# LaTeX tutorial

## Papers, Slides, and Posters

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M1 TAL/NLP 2022–2023

Université de Lorraine, LORIA

# Hi! - me / you / us

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**And you ?** Background ? LaTeX ?

**The course :** 6 hours = 2 + 2 + 2

# Table of contents

# What is LaTeX?

# LaTeX (pronounced LAY-tek or LAH-tek)

It is a *language* and a *system* to compose documents with high quality typesetting.

It is *not* a text processor software (like Libre Office, Microsoft Word, ...)

It is a set of commands defined in terms of the underlying TeX command

# LaTeX (pronounced LAY-tek or LAH-tek)

It is a *language* and a *system* to compose documents with high quality typesetting.

It is *not* a text processor software (like Libre Office, Microsoft Word, ...)

It is a set of commands defined in terms of the underlying TeX command

It is less scary than it sounds.

# Overleaf

- Collaborative LaTeX editor;
- Handles all the compilation for you;
- Many available templates.

→ create an account : *https://www.overleaf.com*

# Why/When LaTeX?

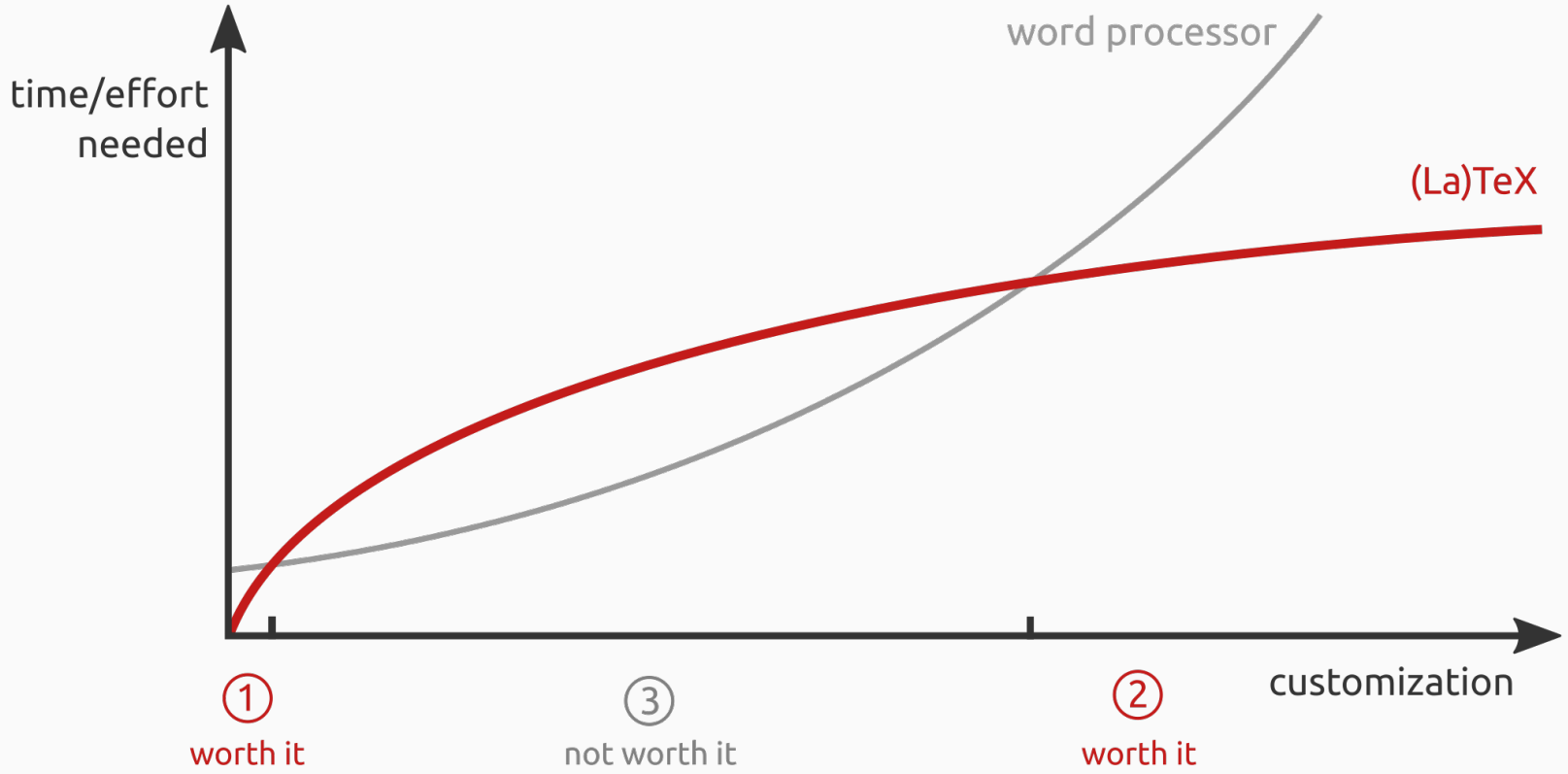


Figure 1 : *https://tex.stackexchange.com/questions/1756/why-should-i-use-latex*

# Document structure

```
\documentclass{article}

% this is a comment
% empty preamble

\begin{document}
    First document. This is a simple example, with
    ↪  no extra parameters or packages included.

    % this is another comment
\end{document}
```

# Document structure

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

% preamble
\usepackage[utf8]{inputenc}

\begin{document}
    First document. This is a simple example, with
    ↪ some parameters and one package included.
\end{document}
```

# Document structure

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

% preamble
\usepackage[utf8]{inputenc}

\title{First document}
\author{Hubert Farnsworth \thanks{funded by the Overleaf team}}
\date{February 2017}

\begin{document}

    \maketitle

    A simple example, with some parameters, one package included, a title, author and date.

\end{document}
```

# Document structure

```
\documentclass[10pt]{beamer}

% preamble
\usetheme{metropolis}

\title{{\LaTeX} tutorial}
\date{\today}
\author{Amandine Decker}
\institute{Université de Lorraine, LORIA}

\begin{document}

    \maketitle

    A simple example of slides, with a parameter, a
    ↪  title, date, author and institute.

\end{document}
```

# Paper / Report

# Structure your paper [1]

```
-1   \part{part}
 0   \chapter{chapter}
 1   \section{section}
 2   \subsection{subsection}
 3   \subsubsection{subsubsection}
 4   \paragraph{paragraph}
 5   \subparagraph{subparagraph}
```

1. *https://fr.overleaf.com/learn/latex/Sections_and_chapters*

# Structure your paper[1]

```latex
\section*{Unnumbered section}
\section{Section}
\subsection{Subsection}
\subsubsection{Subsubsection}
\paragraph{Paragraph}
\subparagraph{Subparagraph}
```

**Unnumbered section**

**1 Section**

**1.1 Subsection**

**1.1.1 Subsubsection**

**Paragraph**

**Subparagraph**

1. *https://fr.overleaf.com/learn/latex/Sections_and_chapters*

# Structure your paper[1]

## 1 First section

### 1.1 Subsection

Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis.

### 1.2 Subsection

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi.

## 2 Second section

1. *https://fr.overleaf.com/learn/latex/Sections_and_chapters*

# Structure your paper [1]

## 1 First section

Lorem ipsum dolor sit amet, consectetuer adipiscing elit.

### 1.1 Subsection

Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis.

## 2 Second section

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi.

1. *https://fr.overleaf.com/learn/latex/Sections_and_chapters*

# Structure your paper[1]

## 1 Section 1

Introduce the first section.

### 1.1 Subsection

Lorem ipsum dolor sit amet, consectetuer adipiscing elit.

### 1.2 Subsection

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi.

## 2 Section 2

Introduce the second section.

1. *https://fr.overleaf.com/learn/latex/Sections_and_chapters*

# Format your text [1]

| | |
|---|---|
| `\textbf{Bold}` | **Bold** |
| `\textit{Italics}` | *Italics* |
| `\textsc{Small caps}` | SMALL CAPS |
| `\underline{Underline}` | Underline |
| `\emph{emphasized text}` | Some *emphasized text* in normal text.<br>**Some *emphasized text* in bold text.**<br>*Some* emphasized text *in italicized text.* |

1. *https://fr.overleaf.com/learn/latex/Bold%2C_italics_and_underlining*

# Add lists [2]

```
\begin{itemize}
    \item list entry
    \item[!] custom label
\end{itemize}

\begin{enumerate}
    \item numbered list
    \begin{enumerate}[a.]
        \item nested
        ↪ lists
    \end{enumerate}
\end{enumerate}
```

