# *Gerald's Column*
by Gerald Fitton

Thanks again for all the many interesting letters and emails. You can write to me at the address given in Paul's Fact File for Abacus Training.

I have to acknowledge that the content of this month's article has been inspired by questions about charts using Fireworkz from Claude Buchanan. Claude lives in New Zealand and, like many of my other correspondents, is most optimistic about the future of our favourite RISC OS machines. He recommends their purchase and offers help locally with many RISC OS packages including Fireworkz.

This month I shall explain the difference between a Line chart and a Line graph. I shall show you how to produce a Line chart using the data provided by Claude. The principles which I describe can be applied to other packages such as PipeDream, Schema and Eureka on the RISC OS platform and to Fireworkz for Windows, Excel and Lotus if you use a Windows machine.

An Example
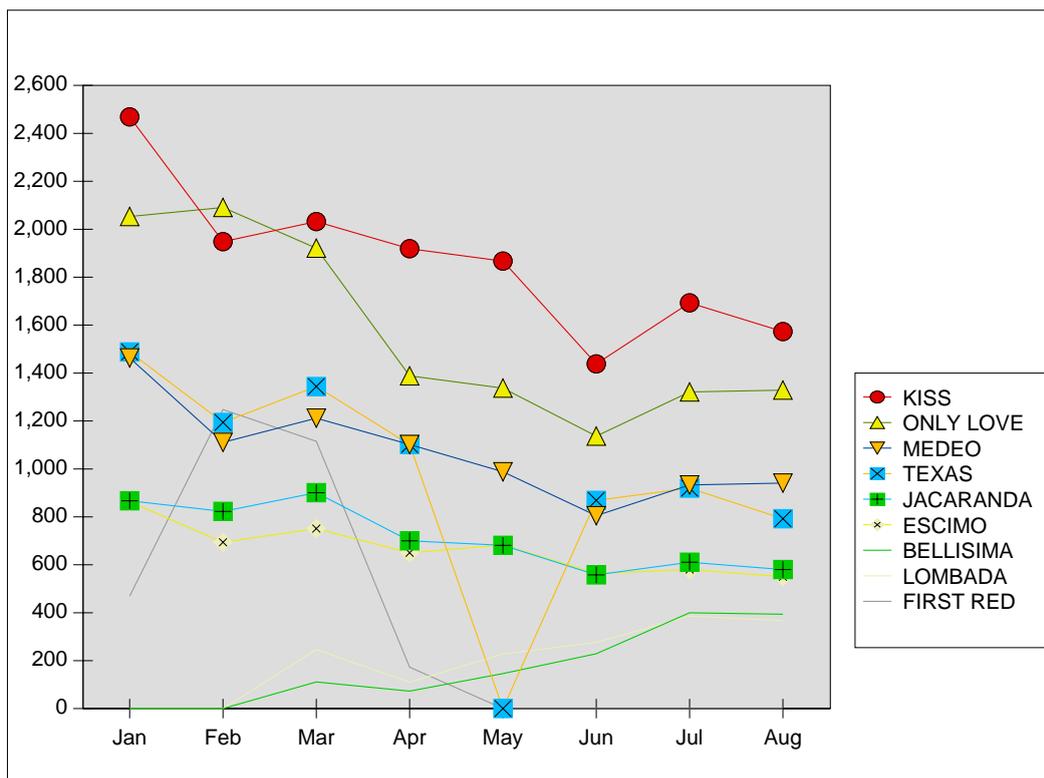
The graphic above is a 27 Kb drawfile created with Fireworkz. It is not a Line graph; a Line graph has numerical values along both axes. It is a Line chart. This chart has the months of the year along the x-axis; these months are called the Series labels and are not numbers.   If the x-axis were graduated in days instead of months then the 'tick marks' corresponding to the first day of each month would not be at equal intervals because the months do not all have the same number of days.

The data for this chart is in the file [LineData] which you will find on the Archive monthly disc and website. A screenshot of the file containing the data appears below.

Fireworkz Pro: ADFS::HardDisc4.$.From_A540.SQ_01.Archive.2000.0002.Files.LineData

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1999 Flower Production in Bunches:
by Variety and Month of Production

Variety	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
KISS	2 469	1 948	2 032	1 919	1 867	1 438	1 693	1 573
ONLY LOVE	2 053	2 091	1 921	1 388	1 337	1 137	1 321	1 329
MEDEO	1 463	1 111	1 212	1 102	988	805	933	941
TEXAS	1 488	1 194	1 344	1 102	0	869	920	792
JACARANDA	867	823	901	700	681	558	611	580
ESCIMO	863	694	751	650	683	564	580	550
BELLISIMA	0	0	111	73	146	229	400	394
LOMBADA	0	0	246	110	228	276	386	367
FIRST RED	469	1 248	1 115	173	0	0	0	0
Total	9 672	9 109	9 633	7 217	5 930	5 876	6 844	6 526

On some other occasion I shall write an article describing when to use a table and when to use a chart—I shall describe the different sorts of charts and when to use them. For now you will have to make do with the brief summary of the next paragraph.

