

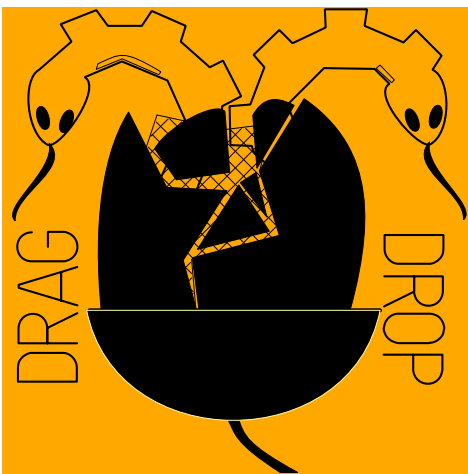
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Autumn 2021
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All machines

Schema2 Envelope Editor

BBC Micro at 40





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Produced on RISC OS computers

This issue has been blessed with contributions
from the following people:
Norman Lawrence (Schema2 and Argon Case
for Pi4B)
Christopher Dewhurst (everything else)

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necessarily those of the editor. Alternative views
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Editorial
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News and App Updates
Disc Assembler
Storm
Schema2
Post-Processing with Ghostscript
Envelope Editor
SoundCon32
Argon Case for Pi4B
Advertisement

EDITORIAL

If your PDF file viewer handles bookmarks (such as !PDF on RISC OS shown here) you'll notice you can click the links to get to different pages of your *Drag 'N Drop*. We explain how to do this with PDFmarks in the *Post Processing with Ghostscript* article.

Special welcome to BBC Micro users, the Disc Assembler listing and Storm game should be of interest. To celebrate 40 years since the BBC Model A we hope to have more 8 bit content in the coming issues of *Drag 'N Drop*. But to quote the old editor's mantra, 'I can't publish what I don't get' !

Chris.

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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.

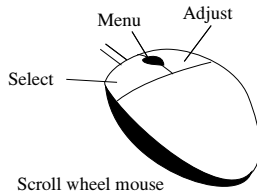


Type AUTO for automatic line numbering. Press Escape to stop and type SAVE "myprog" followed by Return to store *myprog* on hard disc. To return to the desktop type *QUIT.

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

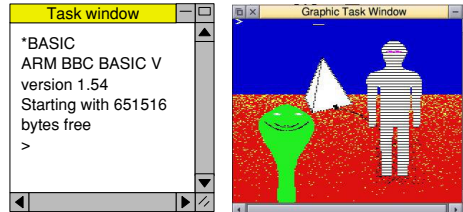
How do I open a Task window?

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 Application Directory?

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

I get a 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.



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.

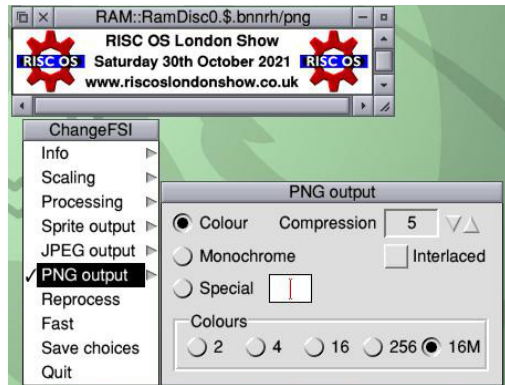
News and Application Updates

RISC OS London 2021

The first physical RISC OS expo since Covid lockdown is Saturday 30th October 2021 at the St Giles Hotel, Feltham. ROUGOL organise the show in the West London town which has good road, train, plane and bus access. Programmers and producers usually have something quite major they've been quietly beavering away at. Keep safe on your travels – it promises to be a good day out! Tickets £5 on the door. www.riscoslondonshow.co.uk.

Price Increase

From January 2022 the cover price of *Drag 'N Drop* will increase to £4.25 for the magazine only, £5.50 per issue if you purchase it with an archive (Zip) file of the programs typed in. We think this is still great value for money when compared to other RISC OS publications. Don't forget if you haven't read *Drag 'N Drop* for a while, the Back Issue stick containing all 43 issues plus programs *plus* all original DTP is fantastic value at £18.00, free postage worldwide.



PNG support

Paint and ChangeFSI are now able to handle PNG images. PNG (Portable Network Graphics) is an industry-standard, lossless bitmap format introduced in the mid 90s. (It was to replace GIF, which is still in rude, animated health across the net!)

ChangeFSI version 1.66 is part of the Nightly HardDisc4 (note *not* the HardDisc4 5.28) download at www.riscosopen.org > Downloads > Miscilaenous which also includes a new support module called CompressPNG which you need to copy to !Boot.Resources. !System.350.Modules.

Paint version 2.45 is in the latest

RISC OS Rom but a Ram version is included in the Nightly HardDisc4, see inside !Boot.RO350Hook.Apps in the zip file if you don't fancy re-flashing your Pi's SD card yet.

