Introduction to writing in LaTeX

Akos Mate

2019 January

Central European University

Introduction

Overview

1. What is (La)Tex and why use it?
2. Goal of the workshop
3. Very short first steps to get set up
4. Using citation manager and LaTeX together
5. CEU LaTeX template
6. some other things that might be useful

What is LaTeX?

TeX is a typesetting system. LaTeX is a set of macros that allows you to deal with text only and leave the formatting headache behind.

What is LaTeX?

TeX is a typesetting system. LaTeX is a set of macros that allows you to deal with text only and leave the formatting headache behind.

Goal of the workshop:

What is LaTeX?

TeX is a typesetting system. LaTeX is a set of macros that allows you to deal with text only and leave the formatting headache behind.

Goal of the workshop:

- to give enough intro that you can start writing your papers in LaTeX

Why use LaTeX?

Pros:

- Output looks professional

Why use LaTeX?

Pros:

- Output looks professional
- Platform independent and reproducible output

Why use LaTeX?

Pros:

- Output looks professional
- Platform independent and reproducible output
- Document formatting is not an issue

Why use LaTeX?

Pros:

- Output looks professional
- Platform independent and reproducible output
- Document formatting is not an issue
- Writing and text dominates the workflow

Why use LaTeX?

Pros:

- Output looks professional
- Platform independent and reproducible output
- Document formatting is not an issue
- Writing and text dominates the workflow

Cons:

- Steep learning curve

Why use LaTeX?

Pros:

- Output looks professional
- Platform independent and reproducible output
- Document formatting is not an issue
- Writing and text dominates the workflow

Cons:

- Steep learning curve
- Initially you get work done slower

Why use LaTeX?

Pros:

- Output looks professional
- Platform independent and reproducible output
- Document formatting is not an issue
- Writing and text dominates the workflow

Cons:

- Steep learning curve
- Initially you get work done slower
- Can be hard to step out of the WYSIWYG comfort zone

Why use LaTeX?

Pros:

- Output looks professional
- Platform independent and reproducible output
- Document formatting is not an issue
- Writing and text dominates the workflow

Cons:

- Steep learning curve
- Initially you get work done slower
- Can be hard to step out of the WYSIWYG comfort zone
- Formatting tables is truly painful

Of course there's research on this

"We show that LaTeX users were **slower** than Word users, **wrote less** text in the same amount of time, and produced more typesetting, orthographical, grammatical, and formatting errors.

On most measures, **expert LaTeX users performed even worse than novice Word users**. LaTeX users, however, more often report **enjoying** using their respective software."

Knauff, M., Nejasmic, J. (2014). An Efficiency Comparison of Document Preparation Systems Used in Academic Research and Development. *PloS one*, 9(12)

Bottomline

LaTeX won't make you more productive or your paper any better. Absolutely no one will be impressed by your text editor or language of choice. Writing in LaTeX is purely a personal, subjective choice.

Survival essentials

Absolutely essential survival tricks:

- ALWAYS have at least two (2) backups of your work (one physical copy, one cloud backup). This is the bare minimum. Best is to have a (1) dedicated backup SSD and (2) your work computer HDD/SSD from which the (3) cloud syncs. (You can use whatever service you wish, like Google Drive, Dropbox, OneDrive, but use one!)

Survival essentials

Absolutely essential survival tricks:

- ALWAYS have at least two (2) backups of your work (one physical copy, one cloud backup). This is the bare minimum. Best is to have a (1) dedicated backup SSD and (2) your work computer HDD/SSD from which the (3) cloud syncs. (You can use whatever service you wish, like Google Drive, Dropbox, OneDrive, but use one!)
- ALWAYS use a bibliography manager! At this point there are no excuses not to use one of these: Zotero, Mandaley, Endnote.

Getting started

What you need installed on Windows:

- MiKTeX (`https://miktex.org/about`)
- Tex Live (`https://tug.org/texlive/`)

On Mac OS X:

- Mac TeX (`http://tug.org/mactex`)

Online option: `https://www.overleaf.com` account where you can do all of this online like a google doc.

I would recommend Overleaf for starters because it makes things easier.

