

# Mini-workshop $\text{\LaTeX}$ and Git

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telecomunicações

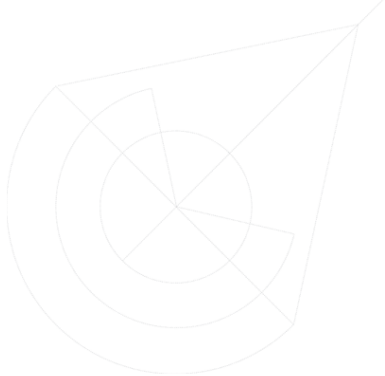
INSTITUIÇÕES ASSOCIADAS



# Introduction to L<sup>A</sup>T<sub>E</sub>X

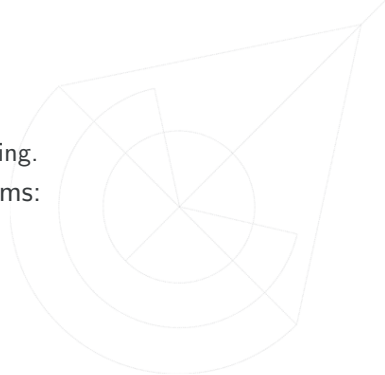


# Intro



# Initial notions

- What is it?
  - A document preparation system for high-quality typesetting.
- It has some advantages when compared to Office platforms:
  - Free.
  - Easy reference and citation management.
  - Potent mathematical writing.
  - Very commonly used in science and engineering.
  - It's as cross-platform as you can get.



Mini-workshop  $\text{\LaTeX}$  and Git└ Introduction to  $\text{\LaTeX}$ 

## └ Intro

## └ Initial notions

## Initial notions

- What is it?
  - A document preparation system for high-quality typesetting.
- It has some advantages when compared to Office platforms:
  - Free.
  - Easy reference and citation management.
  - Potent mathematical writing.
  - Very commonly used in science and engineering.
  - It's as cross-platform as you can get.

- Não é um What You See Is What You Get
- Escrevem código que depois é interpretado
- Só precisam de se preocupar com o conteúdo
- As imagens ficam bem numeradas!

# Initial notions

- What is needed for it to work?
  - A  $\text{\TeX}$  distribution (MiKTeX, MacTeX, etc).
  - Some text editor: Texmaker, TeXworks, TeXShop, Overleaf and Sharelatex (online editor).
- What is handy to have?
  - Citation manager (Mendeley, Bibdesk or other).
  - A decent PDF reader (Foxit Reader, Adobe Acrobat or other).
- Whenever you have any doubts, Google [en.wikibooks.org/wiki/LaTeX](https://en.wikibooks.org/wiki/LaTeX).

2018-11-07

# Mini-workshop $\text{\LaTeX}$ and Git

## └ Introduction to $\text{\LaTeX}$

### └ Intro

#### └ Initial notions

#### Initial notions

- What is needed for it to work?
  - A  $\text{\TeX}$  distribution (MikTeX, MacTex, etc).
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- Overleaf e Sharelatex podem ser vistos como o google docs do latex

# Special characters

- These characters will not work properly if written directly.

#	Defines arguments
\$	Start math mode
^	Starts superscript
_	Starts subscript
%	Makes rest of line commented
{ }	Defines an isolated set of characters
\	Defines a command



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## └ Intro

## └ Special characters

- São caracteres reservados, tal como no matlab não podem chamar  $a+b$  a uma variável
- $\wedge$  e  $\_$  só podem ser chamados num ambiente matemático
- É possível usar estes caracteres se chamados correctamente

## Special characters

- These characters will not work properly if written directly.

#	Defines arguments
\$	Start math mode
^	Starts superscript
_	Starts subscript
%	Makes rest of line commented
[ ]	Defines an isolated set of characters
\	Defines a command

# What is a command

- A command has the following structure:

`\commandname[option1, option2]{argument1}{argument2}`

- Examples:

`\documentclass[11pt]{report}`

`\usepackage[utf8x]{inputenc}`

- The `\usepackage` command includes packages in the document, these packages give meaning to a few commands. Example:

`\usepackage{amsmath}` allows for equation writing.



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## └ Intro

## └ What is a command

- Diferentes comandos têm um diferentes opções e argumentos
- explicar `\documentclass`
- **explicar inputenc**
- explicar `\usepackage`

## What is a command

- A command has the following structure:

```
\commandname[option1, option2]{argument1}{argument2}
```

- Examples:

```
\documentclass[11pt]{report}
\usepackage[utf8]{inputenc}
```

- The `\usepackage` command includes packages in the document, these packages give meaning to a few commands. Example:

```
\usepackage{amsmath}
```

allows for equation writing.

# What is an environment

```
\begin{environment}
```

...ambient content...

```
\end{environment}
```

- There is plenty of code that only functions inside a specific environment. Example:

```
\begin{document}
```

...document content...

```
\end{document}
```



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## └ Intro

## └ What is an environment

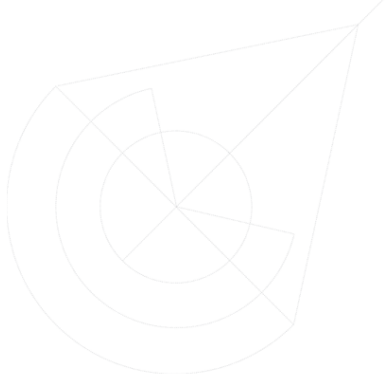
What is an environment

```
\begin{environment}
...ambient content...
\end{environment}
- There is plenty of code that only functions inside a specific environment. Example:

\begin{document}
...document content...
\end{document}
```

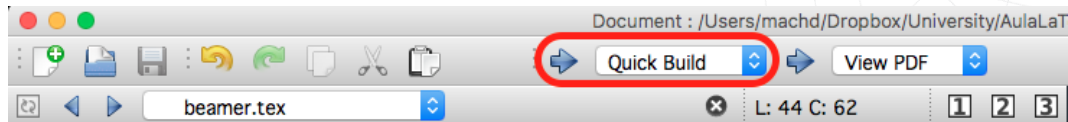
- idem

## How to start a document



# Offline $\text{\LaTeX}$ compilation

- The code to be compiled should be in a .tex file.
- Compilation can be done with a .tex editor or in the command line.



- When using an offline compiler, save the .tex file and run the compiler inside a folder,  $\text{\LaTeX}$  generates a bunch of support files.

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## └ How to start a document

└ Offline  $\text{\LaTeX}$  compilation

- Há diferentes opções de compilação, não se preocupem com isso
- o  $\text{\LaTeX}$  gera alguns ficheiros de apoio, não precisam de se preocupar com esses
- não são grandes (só alguns kB)
- De certeza que vai perguntar se pode instalar pacotes, cliquem OK

Offline  $\text{\LaTeX}$  compilation

- The code to be compiled should be in a .tex file.
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- When using an offline compiler, save the .tex file and run the compiler inside a folder.  $\text{\LaTeX}$  generates a bunch of support files.



# Offline L<sup>A</sup>T<sub>E</sub>X compilation

- This is what a L<sup>A</sup>T<sub>E</sub>X code looks like.

```
1  \documentclass{report}
2  \usepackage[utf8]{inputenc}
3
4  \begin{document}
5  Isto é um documento com uma linha de texto.
6  \end{document}
```

- Compilation usually returns a .pdf file.

Isto é um documento com uma linha de texto.

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## └ How to start a document

└ Offline  $\text{\LaTeX}$  compilation

- Dizer o que é que é o preâmbulo
- Voltar a apontar o inputenc

Offline  $\text{\LaTeX}$  compilation

- This is what a  $\text{\LaTeX}$  code looks like.

```
1 \documentclass[12pt]{report}
2 \usepackage{ctex}
3
4 \begin{document}
5   Isso é um documento com uma linha de teste.
6 \end{document}
```

Isso é um documento com uma linha de teste.

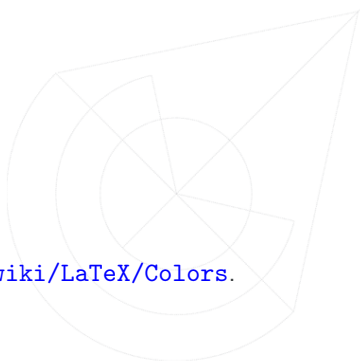
- Compilation usually returns a .pdf file.

## Simple text editing



# **bold**, *italics*, underline, colourful

- ▶ `\textbf{Bold text}`
- ▶ `\textit{Italicised text}`
- ▶ `\underline{Underlined text}`
- ▶ `\textcolor{Colourname}{Colourful text}`
  - ▶ Colour names can be found here → [en.wikibooks.org/wiki/LaTeX/Colors](https://en.wikibooks.org/wiki/LaTeX/Colors).



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└ Introduction to L<sup>A</sup>T<sub>E</sub>X

└ Simple text editing

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- Idem

# Paragraphs, line breaks and sections

- `\\` Breaks the line, doesn't start a new paragraph.
- `\par` Breaks the line and starts a new paragraph.
- `\chapter{Chapter name}` Starts a chapter.
- `\section{Section name}` Starts a section.  
`\subsection{Subsection name},`  
`\subsubsection{Subsubsection name}`
- All of these are numbered, writing a `*` before the `{}` suppresses this.



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## └ Simple text editing

## └ Paragraphs, line breaks and sections

## Paragraphs, line breaks and sections

- `\` Breaks the line, doesn't start a new paragraph.
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- `\chapter{Chapter name}` Starts a chapter.
- `\section{Section name}` Starts a section.
- `\subsection{Subsection name}`.
- `\subsubsection{Subsubsection name}`
- All of these are numbered, writing a \* before the {} suppresses this.

- Esta é a maneira correcta de fazer parágrafos
- Tudo o que estiver a seguir a um chapter/section/etc pertence esse chapter/section/etc até o seguinte ser declarado

# Titles, authors and tables of contents

- All of these can be generated automatically by  $\text{\LaTeX}$ , their appearance depends on the template.
- In this case, you need to give  $\text{\LaTeX}$  the necessary information, in the preamble write:
  - `\title{Title}`
  - `\author{Author or Authors}`
  - `\date{Date}`
- For the title to appear you need to use the `\maketitle` command, usually right after:  
`\begin{document}`
- You may be given a template where the title is defined explicitly, in that case just alter the corresponding text.
- To generate the index just write the command `\tableofcontents`, usually right after the `\maketitle`.