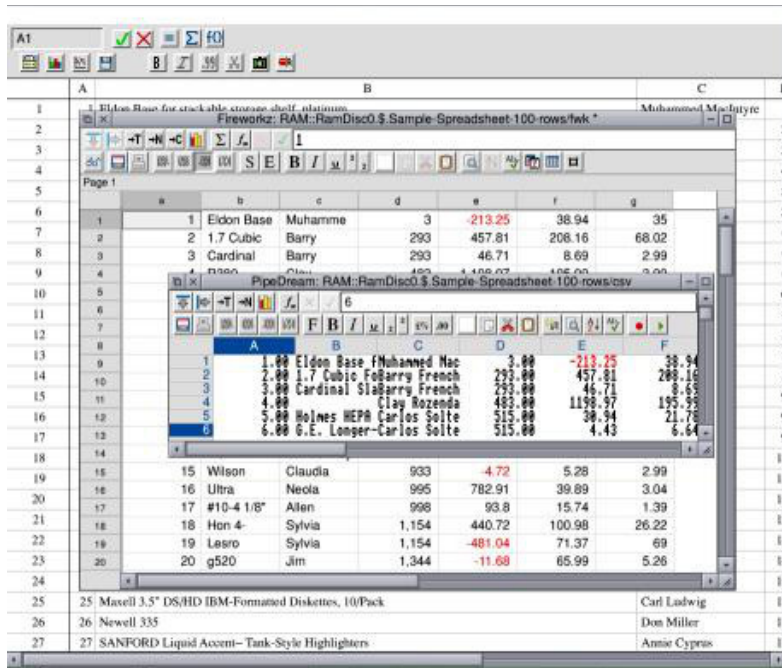
There is rumour that Draw will support PNGs in the near future too, we certainly hope it's true.

Fireworkz Pro 2.31

Version 2.31 of the premier RISC OS spreadsheet app is available for download via !Store with improvements to the MS Export facility. A free and quite capable version of !Fireworkz is available from croftmuisk.co.uk/coltsoft/fireworkz/ but the paid-for version is recommended if you are doing cross platform spreadsheet work.

Retriever

This is a desktop utility marketed by Stader Software in Germany, essentially an advancement on the built-in 'Find' filer menu option. Retriever claims to be able to find content which may be buried in



The screenshot shows a spreadsheet application with multiple windows. The main window displays a table with columns labeled a through g. The data includes items like 'Eldon Base', '1.7 Cubic', 'Cardinal', 'Wilson', 'Ultra', '#10-4 1/8"', 'Hon 4-', 'Lesro', and 'g520', along with names like 'Muhammed Mac', 'Barry', 'Sylvia', and 'Jim'. Numerical values are present in several columns, some in red (e.g., -213.25, -472, -481.04, -11.68). A smaller window titled 'PipeDream: RAM:RamDisc0\$.Sample-Spreadsheet-100-rows.csv' is also visible, showing a similar table structure.

Spoilt for choice: Schema2, Fireworkz and PipeDream are all free but there's a Fireworkz Pro from R-Comp's! Store costing £38. (CSV data free from sample-videos.com.)

documents inside other documents, for example an HTML file inside a compressed (zipped) file, in a variety of RISC OS file types it knows about. Retriever costs £48.00 and can be purchased from www.stader-softwareentwicklung-gmbh.com.de.

Pipedream 4.59

There are three spreadsheet applications being actively

(marking version 4.59.01) to PD has improvements to matrix handling plus several other tweaks you may have missed. Download from croftnuisk.co.uk/coltsoft/pipedream/ (yes, the same website as for Fireworkz).

ARMalyser version 0.67

ARMalyser is a powerful Arm code disassembler, it recognises RISC OS modules, object code and more and

maintained for RISC OS (if only the same were true for a web browser!). One is Fireworkz, another is Schema 2 (covered in our *Drag 'N Drop* tutorials) and the third is PipeDream.

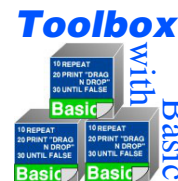
A very minor update

can pick out potential problems with machine code written for earlier Arm chips if the source code isn't available to reassemble for modern Arm chips. Output in various formats (text, HTML, Impression). It has received some bug fixes and can be downloaded from www.armclub.org.uk/free.



RiscLua

The RISC OS port of the Lua programming language has received an update, mainly surrounding 64-bit integers and floating point. The latest version is confusingly called RiscLua 86 but based on Lua version 5.4.3 on other computing platforms (we think time speeds up by a factor of 74.57 in the RISC OS world!) Download RiscLua 86 for free with plenty of coding examples from www.wra1th.plus.com/lua/risclua.html.



● Toolbox with Basic will be back next time.



Every Acorn and RISC OS machine has an excellent assembler built into BBC Basic but the disadvantage is that the source code (the assembly language program) has to be resident in memory at the same time as the assembled machine code.

On BBC and Electron machines in particular this limits the size of the machine code program that can be written.

