



DRAG'N'DROP

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

Spring 2018
Volume 9 Issue 3
£3.75

Missile Command

Type-in arcade action



Apps

- Window Closer
- Icon Clipboard

Series

- RISC OS font format
- Schema 2

...type 'em all in!



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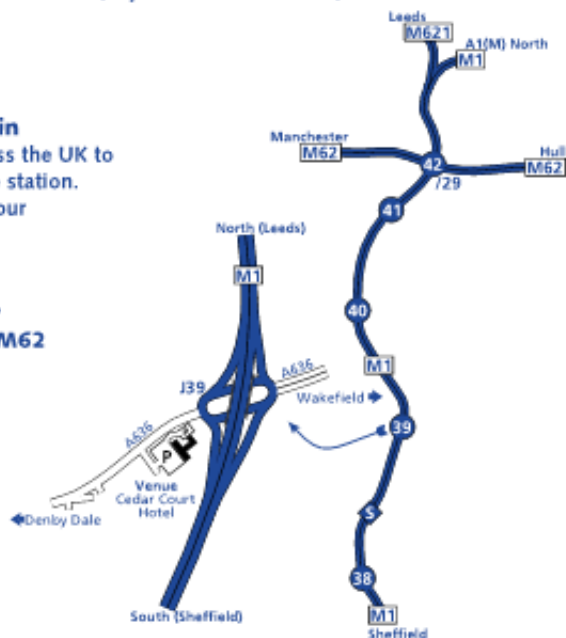
(Adjacent to J39 of the M1)

Getting there by train

- Connections from across the UK to **Wakefield Westgate** station.
- Local buses twice an hour to the venue

Getting there by car

- Easy access from **M1, M62** and major routes
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- **Raspberry Pi**
- **Show Theatre**
- **On-site Catering**
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- **Opening time**
- **Ticket price**

Saturday, 21st April 2018

10.30am to 4.30pm

£5 on the door

Entry for children aged 12 or under (accompanied by an adult) is **FREE**

- **Access**

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- **Enquiries**

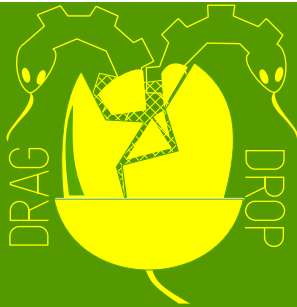
Wakefield Show 2018,
c/o 3 Riverdale Avenue, Stanley,
Wakefield, WF3 4LF

- **Email**

show2018@wakefieldshow.org.uk

For further information, visit

www.wakefieldshow.org.uk



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Produced on RISC OS computers

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

Paul Stewart (Raspberry Ro Lite review, and Go
Wireless with the Vonets VP11G)
Norman Lawrence (Schema 2 series)
Christopher Dewhurst (everything else)

The views expressed in this magazine are not
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the above please contact the editor using the
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EDITORIAL

It's great to see new people writing articles for *Drag 'N Drop*, your editor can take a back seat (sort of!)

Some of you will remember Paul Stewart who used to edit the magazine. He is back with his impressions of the Raspberry Ro Lite machine and an article on how to get your Raspberry Pi working wirelessly.

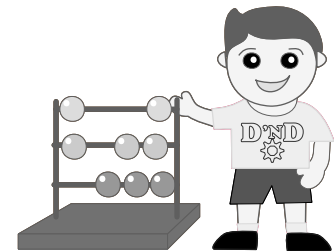
Norman Lawrence starts a great new series on the spreadsheet application Schema 2 which has made a comeback and might well knock Fireworkz and Pipedream from their perches and become the 'RISC OS Excel'.

Plus we have the usual range of reviews and type-in stuff. Do you fancy your hand at being a missile commander? Window Closer and Icon Clipboard are two desktop usefulties complete with 'how it works' commentaries. And find out about the RISC OS font format with the second instalment of the series.

Chris.

Christopher Dewhurst

Editorial	2
Beginner's Page	3
News and application updates	4
Missile Command	5
Schema 2	11
Raspberry Ro Lite	16
Anatomy of a Font	19
Window Closer	24
Go Wireless with the Vonets VP11G	29
Icon Clipboard	31
Artworks 2,X3	33
32-bit PMS Voices	34



Beginner's Page

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.

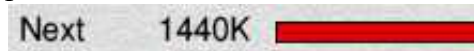
Type AUTO for automatic line numbering. Press Escape to stop and type *SAVE "myprog"* followed by Return to store *myprog* on hard disc.

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?

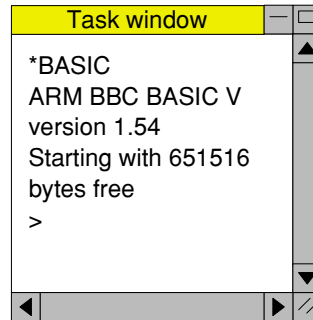
Menu click over the Raspberry icon on the right side of the iconbar and select click on Task window. Or press Ctrl + F12.



You may need to reserve more memory for the task in which case 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, hold down Ctrl and press F12. You can't use the cursor editing facility or change MODE, however.



You can also program and run Basic programs from the desktop. Double-clicking on the filer icon runs it, holding down Shift and double clicking loads it into your text editor.



How do I select the currently selected directory?

