GLSA LaTeX Workshop

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LaTeX (/ˈlɑːtɛx/ *LAH-tekh* or /ˈleɪtɛx/ *LAY-tekh*)

Credit: https://en.wikipedia.org/wiki/LaTeX

0. Motivations

Normal WYSIWYG word processor
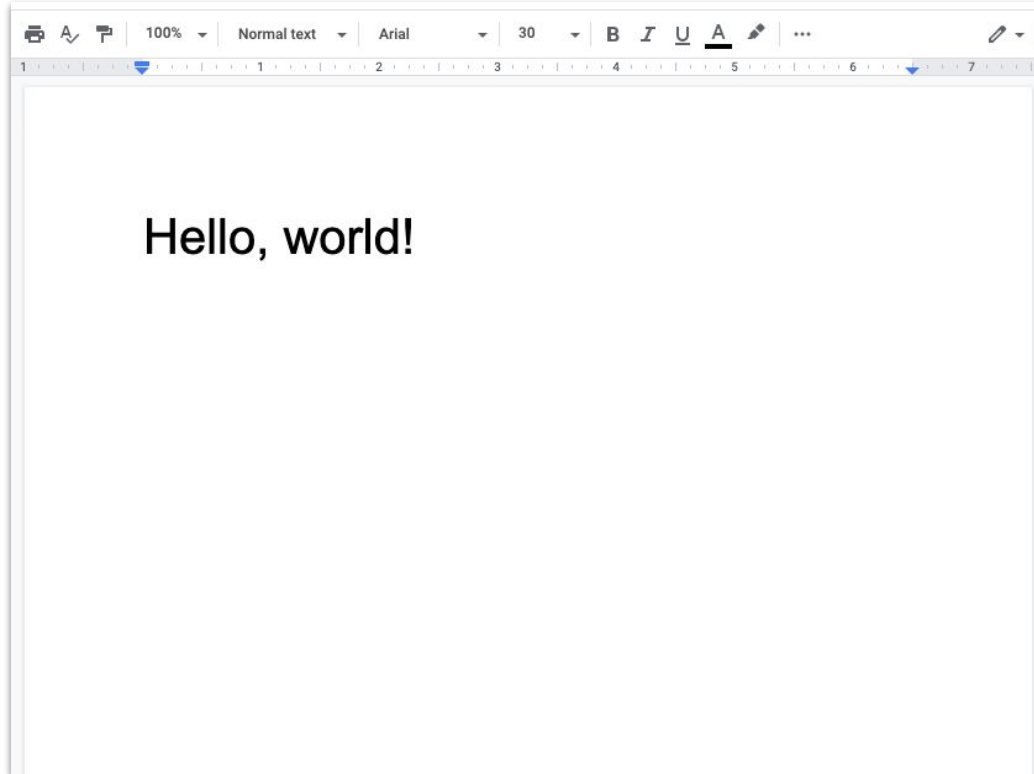
LaTeX

```latex
\documentclass{article}
\begin{document}

Hello, world!

\end{document}
```

Hello, world!

LaTeX

- Document source code is written in a .tex file
- Commands, mixed with the text, tell LaTeX what to display
- LaTeX turns the .tex file into a .pdf file

```
\documentclass{article}
\begin{document}

Hello, world!

\end{document}
```

LaTeX →

Hello, world!

hello_world.tex   hello_world.pdf

6

What's the point?

