Unit-1

Introduction To Latex

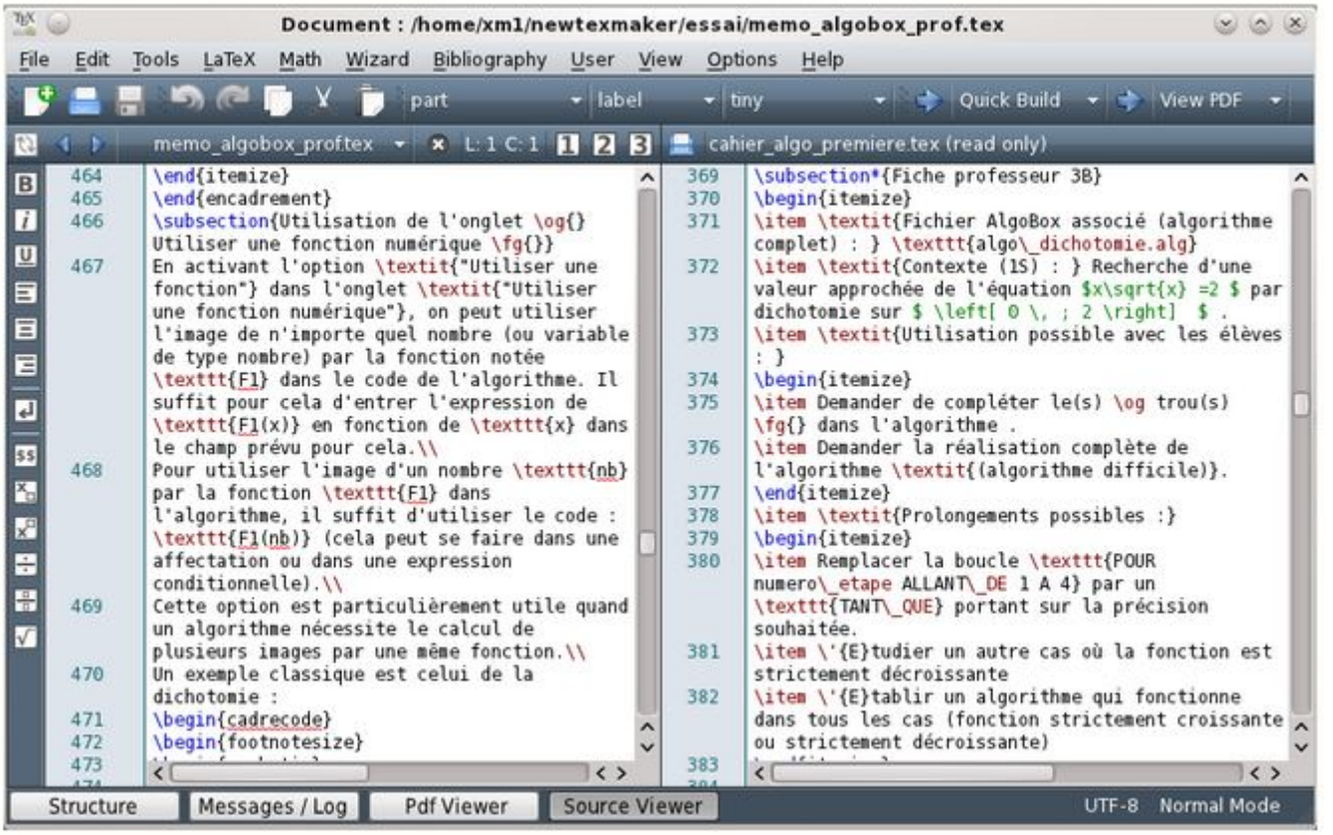
What is LaTex

- ✓ Latex is excellent typesetting software
- ✓ LATEX (pronounced *LAY-tek* or *LAH-tek*) is a tool used to create professional-looking documents and quality of documents produced by latex is unmatched.
- ✓ It is most often used for medium-to-large technical or scientific documents but it can be used for almost any form of publishing. The input for Latex is a plain ASCII [American Standard Code for Information Interchange] text file
- ✓ It's extremely stable, no matter how complex the documents are.
- ✓ Tools like MS word or open office writer are recommended for low complexity documents if the complexity increases at one stage it is impossible to draw some kind of diagrams, math formulas etc but by using latex we can draw them. Here latex takes less time when compare with open office writer or ms word.
- ✓ Latex is free and open source
- ✓ The latex system is a markup language
- ✓ Latex widely used in academia, scientific documents, journals and used in many fields like mathematics, statistics, computer science, engineering, chemistry, physics, economics, linguistics, quantitative psychology, philosophy, and political science. It also has a prominent role in the preparation and publication of books and articles that contain complex multilingual materials, such as Tamil, Sanskrit and Greek
- ✓ It provides a logical approach do create documents instead of a physical, enhancing consistency.
- ✓ Your document is safe because the file format is open and there's no virus threat.
- ✓ Latex is available on windows and all UNIX systems, including Mac and Linux.
- ✓ Latex has outstanding features, such as, automatic numbering of equations, chapters and sections, figures, and tables.
- ✓ Documents with a lot of mathematical equations can also be generated easily in latex
- ✓ It will not crash like word processor.
- ✓ LaTeX allows typesetting math easily. Really - writing `\alpha` is quicker then searching alpha symbol in GUI. Similarly writing x^y is quicker then searching power in list of symbols.
- ✓ Easily produce PDFs with hyperlinks, table of contents, indices, etc.
- ✓ Unlike MS Word, guaranteed backward compatibility.
- ✓ Typeset formulas and it’s particularly strong when working with mathematical symbols.
- ✓ We can produce diagrams with lot of accuracy.
- ✓ It has no compatibility issues
- ✓ It is easy to produce bibliographic entries, which changeable format, on the fly.
- ✓ With latex taking care of formatting, the writer can concentrate on more important activities, such as, content generation and logical sequencing of ideas