Articles may tell you to set the CSD (currently selected directory). Just click menu over filer window and choose Set directory ^W.

How do I open an Application Directory?

Application directories begin with a ! called 'pling'. Hold down shift and double click select to open the directory.

I get blank a screen when trying to run games listings

Check you have the Anymode module installed. You can 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* which is a multi-coloured directory with PC written on it. 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.



News and App Updates

Amcog Flash Collection

Amcog have released their games on a USB flash drive so if you haven't yet bought *Cyborg*, *Legends of Magic*, *Mop Tops*, *Overlord*, *Xeroid* or *Protector* (or even if you have bought just one or two of these) the stick represents great value for money at £40.00; previously the games retailed at £9.99 each. A copy of the *Games Development Kit* is even included. To purchase, go to the Elesar website shop.elesar.co.uk then navigate to Accessories > Software.

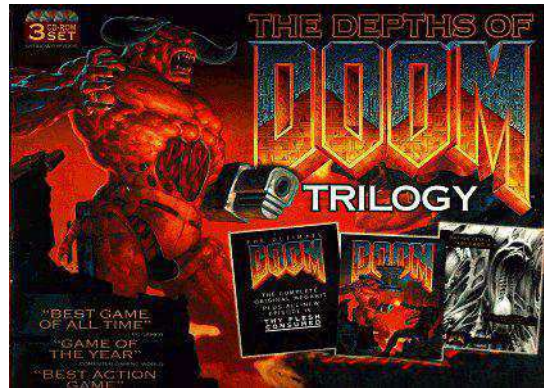


Pi-Top Utils 1.04

■■■■ Pi-Top Utilities adds useful features to your PiTop including a battery level indicator, screen brightness and volume controls.



Version 1.04 is now available at forums.jaspp.org.uk/forum/viewtopic.php?f=8&t=348



Doom Trilogy

The first person 3D shooting adventure has been given a major overhaul so it now runs natively on Raspberry Pis. Not only that the soundtrack has been revamped so your £14.99 will buy you a comprehensive audio and visual experience from !Store.

WeatherUK 1.11

Version 1.11 of the Weather app can be downloaded from !Store. Get

weather information for major towns in the UK over the next few days, with links to the BBC website for longer range forecasts.

Train Times

This is a new application from KevSoft www.kevsoft.co.uk. Information on train times from any UK station can be called up and the timetable for a particular train viewed.

RISC OS Awards 2017

Finally, don't forget to vote for your favourite magazine as the 'Best publication or offline resource' during 2017 at www.riscosawards.co.uk/

The earth is once again under invasion from outer space and your mission is to defend the cities against successive waves of bombs being dropped from the heavens.

Use the mouse to select your difficulty level then click the adjust, menu or select button to launch missiles from bases on the left, middle or right of the screen.

You advance to the next wave when all the enemy bombs have detonated. If all of your cities or missile bases have been destroyed the game ends.

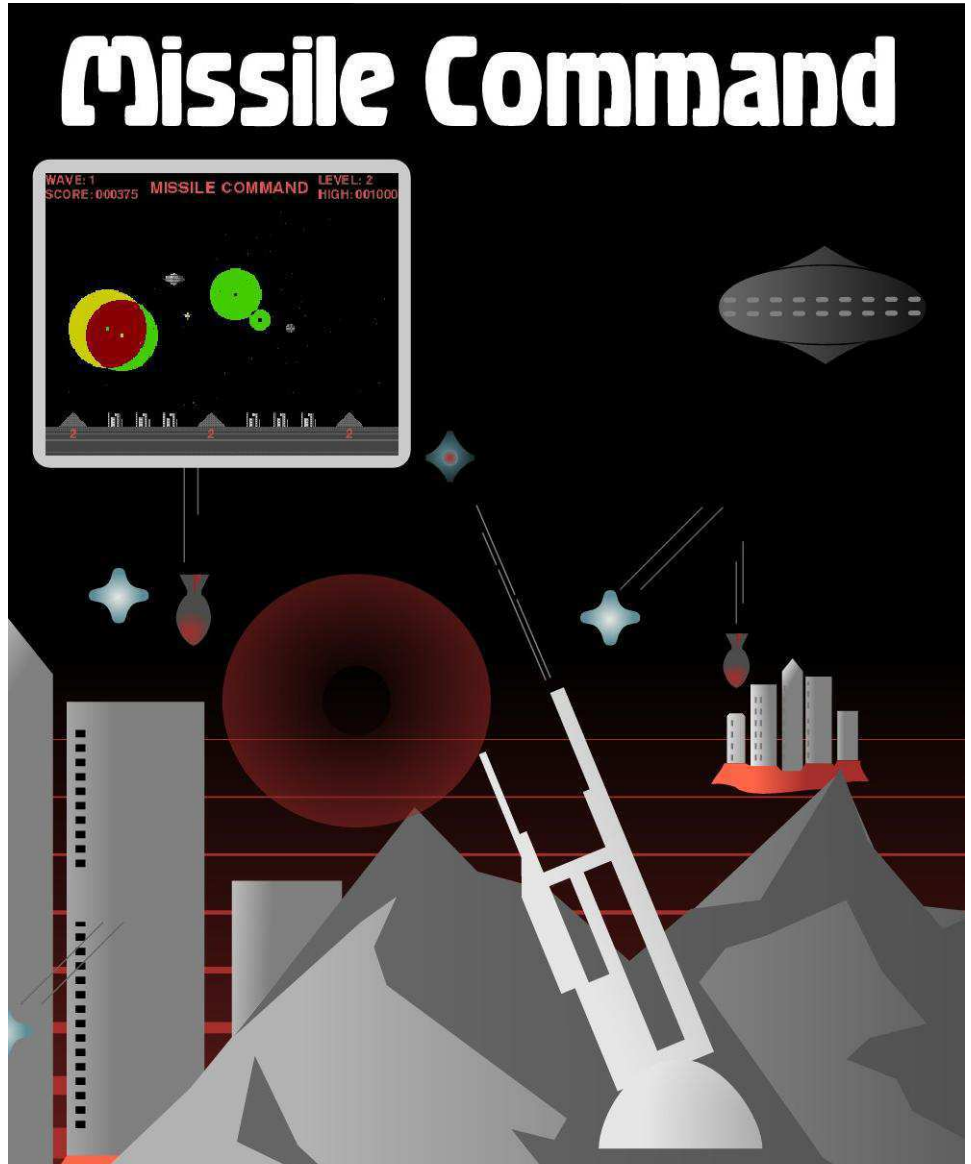
Missile Command uses the RDSP module for its sound effects so after entering the main listing and ensuring it is fully debugged save it as COMMAND. Then click Menu over Edit's iconbar icon and select Create > Obey and type the following lines:

```
ICheck/load RDSP module  
RMensure RDSP 0.21 RMLoad System:Modu  
les.Audio.SoundChip.RDSP
```

```
RStart
```

```
<Obey$Dir>.COMMAND
```

