

L^AT_EX for Linguists

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Resources

- You should download the following files:
- github.com/jhavenhill/latex-for-linguists
- If you don't have L^AT_EX installed, you should download it:
 - MikTeX for Windows
 - MacTeX for Mac
 - Or, sign up for a free account at [writelatex.com](https://www.writelatex.com)

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- First, how do you pronounce L^AT_EX?
 - Usually [leɪtɛk] or [lɑ:tɛk], not [lɑ:tɛks]
- It's a typesetting system, not a word processor
- L^AT_EX documents are written with markup code, which is then interpreted and compiled by the T_EX system
- It has a learning curve, but there are a number of advantages. . .

The structure of a \LaTeX document

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- Every document must contain the following lines:

```
\documentclass{...}
```

```
...
```

```
\begin{document}
```

```
...
```

```
\end{document}
```

Let's start with a basic document

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```
\documentclass{article}
```

```
\begin{document}
```

```
Hello world!
```

```
\end{document}
```

\documentclass{}

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Resources

- The document classes you are most likely to use are:
 - `article` (for articles)
 - `beamer` (for slideshows like this)
 - `res` (for résumés and CVs)

\documentclass{}

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Resources

- The document classes you are most likely to use are:
 - `article` (for articles)
 - `beamer` (for slideshows like this)
 - `res` (for résumés and CVs)
- The `\documentclass` command can have options, which are specified as such:

```
\documentclass[10pt,a4paper,landscape]{article}
```


The preamble

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- The preamble comes between ‘documentclass{ }’ and ‘begin{document}’

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Resources

- The preamble comes between ‘documentclass{ }’ and ‘begin{document}’
- Here, you list the packages you will be using, e.g.:

```
\documentclass{article}
```

```
\usepackage{gb4e}
```

```
\usepackage{qtree}
```

```
\usepackage{tipa}
```

```
\begin{document}
```

```
...
```

The preamble

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Resources

- The preamble comes between ‘documentclass{ }’ and ‘begin{document}’
- Here, you list the packages you will be using, e.g.:

```
\documentclass{article}
```

```
\usepackage{gb4e}
```

```
\usepackage{qtree}
```

```
\usepackage{tipa}
```

```
\begin{document}
```

```
...
```

- You can also define new commands

Titles

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Resources

- A set of commands are available for creating titles and abstracts:

```
\title{...}
```

```
\author{...}
```

```
\date{...}
```

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Resources

- A set of commands are available for creating titles and abstracts:

```
\title{...}  
\author{...}  
\date{...}
```

- These are inserted into the document with the `\maketitle` command

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- Let's add a title to our document:

```
\begin{document}
\title{A sample \LaTeX document}
\author{Your name here}
\date{\today}
\maketitle
Hello world!
```

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Resources

- And an abstract:

```
\maketitle
```

```
\begin{abstract}
```

```
Lorem ipsum dolor sit amet...
```

```
\end{abstract}
```

```
Hello world!
```

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■ `\section{}` and `\subsection{}`

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Resources

- `\section{}` and `\subsection{}`
- `\textit{}`, `\textbf{}`, `\underline{}`, `\texttt{}`, and `\textsc{}`

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- `\section{}` and `\subsection{}`
- `\textit{}`, `\textbf{}`, `\underline{}`, `\texttt{}`, and `\textsc{}`
- subscript ($T_{\text{def}}P$) and superscript ($a^2 + b^2 = c^2$):
`T$_\text{def}$P`
`a2 + b2 = c2`

Changing the font

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- The LaTeXfont is called Computer Modern

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- The L^AT_EX font is called Computer Modern
- Times New Roman: `\usepackage{times}`
 - This will set the entire document to Times New Roman

Changing the font

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Resources

- The L^AT_EXfont is called Computer Modern
- Times New Roman: `\usepackage{times}`
 - This will set the entire document to Times New Roman
- Font size can be specified with a `\documentclass` option, e.g., `[10pt]`, `[11pt]`, `[12pt]`
 - This will set the entire document to that font size

Margins and spacing

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- The default margins are designed for readability, but you may require 1 inch margins.
- Margins can be set using the geometry package:

