souped up but sadly not available for the Beagleboard and Raspberry Pi.

We don't usually report on RO Ltd's activities principally because we are focused on RISC OS 5 and they haven't offered anything new in the last few years anyway. Besides, Paul Middleton has been conspicuous by his absence at recent shows.

However from March 2013 there has been a change of management. Nothing has been announced yet but we are hopeful there might be some co-operation with RISC OS Open so Raspberry Pi owners might be able to buy the 'bells and whistles' which made RISC OS SIX so useful.

Drag 'N Drop Programs

Those of you who have bought the *Back Issues* CD-Rom will benefit from having the magazine listings ready to run instead of having to "type 'em in" (or these days "copy and paste 'em in".) We're going to be putting together a 'Programs Bundle' at the end of Volume 4 which you can buy for a small cost. Details and pricing will be announced in the Summer issue.



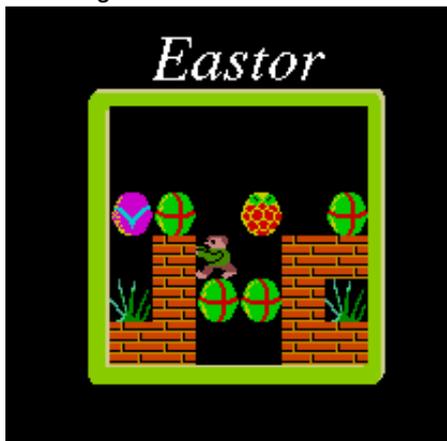
EASTOR

Can you crack the challenge?

Can you find the Golden Easter Egg? Find out in this seasonal puzzle game for the Beagleboard and Raspberry Pi.

The idea is simple: find two Easter eggs of like design and push them into each other whereupon one of another design will appear. Match two of those and so on until you have just one left – the golden Easter egg. Collect this to win the game.

Move around the scrolling playing area using the A, Z, N and M keys. Watch out for the poisonous plants. Step onto one of those and you've lost the game.



Try not to push easter eggs into corners as you will not be able to get them out again!

Eastor was written using the techniques described in Chris Dewhurst's sprite writing series, part 5 of which appears elsewhere in this issue.

● *In the next issue we will provide the BBC Micro and Electron version.*

Keys

A	Up
Z	Down
N	Left
M	Right

Variables

over%	=1 when player has run into the deadly plants, = 2 when golden egg collected.
mx%,my%	Coordinates of man
E%,F%	Contents of next and next but one cell
K%	Key pressed, matched to "AZNM" using INSTR

map%	Map byte array
scrtab%	Table of screen addresses
sprtab%	Table of sprite addresses
srctab%	Table of screen addresses

EASTOR Listing

```

10 REM Eastor
20 REM By Czody
30 REM (c) Drag 'N Drop 2013
40 MODE 13
50 DIM col% 3,sprites% 13*20*20
,code% 200,scrtab% 36*4,sprtab% 13
*4
60 DIM map% 36*16
70 !map%=149:map%!4=-1:SYS &31,
map%,map%+8
80 addr%=map%!8:REM scr start
90 TINT2,0
100 PROCsetupsprites
110 PROCsetupmap
120 PROCassemble
130 PROCscreen
140 REPEAT
150 frame%=11
160 over%=FALSE
170 mx%=0:my%=0
180 PROCupdate
190 REPEAT
200 K%=INSTR("AZNM",GET$)
210 IF K%=1 PROCup
220 IF K%=2 PROCdown
230 IF K%=3 PROCleft
240 IF K%=4 PROCright
250 E%=FNread(mx%,my%)
260 IF E%=2 over%=1
270 IF E%=9 over%=2
280 PROCupdate
290 UNTIL over%
300 IF over%=2 PROCwelldone

```

256 COLOUR PART 2

MODE THEORY

In the first of this two-part series we discovered that in every 256 colour mode, each pixel (byte) on the screen takes one of 256 possible values.

This value is held in one byte or eight bits. The actual colour you see on the screen, however, is a 12-bit colour. Four bits are hardwired into the video circuitry and the other eight are controllable by a combination of Basic's COLOUR statement and the palette registers (VDU 19,16).

Have you done your homework? I asked you to look at why, in Manic Mole, the "extended" COLOUR command was included so some platforms could be printed but appear invisible.

By "extended" we mean COLOUR n,r,g,b where n can be a value zero to 255 and r,g,b are the red, green and blue values respectively.

