

# Aula Prática – LateX e Overleaf



# 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.

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### 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

Home

My first Overleaf Paper

Review

Share

Submit

History

Layout

Chat

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

Recompile

My first Overleaf Paper

Vanessa Braganholo

June 2023

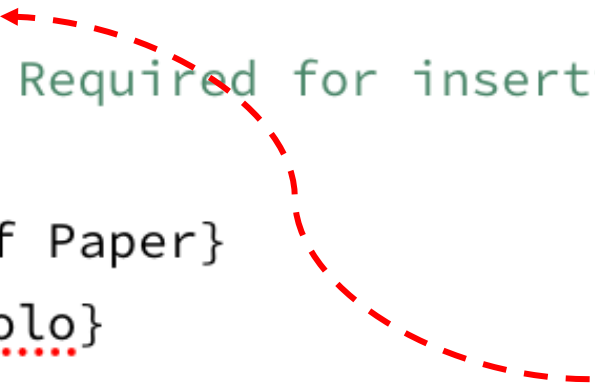
1 Introduction

1



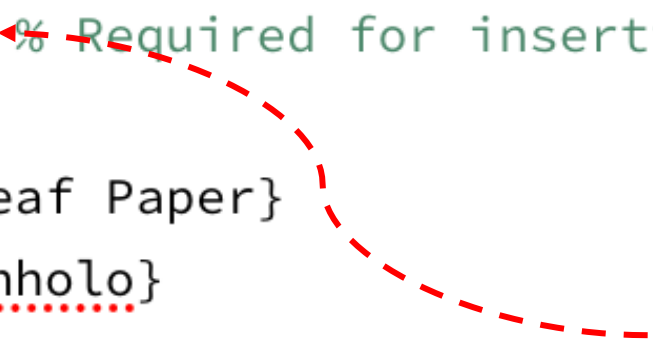
```
1 \documentclass{article}
2 \usepackage{graphicx} % Required for inserting images
3
4 \title{My first Overleaf Paper}
5 \author{Vanessa Braganholo}
6 \date{June 2023}
7
8 \begin{document}
9
10 \maketitle
11
12 \section{Introduction}
13
14 \end{document}
15
```

```
1 \documentclass{article}
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4 \title{My first Overleaf Paper}
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6 \date{June 2023}
7
8 \begin{document}
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

The screenshot shows the Overleaf web editor interface. The top bar includes navigation links: Review, Share, Submit, History, Layout, and Chat. Below this, the 'Code Editor' tab is active, displaying a LaTeX document. The document content is as follows:

```
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
```

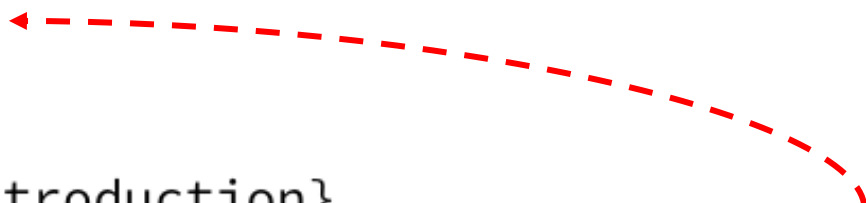
The right pane shows the compiled PDF output. The title page displays the title 'My first Overleaf Paper', the authors 'Vanessa Braganholo' and 'Another Author', and the date 'June 2023'. Below the title page, the first section '1 Introduction' is visible.

```
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
```



*Generates the title  
of the paper*

# 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

```
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 \section{Introduction}
13 \section{Related Work}
14 \section{Approach}
15 \section{Experimental Evaluation}
16 \section{Conclusion}
17
18 \end{document}
19
```

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}
```



My first Overleaf Paper

Vanessa Braganholo      Another Author

**Abstract**

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

- 1 Introduction**
- 2 Related Work**
- 3 Approach**
- 4 Experimental Evaluation**
- 5 Conclusion**