```
\usepackage[margin=1.0in]{geometry}
```

Margins and spacing

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- The default margins are designed for readability, but you may require 1 inch margins.

- Margins can be set using the `geometry` package:

```
\usepackage[margin=1.0in]{geometry}
```

- Line spacing can be set with the `setspace` package:

```
\usepackage{setspace}
```

```
%\singlespacing
```

```
\onehalfspacing
```

```
%\doublespacing
```

Miscellaneous formatting issues

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- Footnotes can be added using the footnote command:
`\footnote{Lorem ipsum dolor sit amet...}`

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- Footnotes can be added using the footnote command:

```
\footnote{Lorem ipsum dolor sit amet...}
```

- Quirks of L^AT_EX:

- # \$ % ^ & _ { } ~ \ are reserved characters—you must use a backslash in order to type them, e.g. \&
- LaTeX differentiates left and right quotes: ' and " are right quotes, while left quotes are typed using the ` key (tilde key)

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- Footnotes can be added using the footnote command:
`\footnote{Lorem ipsum dolor sit amet...}`
- Quirks of L^AT_EX:
 - `# $ % ^ & _ { } ~ \` are reserved characters—you must use a backslash in order to type them, e.g. `\&`
 - LaTeX differentiates left and right quotes: `'` and `"` are right quotes, while left quotes are typed using the ``` key (tilde key)
- Accented characters are typed with special codes, e.g.,
`\=o = ō`, `\o = ø`, `\'e = é`

Symbol

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- It's pretty straightforward: IPA in LaTeX

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- It's pretty straightforward: IPA in LaTeX
- It looks like this:

```
\textipa{[D@ "k\super h\ae p\textcorner t\s{n}  
\~\ae nd\textcorner D@ "\t{dZ}\~En\*r@  
l wIl "p\r*{\*r}Ablij: goU:]}
```

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- It's pretty straightforward: IPA in LaTeX

- It looks like this:

```
\textipa{[D@ "k\super h\ae p\textcorner t\s{n}
\~\ae nd\textcorner D@ "\t{dZ}\~En\*r@
l wIl "p\r*{\*r}Ablij: goU:]}
```

- Which produces: [ðə 'k^hæp^ɪtɪ ænd'ðə 'dʒɛnɪət wɪt
'pɹəblij: goʊ:]

tipa practice

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- Try typesetting: [hau du ai meik ai pi ei simbəlɜz ɪn leɪtɛk]
- Or: [maɪ: 'hʊzbənʃʊd'æv bɒt'pʰətʰeɪ:rouz]

gb4e package

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- gb4e introduces the exe environment.
- This allows you to embed nearly anything in an environment with a typical linguistics citation number: (x)
- It looks like:

```
\begin{exe}  
  \ex  
  \begin{table}  
    ...  
  \end{table}  
  \label{...}  
\end{exe}
```


gb4e package

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- Glosses are introduced using the `\gll` command.
- It looks like:

```
\begin{exe}  
  \ex{\gll Mi griast der Bua, (der) wo aus Ming  
me.\textsc{acc} greets the.\textsc{m.nom} boy  
  \glt ‘The boy who comes from Munich greets me  
\end{exe}
```

gb4e package

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■ This code produces:

- (3) a. Mi griast der Bua, (der) wo aus Minga
me.ACC greets the.M.NOM boy who.M.NOM that from Munich
kummt.
comes
'The boy who comes from Munich greets me.'

gb4e package

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■ This code produces:

(3) a. Mi griast der Bua, (der) wo aus Minga
me.ACC greets the.M.NOM boy who.M.NOM that from Munich
kummt.
comes
'The boy who comes from Munich greets me.'

■ Use curly brackets to group multiple words, or empty curly brackets to skip words.

gb4e package

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Resources

- Lists can be embedded within the example environment using the `xlist` environment:

```
\begin{exe}  
  \ex  
  \begin{xlist}  
    \ex{...}  
    \ex{...}  
    \ex{...}  
  \end{xlist}  
\end{exe}
```

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- Examples can be labeled and cross-referenced using the `\label{...}` and `\ref{...}` commands.

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Resources

- Examples can be labeled and cross-referenced using the `\label{...}` and `\ref{...}` commands.
- The `\label{...}` command must come *after* the example:

```
\ex{Mi griast der Bua, (der) wo  
aus Minga kummt.}\label{ex:MascNom}
```

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- Examples can be labeled and cross-referenced using the `\label{...}` and `\ref{...}` commands.
- The `\label{...}` command must come *after* the example:

```
\ex{Mi griast der Bua, (der) wo  
aus Minga kummt.}\label{ex:MascNom}
```

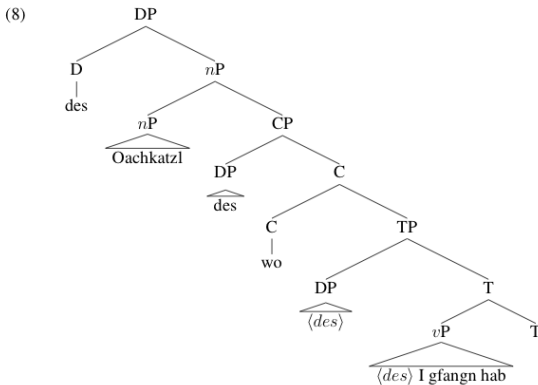
- Check out the `\exr`, `\exp`, and `\exi` commands for other useful ways of labeling and referencing examples.

qtree package

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- qtree lets you make...trees



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qtree

- The code looks like this:

```
\Tree [.DP [.D des ] [.$n$P
\qroof{Oachkatzl}.$n$P [.CP
\qroof{des}.DP [.C [.C wo ]
[.TP \qroof{$\langle$ des
\rangle$}.DP [.T \qroof{$\langle$
des \rangle$ I gfangn hab}.$v$P T ] ] ] ] ] ] ]
```


ot-tableau package

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/ri-afɔ/	*VV	DEP	MAX
a. ri-afɔ	*!		
 b. r-afɔ			*
c. ri-jaɔ		!*	

Vowel deletion in Yoruba

ot-tableau package

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```
\begin{tableau}{c:c|c}
  \inp{\ips{ri-aS0}}      \const{*VV}      \const{Max} \
  \cand{ri-aS0}           \vio{*!}          \vio{}      \
  \cand[\Optimal]{r-aS0}  \vio{}            \vio{}      \
  \cand{ri-jaS0}          \vio{}            \vio{!*}    \
\end{tableau}
```

ot-tableau package

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■ What you need to know:



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Resources

- <http://yihui.name/knitr/>
- knitr (an extension of Sweave) is a way to incorporate R code into your documents.

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Resources

- <http://yihui.name/knitr/>
- knitr (an extension of Sweave) is a way to incorporate R code into your documents.
- This allows you to include dynamically-generated tables, figures, and references.

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Resources

- <http://yihui.name/knitr/>
- knitr (an extension of Sweave) is a way to incorporate R code into your documents.
- This allows you to include dynamically-generated tables, figures, and references.
- The goal is transparent and reproducible research.

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Resources

- knitr documents can be written directly in RStudio, or in something like Sublime Text with the SublimeKnitr plugin.

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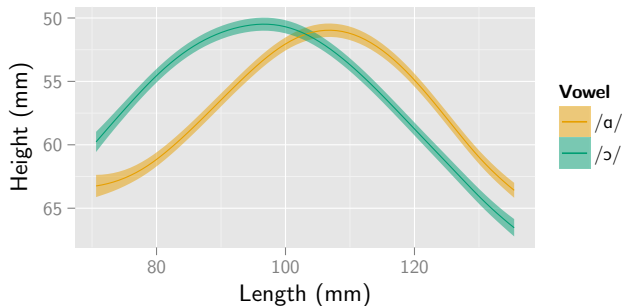
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Resources

- knitr documents can be written directly in RStudio, or in something like Sublime Text with the SublimeKnitr plugin.
- Example:

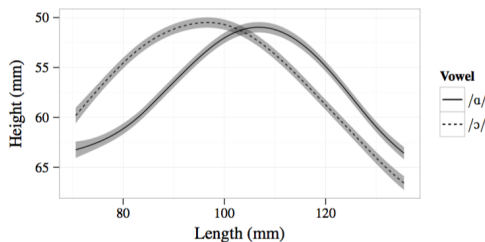
Articulatory Patterns: Speaker 2

Figure: Tongue contours for /ɑ/ and /ɔ/



- ▶ Significant contrast between tongue contours for /ɑ/ and /ɔ/.
- ▶ Greater degree of pharyngeal constriction for /ɔ/, higher tongue position for /ɑ/.
- ▶ Similar pattern for Speakers 1, 3, and 4.