Use a table such as that of the screenshot above if the numerical values are important but use a chart if you want to illustrate a feature of the data such as a trend. Use a Line chart (or Line graph) if you are trying to illustrate is that the trend is rising or falling.

The Line chart shows the way in which the production (and sales) of nine different varieties of roses has varied over the first six months of the year 1999. Without looking at the numerical values in the table you can see that the top line (for the variety KISS) implies that the trend is downwards. Indeed, looking at the chart you'll see that with the exception of BELLISIMA and LOMBADA all sales are falling! The company is not in a happy position—it will have to get these two rising stars to 'shine' soon.

Two more features of the chart stand out to my admittedly practised eye. One is that the sales of the variety FIRST RED died out in May. The other is that the May data point for TEXAS might have been recorded as zero in error; I suspect that it should have a value somewhere near 1100!

The coloured key on the right of the chart lists the variety of roses. The colours of the lines and the symbols match those of the key. Unfortunately the colour of each lines does not match the colour of the points on that line! You won't appreciate this if you are viewing the monochrome picture in the magazine.

Sorting Categories

There is a point I must make about the categories at this stage.

Before creating the Line chart I marked the block of data [LineData]B7J15 and sorted it in Descending order on column J. I find that sorting the data on either the most recent data (in this case August) or on an 'Average' column makes the chart easier to interpret. I have chosen to use the August data for sorting in this case (rather than the average for the year) since we have only part of a full year.

I shall write an article about choosing the right sort of chart on some other occasion. When I do that I will explain when to sort the data on the 'last point' and when to sort on the 'average'. Sorting on the last set of data has the advantage that the order in which the varieties appear in the key (which starts with the variety KISS) matches the right hand end point (the August data) of each of the lines.

Dead or Alive?

It is my opinion, and that of many other users, that PipeDream's charting package is superior to that of Fireworkz. The main reason why this is so is because additional text can be added without killing the 'live' link. By 'alive' I mean that if you make changes to the data then the Line chart will change to match. The Fireworkz chart does stay alive if you change the data or change the names of the categories (in this case the flowers' names) but there is no facility within the chart editing menu to add text to the chart.

When using Fireworkz you can use Draw (or DrawPlus) to add text to a DrawFile which has been created with the data. I believe that using DrawPlus for this purpose is better than using Draw because DrawPlus supports 'layers'. One layer can be used for the chart as produced by Fireworkz and another layer for the extra text.

Such a DrawFile is 'dead' so, if the data is changed, then the 'dead' DrawFile will not change to match the new data. If you use one DrawPlus layer for the chart produced by Fireworkz and another layer for the added text then making changes to the DrawFile is much easier than if you use only one layer. You can delete the outdated Fireworkz chart and replace it with a new one without risking making changes to the text layer.

The Data

The file [LineData] contains the original data file sent to me by Claude. I have Sorted it and added the chart. The chart is one which can be produced quickly and almost entirely automatically. Whilst it remains in Fireworkz the chart so produced is alive.

Perhaps you'd like to have a go at creating such a chart. If so then work with a copy of the data file and not the original. Copy the file [LineData] from the Archive monthly disc (or elsewhere) to either your hard disc, or better to a RAM disc, and then double click on the new copy to Load it.

Although it does not appear in the screenshot of [LineData], the chart is included and is

positioned just below the data. If you want to have a go at creating a similar chart it might be a good idea to get rid of the existing chart first. Click on the chart and a red border will appear. Click on the Delete button (it looks like a pair of scissors—about two thirds of the way along the second button bar) to remove the chart.

Now you have to rebuild it!

## Selecting the Varieties, Months and Data

Mark the block B5J15. To do this place the pointer in B5, press down and hold down the mouse <select> (left) button and then 'drag' to cell J15. When the pointer is in J15 release the <select> button and you'll find that the whole block B5J15 is marked in inverse video.

Data Series and Categories

In Fireworkz a 'Data Series' for a Line chart is the set of data which is used to draw a single line. A 'Category' is a set of data corresponding to one particular value on the x–axis. In our case each line corresponds to one of the varieties of rose so the 'Data Series' are in rows. Each column (the months) has a set of data associated with it. Such as set is called a 'Category'.