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## └ Simple text editing

## └ Titles, authors and tables of contents

## Titles, authors and tables of contents

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`\begin{document}`
- You may be given a template where the title is defined explicitly, in that case just alter the corresponding text.
- To generate the index just write the command `\tableofcontents`, usually right after the `\maketitle`.

- Relembrar o que é que é o preâmbulo.
- Compilem o template que vos deram, vejam o título e procurem onde é que isso aparece no código

# Changing the language of the document

- Some compilers have a spell checker, set it to the language you are using.

- The language of the document can be changed with the `babel` package.

```
1 \documentclass{report}
2 \usepackage[utf8]{inputenc}
3 \usepackage[portuguese]{babel}
4
5 \title{Isto é um título}
6 \author{Eu escrevi isto}
7 \date{\today}
8
9 \begin{document}
10 \maketitle
11 \tableofcontents
12 \chapter{Isto é um capítulo}
13 \section{Isto começa uma secção}
14 \subsection*{Esta subsecção não é numerada}
15 Isto é um documento com uma linha de texto.
16 \chapter{Isto é outro capítulo}
17 \end{document}
```

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## └ Simple text editing

## └ Changing the language of the document

## Changing the language of the document

- Some compilers have a spell checker, set it to the language you are using.

```

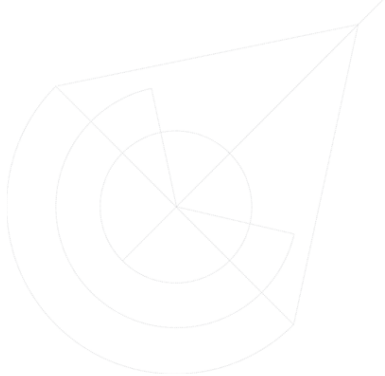
1 \documentclass{report}
2 \usepackage[utf8]{inputenc}
3 \usepackage[portuguese]{babel}
4
5 \title{Este é um título}
6 \author{Eu escrevi isto}
7 \date{\today}
8
9 \begin{document}
10 \maketitle
11 \tableofcontents
12 \chapter{Este é um capítulo}
13 \section{Este começa uma secção}
14 \subsection{Esta subsecção não é numerada}
15 Isto é um documento com uma linha de teste.
16 \chapter{Este é outro capítulo}
17 \end{document}

```

- The language of the document can be changed with the `babel` package.

- explicar que isto muda Chapter para Capítulo, Section para Secção, etc

## Making tables



# Tables - the hard way

- You need to use the `{table}` environment.
- You need to use the `{tabular}` environment.
- You need to set the column alignment and if you want to have vertical lines between them.
- You have to set the horizontal lines you want.

```
\begin{table}[]  
\begin{tabular}{c|cl}  
cell1 & cell2 & cell3 \\ \hline  
cell4 & cell5 & cell6  
\end{tabular}  
\end{table}
```

- You can declare merged cells, partial horizontal and vertical lines, this easily becomes way too complex.

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## └ Making tables

## └ Tables - the hard way

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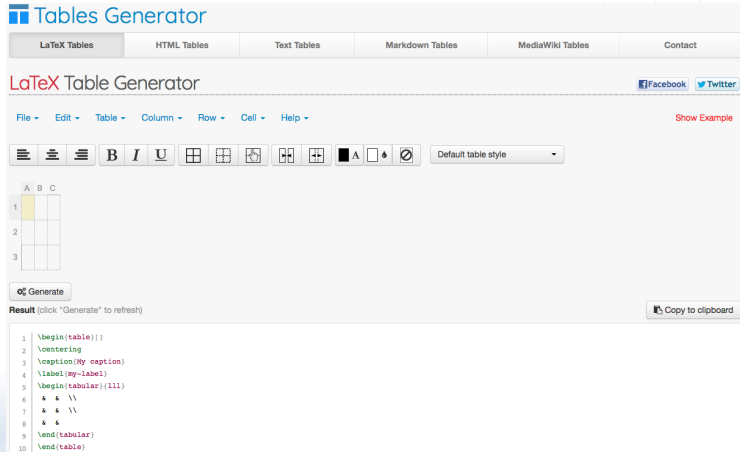
```
\begin{table}[]  
\begin{tabular}{c|c|c|}  
cell1 & cell2 & cell3 \\\hline  
cell4 & cell5 & cell6  
\end{tabular}  
\end{table}
```

- You can declare merged cells, partial horizontal and vertical lines, this easily becomes way too complex.

- Primeiro a complicada, explicar tudo
- Explica o código passo a passo

# Tables - the easy way

- Use this website [www.tablesgenerator.com](http://www.tablesgenerator.com).



The screenshot shows the 'Tables Generator' website interface. At the top, there are tabs for 'LaTeX Tables', 'HTML Tables', 'Text Tables', 'Markdown Tables', 'MediaWiki Tables', and 'Contact'. The 'LaTeX Tables' tab is selected. Below the tabs, the title 'LaTeX Table Generator' is displayed, along with social media links for Facebook and Twitter. A menu bar includes 'File', 'Edit', 'Table', 'Column', 'Row', 'Cell', and 'Help'. A toolbar contains icons for table structure (rows, columns, cells), text formatting (bold, italic, underline), and table styling (background color, border, no border). A 'Default table style' dropdown is also present. The main workspace shows a 3x3 table grid with columns labeled A, B, C and rows labeled 1, 2, 3. The first cell (A1) is highlighted in yellow. Below the grid is a 'Generate' button. To the right of the grid is a 'Show Example' link. Below the 'Generate' button, the 'Result' section displays the LaTeX code for the table, with a 'Copy to clipboard' button. The code is as follows:

```
1 \begin{table}[]
2 \centering
3 \caption{My caption}
4 \label{my-label1}
5 \begin{tabular}{|lll}
6 & & \\
7 & & \\
8 & & \\
9 \end{tabular}
10 \end{table}
```

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## └ Making tables

## └ Tables - the easy way

Tables - the easy way

- Use this website [www.tablesgenerator.com](http://www.tablesgenerator.com).

- A maneira simples, usem esta.
- Funciona estilo Excell
- Gera o código no fim, podem copiar e colar para o documento
- Dá jeito perceber o método complicado, para conseguir perceber o código gerado.



# What are *floats*?

- You may have noticed a blank space in the previous code.
- With the information inside the `[ ]`,  $\text{\LaTeX}$  decides where it will draw the table.

```
1  \begin{table}[ ]
2  \centering
3  \caption{My caption}
4  \label{my-label}
5  \begin{tabular}{lll}
6    & & \\
7    & & \\
8    & & \\
9  \end{tabular}
10 \end{table}
```

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└ Making tables

└ What are *floats*?What are *floats*?

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```
1 \begin{table}
2 \centering
3 \caption{My caption}
4 \label{my-label}
5 \begin{tabular}{lll}
6   & & \\
7   & & \\
8   & & \\
9 \end{tabular}
10 \end{table}
```

- Chama-se um float

# Types of *float*

- There are multiple types of *floats*:
  - H - Draws the *float* exactly where it is declared, may deform the text.
  - h - Draws the *float* close to where it is declared, this avoids deforming the text.
  - t - Draws the float at the top of the page in which it is declared.
  - b - Draws the *float* at the bottom of the page in which it is declared.
  - p - Draws the float in a page restricted to *floats*.
- The `{figure}` environment also uses floats *floats*.
- Use the package `{float}`

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└─ Making tables

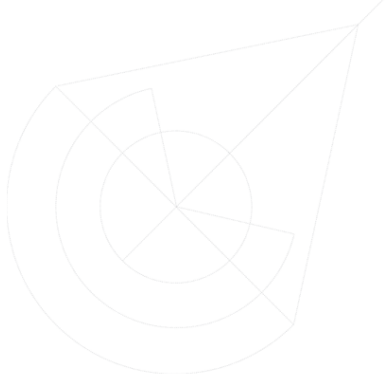
└─ Types of *float*

- Idem

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- The `(figure)` environment also uses *floats*.
- Use the package `(float)`

## Figures and images



# How to declare an image

- Use the `{graphicx}` package.
- Images need to be inside a folder where  $\text{\LaTeX}$  knows it should look.

```
\graphicspath{ {pathtofolder1}{pathtofolder2} }
```

- Images should be declared inside the `{figure}` environment.

```
\begin{figure}[float]
```

```
\centering
```

```
\includegraphics[figure alterations]{imagenname}
```

```
\end{figure}
```

- PNG, JPG, PDF are all accepted. Other file types are as well, check google in case of doubts.
- Multiple properties can be altered, check [en.wikibooks.org/wiki/LaTeX/Importing\\_Graphics](http://en.wikibooks.org/wiki/LaTeX/Importing_Graphics)

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## └ Figures and images

## └ How to declare an image

## How to declare an image

- Use the `{graphics}` package.
- Images need to be inside a folder where  $\text{\LaTeX}$  knows it should look.

```
\graphicspath{ {pathstofolder1} {pathstofolder2} }
```

- Images should be declared inside the `{figure}` environment.

```
\begin{figure}[float]  
  \centering  
  \includegraphics[figure alterations]{imagename}  
\end{figure}
```

- PNG, JPG, PDF are all accepted. Other file types are as well, check google in case of doubts.
- Multiple properties can be altered, check [en.wikibooks.org/wiki/LaTeX/Importing\\_Graphics](https://en.wikibooks.org/wiki/LaTeX/Importing_Graphics)

- Normalmente as figuras se estiverem na mesma pasta que o .tex ele vai lá buscar tudo
- Podem guardar noutra(s) pasta(s), pode dar jeito para arrumar os ficheiros
- Nome da figura não precisa de incluir extensão, mas convém
- Idem

## Lists and enumerations





# How to make a list

- The `{itemize}` environment generates unnumbered lists.
- The `{enumerate}` environment generates numbered lists.
- Nested lists are very much possible.
- Items are identified by the `\item` command.