Actually I made a mistake. I said the platforms were printed in COLOUR 4 but they are printed in COLOUR 1. If you change the palette registers with COLOUR 4,0,0,0 (or VDU 19,4,16,0,0,0) that means COLOUR 4 appears as black because the red green and blue

values are all zero, right? Wrong.

Try Program 1 below. It defines a solid, user-defined character CHR\$255 and prints it at the top left of a MODE 13 screen. Using SYS & 31 to read VDU variable number 149 it finds the address of the top-left corner of the screen and then peeks it to find the value of the pixel there.

```

Program 1
10 MODE 13
20 DIM blk% 12
30 !blk%=149
40 blk%!4=-1
50 SYS &31,blk%,blk%+8
60 start%=blk%!8
70 VDU 23,255, 255,255,255,255,
255,255,255,255
71 TINT0,0
75 COLOUR4,0,0,0
80 COLOUR 1
90 PRINT CHR$255
100 COLOUR 63
110 PRINT'?start%
  
```

We have selected COLOUR 4 but the value peeked from the screen is 35 and not 4 as you might expect. Insert the following line:

```
75 COLOUR 4,0,0,0
```

The 4 in the above line is the palette

register index, not the Basic colour. All the extended COLOUR statement does is to switch off the three bits of red, two bits of green and three bits of blue (total eight bits) going to the video hardware.

The remaining four bits (making up the 12-bit colour) come from bits 4-7 of the byte value on the screen and can't be controlled. In our above example, 35 is %0010 0011 in binary. So the settings of palette register %0011=3 along with a green bit (because bit 5=1) provide the actual 12-bit colour you see.

Now change line 80 to COLOUR 1 and re-run the program. The square is dark pink and the value peeked from the screen is 7. But we said that the platforms in Manic Mole were printed in COLOUR 1 and appeared invisible (black). Confusing or what?

Well, we have one last thing to get our heads round and that's the Basic keyword called TINT. It takes two parameters and allows Basic get more than it's 64 colours.

Did I say 64 colours? But we are in a 256 colour mode, I hear you cry! Before we delve into the workings of TINT, go into MODE 13 and type in the following one-line program in immediate mode:

```
FOR X=0 TO 255:COLOUR X:PRINT"X";
NEXT
```

It prints 256 X's in successive colours. Look closely and you'll notice

Music writing with



In the introductory article on Philips Music Scribe (PMS) we learned the basics needed to typeset a simple one-stave score. This time we'll be concentrating on two-stave keyboard (piano) music.

Table 1 is repeated from last time in case you have forgotten how to represent note names, sharps and flats in Ascii. There is one additional entry in the table for semibreves which are just upper case letters, as for minims, but followed by the plus (+) symbol.

To tell PMS we want another line of music we just follow the data for stave 1 with the data for stave 2 as so:

```
[stave 1 ... ]
@..data for stave 1 (right hand)
[endstave]
[stave 2 ... ]
@..data for stave 2 (left hand)
[endstave]
```

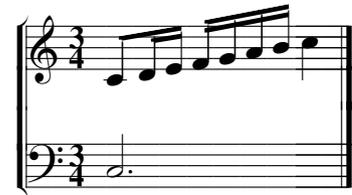
# \$	Sharp and flat
' (apostrophe)	Up one octave
C D E F G A B	Minims
` (grave)	Down one octave
c d e f g a b	Crotchets
c- d- ... a-	Quavers
c= d= ... b=	Semiquavers
	Bar line

Table 1

The @ symbol tells PMS that the line is a comment, it will ignore everything else up until you press Return. So, taking our C Major scale from the last article we can add a simple (and rather unimaginative) bass line:

```
[stave 1 treble 1 time 3/4]
c-d=e=; f=g=a=b=; c'|
```

```
[endstave]
[stave 2 bass 0 time 3/4]
C. |
[endstave]
```



[stave2] tells PMS it is the second stave

[bass 0] tells PMS we want to start in octave zero

[time 3/4] tells PMS the time signature is three crotchets per bar.

Additionally, the full stop after a note name makes it into a dotted note (half as long again). c. is a dotted minim C, d. a dotted crotchet D and so forth.

You can control things like the distance between the two staves and we'll discuss that later.

For now we will set an existing score in PMS. Once you are familiar with the PMS language you can progress to your own arrangements or compositions.

A word of caution here: make sure any material you are typesetting with PMS doesn't infringe copyright restrictions!

The example I've chosen is the first eight bars of the Minuet from Bach's Partita in B flat major - see Figure 1. For many years I heard this

In the Winter edition of *Drag 'N Drop* we got our sprites moving around the screen under keyboard or mouse control. In this article we look at maps.

