Introduction to LaTeX typesetting

It's never too late(x) to change

D-Mizzle & K-Dizzle & J-Hizzle[1]

October 26, 2021

[1]Danny Feldscher & Karthik Durvasula & Josh Herrin

Contents

1 Basic typesetting

Hello world! Here is some long text in order to illustrate what a full paragraph looks like.

And then here's the second paragraph. Again, we can lengthen it for a more paragraphy look.

Third paragraph. Now see the code below:

```
% This tells latex what type of a thing it's making
\documentclass[11pt]{article}

% Starts the document it's building.
\begin{document}

% Telling latex about what document this is
\title{Introduction to \LaTeX\ typesetting}
\author{C \& K}

% The command to print said info
\maketitle

% Now just type what you want here.
% Skip two lines for a paragraph break.
Hello world!

Paragraph two.

% Everything you `begin' you must 'end'.
\end{document}
```

1.1 Sectioning things off

1.1.1 In various tiny bits

No extra package needed for these.

```
\section{Making sections}

\subsection{or subsections}

\subsubsection{...or subsubsections}
....
[text]
....
```

Using an asterisk will suppress the section numbering for that particular section (or) subsection (or) subsubsection....

```
\subsection*{Instructor}
```

1.1.2 \tableofcontents

This will insert the *Table of Contents* wherever it is mentioned.

1.1.3 Labeling and referencing sections

One cool thing you can do is label things and refer to them. Like if I wanted to refer to the section on subsections as Section 1.1. (Note also the clickable pdf link!)

```
\section{Important stuff} % I want to refer to this later
\label{sec:important} % So I name it.
Important text.

\section{Later stuff}
% Now referring back to it via its name
See the important text in Section \ref{sec:important}.
```

If I move the sections around, the numbers change, but the labels do not. So if you call a section by its name, it will always return the current section number.

2   Useful linguist things

More stuff talked about here, like tableaux, etc.

2.1   Examples (package needed: `enumitem`)

Karthik uses this.

```
\usepackage{enumitem}
% Listing thru numbers/letters/roman numerals
\begin{enumerate}
  \item Point 1
\end{enumerate}

\section{New Section}
\begin{enumerate}[resume] %Continues numbering. Otherwise
    , remove `[resume]'
  \item Point 3
\end{enumerate}
```

See also `gb4e`. This package must be loaded last.

```
\usepackage{gb4e}

\begin{exe} % Numbers from where you left off
\ex % Starts an example
% \gll starts a line that should be glossed
% \trans gives the free translation

        \item \gll Wenn jemand in die Wuste zieht ... \\
                    If someone in the desert draws
                        and lives ... \\
                    \trans 'if one retreats to the
                        desert and ... '

        \item \gll Wenn jemand in die Wuste zieht ... \\
                    If someone in the desert draws
                        and lives ... \\
                    \trans 'if one retreats to the
                        desert and ... '
\end{exe}
```

2.2 Tables

You have to construct tables. :/ They look like this:

Left-justified	Right-justified	Centre-justified
1	2	3
Happy	Sad	Apathetic

```
% Table with two columns
% ``l" is left-justified, ``r" is right-justified,``c" is
    center-justified, ``/" is vertical line between
\begin{tabular}{l | r | c}
\hline
\hline
Left-justified & Right-justified &      Centre-justified
    \\
\hline
1 & 2 & 3\\
Happy    &        Sad     &         Apathetic \\
\hline
\end{tabular}
```

This is also why LaTeX throws a fit if you put in & normally. Thinks it's a table.

2.3   Figures (package needed: `graphicx`)

If you want a figure / pictures, it is best if you store it in a sub-folder 'figures/'. Looks like this:
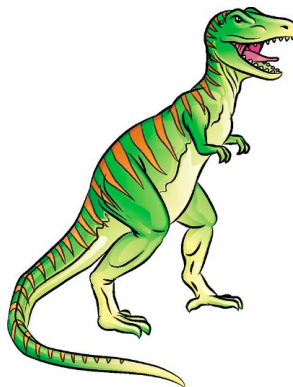