Selecting the Chart

Having marked the block B5J15 click on the chart button (the sixth in the top row—it looks like a bar chart) and select Line... and the Line chart menu shown in the screenshot below will open.
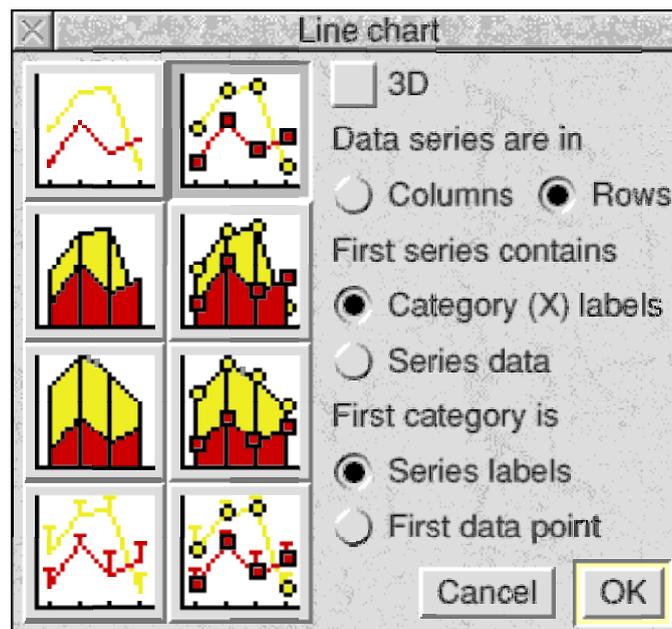
As a by-the-way, in both Fireworkz and PipeDream, if you want to create a Line graph (with numerical values along both axes) then you must select X–Y... rather than Line... for your chart! In Fireworkz and PipeDream such an X–Y chart is called a Scatter chart!

Click on the top right chart option; it shows two lines (one red and one yellow) with points.

It is probable that the defaults (automatically loaded) for the three options on the right of the Line chart menu are not as shown in the screenshot. Fireworkz does its best to work out whether the rows or the columns are the 'Data Series' and, when it could be either, the default is to choose the Columns for the 'Data Series' (and the Rows for the Categories). That is not what we want! Click on 'Data series are in Rows'.

In our case the 'First series' is row 5. This row contains the three letter abbreviations for the months—these three letter abbreviations are our 'Category labels'. They are not data for the first line to be plotted so click on 'First series contains Category (X) labels'.

Another by-the-way is that the months were written out in full in the data file which Claude sent me. Usually long labels are not 'good things' for a chart unless you are absolutely sure that you'll have lots of room on the x-axis. I reduced these labels to three letter abbreviations.

The 'First category' is column B. This column contains the names of the varieties—they are our 'Series labels' rather than numerical data for the first point on each line, so click on 'First category is Series labels'.

When you have a Line chart menu which looks like the one in the screenshot above then click on the OK button. The Line chart will appear complete with the months (as three letter abbreviations) along the x-axis. The key (showing the varieties) will appear on the right of the chart overlapping the chart.

Adjusting the Margins

The chart will look better if the area with the grey background is separated from the key.
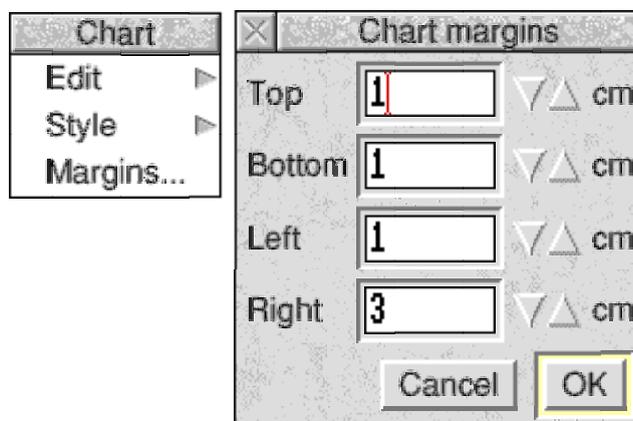
Double click on the chart and you'll find that a double red line surrounds it. This double click action gives you access to the chart Edit menu. Click the mouse <menu> (middle) button over the chart and a Chart menu (above left) will appear. Click on Margins... and the Chart margins menu (above right) will appear.

Change the values you have for the Top, Bottom, Left and Right to 1, 1, 1 and 3 respectively as shown in the screenshot. Then click on OK. The grey area containing the chart will split away from the key.

A 'Bug'?

When I produce a Line chart I expect the colour of the line to be the same colour as the points. This is the case when using PipeDream but not when using Fireworkz. It is possible to change the colours of the lines to match the points (or the points to match the lines) but this is an extra chore which should not be necessary. At some stage in the development of Fireworkz this 'bug' will be 'fixed'.

Summary

Although I prefer the charting package built into PipeDream I know many who prefer the more 'automatic' way in which Fireworkz operates. It is a good charting package.

Sorting the data before creating the Line chart results in a chart which (in my view) is easier to interpret. In Fireworkz you can Sort the data after creating the chart but (unlike PipeDream) you can not change your mind about the type of chart.

Finally

If you have any comments to make about charts in Fireworkz or PipeDream then I'll be pleased to hear from you. Please write to me at the Abacus Training address which you'll find in Paul's Fact File at the back of Archive.

I take the fax machine off line from 6.00 pm (junk fax time!) and I unplug the whole Abacus Training telephone system including answering machine when I go to bed! You can still send me emails! If you write rather than email me then please include return postage. A self addressed sticky label is always helpful.