

An (Extremely Short) Introduction to L^AT_EX Typesetting

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Graduate Student Research Day

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Disclaimer

Disclaimer

You cannot learn \LaTeX in a 40 minute talk

Disclaimer

You cannot learn \LaTeX in a ANY talk

What is L^AT_EX?

Formatting

References

Advanced Topics

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Some History

First came T_EX...

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La + T_EX

Some History

First came \TeX ...

\TeX is a low level programming language written by Donald Knuth in 1978, used for specifying page layout.

...then came \LaTeX

\LaTeX is a collection of macros and functions written by Leslie Lamport, intended to make \TeX easier and simpler to write.

$$\text{La} + \text{\TeX} = \text{\LaTeX}$$

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What is L^AT_EX?
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Advanced Topics
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L^AT_EX is...

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L^AT_EX is a program which turns a text file into a pdf
(or .dvi, or .ps, or...)

What is L^AT_EX?

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- Word processors require you to format your document as you write it (WYSIWYG)
- L^AT_EX *is* a program which reads a .tex file and produces a pdf document
- L^AT_EX separates the formatting from the content (WYSIWYM)

Document Structure

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new commands,
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Formatting options,
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\begin{document}
```

Content goes here.

```
\end{document}
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L^AT_EX ignores anything below this line.

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Advanced Topics

Text Size and Style

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Text groups

Text inside brackets $\{ \dots \}$ is called a *group*.

Style commands are typically confined to a specific group.

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http://en.wikibooks.org/wiki/LaTeX/Text_Formatting#Font_Styles

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Text Options

`http://en.wikibooks.org/wiki/LaTeX/Text_`
`Formatting#Font_Styles`

Emphasis

`\emph{ ... }` will automatically emphasize text differently depending on the context.

More Text Stuff

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Replace 'center' with 'flushright' or 'flushleft' to justify.

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`\vspace{1in}` gives one inch of vertical space,
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fill up vertical and horizontal space on the page.
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Starting a new page

`\pagebreak` *suggests* to L^AT_EX to start a new page here.

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`\pagebreak[4]` *strongly suggests* to start a new page.

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`\pagebreak[4]` *strongly suggests* to start a new page.
`\newpage` forces a new page.

Bullet Points

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```
\begin{itemize}
  \item first
  \item second
  \item third
\end{itemize}

\begin{enumerate}[i]
  \item first
  \item second
  \item third
\end{enumerate}
```

Bullet Points

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\begin{itemize}
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  \item second
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\end{enumerate}
```

- first
- second
- third

- i) first
- ii) second
- iii) third

What is \LaTeX ?

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Defintions, bullet points, figures, etc. can be *labelled*. Labels are only visible in the source code, and will stay in place even when item numbers change.

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```
\begin{figure} \label{maingraph}  
...  
\end{figure}
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As we have seen in Figure `\ref{maingraph}`
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\end{figure}
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`\usepackage{hyperref}` makes each reference *clickable*

Table of Contents and Index

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Sections and Subsections

If you use `\section{...}`, `\subsection{...}`
`\chapter{...}`, etc in your document, then
`\tableofcontents` generates a full table of contents.

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Index

With package `makeidx`, use `\index{key}` next to topics in
your paper. The command `\makeindex` will generate a full
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Bibliographies

Bibliographies in L^AT_EX work very similarly. Each item is given a name, and cited with `\cite{name}`.

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bibTeX will *automatically* style your references, order them alphabetically, and only list those you actually cite (or list them all, if you want).

BibTeX

```
@article{infprimes,  
  AUTHOR = {Euclid},  
  TITLE = {On the Infinitude of Primes},  
  JOURNAL = {First Journal of Math},  
  VOLUME = {1},  
  YEAR = {300 BC},  
  PAGES = {1 - 5},  
}
```

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```

`\cite{infprimes}` will now generate this reference, number it, and cite it.

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Macros and Shortcuts

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$$\int_0^1 f(x)dx$$

`\newcommand{\myint}[1]{\int_0^1 #1\mathrm{d}x}`

`\myint{ e^x }` gives $\int_0^1 e^x dx$.

Presentations

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Beamer is a document class for producing presentations and posters

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```
\documentclass{beamer}
\usetheme{...}
\usecolortheme{...}

\begin{document}

\begin{frame}{frametitle}
  stuff
  \pause
  more stuff
\end{frame}
```