Figure 1: A picture of a dinosaur.

```
\usepackage{graphicx}
% Creates a figure
\begin{figure}
    % It is easier if the figure is saved to a subfolder
    % `figures/' tex file (Note: you don't have to).
    \includegraphics[width=1.5in]{figures/examplepic.jpg}
    \caption{A picture of a dinosaur.}    %Caption for fig
    \label{fig:dino} % Label it for later reference.
\end{figure}

% To center the content within, put it in:
\begin{center}
\end{center}
```

2.4 IPA (package needed: `tipa`)

[həlo lɪŋgwɪsts]! Use this package to type IPA characters. Cheatsheet for the commands for various parts on this chart.
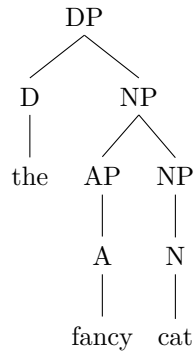
```
\usepackage{tipa}

% Types in IPA
[\textipa{h\textschwa{}lo  lINgwIsts}]
```

2.5 Trees (package needed: `tikz`)

Makes trees. There must be a space before each closing bracket.

% Package(s)
\usepackage{tikz−qtree , tikz−qtree−compat}

% Open tikz environment
\begin{tikzpicture}
\Tree *% It's a tree*
[.DP [.D the] [.NP [.AP [.A fancy]] [.NP [.N cat]]]]
% Really will break if spaces are in the wrong spot
\end{tikzpicture}

2.6 Semantics Formulae (package needed: `amsmath`)

`amsmath` is a L^AT_EXpackage for miscellaneous mathematical symbols (i.e. a lot of the symbols used in semantics).

$$[\![tall]\!] = \lambda d\lambda x.\mathbf{tall}(d)(x)$$

$$[\![\text{-}est]\!] = \lambda R_{\langle d,et\rangle}\lambda C_{\langle e,t\rangle}\lambda x.\exists d[R(d)(x) \wedge \forall y[y \in C(y) \wedge y \neq x \to \neg R(d)(y)]]$$

```
% Package
\usepackage{amsmath}


% ``$'' allows you to enter and leave math mode,
% and math symbols require math mode to print.

$\llbracket \text{\textit{tall}} \rrbracket
        = \lambda d \lambda x .$\textbf{tall}$(d)(x)$


$\llbracket \text{\textit{-est}}\rrbracket =\lambda
        R_{\langle d,et\rangle}\lambda
        C_{\langle e,t\rangle} \lambda x.\exists
        d[R(d)(x)\land \forall y[y\in C(y)\land y\neq
        x\to \neg R(d)(y)]]$
```

`Bmatrix` allows you to create matrices.

Ron is $\begin{Bmatrix} \text{taller} \\ \text{?more tall} \\ \text{*more taller} \end{Bmatrix}$ than Harry.

```
%Package
\usepackage{amsmath}
Ron is $\begin{Bmatrix}\text{taller}\\\text{?more tall}
        \\\text{*more taller}\end{Bmatrix}$ than Harry.
```

3 Other useful packages and commands

3.1 `geometry`

This is available through the package `geometry`. It can be used for global page setting.

```
\usepackage[letterpaper,
            %margin=1in,
            left=1.5in, right=1.5in,
            top=1.5in, bottom=1.5in,
            landscape, %portrait is default
            twocolumn]{geometry} %one column is default
```

3.2 Cite or link or cross-reference colours with `hyperref` & `url`

This package can be used to colour all the citations, links and cross-references. [For more information, look here.]

```
\usepackage[urlcolor=blue,
            linkcolor=blue,
            citecolor=blue,
            colorlinks=true]{hyperref}
\usepackage{url}
% Makes many of the nice settings for hyperref

\url{link}   % Will show only url

\href{url}{what_to_display}

% Citations and cross-references need nothing more.
```

3.3 \newcommand

This command is ridiculously useful to define new commands. This is my denotation command, where I want to put a thing in double brackets like ⟦**this**⟧.

```
% Example command putting a thing in denotation brackets
    % The new command is named \denote
    % It calls for 1 argument
\newcommand{\denote}[1]{
    % Here is where the command definition goes
        % It puts a double bracket on either side,
        % and bolds the argument itself.
    \llbracket \textbf{#1} \rrbracket
}

% Use it like a normal command:
\denote{word}
```

---

4 Useful commands for body of the article

4.1 \begin & \end

These commands are useful for making environments or domains. You've already seen several examples.

