



SKILLPILLS

Skill Pill: L^AT_EX

Session 1: The Basics of Typesetting

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January 30, 2017



- 1 Creating a Document
- 2 A First Example
- 3 Structure of \LaTeX Documents
- 4 Structuring the Document
- 5 Punctuation and Special Characters

If you have not installed \LaTeX on your computer, you may use Overleaf, which is an online \LaTeX editor.

<https://www.overleaf.com>

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document.tex



`pdflatex document.tex`



document.pdf



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```
\documentclass{scrartcl}

\usepackage[ngerman,spanish,english]{babel}
\usepackage[utf8]{inputenc}
\usepackage[T1]{fontenc}

\title{My First \LaTeX\ Document}
\author{Author}
\date{\today}

\begin{document}

    \maketitle
    \section{How it Began}
    This is my first \LaTeX\ document!

\end{document}
```

My First \LaTeX Document

Author

January 18, 2016

1 How it Began

This is my first \LaTeX document!

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- Command:

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

If there is more than one optional argument, separate them by commas.

- Environments:

```
\begin{environment}  
...  
\end{environment}
```

- Comments are made using %.

```
\documentclass{scrartcl}
```

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- possible document classes:
 - scrartcl, scrreprt, scrbook (article, report, book resp.)
 - beamer
 - letter

```
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```

- possible document classes:
 - scrartcl, scrreprt, scrbook (article, report, book resp.)
 - beamer
 - letter
- possible preferences:
 - Font size (e. g. 11pt)
 - Paper format (e. g. a4paper)
 - Number of columns (onecolumn or twocolumn)
 - One-sided/two-sided margins (oneside or twoside)

Example: `\documentclass[a4paper, 11pt, twocolumn]{scrartcl}`

```
\usepackage[ngerman,spanish,english]{babel}  
\usepackage[utf8]{inputenc}  
\usepackage[T1]{fontenc}
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Important packages:

- babel** Definition of language(s) – important for hyphenation
- inputenc** Input encoding – important to use special characters
- fontenc** Font encoding – important for diacritics

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Important packages:

- babel** Definition of language(s) – important for hyphenation
- inputenc** Input encoding – important to use special characters
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There are many more packages, useful for formatting your document.


```
\title{My First \LaTeX\ Document}  
\author{Author}  
\date{\today}
```

```
\title{My First \LaTeX\ Document}  
\author{Author}  
\date{\today}
```

`\title{}`, `\author{}`, `\date{}` define title, author, and date of the document

`\today` includes today's date. The formatting of the date is determined by the defined language.

`\LaTeX` creates the \LaTeX -logo

```
\begin{document}

  \maketitle
  \section{How it Began}
  This is my first \LaTeX\ document!

\end{document}
```

```
\begin{document}
```

```
    \maketitle
```

```
    \section{How it Began}
```

```
    This is my first \LaTeX\ document!
```

```
\end{document}
```

`\begin{document} ... \end{document}` divides document and
preamble

`\maketitle` creates the title (based on `\title`, `\author`, `\date` in the
preamble)

`\section` creates a numbered section

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```
\section{A Section of the Document}  
    Text of a section.
```

```
\subsection{A Subsection}  
    Text of a subsection.
```

```
\subsubsection{A Subsubsection}  
    Further Text
```

```
\paragraph{A Paragraph}  
    blabla
```

```
\subparagraph{A Subparagraph}  
    blablabla
```

1 A Section of the Document

Text of a section.

1.1 A Subsection

Text of a subsection.

1.1.1 A Subsubsection

Further Text

A Paragraph blabla

A Subparagraph blablabla

Line breaks are created with `\newline` or short `\\`.

Paragraphs are created by empty lines or `\par`. To avoid the indentation, one may use `\noindent`.

Be aware of *widows* and *orphans* (*clubs*)!

Widow The last sentence of a paragraph that appears as first sentence of a new page or paragraph.

Orphan A paragraph opening that appears as the last sentence of a page or column.

This is suppressed by `\clubpenalty = 10000 \widowpenalty = 10000`

The table of contents is created by `\tableofcontents`.

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Contents

1	A Section of the Document	1
1.1	A Subsection	1
1.1.1	A Subsubsection	1

In order to emphasize words/phrases one can use `\emph{}`. The emphasized text will be *cursive* if the rest of the text is upright/print, and the other way around.

Other possibilities for highlighting are:

- `\textbf{}` – **bold**
- `\textit{}` – *cursive* (as `\emph{}`)
- `\textsc{}` – SMALL CAPITALS
- `\underline{}` – underline

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

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

The listed examples are declarations (switches), which means they change the way the text to follow is printed. Another way to implement this is using it within an environment or braces. For example:

```
\begin{Large} ... \end{Large}
```

- There are three different listing environments:
 - `itemize` for unnumbered lists
 - `enumerate` for numbered lists
 - `description` for lists based on keywords (as it is in a dictionary)

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- There are three different listing environments:
 - `itemize` for unnumbered lists
 - `enumerate` for numbered lists
 - `description` for lists based on keywords (as it is in a dictionary)
- all three environments may be nested (even in combination)
- the structure of the environments is similar: a new item is created with `\item`.

```
\begin{itemize}
  \item first
  \item second
    \begin{itemize}
      \item three
      \item nested
      \item items
        \begin{itemize}
          \item further
          \item nesting
        \end{itemize}
      \end{itemize}
    \end{itemize}
  \item third
\end{itemize}
```

- first
- second
 - three
 - nested
 - items
 - * further
 - * nesting
- third

```
\begin{enumerate}
  \item first
  \item second
    \begin{enumerate}
      \item different
      \item level
      \item[x)] customized
      \item continued
      \item counting
    \end{enumerate}
  \item third
\end{enumerate}
```

1. first
2. second
 - a) different
 - b) level
 - x) customized
 - c) continued
 - d) counting
3. third

```
\begin{description}
  \item[First Term] Description of term.
  \item[Second Term] Description of term.
    \begin{description}
      \item[First Minor Term] Description
        of term.
      \item[Second Minor Term] Description
        of term.
      \item[Third Minor Term] Description
        of term.
    \end{description}
  \end{description}
\end{description}
```

First Term Description of term.

Second Term Description of term.

First Minor Term Description of term.

Second Minor Term Description of term.

Third Minor Term Description of term.

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Character	Code	Result
Single Quotation Marks	<code>'Example'</code>	'Example'
Quotation Marks	<code>"Example"</code>	"Example"
Apostrophe	<code>'</code>	'
Hyphen	<code>-</code>	-
En dash	<code>--</code>	—
Em dash	<code>---</code>	—
Ellipsis	<code>\dots</code>	...

Character	Code	Result
Enforced space	Mr. \ Smith	Mr. Smith
Non-breaking space	Fig. ~1	Fig. 1
Small non-breaking space	10 \,%	10 %
Hyphenation	computa \-tional	computational

The *non-breaking space* prevents \LaTeX from breaking the text at this point.

For some characters a preceding `\` is necessary:

Code	<code>\%</code>	<code>_</code>	<code>\\$</code>	<code>\&</code>	<code>\#</code>	<code>\{</code>	<code>\}</code>
Result	%	_	\$	&	#	{	}

Backslash is created with `\textbackslash`.