Aula Prática – LateX e Overleaf

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Agenda

- LaTeX
- Overleaf

LaTeX

- LaTeX is **not** WYSIWYG (*what you see is what you get*)

- INSTEAD: when writing a document, you should **focus on the structure and content** instead of formatting details

How does LaTeX work?

- Write your document using a **simple text editor** (notepad will do, but there are specific editors that provide syntax highlight and other useful features like Emacs, TeXnicCenter, etc)
- Your document should include **LaTex commands** to **structure the text** and to indicate the **formatting style**
- Compile the document using a **LaTex compiler**
  - The compilation process produces a DVI or PDF file that is formatted according to the chosen style

LaTeX Compilers

https://www.latex-project.org/get/

TeX Distributions

If you're new to TeX and LaTeX or just want an easy installation, get a full TeX distribution. The TeX Users Group (TUG) has a list of notable distributions that are entirely, or least primarily, free software.

Linux

Check your Linux distributions software source for a TeX distribution including LaTeX. You can also install the current TeX Live distribution directly---in fact this may be advisable as many Linux distributions only contain older versions of TeX Live, see Linux TeX Live package status for details.

Mac OS

The MacTeX distribution contains everything you need, including a complete TeX system with LaTeX itself and editors to write documents.

Windows

Check out the MiKTeX or TeX Live distributions; they contain a complete TeX system with LaTeX itself and editors to write documents.

Online

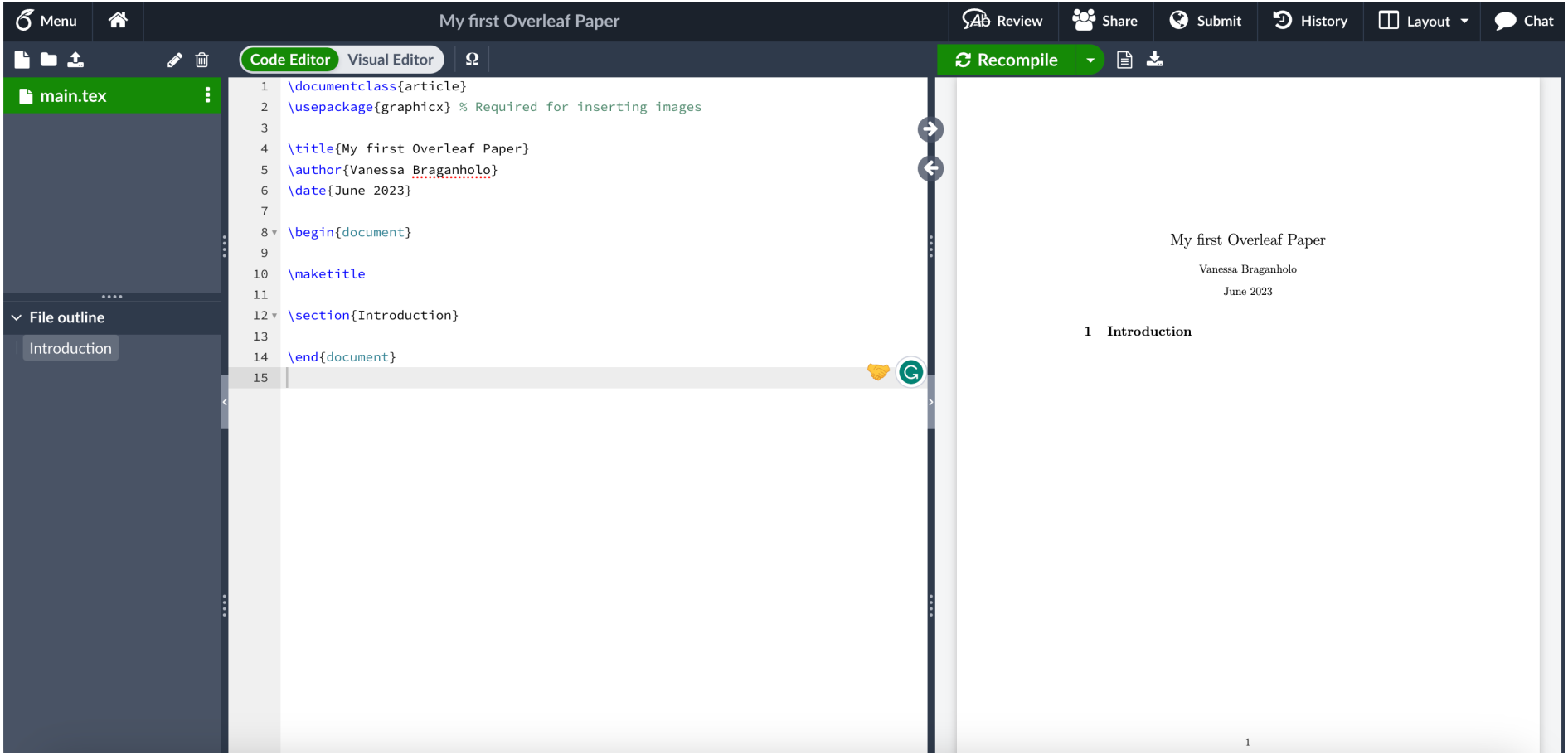
LaTeX online services like Overleaf, Papeeria, LaTeX base or CoCalc offer the ability to edit, view and download LaTeX files and resulting PDFs.