Getting started

Actual writing is done in a text editor of your choice. Dedicated TeX editors are (non exhaustive list):

- TeXmaker
- TeXstudio
- TeXworks

Or use a general purpose text editor with a LaTeX add-on:

- Visual Studio Code
- Sublime Text
- Atom
- emacs

Useful resources

- CEU dissertation template: `http://www.personal.ceu.hu/tex/thesis/`
- `https://www.overleaf.com/learn/` - tutorial everything that you'll need (most likely)
- Google (seriously) and `https://tex.stackexchange.com/`
- **SUPER USEFUL!** - Templates for CVs, papers, cover letters, etc: `https://www.overleaf.com/latex/templates`

Example document

```
% everything in this line is a comment and won't be in the final document
% the packages and other formatting commands before the \begin{document} is
% called the PREAMBULUM

\documentclass[11pt]{article}  % setting the document class to 'article' with 11pt characters
\usepackage[utf8]{inputenc}    % using the 'inputenc' package

\title{perg\_workshop}          % setting the title of the document
\author{Akos m}                 % Setting the author
\date{January 2018}             % and adding the date


% the actual document starts here, between the \begin{document} and \end{document}
\begin{document}

\maketitle          % adds the title, author and date specified in the preambulum

\section{Introduction}    % starts the first section titled introduction.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam,
quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo
consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse
cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non
proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

\end{document}
```

Basic formatting - input

```
This text is \textit{italicized, while} this one is \textbf{bold.}
You can \underline{underline text as well}, or combine \textbf{\textit{bold and italics.}}
% the syntax for formatting is \textbf{text}.
% To combine them, you can do a nested formatting, like  \textbf{\textit{text}}

\medskip % adds horizontal space. other such commands are:
% \smallskip
% \bigskip

\begin{enumerate}
    \item Numbered lists
    \item Are cool
        \begin{itemize}
            \item and you can do nested
            \item unordered lists too.
        \end{itemize}
\end{enumerate}
```

Basic formatting - output

This text is *italicized*, while this one is **bold.** You can underline text as well, or combine ***bold and italics.***

1. Numbered lists
2. Are cool
    - and you can do nested
    - unordered lists too.

Paragraph formatting - input

```
 \begin{center}  % everything inside this environment is centered
Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam,
quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo
consequat.
\end{center}

    % indented paragraph
\par Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam,
quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo
consequat. \\ % adds a linebreak

\noindent % new paragraph without indenting
Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt
mollit anim id est laborum.
Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod
tempor incididunt ut labore et dolore magna aliqua.
```

Paragraph formatting and adding figures - output

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum. Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

adding figures and tables - input

```latex
% the [h!] parameter tells the figure environment that you want this fig. _here_
\begin{figure}[h!]
\includegraphics[scale=0.5]{figures/ceu_picture.jpg} % the [scale=0.5] parameter will
  ↪  scale the image
\caption{A picture of CEU}
\label{fig:ceu}
\end{figure}


% tables are non intuitive. Proof:


\begin{table}[]
    \centering
    \begin{tabular}{|c|c|c|}
    \hline
    cell1 & cell2 & cell3 \\
    \hline
    cell4 & cell5 & cell6 \\
    cell7 & cell8 & cell9 \\
    \hline
    \end{tabular}
    \caption{My dummy table}
    \label{tab:my_label}
\end{table}
```

Adding figures and tables - output

Figure 1: A picture of CEU

cell1	cell2	cell3
cell4	cell5	cell6
cell7	cell8	cell9

Table 1: My dummy table

Many, many tools to get nicely formatted LaTeX tables

- https://en.wikibooks.org/wiki/LaTeX/Tables#Using_spreadsheets_and_data_analysis_tools

- calc2latex: for OpenOffice.org Calc spreadsheets,
- excel2latex: for Microsoft Office Excel,
- matrix2latex: for Python and MATLAB,
- pandas: pandas DataFrame's have a method to convert data they contain to latex,
- latex-tools: a Ruby library,
- xtable: a library for R,
- org-mode: for Emacs users, org-mode tables can be used inline in LaTeX documents, see [1] for a tutorial.
- Emacs align commands: the align commands can clean up a messy LaTeX table.
- Online Table generator for LATeX: An online tool for creating simple tables within the browser. LaTeX format is directly generated
- Create LaTeX tables online : Online tool.

For everything else

There are StackOverflow and Overleaf tutorials and Google.

