The very short guide to typesetting with \LaTeX

What's this all about? What's \LaTeX?

\LaTeX{} is a document preparation system which uses the \TeX{} typesetting program. It enables you to produce publication-quality documents with great accuracy and consistency. \LaTeX{} works on any computer and produces industry-standard PDF. It is available both in free (open-source) and commercial implementations. \LaTeX{} can be used for any kind of document, but it is especially suited to those with complex structures, repetitive formatting or notations like mathematics\(^1\), or where technical stability, dimensional accuracy, or a persistent and non-propietary file format are needed. Install the software from www.tug.org/texlive/ or buy a commercially-supported version from one of the vendors (see the list on p. 3).

Creating and typesetting your document

1. Create your document using any suitable plain-text editor with \LaTeX{} controls, eg \TeXShop (Mac), \TeX{}Maker (Win), Kile (Linux), Emacs (all), even vi!
2. Save the file with a name ending in .tex (never use spaces in filenames!)
3. Use the Build or Compile toolbar button or menu item in your editor to typeset and display the document.
4. Make any changes needed in your original document and repeat step 3.

Syntax (how to type \LaTeX{} commands — these are the rules)

\LaTeX{} commands begin with a backslash

Example: \texttt{\textbackslash tableofcontents}

\LaTeX{} commands need text to work with it goes in curly braces

Example: \texttt{\textbackslash title\{Irishes Tagebuch\}}:Author\{Heinrich Böll\}

\LaTeX{} commands need spaces after commands without braces get suppressed

Example: \texttt{\textbackslash copyri\{ht\}nt\{..\}nt\}}:Copyright\{\copyright\,2016\} Copyright\{\copyright\,2016\}

To prevent this, put empty curly braces after the command.

Example: \texttt{\textbackslash copyright\{\}nt\{..\}nt\}}:Copyright\{\copyright\,2016\} Copyright\{\copyright\,2016\}

Curly braces are also used to restrict the scope of effects inside them.

Example: Some \texttt{\textbackslash tiny \{little\} word\}} Some \texttt{\textbackslash tiny \{little\} word\}}

Note. This guide shows only a tiny fraction of \LaTeX{}'s power. For more information, visit the \TeX{} Users Group site (www.tug.org). For help, see the FAQ (www.tex.ac.uk/faq), StackExchange (tex.stackexchange.com), or the Usenet newsgroup comp.text.tex. For packages (plugins), use CTAN, the Comprehensive \TeX{} Archive Network (www.ctan.org). For further details, see Formatting Information (Flynn, 2016) and other online resources.

\(^{1}\)For reasons of space this guide does not cover details of mathematics typesetting.
Writing a \LaTeX{} document

1 Basic document structure

Here’s the skeleton of a \LaTeX{} document. These three lines are COMPULSORY: your document will not work without them:

```latex
\documentclass{article}
your Preamble goes here (extra setups if any)
\begin{document}
your document text goes here
\end{document}
```

The document class name MUST be one of the standard \LaTeX{} book, article, or report, or one of the many others preinstalled or downloadable (cg thesis, memoir, etc);

- There are body type size options 10pt (the default), 11pt, and 12pt;
- There are paper size options including a4paper (210 mm × 297 mm) and letterpaper (8½” × 11”) [see below].

2 Front matter

The Preamble [see above] is where you specify any packages (\LaTeX{} plugins like typefaces or special formatting), and where you put any changes to standard features.

```latex
\documentclass[a4paper,11pt]{book}
\usepackage{charter,graphicx}
\setlength{\parindent}{0em}
\begin{document}
\title{your document title}
\author{your name}
\date{date of publication}
\maketitle
\begin{abstract}
the paragraphs of your abstract go here
\end{abstract}
\tableofcontents
\text{the text of your document goes here}
\end{document}
```

The title, author, and date MUST be followed by the \maketitle command to be formatted correctly.

3 Body matter

Leave a blank line between paragraphs as you type: this signals a new paragraph. Spacing is controlled by the document class and packages you use. For an unindented, line-spaced style, use the parskip package.

3.1 Sectioning: Sections get numbered automatically in bold type, and get included in the Table of Contents (if you use it). Numbering can be turned off selectively. Section heading layout can be modified with the sectsty, titlesec, and other packages.

```latex
\begin{verbatim}
\section{section title}
\subsection{subsection title}
\end{verbatim}
```

3.2 Lists. There are three types of list: \texttt{itemized} (bulleted), \texttt{enumerate} (numbered, but not ordered) and \texttt{description} (topic-and-explanation format).

Like document these are all \texttt{environments} using \texttt{\begin{...} and \end{...}}.

```latex
\begin{itemize}
\item 1 lb Sugar
\item 2/3 cup Cream
\item Chocolate
\item 2 oz Bitter
\end{itemize}
```

You can nest lists inside each other. Use the \texttt{enumerate} package to control list formatting.

For help see the links on the front and back pages. There is a summary of common commands at www.atdout.org/~winston/latex/latexsheet.pdf and a comprehensive list at www-ceng.unc.edu/local-docs/latex-help/.

3.3 Tables and figures

These environments float (not available in \LaTeX{}, but PDF output).

```latex
\begin{table}[h]
\begin{tabular}{|l|c|c|c|}
\hline
\textbf{Supplement} & \textbf{Growth rate} & \textbf{Supplement intake} & \textbf{Milk intake} & \textbf{Water intake} \\
\hline
Luzern & 145 & 450 & 10 & 144 \\
Sebastias & 87 & 476 & 9 & 128 \\
Leuchten & 278 & 369 & 8 & 121 \\
\hline
\end{tabular}
\caption{Mean growth rate and intake of supplement, milk, and water for 4 diets (after Sherington, J., undated)}
\end{table}
```

```
\begin{figure}[h]
\begin{center}
\includegraphics[width=\textwidth]{swiss_dutch_mennonite_migrations}
\end{center}
\caption{Swiss and Dutch Mennonite migrations of the 1700s and 1800s}
\end{figure}
```

4.1 Tables and figures

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```latex
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\end{tabular}
\caption{Mean growth rate and intake of supplement, milk, and water for 4 diets (after Sherington, J., undated)}
\end{table}
```

Postscript Type 1 font can be configured for \LaTeX{}. If you use Xe\LaTeX{} and the fontspec package, you can also use your computer’s system fonts as well as those available with \TeX{}. Live.

Commend implementations of \texttt{\texttt{\texttt{\LaTeX}}} for Windows with business-level support are available from Personal \TeX{} Inc. (http://mac凌晨Software Inc. (C)\LaTeX{} \texttt{\texttt{\texttt{\texttt{a}}} WordL.Micropress, Inc. (V\LaTeX{} and True\LaTeX{} Software (True\LaTeX{}).}

Dozens of other font packages are available in \TeX{} Live and the \LaTeX{} Font Catalogue, including mathematics and decorative fonts. Any