- Writing code can be hard
- Learning LaTeX *per se* is not of any value

Why is this code here? We don't need this

Automatic numbered references

Contents
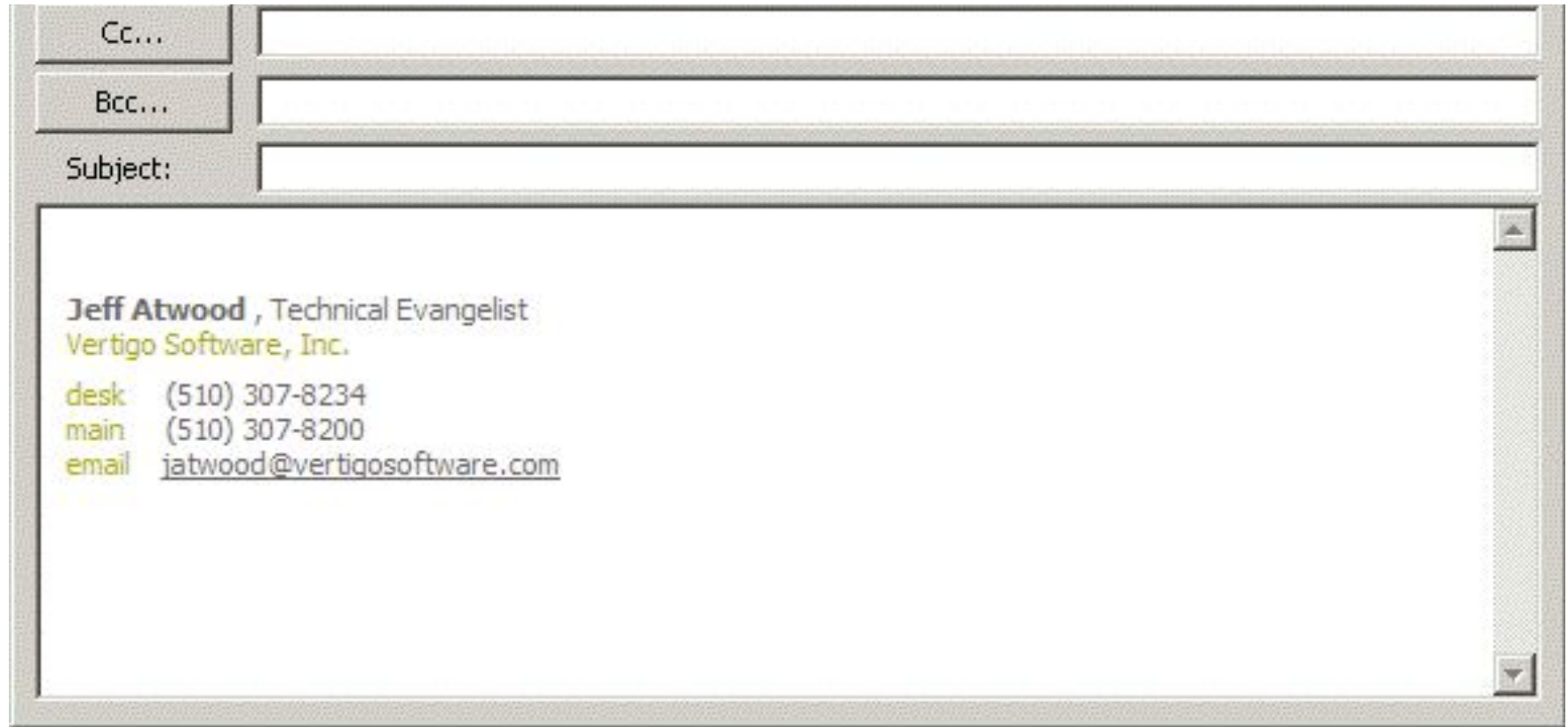
1   Example

$$E = mc^2 \tag{1}$$

See section 1 and equation 1.

Predictable and precise formatting

Cc...

Bcc...

Subject:

Jeff Atwood , Technical Evangelist
Vertigo Software, Inc.

desk   (510) 307-8234
main   (510) 307-8200
email   jatwood@vertigosoftware.com

Fantastic citations

- Change styles (from e.g. MLA to Chicago) with a **single** line!
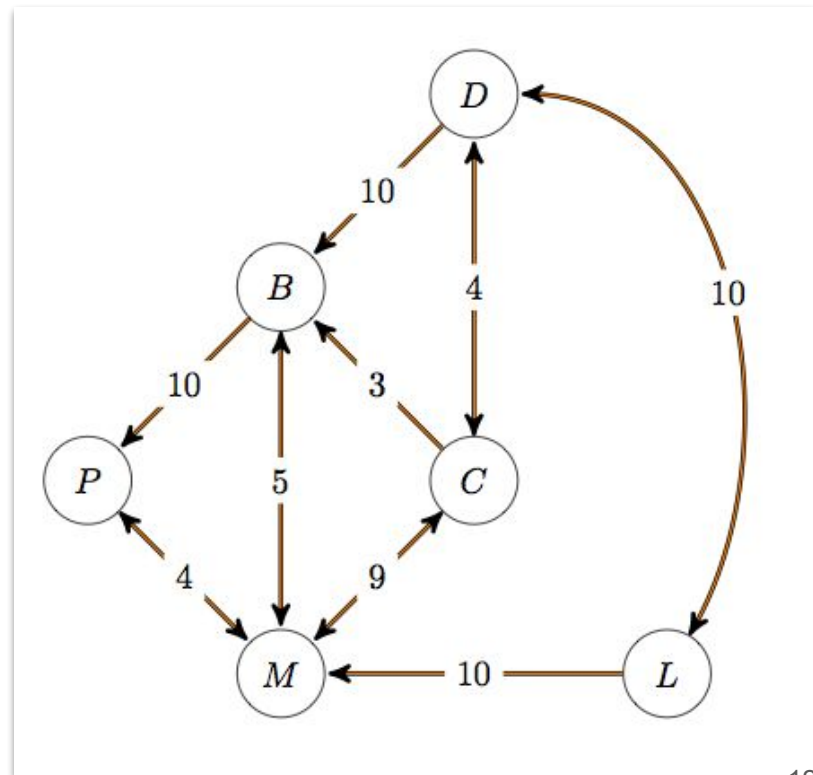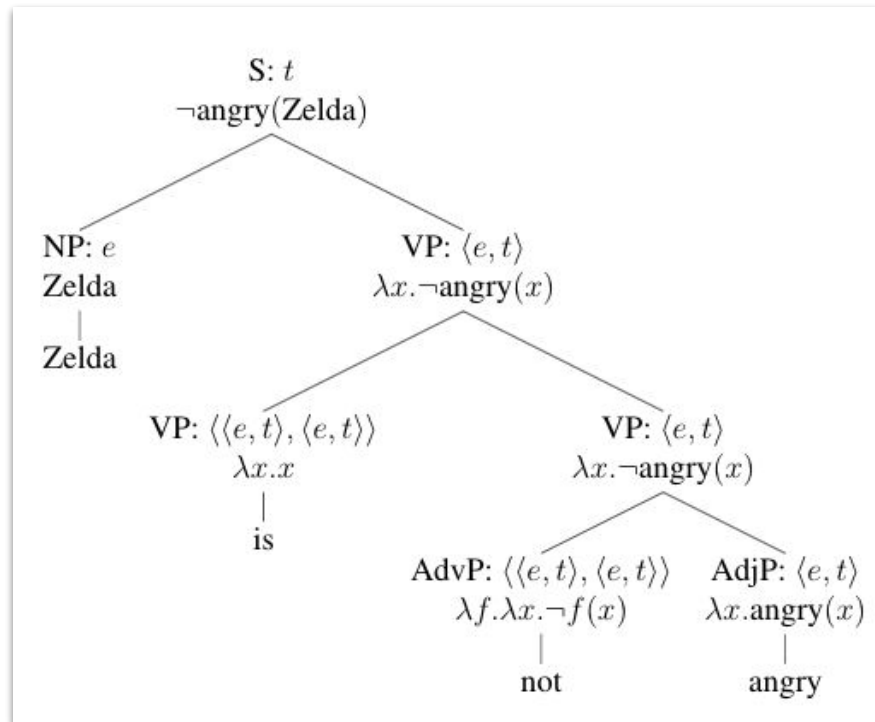
LATEX [1] is a set of macros built atop TEX [2].

