



Federico Cantini <federico.cantini@lib4ri.ch>

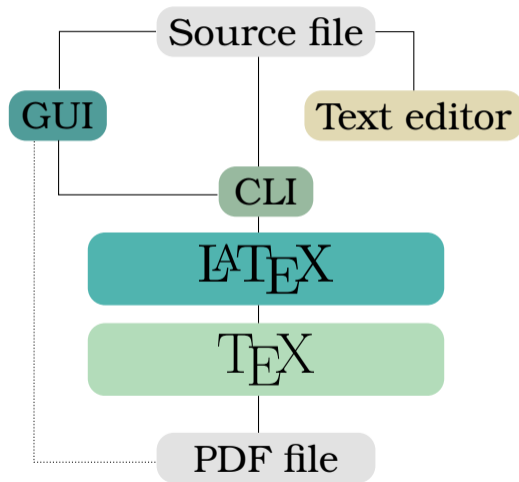
# Getting started with $\text{\LaTeX}$

## The basics



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- Preamble: add commands to influence the style of the whole document, or load packages that add new features to the L<sup>A</sup>T<sub>E</sub>X system
  - Document Class: general structure of the document.
  - Package: additional code to extend core L<sup>A</sup>T<sub>E</sub>X functionalities.
- Body: enter the text mixed with some instructions to the L<sup>A</sup>T<sub>E</sub>X compiler
  - Command: an instruction used for producing something new or to change the form of an existing item, e.g., producing the symbol  $\alpha$  or printing italic as *italic*.
  - Environment: a logical structure established by a pair of commands `\begin{...}\end{...}` to perform a particular task or render the output in a particular way.

- `latex` The original compiler. It generates a PostScript file.
- `pdflatex` Generates a PDF file.
- `lualatex` Includes Lua scripting capabilities
- `xelatex` Supports Unicode and additional fonts technologies such as OpenType, Graphite and Apple Advanced Typography (AAT).

```
\command[options]{argument}
```

`\documentclass command``\documentclass [options] {argument}`

<b>Argument</b>		<b>Options</b>	
book	Default is two-sided.	10pt/11pt/12pt	Font size.
report	No <code>\part</code> divisions.	letterpaper/a4paper	Paper size.
article	No <code>\part</code> or <code>\chapter</code> divisions.	twocolumn	Use two columns.
letter	Letter.	twoside	Set margins for two-sided.
slides	Large sans-serif font.	landscape	Landscape orientation.
beamer	Presentations.	draft	Figures not loaded.

```
\usepackage[options]{package_name}
```

Package	Use	Options
babel	Internationalization	english, german
amsmath	Math writing	sumlimits, nosumlimits, leqno, reqno
hyperref	Hypertext links	draft, final, debug
graphicx	Graphics inclusion	draft, final, hiderotate

<https://www.ctan.org>



## Syntax

### Sectioning

```
\begin{document}
  \title{Title}
  \author{Author's name}
  \maketitle      %this is the command to actually draw the title

  \begin{abstract}
    Your abstract goes here...
    ...
  \end{abstract}

  \part{title}
  \chapter{title}
  \section{title}
  \subsection{title}
  \subsubsection{title}
  \paragraph{title}
  \subparagraph{title}

  \bibliographystyle{style}
  \bibliography{source}
\tableofcontents
\end{document}
```

<code>\begin{enumerate}</code>	Numbered list.
<code>\begin{itemize}</code>	Bulleted list.
<code>\begin{description}</code>	Description list.
<code>\item text</code>	Add an item.
<code>\item[x] text</code>	Use $x$ instead of normal bullet or number. Required for descriptions.

```
\begin{itemize}
  \item item 1
  \item item 2
\end{itemize}
```

## Reserved and special characters

& \&		— \_		... \ldots		▪ \textbullet
\$ \\$		^ \^{}		\textbar		\ \textbackslash
% \%		~ \~{}		# \#		§ \S

ò \`o		ó \'o		ô \^o		õ \~o		ō \=o
ô \.o		ö \".o		o \c o		ö \v o		ó \H o
ç \c c		ø \d o		o \b o		ôo \t oo		œ \oe
Œ \OE		æ \ae		Æ \AE		å \aa		Å \AA
ø \o		Ø \O		ł \l		Ł \L		ı \i
J \j		i ~`		ı ?`				

‘ ’		“ ”		{ \}		[ ]		( )		< \textless
’ ’		” ”		} \}		] ]		) )		> \textgreater

hyphen		-		X-ray
en-dash		--		1–5
em-dash		---		Yes—or no?

\\		Begin new line without new paragraph.
\pagebreak		Start new page.

\today | 12th October 2023.