We can use different software’s like texstudio, texlive, texWroks, Lyx, TexnicCenter, miktex, texmaker etc to product latex documents, sometimes it may depend on the Operating system.
Here is how texmaker software looks like

Unit-1

Introduction To Latex



Here teacher must explain different menus/windows/options along with its functionality

Latex command:

Latex typesetting is made by using special tags or commands that provide a handful of ways to format your document. Sometimes standard commands are not enough to fulfill some specific needs, in such cases new commands can be defined. Commands are special words that determine LATEX behavior. Usually **these words are preceded by a backslash and may take some parameters.**

-Most of the LATEX commands are simple words preceded by a special character.

Example \alpha, \beta, \frac, \sum, \int …etc

-Latex commands are case sensitive

Syntax:

\commandname[opt1][opt2]{arguement1}{arguement2}

Latex environments

Environments are used to format blocks of text in a LATEX documents. Environments are delimited by an opening tag \begin and a closing tag \end. Everything inside those tags will be formatted in a special manner depending on the type of the environment.

Syntax:

\begin{environment_name}
Text to be inserted
\end{environment_name

Example-I:

\begin{tabular}{ c c c } %opening tag
cell1 & cell2 & cell3 \\

Unit-1

Introduction To Latex

```
 cell4 & cell5 & cell6 \\
\end{tabular}                    %Ending tag
```

Example-2:

```
\begin{center}
Contents ……..
\end{center}
```

The above code takes tabular environment

% symbol is used to insert comments, generally while compiling the documents, comments will be ignored. \\ (A double backslash will be used for new line) \LaTeX (Use this command to produce latex logo, it is case sensitive)

Creating a document in LaTeX

```
\documentclass{article}                % No space between document and class
\begin{document}
Hello, this is my first latex document.
I can insert images, lists, tables and formulas here.....
\end{document}
```

```
\documentclass[options]{article/report/beamer/letter....etc}
\begin{document}
\end{document}
```

Unit-1

Introduction To Latex

These are the main three commands to create a latex document, without these we cannot create a document. the matter whichever you want to insert like text, images and formulas etc will come in between \begin{document} and \end{document}

The \documentclass command must appear at the very beginning of your LaTeX document, before any other LaTeX commands, otherwise you will get an error message.

Preamble:
Everything before \begin{document} is called preamble (or) the matter in between \documentclass and \ begin{document} is called preamble.

-Generally packages will be used in preamble
- Abstract will come in preamble
- Title can be inserted here

Example code:

```
\documentclass[12pt]{article}
\title{Student_Name \\ Class}
\author{RGUIIIT \\ Nuzvid}
\date{\today}          % \today command will produce today's date
\maketitle             % without \maketitle command title can't be produced
\begin{abstract}
This is for latex Demo
\end{abstract}         % the matter which is in the box called Preamble
\begin{document}
\LaTeX
\end{document}
```

Task-I

Create a document with two pages one should be the title page with information of your name, id, class, college, branch and second page should contain bit information about our college.

Output formats:

.ps(PostScript)
.dvi (DeVice Independent)
.pdf (Portable Document Format)

Unit-1

Introduction To Latex

You can notice that the PDF document is bigger than the DVI, even if it contains exactly the same information. The main differences between the DVI and PDF formats are:

- DVI needs less disk space and it is faster to create. It does not include the fonts within the document, so if you want the document to be viewed properly on another computer, there must be all the necessary fonts installed. It does not support any interactivity such as hyperlinks or animated images. DVI viewers are not very common, so you can consider using it for previewing your document while typesetting.

- PDF needs more disk space and it is slower to create, but it includes all the necessary fonts within the document, so you will not have any problem of portability.
  It supports internal and external hyperlinks. Nowadays it is the de facto standard for sharing and publishing documents, so you can consider using it for the final version of your document.