```
\begin{itemize}
```

```
\item First item of the unnumbered list
```

```
\begin{enumerate}
```

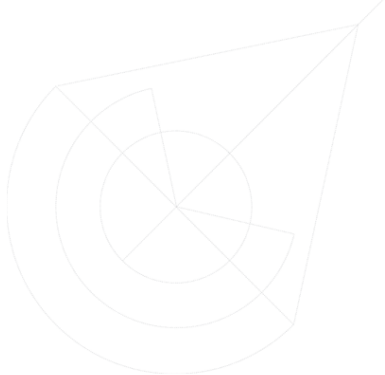
```
\item First item of the numbered sublist
```

```
\item Second item of the numbered sublist
```

```
\end{enumerate}
```

```
\item Second item of the unnumbered list
```

```
\end{itemize}
```



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## └ Lists and enumerations

## └ How to make a list

## How to make a list

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- The `{enumerate}` environment generates numbered lists.
- Nested lists are very much possible.
- Items are identified by the `\item` command.

```
\begin{itemize}
\item First item of the unnumbered list
\begin{enumerate}
\item First item of the numbered sublist
\item Second item of the numbered sublist
\end{enumerate}
\item Second item of the unnumbered list
\end{itemize}
```

- Idem

# Equations and other math topics



# Math environments

- Use the `{amsmath}` package.
- `$equation$` generates an inline equation, can be included in the middle of a sentence.
- `$$equation$$` generates a separated, centred equation.
- The `{equation}` environment generates numbered equations, this is the best option.

```
\begin{equation}  
equation  
\end{equation}
```

- A blank line inside a math environment causes a compilation error!

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## └ Equations and other math topics

## └ Math environments

## Math environments

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- `$$equation$$` generates a separated, centred equation.
- The `{equation}` environment generates numbered equations, this is the best option.

```
\begin{equation}
```

```
equation
```

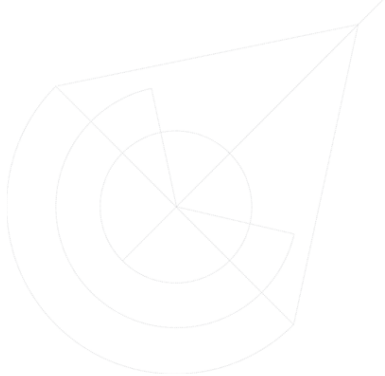
```
\end{equation}
```

- A blank line inside a math environment causes a compilation error!

- Há vários ambientes matemáticos
- Há vários packages
- o *amsmath* tem tudo o que precisam normalmente
- `$$coisa$$` é parecido com o ambiente `equation`, mas não é numerado
- o ambiente é melhor

# Greek letters and other special symbols

- You need to use the letter names in english.
  - `\alpha` writes  $\alpha$ .
  - `\beta` writes  $\beta$ .
  - etc
- There are arrows and mathematical symbols
  - `\rightarrow` writes  $\rightarrow$ .
  - `\simeq` writes  $\simeq$ .
  - etc
- All of these symbols can only be used in a math environment.
- Check the list here [en.wikibooks.org/wiki/LaTeX/Mathematics](https://en.wikibooks.org/wiki/LaTeX/Mathematics)



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## └ Equations and other math topics

## └ Greek letters and other special symbols

## Greek letters and other special symbols

- You need to use the letter names in english.
  - `\alpha` writes  $\alpha$ .
  - `\beta` writes  $\beta$ .
  - etc
- There are arrows and mathematical symbols
  - `\rightarrow` writes  $\rightarrow$ .
  - `\neq` writes  $\neq$ .
  - etc
- All of these symbols can only be used in a math environment.
- Check the list here [en.wikibooks.org/wiki/LaTeX/Mathematics](https://en.wikibooks.org/wiki/LaTeX/Mathematics)

- Se quiserem usar um destes símbolos numa frase têm de usar os  $\$$

# Fractions, parentheses and square roots

- Inside a math environment, it's declared as:

`\frac{numerator}{denominator}`

- You can have a parentheses with necessary size to envelop the fraction:

`\left(\frac{numerator}{denominator}\right)`

- This method for parentheses works with `[`, `{` e `“.”`.
- Using `\left.something\right)` causes only the right parenthesis to be drawn.
- Having a mismatched number of `\left` or `\right` causes a compilation error!
- Roots envelop the whole radicand:

`\sqrt[index]{radicand}`



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## └ Equations and other math topics

## └ Fractions, parentheses and square roots

- Explicar o que é o  $\backslash left$ .
- Por cada  $\backslash left$  é preciso um  $\backslash right$
- se não se meter o índice é uma raiz quadrada sem nada

## Fractions, parentheses and square roots

- Inside a math environment, it's declared as:  
`\frac{numerator}{denominator}`
- You can have a parentheses with necessary size to envelop the fraction:  
`\left(\frac{numerator}{denominator}\right)`
- This method for parentheses works with  $\{, [, \langle, \lceil$ .
- Using `\left something \right` causes only the right parenthesis to be drawn.
- Having a mismatched number of `\left` or `\right` causes a compilation error!
- Roots envelop the whole radicand:  
`\sqrt[degree]{radicand}`

# Superscripts, subscripts, vectors and accents

- The `^` symbol puts things in superscript, this is how you write powers.

`basis^{exponent}`  $\Rightarrow$   $\text{basis}^{\text{exponent}}$

- The `_` symbol puts things in subscript, this is how you write indices.

`basis_{subscript}`  $\Rightarrow$   $\text{basis}_{\text{subscript}}$

- Vectors are declared by the `\vec{}` command.

`\vec{v}`  $\Rightarrow$   $\vec{v}$

- For more, see [en.wikibooks.org/wiki/LaTeX/Mathematics](https://en.wikibooks.org/wiki/LaTeX/Mathematics)

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## └ Equations and other math topics

## └ Superscripts, subscripts, vectors and accents

Superscripts, subscripts, vectors and accents

- The `^` symbol puts things in superscript, this is how you write powers.  
`basic[exponent] → basicexponent`
- The `_` symbol puts things in subscript, this is how you write indices.  
`basic_(subscript) → basicsubscript`
- Vectors are declared by the `\vec{}` command.  
`\vec{v} →  $\vec{v}$`
- For more, see [en.wikibooks.org/wiki/LaTeX/Mathematics](https://en.wikibooks.org/wiki/LaTeX/Mathematics)

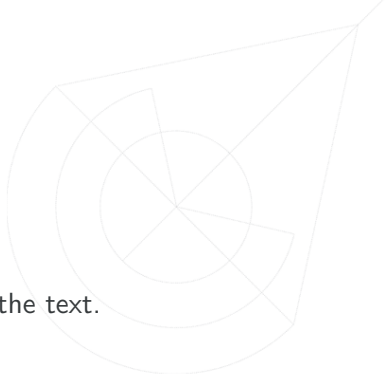
- Usar `o^` ou `o_` fora de ambiente matemático causa erro

## Referencing content



# What is a reference?

- To call, by a number, some equation, figure or table.
- There are 3 different commands for this:
  - `\label{identificationtext}`
  - `\ref{identificationtext}`
  - `\eqref{equationidentificationtext}`
- You can call the reference before and after it appears in the text.
- $\text{\LaTeX}$  deals with the pesky problem of numbering.



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## └ Referencing content

## └ What is a reference?

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- $\text{\LaTeX}$  deals with the pesky problem of numbering.

- Uma das grandes vantagens é o sistema de numeração, funciona bem
- Numeração é por ordem que são declarados
- Normalmente é preciso compilar 2x para as referências funcionarem depois de serem declaradas pela primeira vez ou serem alteradas. Tem a ver com os ficheiros auxiliares

# Referencing equations

- Just add a label to the equation:

```
\begin{equation}\label{labeltext}
```

equation content

```
\end{equation}
```

- You then call the reference with the `\eqref` command:

"As demonstrated in relation `\eqref{labeltext}`..."

- This command is made especially for equations, the reference appears between parenthesis.



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## └ Referencing content

## └ Referencing equations

- idem

## Referencing equations

- Just add a label to the equation:

```
\begin{equation} \label{labeltext}  
equation content  
\end{equation}
```

- You then call the reference with the `\eqref` command:

"As demonstrated in relation `\eqref{labeltext}`..."

- This command is made especially for equations, the reference appears between parenthesis.

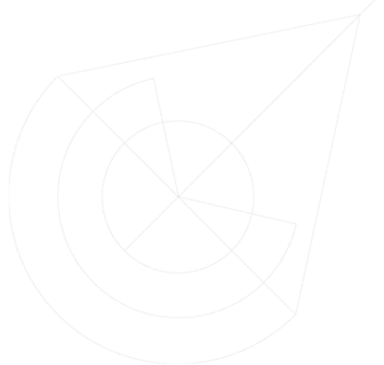


# Referenciar tabelas e figuras

- The figure/table needs to have a caption.
- Just add a label to the figure/table.

```
\begin{table}[]  
\caption{legend}  
\label{labeltext}  
\begin{tabular}{c|cl}  
Table content...  
\end{tabular}  
\end{table}
```

- You then call the reference with the `\ref` command.
- Usually, table captions are placed above the table.



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└ Referencing content

└ Referenciar tabelas e figuras

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Table content...  
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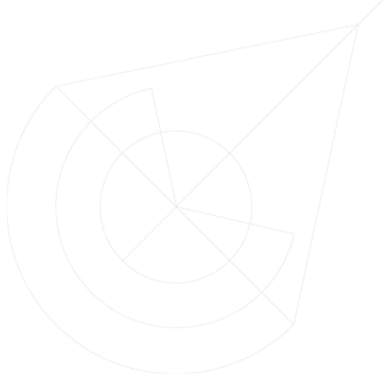
- idem

# Referenciar tabelas e figuras

- The figure/table needs to have a caption.
- Just add a label to the figure/table.

