CS Essentials

Session 4: LaTeX Essentials 1

How to pronounce it?

How to pronounce it?

- 'LAY-TECH'

How to pronounce it?

- 'LAY-TECH'
- 'LAH-TECH'

How to pronounce it?

- 'LAY-TECH'
- 'LAH-TECH'

But **never** lay-tex

What is LaTeX?

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Is it a **word processor**?

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Do not confuse TeX and LaTeX. The latter is an extended version of the former.

Why LaTeX?

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- Focus on what matters the most:

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- Focus on what matters the most: **the content**.

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- It produces high quality documents.

Why LaTeX?

- Focus on what matters the most: **the content**.
- It produces high quality documents.
- It is easy to write Mathematics using it.

How does it work?

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LaTeX compiles the *code* you have written

How does it work?

LaTeX compiles the *code* you have written and decides on the formatting based on the **tags** you have used.

How to get LaTeX?

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Try something related to:

apt install texlive

Creating the documents

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pdflatex name.tex

Creating the documents

pdflatex name.tex

and then open it with a PDF viewer.

Hello, world!

Hello, world!

```
\documentclass{article}

\begin{document}
    Hello, world!
\end{document}
```

Document classes

Document classes

- article

Document classes

- article
- book

Document classes

- article
- book
- letter

Document classes

- article
- book
- letter
- slides

\begin and \end

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Tags used to create environments.

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What is an environment?

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A way of formatting text in a given manner.

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Note: We always need the **document** environment as the first one.

\begin and \end

Tags used to create environments.

What is an environment?
A way of formatting text in a given manner.

All documents have multiple environments.

Note: We always need the **document** environment as the first one.

Another Note: It is possible to create your own environments, although existing ones cover almost everything you can think of.

How to use environments?

```
\documentclass{article}


\begin{document}

    \begin{environment1}

        \begin{environment2}
        \end{environment2}

    \end{environment1}

\end{document}
```

\LaTeX

LaTeX

And not *latex* or *laTEX* or anything else.

Title page

Title page

Modify the **preamble**:

Title page

Modify the **preamble**:

```
\documentclass{article}

\title{Is \LaTeX simple?}
\date{\today}
%\date{1010-10-10}
\author{Possible CompSoc Member}

\begin{document}
    \maketitle
    \newpage

    Hello, world!
\end{document}
```

Title page

Title page

maketitle takes the values we have specified:

Title page

maketitle takes the values we have specified:
title, *author*, *date*. There are more: *subtitle*, *publisher* etc.

Page numbering

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We can see the page number on the title page.

Page numbering

We can see the page number on the title page.
pagenumbering comes into handy.

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pagenumbering comes into handy.

```
\documentclass{article}

\title{Is \LaTeX simple?}
\date{\today}
\author{Possible CompSoc Member}
\begin{document}
    \pagenumbering{gobble}
    \maketitle

    \newpage
    \pagenumbering{arabic}
    Hello, world!
\end{document}
```

Page numbering

Page numbering

- Other options include:

Page numbering

- Other options include:
- roman

Page numbering

- Other options include:
- roman
- Roman

Page numbering

- Other options include:
- roman
- Roman
- alph

Page numbering

- Other options include:
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- Roman
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- Alph

Page numbering

- Other options include:
- roman
- Roman
- alph
- Alph

Note: Every time page numbering is changes, the counter resets.

Exercise 1:

Try to create the same document.

Sectioning

Sectioning

- For structuring the content we use:

Sectioning

- For structuring the content we use:
- **section**

Sectioning

- For structuring the content we use:
- **section**
- **subsection**

Sectioning

- For structuring the content we use:
- **section**
- **subsection**
- **paragraph**

Sectioning

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- **section**
- **subsection**
- **paragraph**

Note: Other commands are subsubsection and subparagraph.

Sectioning

Sectioning

```
\documentclass{article}

\begin{document}
    \section{Section 1}
    This is a section.
        \subsection{Subsection 1}
        This is a subsection.
            \subsubsection{Subsubsection 1}
            This is a subsubsection.
                \paragraph{Paragraph 1}
                This is a paragraph.
                    \subparagraph{Subparagraph 1}
                    This is a subparagraph.
\end{document}
```

Table of contents

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tableofcontents is the only thing we need to add!

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Note: You might need to compile the document twice, because the *tableofcontents* command needs to create a new document first and then use it.

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Note: You might need to compile the document twice, because the *tableofcontents* command needs to create a new document first and then use it.

Another Note: If that does not work, delete the *.toc* file and compile the file again.

Table of contents: Good things to know

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- Sectioning commands with a * will not be numbered and will not appear in the table of contents.

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section*{**Name of the section**}

Table of contents: Good things to know

• Sectioning commands with a * will not be numbered and will not appear in the table of contents.
section*{**Name of the section**}

• Setting the depth of the table is done using
setcounter{**tocdepth**}{**some number between 0 and 5**}:

```
\setcounter{tocdepth}{0} %Shows nothing
\setcounter{tocdepth}{1} %Shows sections
\setcounter{tocdepth}{2} %Shows sections + subsections
\setcounter{tocdepth}{3} %Shows .. + subsubsections
\setcounter{tocdepth}{4} %Shows .. + paragraphs
\setcounter{tocdepth}{5} %Shows .. + subparagraphs
```

Table of contents: Good things to know

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Setting the depth manually for each section:

Table of contents: Good things to know

Setting the depth manually for each section:

\addtocontents{toc}{\setcounter{tocdepth}{some number}}
\subsection{Subsection example}

Packages

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usepackage{**Package name**}

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A way of adding more available functions.

usepackage{**Package name**}

Note: This must be place in the *preamble*.

Packages: Example

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```
%...
\begin{equation}
    f(x) = x^2
\end{equation}
%...
```

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\begin{equation}
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\end{equation}
%...
```

You can not turn of the automatic numbering.

Packages: Example

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We use a package called **amsmath**.

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```
%preamble
\usepackage{amsmath}

%...
\begin{equation*}
    f(x) = x^2
\end{equation}
%...
```

Lists: Unordered

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Using the **itemize** environment:

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```
\begin{itemize}
    \item CLI
    \item Vim
    \item Bash
    \item LaTeX
\end{itemize}
```

Lists: Unordered

Lists: Unordered

```
\begin{itemize}
    \item[$-$] To a dash
    \item[$\ast$] To an asterisk
    \item[$.$] To a dot
    \item[$what$] To do a word
\end{itemize}
```

Lists: Unordered

```
\begin{itemize}
    \item[$-$] To a dash
    \item[$\ast$] To an asterisk
    \item[$.$] To a dot
    \item[$what$] To do a word
\end{itemize}
```

Note: Anything can be used here, even words.

Lists: Unordered

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To change every symbol at the same time:

Lists: Unordered

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```
\usepackage{enumitem}

\begin{itemize}[label=$.$]
    \item Wow!
    \item This
    \item is
    \item incredible!
\end{itemize}
```

Lists: Ordered

Lists: Ordered

Using the **enumerate** environment:

Lists: Ordered

Using the **enumerate** environment:

```
\begin{enumerate}
    \item CLI
    \item Vim
    \item LaTeX
\end{enumerate}
```

Lists: Ordered

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Nested lists are easy to produce:

Lists: Ordered

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```
\begin{enumerate}
    \item CLI
    \begin{enumerate}
        \item cd
        \item cp
        \item mv
    \end{itemize}
    \item Vim
    \item Bash
    \item LaTeX
\end{enumerate}
```

Exercise 2:

Try to create the same document.

Thank you!