One solution is to split up the assembly into two or more programs that CHAIN each other. For example, you might have ASSEM1 that assembles one section of code

assembled what.

It would be better to be able to compile the machine code from a text file that you had typed in a word processor like VIEW on the Beeb or EDIT on RISC OS.

The the only limit on the amount of code you could write would be the amount of Ram available to the word processor – plus the Ram occupied by the compiler program, which is negligible.

You would benefit from facilities provided by the word processor for better program development like search/replace and use of tab stops to format the display tidily.

The compiler would be a small

and passes any necessary variables to ASSEM2 to carry on the assembly.

Short of constantly printing out listings to refer to it becomes difficult to keep track of which routine in which program

Basic program to read in and assemble the lines of assembly language from the text file. Program DISCASS listed at the end of the article does just that. It runs on any Acorn or RISC OS machines and you can even use it with cassettes!

Enter the name of the file to be assembled and press Return. There are two example programs listed below, ARMPROG for use on RISC OS machines and BBCPROG for 8-bits.

If there is a mistake in your assembly language, DISCASS will shut the text file, report the error, and print the line in the text file where it occurred, for example:

```
No such variable:
INC scr55+1:BPL 12
```

When the compiler has finished, type CALL prog to run the machine code. Both programs do the same thing, choose twenty random numbers using a simple algorithm and print them out in hex.

There are certain conventions and recommendations which should be followed when writing programs assembled by DISCASS to avoid unpredictable effects.

● PAGE should be set to a high value and the code assembled below it. BBC Basic allows PAGE to be altered by multiples of 256 (&100) bytes. For the demonstration program, one page is sufficient, so type PAGE=PAGE+ &100 : CHAIN "DISCASS" followed by Return.

On RISC OS press Ctrl+F12 to open a task window and type *BASIC <return>. Ensure the CSD is set to where your text file is stored by pressing Menu over the filer and choosing **Set directory ^W**.

● Lines in the text file should be terminated with a carriage return (CHR\$13) or line feed (CHR\$10) but not both. VIEW on the BBC terminates its lines with CHR\$13 and lines in RISC OS's EDIT end in a line feed so if you are using either of these editors you do not need to be concerned. However beware if importing text files from 'foreign' operating systems like Windows.

● Resident integer variables A%, F%, M%, N%, X% and Y% are used by the compiler and should not be altered in your assembly.

● Your text file should begin by declaring the value of P% (and O% if relocating the code) along with

any other necessary variables.

● The square brackets, [and], indicate entry into and exit from assembler as usual but they must appear on a line by themselves. You should't declare which OPT value is used; DISCASS does this for you. It assembles the machine code once without reporting errors (OPT 0) and again to announce errors (OPT 2).

● If you are using loops within your program, the entire loop must be all on the same line, for example:

```
.scrtab
]
FOR y%=0 TO 31:a%=03000+y%*0280:y%?P
%=a%:y%?(P%+32)=a% DIV256:NEXT
P%=P%+64
[
...
```

● If you are DIMensioning arrays you must only dimension on the first pass. The compiler stores the current OPTion in M%. So your text file should do something like

```
IF M%=0 DIM mem 200
```

And not just

```
DIM mem 200
```

● If you are using cassettes you must rewind the tape after the first pass, in which case alter line 6 to:

```
6IF EOF'#F% M%=N%:PRINT"Rewind t
ape":GOTO3
```

ARMPROG

```
P%=PAGE-0100
[
.prog
    STMFD R13!,{r14 }
    MOV R3,#20
    BL rnd
.loop
    AND R0,R0,#0FF
    ADR R1,strings
    MOV R2,#8
    SWI "OS_ConvertHex2"
    SWI "OS_WriteS"
    .strings EQU "12"+CHR$0
    SWI 256+ASC", "
    SUBS R3,R3,#1
    BNE loop
    LDMFD R13!,{pc }
ALIGN
;*** RNG - Arm version ***
.rnd
    STMFD R13!,{r14 }
    LDR R0,seed
    LDR R1,cnst
    MOVS R0,R0,ASL#1
    EORCS R0,R0,R1
    STR R0,seed
    MOVS R1,R1,LSR#1
    STRCC R1,cnst
```

In a dense meteor storm, the good ship Pegasus is battling for survival. How long can it survive without running out of fuel – or getting crushed by a huge boulder?

Quite frankly, pal, that's up to you. The controls are in front of you and there are fuel cells out there to pick up – if you can get to them. Chortle, chortle.

Controls:

, = Left 1 = Retros fired

, - Right Q = Accelerate

HINTS – Go as fast as possible to get the best score. However the slower you approach a fuel cell the more fuel you get. Have a nice trip!

This game first appeared in Big K Issue 6 September 1984. As part of the BBC Micro 40th anniversary

celebrations it's republished here (for free) as Listing 1.

You can either run it in a BBC Micro emulator or modify the lines shown in Listing 2 for it to run properly on Raspberry Pi's running RISC OS in native mode.

