DRAG'NDROP

Volume 11 Issue 4
Summer 2022
£4.25

RISC OS **Pi** and all RISC OS 5 machines

Window Furniture

Apps
Scribble
ClickDir

8-Bit
Fuse
Spectrum–BBC Basic

Freeware Survey

RISC OZ

DRAG 'N DROP

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Produced on RISC OS computers

This issue has been blessed with contributions from the following people:
Norman Lawrence (Schema2)
Brian K Charradia (Risc OZ)
Christopher Dewhurst (everything else)

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The front cover of this magazine was inspired by 'Isometric People' at www.freepik.com

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Editorial

Not much room here, there's such a lot of content – the way it should be! Thanks to everyone who's contributed and do please keep ideas and articles coming. Hope you're keeping cool in the temperatures, remember RISC OS is and always has been ahead of climate change because RISC OS computers use very little power !

Chris.

Editorial 2
Beginner's Page and Wimp Library 4
News and App Updates 5
Window furniture 8
Freeware Survey 13
Scribble Pad.....16
3D Pingo Review 19
Fuse ZX Spectrum Emulator 20
Spectrum to BBC Basic 23
RISC OZ 27
PHP Programming 29
ClickDir 32
Schema2 34
Volume 1-11 Index 36

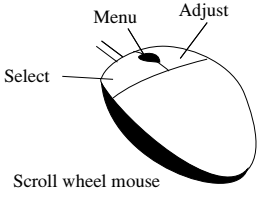
How do I get the BBC Basic prompt?

Press F12 and type *BASIC and press Return. You can change the screen mode with MODE n where n is a number e.g. MODE 7 or MODE 0. Type AUTO for automatic line numbering. Press Escape to stop and type SAVE "myprog" followed by Return to store *myprog* on hard disc. To return to the desktop type *QUIT.

Programs listed in *Drag 'N Drop* are assumed to work on all machines with RISC OS 5 e.g. Raspberry Pi, unless otherwise stated.

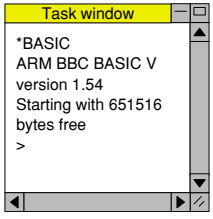
How do I open a Task window?

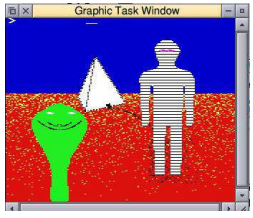
Menu click over the Raspberry icon on the right side of the iconbar and select click on Task window. Or press Ctrl+F12.



You may need to reserve more memory for the task. Adjust-click on the Raspberry icon and under *Application tasks* click and drag the *Next* slide bar out to the right.

You can also type programs in a *task window*, press Ctrl and F12. You can't use the cursor editing facility





or change MODE so you might like GraphTask from armclub.org.uk/free/. It allows you to type in and run Basic programs that use simple graphics (not sprites) in a window on the desktop.

To run Basic programs from the desktop, double-clicking with select on the filer icon runs it. Holding down Shift and double clicking loads it into a text editor like !Edit.

What does 'currently selected directory' mean?

Articles may tell you to set the CSD (currently selected directory). Click menu over filer window and choose *Set directory ^W*. It's where the computer stores the file when you type SAVE "myprog".

How do I open an Applcation Directory?

Application directories begin with a ! called 'pling'. Hold down the shift key and double click select to open the directory. The main !Boot file is an application directory.

Blank screen when running games listings

Check you have the Anymode module installed, download it from www.pi-star.co.uk/anymode. It goes in !Boot.Choices.Boot. Predesk.

Open the !Boot application directory, in the root directory of the SD Card, that is SDFS::RISCOSPi. $.!Boot. Locate the *Loader* file and with Shift held down double click it to open it. Create a text file in Edit with the following line (press Return at the end):

```
disable_mode_changes
```

Save it inside Loader as CMDLINE/TXT and restart your machine.

'Screen mode not available'

Check you have Anymode (see above). Aemulor can interfere, menu over iconbar > Quit > Emulator too.

Sounds are strange

Some listings need the free RDSP module installed. Download it from www.amcog-games.co.uk/rdsp.htm where you'll find instructions on how to install it.

WIMP library

Many programs in *Drag 'N Drop* are multi-tasking (running in a window on the desktop). They use a set of standard procedures to create and deal with windows, icons and menus.

Rather than publish them with every listing they are collected here. They're taken from *The Application Tutorial and Listings Book* available from Drag 'N Drop Publications. If you're interested in writing desktop applications then you should consider buying this book.

```
DEF PROCREDRAW
SYS "Wimp_RedrawWindow",,B TO I
XO=B!4 - B!20 : YO=B!16 - B!24
WHILE I
PROCPLOT
SYS "Wimp_GetRectangle",,B TO I
ENDWHILE
ENDPROC
```

Redraws window for user graphics (bit 4 of window flags set), PROCPLOT is a procedure custom to the app.

```
DEF PROCMKMENU(A)
READ $T
FOR I=0 TO 24 STEP 4
READ A$ : I!A=EVAL A$
NEXT : T+= LEN $T+1
ENDPROC
```

DATA line before this is called with menu header details. Sets up menu header at memory address A.

```
DEF PROCMKENTRY(W,X,Y,H,F,A$,V)
$U=A$
RESTORE+1
DATA Y,H,F,U,V,LEN $U
FOR I=0 TO 20 STEP 4
READ B$
I!(W+X) = EVAL B$
NEXT : U+= LEN $U + 1
ENDPROC
```

Basic DATA line before this is called giving menu item details. W=header address, X=offset (multiple of 24), Y=work flags, H=submenu pointer (–1 if none). F, A$ and V as for PROCMKICON. Add entry for menu already set up.

```
DEF FNMKWINDOW
READ $T,X,Y,W,H
FOR I=0 TO 84 STEP 4
READ A$
I!B=EVALA$
NEXT
T+= LEN $T+1
SYS "Wimp_CreateWindow",,B TO X
=X
```

DATA line with window title, position, size, colours, flags comes before this is called. Make a window returning handle in X. Memory blocks T and B must have been set up.

```
DEF PROCMKICON(H,X,Y,W,D,F,A$,V)
$U=A$ : RESTORE +1
DATA H,X,Y,X+W,Y+D,F, U,V,LEN A$+1
FOR I=0 TO 32 STEP 4
READ B$ : I!B = EVAL B$
NEXT : U+= LEN A$+1
SYS "Wimp_CreateIcon",,B TO I
ENDPROC
```

Make an icon, handle is returned in I. H=window handle, X,Y=bottom left, W,D=dimensions, F=flags, A$=text and V validation string (1 if none)

```
DEF PROCRDICON(W,H)
!B=W : B!4=H
SYS "Wimp_GetIconState",,B
A$=$(B!28) : X = B!24
ENDPROC
```

Read icon W in window H text in A$ and flags in X.

```
DEF PROCWRICONT(W,H,B$)
PROCRDICON(W,H)
B!8=0 : B!12=0
$(B!28)=B$
SYS "Wimp_SetIconState",,B
ENDPROC
```

Updates text B$ in icon H in window W.

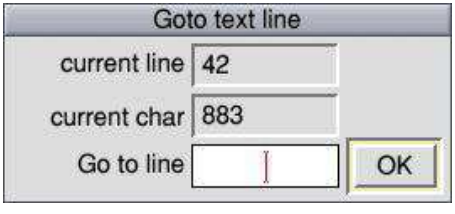
```
DEF PROCWRICONF(W,H,X,Y)
!B=W : B!4=H : B!8=X : B!12=Y
SYS "Wimp_SetIconState",,B
ENDPROC
```

Updates icon W's flag in Window H, X is the EOR word and Y the clear word, ie flag = (flag AND NOT X) EOR Y.

News and Application Updates

Drag 'N Drop Listings

As you may have noticed we now don't publish line numbers in listings. This is because (a) they take up room and (b) languages like BBC Basic V don't need them (as long as they're written in a structured way.) All lines begin with a space so you can distinguish between the start and continuation of a lnie. One disadvantage of this is that it's not easy to refer to program lines. Don't forget though that in Edit you can press F5. BBC Basic line numbers are usually multiples of 10 so just take a zero off the end for the number to type in to the 'Go to line' field.



Of course, for an extra £1.25 you can buy *Drag 'N Drop* with listings ready typed in!

RISC OS London 2022

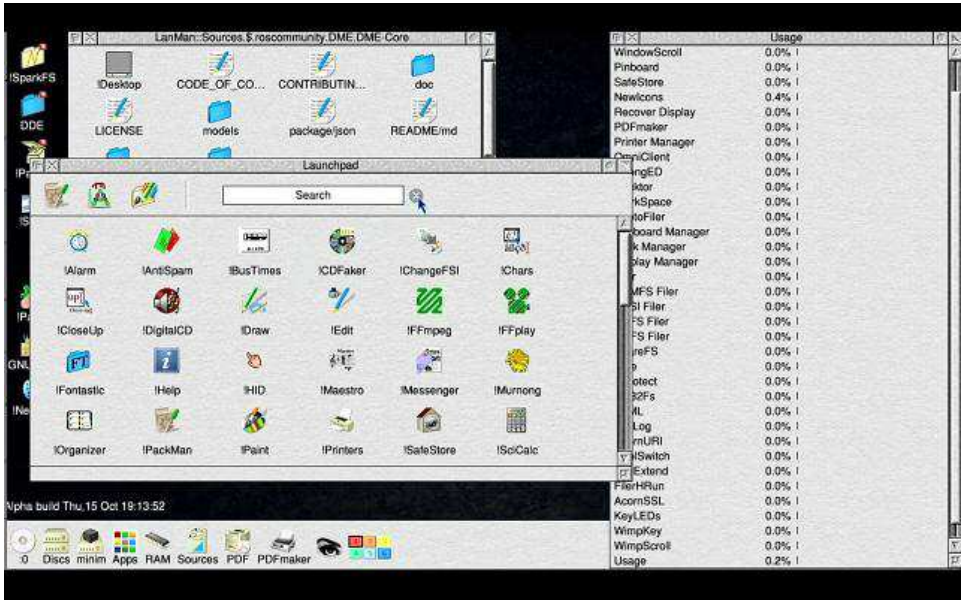
The show will take place on Saturday 29th October with a £5 entrance fee. Due to temporary closure of the St Giles Hotel in Feltham a new venue is being sought. Keep an eye on riscoslondonshow.co.uk for updated information. (How about lovely Guildford like the old days, guys?)