Save it as Boot in the same folder as COMMAND then double click Boot to play.



```

10REM Missile Command
20REM Drag N Drop Spring 2018
30ONERROR PRINT REPORT$+" at Li
ne ";ERL: OSCLI"CON.Fontmax3 36":E
ND
40MODE13:TINT2,0
50OFF
60PROCinit
70REPEAT
80 PROCset_game
90 PROCdraw_screen
100 PROCupdateinfo
110 PROCgetlevel
120 REPEAT
130 PROCset_wave:PROCupdateinfo
140 REPEAT
150 PROClaunch_up:PROCmove_up
160 PROClaunch_down
170 IF ufo=0 AND RND(20)=1 PRO
Csetufo
180 IF ufo PROCufo
190 counter=score:IFcounter>50
00 extra=TRUE:counter=counter-5000
200 PROCdelay(5)
210 UNTIL explode=0 AND ufo=FAL
SE
220 wave+=1:bonus=bases*20+B1%*
10+B2%*10+B3%*10
230 IFbases>0 PROCscore(bonus)
240 UNTIL bases=0 OR (b1%+b2%+b3
%)=0
250 PROCfont("THE END",820,300,5
00)
260 IF score>high high=score:PRO
Chigh
270 REPEAT:MOUSEX,Y,BT:UNTIL BT<
>0
280UNTIL FALSE
290END
300:
310DEFPROCsetufo
320ufo=TRUE:loop=4:ufoy=600+RND(
250):size=0:IF RND(2)=1 ufox=1279:
ufom=speed/2:ELSE ufox=0:ufom=spee
d/2

```

```

330PROCsprite(4,ufox,ufoy,3)
340ENDPROC
350:
360DEFPROCufo
370IFufo=2 PROCufoexplode:ENDPRO
C
380IFexplode=0 WAIT
390PROCsprite(4,ufox,ufoy,3):ufo
x=ufox+ufom
400IF ufox<-50 OR ufox>1279 ufo=
FALSE:ENDPROC
410IF POINT(ufox,ufoy)=13 THEN S
OUND&13,&0390,120,40:score=score+1
00:ufo=2:ELSE PROCsprite(4,ufox,uf
oy,3)
420ENDPROC
430DEF PROCufoexplode
440GCOL3,35:IF size=100:loop=lo
op
450CIRCLE FILL ufox+20,ufoy+20,s
ize:size=size+loop
460IF size>4 CIRCLE FILL ufox+20
,ufoy+20,size
470IF size=0 AND loop<0 THEN ufo
=0
480ENDPROC
490:
500DEF PROCset_game
510wave=0:b1%=TRUE:b2%=TRUE:b3%=
TRUE:counter=0:extra=FALSE
520bases=6:score=0:button=0:depl
oy=3:timer=40
530FORT=0T050:X%(T)=RND(1279):Y%
(T)=RND(900)+100:NEXT
540base(1)=100:base(2)=600:base(
3)=1100
550FOR N%=1 TO 3:city(N%)=150+N%
*100:NEXT
560FOR N%=4 TO 6:city(N%)=350+N%
*100:NEXT
570FOR N%=1 TO 6:dead(N%)=FALSE:
NEXT
580ENDPROC
590:
600DEF PROCset_wave