References

[1] Leslie Lamport (1994) *LATEX: a document preparation system*, Addison Wesley, Massachusetts, 2nd ed.

[2] Donald E. Knuth (1986) *The TEX Book*, Addison-Wesley Professional.

Really good math support

$$y = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

Packages for specialists

TeX vs. LaTeX

- TeX
  - Typesetting system created by Donald Knuth for typesetting math-heavy texts
  - First released in 1978
  - Very low-level

- LaTeX
  - Higher-level system built on TeX
  - Provides higher-level commands that are commonly needed

- What's a compiler?
  - Computer program that takes input (the .tex file) and produces output (the .pdf)
  - We often also refer to the file as a "LaTeX file"

Outline

1. Basics
2. Text
3. Commands and Bibliographies
4. Creating a CV
5. Tables and Graphics
6. Linguistics Content
7. Concluding Remarks

1. Basics

Hello, world!

```
\documentclass{article}
\begin{document}

Hello, world!

\end{document}
```

Hello, world!

Hello, world!

```
\documentclass{article}
\begin{document}

Hello, world!

\end{document}
```

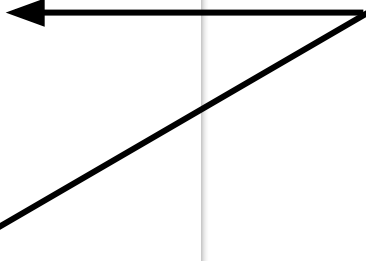**Document Class**
Controls high-level structure
of the document

(more on this later)

Hello, world!

```latex
\documentclass{article}
\begin{document}

Hello, world!

\end{document}
```

Document Body
Contains the text that will be rendered

Hello, world!

```latex
\documentclass{article}
\begin{document}

Hello, world!

\end{document}
```

Content
This is just literal text...

Hello, world!

Content

...but it can also contain things that won't render "literally", like comments...

```
\documentclass{article}
\begin{document}

% This line won't be rendered
Hello, world!

\end{document}
```

Hello, world!

Hello, world!

Content
...or a section header

```
\documentclass{article}
\begin{document}

\section{Introduction}
% This line won't be rendered
Hello, world!

\end{document}
```

1   Introduction

Hello, world!

Commands

- Commands tell LaTeX to do something beyond just printing text

Commands

- **\section** command: prints a numbered section

`\section{Introduction}`
`\section{Methodology}`

1 Introduction

2 Methodology

Commands

- **\section** command: prints a numbered section

`\section{Introduction}`
`\section{Methodology}`

1   Introduction

2   Methodology

- **\textbf** command: render text in boldface
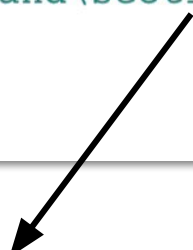
`\textbf{bold and brash}`

bold and brash

Commands

- Commands are just **abbreviations** for larger pieces of code:

```
\newcommand\section{\@startsection {section}{1}{\z@}%
                                    {-3.5ex \@plus -1ex \@minus -.2ex}%
                                    {2.3ex \@plus.2ex}%
                                    {\normalfont\Large\bfseries}}
```

```
\section{Introduction}
```

1   Introduction

- We'll see how to make our own commands later

25

Basics: recap

- **Commands** are used for formatting
- **%** can be used to leave **comments**
- **Content** goes between
  `\begin{document}` and
  `\end{document}`

```
\documentclass{article}
\begin{document}

\section{Introduction}
% This line won't be rendered
Hello, world!

\end{document}
```

1   Introduction

Hello, world!

Style Conventions

- As we've discussed, LaTeX **ignores extra whitespace**
- Use spaces and indentation to your advantage
- Don't stress out about conventions
- Do what works for you and your collaborators

Style Conventions

```
\documentclass{article}\begin{document}\section{Introduction}
\subsection{Point 1}This is a sentence.\subsection{Point 2}This is a sentence.
\section{Related Work}\end{document}
```

```
\documentclass{article}
\begin{document}
    \section{Introduction}
        \subsection{Point 1}
            This is a sentence.
        \subsection{Point 2}
            This is a sentence.
    \section{Related Work}
\end{document}
```

Both produce the
same output!

1 Introduction

1.1 Point 1

This is a sentence.

1.2 Point 2

This is a sentence.

2 Related Work

Where to write LaTeX

- Many excellent desktop editor programs
- For simplicity, we'll use Overleaf
- Follow the instructions in your **handout**

Exercise Period 1: Basics

2. Text

Space

- LaTeX tries to handle spacing words for you
- Whitespace between words (usually) doesn't matter
- Paragraphs: need a totally blank line between them

```
 4   multiple  spaces   don't
 5   really        do          anything      inline
 6
 7   paragraphs need a blank line between
 8
 9
10
11   and there could be many
```

multiple spaces don't really do anything inline
paragraphs need a blank line between
and there could be many

Space

- "But what if I need more control?"

