Using Dia in LaTeX[1]

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What is dia ?

LaTeX is primarily a tool for desk-top publishing. It does a remarkably good job of typesetting text. But there are situations in which the text has to carry diagrams and figures, for which we will need specific tools.

One approach would be to build such tools into LaTeX itself, so that figures and diagrams can be seemlessly built with the text itself.

Another approach would be to create the diagrams and edit them externally (outside LaTeX) before merging them with the text. Diagram editors come in handy in this approach. Some diagram editors are useful only for specific/limited domains, whereas others are more generalised and can be used in many domains.

A third approach would be to generate the diagrams using an appropriate software e.g. Geogebra, Scilab, Matlab, R, Libre Office Impress, etc. and export the diagram in a convenient format e.g. jpg, png, gif, eps. and subsequently import the diagram into the LaTeX text.

Of all the above, the option of using an external diagram editor would be the easiest, so we discuss it more in detail here.

Dia [1] is a simple and easy-to-use Diagram Editor for Linux. It loosely resembles the MS-Windows software Visio, and comes without the inevitable restrictions and constraints of MS-Windows.

In spite of its simplicity, Dia is extremely rich in features and facilites. Features of Dia include multiple-page printing, export to many formats (EPS, SVG, CGM and PNG), and the ability to use custom shapes [2] created by

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[1]Texts shown in winered colour are click-sensitive hyperlinks.

the user as simple XML descriptions. Dia is useful for drawing SADT diagrams, flow charts, ER diagrams, UML diagrams, network maps, electrical circuits and control systems etc.

For those who are mathematics oriented, Dia allows use of Greek letters (in the diagrams/figures you draw with it). Choose the right input method (e.g. IBus) from the top menu, choose the appropriate language (e.g. Greek), and type the text you need. Of course, you should have configured your input method (IBus) beforehand, to include the language you want to use (Greek). This makes Dia the ideal choice for creating maths oriented diagrams in LaTeX documents.

In addition to the basic default shapes built into Dia, a whole lot of third-party shapes are also available. The user may also build/create his own custom shapes and add to this collection.
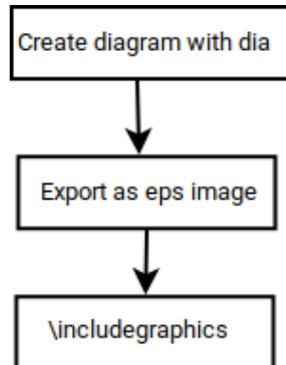
A sample diagram made with dia

This Figure was made using Dia.
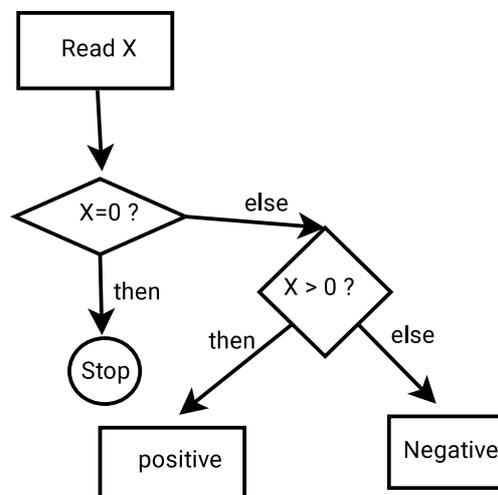
How to do it

Use Dia to create the diagram, export it as eps image. Include that image in your LaTeX document.

Create diagram with dia
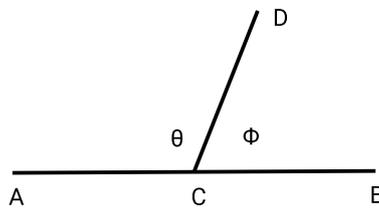
Export as eps image

\includegraphics

That's it. You do not have to struggle with tools like pstricks, TikZ, pgf etc.

One more example

This is an example inspired from the first theorem of Euclid's plane geometry [3].

If a straight line meets another straight line, the sum of the two adjacent angles is two right angles.
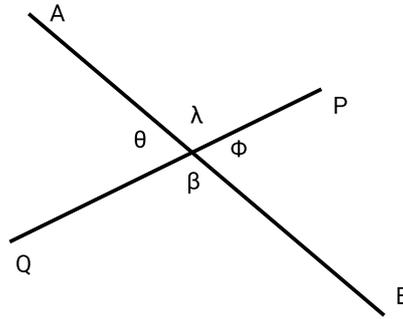
This can be illustrated using a diagram.

D

θ   Φ

A   C   B

In this diagram : $\theta + \phi = \pi$

One more one more example

Here is one more theorem from Euclid's plane gemetry [3] :

If two straight lines intersect, the vertically opposite angles are equal.

This can also be illustrated using a diagram.

In this diagram : $\lambda = \beta$ and $\theta = \phi$

Concluding Remarks

"A picture is worth a thousand words" . This is very true for mathematical texts written with LaTeX . We have shown above, a few examples of how Dia can help in creating texts with mathematical (particularly geometry) figures. However, Dia has a few limitations when used for creating diagrams related to mathematics e.g. function graphs, logarithmic plots etc. In such cases, it would be wiser to use other tools which can generate and export diagrams in appropriate graphical formats (e.g. eps, png, jpg). However, it is still easier to use a diagram editor like Dia for adding diagrams in LaTeX documents rather than tools like TikZ, pstricks etc. Such an approach makes the diagrams available for use in other contexts and in other situations too.

This article was created by the author, using LaTeX under a Linux environment . The LaTeX source of this article can be obtained by sending a request to : drpartha@gmail.com. Please mention the Ref. No., and the Vers. code mentioned at the top of this article. As always, your constructive suggestions and remarks are always welcome.

References

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