Another useful example is `multicols`, which can be used to create multiple columns.

```
%This is in the multicol package
\usepackage{multicol}

\begin{multicols}{2}
  Table 1....
  \columnbreak
  Table 2 ...
\end{multicols}
```

4.2 \longtable

This is available through the package `longtable`. It can be used for making super long tables that stretch out over multiple pages.

```
\begin{longtable}[h]{m|>{\centering}m{0.35in}}
 \hline
 \textbf{Week} & \textbf{Date} \\
 \hline
 1 & 30th Aug \\
 \hline
\end{longtable}
```

5 Specific text setting options

5.1 \noindent

It will remove the indent at the beginning of a paragraph.

5.2 \vspace{2in} & \hspace{2in}

They can be used for adding vertical and horizontal spacing respectively.

5.3 \columnbreak & \pagebreak

They can be used to continue in the next column or page.

5.4 \par

This command at the end of a para will basically "unscrunch" the para if it looks too cluttered because of a certain font/fontsize. I mean, if for some reason the line look like they are two close, then they will be move away a bit.

```
%adjusts linespacing of multiple lines
{\large ...Text... \par}
```

5.5 \hfill

This can be used to push things to the end of the line. Very useful for putting question values in exams...

```
This is a question  \hfill  (2 points)
```

6 Citations

You'll need a bib file - this is a file with all the refences stored; if you use Mendeley/Zotero/Endnote, there should be a way to export all the refs to a bib file. Also, nowadays, journals include .bib references online when you try to get the citation for a paper. This is probably the easiest way to get the relevant citations.

There are many packages for this. Here is one package/way to cite things in it:

```latex
% First include the package
\usepackage[backend=biber,
          citestyle=authoryear-comp,
          bibstyle=authoryear-comp,
          maxcitenames=3,
          maxbibnames=99,
          dashed=false,
          url=false,
          labeldate=true,
          uniquename=minfull,
          uniquelist=minyear
]]{biblatex}
\addbibresource{/your_bibtex_file_name_or_address}
%\bibliographystyle{apa}  %or `plainnat'
...
% To cite with names in parentheses
\autocite{@bibtex_id}
% The id is what you named it in your bib file

% To cite with names outside parentheses
\textcite{@bibtex_id}


...

\printbibliography{}
```

This is the most important research idea in the field (Peirce et al. 2019; Solé 1992). Peirce et al. (2019) agree this is the case.

References

Peirce, J. W. et al. (2019). "PsychoPy2: experiments in behavior made easy". In: *Behavior Research Methods*. DOI: 10.3758/s13428-018-01193-y.

Solé, Maria-Josep (1992). "Phonetic and Phonological Processes: The Case of Nasalization". In: *Language and Speech* 35.1-2, pp. 29–43. DOI: 10.1177/002383099203500204. eprint: https://doi.org/10.1177/002383099203500204. URL: https://doi.org/10.1177/002383099203500204.

7 Additional resources and troubleshooting

7.1 Avoid problems

- Indent and comment (in brief) your code wherever you can, to make sure you can follow the structure easily.

- Run your code frequently so you catch errors early.

7.2 Common Errors

- If you type \begin{anything} you also need a corresponding \end{anything}

- Same thing with opening and closing brackets/braces.

- The dollar sign $ starts math mode. It will think everything after that is math if you don't close it with another $.

- Ampersands & are used in tables, and so anywhere else, LaTeX tries to make it a table and gets confused.

7.3 Troubleshooting

Google it. Expect to find that someone has had the same problem, and someone has also already answered it. (Probably, Alan Munn.) `tex.stackexchange.com` is a good, reputable source.

When you get an error, comment out your recent changes until the document works again. Also check the error message to see if it's helpful.

7.4 Installation of a desktop version of LaTeX

This is THE site to go to install LaTeX: `https://www.ctan.org/?lang=en`. You need a TeX distribution, which varies by operating system.

We recommend you also use a tex editor. Karthik likes TeXShop.