Overleaf

- It is a web application that has an editor and a LaTeX compiler – allows you to use latex without having to install the compiler in your local machine

Let’s use Overleaf

- Go to https://www.overleaf.com/
- Create a user (if you do not already have one)
- Log in
- On the menu on the top left, choose **New Project**, then choose **Blank Project**
- Choose a name for your project


Menu
My first Overleaf Paper
Review
Share
Submit
History
Layout
Chat
Code Editor
Visual Editor
Recompile
main.tex
File outline
Introduction
1 \documentclass{article}
2 \usepackage{graphicx} % Required for inserting images
3
4 \title{My first Overleaf Paper}
5 \author{Vanessa Braganholo}
6 \date{June 2023}
7
8 \begin{document}
9
10 \maketitle
11
12 \section{Introduction}
13
14 \end{document}
15
My first Overleaf Paper
Vanessa Braganholo
June 2023
1 Introduction
1

```
1  \documentclass{article}
2  \usepackage{graphicx} % Required for inserting images
3
4  \title{My first Overleaf Paper}
5  \author{Vanessa Braganholo}
6  \date{June 2023}
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9
10 \maketitle
11
12 \section{Introduction}
13
14 \end{document}
15
```

Formatting style

```
1  \documentclass{article}
2  \usepackage{graphicx} % Required for inserting images
3
4  \title{My first Overleaf Paper}
5  \author{Vanessa Braganholo}
6  \date{June 2023}
7
8  \begin{document}
9
10 \maketitle
11
12 \section{Introduction}
13
14 \end{document}
15
```

Required Packages go here (there may be more than one)

```
1  \documentclass{article}
2  \usepackage{graphicx} % Required for inserting images
3
4  \title{My first Overleaf Paper}
5  \author{Vanessa Braganholo}
6  \date{June 2023}
7
8  \begin{document}
9
10 \maketitle
11
12 \section{Introduction}
13
14 \end{document}
15
```