Space

- "But what if I need more control?"
- Almost always, LaTeX will do the right thing, and you should let it
- If you have no choice, there are escape hatches:
    - `\vspace{1in}`
      1 inch vertical space
    - `\hspace{1em}`
      1 em horizontal space
    - `\\`
      Line break
    - `\pagebreak`
      Page break (skip to the next printed page)

1   Introduction

Hello, world!

A Brief Note on Units

- You'll see the these a lot in the wild
  - LaTeX documentation
  - Templates

pt	point (1/72.27 inches)
mm	millimeter
cm	centimeter
in	inch
ex	Width of "x"
em	Width of "M"

Special characters

- Some characters are reserved by LaTeX

Special characters

- Some characters are reserved by LaTeX
- We've seen this:

`\section{Introduction}`

- How do we write a literal "{"?

Special characters

- Answer: `\{`
- More special characters:

#	(hash, pound)	:	`\#`
$	(dollar)	:	`\$`
%	(percent)	:	`\%`
^	("hat")	:	`\^{}`
&	(ampersand)	:	`\&`
_	(underscore)	:	`\_`
{	(left brace)	:	`\{`

}	(right brace)	:	`\}`
~	(tilde)	:	`\~{}`
∼	(wide tilde)	:	`$\sim$`
"	(open double quotes)	:	`` `` ``
"	(close double quotes)	:	`''`
@	(alias)	:	`\string@`

Diacritics

- LaTeX can *produce* a lot of characters, but...
- Normal LaTeX doesn't support non-ASCII input 😔
- Diacritics on Latin characters can be accommodated
- Non-Latin input: need to use a different compiler, like LuaTeX or XeTeX

ò	\'o	ó	\'o	ô	\^o	õ	\~o
ō	\=o	ȯ	\.o	ö	\"o	ç	\c c
ŏ	\u o	ǒ	\v o	ő	\H o	ǫ	\c o
ọ	\d o	o̲	\b o	o͡o	\t oo		
œ	\oe	Œ	\OE	æ	\ae	Æ	\AE
å	\aa	Å	\AA				
ø	\o	Ø	\O	ł	\l	Ł	\L
ı	\i	J	\j	¡	!`	¿	?`

See more: https://tex.stackexchange.com/questions/8857/how-to-type-special-accented-letters-in-latex

More special characters

- LaTeX has an incredible number of mathematical symbols
- "How can I find how to write a special character?"
  - Official answer: read the manual http://www.texdoc.net/pkg/comprehensive
  - Actual answer:
    - Google it ("trademark latex")
    - Draw it: http://detexify.kirelabs.org/classify.html
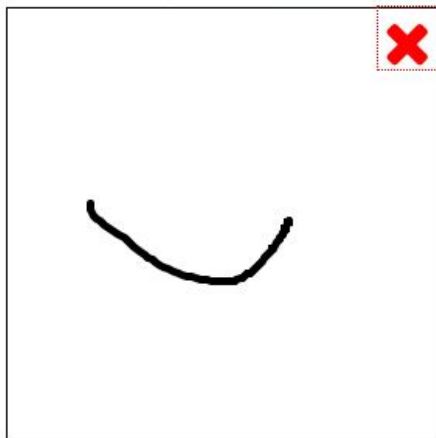
More special characters
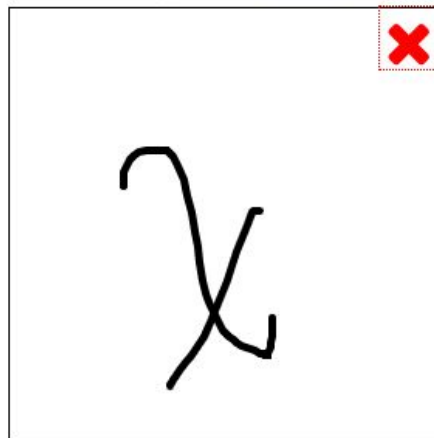
Quirky Quotations

- Shift+apostrophe ("): end quotation mark
- Double apostrophe ('): end quotation mark
- Double Grave accent / backtick (`): beginning quotation mark

"Regular quotation marks"

"Regular quotation marks"

Wrong!

``Two backticks and then quotation marks"

"Two backticks and then quotation marks"

Right!

Font families

```
roman
sans serif
monospace
boldface
italics
underline
SMALL CAPS
emphasis
  both bold and italic
```

```latex
\textrm{roman}
\textsf{sans serif}
\texttt{monospace}
\textbf{boldface}
\textit{italics}
\underline{underline}
\textsc{Small Caps}
\emph{emphasis}
\textit{\textbf{both bold and italic}}
```

Font size

- Set relative to base font size
- Set base font size by passing it as an **option** to the `\documentclass` command:

```
\documentclass[12pt]{article}
```

Code	Result
`{\tiny Text}`	→ Text
`{\scriptsize Text}`	→ Text
`{\footnotesize Text}`	→ Text
`{\small Text}`	→ Text
`{\normalsize Text}`	→ Text
`{\large Text}`	→ Text
`{\Large Text}`	→ Text
`{\LARGE Text}`	→ Text
`{\huge Text}`	→ Text
`{\Huge Text}`	→ Text

Questions so far?