```

```

610deploy=wave*3+3:ufo=FALSE
620timer=30-wave:max_deploy=11+d
eploy
630local_timer=1:speed=level+wav
e:up_left=10
640explode=deploy:B1%=explode/2
650B2%=explode/2:B3%=explode/2
660IFb1%=FALSE THEN B1%=0
670IFb2%=FALSE THEN B2%=0
680IFb3%=FALSE THEN B3%=0
690IFwave>0 THEN PROCfont("***B0
NUS IS "+STR$bonus+"***",500,300,6
00):A=INKEY(200)
700 IFextra=TRUE PROCextracity:A
=INKEY(200)
710REPEAT MOUSE X%,Y%,Z%:UNTILZ%
=0:CLS
720FOR N%=0 TO 50:mob(N%,4)=0:NE
XT
730PROCdraw_screen:MOUSE RECTANG
LE 0,200,1280,600
740ENDPROC
750:
760DEF PROClaunch_up
770TM=FNup_free:IF TM=0 THEN END
PROC
780MOUSE X%,Y%,Z%:IF Z%=0 THEN b
utton=0:ENDPROC
790IF Z%(<>0 AND button<>0) THEN E
NDPROC
800IF (up_left=0 AND Z%(<>0) OR (
Z%=1 AND B3%=0) OR (Z%=2 AND B2%=0
) OR (Z%=4 AND B1%=0) OR (Z%=3 OR
Z%>4) THEN
810VDU7
820ELSE:CASE Z% OF
830 WHEN 4:mob(TM,5)=1:SOUND&11
,&0190,100,40:B1%-=1
840 WHEN 2:mob(TM,5)=2:SOUND&11
,&0190,120,40:B2%-=1
850 WHEN 1:mob(TM,5)=3:SOUND&11
,&0190,140,40:B3%-=1
860 ENDCASE
870 mob(TM,0)=base(mob(TM,5)):mo
b(TM,1)=150:mob(TM,6)=0

```

The spreadsheet application Schema2 was developed in the early 1990s by CRM Ltd for Clares Micro Supplies who distributed the software until around 2002, when APDL acquired the distribution rights.

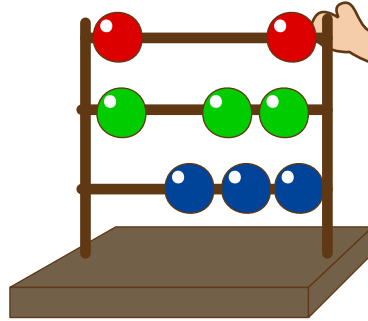
Commercial distribution of Schema2 stopped in 2015 with the death of David Holden and it looked like that was the end of another very useful piece of RISC OS software.

However, all is not lost thanks to Christopher Bazley who earlier this year made Schema2 freely available to download from his website at <http://starfighter.acornarcade.com/mysite/apdl.html>.

I use spreadsheets quite a lot with my engineering students and, as a newcomer to RISC OS, I found Schema2 to be a very capable alternative to Excel. In this series I'll be sharing my experiences with Schema2, starting with first impressions and then going on to explore the use of workspaces, circular references and macros.

Before I begin, it is important for me to acknowledge the help that I received from John Harrison and Christopher Bazley. Special thanks

Schema2



corresponding squared values then graph and save the results.

Double click on !Schema2 to install it on the icon bar and menu-click on the iconbar icon to obtain the Schema2 menu.

Select Create from the menu offerings and type in

to Julian Fry for his unstinted support.

Downloading and installing Schema2 follows standard RISC OS practice so let's skip that bit and get started with a simple demonstration.

We're going to create a sheet of numbers 1 to 10 with their

“Xsquared” for the spreadsheet name as shown in Figure 1. The default spreadsheet size is 10 by 10, so I suggest that you change this to 15 columns and 20 rows or whatever is your preferred spreadsheet size.

Then click create and a spreadsheet window with the title “Xsquared” will appear. In Schema2, spreadsheets are not limited by window size but can contain up to 30,000 by 30,000 cells.

Before going any further, it's a good idea to set our choices with the Schema2 Choices menu option as shown in Figure 2.

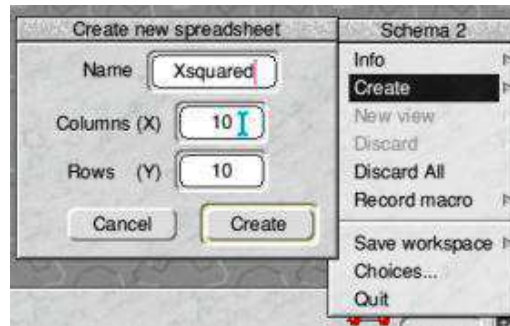


Figure 1 Create New Spreadsheet



Product: RaspberryRo Lite 3 with 32Gb mSATA

Retailer: Fouth Dimension

Website: <http://www.raspberryro.co.uk/raspberrylite.shtml>

Price: £225.00

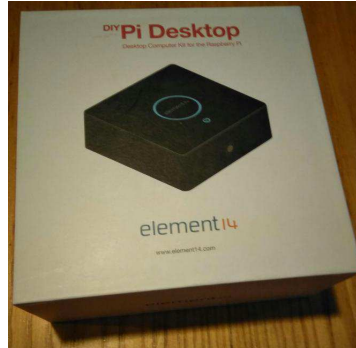
It's been a few years now since I actively used RISC OS, but I decided it's time to dust off my enthusiasm for RISC OS and return to being an active user.

Some of you may remember me, Paul Stewart, for creating and launching *Drag 'N Drop*, which I edited for 3 full years before handing over the to current editor, Christopher Dewhurst.

It was at that point I stopped being an active user. Whilst I may no longer have been an everyday user, I have always kept a slight eye on things via the RISC OS based websites.

