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Getting started with L^AT_EX L^AT_EX Basics



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LATEX Basics

Ecosystem



Document structure

- Preamble: add commands to influence the style of the whole document, or load packages that add new features to the LATEX system
 - Document Class: general structure of the document.
 - Package: additional code to extend core LATEX functionalities.
- Body: enter the text mixed with some instructions to the LATEX compiler
 - Command: an instruction used for producing something new or to change the form of an existing item, e.g., producing the symbol α 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.

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

Syntax

\documentclass command

\documentclass[options]{argument}

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

Syntax

\usepackage command

\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>

```
\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}
```

Syntax Lists

<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 <i>x</i> instead of normal bullet or number.
	Required for descriptions.

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

Syntax

Reserved and special characters

&	\&	-	_	...	\ldots	\textbullet					
\$	\\$	^	\^{}{}		\textbar	\textbackslash					
%	\%	~	\~{}{}	#	\#	\\$					
ò	\`o	ó	\'o	ô	\^o	õ	\~o	ö	\=o		
ó	\.o	ö	\\"o	ø	\c{o}	ő	\v{o}	ő	\H{o}		
ç	\c{c}	ø	\d{o}	œ	\b{o}	őő	\t{oo}	œ	\oe		
Œ	\OE	æ	\ae	Æ	\AE	å	\aa	Å	\AA		
ø	\o	Ø	\O	ł	\l	ł	\L	ł	\i		
ż	\j	i	\^{\prime}	ż	\?'						
'	'	"	"	{	\{	[[((<	\textless
,	,	"	"	}	\}]]))	>	\textgreater

Syntax

Reserved and special characters

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

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

\today | 20th April 2023.

Syntax

Font size

\tiny
\footnotesize
\normalsize
\Large
\huge

tiny
footnotesize
normalsize
large
huge

\scriptsize
\small
\large
\LARGE
\Huge

scriptsize
small
large
large
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>

<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>	Bold series
<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>

Languages support
Babel

```
\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

¹An 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}

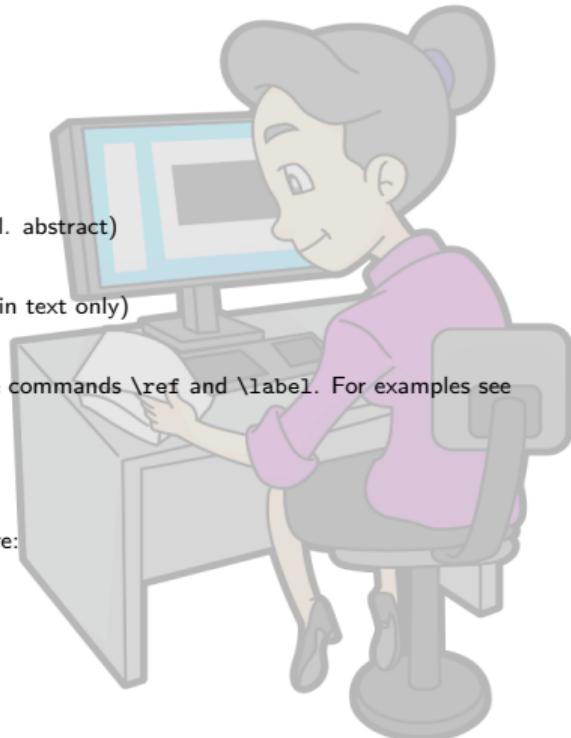
\begin{document}
\maketitle
\end{document}
```

Common file extensions

- .tex** L^AT_EX or T_EX 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
- .bb1** Generated by BiB^TE_X to be used by L^AT_EX
- .blg** BiB^TE_X log file
- .bst** BiB^TE_X style file
- .cls** Document class definition
- .sty** Macro package
- .pdf** The output document

Exercise

- Open your `TeX` editor 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., 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)
- Adjust the position of your text to center alignment
- Use the `babel` language package to set your 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)



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