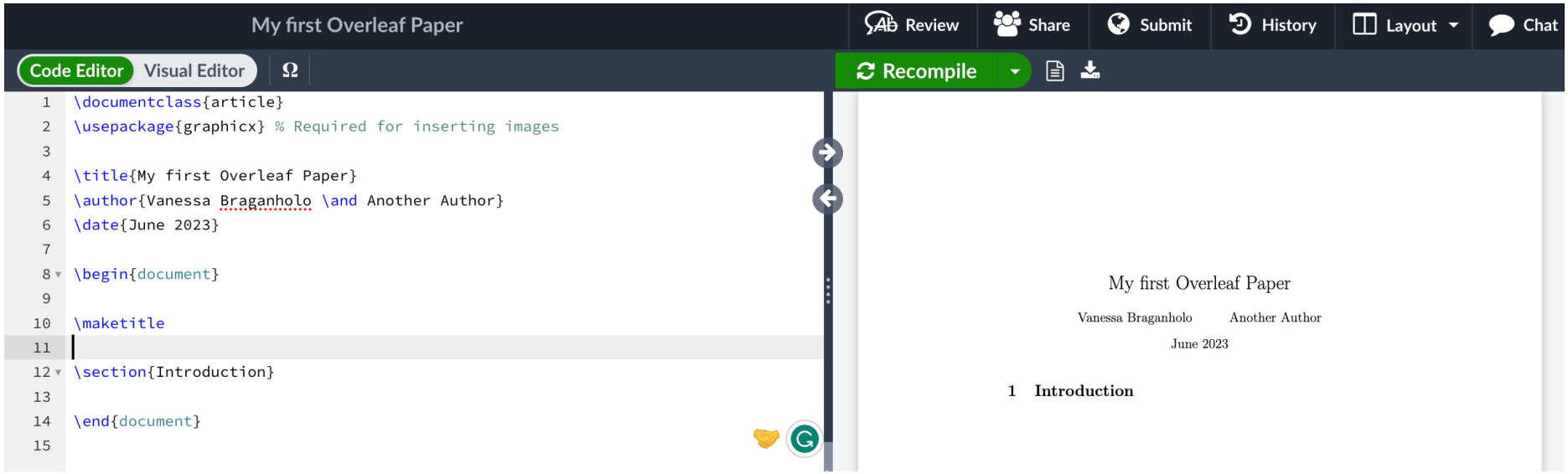
Title and author commands

Important

- Using other formatting styles may change the way the authors need to be informed
- Use the example .tex file that is provided with the formatting template to check how authors should be informed

More than one Author

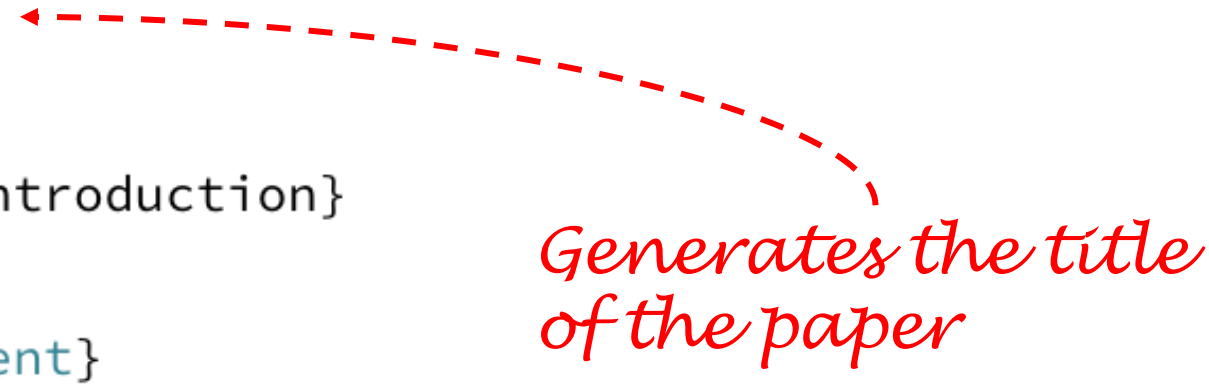
- \and
- Use the **Recompile** button to see the changes on the right pane



```
1  \documentclass{article}
2  \usepackage{graphicx} % Required for inserting images
3
4  \title{My first Overleaf Paper}
5  \author{Vanessa Braganholo \and Another Author}
6  \date{June 2023}
7
8  \begin{document}
9
10 \maketitle
11
12 \section{Introduction}
13
14 \end{document}
15
```

Document content goes between the begin and end document commands

```
1  \documentclass{article}
2  \usepackage{graphicx} % Required for inserting images
3
4  \title{My first Overleaf Paper}
5  \author{Vanessa Braganholo \and Another Author}
6  \date{June 2023}
7
8  \begin{document}
9
10 \maketitle
11
12 \section{Introduction}
13
14 \end{document}
15
```



LaTeX Basic Commands

- \chapter{Chapter Title}
  - Can be used in books, thesis, etc, but should not be used on articles
- \section{Section Title}
- \subsection{Subsection Title}