```
\begin{figure}[float]  
\centering  
\includegraphics[...]{imagenname}  
\caption{legend}  
\label{labeltext}  
\end{figure}
```

- You then call the reference with the `\ref` command.



Mini-workshop  $\text{\LaTeX}$  and Git└ Introduction to  $\text{\LaTeX}$ 

## └ Referencing content

## └ Referenciar tabelas e figuras

- idem

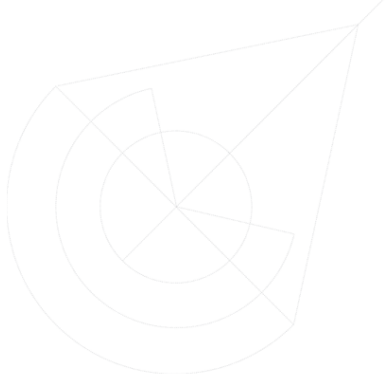
## Referenciar tabelas e figuras

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```
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\centering  
\includegraphics[...]{imagenname}  
\caption{legend}  
\label{labelftext}  
\end{figure}
```

- You then call the reference with the `\ref` command.

## Bibliographies and citations



# How to make a bibliography

- Easiest way is to have a .bib file.
- This file can be made by hand or with a reference management software (Mendeley, Bibdesk or other).
- I'll show you how to do it by hand.
- Generate a .bib file, somehow, by changing the extension of a .txt created with notepad, for example.
- Go get the reference text and copy it into the .bib file.

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## └ Bibliographies and citations

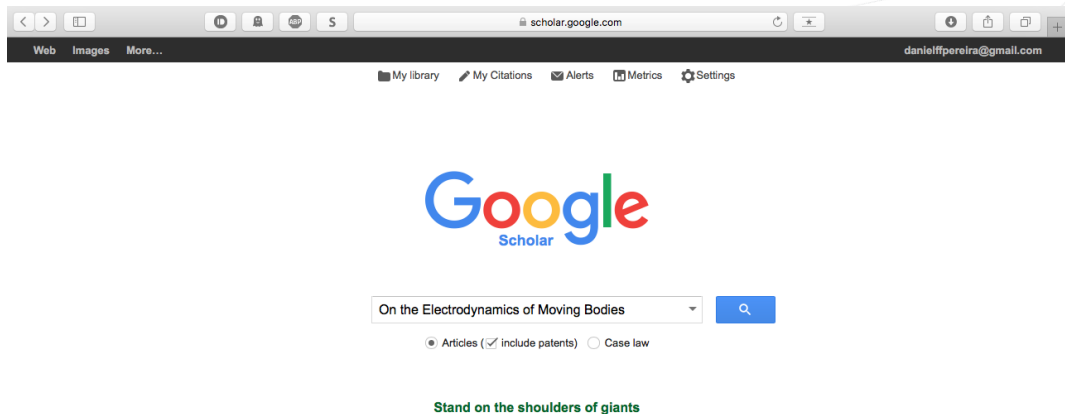
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- Generate a .bib file, somehow, by changing the extension of a .txt created with notepad, for example.
- Go get the reference text and copy it into the .bib file.

- Podem declarar a bibliografia dentro do .tex, mas assim é mais fácil
- Agora mostro-vos onde ir buscar um texto de referência facilmente

# Where to get references





# Where to get references

The screenshot shows a Google Scholar search interface. The browser address bar displays 'scholar.google.com'. The search bar contains the text 'On the Electrodynamics of Moving Bodies'. Below the search bar, the results are listed. The first result is a PDF document titled 'On the electrodynamics of moving bodies' by A. Einstein, dated 1905, available from libarch.nmu.org.ua. The second result is an HTML document with the same title, dated 1952, available from sites.ifi.unicamp.br. The interface includes navigation links like 'Web', 'Images', and 'More...', a 'My Citations' button, and a sidebar with filters for 'Articles', 'Case law', 'My library', 'Any time', and 'Sort by relevance'.

Web Images More... danielffpereira@gmail.com

Google On the Electrodynamics of Moving Bodies

Scholar About 35,200 results (0.05 sec) My Citations

**Articles**

Case law

My library

**Any time**

Since 2017

Since 2016

Since 2013

Custom range...

**Sort by relevance**

Sort by date

**[PDF] On the electrodynamics of moving bodies**

[A Einstein - 1905 - libarch.nmu.org.ua](#)

It is known that Maxwell's electrodynamics—as usually understood at the present time—when applied to moving bodies, leads to asymmetries which do not appear to be inherent in the phenomena. Take, for example, the reciprocal electrodynamic action of a magnet and a

Cited by 929 Related articles All 141 versions Cite Save More

**[PDF] nmu.org.ua**

**[HTML] On the electrodynamics of moving bodies**

[A Einstein - The principle of relativity, 1952 - sites.ifi.unicamp.br](#)

It is known that Maxwell's electrodynamics—as usually understood at the present time—when applied to moving bodies, leads to asymmetries which do not appear to be inherent in the phenomena. Take, for example, the reciprocal electrodynamic action of a magnet and a

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**[HTML] unicamp.br**

**On the electrodynamics of moving bodies**

[A Einstein - 1923 - philpapers.org](#)

Abstract It is known that Maxwell's electrodynamics—as usually understood at the present time—when applied to moving bodies, leads to asymmetries which do not appear to be inherent in the phenomena. Take, for example, the reciprocal electrodynamic action of a

# Where to get references

The screenshot shows a Google Scholar search for "On the Electrodynamics of Moving Bodies". The search results page displays the title, author (Albert Einstein), and a brief abstract. A pop-up window titled "Cite" is open, showing various citation formats for the selected article. The MLA format is highlighted, showing the citation: "Einstein, Albert. "On the electrodynamics of moving bodies." (1905).". Other formats shown include APA, Chicago, Harvard, and Vancouver. The pop-up also includes links to BibTeX, EndNote, RefMan, and RefWorks.

**Cite**

Copy and paste a formatted citation or use one of the links to import into a bibliography manager.

MLA Einstein, Albert. "On the electrodynamics of moving bodies." (1905).

APA Einstein, A. (1905). On the electrodynamics of moving bodies.

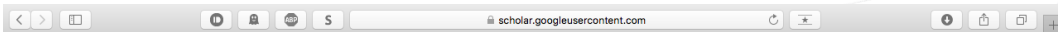
Chicago Einstein, Albert. "On the electrodynamics of moving bodies." (1905).

Harvard Einstein, A., 1905. On the electrodynamics of moving bodies.

Vancouver Einstein A. On the electrodynamics of moving bodies.

[BibTeX](#) [EndNote](#) [RefMan](#) [RefWorks](#)

# Where to get references



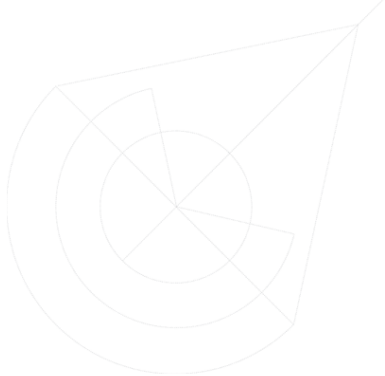
```
@article{einstein1905electrodynamics,  
  title={On the electrodynamics of moving bodies},  
  author={Einstein, Albert},  
  year={1905}  
}
```

# Understanding the citation text

```
@article{einstein1905electrodynamics,  
  title={On the electrodynamics of moving bodies},  
  author={Einstein, Albert},  
  year={1905}  
}
```

- Different publications want different formats.

```
@typeofsource{citetext,  
  title={Source title},  
  author={Authors},  
  year={Publication year}  
}
```



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## └ Bibliographies and citations

## └ Understanding the citation text

## Understanding the citation text

```
@article[einstein1905]{einstein1905electrodynamics,  
  title={On the electrodynamics of moving bodies},  
  author={Einstein, Albert},  
  year={1905}  
}  
- Different publications want different formats.  
@typesource[citabest,  
  title={Source title},  
  author={Authors},  
  year={Publication year}  
}]
```

- Há muitas mais informações que podem vir com a referência
- Podem por exemplo querer só a inicial do primeiro nome dos autores.

# How to insert the bibliography in the document

- After preparing a .bib file, you need to feed it to  $\text{\LaTeX}$ .

$\text{\backslash bibliograph}\{\text{bibliography}\}$

- There are different styles of bibliographies, they change the way things are presented.

$\text{\backslash bibliographstyle}\{\text{plain}\}$

- By default,  $\text{\LaTeX}$  only includes cited sources in the bibliography, if you want uncited sources to be included, use the code:

$\text{\backslash nocite}\{*\}$

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## └ Bibliographies and citations

## └ How to insert the bibliography in the document

## How to insert the bibliography in the document

- After preparing a .bib file, you need to feed it to L<sup>A</sup>T<sub>E</sub>X.  
`\bibliography{bibliography}`
- There are different styles of bibliographies, they change the way things are presented.  
`\bibliographystyle{plain}`
- By default, L<sup>A</sup>T<sub>E</sub>X only includes cited sources in the bibliography, if you want uncited sources to be included, use the code:  
`\nocite{*}`

- idem
- há vários estilos, se o texto está em itálico por exemplo.
- só têm de se preocupar com o style se forem escrever para uma revista

# How to cite a source

- After having included the bibliography in the document, this is cited with the `\cite{citetext}` command.
- If you wish to cite multiple sources at the same time, do:

`\cite{citetext1,citetext2,citetext3,...}`

- For more, see [en.wikibooks.org/wiki/LaTeX/Bibliography\\_Management](http://en.wikibooks.org/wiki/LaTeX/Bibliography_Management)



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## └ Bibliographies and citations

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## How to cite a source

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- idem

This concludes the  $\text{\LaTeX}$ mini-workshop

Mini-workshop  $\text{\LaTeX}$  and Git

- └ Introduction to  $\text{\LaTeX}$

- └ This concludes the  $\text{\LaTeX}$  mini-workshop

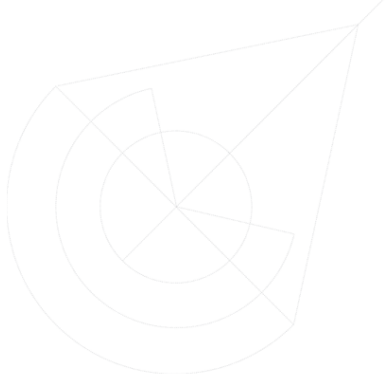
This concludes the  $\text{\LaTeX}$  mini-workshop