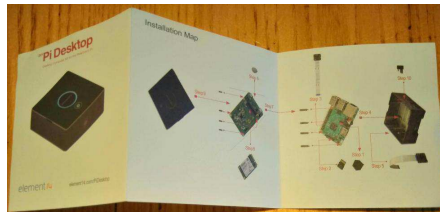
Today I'm taking a look at a 4th Dimension Product, the RaspberryRO Lite 3, with a 32Gb mSATA.

Having ordered on a late Thursday afternoon in February, the parcel arrived the following Wednesday morning.



Review

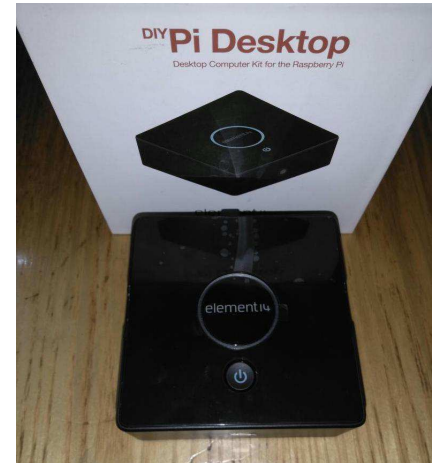
I unpacked it to find a small box with 'DIY PI Desktop by Element 14' on the front. I was a little surprised there was no sticker on the box to indicate it was a RaspberryRO Lite 3 or that it was from the 4th Dimension. Nothing to indicate where it came from, apart from a stubby receipt in the box, not even any sticker on the the box or the unit itself to indicate it was running RISC OS!



Mind you, my A9home never had such stickers on either, but then the A9home was not retailed world wide with other Operating Sytems.

Still, I was expecting something on the outside to indicate it was running RISC OS.

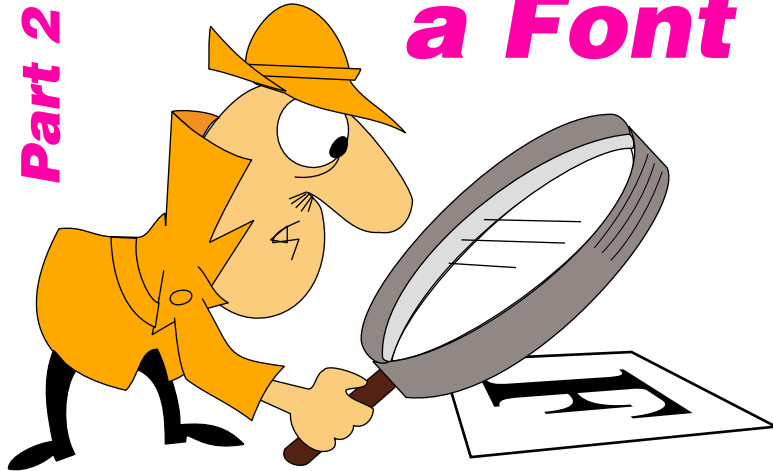
Having unboxed I was quite impressed with how neat the little system looked. It is all in black with Element 14 branded in the middle on top (where is the 'RISC OS inside' sticker or similar?) along with the power on button just underneath.



Switch on and a circular blue light surrounds the Element 14 logo. It is so amazing these days how small computers are getting. I thought my

Anatomy of a Font

Part 2



A RISC OS font consists of two files, the Metrics and the Outlines and in the first instalment of this series we examined how Metrics files work.

We now move on to looking at the structure of the Outlines which holds details on the lines and curves, scaffolding and composite details which make up the font.

Font scaffold are guidelines used when designing a font, much like scaffolding on a building. Composites are parts put together to make up a letter, for example the letter é is an e plus an accent. The

idea behind this originally was to save on storage space because you would need to only design the accent once and recycle it for é, í, ó etc.

With cheaper storage and increased memory on modern machines this is less of an issue so we won't be looking at composites and scaffolds this time.

Instead we'll concentrate on how the lines and curves are stored. Now, information is stored in a huge variety of ways – offsets, offsets to offsets, words (four bytes), half-

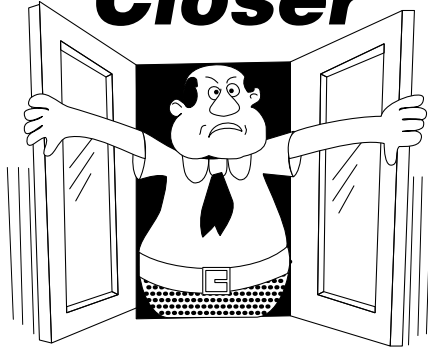
words (two bytes), two's-compliment (signed) half-words and even signed one-and-a-half bytes (12 bits)! It sounds scary but I'll explain with plenty of examples.

Before taking a 'walk through' of a typical Outlines file, type in Program 1, a simple memory dumper. Save it on your hard disc as DUMPER and ensure the Currently Selected Directory is set to this location by menuing over the filer display and choosing 'Set directory'. Open a task window with Ctrl+F12, type *BASIC followed by Return and CHAIN"DUMPER".