Comments

- The **%** symbol indicates commented content

```
\documentclass{article}
\usepackage{graphicx} % Required for inserting images

\title{My first Overleaf Paper}
\author{Vanessa Braganholo \and Another Author}
\date{}

\begin{document}

\maketitle

\section{Introduction}
\section{Related Work}
\section{Approach}
\section{Experimental Evaluation}
\section{Conclusion}

\end{document}
```

My first Overleaf Paper

Vanessa Braganholo Another Author

1 **Introduction**

2 **Related Work**

3 **Approach**

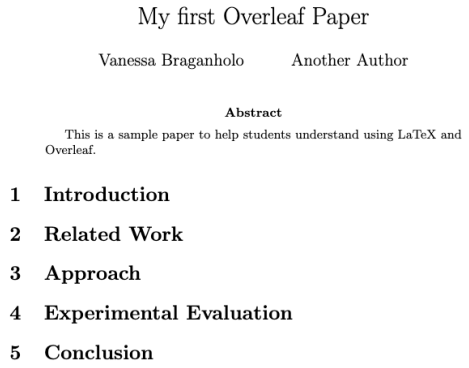
4 **Experimental Evaluation**

5 **Conclusion**

Abstract

\begin{abstract}
\end{abstract}

```
1  \documentclass{article}
2  \usepackage{graphicx} % Required for inserting images
3
4  \title{My first Overleaf Paper}
5  \author{Vanessa Braganholo \and Another Author}
6  \date{}
7
8  \begin{document}
9
10 \maketitle
11
12 \begin{abstract}
13 This is a sample paper to help students understand using LaTeX and Overleaf.
14 \end{abstract}
15
16 \section{Introduction}
17 \section{Related Work}
18 \section{Approach}
19 \section{Experimental Evaluation}
20 \section{Conclusion}
21
22 \end{document}
```



Textual Content

- Just write the content inside the appropriate section.
- To make a new paragraph, leave a blank line after the previous paragraph.

```
16 \section{Introduction}
17
18 This is an example of text for the introduction. This is a paragraph. I will
   make a new paragraph after this one by leaving a blank line between them.
19
20 This is the second paragraph.
21
22 This is the third paragraph.
23
```

My first Overleaf Paper

Vanessa Braganholo Another Author

Abstract

This is a sample paper to help students understand using LaTeX and Overleaf.

1 Introduction

This is an example of text for the introduction. This is a paragraph. I will make a new paragraph after this one by leaving a blank line between them.

This is the second paragraph.

This is the third paragraph.

2 Related Work

3 Approach

4 Experimental Evaluation

5 Conclusion

Bold and Italics

\textbf{bold text}

\textit{italic text}

```
16 \section{Introduction}
17
18 This is an example of text for the introduction. This is a paragraph. I will
   make a new paragraph after this one by leaving a blank line between them.
19
20 This is the second paragraph. This paragraph contains some \textbf{bold text
   that I wanted to emphasize}.
21
22 This is the third paragraph.
```

1 Introduction

This is an example of text for the introduction. This is a paragraph. I will make a new paragraph after this one by leaving a blank line between them.

This is the second paragraph. This paragraph contains some **bold text that I wanted to emphasize**.

This is the third paragraph.

Cross Reference

- Use **\label{label-name}** no name the item you need to cross reference
- Use **\ref{label-name}** to reference the item

- This can be used to reference figures, tables, chapters, sections, etc.

```
16  \section{Introduction}
17
18  This is an example of text for the introduction. This is a paragraph. I will
    make a new paragraph after this one by leaving a blank line between them.
19
20  This is the second paragraph.
21
22  This is the third paragraph.
23
24  The remainder of this paper is organized as follows. Section \ref{sec:related-
    work} discusses related work. Section \ref{sec:approach} presents our proposed
    approach. Section \ref{sec:evaluation} presents the experimental evaluation.
    Finally, we conclude on Section \ref{sec:conclusion}.
25
26  \section{Related Work \label{sec:related-work}}
27  \section{Approach \label{sec:approach}}
28  \section{Experimental Evaluation \label{sec:evaluation}}
29  \section{Conclusion \label{sec:conclusion}}
```

labels

```
16 \section{Introduction}
17
18 This is an example of text for the introduction. This is a paragraph. I will
   make a new paragraph after this one by leaving a blank line between them.
19
20 This is the second paragraph.
21
22 This is the third paragraph.
23
24 The remainder of this paper is organized as follows. Section \ref{sec:related-
   work} discusses related work. Section \ref{sec:approach} presents our proposed
   approach. Section \ref{sec:evaluation} presents the experimental evaluation.
   Finally, we conclude on Section \ref{sec:conclusion}.
25
26 \section{Related Work \label{sec:related-work}}
27 \section{Approach \label{sec:approach}}
28 \section{Experimental Evaluation \label{sec:evaluation}}
29 \section{Conclusion \label{sec:conclusion}}
```

