

# Introduction to $\LaTeX$

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# Outline

- 1 Introduction
- 2 Basic Typesetting
- 3 Advanced Typesetting
- 4 References

# What is $\text{\LaTeX}$ ?

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- $\text{\LaTeX}$  is a document preparation system for high-quality typesetting
- $\text{\LaTeX}$  is most often used to produce technical or scientific documents, but it can be used for almost any form of publishing

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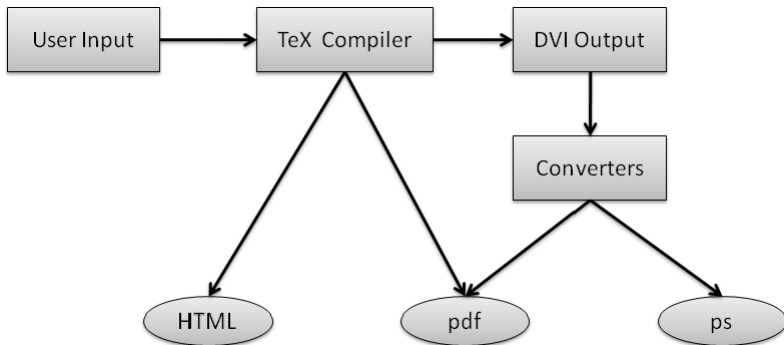
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- Fast, professional math equations typesetting
- Freely available

# Basic $\text{\LaTeX}$ Work Flow I



# What Do You Need to Process a $\text{\LaTeX}$ Document?

- $\text{\LaTeX}$  Editor
  - Linux: Kile, Emacs
  - Windows: TeXworks, WinEdt, LyX
  - Mac: TeXworks, LyX, Emacs

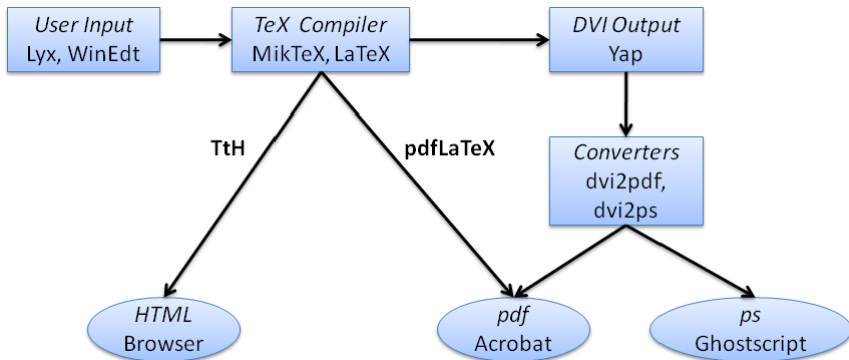
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- $\text{\LaTeX}$  Output Viewer
  - PDF: xpdf, Foxit, Adobe Reader
  - PS: Ghostscript, GhostView
  - HTML: Web Browser

# Basic $\text{\LaTeX}$ Work Flow II



# Hello World in L<sup>A</sup>T<sub>E</sub>X

## Example

```
\documentclass[12pt,letterpaper]{article}
%include packages here
%\usepackage{package}
\begin{document}
Hello world!
\end{document}
```

# Basic Formatting in L<sup>A</sup>T<sub>E</sub>X

- **Bold Text:** `\textbf{Bold Text }`
- *Italic Text:* `\emph{Italic Text }`
- Spacing:
  - Many spaces = one space
  - Use `\\` for newline
  - Hit return *twice* for a new paragraph
  - `\newpage`
- Comments: `% ... your comments here ...`
- Reserved Symbols: `# $ % ^ & _ { } ~ \`



# Mathematical Equations in $\text{\LaTeX}$

- Use  $\$ \dots \$$  or  $\backslash\text{begin}\{\text{math}\} \dots \backslash\text{end}\{\text{math}\}$  for include mathematical symbols, equations, etc.
- Subscript and superscripts —  $x^2$ :  $x^2$  and  $x_2$ :  $x_2$
- Fractions—  $\frac{a}{b}$ :  $\backslash\text{frac}\{a\}\{b\}$  or  $\$a \text{ \over } b\$$ :  $\frac{a}{b}$
- Radical—  $\sqrt{x}$ :  $\backslash\text{sqrt}\{x\}$ :  $\sqrt{x}$
- Many more symbols and operators are available

# Images and Figures in $\LaTeX$

- Include .eps (postscript) images in  $\LaTeX$  for **dvi** output
- Include .jpg, .png, and .gif images in  $\LaTeX$  for **pdf** output
- Software: **gimp**: for converting images, **DIA** and **PowerPoint**: for drawing figures
- graphicx package is required: `\usepackage{graphicx}`

## Example

```
\begin{figure}  
\includegraphics[height=50%,width=50%]{filename.eps}  
\end{figure}
```

# Making Tables in $\text{\LaTeX}$ Using Excel

- Download Excel2LaTeX
  - Available for download at  
<http://www.ctan.org/tex-archive/support/excel2latex/>
- Extract the files and double click on the Excel Add-In file (Excel2LaTeX.xla)
- Create the table in Excel which you want in your  $\text{\LaTeX}$  document and highlight the cells
- Click on the Macro, an error might occur, just click "End"
  - Most likely you will want to un-check "Create table environment" and "Booktabs-style formatting"
- Copy the table to your  $\text{\LaTeX}$  file!

# Bibliography in L<sup>A</sup>T<sub>E</sub>X I

- Bibliography information is stored in a \*.bib file, in Bibtex format
- To include and reference Bibliography:
  - Set referencing style  
`\bibliographystyle{plain}`
  - Create reference section by `\bibliography{bibfile with no extension}`
  - Cite reference inside the text by `\cite{bibliography item}`

## Bibliography in L<sup>A</sup>T<sub>E</sub>X II

- `@book{Come95,`  
  `author="D. E. Comer",`  
  `title={Internetworking with TCP/IP: Principles, Protocols`  
  `and Architecture},`  
  `publisher="Prentice-Hall",`  
  `year=1995,`  
  `volume=1,`  
  `edition="Third" }`

## Other Useful Tools/Topics for L<sup>A</sup>T<sub>E</sub>X

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- Google is your friend