Program 1

```
100N ERROR CLOSE#0:PRINT REPORT
$+" at ";ERL:END
20*KEY1 16GbPi:$.!Boot.Resource
s.!Fonts.
30INPUT "File to dump ";file$
40I%=OPENIN file$
50REPEAT
60INPUT"Offset ";A%
70PTR#I% = A%
80REPEAT
90PRINT RIGHT$("0000"+STR$*PTR#
I%,4)+" ";
100a$=""
110FOR X%=0 TO 3
120Y%=BGET# I%
130PRINT RIGHT$("00"+STR$*Y%,2)+
CHR#32;
140IF Y%>31 a$=a$+CHR$Y% ELSE a$
=a$+"."
150NEXT
```

Window Closer



One aspect of RISC OS which makes it so productive and easy to work with compared to other operating systems is the freedom with which windows can be moved around the desktop, behind or in front of other windows.

The downside is that it when you come to closing windows it can be difficult to see where they are as there could be so many obscuring each other.

This application makes life easier by allowing you to close all of the windows for any particular application that is running.

Type in Listing 1, It creates the application's directory, sprite, !Boot and !Run files.

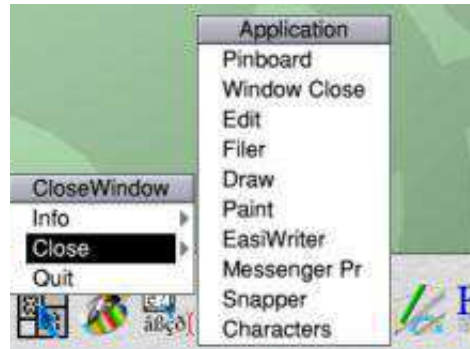
Then type in Listing 2 and,

ensuring it is debugged, save it as !RunImage and double click !WinClose to run.

Clicking Menu over the iconbar brings up three options. Info displays information on the application. Moving the pointer across the Close option will display a menu of applications (tasks) which are running.

To close all of that application's windows just click on the relevant menu option.

Quit, of course, shuts down the WinClose application.



Note that windows with unsaved work in them will not be closed and not all applications listed will have open windows.

The application works as follows. When the user clicks Menu on the iconbar the menu is not displayed

immediately. A flag is set to indicate the menu is to be opened and the computer gathers data on the applications running.

It does this by opening an 'invisible' window below all the others on the desktop. A call to Wimp_GetWindowState (with the invisible window's handle at position zero in the parameter block) returns the handle of the task owning the window in position 28 of the block. If there are no windows on top this value is -1.

Getting the name of the application given its handle has to be done in a roundabout way. The task handle is sent to the system in a message block, with message action number &400C6. The system responds by sending WinClose a message number &400C7 with the task name returned in a string starting at position 28 of the message block, terminated by zero.

PROCgetname extracts the characters to make a Basic string which is inserted into the *app\$()* array, the array of application names along with the applications' handles in *apph%()*.

This is assuming the name hasn't

```

22200THERWISE:READ I%!menu%
2230ENDCASE
2240NEXT
2250ENDPROC
2260
2270REM Iconbar main menu data
2280DATA "CloseWindow",&
00070207,160,40,0
2290DATA 0,info%,&07000021,"Info"
2300DATA 0,menu2%,&07000011,"Close"
2310DATA &80,-1,&07000021,"Quit"
2320
2330DATA "Application",&
00070207,256,40,0
2340
2350DEF PROCerror
2360!B%=ERR
2370$(B%+4)=REPORT$+" at line "+
STR$ERL+CHR$0
2380SYS "Wimp_ReportError",B%,1,app$
2390SYS "Wimp_CloseDown"
2400END

```

Procedures and Functions

PROCcheckmenu Check if menu can be opened, not if a close is in progress or still gathering task information.

PROCclick Deal with mouse clicks

PROCclose Start closing process

PROCclosewins Loop through windows on desktop, if window owner matches task handle selected then send message to that task to close the window.

PROCgetname Check if task name already known by looping from 1 to number of tasks found so far

held in app\$(). If it is a new name, extract the zero-terminated string at offset 28.

PROCmenuchoice Decode menu choice. Take action to quit WinClose or initiate close procedure as necessary.

PROCmessage Deal with messages sent by system to WinClose. Word at 16 of the block is the message number, 0 if application is to quit, &400C7 to get application names.

FNopenatback Open dummy window, ensuring it is opened at the bottom of the stack by setting word in window block +28 to -2, and return handle of task owning window on top of it.

PROCsendmessages Open dummy window at back (bottom) of all others on desktop. Loop through windows on top sending Wimp message to send message back to WinClose with name of task owning the window.

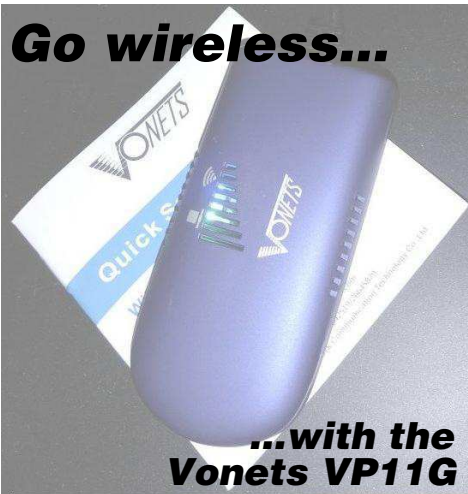


Have YOU written a program for your RISC OS Pi?

Can YOU write an article to describe it?

