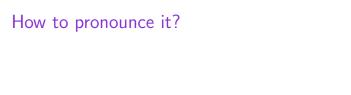
# **CS** Essentials

Session 4: LATEXEssentials 1





How to pronounce it?

• 'LAY-TECH'

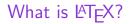
## How to pronounce it?

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

### How to pronounce it?

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

But **never** lay-tex



Is it a word processor?

Is it a word processor?

NO! LATEX encourages content and not design.

Is it a word processor?

**NO!** LATEX encourages *content* and not *design*.

You can think of it as a programming language, whose purpose is to typeset a document.

Is it a word processor?

NO! LATEX encourages content and not design.

You can think of it as a programming language, whose purpose is to typeset a document.

Do not confuse TEX and LATEX. The latter is an extended version of the former.

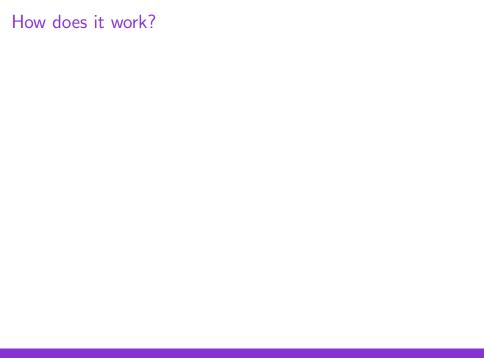


• Focus on what matters the most:

• Focus on what matters the most: the content.

- Focus on what matters the most: the content.
- It produces high quality documents.

- 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?

 $\begin{subarray}{l} \begin{subarray}{l} \beg$ 

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?

How to get LATEX?

Try something related to:

apt install texlive

### Creating the documents

### Creating the documents

 $pdflatex\ name.tex$ 

### Creating the documents

pdflatex name.tex

and then open it with a PDF viewer.



### Hello, world!

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

• article

- article
- book

- article
- book
- letter

- article
- book
- letter
- slides

Tags used to create environments.

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What is an environment?

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#### What is an environment?

A way of formatting text in a given manner.

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All documents have multiple environments.

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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.

#### \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}
```





 $\backslash \textbf{LaTeX}$ 



 $\Lagrange LaTeX$ 

And not  $\label{latex}$  or  $\label{latex}$  or anything else.

Modify the **preamble**:

```
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}
```

\maketitle takes the values we have specified:

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

We can see the page number on the title page.

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

```
We can see the page number on the title page.
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}
```

• Other options include:

- Other options include:
- roman

- Other options include:
- roman
- Roman

- Other options include:
- roman
- Roman
- alph

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

- 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.

• For structuring the content we use:

- For structuring the content we use:
- ullet \section

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

- For structuring the content we use:
- \section
- \subsection
- $\bullet \ \backslash paragraph$

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

Note: Other commands are subsubsection and subparagraph.

```
\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}
```

\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.

\tableofcontents is the only thing we need to add!

**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

• 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}

 $\bullet$  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}:

```
\label{eq:setcounter} $$\left( setcounter {tocdepth} {0} \right) $$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 ... $$+ subparagraphs $$
```

Setting the depth manually for each section:

Setting the depth manually for each section:

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

What is a package?

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A way of adding more available functions.

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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*.

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

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

You can not turn of the automatic numbering.

We use a package called amsmath.

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

Using the **itemize** environment:

Using the **itemize** environment:

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

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

```
\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.

To change every symbol at the same time:

To change every symbol at the same time:

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

Using the **enumerate** environment:

Using the **enumerate** environment:

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

Nested lists are easy to produce:

Nested lists are easy to produce:

```
\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!