

L^AT_EX Workshop

NCSU Linguistics

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1 What is L^AT_EX?

- An open-source typesetting language used for document mark-up
- Used in conjunction with various T_EXEditors (the lab computers have TeXStudio)
- L^AT_EX offers control over all aspects of typesetting, consistency of output, and is extremely well-documented.
- It can be used for articles, papers, letters, presentations, tables/graphs, and more!
- Templates allow for convenient start-up of documents with all your desired settings already declared.

2 Anatomy of a .T_EX file

2.1 Syntax & Conventions

- **Commands:** begin with the backslash “\” (ex. `\maketitle` or `\centering`);
- Many commands take *obligatory arguments* between braces (ex. `\documentclass{article}`), while other also take additional *optional arguments* in square brackets (ex. `\documentclass[11pt]{article}`)
- **Special Characters:** # \$ % ^ & _ { } ~ \. The symbol % is used for commenting out (like # in Praat). These characters must be escaped to be used as regular characters.
- Any white space is treated as a single space; more than one line is treated as one line. Useful for spacing out your code!

- Use `\\` to start a new line or `\\~\\` to add an extra line between paragraphs.
- Curly braces delimit *groups*. `\textbf{This is bold text!}` gives us **This is bold text!** as output.
- Environments function like groups, but are defined by the `\begin{environment}` and `\end{environment}` commands.
- Left quotes are not corrected automatically. `"hello!"` gives `"hello!"`. `‘hello!’` gives us the correct `“hello!”`.

2.2 The Preamble

- The Preamble is the first part of your `.TEX` file where you set your global settings, define the type of document, and use packages (more on this later!)
- `\documentclass{style}` defines your document as a specific style which has its default settings.
- The most general is the article class, which you define by using the command `\documentclass{article}` somewhere in the preamble.
- Use the `\author{name}` and `\title{titlehere!}` commands to define these elements.
- Somewhere after using the `\documentclass{article}` command, declare the *document environment* which will delimit the body of your document and end the preamble.

Your Turn! — Open TexStudio, declare an article *documentclass* with 13pt font, set the title and author, define the *document environment*, and add some text within that environment! **Note!**: Click the double arrow “Build & View” in TexStudio to compile.

2.3 Document Body

- Main content of document is contained within the *document* environment.
- Use the command `\maketitle` to automatically add the title from information in the preamble.
- Can be delimited into sections and subsections by using the `\section{title}` and `\subsection{title}` commands. **Pro-Tip!** Use `\section*{title}` to remove the numbers.

- Enumerated, bulleted, and regular lists are defined by the *enumerate*, *itemize*, and *description* environments, respectively. Use the `\item` command to add items to the list.
 - For example, `\begin{enumerate} \item This is a wug. \item Here are two... \end{enumerate}` would give us the list below.
 1. This is a wug.
 2. Here are two...
 - \LaTeX reference numbers are dynamic; if you remove an element the rest will change accordingly.
- Your Turn!** — Add a title, sections, and some lists (**Pro-Tip!** you can nest lists!).

3 Packages

- Packages offer a wide variety of additional functions which are built on top of existing \LaTeX architecture.
- Packages are called in the preamble using the command `\usepackage[options]{name}`

3.1 geometry

- Improves options for customizing page layout
- `\usepackage[margins = 1in]{geometry}`
- `\usepackage[top=.5in,bottom=.5in,left=1in,right=1in]{geometry}`
- **Your Turn!**

3.2 graphicx

- Allows you to embed high-quality graphics in your document.
- Use the command `\includegraphics{filename}`
- It's easiest to store the image in the same directory as the \LaTeX file. Don't use spaces in the name! Also, use higher quality PDF images when you can.
- Utilize the optional arguments! `[width = \textwidth]`, `[height = 6in]`, etc.

- Usually you'll want to have your image in a *figure* environment

```
\begin{figure}\centering
\includegraphics[width=\textwidth]{filename}
\caption{caption here}
\label{fig:my_image} % use \ref{my_image} later to refer to this spot.
\end{figure}
```

Your Turn!—Find an image online and include it in your document!

3.3 hyperref

- Used for embedding hyperlinks in pdfs
- Command is `\href{link}{description}`

Your Turn! Include a link to your favorite website.

3.4 tipa

- IPA Support! a.k.a. A linguist's best friend.
- Refer to the OSU *tipa* cheat sheet
<http://www.ling.ohio-state.edu/events/lcc/tutorials/tipachart/tipachart.pdf>
- Add these custom commands to the preamble¹

```
\newcommand{\ipa}[1]{\textipa{#1}}
\newcommand{\ips}[1]{\$/\$\textipa{#1}\$/\$}
\newcommand{\ip}[1]{\textipa{[#1]}}
```

Using these custom commands and the codes from the cheat sheet, you can create output like this:

```
/trænskɾɪpʃən/
træn.skɾɪp.ʃən
[tʃɹæ̃n.skɹɪp.ʃn]
```

From input like this:

¹Thanks to Jeff Mielke for sharing these commands from the U Ottawa L^AT_EXworkshop.

```

\noindent \ips{tr\ae{}nskrIpS@n} \\  

\ipa{tr\ae{}n.skrIp.S@n} \\  

\ip{tS\r*{\*r}\'\{\~{\ae{}}\}n.sk\r*\'}{I}p.S\s{n}}

```

Your turn!—Transcribe your name or an interesting word using *tipa*.

4 Miscellaneous Notes

- **Math Mode** allows for definitions of formulas and mathematical symbols. Additionally, it allows for sub- & superscripts. 9^{th} ; H_2O .
- Some special characters are supported outside of *tipa*: `fa\c{c}ade` gives façade, `reacci\'on` gives reacción, `cari\~no` gives cariño.
- The `\verb|text|` command allows for **verbatim** typesetting, including special characters. You can also use `\begin{verbatim}... \end{verbatim}`
- **Templates** are a handy tool for saving your most used packages, commands, and set-ups for future use. **File** → **Make Template & File** → **New from Template**.
- Find helpful L^AT_EX resources on the Phonology Lab website:
<http://phon.wordpress.ncsu.edu/resources/>

5 Advanced Topics

- Bibliographies
 - L^AT_EX has a flexible reference management system that allows you to store information about a certain source and easily cite it in-text. From the in-text citations L^AT_EX will then automatically build the bibliography based on your formatting style.
- Tables
 - <http://en.wikibooks.org/wiki/LaTeX/Tables>
- Presentation slides with Beamer
 - <http://en.wikibooks.org/wiki/LaTeX/Presentations>.