Get £15 to appear in Drag 'N Drop!

dragdrop@dragdrop.co.uk



With RISC OS still lacking the ability to do WiFi we have to use alternatives and in this article I'll look at an inexpensive peripheral which goes some way to addressing this problem.

After purchasing my Raspberry RO Lite 3 from 4D (reviewed elsewhere in this issue) I sourced a Vonets VAP11G WiFi Router/ Repeater/Bridge. It is available on eBay or Amazon from £15.

The device is relatively small and is powered by USB. However a word of caution here. I have found it must be powered independently of the RaspberryPi, although this may differ on other systems.

This seems to be because once configured there is not enough time between switching on the Pi, the WiFi bridge starting up and RISC OS looking for DHCP. RISC OS ends up auto-configuring rather than receiving the IP Address.

Now, I have read in the past about people buying these sorts of items but finding them impossible to configure from RISC OS.

This one, you will be pleased to know, does not fall into that category. But you have to configure it using either !Otter-browser or !QupZilla.

I have tried configuring it using both WebsterXL and Netsurf and neither would load the configuration page correctly.

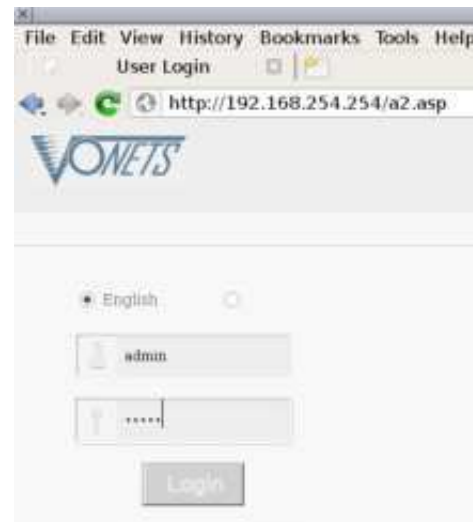


By default this device expects your system to be on the IP range of 192.168.254.* with subnet of 255.255.255.0. So first of all, you

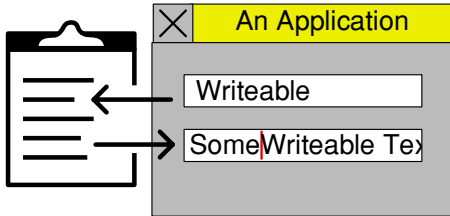
just need to manually assign your device an IP address in that range,

This is achieved by double clicking !Boot to bring up the Configuration window, click Internet, ensure "Enable TCP/IP Protocol Suite" is ticked, go to Interfaces > Configure to see the window in the screen shot above.

Once completed you can browse to the configuration page. Type 192.168.254.254 into your browser's address bar and it will take you to the setup page, where you can login using the default credentials supplied in the instruction sheet which comes with the device.



Icon Clipboard



This is a simple application which allows text to be transferred between writable icons.

First of all type in Listing 1 which creates the necessary application directory, sprite, !Boot and !Run files. Then type in the second listing and save it inside the application directory as !RunImage. Double click !IClipbord to run.

To copy text from a writeable icon simply place the caret in the icon and press Ctrl+C. To paste, put the caret in another writeable icon and press Ctrl+V or Insert.

How It Works

For an application to detect key presses on the keyboard (as IClipboard does) it has to have the "hot keys" bit set in the window flags in the window definition.

IClipbord doesn't need a window so the way round this is to set up an 'invisible' window is define.

A SYStem call to "Wimp_Poll" returns event number 8 if a key has been pressed. The system puts the key code in word seven (+24) of the parameter block.

The details of the icon in which the caret is situated are obtained with SYStem call Wimp_GetIconState,,B% which returns the address of the text at word eight (+28) of B%, control code terminated.

If the key is Ctrl+C (key code 3) then the copying PROCEDURE is called. This copies the text from the icon into copy%. The length of the text is L%.

If the key is Ctrl+V (22) or Insert (&1CD) PROCpaste is called. This checks if L% is zero, if the user has pressed Ctrl+V with nothing on the clipboard the procedure ends there. Otherwise each character of *copy%* is inserted into the keyboard buffer using SYS "OS_Byte",138,0,Y% where Y% is the ASCII code of the character.

The standard RISC OS shortcut for deleting text in a writeable icon is Ctrl+U. One enhancement to the

program would be to add a facility to delete part of the text, Ctrl+Y to delete everything up to the caret, for instance. (The caret position is at B%+20 when PROCkeypress is called.)