Cross references

My first Overleaf Paper

Vanessa Braganholo Another Author

Abstract

This is a sample paper to help students understand using LaTeX and Overleaf.

1 Introduction

This is an example of text for the introduction. This is a paragraph. I will make a new paragraph after this one by leaving a blank line between them.

This is the second paragraph.

This is the third paragraph.

The remainder of this paper is organized as follows. Section 2 discusses related work. Section 3 presents our proposed approach. Section 4 presents the experimental evaluation. Finally, we conclude on Section 5.

2 Related Work

3 Approach

4 Experimental Evaluation

5 Conclusion

Use of ~

- When you do not want that to happen:

"blablalblalbalb blalbal bla bla bla bla on **Section 4** blabla bla"

- Use **~** to keep text on the same line (separated by a blank space).

Use of ~

Instead of

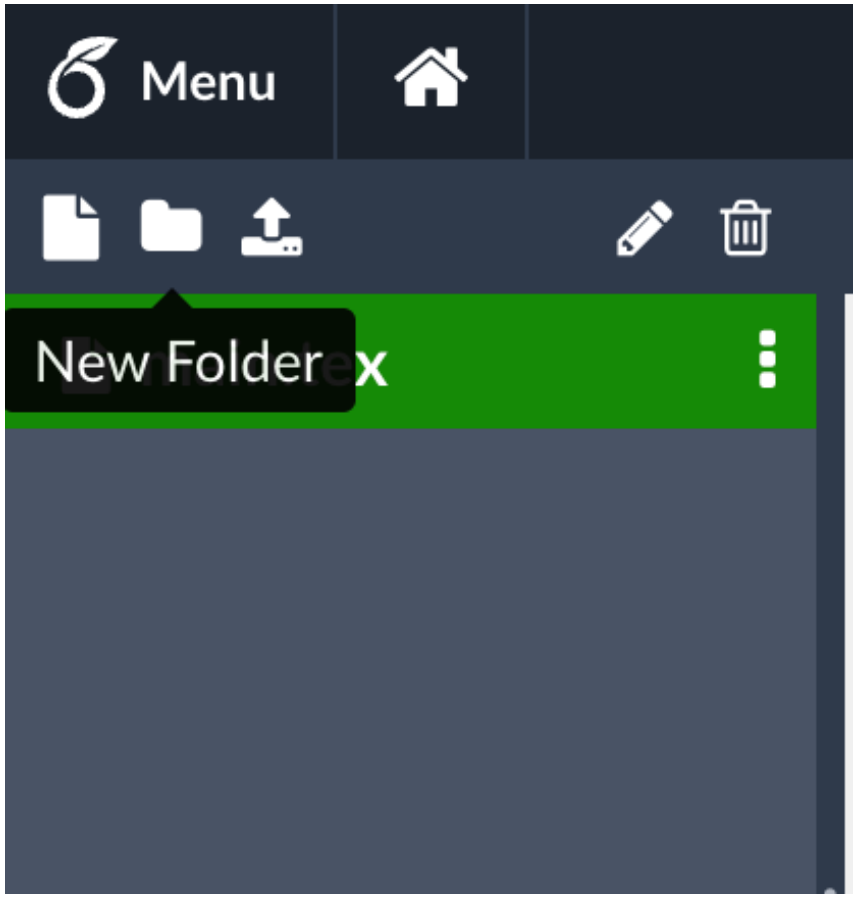
“blablalblalbalb blalbal bla bla bla bla on **Section \ref{sec:labelsection4}** blabla bla”

write

“blablalblalbalb blalbal bla bla bla bla on **Section~\ref{sec:labelsection4}** blabla bla”