- Use `\item` to add a list entry
- ! Choose custom labels with `\item[!]`

1. You can also have numbered lists with *enumerate*
    a. And insert lists in lists
    b. item b

2. *https://fr.overleaf.com/learn/latex/Lists*

# Add figures [3]

```
\begin{figure}
    \centering
    \includegraphics{overleaf.pdf}
    \caption{Overleaf logo}
    \label{fig:overleaf}
\end{figure}
This is a reference to
↪  \cref{fig:overleaf}.
```

**Figure 2 :** Overleaf logo

This is a reference to Figure 2.

3. *https://fr.overleaf.com/learn/latex/Inserting_Images*

# Add tables [4]

```latex
\begin{table}
    \centering
    \begin{tabular}{lcr}
        cell1 & cell2 & cell3 \\
        cell4 & cell5 & cell6 \\
        cell7 & cell8 & cell9
    \end{tabular}
    \caption{A 3x3 table without lines}
\end{table}
```

| | | |
|---|---|---|
| cell1 | cell2 | cell3 |
| cell4 | cell5 | cell6 |
| cell7 | cell8 | cell9 |

**Table 1 :** A 3x3 table without lines

4. *https://fr.overleaf.com/learn/latex/Tables*

# Add tables [5]

```latex
\begin{table}
    \centering
    \begin{tabular}{|l|c|r|}
        cell1 & cell2 & cell3 \\
        cell4 & cell5 & cell6 \\
        cell7 & cell8 & cell9
    \end{tabular}
    \caption{A 3x3 table with vertical lines}
\end{table}
```

| cell1 | cell2 | cell3 |
|---|---|---|
| cell4 | cell5 | cell6 |
| cell7 | cell8 | cell9 |

**Table 2 :** A 3x3 table with vertical lines

5. *https://fr.overleaf.com/learn/latex/Tables*

# Add tables [6]

```latex
\begin{table}
    \centering
    \begin{tabular}{|r|r|r|}
                    cell1 & cell2 & cell3 \\
                    \hline
                    cell4 & cell5 & cell6 \\
                    \hline
                    cell7 & cell8 & cell9 \\
                    \hline
                \end{tabular}
    \caption{A 3x3 table with vertical and
     ↪  horizontal lines}
\end{table}
```

| cell1 | cell2 | cell3 |
|---|---|---|
| cell4 | cell5 | cell6 |
| cell7 | cell8 | cell9 |

# Add tables[7]

```latex
\usepackage{booktabs} % in preamble
\begin{table}
    \centering
    \begin{tabular}{|l|c|r|}
        \toprule
        \textbf{title1} &
        ↪ \textbf{title2} &
        ↪ \textbf{title3} \\
        \midrule
        cell1 & cell2 & cell3 \\
        cell4 & cell5 & cell6 \\
        \bottomrule
    \end{tabular}
    \caption{A nicer table}
\end{table}
```

| title1 | title2 | title3 |
|---|---|---|
| cell1 | cell2 | cell3 |
| cell4 | cell5 | cell6 |

7. https://fr.overleaf.com/learn/latex/Tables

# Add references : .bib file

```
@article{
    amblard-etal2015,
    author = {Amblard, Maxime and Fort, Karën, and
              Demily, Caroline and Franck, Nicolas
              and Musiol, Michel},
    title = {Analyse lexicale outillée de la parole
             transcrite de patients schizophrènes},
    year = {2015},
    journal = {Traitement Automatique des Languages},
    volume = {55},
    issue = {3},
    pages = {91-115}
}
```

- no preamble
- @ followed by a type
- a key
- fieldname = value
- comments using %

# Add references : .bib file

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    volume = {55},
    issue = {3},
    pages = {91-115}
}
```

- no preamble
- @ followed by a type
- a key
- fieldname = value
- comments using %

# Add references : types of bib entries

| | |
|---|---|
| article | |
| book | |
| collection | |
| manual | |
| reference | (such as dictionary or encyclopedia) |
| online | |
| report | |
| patent | |
| periodical | |
| proceeding | |
| thesis | |

# Add references : .bib file