Arthur's 35th

June 2022 marks 35 years since the Archimedes micro came out, at the time the world's fastest desktop computer thanks to its new ARM chip nowadays powering millions of mobile phones. Arthur was the name of the operating system for a couple of years before RISC OS came out. Described by some as the Technicolor Desktop you can party like it's 1987 with our article on desktop furniture on page 8 of this magazine.

Launchpad

RISC OS developer Paolo Fabio Zaino has been developing a replacement for the Apps (Resource Filer) folder, the one on the left



hand side of the iconbar which has remaine largely unaltered for 30 years. The newer Launchpad will include an interactive search for apps on the local machine and internet, keyboard shortcuts to quickly start up apps and generally provide the an option to get the look and feel of other modern OSs like Windows.

We haven't been able to find a demo download but you can watch the short videos on YouTube.

YouTube on RISC OS is a pain in the butt at the moment to say the least since several applications have to be invoked and then the most reliable way of watching a video is to download and not stream it. The last video was posted eight months ago so we're not certain of the Paolo's latest progress.

Iris 1.020

The latest version of the web browser was released earlier this year. Click on the OBrowser/Iris Updates link on Iris's homepage. If you haven't yet purchased Iris it costs £49.99 (plus optional donation) from !Store.

RISC OS Mug Zone

Following the rather experimental Midland User Group Zoom show in July, you can now tune into MUG's own channel on YouTube, the RISC OS Mug Zone which starts with recordings of talks given at the show.

BBC Basic Compiler

ABC (Arm Basic Compiler) will compile Basic programs to machine code and it can now output Vector Floating Point (VFP) instructions. VFP is a dedicated part of modern ARM chips which handles Floating Point Arithmetic (FPA), in essence meaning all that maths with complicated decimal numbers, trigonometry and logarithms can be calculated much faster.

ABC version 5.00 is part of the Desktop Development Environment available from RISC OS Open for £50.00. Visit riscosopen.org/content/sales/dde for further details.

SQLite 3.39

SQLite is a slimliner version of SQL, a programming language developed in the 1970s for manipulating data held in database. Version 3.39 of the RISC OS port can be downloaded direct from toralar.net/riscos/sqlite-b2.zip.

Dr2SVG 1.19

Most images on the internet are in bitmap format (JPEG, PNG etc); less well know is SVG, a scalable graphics mark-up language rendering Draw-quality pictures regardless of which computer operating system you use to browse the web.

It's now possible to convert RISC OS Drawfiles to SVG using Clive Semmens's Dr2SVG utility, very useful for webpage development. Go to clive.semmens.org.uk/RISCOS/XP1Dr2SVG.html.

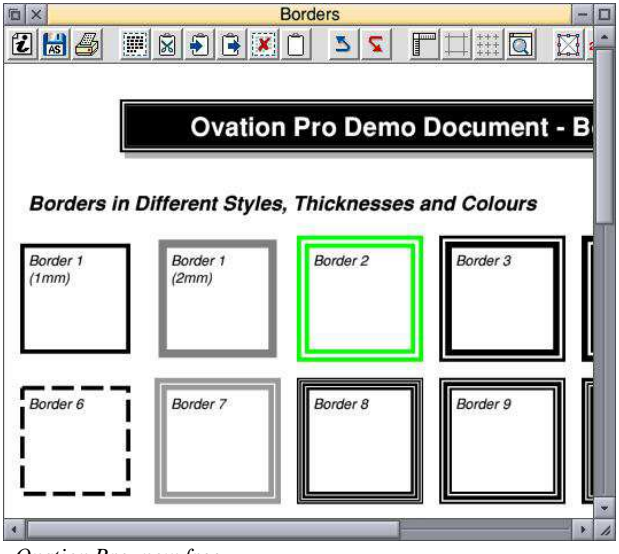
MiniTime 1.10

MiniTime displays the current date and time on the iconbar and also has a calendar option. If you don't like the algae-clogged look then the colour scheme is highly configurable along with the date format and icon and window style.

Download it from stronged.iconbar.com/fjg/index.html.

ovationpro/opr.html and then 'freshen' it with the application from davidpilling.com/ovationpro/upgrade/op278g.zip to get the fully functioning desktop publishing package.

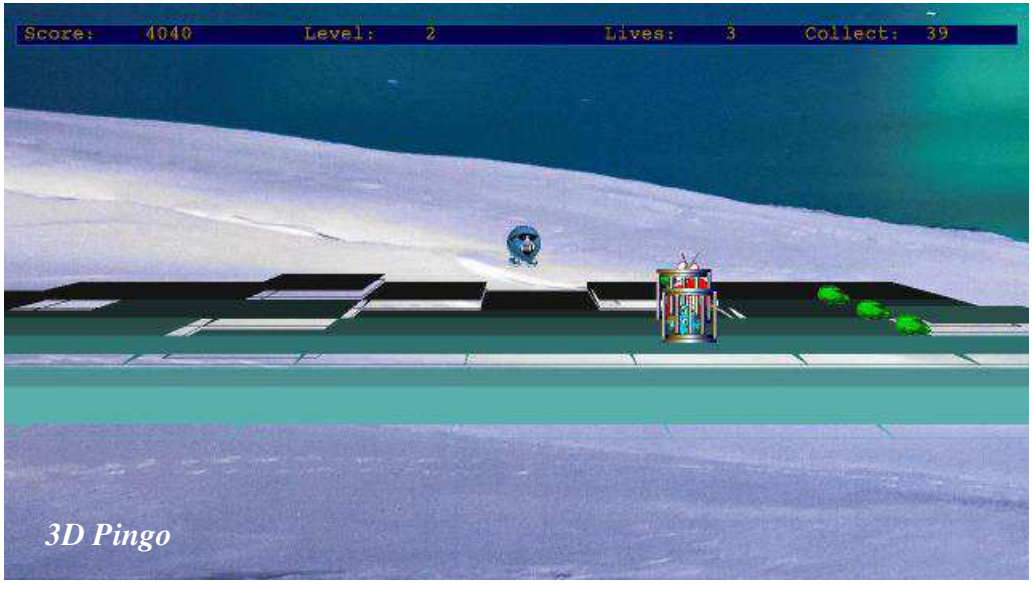
For the time being it runs happily on Pi machines but we think that the author David Pilling is concentrating on maintaining the Windows version of OPro only. So there may be hardware compatibility issues in the future.



Ovation Pro, now free

3D Pingo

Recently released by AMCOG is a three-dimensional platform game that sees a smiling rotund character travelling round a three dimensional landscape collecting rocks and avoiding all the usual nasties. Full review on page 19.



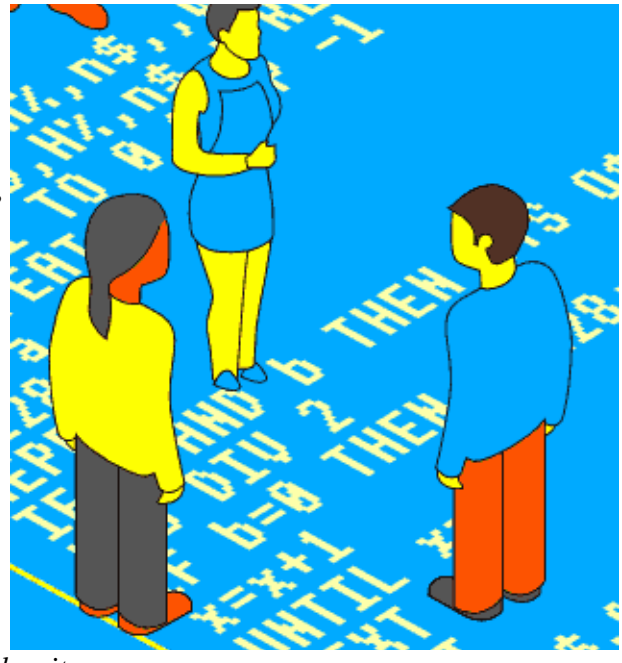
3D Pingo

Ovation Pro 2.78g – Free

News just in is that Ovation Pro, a RISC OS desktop publishing package previously retailing for over £150, is now completely free. Simply download the demo version of OPro from davidpilling.com/

The icons

which surround the edges of RISC OS windows control the size and positioning of the window, both across and down the desktop (two dimensions) and its position in the stack (the third dimension, as it were). Scroll bars allow the user to adjust which part of the larger workspace they're seeing. Applications will have all, some or none of this window furniture.



Technically speaking, the sprites which constitute the window furniture are called the *toolsprites*.

RISC OS allows you to customise the toolsprites to a fair degree and the design of the built-in suite has changed over the years to reflect passing fashions.

Before embarking on designing a shiny new set of toolsprites we need to take in some basic information.

The original 1980s Archimedes toolsprites were of a simple design and they still exist in the Boot file of your machine.

Hold down the Shift key and double click on the !Boot file in your root directory (for example 16GbPi). Open the Resources.Configure file and you should see the 2DTools file.

If you don't have a 2DTools file, Program 1 will create the set from scratch.

We're going to be playing with this file so make a copy of 2DTools by dragging it to somewhere suitable on your hard disc. For example I've put it in a directory called Toolsprites.

If you are using Program 1 then ignore the next two paragraphs.

Open 2DTools in Paint by double clicking. Resize the window so that you get four sprites across the window (so your first row is bicon, bicon0, bicon22, bicon23).

These are the original toolsprites as used by early versions of RISC OS and you will see there are 10 of them with four versions, the purpose of which was originally to cope with different desktop modes.

We only need one set of 10, the one for Mode 0. We'll discuss the meanings of the sprite names in a minute. Delete the sprites not required, the ones with names ending in 1, 22 and 23, leaving the ones ending in 0. Rename the sprites by removing the 0 from the end.

