Uma Introdução ao LaTeX[1]

Parte 2: Documentos Estruturados & muito mais

Luiz Rafael dos Santos

IFC-Camboriú

2 de dezembro de 2013

[1] Adaptado de "An interactive introduction to LaTeX" por John Lees-Miller.

Sumário

Documentos Estruturados

- Na Parte 1, aprendemos sobre comandos e ambientes para digitar textos e textos matemáticos.
- Agora, aprenderemos sobre comandos e ambientes para documentos estruturados.
- Você pode tentar os novos comandos no writeLaTeX:

Clique aqui para abrir o documento-exemplo no **writeLaTeX**

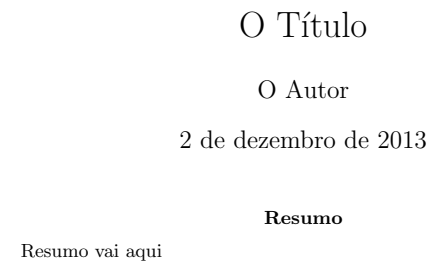
Ou vá para esta URL: `http://bit.ly/1cU9qBC`
Para melhores resultados, por favor use Google Chrome ou FireFox.

- Vamos começar!

Título e Resumo

- Informe ao LaTeX no preâmbulo o título, usando o comando `\title` e o autor, usando o comando `\author`.
- Então use `\maketitle` no documento para realmente criar o título.
- Use o ambiente `abstract` para criar um resumo.

```
\documentclass{article}
\usepackage[brazil]{babel}
\usepackage[T1]{fontenc}
\usepackage{ae,aecompl}
\usepackage[utf8x]{inputenc}

\title{O Título}

\author{O Autor}

\date{\today}

\begin{document}
\maketitle

\begin{abstract}
Resumo vai aqui
\end{abstract}

\end{document}
```



Seções

- Apenas utilize os comandos `\section` e `\subsection` para seções e subseções.
- Você pode adivinhar o que os comandos `\section*` e `\subsection*` fazem?

```
\documentclass{article}
\usepackage[brazil]{babel}
\usepackage[T1]{fontenc}
\usepackage{ae,aecompl}
\usepackage[utf8x]{inputenc}

\begin{document}
\section{Introdução}
O problema de \ldots

\section{Método}
Investigamos os seguintes fatos\ldots
\subsection{Preparação de amostra}

\section{Resultados}

\section{Conclusão}
\end{document}
```

1 Introdução

O problema de . . .

2 Método

Investigamos os seguintes fatos. . .

2.1 Preparação de amostra

3 Resultados

4 Conclusão

Rótulos e Referência Cruzada

- Use `\label` para rotular e `\ref` para referência cruzada automática.
- O pacote `amsmath` disponibiliza o comando `\eqref` para referenciar equações.

```
\documentclass{article}
\usepackage[brazil]{babel}
\usepackage[T1]{fontenc}
\usepackage{ae,aecompl}
\usepackage[utf8x]{inputenc}
\usepackage{amsmath} % for \eqref
\begin{document}

\section{Introdução}
\label{sec:intro}

Na Seção  \ref{sec:method}, nós \ldots

\section{Método}
\label{sec:method}

\begin{equation}
\label{eq:euler}
e^{i\pi} + 1 = 0
\end{equation}
```

1 Introdução

Na Seção 2, nós ...

2 Método

$$e^{i\pi} + 1 = 0 \quad (1)$$

Por (1), temos ...

Exercícios de um documento estruturado

Digite um artigo curto em LaTeX: [2]

Clique aqui para abrir o artigo

Faça seu artigo parecer com este aqui. Use os comandos `\ref` e `\eqref` para evitar escrever explicitamente seção e número de equações no texto.

Clique aqui para abrir este exercício no **writeLaTeX**

- Uma vez que tenha tentado, clique aqui para ver a solução.

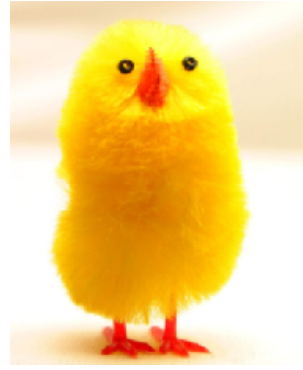
[2] Traduzido a partir de `http://pdos.csail.mit.edu/scigen/`, um gerador de artigos aleatórios.

Outline

Graphics

- Requires the `graphicx` package, which provides the `\includegraphics` command.
- Supported graphics formats include JPEG, PNG and PDF (usually).

```
\includegraphics[
  width=0.5\textwidth]{big_chick}

\includegraphics[
  width=0.3\textwidth,
  angle=270]{big_chick}
```



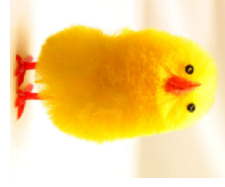


Image from `http://www.andy-roberts.net/writing/latex/importing_images`

Interlude: Optional Arguments

- We use square brackets [ ] for optional arguments, instead of braces { } .
- `\includgraphics` accepts optional arguments that allow you to transform the image when it is included. For example, `width=0.3\textwidth` makes the image take up 30% of the width of the surrounding text (`\textwidth`).
- `\documentclass` accepts optional arguments, too. Example:

```
\documentclass[12pt,twocolumn]{article}
```

  makes the text bigger (12pt) and puts it into two columns.
- Where do you find out about these? See the slides at the end of this presentation for links to more information.

Floats

- Allow LaTeX to decide where the figure will go (it can "float").
- You can also give the figure a caption, which can be referenced with `\ref`.

```
\documentclass{article}
\usepackage{graphicx}
\begin{document}

Figure \ref{fig:chick} shows \ldots

\begin{figure}
\centering
\includegraphics[%
  width=0.5\textwidth]{big_chick}
\caption{\label{fig:chick}Aww\ldots.}
\end{figure}

\end{document}
```

Figure 1: Aww....