If that isn't enough, Listing 3 makes it run in a desktop window using techniques discussed in *The Application Tutorial and Listings Book*.



Listing 1

```

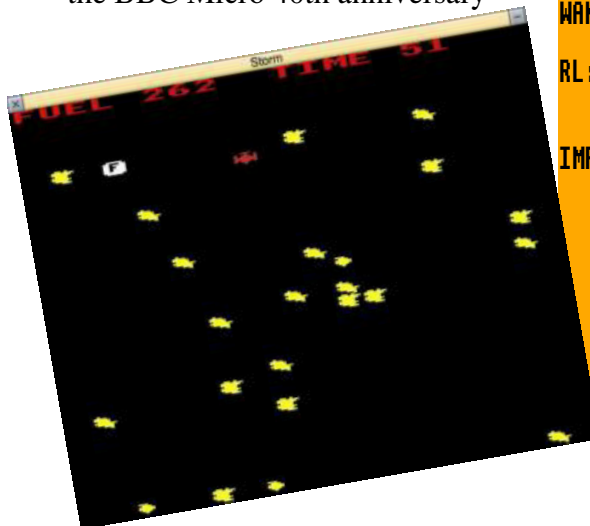
1 REM STORM COPYRIGHT OCTOSOFT
1984 A.TRENKER D.SCH
WANENFLOGL
2 ON ERROR REPORT:PRINT" at ";E
RL:OSCLI"FX12,20":OSCLI"FX11,20":END
4*FX12,0
5 INPUT"LEVEL PLEASE (1 EASY 10
IMPOSSIBLE)",I
6 D%=6
10 MODE 5
20 PROCINIT
30 VDU23,1,0;0;0;0;
40 *FX11,5
42 *FX12,20
50 COLOUR1
60 TIME=0
80 FOR N=1TOP:PROCKEY:PROCF:NEXT

```

```

1001 IF FNH GOTO 2000 ELSE IFFNO TH
EN2000
1002 PROCROCK:GOTO1000
2000 SOUND 2,-15,10,30:IFFNO M$="OU
T OF FUEL" ELSE M$="HIT BY ASTEROID"
2001 CLS:MODE7:ACROSS=11:C=1:PROCB1
GLETER
2002 SCORE%=(D^3/TIME/600)
2003 VDU10,10,10:PRINTTAB(14)" SCOR
E=";SCORE%:VDU10,10;*FX12,0
2004 FOR T=1TO255STEP30:SOUND1,-14,
T,2:NEXT:*FX15,1
2005 M$="ANY KEY TO PLAY AGAIN":C=4
:ACROSS=7:PROCB1GLETER:VDU10,10,10:
RUN
9000 DEF PROCINIT
9013VDU23,230,28,73,93,127,127,93,8

```




```

,0
9015VDU23,231,32,120,124,60,127,62,
14,2
9020VDU23,232,52,127,126,60,124,126
,60,14
9025VDU23,233,0,56,28,62,62,28,8,0
9026VDU23,234,62,99,111,103,111,111
,127,62
9027 F%=300
9029 D=10
9030 X%=RND(6)+6
9031 DEFFNR=(RND(1)<I/10*(D/999))
9033 DEFFNF=(RND(1)<I/500)
9034 DEFFNO=(F%<0)
9035 DEFFNH=(POINT(X%*64+32,0%)=2)
9036 DEFFNG=(POINT(X%*64+32,0%)=3)
9037ENVELOPE1,0,2,-2,2,6,12,6,-127,
0,0,127,126,0
9038 DEFFNLF=(F%<30ANDF%>27)
9039 VDU23,1,0;0;0;0
9040P=5;0%=780
9050ENDPROC
9100DEF PROCKEY
9101 T=TIME:REPEATUNTILTIME>T+5
9103 IF FNG SOUND 1,2,40,5:F%=F%+10
9104 IFFNLF SOUND1,1,30,30 :F%=F%-4
9105 PRINTTAB(X%,D%-1)CHR$(32)
9110A=INKEY(1)
9115IFA=44 THEN IF X%>1 THEN PRINTT
AB(X%,D%)CHR$32:X%=X%-1:PRINTTAB(X%,
D%)CHR$230:F%=F%-1
9120IFA=46 THEN IF X%<19 THEN PRINT
TAB(X%,D%)CHR$32:X%=X%+1:PRINTTAB(X%
,D%)CHR$230:F%=F%-1
9125IF A=49 THEN IF P<10 P=P+.6:F%=
F%-2
9126IF A=81 THEN IF P>0 P=P-.5:F%=F
%-3
9130 PRINTTAB(X%,D%)CHR$(230)
9131 SOUND 1,-10,120-P*10,1:SOUND1,

