\LaTeX\ introduction

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Getting started
  Installing \LaTeX
  Resources

Editing
  Really basic
  Document structure
  Formatting
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OS X

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- I uses aquamacs (an OS X version of GNU emacs), takes some more work to customize:
  http://aquamacs.org/,
  http://www.gnu.org/software/auctex/
Windows

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- Emacs is also an option.
If you’re using linux, you probably don’t need my help.
I put up some basic templates, plus the source to this file, on the web. The source to this file in particular contains all sorts of little recipes you might find useful.
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Some resources for linguists:

- **\LaTeX** for linguists
  - [http://www.essex.ac.uk/linguistics/clmt/latex4ling/](http://www.essex.ac.uk/linguistics/clmt/latex4ling/)
- **UCSC edition**
  - [http://people.ucsc.edu/~kirchner/resources/latex/latex.html](http://people.ucsc.edu/~kirchner/resources/latex/latex.html)
- **LingTeX mailing list** [http://heimifi.uio.no/~dag/ling-tex.html](http://heimifi.uio.no/~dag/ling-tex.html)
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- **LingTeX mailing list** [http://heim.ifi.uio.no/~dag/ling-tex.html](http://heim.ifi.uio.no/~dag/ling-tex.html)

A good general purpose reference (esp. for formulae):
- [http://www.giss.nasa.gov/tools/latex/](http://www.giss.nasa.gov/tools/latex/)
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- Macros: `\makro[options]{argument}`
  - e.g. "\textbf{hi}" produces \textbf{hi}.
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Generate formatted PDF/Postscript file by compiling document.

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Macros: \texttt{\textbackslash macroname[options]\{argument\}}

\begin{itemize}
\item Most text is just text.
\end{itemize}

Environments are bracketed with a begin and end command:

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\item Most text is just text.
\end{itemize}
Preamble

- Setup stuff goes here.

\documentclass[article,11pt]{memoir}
\usepackage{mathptmx}
\usepackage{natbib}
\bibpunct{(}{)}{;}{a}{}{,}

% etc.
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  - Document class: basic document template

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- Load support packages, e.g. mathptmx sets up Times New Roman.

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Preamble

- Setup stuff goes here.
  - Document class: basic document template
  - Load support packages, e.g. mathptmx sets up Times New Roman.
  - Other setup, document formatting etc. This one sets up some citation styles.

\documentclass[article,11pt]{memoir}

\usepackage{mathptmx}

\usepackage{natbib}
\bibpunct{(}{)}{;}{a}{}{,}

\% etc.
Content of document goes here.

\begin{document}
Hello world
\end{document}
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One big environment.

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Regular paragraphs are just blocks of text with blank lines before and after them. It doesn’t matter where you put the line breaks.
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- *italic*: \textit{italic}
- **bold**: \textit{bold}
- *small caps*: \textsc{small caps}
- With ulem.sty:
  - underlined: \uline{underlined}
  - struck-out: \sout{struck out}
Bulleted text

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- Each item is prefaced with an \item command.
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\begin{itemize}
\item Bullets are done with the itemize environment.
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\end{itemize}
Document divisions

- Automatic section numbering and cross-referencing.
- Commands: `\chapter` (memoir), `\section`, `\subsection`, etc.
- Labeling command: `\label{name}`
- Reference with `\ref{name}`, or `\pageref{name}` for the page number.

```
\chapter{My first chapter}
\section{The .1 section of this chapter}
\subsection{The .1.1 section}
\label{mylabel}
```

...  

```
\S \ref{mylabel} is on p. \pageref{mylabel}
```

- This last line will produce something like “§1.1.1 is on p. 1”. (except, automatically determined.)
BibTeX