```
@book{asher2003logics,
    Author = {Asher, Nicholas and Lascarides, Alex},
    Publisher = {Cambridge University Press},
    Title = {Logics of conversation},
    Year = {2003}
}

@mastersthesis{boritchev2017,
    author = {Maria Boritchev},
    title = {{Approaching dialogue modeling in a
              dynamic framework}},
    school = {Universit\'e de Lorraine},
    year = {2017}
}
```

# Add references : styles

- citation format in the main text;
- reference format of the “Bibliography” section.

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**Harvard system** alphabetical ordering in the “Bibliography” section, no numbering. The citation is made with the author’s last name, followed by their first name, and the year of publishing.

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**Ex :** Chomsky, N. and Lightfoot, D.W., 2002. Syntactic structures. Walter de Gruyter.

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**Vancouver system** references cited with numbers corresponding to their appearance number ; ordered by number in the “Bibliography” section.

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**Ex :** Chomsky, N. and Lightfoot, D.W., 2002. Syntactic structures. Walter de Gruyter.

**Vancouver system** references cited with numbers corresponding to their appearance number ; ordered by number in the “Bibliography” section.
**Ex :** [1] Chomsky N, Lightfoot DW. Syntactic structures. Walter de Gruyter ; 2002.

# Add references : styles

- citation format in the main text ;
- reference format of the “Bibliography” section.

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**Ex :** Chomsky, N. and Lightfoot, D.W., 2002. Syntactic structures. Walter de Gruyter.

**Vancouver system** references cited with numbers corresponding to their appearance number ; ordered by number in the “Bibliography” section.
**Ex :** [1] Chomsky N, Lightfoot DW. Syntactic structures. Walter de Gruyter ; 2002.

**Mixed systems** references numbered and ordered according to the alphabetical order in the “Bibliography” section ; cited with their numbers.

# Add references

- biblio organizer :
  - yourself by hand (time consuming)
  - software : JabRef, Zotero (not always accurate)
- biblio integration in LaTeX :
  - historic method : BibTex
  - modern : BibLaTeX+ biber

Requires multiple compilation (handled by Overleaf). Use latexmk software if you are using command line on your computer.

# Add references : BibLaTeX

```
% preamble
\usepackage[
    backend=biber,
    style=authoryear,
    sorting=ynt
]{biblatex}
\addbibresource{filename.bib}

