

Gerald's Column *by Gerald Fitton*

Thanks once again for all your emails and letters. I had expected (and even hoped for) a flood of complaints that my article about upgrades had given you bad advice. To date I have received neither complaints nor praise! So either that topic was uninteresting—or you all agree with me—or possibly you disagree so violently that you decided not to write to me at all! Anyway, I was quite surprised.

So this month I have decided to open up another controversial topic. Briefly my topic is 'A Standard Format for Spreadsheet Files'.

Some History

In the mid 1980s the Apple Macintosh sported a multi tasking WIMP user interface. Acorn were making the BBC computer and the 'Industry Standard' machine was invariably called an IBM machine. The first Archimedes machines were released around 1988. They did have a Graphic User Interface (GUI) but, unlike the Apple machines, the Acorn Operating System (called Arthur) was not multi tasking; that had to wait a year or so for RISC OS 2.

Around that time the Operating System for the IBM machine was MS-DOS. For those of you who are not familiar with MS-DOS it is totally single tasking and the user interface is a Command Line Interface (CLI) similar to the User Interface which you access by tapping <F12> on a RISC OS machine; the RISC OS CLI has a * prompt.

The definitive spreadsheet for the IBM machine was 'Lotus 1-2-3'. I am using the word "definitive" here to mean that Lotus format was the Standard format for spreadsheet files. All other spreadsheets had to imitate the way in which Lotus functioned. All other spreadsheets had to have a 'Save as Lotus' and 'Load as Lotus' options or a 'filter' which would convert the spreadsheet to and from Lotus format. One of the most successful imitators of Lotus on the IBM machine was called 'AsEasyAs' (As Easy As – Lotus).

Colton Software developed a spreadsheet with word processing facilities which they called PipeDream 2; it was based on View Professional for the BBC. This spreadsheet was available not only for the 1988 Archimedes but also for the IBM (running under MS-DOS) and on an early laptop called the Z88. The PipeDream file format for the three machines was identical so that files could be Saved on one machine and Loaded into the others. Those early PipeDream files will still Load into the most recent versions of PipeDream.

Of course Colton Software provided a 'Save as Lotus' and 'Load as Lotus' for the IBM and Z88 versions of PipeDream 2 and, for the Archimedes, a !PD123 utility which converts PipeDream format files to and from Lotus format.

One of the properties of Time is that it 'goes by' and, as it went, the Windows Operating System replaced the single tasking MS-DOS. Lotus lost its position as market leader to Excel through a ruthless marketing drive by Microsoft. Nowadays Excel is considered to be the market leader even though, in the opinion of many, Lotus is the better spreadsheet. We are not yet at the point where Excel omits the option to Load or Save Lotus format files. As an aside I note that many users do not like Excel 2000 as much as the earlier version shipped as part of Microsoft Office Professional 97—which is the version I have.

Correspondence

Over the last six months or so I have read much on the Acorn News Groups and in my own post bag about the merits of Excel. I would refer you to my article in Archive Volume 13 No 10 in which I discuss the advantages and disadvantages of the Excel Workbook format when compared with linked but separate spreadsheets. I have received many letters from Excel enthusiasts who want an 'Excel for RISC OS' but only one letter which (quite rightly) complains that selective printing of parts of a large Excel Workbook is a practical impossibility. The correspondent who brought this to my attention now Loads the Excel file into PipeDream or Fireworkz and prints selectively from those packages rather than printing directly from Excel on his Windows machine. PipeDream has a conditional print option and the Fireworkz File – Print... – Range and Extra menus are highly flexible.

Standards

I acknowledge that when it comes to spreadsheets on the Industry Standard platform (now Windows 95, 98 SE, etc), Excel is the market leader and not Lotus. Nevertheless Lotus is considered to be the format which must be included in the 'Load as' and 'Save as' for any other spreadsheet on whatever platform, Windows, RISC OS or Mac. So, in the sense that 'Save as Lotus' and 'Load as Lotus' must still be included as part of any spreadsheet, Lotus and not Excel is still the 'Lowest Common Denominator Format' for spreadsheet formulae.

Comma Separated Value (CSV) is a widely used Standard for the transfer of data between databases and spreadsheets. Rich Text Format (RTF) is a widely used Standard for the transfer of ASCII text with Styles between different Word Processors (WP) and the more sophisticated Desk Top Publishers (DTP) such as Impression and Ovation Pro. Amongst other standards the PDF Format for Print files is gradually replacing PostScript Format.