Figures

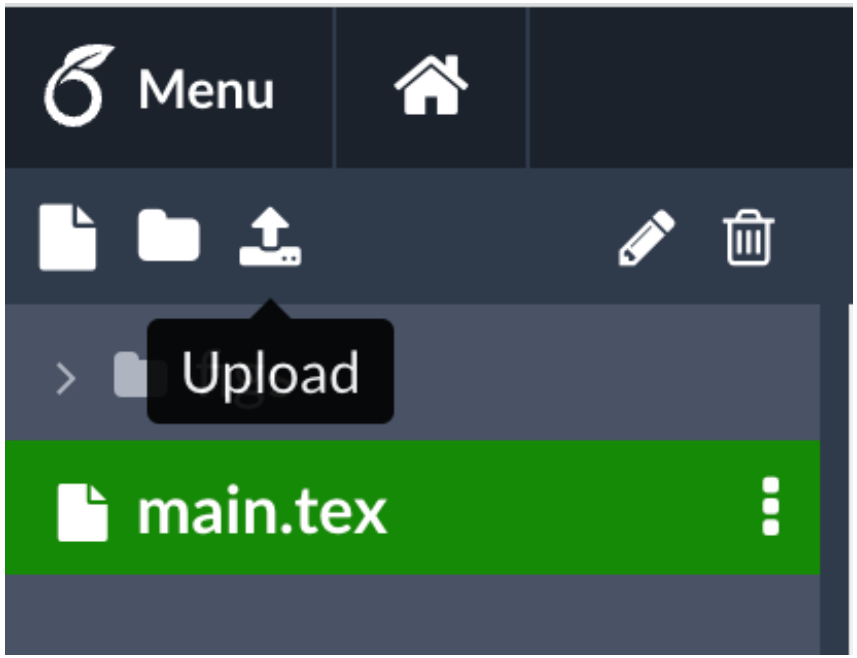
- I suggest you create a folder to place all your figures



Figures

Figures

- Upload the image of the figure
- Lots of formats are accepted
- Use **PDF images** whenever possible (they have better quality and infinite zoom)



Figures

- Drag the file to the figs folder you created

Figures

- This figure will be scaled to occupy 50% of the line width.

```
26 \section{Related Work \label{sec:related-work}}
27
28 This section contains a Figure. Figure \ref{fig:logo-ic} shows the IC logo.
29
30 \begin{figure}[t]
31 \centering
32 \includegraphics[width=.5\linewidth]{figs/logo.png}
33 \caption{Example of Figure \label{fig:logo-ic}}
34 \end{figure}
```

Figure 1: Example of Figure

Another option for Figure size

```
30 \begin{figure}[t]
31 \centering
32 \scalebox{0.2}{\includegraphics{figs/logo.png}}
33 \caption{Example of Figure \label{fig:logo-ic}}
34 \end{figure}
```

Floats

- Figures and tables in LaTeX are **floats**. LaTeX uses an algorithm to determine the best placement for them in the text.
- You can indicate your preference using placement options in your figures and tables.

Float placement

Parameter	Position
`h`	Place the float *here*, i.e., *approximately* at the same point it occurs in the source text (however, not *exactly* at the spot)
`t`	Position at the *top* of the page.
`b`	Position at the *bottom* of the page.
`p`	Put on a special *page* for floats only.
`!`	Override internal parameters LaTeX uses for determining "good" float positions.
`H`	Places the float at precisely the location in the LaTeX code. Requires the `float` package. This is somewhat equivalent to `h!`.