Either way you should have a sprite file consisting of 10 sprites – bicon, ticon, ticon1, sicon, uicon, dicon, ricon, licon, cicon and blicon – as illustrated on the next page.

These 10 sprites are the minimum toolsprites. We'll come to the meaning of these names (and also the significance of their dimensions) in a minute.

Program 1

```
REM Make Essential Toolsprites
REM (c)Drag N Drop April 2022
DIM H% 2000:!H%=2000:H%!8=&10
O$="OS_SpriteOp"
SYS O$,&109,H%
REPEAT
READ n$
IF n$<>"" PROCdefine
UNTIL n$=""
```

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RISC OS Freeware 2022 Survey

This is a summary of the most useful, free software for RISC OS in 2022, additional to the software bundled with the RISC OS Pi SD Card from RISC OS Open. Software usually comes in Archive (Zip) format, you'll need SparkFS to open it. SparkFS comes bundled with the Pi distribution of RISC OS in the Utilities directory. If you use a non-RISC OS machine to connect to the internet and transfer software to your Pi you may need to set the file type to &A91 (Zip). All websites shown can be currently reached with Netsurf. Applications which haven't received an update for a while will require Aemulor to run on the Pi. Others are cut-down versions of commercial software (for example Fireworkz) worth looking at purchasing if you make extensive use of it.

Product	Category	Website	Date	Notes
Aemulor	Emulators	sendiri.co.uk/aemulor/index.html	Feb-20	Run older software on Raspberry Pi. Ensure you download the right version for your machine.
Anymode	Graphics	www.pi-star.co.uk/anymode/	Mar-14	Relocatable Module which makes "old school" modes available on Pi
ArchiEmu	Emulators	tellima.nl/riscos/archi.zip	Jun-18	Archimedes 'A' series machines emulator. NB links broken on this site, needs riscos inserting between tellima.nl/ something.zip -> tellima.nl/riscos/something.zip
Avalanche	Networking	effarig.co.uk/riscos/	Jun-21	VNC (Virtual Network Client) server, see RISC OS screen on other devices eg iPad.
BeebEm	Emulators	riscosports.co.uk/emulation.html		BBC Micro emulator. Master and BBC B. Currently doesn't work on Pi.
BeebIt	Emulators	mjfoot.netlify.app/bbc.htm	Nov-20	BBC Micro emulator. Master and BBC B.
CDFaker	Filing	forums.jaspp.org.uk/forum/ viewtopic.php?t=394	Feb-18	Allows CD images (.ISO files) to be accessed like normal CDs by clicking on Iconbar CD icon
DigitalCD	Music	riscos-digitalcd.net/digitalcd/player/ intro.htm	Sep-21	Desktop sound file player, MP3 and more formats
DPlngScan	Graphics	Available through !Store	Apr-16	Image processing, download includes D2Font (converts Drawfiles to fonts) and Trace (turns bitmaps into vectors)
DrawPlus	Graphics	users.on.net/~belles/software/openvector/	Jul-15	Enhanced version of built-in Draw
DrawWorks	Graphics	archive.org/details/dworks-xl-458	May-00	Enhancements to Draw. DrawWorks, DW New Millennium (needs Aemulor) and DWXL (runs natively), in Zip or CD rom (ISO) format (use CD faker). Some tools don't work on Pi eg colour picker. *unset dwd$dir if Pi complains loaded.
Fat32FS	Filing	sites.google.com/site/jeffreyadoggett/	Feb-22	Access to Fat32 formatted media over 2GB

Fireworkz	Spreadsheet	croftnuisk.co.uk/coltsoft/	Oct-21	Spreadsheet. Windows version also available. Limited TSV/ CSV support but can export Draw
FTPC	Networking	www.ftpc.iconbar.com/	Dec-11	File Transfer Protocol (FTP) uploading files to websites
Fuse	Emulation	riscoscloverleaf.com/ download-sinclair-zx-spectrum-emulator/	Dec-20	ZX Spectrum emulator
Graphtask	Graphics	armclub.org.uk/free/	Jan-21	Run most programs in a task window, useful for accessing modes with less than 256 colours on RPi.
GhostScript 8	Printing	mw-software.com/software/ghostscript/ghostscript.html	Apr-17	GhostScript 8.54, most reliable version shipped with RISC OS open distros
GhostScript 9	Printing	www.riscosports.co.uk/downloads.html	Jun-20	GhostScript 9.26, note 8.54 is more reliable
HTTP-Server	Networking	thomas-milius-stade.dnshome.de/English/ Computer/index.htm	Mar-22	HTTP server similar to WebJames. Useful for trying out PHP scripts, CGI etc.
Impression	DTP	Available on !Store	Oct-19	Comprehensive DTP, needs Aemulor
InfoZip	Filing	www.starfighter.acornarcade.com/ mysite/utilities.htm	Jul-12	Zip file archiver and dearchiver
InterGif	Graphics	www.mw-software.com/software/		
		freeware.html	Jul-13	GIF file creator including animated
Netsurf	Networking	www.netsurf-browser.org/downloads/riscos/	May-20	Fast compact browser, 4MB download, but limited access to most websites.
Otter	Networking	www.riscosports.co.uk/vfp/	Aug-20	Web browser. Needs Pi 3 at least for speed
Ovation	DTP	archive.org/details/ ovation-155-rm-20160723	Jul-16	Desktop publisher. Less features than Impression but runs natively on Pi.
Packman	Filing	sites.google.com/site/alansriscosstuff/		
		packman	Feb-21	Package manager, required to download some software eg Python 3
PatchSWP	Utility	tellima.nl/riscos/rpi3patch.zip	Jul-18	Patches the SWP instruction (deprecated in later ARM chips) to get software running eg ttf2f
Pipedream	Spreadsheet	croftnuisk.co.uk/coltsoft/	Oct-21	Spreadsheet. CSV and TSV import, manuals, tutorials, Lotus 123 converter
Plingstore	Utility	www.plingstore.org.uk/	Jul-20	Written as "!Store" pronounced "PlingStore" Access to free and commercial software, managed by R-Comp
PHP	Programming	www.cp15.org/php/	May-07	Stand-alone PHP interpreter. NB Do not run this before downloading WebJames and copy over the !PHP.php file
PMS	Music	Available on !Store	Jul-15	Professional music typesetting from text markup files
Pluto	Email	sourceforge.net/projects/plutoemail/ files/pluto/pluto318.zip	Oct-20	Email client, also available from !Store. Note RISC OS email apps don't work out of the box, they need a 'Transport'

				app like PopStar. Main Pluto website at www.avisoft.f9.co.uk/pluto/index.htm
PopStar	Email	www.heenan.me.uk/acorn/	Feb-03	Transport' necessary to make Email apps work. Needs a lot of messing around to get it working as there's no one place with completely updated version
PrintPDF	Printing	www.stevefryatt.org.uk/risc-os/printpdf	Jul-20	Create PDF files from any app which has a printing option, needs Ghostscript
Python	Programming	Available on !PackMan		Version 3 of the popular programming language
QupZilla	Networking	www.riscosports.co.uk/vfp/	Jul-20	Web browser. Large download. Needs Pi 3 at least for speed. Not very reliable or useful in our opinion!
SamplEd	Music	www.reallysmall.co.uk/Pages/categories/riscos/sound/sampleed.php	Dec-12	Sample editor, convert between sound formats
Schema2	Spreadsheet	starfighter.acornarcade.com/mysite/apdl.html		Feb-21 Spreadsheet with macro and graph drawing capabilities. Download converters and tutorials
StrongEd	Text editing	stronged.iconbar.com/		Comprehensive text editor with advanced features e.g. disassembly.
TapirMail	Email	flypig.co.uk/tapirmail/download.htm	Jan-15	Email client. Note RISC OS email apps don't work out of the box, they need a 'Transport' app like PopStar
ttf2f	Fonts	netsurf-browser.org/projects/ttf2f/	Aug-21	Windows True Type Font (TTF) to RISC OS font converter.
Variations	Graphics	compo.iconbar.com/variation.htm		Image processor
Vector	Graphics	users.on.net/~belles/software/openvector/	Dec-07	Enhancements to built-in Draw
WebJames	Networking	www.cp15.org/webjames	May-07	Old version of application needed to upgrade with files from riscosports (see below).
		https://www.riscosports.co.uk/vfp/WebJames.zip	Oct-16	HTTP server with PHP interpreter. Download and extract webjames-0/48-php-2/23/zip from the cp15 website then copy the contents from the riscosports website. Use the direct link and do NOT navigate to the downloads page of riscosports. Type 127.0.0.1 in your web browser to get onto the local 'werbsite'. See also HTTP-Server.
Zap	Text editing	Available on !Store		Text editor

Scribble Pad is

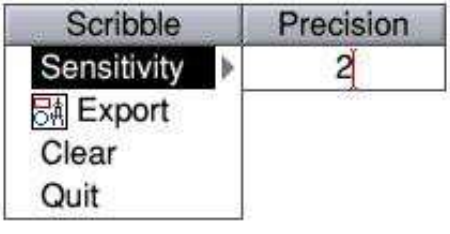
is a simple desktop application that I wrote when I needed to sign my name on an electronic document.

It allows you to draw freehand with the mouse and export the result to Draw. It can be used for signatures, doodles or even creating diagrams. You can then use Draw's facilities to increase the line thickness, colour, scaling and so on.

Type in the application which is written in BBC Basic. Ensuring there are no errors, double click to run and all being well a scribbly shape appears on the icon bar and small window opens.

Click the select button anywhere in the window to start drawing. Click again to stop drawing, which is like lifting the pen up, to move to a different part of the paper.

When you are finished, press Menu and choose Export and after a short delay your work opens in a Draw.