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- Three parts:
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```latex
@article{Chomsky59,
  Author = {Noam Chomsky},
  Journal = {Information and Control},
  Pages = {137–167},
  Title = {On certain formal properties of grammars},
  Volume = {2},
  Year = {1959}
}
```
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    ```
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    ```
  - BibTeX – a program called after LaTeX that figures out citations from an .aux file (produced as a side-effect of compilation).
Formulas

- Formulas are entered in math mode. The main way to switch to math mode is using \$ symbols.

\[
\left[ \textbf{must} \right] = \lambda p_{\langle st \rangle} . \lambda w_s . \forall w' : wRw' \rightarrow p(w')
\]
More complicated formulas

(Chosen at random from *The Harmonic Mind*)

$$[I \otimes M]^{(d')}_{(d)} = \begin{cases} [1^{\otimes k} \otimes M]^{(d')}_{(d)} & \text{if } \exists k \text{ s.t. } m + k = d \text{ and } m' + k = d' \\ 0 & \text{otherwise} \end{cases}$$

\[
\left[ \mathbb{I} \varotimes \mathbb{M} \right]^{(d')}_{(d)} = \left\{ \begin{array}{ll}
\mathbb{I} \varotimes \mathbb{M} \right]^{(d')}_{(d)} & \text{if } \exists k \text{ s.t. } m + k = d \text{ and } m' + k = d' \\
\mathbf{0} & \text{otherwise}
\end{array} \right. \]
Example numbering

- Various packages – I use gb4e.
  - Copy on website adapted to not conflict with memoir.
- Another popular one is linguex.
- Easy to do automatic cross-references: (2)

1. Alfonso is a lawyer.

2. * Alfonso seems a lawyer.

3. a. Who is Alfonso talking to?
   b. Who on earth is Alfonso talking to?
Including figures

- I usually use the graphicx package.
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\includegraphics[scale=0.3]{cat_proximity}
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\includegraphics[scale=0.3]{cat_proximity}
Tree diagrams

- Many popular packages:
  - pst-jtree. Reportedly the best modern one, but requires \textsc{pstricks}, and consequently, does not work with \textsc{pdflatex}.
  - qtree. Pretty easy to use, no dependencies.
  - parsetree. Actually designed for programming language theory, but works well for linguistics.
  - TikZ. General purpose drawing package, really really nice. But does less tree formatting automatically.

- Examples: (download source to see details)
Note: I pulled this out of a homework from about 7 years ago, so I have no idea why you’d use this constituent structure.

(4)

```
(\text{DP})
\quad \begin{array}{c}
\text{D} \\
\text{a} \\
\text{AP} \\
\text{A} \\
\text{former} \\
\text{\langle s\langle et\rangle \rangle} \\
\lambda_{temporal} \\
\text{\langle et\rangle\langle s\langle et\rangle \rangle} \\
\text{N} \\
\text{\langle et\rangle} \\
\text{\langle et\rangle} \\
\text{\langle s\langle et\rangle \rangle} \\
\text{\langle et\rangle} \\
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```

```
parsetree

(5)

[Diagram of a parse tree with nodes labeled as follows: DP, NP, AP, A, N', and labels for a, temporal, former, (et) (s<et>), lambda temporal (et) (s<et>), teacher (et).]
Trees in TikZ

(6)

```
DP
  /
 D  NP
 /   /
 a  N'  \
   /
  AP  ?
 /  \
A  ?
  /
former λ_{temporal} teacher
 ⟨⟨s⟨et⟩⟩⟨et⟩⟩  ⟨⟨et⟩⟨s⟨et⟩⟩⟩  ⟨et⟩
```
(7) **Negative question, negative answer**
Is Alfonso not coming to the party?
Tableaux

- Can do many tableaux with simple tabular environments.
- This example is also using the tipa package for IPA fonts, and the arydshln package for the dashed line.
- Actually, this uses my own custom tableau environment based on tabular, there is probably something better around. (Colin?)
- Major drawback: it is a pain to add columns, especially in large tableau. It is a huge pain to re-order columns.

<table>
<thead>
<tr>
<th>/k-haratat-s/</th>
<th>FtBin</th>
<th>FtHdR</th>
<th>Dep_μ</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. [kha.(rá:].tats]</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. [kha.(rá).tats]</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. [(khá.ra).tats]</td>
<td></td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

Tableau 1: Lengthening of stressed vowels
This presentation is made with the `beamer` package. Seems like the best option by far.

Pretty easy to use, well-documented. (Same author as PGF/TikZ.)

Source for this file available.

I’ve also put up a beamer “template” (which is really just the example from the beamer site).

To see what can be done, I will now switch to a different file.
Posters

- I use the a0poster class along with textpos.
- Produces A0-sized PDF files. (European size.)
- Pretty easy to get to work with the poster printer upstairs.