Adding references with natbib

1. Have **usepackage[round]natbib** in your preambulum.
2. You can choose the type of citation you prefer in the [param] space
3. you add the bibliography to your document with a bibliography{your_bibfile}

How it looks like with Zotero

1. Right click on your collection folder on the left panel
2. 'Export collection'
3. Format as BibTeX
4. Save it into the same folder as your main .tex

How to cite with natbib

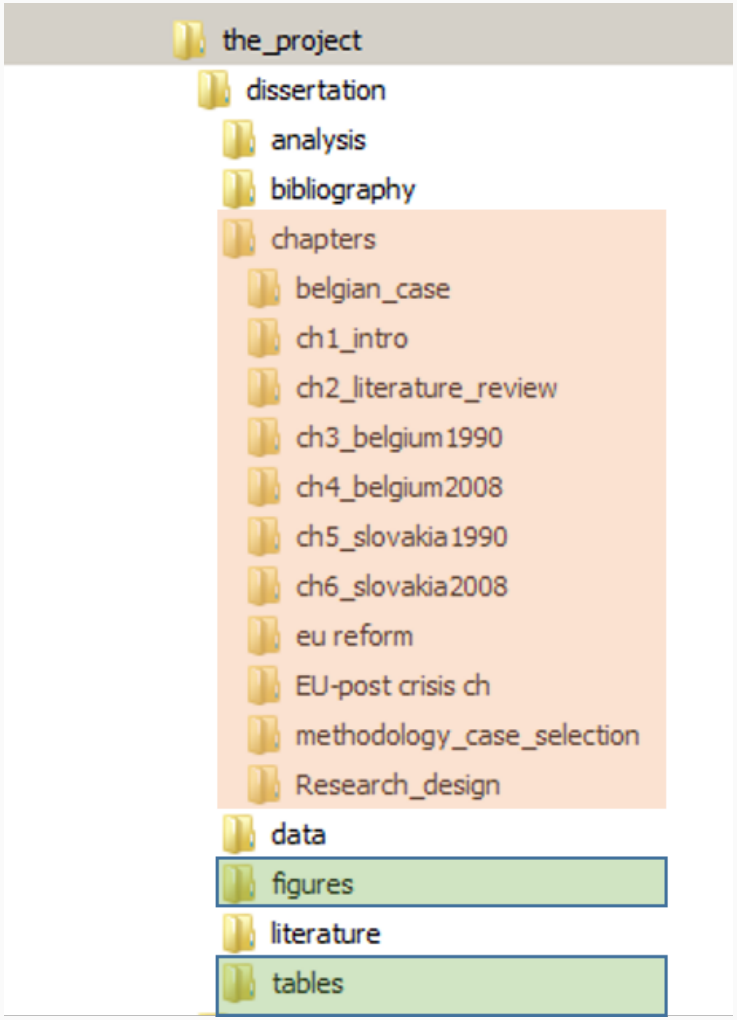
- You can put the source in parenthesis like (Einstein 1999) with citep{bib_key}
- Just the date, like: Einstein (1999) with citet{bib_key}

More, in-depth natbib tutorials:

- `http://merkel.texture.rocks/Latex/natbib.php`
- `https://www.overleaf.com/learn/latex/Bibliography_management_with_natbib`

setting up your dissertation in LaTeX

- A main .tex file that contains the link to the chapters, preambulum, title page, acknowledgement, etc.
- Each chapter is a separate .tex file
- The .bib file with your references
- Whatever figures and tables you want to include


the_project
dissertation
analysis
bibliography
chapters
belgian_case
ch1_intro
ch2_literature_review
ch3_belgium1990
ch4_belgium2008
ch5_slovakia1990
ch6_slovakia2008
eu reform
EU-post crisis ch
methodology_case_selection
Research_design
data
figures
literature
tables

Some of the advice is outdated in the CEU template if you use Overleaf or TeXstudio or other contemporary editor: e.g.: don't worry about the order to run pdflatex and bibtex to get your final document, the software does it for you.

The workflow with the CEU template

- Have all your packages and extra formatting options in the preambulum in your main .tex

The workflow with the CEU template

- Have all your packages and extra formatting options in the preambulum in your main .tex
- Decide on the citation package you want to use (I recommend either 'natbib' or 'biblatex')

The workflow with the CEU template

- Have all your packages and extra formatting options in the preambulum in your main .tex
- Decide on the citation package you want to use (I recommend either 'natbib' or 'biblatex')
- Use your citation manager of choice (Zotero, Endnote, Mandaley, etc.) to collect your references and then export it to your .bib file

The workflow with the CEU template

- Have all your packages and extra formatting options in the preambulum in your main .tex
- Decide on the citation package you want to use (I recommend either 'natbib' or 'biblatex')
- Use your citation manager of choice (Zotero, Endnote, Mandaley, etc.) to collect your references and then export it to your .bib file
- Finish your dissertation and graduate

Using LaTeX for CVs, or presentations

- You can find plenty of great LaTeX CV templates on Overleaf which you can modify after.
- The ”beamer” class creates the presentation format (such as this one)
- If you want to draw great looking flowcharts or other graphics, you can use the `tikz` package
- All of the previous disclaimer applies to these as well: only do it if you enjoy it, or absolutely must.