# 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}` to 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.

*Cross references*

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}}`

# 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:

“blablablablablab lablab 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

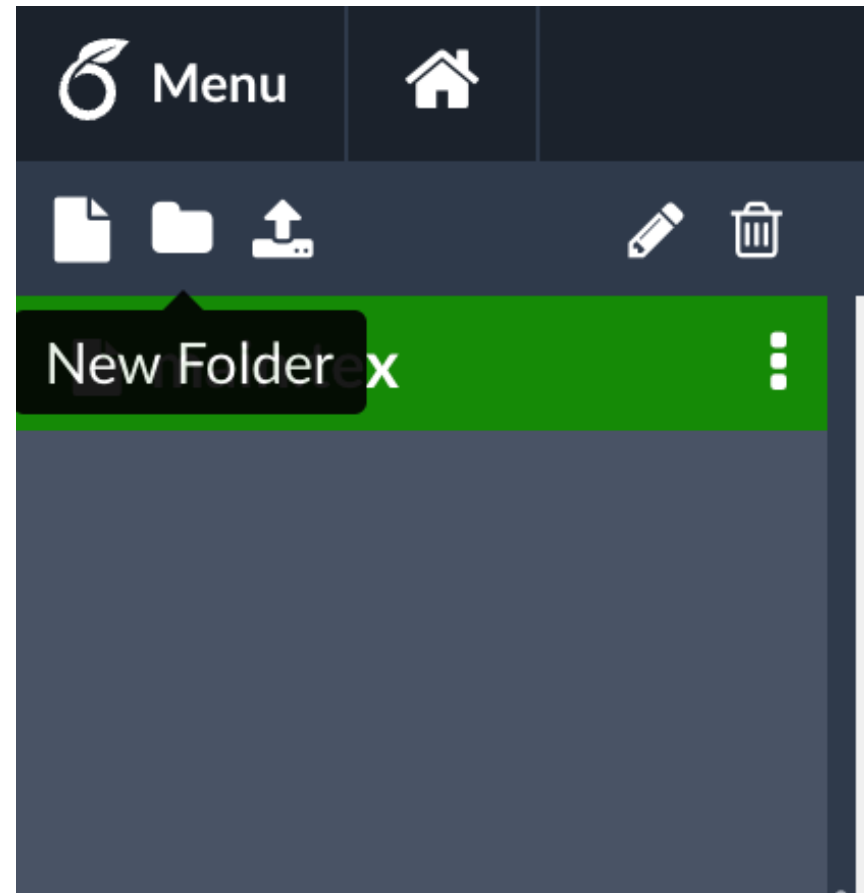
“blablablablab balbal bla bla bla bla on  
**Section \ref{sec:labelsection4} blabla bla**”

write

“blablablablab balbal bla bla bla bla on  
**Section~\ref{sec:labelsection4} blabla bla**”