Figure 3: Tongue contours for /a/ and /ɔ/, Speaker 2.



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Resources

- Numbered lists are introduced and ended with the `enumerate` environment:

```
\begin{enumerate}  
  \item{...}  
\end{enumerate}
```

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Resources

- Numbered lists are introduced and ended with the `enumerate` environment:

```
\begin{enumerate}  
  \item{...}  
\end{enumerate}
```

- `\item{}` encloses each item

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Resources

- Numbered lists are introduced and ended with the `enumerate` environment:

```
\begin{enumerate}  
  \item{...}  
\end{enumerate}
```

- `\item{}` encloses each item
- Bulleted lists are the same, except they use the `itemize` environment.

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Resources

- Numbered lists are introduced and ended with the `enumerate` environment:

```
\begin{enumerate}  
  \item{...}  
\end{enumerate}
```

- `\item{}` encloses each item
- Bulleted lists are the same, except they use the `itemize` environment.
- Numbered and bulleted lists can be embedded within one another.

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- Which numbering system is used can be chosen with the `enumerate` package:

```
\usepackage{enumerate}
```

```
...
```

```
\begin{enumerate}[I.]
```

```
  \item{...}
```

```
\end{enumerate}
```

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- Which numbering system is used can be chosen with the `enumerate` package:

```
\usepackage{enumerate}
```

```
...
```

```
\begin{enumerate}[I.]
```

```
  \item{...}
```

```
\end{enumerate}
```

- Or, items can be given individual bullet symbols:

```
\usepackage{enumerate}
```

```
...
```

```
\begin{itemize}
```

```
  \item[-]{...}
```

```
  \item[+]{...}
```

```
\end{itemize}
```

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- `\setcounter{enumi}{4}` can be used to set the counter for numbered lists:

```
\usepackage{enumerate}
```

```
...
```

```
\begin{enumerate}
```

```
    \setcounter{enumi}{4}
```

```
    \item{The fifth item}
```

```
\end{enumerate}
```

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- `\setcounter{enumi}{4}` can be used to set the counter for numbered lists:

```
\usepackage{enumerate}
```

```
...
```

```
\begin{enumerate}
```

```
    \setcounter{enumi}{4}
```

```
    \item{The fifth item}
```

```
\end{enumerate}
```

- There are separate counters for each level of embedding:
`enumi`, `enumii`, `enumiii`, `enumiv`

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- `\setcounter{enumi}{4}` can be used to set the counter for numbered lists:

```
\usepackage{enumerate}
```

```
...
```

```
\begin{enumerate}
```

```
    \setcounter{enumi}{4}
```

```
    \item{The fifth item}
```

```
\end{enumerate}
```

- There are separate counters for each level of embedding:
`enumi`, `enumii`, `enumiii`, `enumiv`
- Additional counters operate for sections, tables, pages, etc.

Graphics

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Resources

- The `graphicx` package is used for inserting pictures

```
\usepackage{graphicx}
```

```
...
```

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

```
\includegraphics{LabovGraph.pdf}
```

```
\end{figure}
```

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Resources

- The `graphicx` package is used for inserting pictures

```
\usepackage{graphicx}
```

```
...
```

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

```
\includegraphics{LabovGraph.pdf}
```

```
\end{figure}
```

- Graphic width can be controlled with `[width=...]` option.
 - It can be an absolute value (4in) or a relative value (`.95\textwidth`)

Graphics options

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- Some more graphics options:

```
\usepackage{graphicx}
```

```
...
```

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

```
    \centering
```

```
    \includegraphics[width=...]{VowelSpace.png}
```

```
    \caption{...}
```

```
    \label{...}
```

```
\end{figure}
```


Graphics options

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- Some more graphics options:

```
\usepackage{graphicx}
```

```
...
```

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

```
\centering
```

```
\includegraphics[width=...]{VowelSpace.png}
```

```
\caption{...}
```

```
\label{...}
```

```
\end{figure}
```

- H requires the package `float` and inserts a graphic in that exact spot—`h` will only attempt to put a graphic in that spot. `!htbp` allows a figure to be placed here *h*, at the top *t*, at the bottom *b*, or on a float page *p*.