```

```

0,0,0
9132 PRINTTAB(X%,D%-2)CHR$(32)
9140 D=D+1
9190ENDPROC
9200DEFPROCROCK
9205 COLOUR2
9210IF FNR PRINT TAB(RND(19),30)CHR
$(RND(3)+230) ELSE PRINTTAB(0,30)" "
9211IF FNR PRINT TAB(RND(19),30)CHR
$(RND(3)+230)
9212IF FNR PRINT TAB(RND(19),30)CHR
$(RND(3)+230)
9213IF FNR PRINT TAB(RND(19),30)CHR
$(RND(3)+230)
9214IF FNR PRINT TAB(RND(19),30)CHR
$(RND(3)+230)
9215 COLOUR1
9218 IF FNF COLOUR3:PRINTTAB(RND(19
),30)CHR$(234)
9219 COLOUR1
9220VDU10
9221 PRINTTAB(X%,D%-1)CHR$(32)
9290 ENDPROC
9600 DEFPROCBIGLETTER
9601 PRINTCHR$(128+C);
9602 PRINTTAB(ACROSS)CHR$(141);M$:P
RINTCHR$(128+C);:PRINTTAB(ACROSS)CHR
$(141);M$
9605 ENDPROC
9700 DEFPROCFL
9705 PRINTTAB(0,0);"FUEL "F%;" TIM
E ";INT(TIME/100);" "
9710ENDPROC

```

Listing 2

Modify the following lines in listing 1 for the game to work correctly in single-tasking mode on RISC OS:

```
10 MODE 10
```

```

9101 T=TIME:REPEATUNTILTIME>T+5
9035 DEFFNH=(POINT(X%*64+32,0%)=15)
9036 DEFFNG=(POINT(X%*64+32,0%)=63)
9205 COLOUR15
9215 COLOUR3
9218 IF FNF COLOUR63:PRINTTAB(RND(1
9),30)CHR$(234)
9219 COLOUR3

```

Line 9101 introduces a short delay otherwise the game runs to fast. The other lines are concerned with displaying the correct colour in MODE 10, the 256-colour mode equivalent of MODE 5.

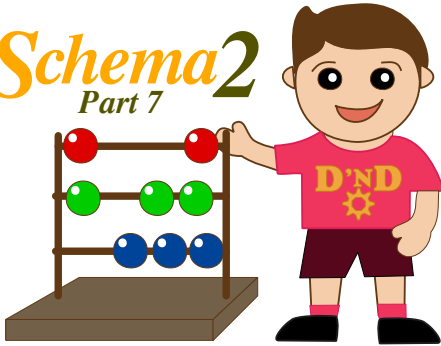
Listing 3

```

10REM Desktop Storm
20REM Original BBC Micro game A.T
renker D.Schwanenflugel
300N ERROR SYS "Wimp_CloseDown":P
RINT REPORT$+" at line ";ERL:END
40SYS "Wimp_Initialise",200,&4B53
4154,"Storm"
50PROCINIT
60REPEAT
70SYS "Wimp_Poll",,B TO E
80CASE E OF
90WHEN1:PROCREDRAW
100WHEN2:SYS "Wimp_OpenWindow",,B
110WHEN3:SYS "Wimp_CloseWindow",,B
:Q=TRUE
120WHEN6:PROCCLOCK
130WHEN8:PROCKEY
140WHEN17,18:Q=(B!16=0)
150ENDCASE
160IF SCR=2 PROCCLOCK
170UNTIL Q
180SYS "Wimp_CloseDown"
190END

```

Schema2 Part 7



Graphics Macros

A few years ago I developed an Excel Spreadsheet to help engineering students with their understanding of shell and tube heat exchanger design.

For given input conditions the program would predict important results including length and diameter of the bundle of tubes to be used in the design of a heat exchanger.

One part that students found very useful was a graphical display of the orientation of the tubes which illustrated the series of holes according to the number of tubes and pitch pattern.

This can be seen in Figure 1, where the tubes are arranged in a triangular pitch pattern, alternatively a drop down menu allows for a