# Figures

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

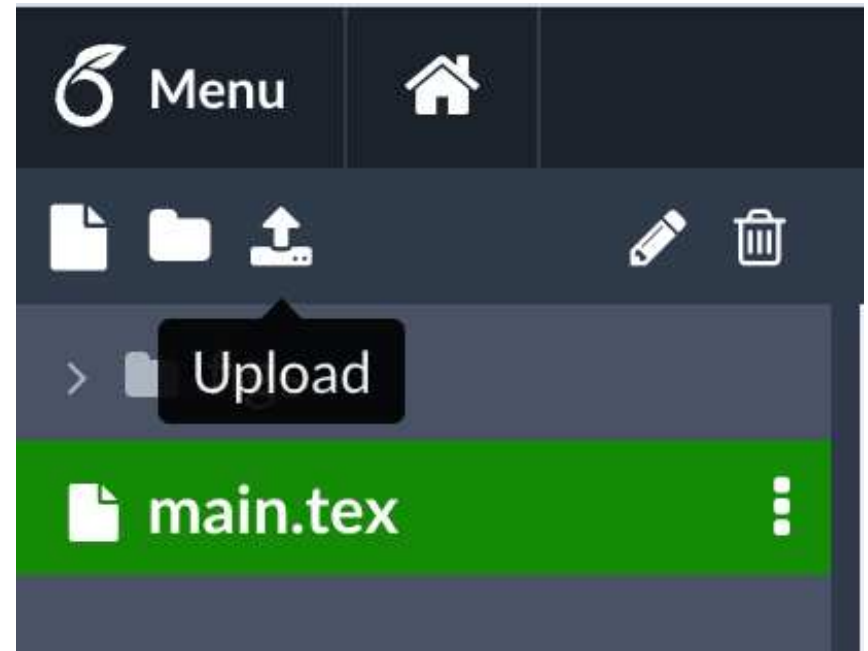


# Figures



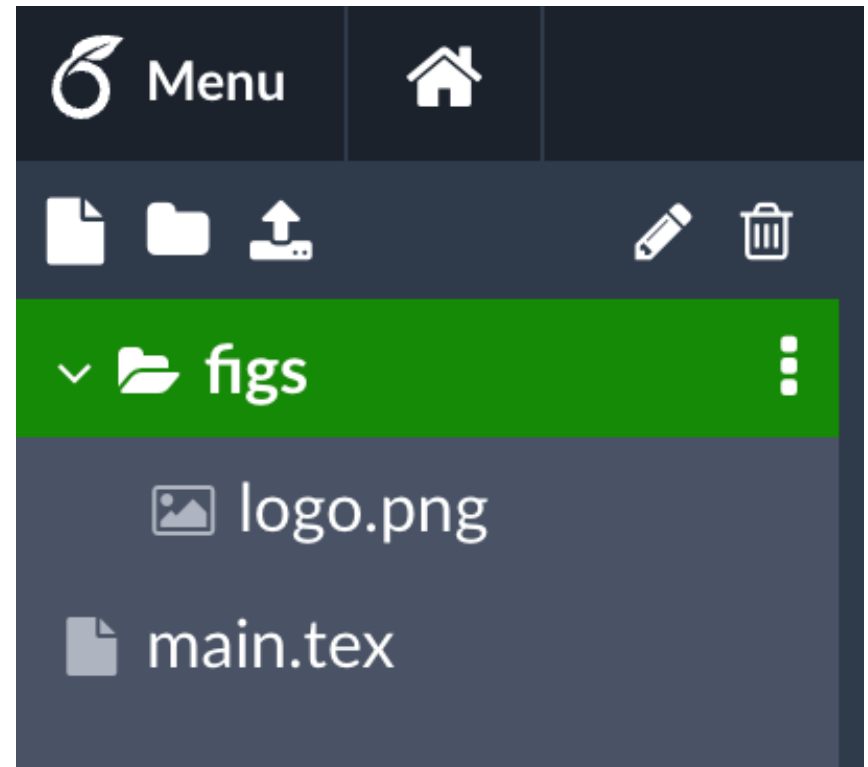
# Figures

- 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

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

# 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

```

38 ▾ \begin{table}[t]
39   \caption{This is a table\label{tab:example}}
40 ▾ \begin{center}
41 ▾ \begin{tabular}{|c|c|c|}
42   \hline
43     cell1 & cell2 & cell3 \\
44   \hline
45     cell4 & cell5 & cell6 \\
46   \hline
47     cell7 & cell8 & cell9 \\
48   \hline
49 \end{tabular}
50 \end{center}
51 \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  $M_i$ ,  $i = 1, \dots, n$  will be formatted in italics and the  $i$  will be subscripted to  $M$ .

This is a text that uses mathematical mode. The variable  $M_i$ ,  $i = 1, \dots, n$  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](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

what they are	who they are		what they do
LaTeX package	biblatex	natbib	Defines macros (e.g. <code>\cite</code> , <code>\printbibliography</code> ) in your <code>.tex</code> document
		.bbl file	
processing program	biber	BibTeX	Bridge between your <code>.bib</code> and your <code>.tex</code> files
database file	<div>other (RIS, Endnote XML, Zotero RDFXML, ...)</div> <div>features available for biber only (e.g. utf8, crossref, 'urldate', 'inbook'...)</div> <div>.bib</div>		Stores all data about your references (author, year, etc.) in a structured way
database management system	generic software for reference management (Zotero, Mendeley, Papers, ...)	.bib-specific DBMS (Jabref, Referencer, ...)	Enables you to manage your database entries (i.e. to edit your <code>.bib</code> -file)

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](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 Galery 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 `acmart.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!

# Aula Prática – LateX e Overleaf