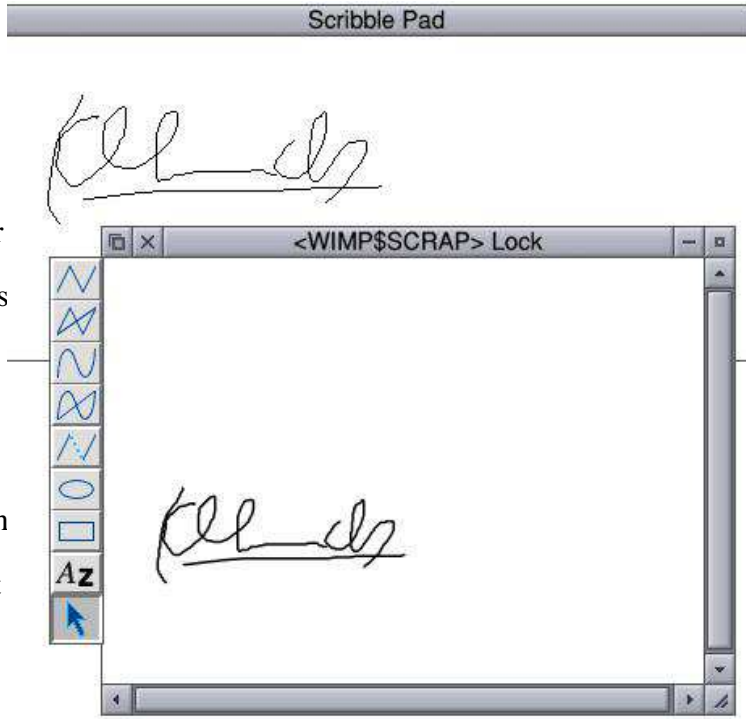
There are three other options on the menu. Sensitivity is a number zero to nine and controls how often the computer samples your mouse. A lower figure produces more accurate results but if you have a wobbly hand a higher value might be more suitable.

Don't forget you can also alter the mouse speed through your machine's configuration (!Boot > Mouse > Mouse speed).

Clear wipes the scribble pad so you can start a new doodle. There's a storage limit currently set to 1000 co-ordinates, which enough for a signature or simple doodles. If you exceed this an error window pops up and no more drawing will be allowed. However, you can easily adjust this in the program by increasing the value of MP in line 35.

To exit the application choose Quit from the menu.

Plenty of improvements could be made to the application. Currently it uses Basic's DRAW statement which permits only thin lines. Whilst you can alter the thickness later in Draw it would be nicer to let the user choose the pen nib thickness in the Scribble itself. You'd have to work out the gradient between co-ordinates and plot a circle (or other shaped) sprite at intervals along the gradient. Equally useful might be an option to import a sprite and display it in the



Product: 3D Pingo
Supplier: AMCOG Games, available through !Store
Price: £9.99

In this latest offering from AMCOG games you control a spherical character with feet and sunglasses around platforms on a 3D landscape collecting crystals all the while avoiding creatures that wander around at will.

The sprites are cute and reasonably well designed and the game is accompanied by the high quality original compositions we are used to from AMCOG.

It took me a while to get used to the 3D perspective. Your view of the world is almost horizontal (slightly off the ground as it were) so it's like very nearly (but not quite) seeing the platforms edge-on.

This makes the gaps in platforms quite hard to see. The tiles are graded black to light blue and are quite subtle against a background of a blue mountainscape at sunset.

Different levels (you don't have to complete level 1 before trying out the others) have different pictures as the backdrop.

There are stairs between platforms at different heights and you can walk up and down by keeping your finger on one of the four direction keys. Part of the challenge is to beware of gaps where you have to use the jump key to cross onto the next platform.

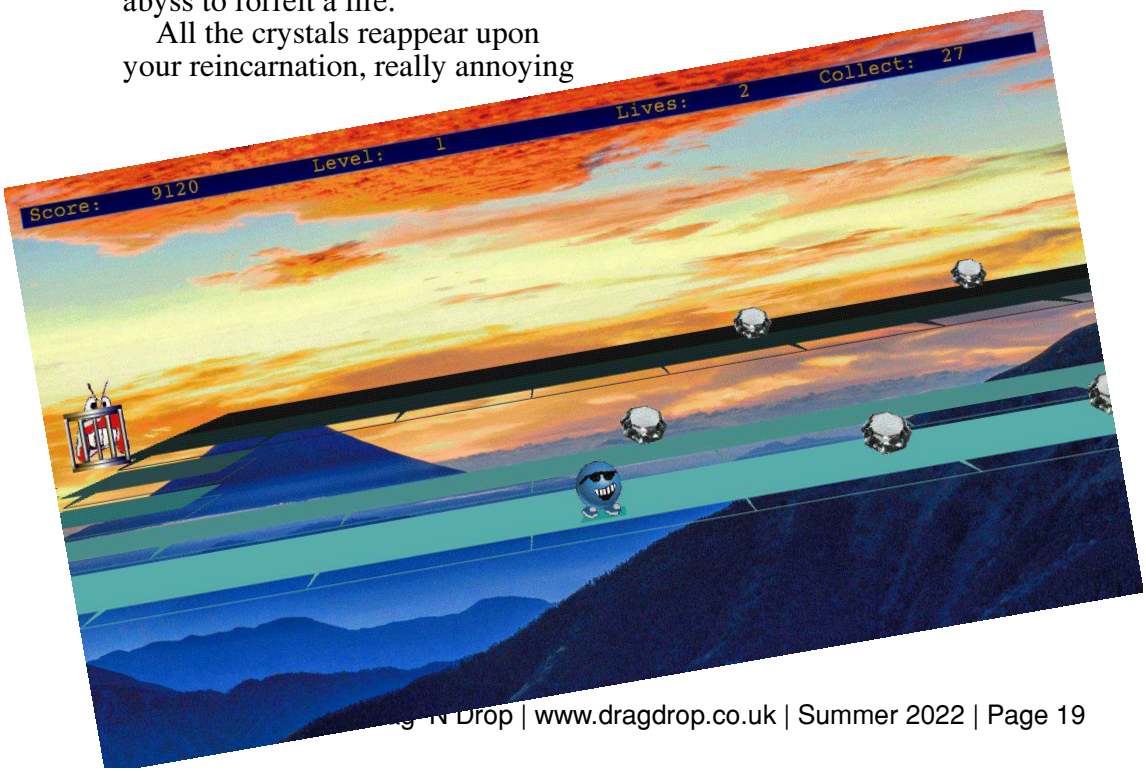
It's quite tricky to get your position right to pick up a rock, which look like diamonds on level 1 but on later screens I think are supposed to be emeralds or rubies.

One misjudged move and you go tumbling off the 3D world into the abyss to forfeit a life.

All the crystals reappear upon your reincarnation, really annoying if you've picked them all up then get killed by a monster making your way to the exit door!

One nice touch to the graphics is that the further your spherical blob gets away from the bottom of the screen the smaller it becomes which adds to the realism.

I liked the characters in 3D Pingo, especially the cool looking player sprite with sunglasses and a big smile on his face.



Fuse is an

application which emulates the Sinclair ZX Spectrum series of 8-bit machines.

The RISC OS port can be downloaded from cloverleaf.com/download-sinclair-zx-spectrum-emulator/.

It comes as Zip (archive) file, normally opened automatically by SparkFS.You'll find the Fuse app inside Apps.Emulators within the Zip file.

I have a directory on my Pi called Emulators where among other things I keep the BBC emulator !BeebIt, so a sensible place to install Fuse was in this same directory to mirror the directory structure in the Zip file.

Of course, you can drag !Fuse to wherever you want to install it, which is one of the great freedoms about RISC OS.

I wanted to try out some Spectrum Basic programming but I was at a loss as to how to do anything after I'd double clicked !Fuse.

There's just this window with a grey backcloth saying (c) 1982 Sinclair Research at the bottom, so then what?! This is not a good example of software development!

Some technical documentation is supplied inside the !Fuse application directory but, astonishingly, there aren't any user-level instructions. Not even on the internet (Fuse has been ported to other platforms).

So what I've documented here was found by trial and error. The example program came from the ZX Spectrum Plus User Guide by Neil Ardley at manualslib.com/manual/1171340/Sinclair-Zx-SpectrumPlus.html.

Navigation around Fuse is, rather awkwardly, by keyboard only. There isn't any nice RISC OS pointing and clicking on icons and menus.

You use the cursor keys and press Return to navigate the menus or use the shortcuts by holding down Ctrl and tapping the letter highlighted in blue (no Return needed). Escape cancels and returns you to the previous menu, space toggles options with green tick boxes.

Make sure the window title "Fuse – 100%" is highlighted. Click the pointer in the window if it isn't. Press F1 on the keyboard to call up the main menu.

Type Ctrl+M to get to the machine menu and Ctrl+S for a list of Spectrums to emulate. Choose option E, Spectrum+2.

Wait for the 'machine' to start up and you will see a menu headed up "128" with Tape Loader, 128 BASIC, Calculator and 48 BASIC on it.

Press the down arrow to get to 128 BASIC and press Return. You'll see a blank grey screen with a black line with 128 BASIC on it at the bottom and a flashing block at the top. At any time you can call up the main menu with F1 or a Basic options menu with Shift+F1.

Before doing any programming it is necessary to set up a blank 'tape'. Press F1 > Media > Tape > Write. The list of files shown is the RISC OS currently selected directory, you

The Sinclair

ZX Spectrum was a popular home micro of the 1980s and, like the BBC micro, enjoys an extended life today in the form of emulators for modern computers.

Fuse is a RISC OS Spectrum emulator and more details can be found in the article Getting Started with Fuse ZX Spectrum Emulator elsewhere in this issue of *Drag 'N Drop*.

The Spectrum has a dialect of Basic similar to BBC Basic but there are important differences, mainly concerning how graphics are displayed.

This article is a short Spectrum-to-BBC Basic reference guide and in the next article we'll draw on this to conver a couple of small games listings, the sort that appeared in the type-in books of the era.

Screen Mode

Unlike the BBC with its eight screen MODEs (more on RISC OS) the Spectrum has just one mode and it's smaller than the BBC micro display, measuring 32 × 22 characters. The character set is 8×8 pixels making for a 256 × 176 pixel display with two extra lines underneath not available for graphics but used by the Spectrum to give system messages.

The closest BBC Modes to the Spectrum screen are Mode 1 or Mode 4 because they are the same resolution. Mode 1 is the usual choice for BBC versions of Spectrum games. The Spectrum has 22 lines of characters and Mode 1 32 lines so there are 10 spare at the bottom.