Of course ASCII, particularly 7-bit ASCII, is still the 'Lowest Common Denominator Format' (LCDF) for the transfer of text between packages and platforms.

Spreadsheet Format

Lotus format is the Lowest Common Denominator Format (LCDF) for spreadsheet formulae. If you need to transfer formulae from one spreadsheet to another then CSV and ASCII formats are of little use. They can be used at a pinch. The technique I have used to help some of my correspondents has been to convert the formulae to text, Save the textual versions of the formulae as a CSV file, modify the formulae using !Edit (making use of the Search and Replace facility) and then Load the modified file into the target spreadsheet.

Many of my correspondents concerns would be satisfied if they had access to a simple format which would allow them to transfer spreadsheet formulae from one package to another. Of course I am biased but I think that Lotus format is more obscure than is the format for PipeDream—I shall try to show you that PipeDream can fill that role.

Another requirement, which is not as obscure as you might believe at first, is to create a spreadsheet (or database) from data which is not in spreadsheet format, for example data held in the directory structure of a disc. PipeDream can fill this role too.

In my article this month, in the hope that some people will find it useful, I shall describe the format of PipeDream files. Perhaps the fact that the format of PipeDream files is well documented will encourage you to write Utilities which convert data and formulae to PipeDream format even if the PipeDream format is used only an intermediate format.

The Utility !PD123 can be used to convert PipeDream spreadsheet to the Lotus Lowest Common Denominator Format and from Lotus you can Load into almost any spreadsheet or database on any platform.

Mark's PipeDream

On page 197 of the PipeDream 4 Reference Guide you will find a couple of sentences written by Mark Colton, the creator of PipeDream:

“The PipeDream file format is designed to facilitate manipulation by other programs. . . . The files are sequential and can be edited using any text editor.”

It was Mark's firm intention that the PipeDream file format should be easily understood and the coding so transparent that third party authors would be able to write Utilities which would convert data in other formats to PipeDream files. Many people have constructed PipeDream files using a BASIC program to do so.

An example which I included in Archive Volume 14 Number 1 is a Utility written in BASIC by Francis W Aries called [DiscsCat] which creates a PipeDream file. In Francis' BASIC program OSLI commands are used to read the file names in the directories of a floppy disc. Also the program will open some types of file and extract keywords from those files. The PipeDream file created by the [DiscsCat] program contains a catalogue of the contents of the floppy disc together with keywords.

Other people have written utilities in BASIC which convert files in other spreadsheet formats to PipeDream format. One example which I find most useful is a utility called FirePipe written by Harriet Bazley. The current version is 2.00 (30th October 2000). This fully multi tasking Utility converts Fireworkz files to PipeDream format.

The Header

The format of PipeDream files is described in detail in the PipeDream 4 Reference Guide pages 197 to 202 inclusive. PipeDream files are not 'coded' nor compressed. They can be Loaded into any editor such as Acorn's !Edit—indeed, as I shall show you, you can create a simple PipeDream file using !Edit and it will Load into PipeDream. PipeDream files can be Loaded into !Edit by holding down the <Shift> key whilst double clicking on the file.

I shall use the word 'constructs' to mean the special parts of a PipeDream file which define its structure rather than those parts of the file which are data. Information about the structure of a PipeDream file is added in a manner similar to that used in HTML. Whereas HTML uses such 'tags' as <P> and </P> to indicate the start and end of a paragraph, in PipeDream the 'constructs' begin and end with the % symbol. A 'literal %' is inserted in a file using the construct %PC%.

At the start of the file there is a group of constructs that define those parameters which you will find in the Options, <Ctrl O>, and Page layout, <Ctrl PY>, menus. All these definitions start with the construct %OP%. I remember OP as an abbreviation of OPTions. Without explanation (for now) I shall say that this 'header' is optional; by this I mean that if you are creating a PipeDream file, for example using BASIC, it can be omitted!

A typical PipeDream file might start with:

```
%OP%VS4.50/23 (10-Aug-2000)
%OP%TNN
%OP%WRN
%OP%DP2
%OP%IRN
%OP%PL56
%OP%GRY
%OP%FM3
%OP%BM3
%OP%LM6
%OP%FGHomerton.Medium
```

Column Constructs

This 'header' is followed by the 'body' of the file. The body of the file is arranged column by column. Let me emphasise that, unlike the CSV format, the body of the file is not arranged row by row. Each column starts with a column construct such as:

```
%CO:A, 12, 72%
```

PipeDream has two 'column widths' for each column. The first is the true column width which can be set with <Ctrl W>, the other is the 'wrap width' for text which can be set with <Ctrl H>. The construct %CO:A, 12, 72% will make Column A 12 'characters' wide with a wrap width of 72 characters. I remember CO as an abbreviation for COLUMn.