- Any questions

# Introduction to Git



# Intro



# Initial notions

- What is it?
  - A database control and sharing system.
- GitHub is a very popular option, it's free and open. Create an account on GitHub.
- You need to install the git distribution.
  - Windows: [gitforwindows.org](https://gitforwindows.org)
  - Mac: [sourceforge.net/projects/git-osx-installer/files/](https://sourceforge.net/projects/git-osx-installer/files/)
  - Linux: run the following code in the console (this should work for most distros)

`sudo apt-get update`

`sudo apt-get install git`

- You should use a Git client:
  - GitKraken: [www.gitkraken.com/git-client](https://www.gitkraken.com/git-client)
  - GitHub Desktop: [desktop.github.com](https://desktop.github.com)

Mini-workshop  $\text{\LaTeX}$  and Git

## └ Introduction to Git

## └└ Intro

## └└└ Initial notions

## Initial notions

- What is it?
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```
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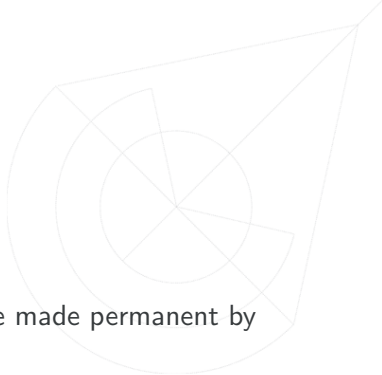
```
sudo apt-get install git
```

- You should use a Git client:
  - GitKraken: [www.gitkraken.com/git-client](https://www.gitkraken.com/git-client)
  - GitHub Desktop: [desktop.github.com](https://desktop.github.com)

- Git actually can run from the command line
- Using it that way is not a good idea for beginners
- You are going to use GitHub, so use GitHub Desktop client
- The practical explanations presented in the rest of this workshop assume you are using GitHub Desktop client
- SO USE OTHER CLIENTS AT YOUR OWN RISK

# What is a repository

- A repository is a data structure that:
  - Stores a set of files and/or a directory structure.
  - A historical record of the changes to those files.
- The main repository lives somewhere in a server.
- You can **clone** a copy of the repository to your PC.
- Changes are made locally to the cloned repository can be made permanent by **committing** to it.
- Changes can then be **pushed** to the external repository.
- If you are working on another computer, you can then **pull** the changes from the external repository.





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## └ Introduction to Git

## └└ Intro

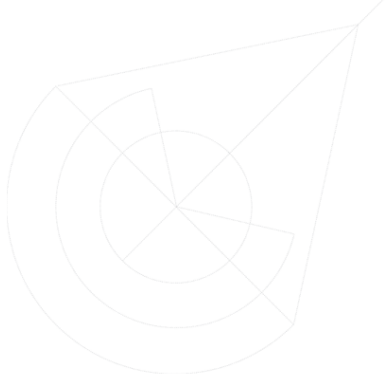
## └└└ What is a repository

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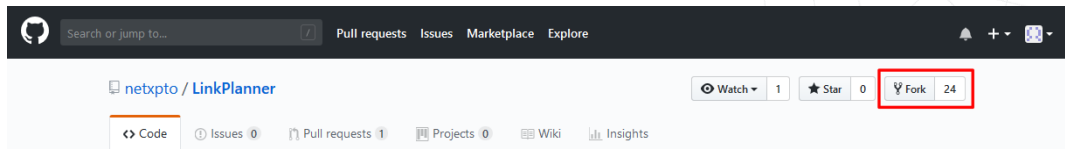
- Similar to Dropbox or OneDrive, but it only uploads when you tell it to
- Read slide and explain line by line
- For the work in this class you will be working on a repository that already exists, but it belongs to someone else, so... NEXT SLIDE

## Forking repositories



# What the fork?

- A fork is a copy of another repository.
- In the GitHub website, navigate to the repository you want to fork.



2018-11-07

# Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

## └ Introduction to Git

### └ Forking repositories

#### └ What the fork?

- A fork is a copy of someone's repository to your account
- You can't change someone else's repository directly, but you can change your fork of it as much as you want
- Click on the Fork button and... NEXT SLIDE

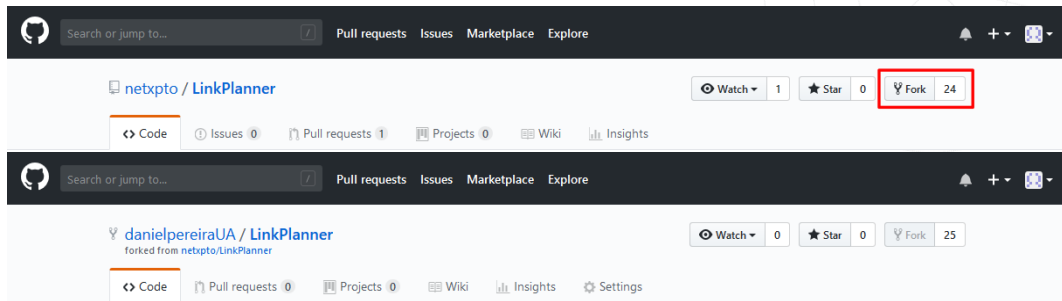
What the fork?

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# How to fork a repository

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## └ Introduction to Git

## └ Forking repositories

## └ How to fork a repository

## How to fork a repository

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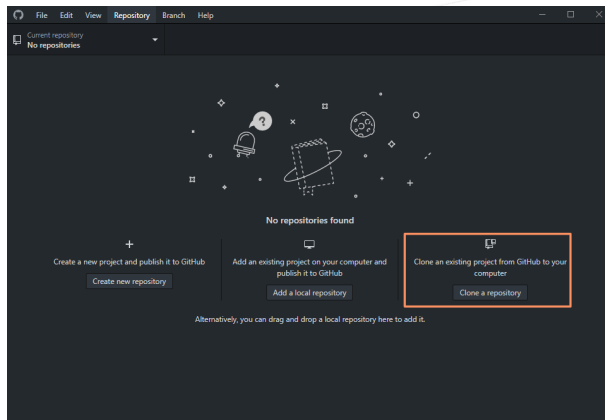


- This is your fork
- Point out the usernames in the figure
- Now you want to work on your fork, alter files and such, so you...

NEXT SLIDE

# How to clone your fork

- This is not the only way to do it, but it is the easiest.
- In the GitHub Desktop app, choose to *clone a repository*.



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## Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

### └ Introduction to Git

### └ Forking repositories

### └ How to clone your fork

How to clone your fork

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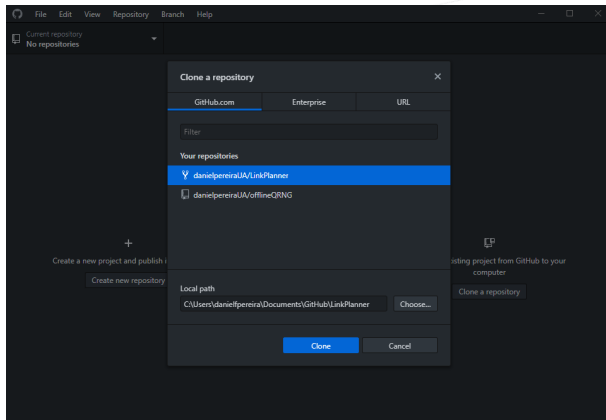


- ... clone your fork to your machine
- you can do this in multiple ways, do it this way to be simpler
- click on clone a repository... NEXT SLIDE



# How to clone your fork

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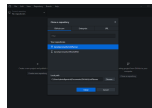
## └ Introduction to Git

## └ Forking repositories

## └ How to clone your fork

## How to clone your fork

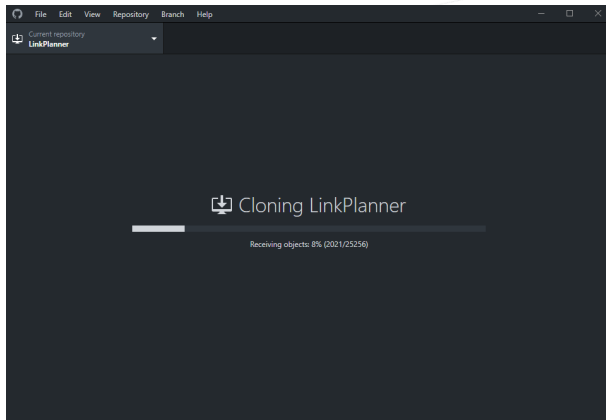
- This is not the only way to do it, but it is the easiest.
- In the GitHub Desktop app, choose to clone a repository.



- this shows a list of the repositories associated to your GitHub account
- point out they can choose the path to where it will download the files
- choose the one you want to clone and... NEXT SLIDE

# How to clone your fork

- This is not the only way to do it, but it is the easiest.
- In the GitHub Desktop app, choose to *clone a repository*.
- Then you just have wait while it downloads, may take a while.



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# Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

## └ Introduction to Git

### └ Forking repositories

#### └ How to clone your fork

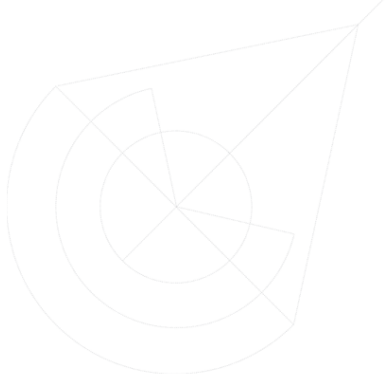
- just wait

#### How to clone your fork

- This is not the only way to do it, but it is the easiest.
- In the GitHub Desktop app, choose to clone a repository.
- Then you just have wait while it downloads, may take a while.



Working inside your fork



# Branches

- What is a branch?
  - You can see it as a split of a repository inside it.
  - While a fork is to another account, a branch remains in the same account.
  - Allows code to be tested before it is included in the main branch.
- You won't have to worry about branches much in this class, only that you work on the branch allotted to you.

Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

## └ Introduction to Git

## └ Working inside your fork

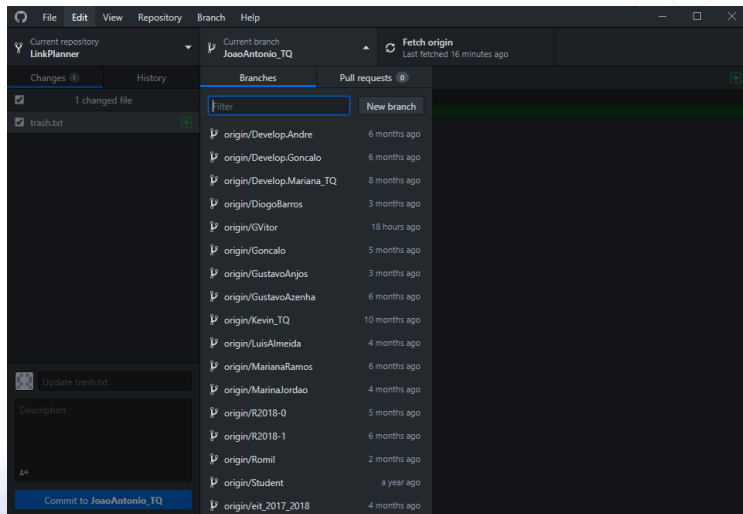
## └ Branches

## Branches

- What is a branch?
  - You can see it as a split of a repository inside it.
  - While a fork is to another account, a branch remains in the same account.
  - Allows code to be tested before it is included in the main branch.
- You won't have to worry about branches much in this class, only that you work on the branch allotted to you.

- before you do anything, make sure you are working on the branch allotted to you

# Branches



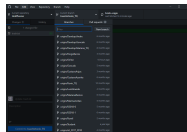


2018-11-07

## Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

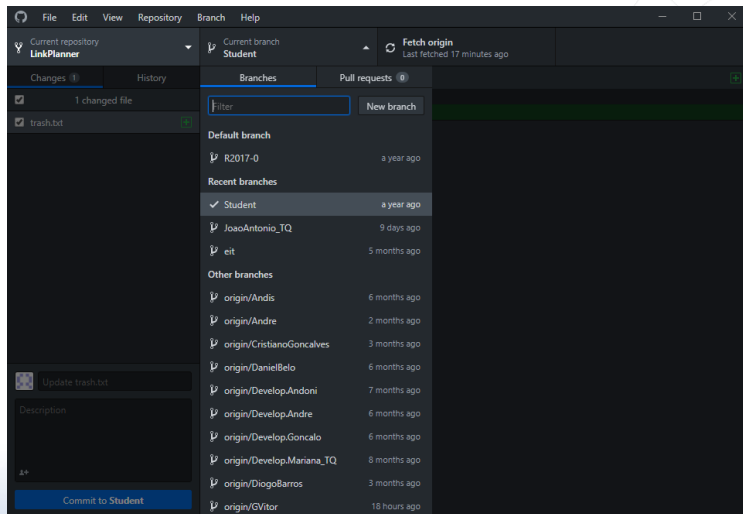
- └ Introduction to Git
  - └ Working inside your fork
    - └ Branches

Branches



- before you do anything, make sure you are working on the branch allotted to you
- there are only branches with origin/... in the branch name means that it is not yet listed on your fork however... NEXT SLIDE

# Branches



# Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

## Working inside your fork

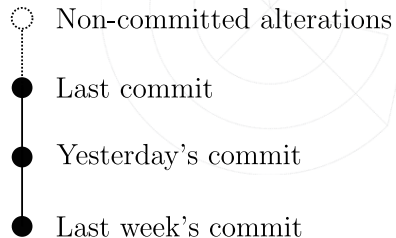
## └─ Branches

[illegible]

- after the first selection, it is included in your fork, use this version from then on

# Committing, pushing and pulling

- Alterations made on your **clone** (that lives on your computer) can be made “official” by *committing* to them.
- You can discard changes by *checking out* the version of the latest commit. You can even **check out** a version of a file from any previous commit.
- The alterations you make this way are local to your machine, you need to **push** them to your “cloud” repository.
- If you wish to work on your repository on another machine, you will need to **pull** the latest version from the “cloud” repository.



Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

## └ Introduction to Git

## └ Working inside your fork

## └ Committing, pushing and pulling

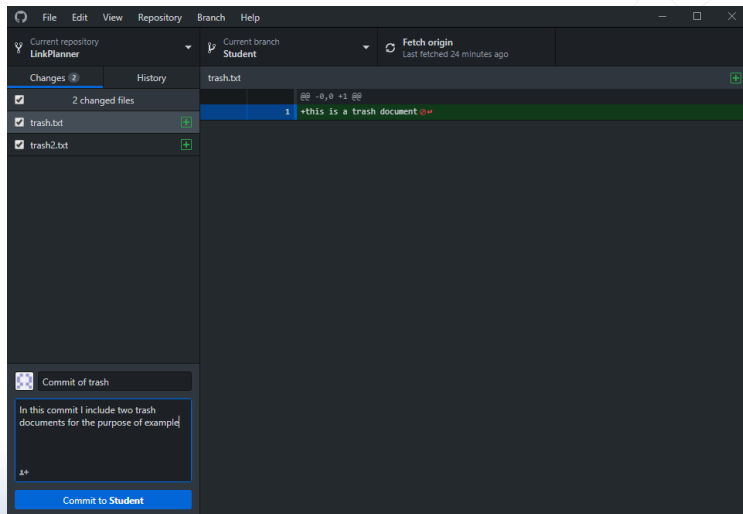
## Committing, pushing and pulling

- Alterations made on your **clone** (that lives on your computer) can be made "official" by committing to them.
- You can discard changes by **checking out** the version of the latest commit. You can even **check out** a version of a file from any previous commit.
- The alterations you make this way are local to your machine, you need to **push** them to your "cloud" repository.
- If you wish to work on your repository on another machine, you will need to **pull** the latest version from the "cloud" repository.



- You can now freely work on your clone of your fork of the original repository
- Checking out files from previous commits is not the easiest thing you can do, don't do it lightly.

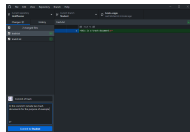
# Committing, pushing and pulling



Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

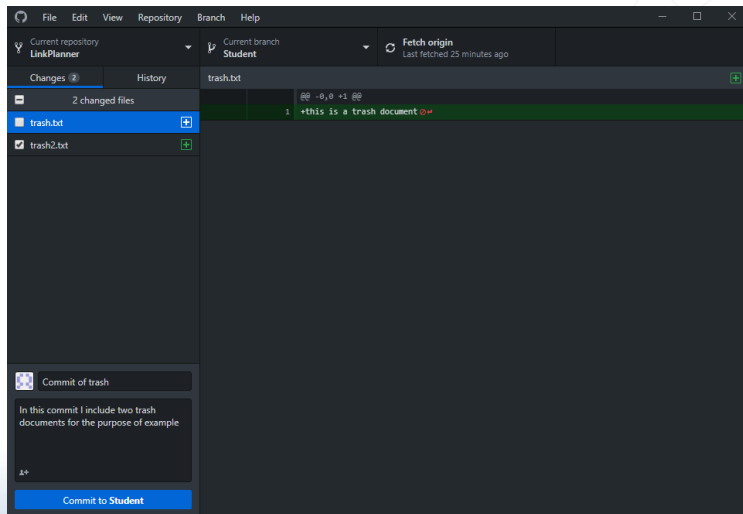
- └ Introduction to Git
  - └ Working inside your fork
    - └ Committing, pushing and pulling

Committing, pushing and pulling



- here I have 2 different changes that I haven't committed yet
- You need to write a summary (point to it) and a description of the changes you made.
- After that click commit.

# Committing, pushing and pulling

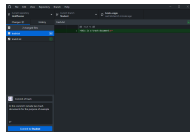




Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

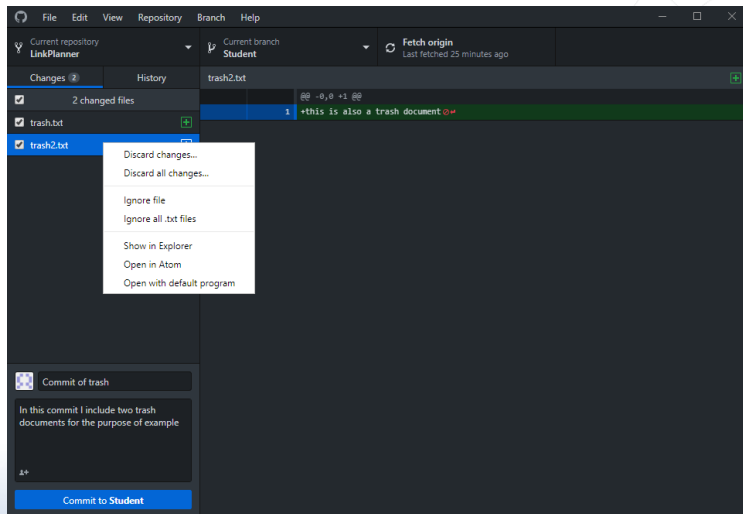
- └ Introduction to Git
  - └ Working inside your fork
    - └ Committing, pushing and pulling

Committing, pushing and pulling



- I can choose not to include some files in the commit, these can be committed at a later stage or discarded.
- Point to the checkmarks.

# Committing, pushing and pulling

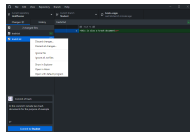


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## Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

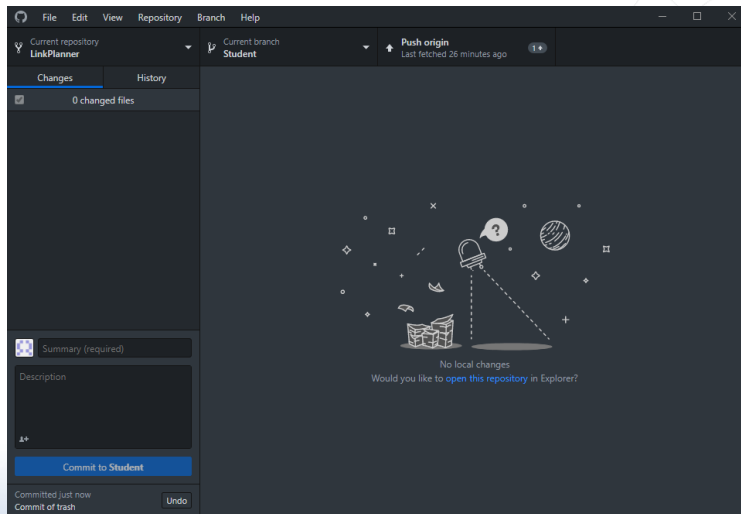
- └ Introduction to Git
  - └ Working inside your fork
    - └ Committing, pushing and pulling

Committing, pushing and pulling



- The discarding options appear if you right click the changes.