So there's a lot of blank space and for a neat display you should set up a text window with VDU 28,4,23,35,4 at the beginning of your converted program.

Colours

The Spectrum is capable of displaying the same palette of eight colours as the BBC – red, blue, green, yellow, magenta, cyan (plus black and white). There are only four colours in Mode 1 so a compromise is always needed, reducing the eight to some combination of four using VDU 19.

This isn't an issue if you use Mode 9 on RISC OS which offers the full compliment of colours.

GraphTask is recommended as opposed to running games single tasking because on the Pi all screen modes are 256 colour modes. That may seem like a bonus but causes difficulty getting the right colours for 8-bit games.

LET

This can be omitted entirely on the BBC, so statements like LET mis=20 become just mis=20.

PRINT AT y,x

BBC Basic: PRINT TAB(x,y)

On its own PRINT is the same on both machines, when used with AT its the equivalent of TAB but with the coordinates switched. In Spectrum Basic you specify row then column, it's column then row in BBC Basic.

The trailing semicolon on the Spectrum is always needed but optional on the BBC unless you want to stop the interpreter moving to the next line or bunch up decimal numbers.

G'day mates

and welcome to a new column from down under in Straya with me, Pesky from the Antipodes. I recently got my Pi and it's just a beaut having RISC OS running on a modern machine.

I received my *Drag 'N Drop* back issues stick as a present and then I bought Chris Dewhurst's *The Applications Tutorial and Listings Book* – I've got to say, mates, I'm stoked and it's helping me heaps with my programming.

OS_WriteC and OS_ReadC

Now to kick off the column inches the editor has donated to me I've been tinkering around with a few SYS calls and thought I'd share a few learning points with yous.

Before I do, I'll tell you I make much use of the RAM disc on RISC OS. Nothing like it on the other computers like Windows.

Take a squizz at Program 1, which you can type in and run in a task window. Press Ctrl and F12 at the same time, then type BASIC and press the Return key. The program prompts you to type in your name using INPUT.

Program 1

```
INPUT A$
l% = LEN A$
PRINT l%'
FOR z% = 1 TO l%
PRINT ASC (MID$(A$,z%,1))
NEXT z%

FOR z% = 1 TO l%
SYS "OS_WriteC", ASC (MID$(A$,z%,1))
SYS "OS_ReadC" TO m%
PRINT CHR$ m%
NEXT z%
```

It prints the length of your name with LEN, then inside the first z% loop it displays the Ascii code of the individual letters in the string with using ASC and MID$.

The second z% loop uses the OS_WriteC call, you give it the Ascii code of what you want. SYS "OS_WriteC",65 for example prints capital A.

It also uses OS_ReadC to reads in the Ascii code of what you type at keyboard. So if you typed A then SYS "OS_ReadC" TO m% would mean m% ends up being equal to 65.

Between them these two calls print out the letters of your name and next to them the letter you typed in at the keyboard.

Now, not exactly rocket science, mates but we can make it more user friendly.

Program 2

```
INPUT "Type a few words. Your full name
   perhaps....  " A$
l% = LEN A$
PRINT'"You typed "; l%; " keyboard
   symbols. Call some of them letters"'
:
PRINT "Anyhow, here's what you
   typed...."'
FOR z% = 1 TO l%
PRINT MID$(A$,z%,1), ASC (MID$(A$,z%,1))
NEXT z%
PRINT
:
PRINT'"This is in my brain only as you
   type.."'
FOR z% = 1 TO l%
SYS "OS_WriteC", ASC (MID$(A$,z%,1))
NEXT z%
 :
PRINT''"Now KEEP TAPPING any keys and
   wrap your head around the code that
   causes this..."''
FOR z% = 1 TO l%
SYS "OS_WriteC", ASC (MID$(A$,z%,1))
```

Today we will

be looking at PHP variables. In BBC Basic we are used to writing statements like

```
mrs_coats=10
mr_birkin=35
```

which sets the variable mrs_coats to a value of 10 and mr_birkin to 35. It's the same in PHP except we always have to prefix variable names with $. Also lines of code in PHP need a semi-colon at the end:

```
$mrs_coats=10;
$mr_birkin=35;
```

We can add up just as in Basic:

```
$total_clothes = $mrs_coats +
  $mr_birkin;
```

You could also add up like this:

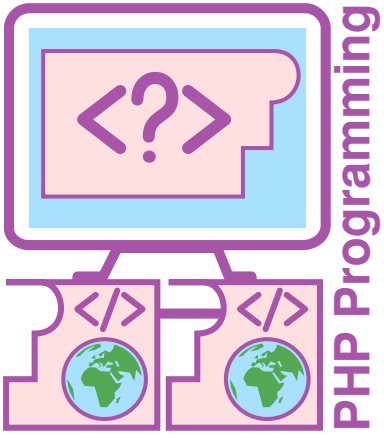
```
$total_clothes = 10 + 35;
```

You can also put text into variables, in a similar way to storing numbers by using speech marks:

```
$clothes1 =  "Winter Coats";
```

You can also uise quotation marks:

```
$clothes1 = 'Winter Coats';
```



But you can't do this:

```
$clothes1 = 'Winter Coats";
```

We've started with a single quote and ended with a double quote and you will get an error.

Let's get some practice using PHP variables. Double click !PHP to run it and go with the default option of Single Tasking. If you're not sure of installing PHP on your RISC OS machine then refer back to the last article.

Type (or copy and paste) the following:

```
<html>
<head>
<title>Variables - Some Practice</title>
</head>
<body>
<?php print("It Worked!"); ?>
</body>
</html>
```

Save it as Variables ensuring the filetype is set to PHP (&18A). Double click it and you should see the text "It worked!" on a Netsurf (or whatever browser) page.

The PHP script is only one line long:

```
<?php print("It Worked!"); ?>
```

and the rest ofo the script is just HTML. Instead of echo introduced last time we use print which does exactly the same. Browsers recognise PHP by looking for this punctuation (called syntax)

```
<?php ?>
```

Now we'll adapt the basic page so we can set up some variables. Keep the HTML as it is but change your PHP from this

```
<?php print("It Worked!"); ?>
```

to this:

```
<?php
  print("It Worked!");
?>
```

Not much of a change! But spreading your code over more than one line makes it easier to see what you are doing. Add this second line to your code:

```
<?php
```

ClickDir is one

of those small applications you never knew how you survived without.

Have you ever double clicked on a Basic program and it complains it can't find file such-and-such? Have you rummaged around for the output of that program and then discovered it in the root directory of your 16GBPi or HardDisc0 ?

You probably have then had to set the Currently Selected Directory (CSD) with Menu click on the filer window > Set directory or Ctrl+W.

ClickDir solves all that by automatically changing the CSD to the one in which you double clicked the file. It can be done once, every time you double click, or turned off.

Type in the program and, ensuring there are no errors, save it. Double click and a green folder icon will appear on the left hand side of the icon bar.

Click the select button on the icon bar sprite to cycle through the options: Auto (set CSD every time you double click), 1-shot (set CSD once only) or Off (do not set CSD).

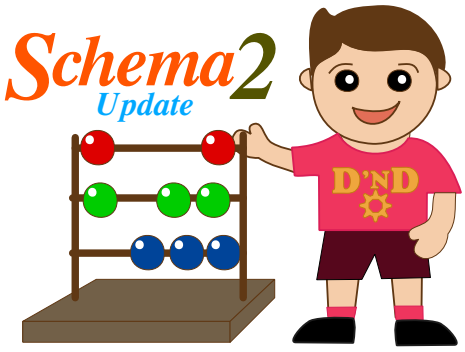
Note that if you have one-shot selected and double click a program it will change the setting to Off.

Clicking Menu over the iconbar sprite gives two options: one for program information and the other to quit the application.

The program uses some standard procedures from *The Application Tutorial and Listings* book, listed on page 4 of this issue also.

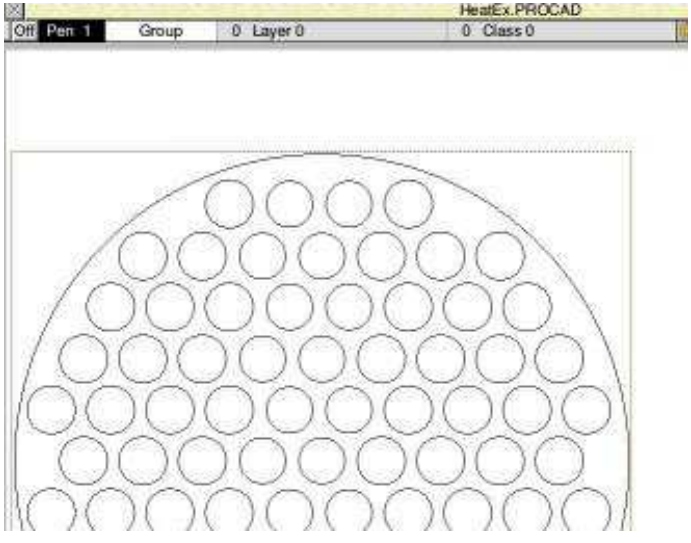
ClickDir listing

```
 REM ClickDir
 REM (c) Drag N Drop Summer 2022
 ON ERROR SYS"Wimp_CloseDown":REPORT:PRI
NT" at ";ERL:END
 SYS "Wimp_Initialise",200,&4B534154,"Cl
ickDir"
 PROCINIT : PROCWINDOWS
 REPEAT
 SYS "Wimp_Poll",,B TO E
 CASE E OF
 WHEN 6:PROCCLICK
 WHEN 9:PROCMENUSELECT
 WHEN 17,18:PROCMESSAGE
 ENDCASE
 UNTIL Q OR INKEY-113
 SYS "Wimp_CloseDown"
 END
 :
 DEF PROCCLICK
 BT=B!8
 IF BT=4 PROCCYCLE
 IF BT=2 THEN SYS "Wimp_CreateMenu",,N1,
B!0-80,B!4+100
 ENDPROC
 :
 DEF PROCCYCLE
 MP=(MP+1) MOD 3
 PROCWRICONT(-2,IB,M$(MP))
 ENDPROC
 :
 DEF PROCMENUSELECT
 I$=STRING$(32," ")
 SYS "Wimp_DecodeMenu",,N1,B,I$ TO ,,,I$
 IF !B=1 THEN Q=TRUE
 ENDPROC
 :
 DEF PROCINIT
 DIM B 256,N 256,S 256,U 256,T 256,V 32
 DIM M$(2):M$()="Off","Auto","1-Shot" :
MP=0 : Q=FALSE
 PROCSPRITES
 $V="Sclickdir" : $(V+10)="r2"
 PROCMKICON(-2,0,-15,100,110,&1700310B,M
$(0),V)
 IB=I : REM make note of icon handle
 ENDPROC
 :
 DEF PROCSPRITES
 N$="clickdir"
 SYS "XWimp_SpriteOp",37,,N$ TO ;C
 IF C=0 THEN ENDPROC:REM exists
 O$="OS_SpriteOp": !S=256: S!8=&10
 SYS O$,&109,S: REM init sprite
 SYS O$,&10F,S,N$,1,17,17,4: REM create
sprite w/palette
 SYS O$,&125,S,N$,-1 TO ,,,,L
 RESTORE+1
 FOR X=0 TO 12 STEP4:READ X!L:NEXT: REM
palette
 DATA &DDDDDD00,&DDDDDD00,&00AA0000,&00A
A0000
 DATA 31,0,0,63,128,0,255,255,0,255,255,
128,0,0,0,255,255,128,255,255,128,255,25
5,128,255,255,128,255,255,128,255,255,12
8,255,255,128,255,255,128,255,255,128
 FOR Y=13 TO 0 STEP -1
 X=0 : REPEAT READ J : K=128
 REPEAT
 IF J AND K THEN SYS O$,&12A,S,N$,X,Y,1
 K=K DIV 2 : IF K=0 THEN K=128:READ J
 X+=1 : UNTIL X=17
 NEXT
 SYS O$,&10C,S,"<WIMP$SCRAP>"
 *ICONSPRITES <WIMP$SCRAP>
```