% print bibliography
\printbibliography[
    heading=bibintoc,
    title=Bibliography
]
```

# Add references : citations

`\cite{asher2003logics}`
: Asher and Lascarides, 2003

`\citep{asher2003logics}`
: (Asher and Lascarides, 2003)

`\citet{asher2003logics}`
: Asher and Lascarides (2003)

`\citeauthor{asher2003logics}`
: Asher and Lascarides

`\citeyear{asher2003logics}`
: 2003

`\citetitle{asher2003logics}`
: Logics of Conversation

# Use a ready-made template!

For your project – ACL paper template :
*https://github.com/acl-org/acl-style-files*
*https://www.overleaf.com/read/crtcwgxzjskr*

In general – Overleaf :
*https://fr.overleaf.com/latex/templates*

# A few tips : typography

TYPOGRAPHY MATTERS.

I want to be able to write texts in English, but also en français. Yet : typography rules are different in those languages ! There must be more than 1,000.5 rules in English, 1 000,5 en français. I would give $3 billion and 3 milliards € to learn them !

# A few tips : typography

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- punctuation & spaces ;
- accent on caps letters ;
- quotation marks : “en” but « fr » ;
- pick one language (en-US or en-GB).

# A few tips : typography – useful links

English *https://www.loveofgraphics.com/typography/typographic-rules-to-remember/*

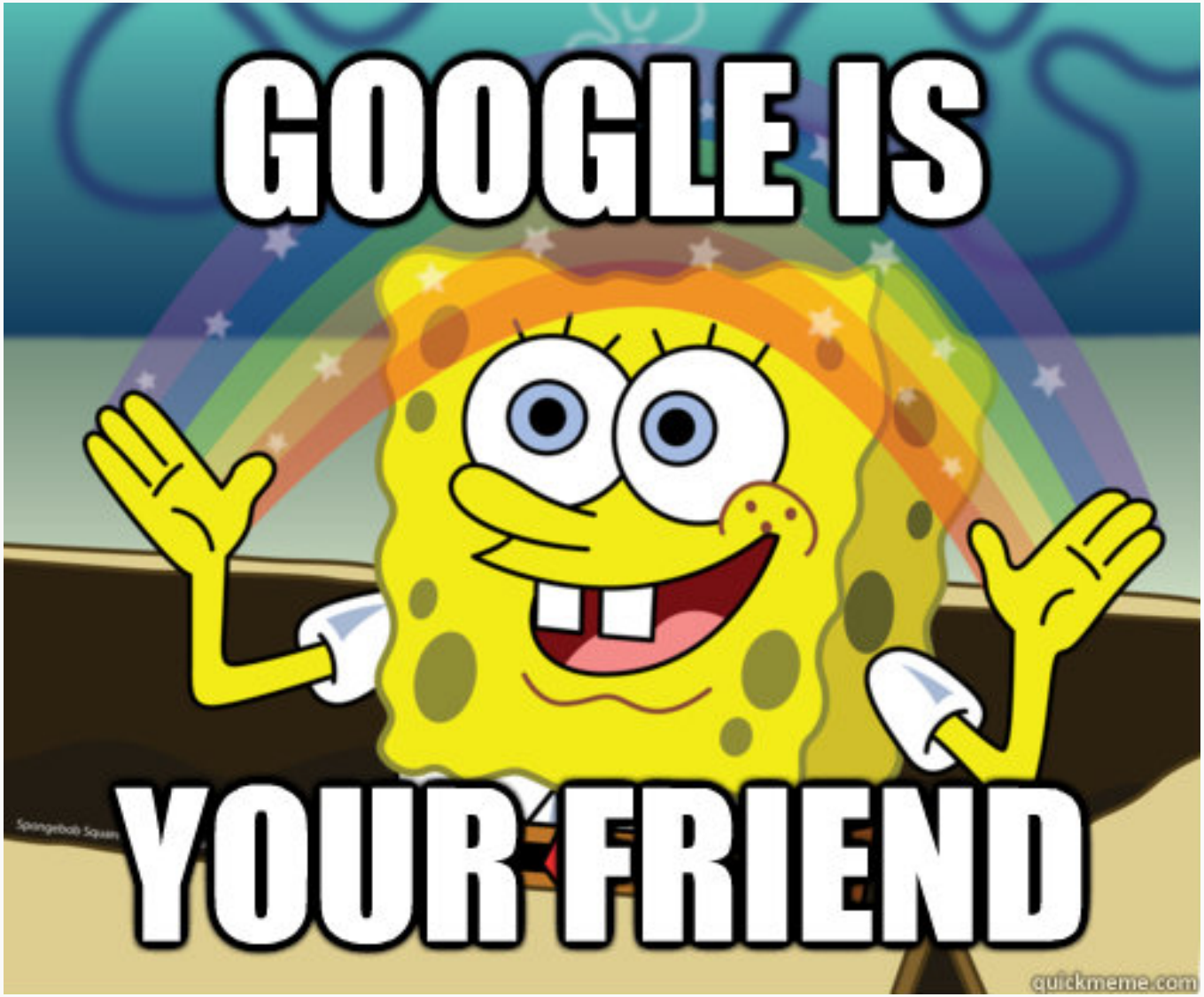
French *http://www.schplaf.org/kf/VadeMecum_Memoire.php*

Both *https://www.mancko.com/typography-punctuation/en/*

# A few tips : proofreading checklist

- double spaces;
- spaces around punctuation;
- capital letters;
- words partially in the margin (`\hyphenation{aaa-aa}`);
- all figures/tables are mentioned in the text;
- no lonely/empty section.

# A few tips : your best friend(s)



Questions?

# Practice [8] (1/2)

1. **Copy this project** (Menu > Copy the project) :
   *https://fr.overleaf.com/read/vvkmhnphsynz*
2. **Collaborative correction** (test) :
   *https://fr.overleaf.com/6471183136ttjhdwdjpjtp*

8. 30-minute LaTeX tutorial :
*https://fr.overleaf.com/learn/latex/Learn_LaTeX_in_30_minutes*

# Practice (2/2)

3. **ACL template :**
   - acl_latex.tex ≈ acl.tex (acl.tex seems outdated) : ACL LaTeX guidelines ;
   - acl_natbib.bst : bibliography style ;
   - acl.sty : document formatting ;
   - anthology.bib, custom.bib : bibliography files ;
   - formatting.md : additional ACL guidelines.

   → We will not need acl.tex, anthology.bib, custom.bib and formatting.md ;

   → acl_latex.tex can help you find the right commands throughout the session.
4. **Our files for today's session :**
   - biblio.bib : the bibliography file ;
   - Final_pdf.pdf : the completed pdf ;
   - main.tex : the file we will write our LaTeX in ;
   - text.md : the file with most of the text you will need so that you do not have to write :-).

## Introduction

We are working on the ACL template (https://www.overleaf.com/read/crtcwgxzjskr) that you will use for your project this semester (UE 703). The instructions provided with the template can help you find some (most) of the commands we will use today.

A LaTeX document is composed of a *preamble* and a *document body*. We will first have a quick look at the preamble and then add content to our document body.

# The preamble

The preamble corresponds to the first part of your .tex file, it stops at `\begin{document}` (*i.e.* the document *environment*).