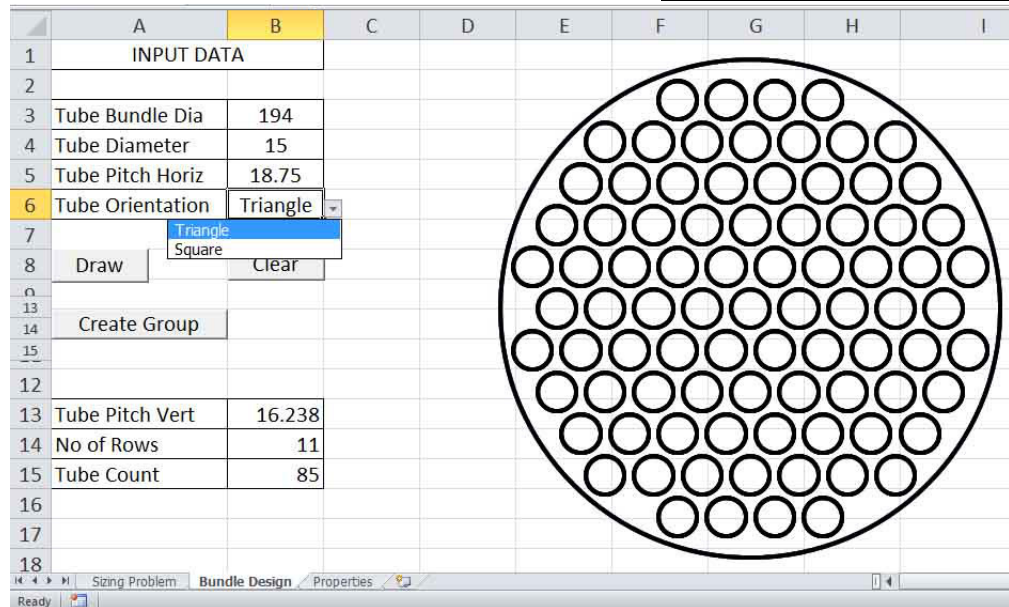


Figure 1. Excel sheet showing an eleven row tube bundle

square pattern configuration. In addition, the layout would also be different for an even or odd number of tube rows.

In Figure 1 the three buttons on the Excel sheet are used as follows: one to draw the graphical output, group all the circles (so that the graph can be moved as a single unit) and one to clear the graph to prevent multiple results being displayed.

This application is perfect to demonstrate the graphical capabilities of Schema2, but to keep

things simple, the Schema2 macro that I created for this article is limited to an odd number of rows that are arranged in a triangular pattern.

The macro, which is named **circle**, is listed at the end of this article. Basically, it uses the ELLIPSE function to create a large circle representing the tube bundle diameter and then many small circles according to the number of tubes used.

The compiled macro circle was



Post-Processing with Ghostscript

This article introduces some of the ways Ghostscript can be used to manipulate a PDF file including bookmarks, annotations and setting document properties.

I'm assuming you have Ghostscript 9.06 installed on your RISC OS machine, it is available from www.riscosports.co.uk/downloads.html.

In its most basic usage Ghostscript can be used to combine or split existing PDF files. However, by supplying a secondary file containing a list of "pdfmarks" it's possible to do much more. The "pdfmarks" file is a simple text file.

Simple Command Line Usage

Ghostscript is a command line tool

and provides functionality controlled by switches. It takes the following format:

```
gs [options] [filename 1] ...
   [options] {n}
```

On RISC OS such commands are known as 'star commands' because they executed either by calling up a task window (Ctrl+F12) and typing them in at the '*' prompt, or several star commands can be put into an Obey file and double clicking it. You create Obey files in Edit by menuing over the icon bar and choosing Create > Obey.

It is necessary on RISC OS to specify the full path of input and output files, however system variables can be used to abbreviate. For example:

```
*set g$dir <obey$dir>
*gs [options] <g$dir>.[filename 1]
...
```

This will set **g\$dir** to the directory in which the obey file resides and input and output files then can be prefixed with **<g\$dir>**. (not the trailing full stop). To keep the following examples as simple as possible, the line setting **g\$dir** and

the **<g\$dir>**. prefix will not be shown.

The most common options when working with PDFs are:

- dBATCH Causes Ghostscript to exit once it has finished processing
- dNOPAUSE Causes Ghostscript to process all pages without pausing at the end of each page
- dQUIET Suppresses the window giving routine information comments
- sOutputFile= Specify the output file to create

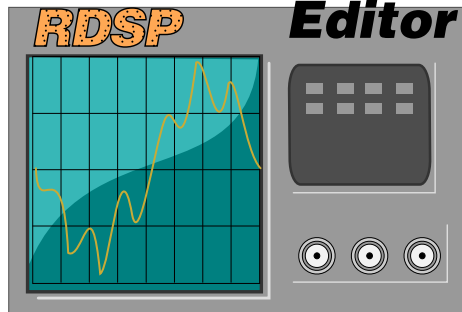
To make the following examples shorter, the -dQUIET -dBATCH -dNOPAUSE switches will not be shown.

Combining Multiple PDF files

Combining multiple files into a single PDF is perhaps the easiest thing to do. It might be desirable to combine several reports, for example, into a single file. In order to do this the following command would be executed.

```
gs -sDEVICE=pdfwrite -sOutputFile=co
```

Envelope Editor



This type-in application is a comprehensive sound envelope editor for use with Tony Bartram's RDSP (Risc Digital Sound Processor) module.

If you do not already have this installed then it can be downloaded from AMCOG at www.amcog-games.co.uk/rdsp.htm.

The window has the appearance of synthesizer console. Parameters are controlled by turning the knobs (clicking and dragging the icons) with finer control available by clicking adjust or select on the digital readouts above the knobs.

Refer to the RDSP user guide for explanation of WAVE, FILTR and so forth.

Click the top-right toggle size icon to open the window to show all the knobs. Click the ENVELOPE

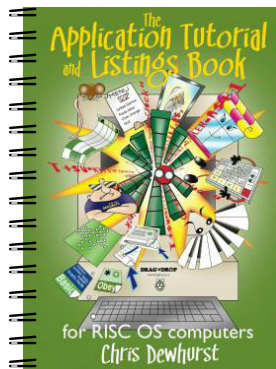
button to assign the envelope and the SOUND button to make a sound.