Environments

- Special spans of text with different rules
- You've already seen one: `\begin{document}...\end{document}`
- Also used for lists:

```
\begin{itemize}
    \item one
    \item two
\end{itemize}
```

- one

- two

Environments

- Special spans of text with different rules
- You've already seen one: `\begin{document}...\end{document}`
- Also used for lists:

```
\begin{itemize}
    \item one
    \item two
\end{itemize}
\begin{enumerate}
    \item one
\item two
    \item[4.] Override
\end{enumerate}
\begin{description}
\item[WordPerfect] a WYSIWYG editor
\item[Bravo] the first WYSIWYG editor
\end{description}
```

- one
- two

1. one
2. two
4. Override

WordPerfect a WYSIWYG editor

Bravo the first WYSIWYG editor

Packages

- People have written code for lots of specialized tasks
  - Fancy headers
  - Trees
  - IPA
  - *SPE*-style rules
  - …
- Overleaf has most of them already installed

Packages: lorem ipsum

- The package `lipsum` provides the `\lipsum` command

```
\documentclass[12pt]{article}
\usepackage{lipsum}
\begin{document}

\lipsum

\end{document}
```

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec non-

Packages: times

- Computer Modern is not the best font
- The package `times` sets your default font to Times New Roman

```
\documentclass[12pt]{article}
\usepackage{lipsum}
\usepackage{times}
\begin{document}

\lipsum

\end{document}
```

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et

Text: recap

- **Extra whitespace** in between words **is ignored**
- **Paragraphs need a blank line** between them
- Some characters are special and need to be **written differently** to be **included literally**
- Only **Latin input** is supported
- **Environments** are areas with "different rules" that begin with `\begin{name}` and end with `\end{name}`
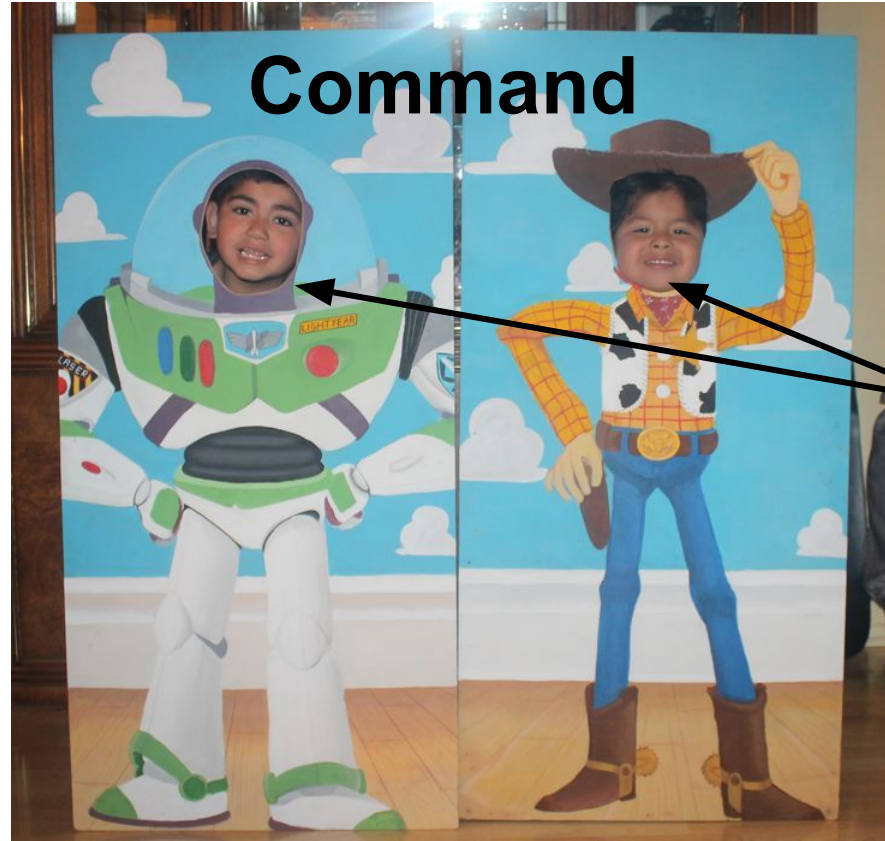- **Packages** provide **new commands** and can be loaded by including `\usepackage{name}` in the preamble