The Autumn 2021 edition of *Drag 'N Drop* carried part 7 of my series on using Schema2. Its main purpose was helping engineering students with their understanding of shell and tube heat exchanger design.

I exploited the ability of Schema2 to export a CSV file and PROCAD to import it (after a bit of cleaning up) to create the result, the end view of a tube bundle.



It's with great pleasure that I acknowledge the assistance of Julian Fry, who proof read the article, made very helpful suggestions and picked up a number of typos. Julian even went one stage further and simplified the the whole process as follows. He modified my original version of listing 1 to open a file using:

```
h=OPEN("<WorkSpace$Dir>.CSVCAD",1)
```

where the 1 indicates the file is opened for writing. The revised listing 1 is at the end of this article.

The use of WorkSpace$Dir avoids the need for an absolute path. Now when writing to a file, Schema2 saves file space by placing several items to a line separated by commas and the file is not PROCAD CSV friendly.

Julian very cleverly wrote a second macro called MakeCSV (see listing 2 at the end of this article) which parsed the data before writing it in PROCAD CSV file format.

The macro is called from listing 1 using

```
res=MakeCSV(h,CentreX,CentreY,Bundlead)
```

and for the tubes

```
res=MakeCSV(h,X,Y,TubeRad)
```

Then the file is closed using

```
res=CLOSE(h)
```

The resulting file CSVCAD can be dragged and dropped onto the PROCAD icon.

● A very elegant solution to the problem. I just wish all my proof readers were as dedicated. To see the output in PROCAD on a normal screen, set the paper size to A1 and scale size to 50%.

Listing 1

```
MACRO circle
LOCAL w,res,X,Y
LOCAL BundleDia, BundleRad,MyScale
LOCAL CentreX,CentreY,Width,Height
LOCAL TubeDia,TubeRad,TubeX,TubeClear,TubeCount
LOCAL PitchHor,PitchVert,NRIS,SV,CT,CTT
LOCAL NR,N,TubeSum,NTIC, OffSeteven
LOCAL h
ON_ERROR_EXIT

REM Open the file for ProCad CSV
h=OPEN("<WorkSpace$Dir>.CSVCAD",1)

BundleDia = !HeatEx.$C6
```

Vol 1–11 Index

This index is organised with a reference (e.g. application name) or article/listing/series title followed by the volume – issue number – page.

!PDF 1i4-3, 2i2-3, 2i3-4
&CAFE (series) 7i1-40, 7i2-41
105 key UK layout mechanical keyboard (review) 7i3-10
16 FFmpeg commands for all needs 10i1-12
21st Century Computing (article) 4i2-5
24-bit colour 5i2-47
256 colour palette switching (article) 8i1-34
256 colours 4i2-10, 4i3-9, 5i2-47
32-bit PMS Voices (article) 9i3-34
32-bitting sound modules (article) 7i2-13
3D Graphics 10i2-28
3D Pingo (review) 11i4-19
3D Wireframe Graphics (series) 7i1-29, 7i2-43
55 BBC Micro Books 4i3-21, 4i4-17
7-segment LCD 5i3-6
76489 chip 1i2-22
8-bit roundup (article) 1i1-29
8-bit roundup (article) 1i2 -22
8-bit roundup (article) 2i1-19
8-bit roundup – New Releases from Retro Software (article) 3i3-19
8-bit Roundup: Retro Software Roundup 3i4-15
8-bit: BBC ARM7TDI Upgrade 1i1-29
8-bit: BBC GoMMC (article) 2i1-23
8-bit: BBC RAM Disc (article) 2i1-19
8-bit: BBC Repairing your power supply 1i1-30
8-bit: BBC Retro Software Update (article) 2i1-25
8-bit: Game On (article) 2i4-17
8-bit: Game On 2 (article) 3i1-9
8-bit: Look Who?s Calling 2i2-19
8-bit: Repton – The Lost Realms 2i3-19
8-bit: Speak your mind (article) 1i2-22
80 BBC Micro Books 10i5-2
A Celtic Knot in 5 minutes 10i3-23
A Front End for CDFaker (article) 7i2-24
A simple thumbnailer (article) 6i1-47
A Trip Round the Chocolate Factory (article) 1i3-20
Acorn Electron World (article) 4i2-27
Acorn speech system 1i2-22
Acorn World in Pictures 1i1-20
Acorn – A World in Pixels (review) 10i4-12
Acorn – A World in Pixels – Extended Edition (review) 11i2-32
Adding document information to PDF files 3i4-6
All Sorted 1 (article) 1i1-9
All Sorted 10 – Hacks & Tricks (article) 3i2-10
All Sorted 11 – Hacks & Tricks (article) 3i3-9
All Sorted 12 – Mashing it Together (article) 3i4-10
All Sorted 13 – Timsort 4i4-33
All Sorted 2 (article) 1i1-22
All Sorted 3 (article) 1i2-7
All Sorted 4 (article) 1i3-10
All Sorted 5 (article) 1i4-11
All Sorted 6 – the Merge Sort (article) 2i1-4
All Sorted 7 – Heaps of Data (article) 2i2-7
All Sorted 8 – Quicker Sorting (article) 2i3-12
All Sorted 9 – Strands & the Merge sort revisited (article) 2i4-6
AltTab 0.42 1i1-3
AMCOG Games Collection 10i2-6
Amcog Games Development Kit 8i4-29, 10i6-15
Anatomy of a Drawfile (article) 4i4-29, 5i2-36, 5i3-27
Anatomy of a Font (series) 9i1-14, 9i3-19
APDL 1i3-2
Archive magazine 10i5-7
ArcSimp 1i1-3
Argon Case for Pi4B 11i1-32
ARM Crash Course 11i3-14
ARM7TDMI Coprocessor 1i1-29
Armbook 10i1-4, 10i2-7
Armcode bit pattern demo (listing) 5i2-32
Armcode for Beebsters (series) 8i1-30, 8i2-28
ARMini computer 2i3-2
ARMini computer 3i3-3
ArmSort 4.08 3i4-4
Artworks 2.X3.00 upgrade (review) 9i3-33
Artworks Viewer 2.14b 1i4-3
Attack of the Monotrons (game listing) 10i5-9
Attack of the Raspberry Macaroons game (article and listing) 8i4-14
Autofocus app (listing) 8i1-42
awk 2i3-25
Backdrops (Desktop Heroes article) 1i3-18
BarFree 3i3-5
Basalt 1.50 3i4-4
Basic V for the Acorn Archimedes (book review) 6i3-6
BBC Basic Reference Manual (review) 9i2-18
BBC Micro Games Retrospective (articles) 4i3-26, 4i4-11, 5i2-61
BBC Microbit 6i4-3
BBC Playground 4i4-10
BBFlash 3i4-4
Beagleboard 1i1-15
Beagleboard-XM 1i4-2
BeebIt 0.61 2i4-4
Beginner's Tips 5i1-2, 5i2-2
BgrndCtrl 1i2-5
Birmingham 2009 1i2-20