The relevant commands in BBC Basic are shown in black typeface below the knobs. Clicking on the text file icon puts them into an Edit window for import into your own programs.

The green buttons labelled RND choose random parameters. Use the Stop button to terminate a sound.

These options are also available from the menu by click the middle mouse. To quit the application click the window's close icon or choose Quit from the menu.

The Envelope Editor was one of many demonstration applications featured in *The Application Tutorial and Listings Book* available from Drag N Drop.



ENVED listing

```
10REM RDSP Envelope Editor
20REM (c) Drag N Drop Autumn 2021
30REM RDSP Module (c) Tony Bartra
M
40*RMENSURE RDSP 0.23 RMLoad SYST
EM:MODULES.AUDIO.SOUNDCHIP.RDSP
50ON ERROR PROCERROR
60*RSTART
70SYS "Wimp_Initialise",350,&4B53
4154,"Envelope Editor"
80PROCINIT : PROCSPRITES : PROCWI
NDOWS : PROCICONS : PROCMENUS
90!B=W1
100SYS "Wimp_GetWindowState",,B
110SYS "Wimp_OpenWindow",,B
120REPEAT
130SYS "Wimp_Poll",,B TO E
140IF E=2 SYS "Wimp_OpenWindow",,B
150IF E=3 SYS "Wimp_CloseWindow",,
B
160IF E=6 PROCCCLICK
170IF E=9 PROCMENUSELECT
180IF E=17 OR E=18 Q=(B!16=0)
190PROCPOINTER
200IF DR PROCUPDATE
210UNTIL Q
220SYS "Wimp_CloseDown":*RSTOP
230SYS "Font_LoseFont",F1 : SYS "F
ont_LoseFont",F2
240END
250:
260DEF PROCCCLICK
270IH = B!16 : BT=B!8
280IF BT=2 SYS "Wimp_CreateMenu",,
N1,B!0,B!4:ENDPROC
290IF IH<96 AND (IH AND2)=2 PROCBU
MP:ENDPROC
300CASE IH OF
310WHEN 100: PROCSOUND(TRUE)
```

SoundCon32



SoundCon is a freeware sound sample converter dating from the 1990s and it allows conversion between over a dozen popular formats including RISC OS Sound Modules.

In this article I'll show how to update the application to run on the Raspberry Pi.

I'll present short user's guide to SoundCon first then proceed to a more technical discussion for those interested in what's involved 'behind-the-scenes' to make the the application 32 bit compatible, i.e. work with RISC OS 5.

SoundCon32 User Guide

Double click on !PlayIt. Please refer to the technical discussion on where to obtain !PlayIt and what to tweak in the the Run file to load the correct driver.

This does not load anything on the iconbar but installs the necessary

'drivers' to play back sound samples.

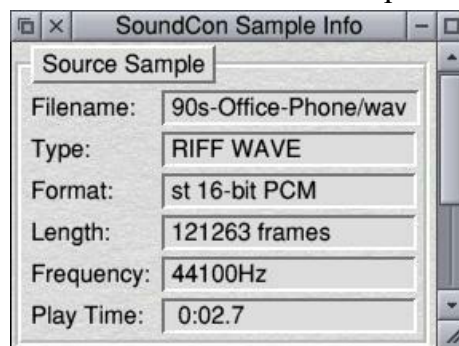
Double click on the !SoundCon app itself to put it on the iconbar.

Next find a sound sample, there are hundreds of WAVe files on the internet. Try freewavesamples.com.



Netsurf should set the filetype to &FB1 from the / wav extension but if it hasn't you will need to manually by clicking Menu over the file and choosing File 'xxx' > Set Type > type '&FB1' or 'WaveForm' in the dialogue box.

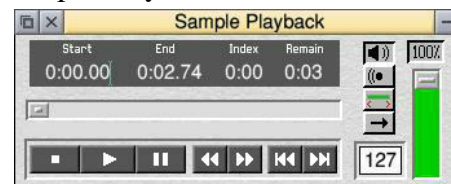
A window will pop up giving information on the sound sample.



This window may also be called up by clicking Menu on the iconbar icon and choosing **Sample info**.

Click Menu over the **Sample info** window window you will get three options: Convert, Play Sample and Clear sample. Move right across the

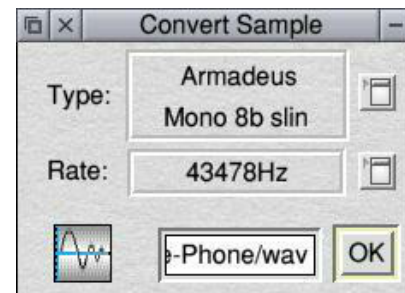
Play Sample option to bring up the Sample Playback window:



This window may also be called up by choosing **Play...** from the icon bar menu.

