LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

Resources

LATEX for Linguists

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Research Tool Workshop Series
Georgetown University
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The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
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Resources

Some basic information

- First, how do you pronounce LATEX?
  - Usually [leɪtɛk] or [lɑːtɛk]

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- First, how do you pronounce LaTeX?
    - Usually [leɪtɛk] or [lɑːtɛk]
- It's a typesetting system, not a word processor
- LaTeX documents are written with markup code, which is then interpreted and compiled by the TeX system

Some basic information

- First, how do you pronounce LATEX?
    - Usually [leɪtɛk] or [lɑːtɛk]
- It's a typesetting system, not a word processor
- LATEX documents are written with markup code, which is then interpreted and compiled by the TEX system
- It has a learning curve, but there are a number of advantages, which you will hopefully see. . .

The structure of a LaTeX document

- Every document must contain the following lines:

  ```
  \documentclass{...}
  ...
  \begin{document}
  ...
  \end{document}
  ```

Let's start with a basic document

```
\documentclass{article}

\begin{document}
Hello world!
\end{document}
```

\documentclass{}

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

\documentclass{}

LaTeX for
Linguists

Jon Havenhill

Introduction
What is LaTeX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

Resources

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

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

The preamble

- The preamble comes between 'documentclass{}' and 'begin{document}'

The preamble

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

  \documentclass{article}

  \usepackage{covington}
  \usepackage{qtree}
  \usepackage{tipa}

  \begin{document}
  · · ·

The preamble

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

Resources

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

  \documentclass{article}

  \usepackage{covington}
  \usepackage{qtree}
  \usepackage{tipa}

  \begin{document}
  ...

- You can also define new commands

Titles

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

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

Titles

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

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

Titles

- Let's add a title to our document:

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

Titles

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

Resources

- And an abstract:

  \maketitle

  \begin{abstract}
  Lorem ipsum dolor sit amet...
  \end{abstract}

  Hello world!

Some basic text formatting

- \section{} and \subsection{}

Some basic text formatting

- \section{} and \subsection{}
- \textit{}, \textbf{}, and \underline{}

Some basic text formatting

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

Resources

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

Changing the font

- The LATEXfont is called Computer Modern

Changing the font

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- Times New Roman: \usepackage{times}
  - This will set the entire document to Times New Roman

Changing the font

- The LATEXfont is called Computer Modern
- Typewriter font: \texttt{}
    - This will set the text in the brackets to monospace font
- 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

- 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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- 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

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

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- Quirks of LATEX:
  - # \$ % ^ & _ { } ~ \ 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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- Accented characters are typed with special codes, e.g., `\=o` = ō, `\o` = ø, `\'e` = é

Miscellaneous formatting issues

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- Quirks of LaTeX:

  - `# $ % ^ & _ { } ~ \` 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

- Comprehensive list of symbols: http://mirrors.ibiblio.org/CTAN/info/symbols/comprehensive/symbols-a4.pdf

Lists and bullets

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

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

Lists and bullets

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

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Lists and bullets

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

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LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

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  ```

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- 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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LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

Resources

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

```
\usepackage{enumerate}
...
\begin{enumerate}[I.]
    \item{...}
\end{enumerate}
```

Lists and bullets

- 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}
```

Lists and bullets

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

Resources

- \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}

Lists and bullets

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

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  \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

Lists and bullets

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

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  ```
  \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

- The graphicx package is used for inserting pictures

  ```
  \usepackage{graphicx}
  ...
  \begin{figure}[h]
      \includegraphics{LabovGraph.pdf}
  \end{figure}
  ```

Graphics

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

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- 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

- Some more graphics options:

```
\usepackage{graphicx}
...
\begin{figure}[H]
    \centering
    \includegraphics[width=...]{VowelSpace.png}
    \caption{...}
    \label{...}
\end{figure}
```

Graphics options

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

Resources

- 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.

Cross references

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

Cross references

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

Cross references

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

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.

Tables

- Tables are enclosed in the tabular environment.

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

Tables

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  \begin{tabular}{c|c|c}
      1 & 2 & 3\\
  \end{tabular}
- & separates cells and \\ ends the row.

Tables

- 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.

Tables

- 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.

Tables

- Tables can be embedded in the table environment.

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

Tables

- Tables can be embedded in the table environment.

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

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

`tipa` package

- It's pretty straightforward: IPA in LaTeX

- 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:]}

tipa package

LaTeX for
Linguists

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Introduction
What is LaTeX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

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  \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 ˈkʰæpˈtn̩ æ̃ndˈðə ˈd͡ʒɛ̃nɹɚɫ wɪɫ ˈpɹ̩ablijː goʊː]

- Try typesetting: [haʊ du aɪ meɪk aɪ pi eɪ sɪmbəlz ɪn leɪtɛk]
- Or: [maɪ ˈɦʊzbən̠ʃʊdˀæv̥ bɔtˀpʰətʰeɪːɾoʊz̥]

covington package

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

  \begin{example}
      \label{...}
      \begin{table}
      ...
      \end{table}
  \end{example}

covington package

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

Resources

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

```
\begin{example}
    \gll Der Mann, der Florian kennt.
    The.\textsc{m.nom} man, who.\textsc{m.nom}...
    \glt 'The man who/that knows Florian.'
    \glend
\end{example}
```

- This code produces:

(1) a. *Der*   *Mann,* *der*   *Florian* *kennt.*
         The.M.NOM man, who.M.NOM Florian knows.
        'The man who/that knows Florian.'

- This code produces:

  (1) a. *Der*   *Mann, der*   *Florian kennt.*
          The.M.NOM man,   who.M.NOM Florian   knows.
          'The man who/that knows Florian.'

- Lists can be embedded within the example environment.

covington package

LATEX for
Linguists

Jon Havenhill

Introduction
What is LATEX?
The basics
Formatting
Fonts
Margins
Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables
Linguistics
tipa
covington
qtree
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- This code produces:

  (1)　a. *Der*　　　　*Mann,*　*der*　　　　　*Florian*　*kennt.*
  　　　　The.M.NOM　man,　who.M.NOM　Florian　knows.
  　　　'The man who/that knows Florian.'

- Lists can be embedded within the example environment.
- Examples can be labeled and cross-referenced.

covington package

LaTeX for
Linguists

Jon Havenhill

Introduction
What is LaTeX?
The basics
Formatting
Fonts
Margins
Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables
Linguistics
tipa
covington
qtree
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- This code produces:

  (1)   a.   *Der*   *Mann,*   *der*   *Florian*   *kennt.*
              The.M.NOM   man,   who.M.NOM   Florian   knows.
              'The man who/that knows Florian.'

- Lists can be embedded within the example environment.
- Examples can be labeled and cross-referenced.
- Use brackets to group multiple words, or empty brackets to skip words.

qtree package

- qtree lets you make...trees!

qtree package

- qtree lets you make...trees!
- The code looks like this:

qtree package

- qtree lets you make...trees!
- The code looks like this:
- It's fairly straightforward once you get the hang of it.

qtree package

LATEX for
Linguists

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Introduction
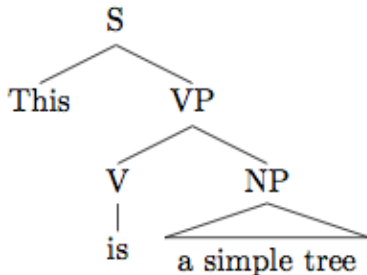What is LATEX?
The basics

Formatting
Fonts
Margins

Lists, tables,
pictures, etc.
Lists
Graphics
References
Tables

Linguistics
tipa
covington
qtree

Resources

- The code on the last slide produces:

LᴬTᴇX resources

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