

Developers Conference 2018

Introduction to \LaTeX

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What is \LaTeX ?

How is it pronounced?

There is no specific recommendation on pronouncing \LaTeX but the \TeX part is pronounced **tech** as explained by its creator Prof. Donald E. Knuth. \TeX in Greek means *art*, *craft* or *technique*.

A brief history of \LaTeX

The \LaTeX program is a computer typesetting for placing text on a page. It was written by Dr. Leslie Lamport while using \TeX 's typesetting engine & macro system developed by Prof. Donald E. Knuth.

1962 - \TeX created by Prof. Donald E. Knuth

1968 - \TeX and Metafont

1982 - $\TeX 82$

1983 - $\LaTeX 2.09$ created by Dr. Leslie Lamport

1994 - $\LaTeX 2_{\epsilon}$

$\LaTeX 3$ is under development since 2014.

Where is it used?

Over the years \LaTeX has become the standard document system for writing technical and scientific papers. It's widely used by the scientific community to produce documents that contains formulas, for example the Schrodinger equation:

$$e^{i\hat{k} \cdot \hat{r}} = \sum_{l=0}^{\infty} (2l+1) i^l j_l(kr) P_l(\cos \theta)$$

\LaTeX is also used by scholars to write documents that contain non-Latin scripts such as Arabic, Greek, Sanskrit, Tamil, etc.

Getting \LaTeX

I use Texmaker on openSUSE Tumbleweed and installation is straightforward via the command-line console:

```
sudo zypper in texmaker
```

Installation packages are available for Linux distributions, Windows and macOS from the project website **xm1math.net/texmaker**.

Texmaker is a cross-platform open source \LaTeX editor with an integrated PDF viewer. It's written in C++ and uses the Qt interface.

Configuring Visual Studio Code

A \LaTeX extension by James Yu is available through the Visual Studio Marketplace. Press `Ctrl + P`, paste the following command and press enter.

```
ext install James-Yu.latex-workshop
```

The default config will use the `pdflatex` engine but it can be easily configured to use `xelatex`, `lualatex` or some other engine.

Structure of \LaTeX documents

Example code

```
% Simple LaTeX document

\documentclass[11pt]{article}
  \title{A Simple {\LaTeX} Document}
  \author{Ish Sookun\\ La Sentinelle Ltd}
  \date{\today}

\begin{document}
  \begin{abstract}
    This is an abstract.
  \end{abstract}
```

Define the document type using the **`\documentclass`** command. Possible classes are:

- article
- report
- book
- beamer

The **`\documentclass`** calls a document template that determines document characteristics such as headers, margins, and so on.

Example usage:

```
\documentclass[11pt]{article}
```

`\begin{document}`

Everything that makes up your document should reside within the **document** environment.

```
\begin{document}
...
\end{document}
```

Within the **document** block you can now add an abstract and sections containing paragraphs.

```
\section{Introduction}
All our digital products
are deployed on Amazon
Web Services.\
```

Expenses incurred by
running instances...

`\maketitle`

To display a title you need to declare the following components in the preamble:

- `title`
- `author`
- `date`

You can accomplish the whole with the following commands:

```
\title{Cloud Expenses Report}  
\author{Ish Sookun}  
\date{\today}  
...  
\maketitle
```

These commands should be in the preamble, except the **`\maketitle`** command which comes after the `\begin{document}`.

`\begin{abstract}`

A block of text can be formatted by declaring an environment called **abstract**. Environments are delimited by an opening `\begin` and a closing `\end` tag in the form:

```
\begin{abstract}
```

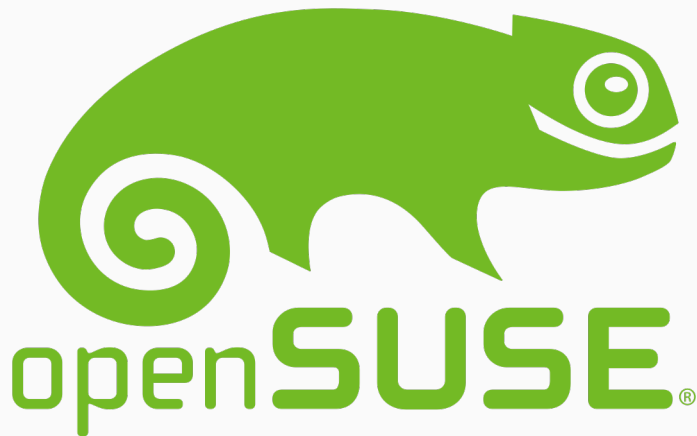
```
This report was prepared after  
analyzing the expenses incurred  
over a period of twelve months  
starting January 2017.
```

```
\end{abstract}
```

An abstract is optional and I would recommend it only if you are writing a report that is several pages long. Otherwise, you may also have a **section** that is called *abstract* in your report.

Woohoo! It's demo time :)

openSUSE Leap 15 - release is coming! 25 May 2018 :)





The T_EXbook

by Donald E. Knuth



L^AT_EX - A Document Preparation System by Dr. Leslie Lamport

by Dr. Leslie Lamport

I used the Metropolis beamer theme by Matthias Vogelgesang for this presentation. Its source can be obtained at github.com/matze/mtheme.