# Committing, pushing and pulling

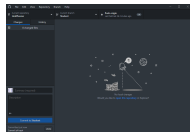


2018-11-07

## Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

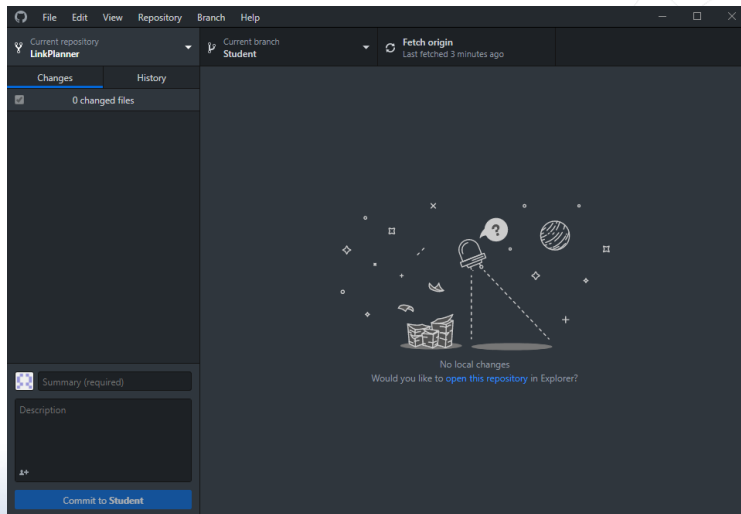
- └ Introduction to Git
  - └ Working inside your fork
    - └ Committing, pushing and pulling

Committing, pushing and pulling



- After you commit, you need to push those changes to the cloud...  
NEXT SLIDE

# Committing, pushing and pulling

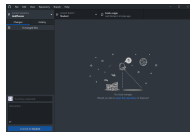


2018-11-07

## Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

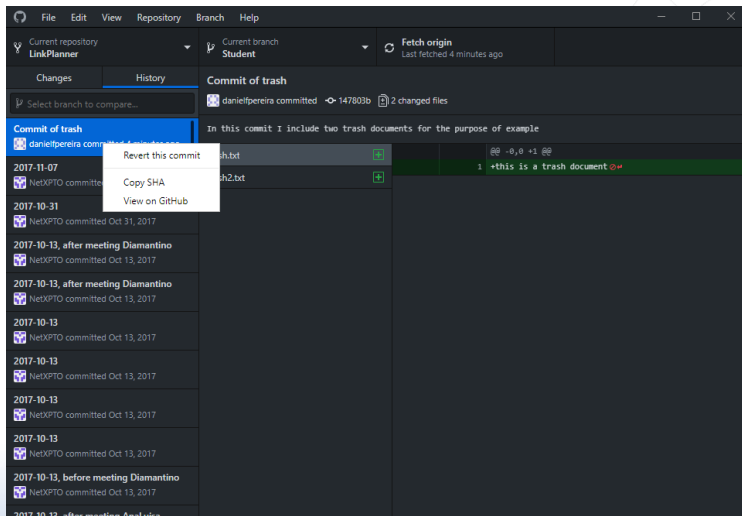
- └ Introduction to Git
  - └ Working inside your fork
    - └ Committing, pushing and pulling

Committing, pushing and pulling



- This is what it looks like after pushing

# Committing, pushing and pulling



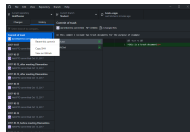


2018-11-07

## Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

- └ Introduction to Git
  - └ Working inside your fork
    - └ Committing, pushing and pulling

Committing, pushing and pulling



- You revert a commit from the history tab

## Communicating between forks



# Pull requests

- The alterations you made and pushed to your account only live in your fork.
- If you want to share them with someone else (for example the owner of the original repository) you need to open a pull request.

Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

└ Introduction to Git

└ Communicating between forks

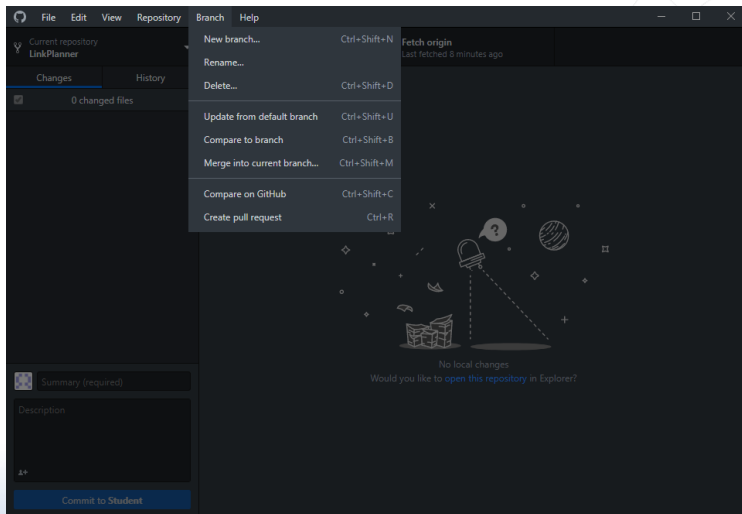
└ Pull requests

## Pull requests

- The alterations you made and pushed to your account only live in your fork.
- If you want to share them with someone else (for example the owner of the original repository) you need to open a pull request.

- After you committed and pushed your alterations, if you want to share your alterations, you need to request a pull from your account to theirs

# Pull requests



2018-11-07

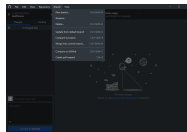
## Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

- └ Introduction to Git

- └ Communicating between forks

- └ Pull requests

Pull requests



- Go here on the desktop app, click Create pull request, this takes you to... NEXT SLIDE

# Pull requests

netxpto / LinkPlanner

Watch 1

Star 0

Fork 25

Code

Issues 0

Pull requests 1


Projects 0

Wiki

Insights


## Open a pull request

Create a new pull request by comparing changes across two branches. If you need to, you can also [compare across forks](#).



base fork: netxpto/LinkPlanner


base: Student



head fork: danielpereiraUA/LinkPlanner

compare: Student

✓ **Able to merge.** These branches can be automatically merged.



Commit of trash

Write

Preview

AA B i “ < > ↺ ≡ ≡ ≡ @ 📌 ↶

In this commit I include two trash documents for the purpose of example

Attach files by dragging & dropping, [selecting them](#), or pasting from the clipboard.

☒ Allow edits from maintainers. [Learn more](#)

Create pull request

Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

## └ Introduction to Git

## └ Communicating between forks

## └ Pull requests

- The website...
- Note the arrow, its direction
- Note the branches and forks on each side
- if you did everything right, it should say Able to merge, else it will tell you there are conflicts
- I'll explain what conflicts are after

## Pull requests





# Pull requests

- The alterations you made and pushed to your account only live in your fork.
- If you want to share them with someone else (for example the owner of the original repository) you need to open a pull request.
- The owner of the repository you are requesting the pull to needs to approve it before it actually happens.

Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

## └ Introduction to Git

## └ Communicating between forks

## └ Pull requests


## Pull requests

- The alterations you made and pushed to your account only live in your fork.
- If you want to share them with someone else (for example the owner of the original repository) you need to open a pull request.
- The owner of the repository you are requesting the pull to needs to approve it before it actually happens.

- the owner of the repository being pulled to needs to authorize, he'll have to deal with the conflicts

# Pull requests

- The alterations you made and pushed to your account only live in your fork.
- If you want to share them with another fork of the same repository (for example original repository) you need to open a pull request.
- The owner of the repository you are requesting the pull to needs to approve it before it actually happens.
- Now say you want to update your fork from another fork of the same repository (for example, from the original repository).
- You do the reverse of what you did previously.
- Create a pull request from the fork you want to pull from into your fork.



base fork: **danielpereiraUA/LinkPlanner** ▼

base: **Student** ▼

←

head fork: **netxpto/LinkPlanner** ▼

compare: **Student** ▼

Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

## └ Introduction to Git

## └ Communicating between forks

## └ Pull requests


## Pull requests




- The alterations you made and pushed to your account only live in your fork.
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- You do the reverse of what you did previously.
- Create a pull request from the fork you want to pull from into your fork.

0 | [base fork: danielquast/MLTaffness](#) | [base: Student](#) | [base fork: danielquast/MLTaffness](#) | [original: Student](#)

- now if you want to update your fork from an external fork, you do the same as before
- note the arrow
- Note the branches and forks on each side


# Pull requests


 **danielpereiraUA / LinkPlanner**  
forked from netxpto/LinkPlanner


 Watch ▾ 0  Star 0  Fork 25


[↔ Code](#) [🔗 Pull requests 0](#) [📁 Projects 0](#) [📖 Wiki](#) [📊 Insights](#) [⚙ Settings](#)

**Initial upload** [Manage topics](#) [Edit](#)

 **791** commits


 **25** branches

 **0** releases

 **10** contributors

Branch: R2017-0 ▾ **New pull request** [Create new file](#) [Upload files](#) [Find file](#) [Clone or download ▾](#)

This branch is even with netxpto:R2017-0. [🔗 Pull request](#) [📄 Compare](#)

 **netxpto** 2017-11-07

Latest commit cadabbe on Nov 7, 2017

📁 doc/tex	2017-11-07	a year ago
📁 include	2017-10-13, before meeting Diamantino	a year ago
📁 lib	2017-10-13, after meeting Diamantino	a year ago

2018-11-07

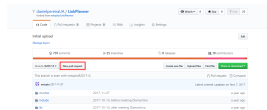
# Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

## └ Introduction to Git

## └ Communicating between forks

## └ Pull requests

### Pull requests



- to get there, go to your repository's page and click here

What if things go wrong?