## Syntax

### Font size

<code>\tiny</code>	tiny	<code>\scriptsize</code>	scriptsize
<code>\footnotesize</code>	footnotesize	<code>\small</code>	small
<code>\normalsize</code>	normalsize	<code>\large</code>	large
<code>\Large</code>	large	<code>\LARGE</code>	large
<code>\huge</code>	huge	<code>\Huge</code>	huge

### Paragraph alignment

Alignment	Environment	Switch
Left justified	<code>flushleft</code>	<code>\raggedright</code>
Right justified	<code>flushright</code>	<code>\raggedleft</code>
Center	<code>center</code>	<code>\centering</code>

## Syntax

### Font face

<i>Command</i>	<i>Switch</i>	<i>Effect</i>
<code>\textrm{text}</code>	<code>{\rmfamily text}</code>	Roman family
<code>\textsf{text}</code>	<code>{\sffamily text}</code>	Sans serif family
<code>\texttt{text}</code>	<code>{\ttfamily text}</code>	Typewriter family
<code>\textmd{text}</code>	<code>{\mdseries text}</code>	Medium series
<code>\textbf{text}</code>	<code>{\bfseries text}</code>	<b>Bold series</b>
<code>\textup{text}</code>	<code>{\upshape text}</code>	Upright shape
<code>\textit{text}</code>	<code>{\itshape text}</code>	<i>Italic shape</i>
<code>\textsl{text}</code>	<code>{\slshape text}</code>	<i>Slanted shape</i>
<code>\textsc{text}</code>	<code>{\scshape text}</code>	SMALL CAPS SHAPE
<code>\emph{text}</code>	<code>{\em text}</code>	<i>Emphasized</i>
<code>\textnormal{text}</code>	<code>{\normalfont text}</code>	Document font
<code>\underline{text}</code>		<u>Underline</u>

```
\usepackage[language1, language2]{babel}
```

Place it soon after `\documentclass`

```
\selectlanguage{language1}
```

```
\foreignlanguage{language1}{Text in another language.}
```

*No spell checking!*



```
\usepackage[utf8]{inputenc}
```

## Footnotes

```
\footnote{text}
```

```
Creating a footnote is easy.\footnote{An example footnote.}
```

```
Creating a footnote is easy.1
```

---

<sup>1</sup>An example footnote.

## Author's affiliation

```
\usepackage[options]{authblk}
```

```
\documentclass{article}
\usepackage{authblk}

\title{Multiple Affiliation for Multiple Author}
\date{\today}

\author[1, 2]{Author1}
\author[3, 5]{Author2}
\author[1, 2, 4]{Author3}
\author[1, 2, 4]{Author4}

\affil[1]{Affiliation1}
\affil[2]{Affiliation2}
\affil[3]{Affiliation3}
\affil[4]{Affiliation4}
\affil[5]{Affiliation5}

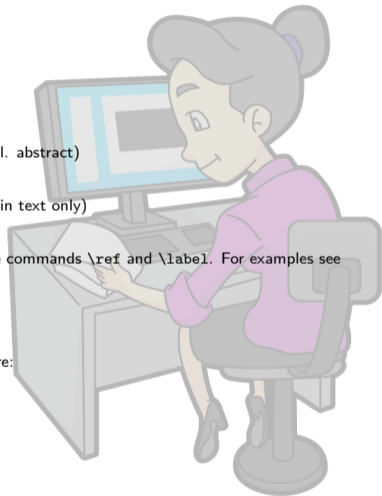
\begin{document}
\maketitle
\end{document}
```

## Common file extensions

- .tex** L<sup>A</sup>T<sub>E</sub>X or T<sub>E</sub>X input file
- .aux** Transport info from one compilation run to another (cross-references)
- .log** Compilation run log
- .toc** Stores section headers. Used to generate the table of contents
- .lof** As .toc for the list of figures
- .lot** As .toc for the list of tables
- .bib** **Bibliography database file**
- .bbi** Generated by BibT<sub>E</sub>X/BibL<sup>A</sup>T<sub>E</sub>X to be used by L<sup>A</sup>T<sub>E</sub>X
- .blg** BibT<sub>E</sub>X/BibL<sup>A</sup>T<sub>E</sub>X log file
- .cls** Document class definition
- .sty** Macro package
- .pdf** **The output document**

## Exercise

- Open  $\text{T}_{\text{E}}\text{X}$ studio and create a document with document class type "article"
- Create a title page (e.g., title, authors, date)
- Create the sections and subsections of one of your papers or your next planned paper (incl. abstract)
- Create a table of contents (use the command `\tableofcontents`)
- Add some text in one or more sections (copy paste from a ready document you have - plain text only)
- Include a subscript in your text (e.g.,  $\text{CO}_2$ )
- In one of your paragraphs refer to the first section (load the package *hyperref* and use the commands `\ref` and `\label`. For examples see here: [https://en.wikibooks.org/wiki/LaTeX/Labels\\_and\\_Cross-referencing](https://en.wikibooks.org/wiki/LaTeX/Labels_and_Cross-referencing))
- Adjust the position of your text to center alignment
- Use the babel language package to set you own mother language (or other)
- Try different options and classes for the command `\documentclass` (For examples see here: [https://en.wikibooks.org/wiki/LaTeX/Document\\_Structure](https://en.wikibooks.org/wiki/LaTeX/Document_Structure))



Slide 21 background image: Free Clip Art

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