Bitcoin (article) 5i3-44, 6i1-36
Boing game (article and listing) 9i4-4
Bookmaker 2.15 3i2-3
Bookmarking with PrintPDF (article) 1i4-35
Brexit (game listing) 10i1-5
bubble sort 1i1-9
Buggies game (article and listing) 9i2-21
C programming see C-Side
C-Side (series) 6i1-61, 6i4-30, 7i1-27, 7i3-27
Cake Hog game (article and listing) 9i2-7
Calendars with Yahoo & Organizer (article) 2i1-32
Calibra 3i2-3
Change your Perspective (article) 1i1-35
ChatCube 10i6-6
Christmas Show in Pictures 1i2-20
Cineworks 4i4-46
ClassicRip 10i2-5
ClickDir app (article and listing) 11i4-32
CLOC 10i4-6
Cogs 1i3-4
Col256 (listing) 5i2-47
Colour Coordinated (article) 5i2-47
Combining Documents with PrintPDF (article) 2i1-36
Composing with Milktytracker (article) 7i3-29
Contact Sharing with Organizer 1i4-31
contact us page (Web Log) 1i1-4
Converting the PMS Manual (article) 4i4-49
ConvText (article and listing) 8i2-11
CSV2DTA listing 6i3-22
D-Link DNS-323 (article) 1i3-29
DayCalc 1.06 2i1-3
DDE 22 3i1-5
Delegate review 6i1-45
Demos 1i1-16
DeskEdit (review) 6i3-7
Desktop Clock app (article and listing) 9i4-22
Desktop Function Keys app (listing) 8i4-39
Desktop Heroes 1i1-18, 1i2-16, 1i3-18, 5i1-6
Desktop makeover with Themes (article) 5i1-33
Desktop OXO 8i3-27
Desktop Retro Gaming (series) 7i1-18, 7i2-32
Desktop Solitaire (application and listing) 10i4-14
Dickie Brickie 10i6-8
DirSync 1.10 3i1-5
Disc Assembler (article and listing) 11i1-6
DiscKnight 2i3-4
DIY Draw (article) 4i4-26
DIY Filing Systems (article and listing) 9i1-21
DIY Pointers (article and listing) 8i2-30
Do-It (application and listing) 10i3-32
Doing more with text (series) 5i3-40, 5i4-26
Doktor – the no nonsense toolbar (article) 3i2-6
Dotted fills see LICHT
Draggit (app) 5i2-25
DrawGen 10i2-6
Drawing with Draw Part 1 (article) 1i1-38
Drawing with Draw_Stroke 9i1-27
DrawJot (listing) 7i4-12
DrawJot (listing) 7i4-12
DrawPrint 1i3-4, 2i2-3, 2i4-4, 3i4-4, 5i2-3, 5i4-5, 10i4-6
Drawrite (listing) 5i4-10
DrawWorks Millennium 2i3-3
Drobe 1i1-4
DTAFormat (Draw Text Area Formatter) listing 6i3-23
DVD Drive Survey 11i2-18
Easiwriter 9.12 5i1-04
Eastor (listing) 4i3-4
Eastor 8-bit (listing) 4i4-5
Easy CSD (article and listing) 6i1-59
Easy Scroll (article and listing) 6i2-14
Edit Search/Replace (article) 5i4-30
Electron Pi Keyboard Kit 8i4-5
Elesar keyboard review 7i3-10
Envelope Editor app (listing) 8i4-23
Equatech Wireless Keyboard and Mouse (review) 9i2-17
Equatech Wireless Mouse 9i2-17
Exif 6i1-25
Fade – presentation software (article) 3i2-16
Fast Icons 10i4-13
FAT32FS 1.39 3i2-3
FATFS32 1.27 1i2-5
Father Xmas's Crakers (listing) 7i1-42
FFmpeg 1i2-5, 2i1-3, 2i2-3, 3i3-5, 10i1-12
Fibonacci Wallpaper (article) 8i1-39
Files Inside Out (article) 6i1-55
Files of the World (series) 6i3-9, 6i4-17, 7i1-4, 7i2-7, 8i1-5
Firefox 1i1-3
Fireworks 1.35 5i2-3
Fireworkz Manuals 3i4-3
First Steps with RISC OS (book review) 6i3-6
Flappy Fluffy (listing) 7i3-11
Flicker (article) 3i1-6
Floozy game (listing) 8i1-18
Form Filler (Desktop Heroes article) 5i1-6
FormFiller 1.14 3i2-3
Forth on the Pi (article) 8i1-11
Frontender 5i1-28
Fun Time (article) 2i2-22
Fuse (Free Unix Spectrum Emulator) 3i3-5, 10i6-6, 11i4-20
Games Panel Designer (listing) 5i4-16
GCC 4.1.2 (test) 1i4-3
Gem Drop 2i3-23
Geneaology Records 3i3-3
Get Archiving with ZipFE (article) 5i1-28
Get Set For Digital – Updating your RiscTV card for the digital age (article) 2i4-29
Getting Started with Email on RISC OS

10i3-18
Getting started with RISC OS on the Raspberry Pi (review) 4i2-16
Getting started with RISC OS: a refresher (Beginner's tips) 5i4-4
Ghostscript 9.26 10i3-5
Ghostscript on RISC OS (series) 7i3-7, 7i4-8
Gnome Sort All Sorted 3 (article) 1i2-7
Gofer Sort (article) 2i4-15
GPIO for Beginners (series) 5i1-26, 5i2-4, 5i3-6
GPIO pinout 5i2-4
Graded text (listing) 5i2-38
GraphTask 10i4-5
Haunted Tower Hotel (review) 11i2-34
Hay Jump (listing) 7i4-22
Hexen II: Hammer of Thyrion 3i4-3
Hints & Tips (series) 7i2-23
Hirize (game listing) 10i1-16
Hitachi LCD see LCD Backpack
HongKong 160 3i4-4
Hopper 5i4-6
House of Cards 2i2-3
How to design a glass button in eight steps (article) 9i4-36
Huddersfield 2009 1i1-20
I2C, IIC 6i1-05
Icon Clipboard app (article and listing) 9i3-31
Icon flag generator (application and listing) 10i5-30
Iconbar Animation 8i3-10
Iconv 0.11 2i2-3
Ident Compact Edition (advert) 9i2-3
Ident-1 6i4-3
IMAP (article) 3i1-16
Impact 3.35 1i2-5
Impression Style 3.13 10i1-3
InfoZip 3.07 3i4-4
Inside Drag 'N Drop (article) 5i3-37
InterGIF 3i1-5
Internet Message Access Protocol 3i1-16
Introduction to Unicode (article) 5i1-20
Iris web browser 10i5-6
Island of the Undead (review) 9i4-38
Joining PDF files 3i4-5
Jpegtran 3i2-3
JV Software 10i6-8
KevMon 1.01 3i2-3
Kyocera M5521 (review) 10i5-19
Launcher 10i3-5
LCD Backpack (series) 6i1-5, 6i2-31
LEDs (GPIO) 5i1-26, 5i2-4
Legends of Magic (review) 7i1-19
LibraOffice to HTML 10i3-5
LICHT (article and listing) 9i1-5
LICHTline (article and listing) 10i1-8
Linking Basic Programs (article) 7i3-14
Listing Programs (Beginners tips) 5i2-2
London Show 2009 1i1-5
Lua 2i3-25, 10i4-6
Luafox 2i3-4, 3i1-5
Macaroon Attack 2 game (listing) 9i4-25
Machine Code Scrolling Stars (article and listing) 8i1-14
Mae2PMS (listing) 5i2-43
Maestro Bar Copier (application listing) 10i6-23
Maestro to PMS converter (article) 5i2-41
Magic Mushrooms 1.12 3i4-4
Magic Wand Scanner (review) 9i2-19
MakeDraw 2.10 1i1-3, 1i2-5
Male-to-female jumper lead 5i3-6
Mami Fletcher's House (review) 11i2-33
Manic Mole (listing) 4i1-16
Mashing it Together – All Sorted 12 (article) 3i4-10
Match Points (article) 2i2-23
MBBack 2.01 2i1-3
MBBack release 8 1i2-5
MBOX Alert 2i3-3
MemAlloc module (listing) 8i1-39
Messenger Pro 6.03 3i1-5
Messenger Pro 6.05 3i3-3
Messenger Pro 6.06 3i4-3
Meteors 5i4-5
Microsoft Office File Block (article) 3i3-36
MIDI files see Files of the World
Missile Command game (article and listing) 9i3-5
Module Auto 32-Bitter (listing) 8i2-15
Module Saver (listing) 8i2-41
Module Surgery (series) 7i2-15
Moptops (review) 8i2-20
MoreDesk 2i3-4, 10i6-8
MoreDesk (Desktop Heroes article) 1i2-16
Morse Code (program) 5i2-6
Mountain Panic 4i4-10
Mountain Panic (review) 5i3-50
MPdata+ 10i4-6
Mr Frog's Armcode Corner 5i2-32, 5i4-58, 6i1-43, 6i2-34. 7i2-5
Mr Miner (listing) 6i2-21
MsgMon 1.01 1i4-3
MTP 0.21 5i1-4
Mug Show (advert) 5i4-1
Multitasking with Null Events (article) 7i4-18
Murnong 1.31 1i1-3, 2i1-3, 2i2-3
Music Man (article) 3i4-27
Music Ripper's Toolkit 3 1i3-4
Music Writing with PMS (series) 4i2-18, 4i3-11, 4i4-18, 5i1-35
Mycalc (app) 5i2-26
Netfetch 3.65 3i3-3
Netsurf 2.6 2i1-3
Netsurf 2.8 3i1-5
Netsurf 3.0 4i4-4
New Breed Software 2i3-23
Newshound 1.52 2i2-3
NewsUK 5i1-4
No time to make the tea (article) 6i3-28
OCR online 10i5-21
Odd-Even sort 1i3-10
Openvector, Opengrid, Drawplus 3.30 1i4-3
Openvector, Opengrid, Drawplus 3.32 2i2-