Figure 1 shows ...

Tables

- Tables in LaTeX take some getting used to.
- Use the `tabular` environment from the `tabularx` package.
- The argument specifies column alignment — **l**eft, **r**ight, **r**ight.

```
\begin{tabular}{lrr}
Item   & Qty & Unit \$ \\
Widget & 1   & 199.99  \\
Gadget & 2   & 399.99  \\
Cable  & 3   & 19.99   \\
\end{tabular}
```

Item	Qty	Unit $
Widget	1	199.99
Gadget	2	399.99
Cable	3	19.99

- It also specifies vertical lines; use `\hline` for horizontal lines.

```
\begin{tabular}{|l|r|r|} \hline
Item   & Qty & Unit \$ \\\hline
Widget & 1   & 199.99  \\
Gadget & 2   & 399.99  \\
Cable  & 3   & 19.99   \\\hline
\end{tabular}
```

Item	Qty	Unit $
Widget	1	199.99
Gadget	2	399.99
Cable	3	19.99

- Use an ampersand [&] to separate columns and a double backslash [\] [\] to start a new row (like in the `align*` environment that we saw in part 1).

Outline

bibTeX 1

- Put your references in a `.bib` file in 'bibtex' database format:

```
@Article{Jacobson1999Towards,
  author = {Van Jacobson},
  title = {Towards the Analysis of Massive Multiplayer Online
           Role-Playing Games},
  journal = {Journal of Ubiquitous Information},
  Month = jun,
  Year = 1999,
  Volume = 6,
  Pages = {75--83}}

@InProceedings{Brooks1997Methodology,
  author = {Fredrick P. Brooks and John Kubiatowicz and
            Christos Papadimitriou},
  title = {A Methodology for the Study of the
           Location-Identity Split},
  booktitle = {Proceedings of OOPSLA},
  Month = jun,
  Year = 1997}
```

- Most reference managers can export to bibtex format.

bibTeX 2

- Each entry in the `.bib` file has a *key* that you can use to reference it in the document. For example, `Jacobson1999Towards` is the key for this article:

```
@Article{Jacobson1999Towards,
  author = {Van Jacobson},
  ...
}
```

- It's a good idea to use a key based on the name, year and title.
- LaTeX can automatically format your in-text citations and generate a list of references; it knows most standard styles, and you can design your own.

bibTEX 3

- Use the `natbib` package (recommended).
- Use `\citet` and `\citep` to insert citations by key.
- Reference `\bibliography` at the end, and specify a `\bibliographystyle`.

```
\documentclass{article}
\usepackage{natbib}
\begin{document}

\citet{Brooks1997Methodology}
show that \ldots. Clearly,
all odd numbers are prime
\citep{Jacobson1999Towards}.

\bibliography{bib-example}
% if 'bib-example' is the name of
% your bib file

\bibliographystyle{plainnat}
% try changing to abbrvnat

\end{document}
```

Brooks et al. [1997] show that .... Clearly, all odd numbers are pri
[Jacobson, 1999].

References

Fredrick P. Brooks, John Kubiatowicz, and Christos Papadimitriou. A metho
ology for the study of the location-identity split. In *Proceedings of OOPSL*
June 1997.

Van Jacobson. Towards the analysis of massive multiplayer online role-playi
games. *Journal of Ubiquitous Information*, 6:75–83, June 1999.

Exercise: Putting it All Together

Add an image and a bibliography to the paper from the previous exercise.

1. Download these example files to your computer.

   Click to download example image

   Click to download example bib file

2. Upload them to writeLaTeX (use the files menu).
3. (To find the keys in the `.bib` file, you'll have to open it in Notepad on your computer — you can't view it online in writeLaTeX, yet.)

Outline

More Neat Things

- Add the `\tableofcontents` command to generate a table of contents from the `\section` commands.
- Change the `\documentclass` to

  `\documentclass{scrartcl}`

  or

  `\documentclass[12pt]{IEEEtran}`
- Define your own command for a complicated equation:

```
\newcommand{\rperf}{%
  \rho_{\text{perf}}}
$$
\rperf = {\bf c}'{\bf X} + \varepsilon
$$
```

$$\rho_{\text{perf}} = \mathbf{c}'\mathbf{X} + \varepsilon$$

More Neat Packages

- `beamer`: for presentations (like this one!)
- `todonotes`: comments and TODO management
- `tikz`: make amazing graphics
- `pgfplots`: create graphs in LaTeX
- `spreadtab`: create spreadsheets in LaTeX
- `gchords`, `guitar`: guitar chords and tabulature
- `cwpuzzle`: crossword puzzles

See `https://www.writelatex.com/examples` and `http://texample.net` for examples of (most of) these packages.

Installing LaTeX

- To run LaTeX on your own computer, you'll want to use a LaTeX *distribution*. A distribution includes a `latex` program and (typically) several thousand packages.
  - On Windows: MikTeX
  - On Linux: TeXLive
  - On Mac: MacTeX
- You'll also want a text editor with LaTeX support. See `http://en.wikipedia.org/wiki/Comparison_of_TeX_editors` for a list of (many) options.
- You'll also have to know more about how `latex` and its related tools work — see the resources on the next slide.

Online Resources

- The LaTeX Wikibook — excellent tutorials and reference material.
- TeX Stack Exchange — ask questions and get excellent answers incredibly quickly
- LaTeX Community — a large online forum
- Comprehensive TeX Archive Network (CTAN) — over four thousand packages plus documentation
- Google will usually get you to one of the above.

Thanks, and happy TEXing!