To play the sample click once on the rewind icon and then click the play icon. (I am not sure why it's necessary to click the rewind icon but if you try clicking play immediately the sound doesn't play.)

The controls on the right hand side of the window are self explanatory.



To convert the sound sample choose **Convert...** from the iconbar menu or Convert from the **Sample**

All my monitors have built-in speakers, together with VESA mounted Pi's, wireless keyboards and mice.

This arrangement permits short HDMI cables and simplifies the task of setting up three computers on our dinning table for the grandchildren to play computer games.

Over the years I've used a variety of cases to house my Raspberry Pi's but I consider the Argon One m.2 to be the best so far.

It costs almost as much as a 4GB Pi 4B but for me the advantages outweigh the negatives with two full size HDMI sockets, the opportunity to fit an m.2 SATA Solid State Drive and it's an elegant solution to the question of active or passive cooling for Raspberry Pi 4Bs.

If you prefer, you can buy a ready-made, complete computer solution from Andy Mark's company, RISCOSbits, called (appropriately) Fortress. I'm certain you could drive a bus over the case without damaging it!

I like the DIY approach so I bought the case only, which comes with straightforward assembly instructions. My setup includes a 250 GB Samsung Evo drive and a 4

GB Pi 4B. I formatted the SATA Drive with HForm and then used SystemDisc to create a boot section and populate the disc. RISC OS boots directly from the hard drive without the need for an SD card.

Core Electronics (based in Newcastle, Australia) provide a 3D printing

service and they also supply the STL files for printing a VESA mount for an m.2 shown in Figure 1.

My Pi 4B is clocked to 2.147 GHz and the aluminium case acts as a heat sink feeling pleasantly warm, rather than hot.

The manufacturers of the m.2 provide software to control the fan but only for Linux. Fortunately RISCOSbits sell software to do this



Figure 1. Vesa mount on back of Philips monitor

on RISC OS which was easy to install following the supplied instructions. The fan can be set to stay off or to start at a predetermined temperature.

A quaint touch is that on shutdown, the image on the screen shrinks until it is just a dot in the middle of the screen, just like an old style television.

For me, the only negative about

the m.2 is that it doesn't permit the use of my Elesar WiFi HAT. Instead I use a Vonnets WiFi adaptor in conjunction with the application !ReDHCP (comes with RISC OS Direct) but it's not quite as easy to configure as the Elesar HAT.

The compact elegant looking case is very portable and with applications such as TextEase Show, TechWriter and Schema2, I can use my Pi 4B in the office as well as home.

Windows 11

These days you can install Windows on a Raspberry Pi (and yes and your editor has even allowed column inches for 'that' operating system!).

I followed a video series by leepsvideo on his Youtube channel. Microsoft offer both x86 and ARM64 versions of Windows.

There's a Pi edition of Windows 11 which is compiled from the official Microsoft website. This got me thinking: would it permit the playing games at a reasonable frame rate?

So I installed Win11 on an m.2 SATA Solid State Drive fitted to a second Argon One m.2 case (fig.2)

You need a Microsoft account to

load Win11 and it doesn't support WiFi, only Ethernet. Neither does sound work over HDMI, you have to use a 3.5mm jack.

It runs productivity apps happily like the Office suite. BeebEm works and gives access to BBC Micro favourites.

Games such Monkey Island, Myst and Riven which work over SCUMMVM and DOSbox seem to work fine but CPU temperatures go up to the 70's. Win 11 doesn't support the Argon fan.

Three in One

At present Win 11 is more of a toy and I'd use my laptop for any serious work. It's easy to change from Win 11, however, by removing the usb3 bridge and boot from a



usb3 memory stick.

I have two formatted memory sticks, one for RISC OS and the other for 64 bit Pi-OS (which used to be called Rasbian).

I don't have much need for Linux but my grandchildren are into Minecraft in a big way and the latest version 1.17.1 can be played in 64 bit Pi OS. With a bit of tweaking, frame rates in the 30's can be achieved and the grandchildren have not complained so far.

40 years of improving on the best.

In 1981 the first BBC Microcomputer was released with 16K RAM, 8 colours, and a clock speed of 2MHz.

Over the next 40 years a pedigree of fast machines running the world's best operating system, RISC OS, appeared. We won't bore you with the rest of the facts. Except to tell you about the latest computer. Which runs RISC OS*, of course. It has 253,952 as much RAM, 2 million more colours, runs 900 times faster, and is 10 times lighter than the BBC Microcomputer.



BBC Microcomputer Model A. 8 colours, 16K RAM, 2MHz, 3700g. Raspberry Pi 400. 16M colours, 3968MB RAM, 1.8GHz, 386g.

The new Raspberry Pi 400. Still improving on the best.

Raspberry Pi 400 machine available from all good internet retailers. RISC OS downloadable separately. "Raspberry Pi" is a trademark of the Raspberry Pi Foundation. E&OE. *Other operating systems available.