A map refers to a grid of characters as though you were looking at a maze in plan view. The contents of each cell in the grid is stored in an array, or more precisely a *byte array*. Consider a very simple four by four maze as shown in figure 1.

The cells are numbered from zero to 15 going from top left to bottom right. We use one byte for each cell and this acts as an index of the sprite that appears in that cell. For example, 0=space, 1=brick wall, 2=diamond. Using this numbering scheme the contents of our byte array would be:

2,1,0,2,0,1,2,0,0,1,1,0,0,0,0,2

Incidentally there are various *byte packing* techniques which enable information about more than one cell to be stored one byte but at the expense of variety. We won't worry about that here.

To be easier on the eye and for succinctness the same data can be encoded into a string of letters. Starting with CHR\$64, @=space, A=wall, B=diamond etc. the maze data becomes:

BA@B@AB@@AA@@@@B

SPRITES

PART 5

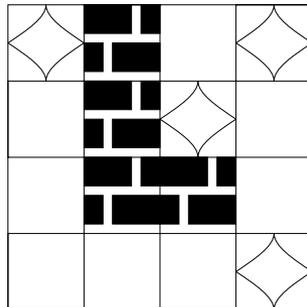


Figure 1 - a simple map

You only have to extract the letters

with MID\$, mask off the bottom few bits of its Ascii code and poke it into the byte array.

Once all the data is set up we need to plot each sprite on the screen. We could have an Y loop counting four rows down the grid and an X loop going across and calculate the screen address using last month's PROCsprite procedure.

But it's faster to store a *look-up* table of screen addresses for each cell. A single loop counts zero to 15, the loop counter itself retrieving the screen address from look-up table, the same loop counter *also* fetching the contents of the grid from the byte array, and then passing the results to the sprite plottig routine.

The screen address look-up table would be set up along with the map and sprite data at the start of the program.

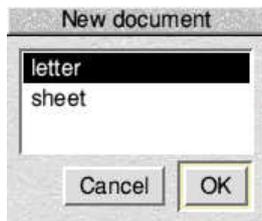
Notice I said just now that we assume each sprite is 20x20 pixels. If all sprites are the same size it makes the plotting routine much simpler. We don't need to store any information about the sprite dimensions and we

Fireworkz is a free software package for RISC OS. Actually it is two applications rolled into one – a spreadsheet and a word processor. In the first part of this beginner's series we look at the word processor.

It isn't as sophisticated as commercial products like EasiWriter but it's free and a very capable application for desktop publishing or, as it might be called these days, internet publishing.

If you don't already have a copy of Firworkz you can get it from <http://downloads.abacusline.me.uk/freeware/fireworkz/index.htm>. Follow the instructions to download and install the latest version 1.34/10.

Run Fireworkz in the usual way by double clicking on !Fireworkz to install it on the icon bar. Now select-click on the iconbar icon. You will be prompted to open either a Letter or a Sheet.



Sheets are for spreadsheet documents (results from experiments, accounts etc.), letters are DTP documents (leaflets, reports, books etc.) There could be a crossover between the two, of course, since you

might want to include part of a spreadsheet in your report. We'll come onto that later. For the time being we're going to be designing a simple poster so ensure Letter is

using fireworkz part 1

highlighted by select-clicking on it and click OK.

A window will open which looks like Figure 1. Try moving the pointer around - but don't click anywhere yet.

You'll see there is an information bar which gives helpful, brief details of what the icon or area underneath the pointer does e.g. "Ruler, Click here to place a new tab".

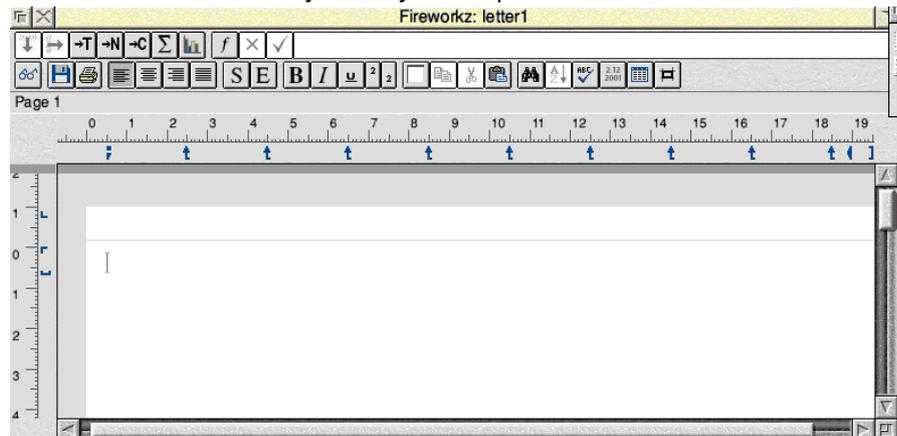


Figure 1. The Fireworkz 'letter' window

Not scans.