Cross references

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- `\label{...}` is used to label objects for cross-reference.

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- `\label{...}` is used to label objects for cross-reference.
- These objects can then be referred to with the `\ref{...}` command.

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Resources

- `\label{...}` is used to label objects for cross-reference.
- These objects can then be referred to with the `\ref{...}` command.
- You can label graphics, tables, sections, pages, etc.

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Resources

- Tables are enclosed in the `tabular` environment.

```
\begin{tabular}{c|c|c}  
1 & 2 & 3\\  
\end{tabular}
```

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Resources

- Tables are enclosed in the `tabular` environment.

```
\begin{tabular}{c|c|c}
```

```
1 & 2 & 3\\
```

```
\end{tabular}
```

- `&` separates cells and `\\` ends the row.

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Resources

- Tables are enclosed in the `tabular` environment.

```
\begin{tabular}{c|c|c}
```

```
1 & 2 & 3\\
```

```
\end{tabular}
```

- `&` separates cells and `\\` ends the row.
- `{c|l|r}` controls the alignment of the text in each column.

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Resources

- Tables are enclosed in the `tabular` environment.

```
\begin{tabular}{c|c|c}
```

```
1 & 2 & 3\\
```

```
\end{tabular}
```

- `&` separates cells and `\\` ends the row.
- `{c|l|r}` controls the alignment of the text in each column.
- Horizontal dividers are marked with `|` and horizontal dividers can be created with `line` between rows.

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- Tables can be embedded in the `table` environment.

```
\begin{table}  
  \caption{...}  
  \label{table:...}  
  \begin{tabular}{c|c|c}  
    ...  
  \end{tabular}  
\end{table}
```

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- Tables can be embedded in the `table` environment.

```
\begin{table}  
  \caption{...}  
  \label{table:...}  
  \begin{tabular}{c|c|c}  
    ...  
  \end{tabular}  
\end{table}
```

- This allows you to add captions/titles and references.

natbib

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- `natbib` is a package for creating bibliographies and in-text citations.

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Resources

- `natbib` is a package for creating bibliographies and in-text citations.
- It (and the built-in) citation system use a `.bib` file, which stores your bibliography

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Resources

- `natbib` is a package for creating bibliographies and in-text citations.
- It (and the built-in) citation system use a `.bib` file, which stores your bibliography
- Programs like Mendeley can manage your `.bib` file automatically

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Resources

- natbib is a package for creating bibliographies and in-text citations.
- It (and the built-in) citation system use a .bib file, which stores your bibliography
- Programs like Mendeley can manage your .bib file automatically
- You can specify which citation style you'd like using `\bibliographystyle{...}` and by specifying unified for linguistics, apalike for APA, chicago for Chicago style, etc.

- There are many ways to cite things:
- - `\citep{...}` for (Author, Year)
 - `\citet{...}` for Author (Year)
 - `\citep{paper1,paper2}` for (Author1, Year; Author2, Year)

- There are many ways to cite things:
 - `\citep{...}` for (Author, Year)
 - `\citett{...}` for Author (Year)
 - `\citep{paper1,paper2}` for (Author1, Year; Author2, Year)
- Cheat sheet for citation commands:
<http://merkel.zoneo.net/Latex/natbib.php>

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- There are many ways to cite things:
 - `\citep{...}` for (Author, Year)
 - `\citet{...}` for Author (Year)
 - `\citep{paper1,paper2}` for (Author1, Year; Author2, Year)
- Cheat sheet for citation commands:
<http://merkel.zoneo.net/Latex/natbib.php>
- Unified style sheet for linguistics:
<https://linguistlist.org/pubs/tocs/JournalUnifiedStyleSheet2007.pdf>

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- <http://en.wikibooks.org/wiki/LaTeX/>
- Twitter: @TeXtip
- LaTeX4Ling: <http://www.essex.ac.uk/linguistics/external/clmt/latex4ling/>
- Google (of course)