Exercise Period 2: Text

3. Commands and Bibliographies

Commands

Commands

Command

Arguments

Commands

- Command: the **foundation**
- Arguments: the **missing pieces**

Command

Arguments

Commands
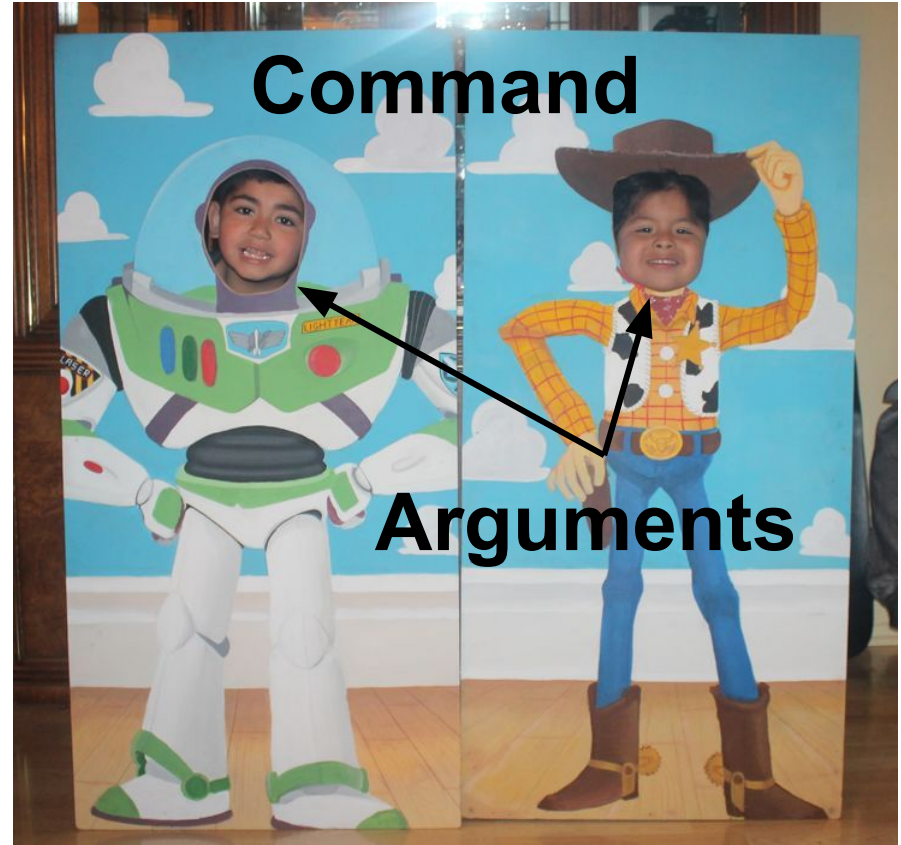
Command   **Argument**

Commands

`\section{Introduction}`

Command   **Argument**

Making a command

- Goal: takes two years, puts them in parentheses with an en-dash between them

$$(1994 - 2002)$$

Making a command

- Goal: takes two years, puts them in parentheses with an en-dash between them

$$(1994 - 2002)$$ `\yearRange{1994}{2002}`

Command   **Arguments**

Making a command

- Goal: takes two years, puts them in parentheses with an en-dash between them

Command name

```
\newcommand{\yearRange}[2]{
    (#1 -- #2)
}
```

Making a command

- Goal: takes two years, puts them in parentheses with an en-dash between them

Number of arguments

↓

```
\newcommand{\yearRange}[2]{
    (#1 -- #2)
}
```

Making a command

- Goal: takes two years, puts them in parentheses with an en-dash between them

```
\newcommand{\yearRange}[2]{
    (#1 -- #2)
}
```

Definition

Making a command

● Goal: takes two years, puts them in parentheses with an en-dash between them

`\yearRange{1994}{2002}`

↓ ↓

`(#1 -- #2)`

↓ ↓

`(1994 -- 2002)` → $(1994 - 2002)$

Footnotes

- Footnotes are a type of command
- Automatically numbered

This is a sentence about footnotes [1] that has a footnote.

---
[1]Footnotes usually show up at the bottom of the page.

1

Bibliographies and citations

- LaTeX has ***awesome*** reference management
- The basic plan
  - Tell LaTeX about your references
  - Use the `\cite` (and related) commands
  - LaTeX takes care of formatting the citation (and the references section!) for you
- Several packages to do this
- We'll use `natbib`

.bib file

- List of bibliographic items
- Not given in any particular style
- Each item has a **key**

```
@book{Labov1972,
    Address = {Philadelphia},
    Author = {William Labov},
    Publisher = {University of Pennsylvania Press},
    Title = {Sociolinguistic Patterns},
    Year = {1972}
}
```

Citing

- \citet{**key**}   McCawley (1970)

- \citep{**key**}   (McCawley, 1970)

References section

● You don't need to do anything!

`\bibliography{pubs}`

James D. McCawley. Concerning the base component of a transformational grammar. 1968.

James D. McCawley. English as a VSO language. 1970.

James D. McCawley. Verbs of bitching. 1973.

Salikoko S. Mufwene, Elaine J. Francis, and Rebecca S. Wheeler. Polymorphous linguistics: Jim McCawley's legacy. 2005.

Karan Sikka, Lucas Van Bramer, and Ajay Divakaran. Deep unified multi-modal embeddings for understanding both content and users in social media networks. *ArXiv*, abs/1905.07075, 2019.

Exercise Period 3: Commands and Bibliographies

4. Creating a CV

Exercise Period 4: CV

5. Tables and Graphics

Tables

- LaTeX tables produce good-looking output
- Unfortunately, they're tedious to create
- There are a few ways around this (Excel-to-LaTeX, online editors, outputting the LaTeX table code from R or Python, etc.)
- We're sticking with the simple, but tedious method today

Tables

```
\begin{tabular}{ |c|c|c| }
\hline
\textbf{Column 1} & \textbf{Column 2} & \textbf{Column 3} \\ \hline
1 & 2 & 3 \\ \hline
4 & 5 & 6 \\ \hline
7 & 8 & 9 \\
\hline
\end{tabular}
```

Column 1	Column 2	Column 3
1	2	3
4	5	6
7	8	9

- **l**, **c**, or **r** to specify alignment
  - Left, center, or right
- Pipes ("**|**") to add vertical lines
- **\hline** to add horizontal lines
- **** for new lines
- Ampersands separate cells

Tables

- `\begin{tabular}...\end{tabular}`
  gives us the actual table contents
- Putting the tabular inside of
  `\begin{table}...\end{table}` gives
  additional functionality
  - Captioning
  - Automatic numbering
    - Add a table above Table 1,
      and it gets automatically renamed to
      table 2

```
\begin{table}
\centering
\begin{tabular}{ |c|c|c| }
\hline
\textbf{Column 1} & \textbf{Column 2} & \textbf{Column 3} \\ \hline
1 & 2 & 3 \\ \hline
4 & 5 & 6 \\ \hline
7 & 8 & 9 \\
\hline
\end{tabular}
\caption{This is a table}
\end{table}
```

Column 1	Column 2	Column 3
1	2	3
4	5	6
7	8	9

Table 1: This is a table

Images

- Use the package **graphicx** for basic images
- If the image is small enough, you don't need to specify the size
- If you need to make it smaller, set one dimension and use
  `keepaspectratio`
  - Equivalent of resizing via corners instead of sides in PowerPoint

```
This is the logo for the linguistics department.

\includegraphics[width=2cm, keepaspectratio]{linguistics_logo.jpg}

This is a sentence below the logo.
```

This is the logo for the linguistics department.

