

# Latex Workshop

By Geomatics Engineering Society

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## Introduction

What?

Why?

How?

## Basics

## Report Writing

## Extras

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### ② Basics

### ③ Report Writing

### ④ Extras

# L<sup>A</sup>T<sub>E</sub>X: A typesetting Language



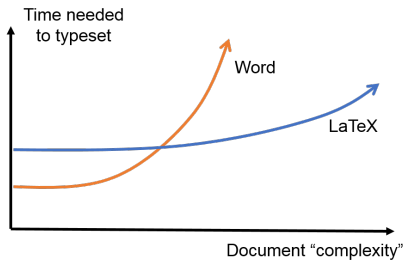
Figure: Early Typesetting Process

Credit to :

Donald Knuth and Leslie Lamport

# Why L<sup>A</sup>T<sub>E</sub>X ?

- Popularity
- Aesthetics
- Consistency
- Versatility
- Power



# Softwares Needed

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- **A Compiler**  
Tex-Live , MikTex
- **An Editor**  
TexWorks, TexStudio

## Alternative

- **Online Platforms**  
overleaf

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# Wizards

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Small programs  
to help with various  
tasks.



Whilst installing a new computer  
programme, Jeff had trouble  
with the setup wizard.

# Structure of a L<sup>A</sup>T<sub>E</sub>X File

**`\documentclass [12pt]{article}`** Define the types of the document  
(article, book, thesis ...)

**`\usepackage {color}`**  
**`\usepackage {graphicx}`** Preamble. Incorporate packages or  
define macros here

**`\begin{document}`**  
  
Main body, stuff to be printed, title,  
authors, abstract, sections,  
references, ....  
  
**`\end{document}`**



# Environment , Commands and Comments

## Environment

Blocks with unique characteristics.

typically enclosed in `\begin{...}` and `\end{...}`

## Commands

used to specify what we want to be done.

Remember : newline `\\` and escaping.

## Comments

For documentation. Any text in a line after `%` is a comment.

It is a good idea to separate a document into multiple files and use `\input` command in main file.

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# Scenarios

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- Build from Specifications.
- Build from Templates.
- Modifying Existing Templates per Specs.

# Adding Images

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- using graphicx package and

```
\includegraphics {image}
```

 command.

- captions and labels can be used in figure environment
- Sub Figures need the package subcaption

# Positioning Images

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```
\begin {figure}[placement]
```

- h : here
- t : top of page
- b : bottom of page
- p : separate page

Adding ! will force the option used.

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- ordered lists by `enumerate`.
- unordered lists by `itemize`.
- descriptive lists by `description`
- \* lists can be nested.
- labels can also be changed. (see [lists in latex](#))

# Equations

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- `$ eqn $` for inline math
- `$$ eqn $$` for display math
- use `\begin {equation}` for numbered equations.
- Try out math wizard.

# Tables

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- `\begin {table}` for table environments.
- `\begin {tabular}` for actual table. Try wizard for simple tables.
- For Complex Tables try <https://www.tablesgenerator.com/>



# References

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used to reference within the document.

- `label{key}` to create a label that can be referenced.
- `\ref {key}` for referencing the object with give key.
- try `hyperref` for clickable links.
- try `href` for urls

# bibliography

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- add entries to a seperate bibliography file.
- use `\cite {id}` to make citations.
- use `\bibliography {bib file}` for making references.

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## You can do much more with Latex

- Slides
- CV
- Source Code
- Drawings
- Plots
- Multilingual texts
- books in other languages