Introduction to LaTeX

Overleaf, Beamer, and Github

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8th of October 2021

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Introduction to LaTeX

All material is available here . Please contact me at cep@ifro.ku.dk if you have any additional questions or comments.

Introduction

- Getting started
- What is LaTeX?

Your first project

- About coding...
- Tips and tricks
- Get typing!

cheat-sheet.Rtex (.pdf)

Introduction

Getting started

Let's start by creating an `Overleaf` account:

1. Please go to: https://www.overleaf.com/edu/ucph
   - Make an account using your KUmail
   - This claims a professional version (with room for more projects, room for more collaborators, synchronization with `github`, track changes features, and more...)
2. Then, create a new project by pressing the big green button!

What is LaTeX?

- LaTeXis a document processor that unlike MS Word is not a *what you see is what you get* program
- A wide variety of LaTeX processors exist: VS Code, Scientific Workplace, MikTeX, LyX, and so on…
- Overleaf is just one such processor, with some useful built-in features:
  - Like Google Docs, you can collaborate with others (just better, and prettier)!
  - Auto-complete features, dictionaries, de-buggers, and track-changes

What is LaTeX?

The same slide as before, but now un-compiled:

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    \item \alert{Overleaf} is just one such processor, with some
         useful built-in features:
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            (just better, and prettier)!
        \item Auto-complete features, dictionaries, de-buggers,
            and \alert{track-changes}
    \end{itemize}
\end{itemize}
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Your first project

About coding...

A few remarks on coding (in general) and LaTeX:

- Google like there is no tomorrow!
- Remember that time spent coding up something cool is never wasted. You can always reuse it later in other projects.

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- Find yourself some useful resources:

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- Be able to recreate most (if not all) of today's cheat sheet

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4. And proper parenthesis placement:

```
\frac{1}{x_{1}^{2}}
```

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- Note that the asterisk (*) determines whether or not it should be numbered

Using Overleaf

Plan:

- We are going to generate this document step-by-step
- Or you can choose to work on some ongoing project or an upcoming assignment

A couple of things to remember:

- Make use of the many online sources of help
- Reuse your previous code!
- There is an almost infinite number of solutions to any problem - use the one that makes the most sense for you

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Start by going to: https://github.com/carlepless/latex-introduction and have a look at the first two sections in `cheat-sheet.pdf`.

cheat-sheet.Rtex (.pdf)

R and Overleaf

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- Try playing around with replicating some stuff from `cheat-sheet.pdf` (or your own project)

Making tables and inserting figures

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Making tables and inserting figures

An important warning...

- Making tables in LaTeX is an advanced form of self-torture
- Therefore, the goal is to minimize time spent manually making tables and maximize automatization
- For regression tables, use the `stargazer` package
- If you want to make manual adjustments, use resources like https://www.tablesgenerator.com, which can convert `.txt` to `.tex`

Making tables and inserting figures

But sometimes, you just can't curb your enthusiasm and simply must make a table:

```
\begin{table}[H]
    \centering
    \caption{My very first \LaTeX \: table}
    \label{tab:my_label}
    \begin{tabular}{c|c|c}
        Variable & Description & Type  \\ \hline
        \texttt{wage} & Wage in USD per hour & Numeric
            \\
        \texttt{educ} & Years of education & Integer \\
        $\vdots$ & $\vdots$ & $\vdots$ \\
        $\vdots$ & $\vdots$ & $\vdots$ \\
        \texttt{married} & Marital status & Binary\\
        \hline \hline
    \end{tabular}
\end{table}
```

Making tables and inserting figures

Table 1: My very first LaTeX table

Variable	Description	Type
`wage`	Wage in USD per hour	Numeric
`educ`	Years of education	Integer
⋮	⋮	⋮
⋮	⋮	⋮
`married`	Marital status	Binary

Making tables and inserting figures

- Inserting figures on the other hand, is pretty straightforward

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\begin{figure}[H]
    \centering
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- Try playing around with section 4.1 and 4.2
- If you are familiar with regression tables, you can also look at section 5 on `stargazer`

BibTeX

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Essentially, you specify an entry as:

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@Book{Verbeek2017,
        title     = {A Guide to Modern Econometrics},
        publisher = {John Wiley \& Sons},
        year      = {2017},
        author    = {Verbeek, M.},
        address   = {Rotterdam School of Management, Erasmus
             University, Rotterdam},
        edition   = {Fifth},
        }
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             University, Rotterdam},
        edition   = {Fifth},
        }
```

- Which you can then cite actively with `\cite{Verbeek2017}` and passively with `\citep{Verbeek2017}`
- As long as Verbeek2017 is an entry in your `.bib` file

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In practice, use a reference management program!

- Zotero, Mendeley or similar
- In both, you can import a BibTeX entry directly and then export all your references to a `.bib` file that you can upload to Overleaf

More advanced topics

More advanced topics

There are a lot of neat extensions to LaTeX, some examples include:

1. `tikz`
   - A package that allows you to draw pixel perfect graphs, illustrations, and figures with complete customizability
   - I included a couple of examples in the `cheat-sheet.pdf` but otherwise I recommend looking at TikZ Cookbok
2. `beamer`
   - An extension that allows you to create slides (like PowerPoint) with LaTeX
   - Has the same advantages (and disadvantages)
   - Extremely useful if you need to give a presentation that is very math or code intensive
   - Feel free to use my theme for this presentation