Figure placement at the top

```
30 \begin{figure}[t]
31 \centering
32 \scalebox{0.2}{\includegraphics{figs/logo.png}}
33 \caption{Example of Figure \label{fig:logo-ic}}
34 \end{figure}
```

Tables

```
38 \begin{table}[t]
39 \caption{This is a table\label{tab:example}}
40 \begin{center}
41 \begin{tabular}{ c c c }
42  cell1 & cell2 & cell3 \\
43  cell4 & cell5 & cell6 \\
44  cell7 & cell8 & cell9
45 \end{tabular}
46 \end{center}
47 \end{table}
```

Table 1: This is a table

cell1	cell2	cell3
cell4	cell5	cell6
cell7	cell8	cell9

Table Lines

- Use | to make vertical line (at the column definition section of the table)
- Use \hline to make horizontal lines

```
\begin{table}[t]
\caption{This is a table\label{tab:example}}
\begin{center}
\begin{tabular}{|c|c|c|}
\hline
 cell1 & cell2 & cell3 \\
 \hline
 cell4 & cell5 & cell6 \\
 \hline
 cell7 & cell8 & cell9  \\
 \hline
\end{tabular}
\end{center}
\end{table}
```

Table 1: This is a table

cell1	cell2	cell3
cell4	cell5	cell6
cell7	cell8	cell9

Mathematical Mode

- Use **$** to enter and leave mathematical mode.
- This is useful to make superscripts, for instance.

This is a text that uses mathematical mode. The variable **M_i, $i = 1, \ldots, n$** will be formatted in italics and the **i** will be subscripted to **M**.

This is a text that uses mathematical mode. The variable M_i, $i = 1, \ldots, n$ will be formatted in italics and the i will be subscripted to M.

Bibliographical References

- You can use a .bib file to register all your references
- Different types of reference require different information

```
@book{texbook,
  author = {Donald E. Knuth},
  year = {1986},
  title = {The {\TeX} Book},
  publisher = {Addison-Wesley Professional}
}
```

Journal Article

```
@article{knuth:1984,
  title={Literate Programming},
  author={Donald E. Knuth},
  journal={The Computer Journal},
  volume={27},
  number={2},
  pages={97--111},
  year={1984},
  publisher={Oxford University Press}
}
```

Bibliography

- Add the \bibliography{bib file name} command before the \end{document} command.
- Add the \bibliographystyle{stylename} command after the \bibliography command.

```
63  \bibliography{bibliography}
64  \bibliographystyle{abbrv}
65
66  \end{document}
```

Adding citations to the text

- Use the \cite{key} command

This is an example of a citation to the journal article of the previous slide \cite{knuth:1984}.

```
60 \section{Conclusion \label{sec:conclusion}}
61
62 This is an example of a citation to the journal article of
   the previous slide \cite{knuth:1984}.
63
64 \bibliography{bibliography}
65 \bibliographystyle{abbrv}
66
67 \end{document}
68
```

5 Conclusion

This is an example of a citation to the journal article of the previous slide [1].

References

[1] D. E. Knuth. Literate programming. *The Computer Journal*, 27(2):97–111, 1984.