Over the past few years we've been busy putting together this astonishing collection of 55 BBC Micro and Electron programming books. Unlike any other collections on the 'net these aren't just scans packaged up in PDF format but very high quality digitally remastered and debugged editions – and you can run a lot of the Basic programs on modern machines like the Raspberry Pi!

The CD ROM contains all books in RISC OS Impression/Easiwriter format (complete with fonts, Drawfiles etc.), two types PDF (fonts 'mapped' to the standard Postscript set and 'Type 1') plus HTML (all platforms) together with program directory (RISC OS) and disc images for use on emulators (all platforms).

For the full list of books see below...don't miss out on this amazing compilation!

100 Programs for the BBC • 100 Programs for the Electron • 21 Games for the BBC • 21 Games for the Electron • 35 Educational Programs for the BBC Micro • 36 Challenging Games for the BBC Micro • 60 Programs for the BBC Micro • Advanced Basic Rom User Guide • Advanced Graphics on the BBC Micro • Advanced Machine Code Techniques • Advanced Programming for the BBC Micro • Advanced Programming Techniques for the BBC Micro • Advanced Programming Techniques for the Electron • Advanced User Guide for the Electron • The Basic ROM User Guide • Best of PCW Software • Brainteasers for the BBC and Electron • Creating Adventure Programs on the BBC Micro • Creative Animation and Graphics on the BBC Micro • Creative Assembler How To Write Arcade Games for the BBC and Electron • Creative Graphics on the BBC Micro B • Essential Maths on the BBC and Electron • BBC Micro Expert Guide • Games and Other Programs for the Electron • Games BBC Computers Play • The Electron Gamesmaster • Giant Book of Arcade Games • Graphic Art on the BBC and Electron • BBC Micro Graphics and Sound • Graphics on the BBC Microcomputer • Graphics Programming on the BBC • Graphito • Graphs and Charts on the BBC Micro B • Handbook of Procedures & Functions • How to Write Adventure Games on the BBC and Electron • Instant Arcade Games • Invaluable Utilities for the Electron • The BBC Micro Machine Code Portfolio • Making Music on the BBC Micro • Mastering Assembly Code • Microguide for the BBC • More Virgin Games for your BBC • BBC Micro Music Masterclass • PCW Games Collection for the BBC • Practical Programs for the Electron • BBC Micro Programs in Basic • Quality Programs for the BBC • The Second Book of Listings • The Super-User's BBC Micro Book • The BBC Micro Book • The BBC Micro Revealed • Acorn Electron User Guide • Virgin Games for your BBC • Writing Educational Programs on the BBC and Electron •

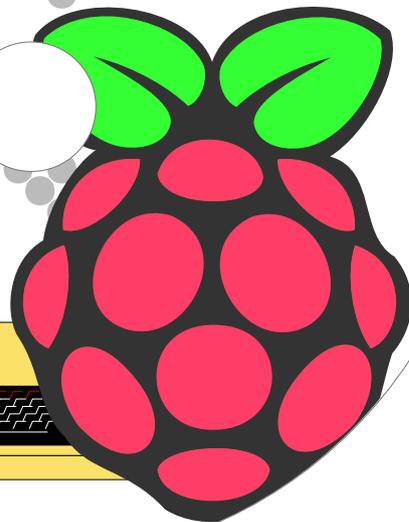
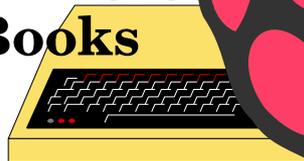
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55

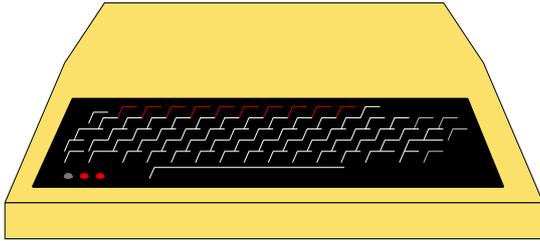
Wakefield
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BBC Micro Books



BBC MICRO



changes and selections and then sit back and watch the highlights from the game and hope you won. It was quite primitive for the time but it set the standard for the football management games; unfortunately the sequel didn't appear on the BBC.

finish within the time limit to qualify. It was a good version on the BBC too, although the rather over the top: sliding across the road at corners was unnecessary. But at least it had corners unlike *Overdrive!*

Games Retrospective **A&F**

Part 2: Conversions from Other Machines

The BBC Micro had many excellent original titles released for it and also a large number of games from other machines were converted to the BBC, some good, some not so good. So the second part of my BBC games retrospective is a look at those games and seeing how the well the BBC versions compared.

