Introduction to LaTeX

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Introduction

- What is LaTeX?
- Where can I use it?
- Should I use it?

What you need

Get LaTeX

- Linux: TeX Live (texlive)
- Mac: MacTeX
- Windows: MiKTeX or proTeXt or TeX Live

And LaTeX editors

- TeXmaker
- TeXstudio
- TeXworks
- Or just any other editor

There are also online editors

- https://latexbase.com/
- https://www.sharelatex.com
- https://www.overleaf.com
- https://papeeria.com/
- http://www.hostmath.com/
- https://www.authorea.com/

Basic Code

```
\documentclass{article}

\begin{document}

This is the document body, in which you usually work.

\end{document}
```

Basic Code

```
\documentclass[12pt]{article}

\usepackage[utf8]{inputenc}        % this is in the header

\begin{document}                   % here the body starts

\title{My first LaTeX document} % get a nice title
\author{Zitro}
\maketitle


Here we can write our document text

\end{document}
```

Equations

$$x + y = z$$

$$x_1 \cdot x_2 \cdot \ldots \cdot x_i = \gamma^2$$

$$\frac{x_1}{y_2} = \sqrt{5}$$

$$\sum_{x=1}^{\infty} x = y$$

$$\int_{x=1}^{\infty} x = y$$

$$\frac{\partial Q}{\partial t} = \frac{\partial s}{\partial t}$$

$$\lim_{x \to 0} \frac{e^x - 1}{2x} \underset{\mathrm{H}}{=} \left[\frac{0}{0}\right] \lim_{x \to 0} \frac{e^x}{2} = \frac{1}{2}$$

$$K_a = \frac{[H^+]\,[A^-]}{[HA]}$$

Some characters to watch out for

& % $ # _ { } ~ ^ \

Those need to be masked with a "\":

```
\& \% \$ \# \_ \{ \}
```

and the last ones can be written as

```
\textasciitilde
\textasciicircum
\textbackslash
```

Figures and Pictures

Figure 1: This is a nice picture

Figure 2: This is another nice picture

Figures code

Use this in the document header:

```
\usepackage{graphicx}
\usepackage{cleveref}
```

```
\begin{figure}[hbt]
\centering
\includegraphics[width=1\textwidth]{myfigure.png}
\caption{This is a nice figure}
\label{fig:nicefigure}
\end{figure}
```

Then you can refer in the text to

```
\ref{fig:nicefigure}
```

Tables

What	When	Where
Initiate 34c3	Day 1 15:30	S13
Introduction to Latex	Day 1 16:30	S13
Künstliche Intelligenz	Day 1 20:00	S14-15
Language Confusion	Day 2 13:00	S13
Sorting data by formulas	Day 2 14:00	S13
Geschichten aus dem Krieg	Day 2 15:30	L12
HTML, CSS and JavaScript	Day 2 17:00	L12
Happy Hour	Day 2 22:00	Assembly: Chaos West
Haecksenbreakfast	Day 3 13:00	L11
Arduino-Workshop	Day 3 17:00	L12
Outro	Day 4 15:00	Assembly space

Table code

```
\documentclass{article}
\usepackage{booktabs} % for top-, mid- and bottomrule
\usepackage{caption} % for captions
\begin{document}

\begin{table}
        \centering
        \caption{Haecksen events at 34c3}
        \label{table:events}
        \begin{tabular}{l l l}
                \toprule
                What                    & When          & Where \\
                \midrule
                Initiate 34c3           & Day 1 15:30   & S13 \\
                Introduction to Latex   & Day 1 16:30   & S13 \\
                \bottomrule
        \end{tabular}
\end{table}
\end{document}
```

Literature with Biblatex

Another advantage of LaTeX is the citation and bibliography handling.

```
\documentclass{article}

\usepackage
        [backend=biber]{biblatex}
        % optional: citestyle=authoryear

\addbibresource{literature.bib} % file containing bibliography

\begin{document}


According to \textcite{Alex2008} ... \\

\parencite{ME2003}

\printbibliography % to get the bibliography
\end{document}
```

Literature: the .bib file

```
@article{,
author = {},
title = {},
journaltitle = {},
year = {},
}

@book{,
author = {},
title = {},
year = {},
}
```

Use the TeXmaker bibliography menu or use google to look for the bibtex entry of your document.

Table of Contents, Figures, Tables

```
\tableofcontents
\listoffigures
\listoftables
\printbibliography
```

Flow Charts with TikZ

you can build nice flowcharts with latex! Check out:
http://texample.net/tikz/examples/smart-circle/
http://texample.net/tikz/examples/tag/diagrams/

Learning Resources

For example: https://www.latex-tutorial.com/tutorials/
https://www.tug.org/twg/mactex/tutorials/ltxprimer-1.0.pdf