In the preamble, you define the type of document (here an article), the title, author(s), and you call all the *packages* that you need. Packages provide additional commands and options. Overleaf supports a lot of packages so you usually do not need to do anything more than calling them in the preamble.

However, you can add additional packages by importing .STY files into your project (you can see all the imported files on the left part of your screen). If you go through the preamble of this document, you will see that the ACL template uses some usual packages but also a custom one : the acl package (`\usepackage{acl}`). This package defines the format of your pdf, do not change it.

# The title / author(s)

Let us start by adding a proper title to our document as well as an author. To actually see the authors instead of the anonymised text you will need to change something in the preamble.

**LaTeX hands-on**

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# The abstract


## Abstract

This document is a exercise sheet to learn LaTeX. It will (hopefully) make you manipulate all the basic commands you will need when writing your first papers, as well as some more advanced commands and tricks to make your life easier.

# Document body

We can now add content to our document. We will add a list, a table, a figure, references to these and some citations. We will also go through the different types of fonts, add a footnote and play with urls.

## 2.1 Lists

Let us make a list of the different possible fonts:

- **Bold**;
- *Italics*;
- SMALL CAPS;
- `typewriter`;
- Underline;
- Some *emphasized text* in normal text;
- **Some *emphasized text* in bold text**;
- *Some* emphasized text *in italicised text*.

# A table + urls[8]

## 2.2 Tables

Let us add a table to our document. We use two environments to create a table, `tabular` creates the actual table while `table` enables you to add a caption and a label (for future referencing).

| Embedded in the text | In plain text |
|---|---|
| LaTeX tutorial | https://overleaf.com/learn |

Table 1: Two ways to write an url

8. You can also fix the url in the introduction if needed.

# A table + urls : tips

- The package *booktabs* is useful to make nicer tables;
- The type of column *p* enables you to set the width of the column (a column *p{0.3\textwidth}* will take 30% of the available text width);
- The package *array* provides more types of columns : *m{0.3\textwidth}* does the same as *p{0.3\textwidth}* but with the text centred vertically;
- The package *hyperref* provides functionalities related to urls, it is already imported here.

## 2.3 Figures

Now we can add a figure. For now the image is among the other files of this project but we can keep our project organised by creating a folder dedicated to images. It is particularly useful for bigger projects where many images are required.

Figure 1: The overleaf logo

# A figure : tip

- The package *graphicx* enables you to add figures and provides related functionalities ;
- You can change the size of your image with different parameters : scale, width, height, ...

## 2.3 Figures

Now we can add a figure[1]. For now the image is among the other files of this project but we can keep our project organised by creating a folder dedicated to images. It is particularly useful for bigger projects where many images are required.