More about bibtex and Overleaf

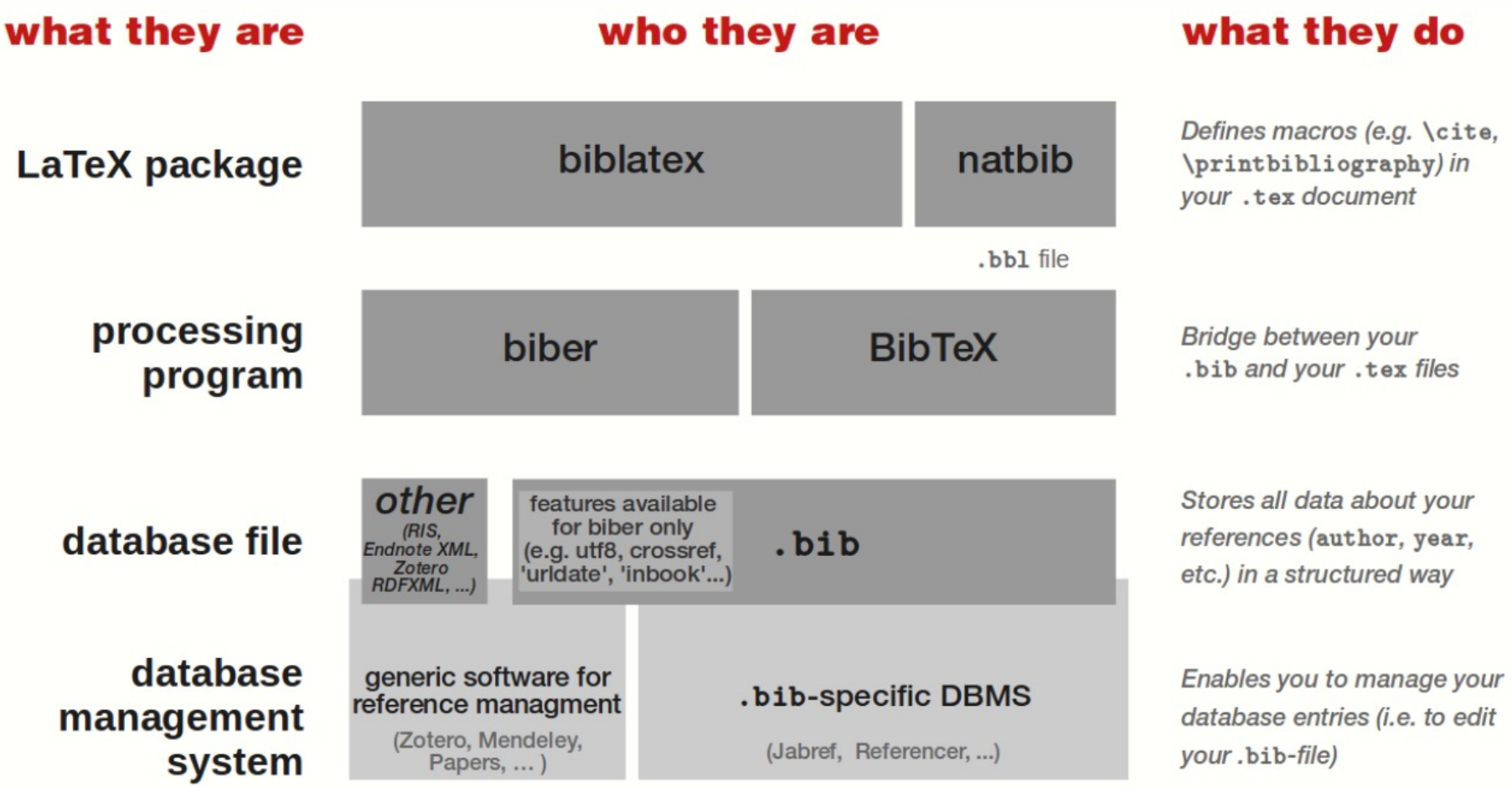
- https://www.overleaf.com/learn/latex/Bibliography_management_with_bibtex

Several other (new) options

- **bibtex** x **biber**: external programs that process bibliography information and act (roughly) as the interface between your .bib file and your LaTeX document.
- **natbib** x **biblatex**: are LaTeX packages that format citations and bibliographies. Natbib works *Only* with bibtex, while biblatex (at the moment) works with both bibtex and biber.)

Source: https://tex.stackexchange.com/questions/25701/bibtex-vs-biber-and-biblatex-vs-natbib

Several other (new) options



Source: https://tex.stackexchange.com/questions/25701/bibtex-vs-biber-and-biblatex-vs-natbib

For more info

- https://www.overleaf.com/learn/latex/Learn_LaTeX_in_30_minutes

Using a formatting style

- Let’s see how to use the ACM formatting style to write the paper of the final project of this class.
- Use the Home button to go back to your projects on Overleaf.
- Create a new project. Choose Academic Journal as template.

Choosing the ACM template

- On the page that is presented, choose Show All Gallery Items
- Search for “ACM”
- Choose the SIGPLAN Proceedings Template

Association for Computing Machinery (ACM) - SIGPLAN Proceedings Template

This is a sample file for **ACM** SIGPLAN conference proceedings, using **acm**art.cls v1.90. It is provided by the **ACM** as a template for submissions, and pre-loaded in Overleaf (formerly writeLaTeX) for ease of editing online. Please see the **ACM** Submission Guidelines page for more details on manuscript preparation. Note: Most proceedings authors will use the "sigconf" proceedings template. If you are unsure which template variant to use, please request clarification from your event or publication contact. Important ...

Conference Paper | Two-column | Association for Computing Machinery (ACM) - Official Sample Papers

- Click on Open as Template

Now get to work!

- Use the template as a guide, alter what needs to be altered, and add the content of your paper!

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