GEORGETOWN UNIVERSITY
Georgetown College
Department of Linguistics

This is a sentence below the logo.

Images

```
This is also the logo for the linguistics department.

\includegraphics[height=6cm, keepaspectratio]{linguistics_logo.jpg}

This is another sentence below the logo.
```


This is also the logo for the linguistics department.

GEORGETOWN UNIVERSITY

Georgetown College
Department of Linguistics

This is another sentence below the logo.

Figures

- We have our image in the document, but we can do better
- Like `\begin{table}` wraps around `\begin{tabular}`, `\begin{figure}` wraps around \begin{image} (and a few other things)
- Figures have a few advantages:
  - Better spacing above and below image
  - Automatic placement (sometimes not what you want, but there's an option to turn this off)
  - Titles/Captions
  - Automatic numbering

Figures

- Turning our image into a figure

```
This is the logo for the linguistics department.

\begin{figure}[h!]
    \centering
    \includegraphics[width=6cm, keepaspectratio]{linguistics_logo.jpg}
    \caption{Logo for Georgetown Department of Linguistics}
    \label{fig:logo}
\end{figure}

This is a sentence below the logo.
```

This is the logo for the linguistics department.

Figure 1: Logo for Georgetown Department of Linguistics

This is a sentence below the logo.

Figures

This "h" means here (so override automatic placement), and "!" means important.

```
This is the logo for the linguistics department.

\begin{figure}[h!]
    \centering
    \includegraphics[width=6cm, keepaspectratio]{linguistics_logo.jpg}
    \caption{Logo for Georgetown Department of Linguistics}
    \label{fig:logo}
\end{figure}

This is a sentence below the logo.
```

This is the logo for the linguistics department.

Figure 1: Logo for Georgetown Department of Linguistics

This is a sentence below the logo.

Figures

```latex
This is the logo for the linguistics department.

\begin{figure}[h!]
    \centering
    \includegraphics[width=6cm, keepaspectratio]{linguistics_logo.jpg}
    \caption{Logo for Georgetown Department of Linguistics}
    \label{fig:logo}
\end{figure}

This is a sentence below the logo.
```

This label "`fig:logo`" doesn't appear in the figure, so what is it for?

This is the logo for the linguistics department.

Figure 1: Logo for Georgetown Department of Linguistics

This is a sentence below the logo.

Labels and References

- Within the figure, we have automatic numbering
- What if we want to refer to it in the text?
- One option is to use plain text

```
\end{figure}

The Georgetown Department of Linguistics logo (see Figure 1) is cool.
```

Labels and References

- *"See Figure x"* is not a good option because we'll have to update x if we add or remove figures before it
- Give your figure a `\label` (i.e. a name) and reference that name with `\ref{fig:logo}`
- `\label` and `\ref` also work for tables, numbered equations, etc.
- Create automatic lists of figures and tables in a ToC

```
\end{figure}

The Georgetown Department of Linguistics logo (see Figure \ref{fig:logo}) is cool.
```

This gives us the exact same output as the plain text, but we don't have to update the figure number anymore!

Equations

- An environment just like tables and figures
- Using \begin{equation} automatically enters math mode
- Math mode is not as scary as it sounds, but it's not our focus today
  - We'll talk about it a bit if we have time
  - Really just learning a lot of abbreviations for mathematical symbols
  - Allows you to quickly produce gibberish like this

$$\lim_{x \to 0} \frac{e^x - 1}{2x} \begin{bmatrix} 0 \\ 0 \end{bmatrix} \mathrm{H} \sum_{k=1}^{N} \frac{\partial}{\partial \phi} \Delta \; cos^2 k \cdot \phi \cdot p(k \mid x) \approx 42$$

Gibberish example extended from: https://en.wikibooks.org/wiki/LaTeX/Advanced_Mathematics

Exercise Period 5: Tables and Graphics

6. Linguistics Content

IPA

- We'll use the excellent `tipa` package

IPA: Behold, the chart

https://jon.dehdari.org/tutorials/tipachart_mod.pdf

(or google "tipa chart")

IPA

- ASCII input mapped to IPA

\textipa{"O:.s@m}

ˈɔː.səm

Examples

(1)　　I invited Fred for dinner.

(2)　　? I invited for dinner Fred.