[1] We added an image in the figure environment (which is the usual use of this environment), but we could add anything. Same thing with table. You can try to replace the image/tabular by some text for example.

## 2.4 Maths

We can write something small directly in the text such as $\cos(2\pi) = 1$. Or we can write a bigger computation in the centre of the page:

$$\sum_{i=1}^{n} k^2 = \frac{n(n+1)(2n+1)}{6}$$

We can also number our equations:

$$\neg\exists x.P(x) \vee Q(x) \iff \forall x.\neg P(x) \wedge Q(x) \quad (1)$$

9. *https://en.wikibooks.org/wiki/LaTeX/Mathematics*

# Some maths : some environments

- **Inline** : $maths here$ or `\(`maths here`\)`;
- **Displayed equation** (centred) $$maths here$$ or `\[`maths here`\]`;
- **Automatically numbered equations** (you can label them !) : *`equation`* environment.

### 2.5 Referring to tables, figures, sections, ...

We have added a table and a figure but if we do not mention them explicitly in the text our readers may miss them. We will thus add a reference to them and explain their content.

We can also do this with sections (and subsections, paragraphs, etc.). For example in the introduction, we can explicitly refer to the right sections when describing the outline. A nice thing with references is that it creates a clickable link to the part we are referring to.

# Refer to parts of your document

In your Table subsection :

Table 1 shows you two ways to write urls in LaTeX.

In your Figure subsection :

Figure 1 is a figure with a caption.

In your Introduction section :

A LaTeX document is composed of a *preamble* and a *document body*. We will first have a quick look at the preamble (Section 1) and then add content to our document body (Section 2).

## 2.6 Citations

Eventually we can add some citations. The references go in a .bib file, custom.bib in our case. Let us add a few references: find a book, an article and a website to cite.

# Declare the bib file and print the references

You can find in acl_latex.tex how to add a bibliography (it is at the end).

## References


Maxime Amblard, Michel Musiol, and Manuel Rebuschi. 2014. L'interaction conversationnelle à l'épreuve du handicap schizophrénique. *Recherches sur la philosophie et le langage*, 31:1–21.

Nicholas Asher and Alex Lascarides. 2003. *Logics of Conversation*. Studies in Natural Language Processing. Cambridge University Press.

Wikipedia. Bibtex. Visited on September 13, 2022.

# Different ways to cite

We can cite:

a. In parentheses: (Amblard et al., 2014);

b. Without parentheses: Amblard et al., 2014;

c. With the date in parentheses: Amblard et al. (2014);

d. Only the date in parentheses: (2014);

e. Only the date: 2014;

f. Only the author(s): Amblard et al..

## A An appendix

You will usually have a limit regarding the number of pages you are allowed to write in your projects. If you have some content of lesser importance that you still want to present or figures/tables that are too big for the main part of your document, you are usually allowed to add them in appendix.

You can organise appendices like the rest of your document with sections, subsections, etc.

# A last table

A more complex table to finish these exercises:

| **Merging rows/columns in a table** | |
|---|---|
| 2 rows | c<br>c |

# Slides

# Create your LaTeX project [10]