3
Openvector, Opengrid, Drawplus 3.37 3i2-3
Optical Mouse Pen (review) 10i5-29
Overlord 6i4-5
Packman 0.3 2i1-3
Packman Packge Manager 0.05 2i4-4
Pal256 (listing) 5i2-48
PANL (listing) 5i4-16
Parallel Lines Pattern 3i2-18
Passman 1.00 5i2-03
PasteKeys 0.6 1i1-3
PDF File Icon 11i3-16
PDF Maker (article) 1i2-33
PDF Suite (article) 1i2-33
PDFTools 3i3-5
Pebbles game (article and listing) 9i2-27
Perl 2i3-24
Philips Music Scribe see PMS
Philips Music Writer see PMS
Photodesk 3.10 2i3-4
PhotoDesk 3.10 (32 bit) 3i1-5
PHP Programming 11i3-22, 11i4-29
Piball (game) 5i1-8
Piball (listing) 5i1-13
Pico (review) 5i4-9
PICprog 1.54 1i1-3
Pieces of String (article) 3i4-18
Pipedream 5i4-6
Pipeworkx 6i3-12
PiTools 10i5-7
PlayIt 3i3-5, 3i4-4
Plingstore 5i1-4
Pluto 5i2-3, 10i3-5
PMS 3.61 6i4-3
PMS – See Music Writing with PMS
Post-Processing with Ghostscript 11i1-19
Potted History of Acorn 5i4-5
Powerbase 1i2-5
PrintPDF 1i4-3
PrintPDF Queue Process in Pictures 2i1-37
ProCAD+ 5i4-5
Programming in PostScript (series) 10i3-11, 10i4-17
Prophet 10i1-3, 10i2-6
Protector (review) 9i2-20
Pursuit Curves 3i3-14
PushSend 10i3-5
Putting the bits together (article) 6i1-38
Python 2i3-25, 10i2-6
Python B-side the C (article) 7i4-6
Python Primary School (series) 6i4-9, 7i1-10, 7i2-26, 7i3-17, 8i2-33, 8i3-14, 9i1-24
Quizmaster 5i4-5
Quizmaster review 6i1-06
R-Comp Tablet 3i3-3
Rainbow 10i4-5
Raspberry Pi 400 10i4-11
Raspberry Pi Assembly Language for Beginners (review) 4i2-17
Raspberry Pi RISC OS System Revelaed (review) 5i2-60
Raspberry Pi User guide (review) 4i2-16
Raspberry Ro Lite 3 with 32Gb mSATA (review) 9i3-16
RDPClient 1i3-4
RDSP Envelope Editor (article and listing) 11i1-23
Recce 10i2-5
Recoding the Classics 11i2-15
Remembering filetypes (Beginner's tips) 5i3-2
Reporter 1.66 2i4-4
Retro Software 1i1-33
Retro Software Revealed (article) 1i1-33
Rhapsody 4 6i4-3
RISC OS 5.2 Rom chips 5i1-3
RISC OS 5.28 10i3-6
RISC OS 6 Pinboard – A quick tour (article) 1i2-27
RISC OS 6.2 (Select 6i1) What's New (article) 1i2-35
RISC OS Classic ROMs Collection CD 2i3-3
RISC OS Cloverleaf 10i3-4
RISC OS Direct 10i3-4
RISC OS Font System (article) 5i3-35
RISC OS Freeware Survey 2022 11i4-13
RISC OS In Education – Does it have A Future? (article) 2i3-31
RISC OS London Show 2011 guide 3i1-27
RISC OS Pi-Top (article) 7i3-5
RISC OS Programming in BASIC (series) 3i2-20, 3i3-39, 3i4-23, 5i4-34, 6i2-16, 6i3-16, 6i4-20, 7i2-36, 8i3-21. 8i4-34
RISC OS Sound System (article) 8i2-5
RISC OZ (series) 11i4-27
RiscOSM 5i4-7, 10i12-5
ROOL Roundup & Wakefield 2011 Guide 2i3-11
Rotated Areas in Draw (article) 3i2-26
Rotated graded text (listing) 5i2-40
RoundBox (application and listing) 10i2-24
RPCEmu 10i6-8
RTF - see Files of the World
Safestore 3i3-3
Safestore (Desktop Heroes article) 1i1-18
Schema 2 (series) 9i3-11, 9i4-11, 10i2-15, 10i3-25, 10i5-22, 10i6-9, 11i1-13, 11i2-7, 11i4-34
ScreenGrabber 2.21 1i1-3
Scribble Pad app (article and listing) 11i4-16
Scripting with and without StrongEd (article) 2i3-24
Scrolling starfield (article) 5i3-34
Scrolling stars (listing) 5i3-34
Scuba Hunter (review) 10i3-10
Selection and shell sorts (article) 1i4-11
Selling on eBay with Netsurf 4i2-14
SetTyper app (article and listing) 9i3-30
SheetLabel app (article and listing) 9i4-30
Sid Slug game (listing) 8i2-21
Simple Video Editing using Cineworks (article) 4i4-46
Sinclair Spectrum to BBC Basic 11i4-23
Single tasking (Beginner's tips) 5i1-2

SiteMatch 240f 3i4-4
Sky Pi HDD (article) 5i4-39
Small Changes in Design (article) 8i4-30
SmartMenu 0.21a 1i1-3
Snapper 2i1-3
Snapper 1.14 3i3-5
Snapper 1.70 3i4-4
Snes9x 3i3-5
SokoBas 2i4-4
Sony Mini CDR Station MCS1 6i3-27
Sound (article) 4i1-23
Sound for Musicians (series) 11i2-20, 11i3-8
SoundCon32 (article) 7i2-20, 11i1-28
Source Code Management Tool 1i4-24
Sourcery 1 (article) 1i3-24
Sourcery Source Code Management (article) 1i4-24, 2i1-26
South West Show 2010 in pictures 1i3-19
Sphagetti with different sauces (article) 6i4-26
SPI Bus (article) 5i3-10
Sprite Pool 5i2-28
Sprites (series) 3i3-48, 3i4-30, 4i1-6, 4i2-22, 4i3-16, 4i4-39
SpSheet app (article and listing) 11i3-18
Spy Mission: The Ice Caves of Dr Atom (review) 10i5-28
Stable sorts 1i1-26
Star Mine (review) 10i2-8
Stave Paper app (listing) 8i4-19
Stick and Drag (article) 5i2-23
Sticky programming 5i2-23
Storm game (listing) 11i1-9
Strands & The Merge Sort Revisited 2i4-6
Stripping email headers with Lua (article) 2i3-27
Super Pack 6 4i4-4
SuperDoku 1.23 1i2-5
SWILister (listing) 8i3-31
SyncDiscs 1.22 2i1-3
SystemDisc 1.01 5i2-3
TailWimp 10i4-5
TaskW 5i2-23
TBA Software 2i4-13
TBX C++ Library 0.4 3i1-5
Techwriter 9.12 5i1-4
Teetfort 2i3-23
Text Area Utilities (article) 6i3-22
Text Editing with outline fonts 10i4-7
TextEase 10i6-7
The Application Tutorial and Listings Book 10i6-1
The Archives (article) 1i1-4
The Beagle Has Landed (article) 1i1-15
The Big Book of the Raspberry Pi (review) 5i2-60
The Book of Draw Stuff 6i3-2
The Difference Words can Make (article) 3i3-45
The Exif Files (article) 6i1-25
The Merge Sort (article) 2i1-8
The Rise of Retro Software (article) 1i2-26
The Uses of Literacy (article) 11i2-30
Themes 5i1-33
ThemeSetup 5i1-33
Ticker 0.87 3i2-3
Timsort 4i4-33
Toolbox with Basic (series) 10i4-20, 10i5-14, 10i6-17, 11i2-27
Tracing Outlines (article) 8i2-39
TSV2Draw (application and listing) 10i2-9
Tutorials 10i4-5
Type from PDF (article) 4i1-6
Unicode 5i1-20, 5i4-56
UnitConv 2.32 3i2-3
Upgrading to Messenger Pro 6 (article) 2i4-23
Upgrading to RISC OS 5.23 (article) 8i4-7
Upscaling and Interpolation (article and listings) 9i4-17
URLtoIE 1.40 3i4-4
User Sprite Areas (article) 5i4-19
User Voices II (article) 5i3-46
Using Cineworks (series) 4i4-46, 5i1-23
Using Fireworkz (series) 4i3-21, 4i4-23, 5i1-30
Using IDE Compact Flash Cards with a RiscPC (article) 2i4-27
Using IMAP in Messenger Pro 6 (article) 3i1-18
Using RDSP (series) 8i3-6, 8i4-9, 9i1-19
Using Wimp Works2 10i4-26
Varieties of Numerical Experience (article) 4i2-30
Vectoroids 2i3-23
Vintage Computing Festival (article) 1i4-22
VMG see Voice Module Generator
Voice Module Generator (article and listings) 9i1-9
Vonets VP11G (review) 9i3-29
Vpod Review – Change your Perspective (article) 1i1-35
VRML Viewer 1.01 1i1-3
Wakefield Show 2010 guide 1i3-9
Wakefield Show 2011 in pictures 2i4-32
Wakefield Show 2012 guide 3i3-43
Wallace Goes Walking (game) 5i3-16
Wallace Goes Walking (listing) 5i3-21
Waltz Alice 5i1-35
Web Change 2.95.21 1i4-3
Web Log – A Free Online Diary (article) 2i2-3
Web Log – Blogging on RISC OS 2i3-5
Web Log – British Newspaper Archive 3i3-6
Web Log – BT image history 3i2-8
Web Log – Dart (article) 3i1-8
Web Log – File converters 6i3-21
Web Log – Google Alerts (article) 2i1-4
Web Log – Google Buzz (article)
Web Log – Google mail (article) 1i4-3
Web Log – Gumtree (article) 7i1-26
Web Log – iconbar.com (article) 1i2-6
Web Log – Label Templates
Web Log – ReachBy.com (article) 1i1-4
Web Log – riscos.info (article) 1i2-6
Web Log – templatemaker.com 11i2-35

Web Log – Traffic Signs 5i1-7
Web Log – travelinesoutheast.org 7i4-25
WebChange 2.95.26 3i3-5
WebGen 2.52 5i1-5
Why Not Basic? (artice) 6i2-11
WiFi File Transfer (article) 9i1-8
Wimp events 5i2-29
Wimp Library 11i4-4
Window Closer app (article and listing) 9i3-24
Window Furniture (article and listings) 11i4-6
Windows Metafiles 7i1-4
WinEd tutorial (article) 5i2-51
Winglebith (game) 5i2-10
Winglebith (listing) 5i2-15
WMF see Windows Metafiles
Working with Non-Latin Languages on RISC OS (article) 2i2-28
Working with PDFs (article) 3i4-5
Working with Unicode (series) 5i1-20, 5i4-56
Wrangler 1.07 3i4-4
Writing a simple RISC OS app (series) 5i2-26, 5i3-25, 6i1-32, 6i2-7
Writing for Drag 'N Drop (article) 6i3-20
Writing Games for RISC 6i4-5
Xeroid (review) 7i4-21
XP1LO2web (LibraOffice to HTML) 10i3-5
YTPlay 10i5-7
ZipFE 5i1-28
Zmac 2i2-3