# Conflicts

- A conflict arises when:
  - Change a file on PC A, push it to the cloud.
  - Change the same file on PC B before pulling the changes made on PC A.
  - When you then try to pull/push the changes made on PC A/B, you will have a conflict.
- Git knows you made changes on both machines, it even knows what changes you made in which.
- It needs you to tell it what changes to accept and what changes to discard.
- This is called merging.



Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

## └ Introduction to Git

## └ What if things go wrong?

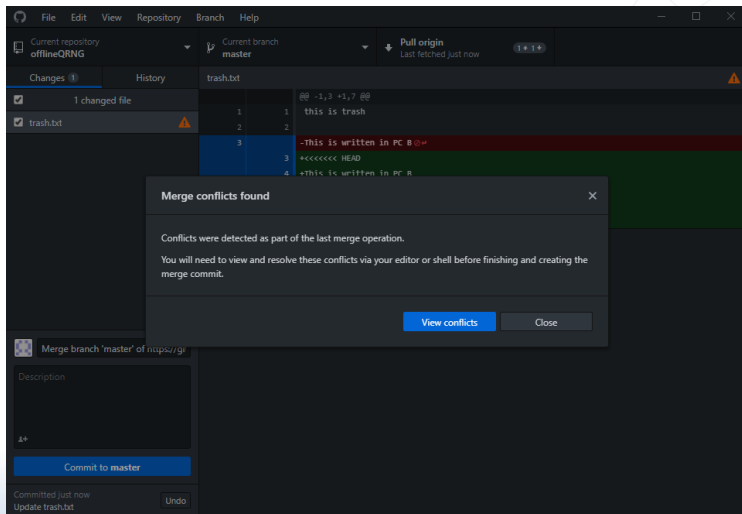
## └ Conflicts

## Conflicts

- A conflict arises when:
  - Change a file on PC A, push it to the cloud.
  - Change the same file on PC B before pulling the changes made on PC A.
  - When you then try to pull/push the changes made on PC A/B, you will have a conflict.
- Git knows you made changes on both machines, it even knows what changes you made in which.
- It needs you to tell it what changes to accept and what changes to discard.
- This is called *merging*.

- what is a conflict?
- just follow the slide

# Conflicts



2018-11-07

## Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

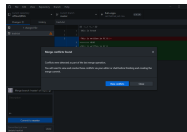
└ Introduction to Git

└ What if things go wrong?

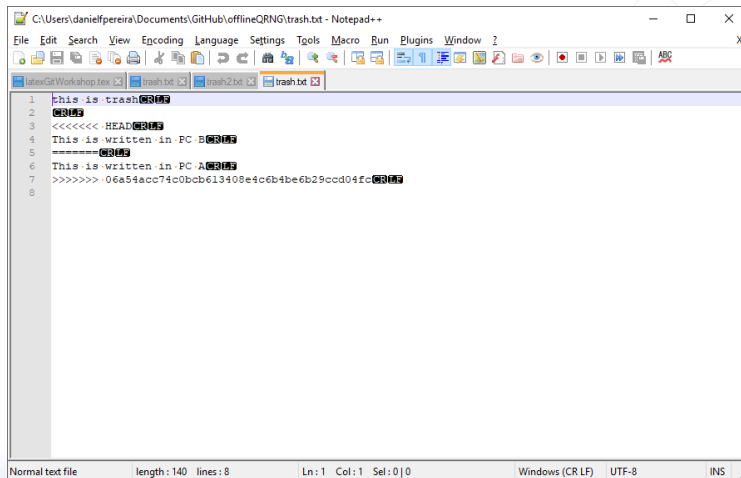
└ Conflicts

- this is what the app will tell you
- note the danger logo
- there is a conflict on one file

Conflicts



# Conflicts



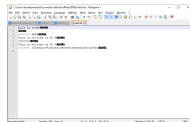
```
1 this is trashCRIFS
2 CRIFS
3 <<<<<< HEADCRIFS
4 This is written in PC-BCRIFS
5 =====CRIFS
6 This is written in PC-ACRIFS
7 >>>>>> 06a54acc74c0bcb613408e4c6b4be6b29ccd04fcCRIFS
8
```

Normal text file    length: 140   lines: 8    Ln: 1   Col: 1   Sel: 0 | 0    Windows (CR LF)    UTF-8    INS

Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

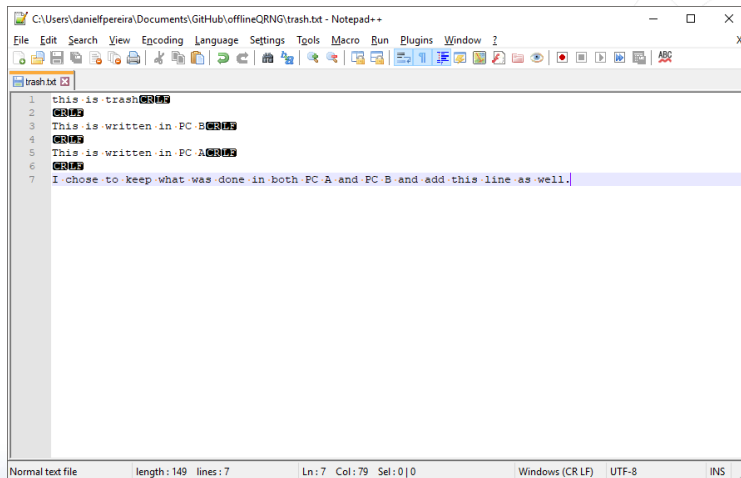
- └ Introduction to Git
  - └ What if things go wrong?
    - └ Conflicts

## Conflicts



- I am working on PC B
- Everything above the ===== line is what I have done in PC B
- Everything below the ===== line is what is in the cloud
- The text in the end identifies the commit in which what was in the cloud was added

# Conflicts



CAUsers\danielfpereira\Documents\GitHub\offlineQRNG\trash.txt - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

trash.txt

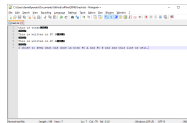
```
1 this is trashCRUI
2 CRUI
3 This is written in PC-B CRUI
4 CRUI
5 This is written in PC-A CRUI
6 CRUI
7 I chose to keep what was done in both PC-A and PC-B and add this line as well.
```

Normal text file length: 149 lines: 7 Ln: 7 Col: 79 Sel: 0 | 0 Windows (CR LF) UTF-8 INS

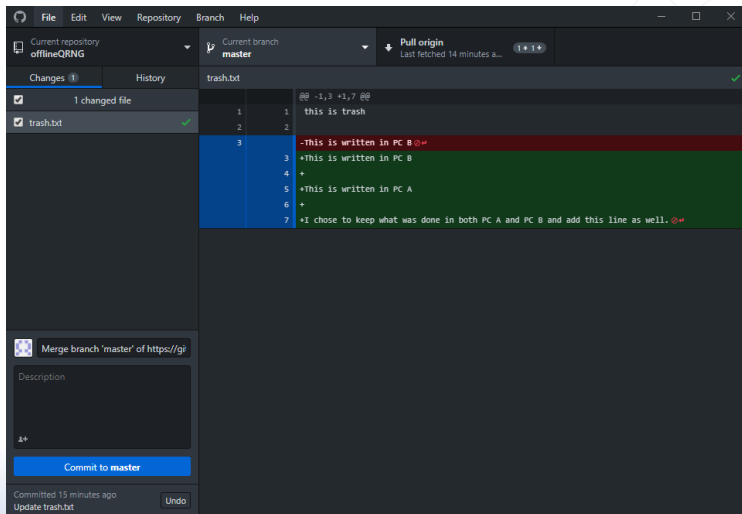
Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

- └ Introduction to Git
- └ What if things go wrong?
- └ Conflicts

- this is what a conflict solution may look like
- you may want to delete one of the versions
- you can write anything you want



# Conflicts

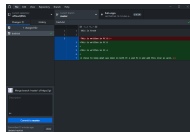




Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

- └ Introduction to Git
- └ What if things go wrong?
- └ Conflicts

Conflicts

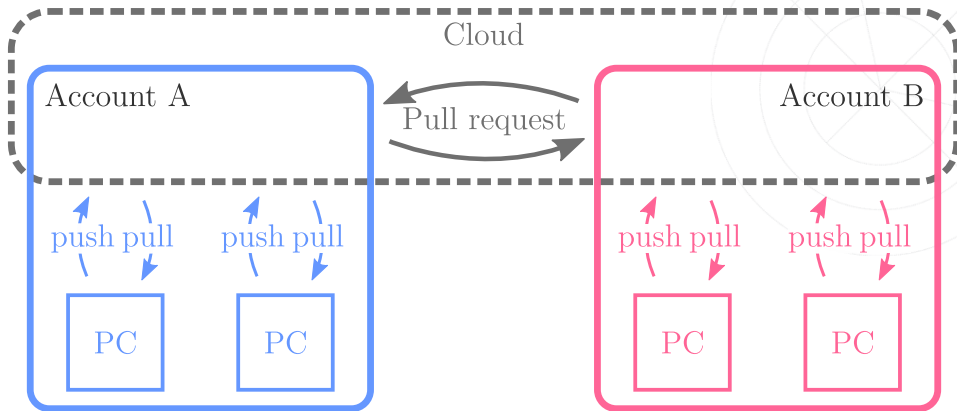


- after the conflict has been solved
- note the danger logo is gone
- note the summary: it is automatically filled in by the app, you can change it if you want but I don't recommend it

# Summary



# Topology of communications



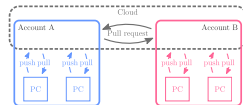
Mini-workshop  $\text{\LaTeX}$  and Git

└ Introduction to Git

└ Summary

└ Topology of communications

Topology of communications



- explain the whole figure



This concludes the Git mini-workshop

2018-11-07

## Mini-workshop L<sup>A</sup>T<sub>E</sub>X and Git

- └ Introduction to Git

- └ This concludes the Git mini-workshop

This concludes the Git mini-workshop

- Any questions?

# The end!