(3)　　* I for invited Fred dinner.

```
\begin{exe}
\ex   I invited Fred for dinner.
\ex[?]{I invited for dinner Fred.}
\ex[*]{I for invited Fred dinner.}
\end{exe}
```

Interlinear glossed text

(2)   Pekka pelästyi   karhusta.
Pekka became afraid bear.ELA

'Pekka became afraid because of the/a bear.'

```
\begin{exe}
\ex
\gll Pekka pel\"astyi karhusta.\\
     Pekka {became afraid} bear.ELA\\
\trans `Pekka became afraid because of the/a bear.'
\end{exe}
```
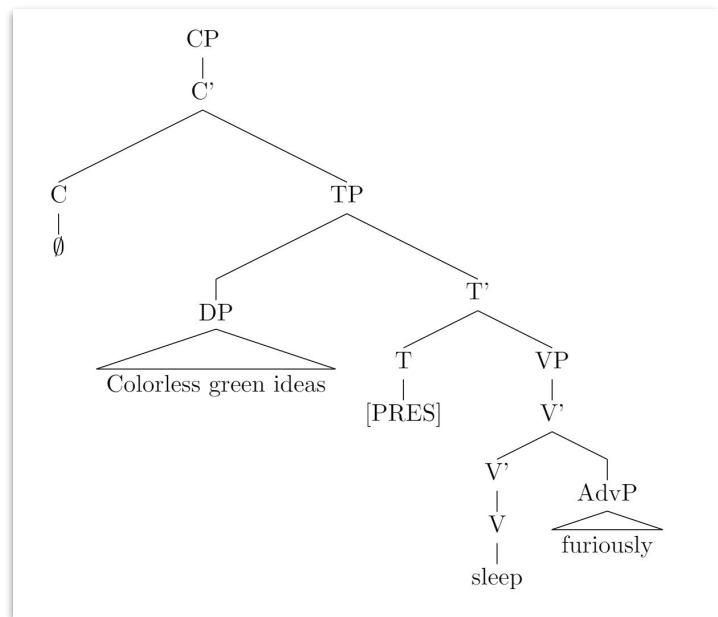
Trees

- Possible to draw trees in PowerPoint with textboxes and lines
- This quickly becomes overwhelming
- The tree below would have:
  - 17 textboxes
  - 14 lines
  - 2 triangles
- Tedious to create
- Tedious to modify
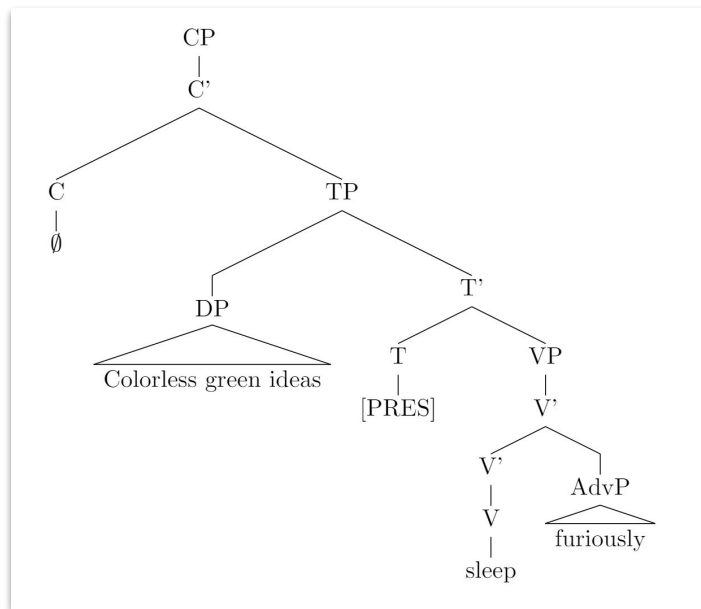
Trees

- qtree for drawing trees `\usepackage{qtree}`

```
\Tree[.CP
        [.C'
            [.C $\emptyset$ ]
            [.TP
                [\qroof{Colorless green ideas}.DP ]
                [.T'
                    [.T {[PRES]} ]
                    [.VP
                        [.V'
                            [.V'
                                [.V sleep ] ]
                            [\qroof{furiously}.AdvP ]
                        ]
                    ]
                ]
            ]
        ]
    ]
```
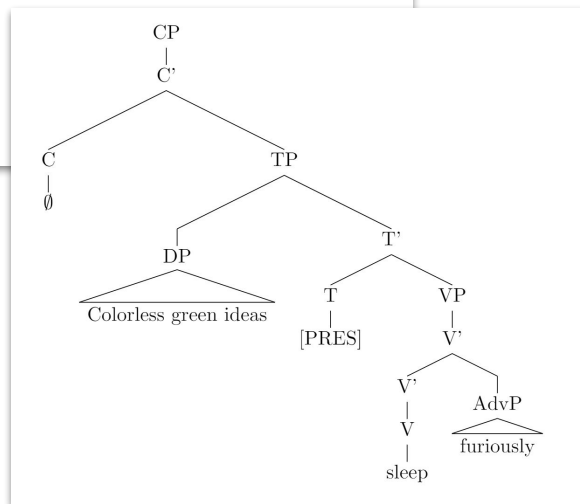
Trees

- The whole tree resembles its bracketed form
- Parent nodes start with a period like `.CP`
- Triangles are made with the `\qroof` command
- **Must** have a space after terminals
- Render square brackets and spaces by putting them inside of curly braces
  - `{[PRES]}`
  - `{terminal with spaces}`

```
\Tree[.CP
    [.C'
        [.C $\emptyset$ ]
        [.TP
            [\qroof{Colorless green ideas}.DP ]
            [.T'
                [.T {[PRES]} ]
                [.VP
                    [.V'
                        [.V'
                            [.V sleep ] ]
                        [\qroof{furiously}.AdvP ]
                    ]
                ]
            ]
        ]
    ]
]
```

Exercise Period 6: Linguistics Content

7. Concluding Remarks