Listing 1

```
10REM Make files for Icon Clipboard
20REM (c) Drag 'N Drop 2018
30:
40app$="!IClipBord"
50OSCLI"CDIR "+app$
60PROCcreatesprites
70PROCcreatefiles
80END
90:
100DEF PROCcreatesprites
110DIM H% 550:H%=550:H%!8=&10
120op$="OS_SpriteOp"
130SYS op$,&109,H%:READ n$,W%,D%
140SYS op$,&10F,H%,n$,W%,D%,9:R
EM create sprite
150SYS op$,&11D,H%,n$:REM create
mask
160FOR Y%=D%-1 TO 0 STEP-1:READ
a$
170FOR X%=1 TO W%
180b$=MID$(a$,X%,1):IF b$="." TH
EN
190SYS op$,&12C,H%,n$,X%-1,Y%,0
200ELSE
210SYS op$,&12A,H%,n$,X%-1,Y%,EV
AL("&" +b$)
220ENDIF:NEXT,
230SYS op$,&10C,H%,app$+"!Sprit
es"
240ENDPROC
250:
260DEF PROCcreatefiles
```

```

690SYS "Wimp_CreateIcon",,B% TO
iconhandle
700REM iconbar menu
710FOR I%=0 TO 40 STEP 4
720CASE I% OF
730WHEN 0,40:READ $(menu%+I%):I%
=i%+8
740OTHERWISE READ I%!menu%
750ENDCASE
760NEXT
770ENDPROC
780
790REM dummy window data
800DATA 0,0,0,0, 0,0,-1,&800010D
0,0,0,0,0
810DATA 0,0,0,0,0,0,0,0,0,0
820REM iconbar icon data
830DATA -1,0,-4,68,68,&B7002002,
"!iclipbrd"
840REM menu data
850DATA "IClipBrd",&00070207,160
,40,0
860DATA &80,-1,&07000021,"Quit"
870
880DEF PROCError
890!B%=ERR
900$(B%+4)=REPORT$+" at line "+$
TR$ERL+CHR$0
910SYS "Wimp_ReportError",B%,1,a
pp$
920SYS "Wimp_CloseDown"

```



Product: Artworks 2.X3.00 upgrade
Retailer: MW Software
Website: www.mw-software.com/
Price: £30.00

Review

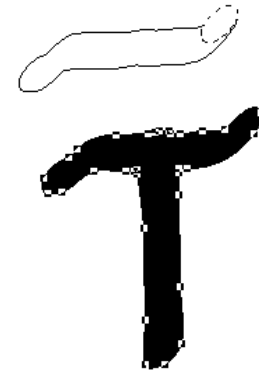
It's been five long years since the last upgrade to Artworks was released so what's new?

There have been some "under the bonnet" code tweaks to make Artworks run reliably on expensive RISC OS computers like the TiMachine) but for the rest of us your £30.00 gets you a new 'shape painter' tool to play with, making 36 tools now on the toolbar.

It's rather like painting thick lines in Paint then using a tracing application to 'draw round' the bitmap, except Artworks now does it all for you.



There are circular, elliptical (and tilted elliptical) brushes with different sized brush heads. A slider bar can be dragged to mimick more faithfully your mouse movements although the higher the accuracy the more storage is taken up.

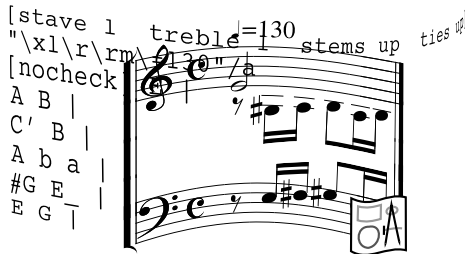


The new tool opens up lot of potential, creating digitised signatures, handwriting, applying graded colours to

lines and so on. It's particularly helpful if you use a stylus/tablet to produce your artwork on RISC OS.



Philips Music Scribe



Philips Music Scribe (PMS) is a music processing application which takes plain text files, in which music is engraved in sequences of ASCII characters, and renders high quality scores for printing or exporting to Draw for further editing.

PMS is now available for free in !Store. Inside **Utils.PH-Voices** in the download there is a 26-bit voice module providing some synthesized organ tones.

This doesn't work on modern machines but fortunately the source code is provided as **asmVoices** and I will now describe the steps necessary to '32-bit' the module to make it work on the Raspberry Pi.

Open **asmVoices** in Edit. Now, 26-bit modules have a 28-byte or 44-byte (7-word or 11-word) header. 32-bit voices must *always* have a 52-byte (13-word) header.

Locate the line which reads **EQUD 0 ;help & cmd keywords** (The layout might be ever so slightly different on your screen, caused by optional extra spaces). This line is line 18 in my Edit, press f5 and look at the figure to the right of 'current line' no.)

In the line below add the following three lines:
IFOR I=1 TO 5:COPT C:EQUD 0:JNEXT:COPT C
EQUD Flag-ModuleBase ;32 bit flag
.Flag EQUD 1 ;

This does two things. The first line pads out the header with five blank words. 32-bit modules must have a pointer to a flag with bit zero (and only bit zero) set. The other two lines insert this pointer to *Flag* and *Flag* itself has bit zero set.

This upgrades the header to 32-bit standard. Further down in the code find the following lines:
BIC R14,R14,#VFLAG ; clear V flag
MOV PC,R14

This clears the processor's overflow flag (VFLAG) which in 28-bit code



lives in the same word as the program counter (the memory address of the current instruction). In 32-bit code, however, the overflow flag is in a separate word called the Current Program Status Register (because all of the program counter's 32 bits are now used for the address). So replace the **BIC R14,14,#VFLAG** line with the following three lines:

```
MRS R8,CPSR
BIC R8,R8,#VFLAG
MSR CPSR_f,R8
```

This uses the 'new' ARM instructions to load the CPSR into R8, clear VFLAG and store the result back in the CPSR.

Save the assembly code as **asmVoices32** (ignore the message about mismatched brackets) and double click to run. The voice module is saved as **TestModule** and double click that to install. Several new voices (PH-Organ, PH-Sine plus variants) are now available from the PMS Play window.

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