```latex
\documentclass[10pt]{beamer}

\title{{\LaTeX} tutorial}
\subtitle{Papers, Slides, and Posters}
\date{M1 TAL/NLP 2022--2023}
\author{Amandine Decker}
\institute{Université de Lorraine, LORIA}
\titlegraphic{\hfill
    \includegraphics[height=1cm]{Img/logo_ul.png}
    \includegraphics[height=1cm]{Img/idmc.jpg}
    \includegraphics[height=1cm]{Img/loria.png}
}
```

10. The metropolis template : *https://www.overleaf.com/latex/templates/metropolis-beamer-theme/qzyvdhrntfmr*

# Create a slide

```
\begin{frame}{Frame Title}
    Your content here.
\end{frame}
```

# A few useful commands

- Display items one by one : `\begin{itemize}[<+->]`;

# A few useful commands

- Display items one by one : `\begin{itemize}[<+->]`;
- Center the content : `\centering`;

# A few useful commands

- Display items one by one : `\begin{itemize}[<+->]`;
- Center the content : `\centering`;
- Highlight some elements : `\alert{text here}`

# A few useful commands

- Display items one by one : `\begin{itemize}[<+->]`;
  - Center the content : `\centering`;
- Highlight some elements : `\alert{text here}`

Divide the slide in columns :

```
\begin{columns}
  \column{0.3\textwidth}
    First column
  \column{0.3\textwidth}
    Second column
  \column{0.3\textwidth}
    Third column...
\end{columns}
```

# Poster

# You already know everything!

- Pick a template (*https://fr.overleaf.com/latex/templates/tagged/poster*);
- Read the instructions;
- You are ready!

Questions?