Cell Constructs

The %CO:A, 12, 72% column construct is followed by information about all the cells in that column. Each line of the file can contain many constructs (see page 201) which define the nature and display of the cell contents.

As an example, the numbers 27, 28, 29, 30, 31 and 32 are right aligned in cells A1, A2, A3, A4, A5 and A6 with the set of constructs shown below:

```
%CO:A, 12, 72%%V%%R%27
%V%%R%28
%V%%R%29
%V%%R%30
%V%%R%31
%V%%R%32
```

Row numbers are not included in the file. Each cell in a column is separated from the next one by a Carriage Return (ASCII 13) or by a Line Feed (ASCII 10) or by CR – LF or by LF – CR. You have the choice! PipeDream will accept a mixture within the same file!

As a ‘by-the-way’ you can Load such a file into PipeDream and then arrange to Save with any of those line separators. Many users of PipeDream have reported to me how useful they have found this feature when transferring text files from the RISC OS platform to the Windows platform since different Windows packages require different line separators.

The %V% (as in %V%%R%27) indicates that the cell contains a number rather than the textual form of the digits. The construct %R% indicates that the number is right aligned but, in most circumstances, the inclusion of %R% for numbers is optional since numbers are right aligned by default. Finally, 27 is the actual content of the cell.

A blank row indicates that a cell in that column is blank.

Note that the constructs in %V%%R%27 must be on the same line as the %CO:A, 12, 72% construct which defines the column width. If you put %V%%R%27 on the next line (by tapping <Return> after the %CO:A, 12, 72%) then cell A1 will be blank and the number 27 will appear in A2!

On page 201 of the PipeDream 4 Reference Guide you will find a list of the constructs which can appear anywhere within the line defining a cell. As a couple of examples the construct %D2% will force that cell to display numbers to two decimal places; %C% will centrally align the contents of a cell.

More Columns

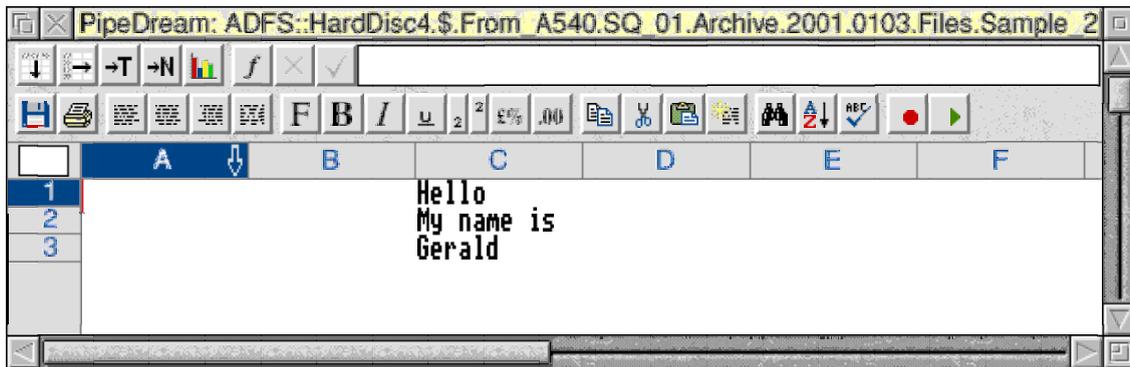
More columns can be added to the file by adding extra column constructs. The following constructs adds blank columns B, C, D, E and F to a PipeDream file. The zero at the end of each construct indicates that the wrap width is locked to the column width, it does not mean that the wrap width is zero.

```
%CO:B, 12, 0%
%CO:C, 12, 0%
%CO:D, 12, 0%
%CO:E, 12, 0%
%CO:F, 12, 0%
```

If you wish to fill cells in column C then you will need to insert the information between the construct for column C and that for column D. Have a look at the example below.

```
%CO:A, 12, 0%
%CO:B, 12, 0%
%CO:C, 12, 0%Hello
My name is
Gerald
%CO:D, 12, 0%
%CO:E, 12, 0%
%CO:F, 12, 0%
```

If Loaded into PipeDream this file will consist of six columns, A, B, C, D, E and F. The text “Hello” (without inverted columns) will appear in Cell C1. “My name is” and “Gerald” will appear in cells C2 and C3 respectively.