Addictive

They didn't release too many games for the BBC, apart from the excellent platformer *Boffin*, but there was one game which they released which is now a legendary title and that game is *Football Manager*. Written by Kevin Toms (and his beard) it was one of the first games to let you manage a football team rather than just play the game. You would make all your

I mentioned *Chuckie Egg* in the last article,

but it's worth mentioning again, as it was originally released first on the ZX Spectrum (I think) and then a BBC version followed a bit later on. The BBC version is regarded as the best version and having seen many of them now I think it is easily the best 8 bit version. The game did receive a sequel – *Chuckie Egg 2* – which sadly never appeared on the BBC. Luckily I managed to play it on a friend's ZX Spectrum and, whilst it was a good game, it didn't quite have the magic of the original game.

Atari

The BBC didn't have a massive amount of driving games released for it, but one that did make an appearance was a conversion of the arcade classic *Pole Position*. This was quite a basic racing game but was reasonably good fun: get to the

Bubble Bus Software

The only release from Bubble Bus Software for the BBC Micro was the massive platformer *Starquake*. Somehow I managed to miss this game when it was first released. Mind you, *Retro Gamer* miss most BBC releases so i'm not the only one who does.

There doesn't seem to be much to choose between the various versions, they look like standard platformers do on the respective machines. There is some nice music too and over 500 screens to explore.

Domark

One of the all time best vector graphics game was Atari's *Star Wars* and Domark were the company to bring it to the home computers. I loved the arcade game of *Star Wars* but would the BBC version be as good or massively disappointing? Well, it lost the speech and the iconic music but other than that this was a pretty decent version: shoot the Tie Fighters, fly over the deathstar surface destroying the towers, and

Community Contacts

Developers & Publishers

Please note: we list here developers supporting RISC OS 5.

Archive www.archivemag.co.uk

CJE Micros www.cjemicros.co.uk

Datawave www.datawave.nl

David Pilling Software
www.davidpilling.net/riscos.html

Electronic Font Foundry thefonts.com

MW Software www.mw-software.com

Orpheus Internet
www.orpheusinternet.co.uk

Organizer www.organizerpim.co.uk

PiLearn www.pilearn.com

R Comp www.rcomp.co.uk

RISC OS Code www.riscoscode.com

RISC OS Open Ltd
www.riscosopen.org

Webwonder/ProCad
www.zynet.co.uk/dsnell/Welcome.html

User Groups

HHRUG (Hemel Hempstead RISC OS user Group)
Area: Hemel Hempstead
Meets every 3rd Wednesday of the month
£3.50 per evening (£3.00 if paid 3 months in advance)
www.hhrug.org/

ICENI
Area: Ipswich
Meets every 1st Wednesday of the month
Visitors free for the first time
www.icenicomputerclub.org.uk

LAUG (Liverpool Acorn User Group)
Area: Liverpool
Meets every second Tuesday of the month
Free entry
www.orpheusweb.co.uk/bob.williams/laug/index.htm

ROUGOL (RISC OS User Group of London)
Area: London
Meets every third Monday of the month
Free entry
<http://rougol.jellybaby.net>

RONWUG (RISC OS North West User Group)
Area: North West
Meets 3rd Weds every month
Free admission
www.ronwug.org

SASAUG (Surrey and Sussex Acorn Users Group)
Area: Surrey and Sussex
Meets every second Monday of the month
£1.50 per meeting for members
www.sasaug.org.uk

WROCC (Wakefield RISCOS Computer Club)
Area: Wakefield
Meets First Wednesday of the month
£2 for non members
www.wrocc.org.uk/



Are your RISC OS club details up to date? If not please let us know!

RISC OS 'YOUR COMPUTER NEEDS YOU'

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CD'12



We are looking for people to write articles. Have you written a program for your RISC OS 5 computer? Do you have hints and tips to share on using apps? Maybe you have found a gadget

which works with your machine or just a short story about what you do with your computer. We want to hear from you! Email your articles to submissions@dragdrop.co.uk today.