Unrecognised Constructs

There are two features of the PipeDream format which are most useful when creating PipeDream files and forgiving when you make a mistake!

The first is that if, by mistake, you include a construct which is not recognised then PipeDream will simply ignore it. There is no error message nor is there a crash. The constructs which can be interpreted are used and those not understood do nothing!

Missing Constructs

I have included five sample PipeDream format files on the Archive monthly disc. As well as being on the monthly disc you will find them in all the other usual places including Internet websites. They have a Text filetype so they will Load into !Edit by default. They will Load into PipeDream by dragging them to the PipeDream icon on the icon bar.

The file [Sample_3] is a minimal file. Loaded into Edit it reads:

```
%CO:C,12,0%Hello  
My name is  
Gerald  
%CO:F,12,0%
```

Let me emphasize that this is the whole of the file. The ‘header’ is missing as are the constructs for columns A, B, D and E. If you drag this minimal file to PipeDream (on the icon bar) a PipeDream file will be created and it will look like the screenshot of [Sample_2] shown above.

You will have guessed that PipeDream adds the missing columns as blank columns but you might wonder where PipeDream has obtained the information usually in the ‘header’! If you look inside your !PipeDream.User sub directory you will find a PipeDream file called [Choices]. It is the header information from this file which is used for absent constructs.

[Choices] can be Loaded into !Edit and you can edit it using !Edit. If you have constructed a suitable [Choices] file then, when you create your PipeDream file (using BASIC or some other package) you can simplify its construction by concentrating only on those columns which contain data or formulae.

Finally, a property which PipeDream shares with !Edit is that it will Load any type of file. You never get an error message which complains that the filetype is not recognised and can not be Loaded. PipeDream looks for the %% ‘tags’ in the same way that HTML looks for the <> tags—if it finds none then the file is still Loaded and the constructs from the [Choices] file are used to format the file.

An Example

I am sure that all of you who are into BASIC and those of you who are able to use !Edit will be able to construct the file [Sample_4]. It consists of the five lines:

```
%CO:C,12,0%Hello
My name is
Gerald
%CO:F,12,0%
%V%join(C1," ",C3)
```

Drag this file to PipeDream and you will find that the formula in F2 which is:
%V%join(C1," ",C3) will be evaluated as “Hello Gerald”.

Fireworkz Lotus Excel etc

Information is available for the construction of files in Fireworkz format. It appears as a disc file supplied with the Fireworkz program. I do know of people who have created Fireworkz format files from this information and those who have used this information to convert Fireworkz files. I would like to mention once again Harriet Bazely who has created a Fireworkz to Impression utility.

However, most people who have produced ‘Spreadsheet making utilities’ have created a PipeDream file (because it is much easier to do so) and then used ‘filters’ to convert the PipeDream format spreadsheet into Fireworkz, Lotus, Excel, etc.

There is a PipeDream to Fireworkz ‘filter’ (converter) built into Fireworkz. A PipeDream to Lotus converter is provided with PipeDream. Lotus files will Load into Excel.

In Summary

The details of the format of PipeDream files is well documented and many people create PipeDream files as an intermediate step when converting data to other spreadsheet formats such as Lotus and Excel. Constructs can be omitted and PipeDream will ‘plug the gaps’. PipeDream will Load any type of file and it will ignore constructs (characters enclosed between %% symbols such as %Gerald%) which it does not understand. Finally a single % is interpreted as a literal % but the inclusion of % can be forced with %PC%.

Availability

Since 1998 we at Abacus Training have been managing Colton Software products (PipeDream and Fireworkz) for the owner who is Richard Colton. PipeDream, complete with Reference Guide and Tutorial Guide is available from us. The most recent version of PipeDream is 4.50/23. It supports the long filenames of RISC OS 4.

PipeDream continues to be developed.

For a limited period the Second Edition of the PipeDream 4 Reference Guide (which contains the PipeDream constructs) is available from us to those who 'missed out' because it was out of print when they upgraded from PipeDream 3.

Finally

Please write to me at the Abacus Training address which you'll find in Paul's Fact File at the back of Archive.