

# Using L<sup>A</sup>T<sub>E</sub>X

## A Primer for Informagicians

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# What Will This Talk Cover?

- 1 Introduction
- 2 Basic  $\LaTeX$  Commands
- 3  $\LaTeX$  for Maths
- 4 Sourcecode Tools
- 5 Dissertation/Project Tools
- 6  $\LaTeX$  Frontends
- 7 Compiling  $\LaTeX$
- 8 Conclusion

# What is $\LaTeX$ ?

$\LaTeX$  is a markup language used for typesetting documents.

- 1 Write up your document in plain text
- 2 Add short commands to tell the computer how to format the document
- 3 When you're finished, the document is compiled and output as a PDF

# How does the output look?

L<sup>A</sup>T<sub>E</sub>X follows rules to writing nice-looking documents, including:

- Wide Margins
- Indentation
- Image placement
- Ligatures and kerning

L<sup>A</sup>T<sub>E</sub>X knows everything in the Style Guide!

## Typesetting of L<sup>A</sup>T<sub>E</sub>X - Ligatures



Figure: Microsoft Word



Figure: L<sup>A</sup>T<sub>E</sub>X

(images taken from <http://nitens.org/taraborelli/latex>)

Things I don't like about Word

- Sometimes the bullets print funny when converting the document
- I can't write in IPA easily and have it match the rest of my text
  - ɛkspləneɪʃən
  - ai wɪt̪ nat dʒʊdʒ yu

Figure: Microsoft Word

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Figure: L<sup>A</sup>T<sub>E</sub>X

## Basic $\LaTeX$ commands

# Basic $\LaTeX$ commands

Remember:

$\LaTeX$  is a lot like HTML (remembering this will make it easier)

# Writing L<sup>A</sup>T<sub>E</sub>X commands

L<sup>A</sup>T<sub>E</sub>X commands are not difficult. Primarily, they consist of:

Short Commands Perform this command over a few words

```
\command{some text}
```

Section Commands Perform this command over a small bit of text

```
\begin{command}
```

block of text

```
\end{command}
```

Document-wide Commands Perform this command throughout the document unless I later tell you to stop

```
\command document of text
```



# Sample Commands

*Emphasized Text* `\emph{Emphasized Text}`

**Bold Text** `\textbf{Bold Text}`

Long Quote `\begin{quote}`

Double-spacing `\doublespacing`

Centering `\centering`

But before we get carried away...

# Creating a new $\LaTeX$ document

Any  $\LaTeX$  document will need a header and a body.

The Header tells the document what it is.

The Body is where your content goes.

# Headers

For your informatics projects, your headers may look like this:

```
\documentclass[a4paper,12pt]{report}

\usepackage{amsmath,graphicx,setspace,mircotype}
\usepackage[left=2in,right=1in]{geometry}
\usepackage{fancyhdr}
    \pagestyle{fancy}
    \rhead{matric}
    \lhead{shortened project name here}
    \cfoot{\thepage}

\title{project name here}
\author{your name \and matric}
\date{date that the project is due}
```

# Headers

Setting the margins is also in the header.

The default of L<sup>A</sup>T<sub>E</sub>X is roughly 1-inch-wide margins.

Narrow Margins `\usepackage{fullpage}`

Specific Margin Widths

```
\usepackage[left=2in,right=1in]{geometry}
```

# Body

After the headers, all of the content of the document goes between document tags.

```
\begin{document}
```

All of the content of your document goes here

```
\end{document}
```

## Example L<sup>A</sup>T<sub>E</sub>X Body — Markup

```
\section{Conclusions}
\emph{``Stand firm in your refusal to remain consci
during algebra. In real life, I assure you, there i
such thing as algebra."} \cite{Lebowitz81}.
```

Prosodic markup is a task which requires highly-ski  
phoneticians, unlike part-of-speech tagging which c  
done by a computer...

# Example L<sup>A</sup>T<sub>E</sub>X Document — Output

## Section 5. Conclusions

*“Stand firm in your refusal to remain conscious during algebra. In real life, I assure you, there is no such thing as algebra.”* [Lebowitz, 1981].

Prosodic markup is a task which requires a highly-skilled phoneticians, unlike part-of-speech tagging which can be done by a computer...

# Images

Include in the header:

```
\usepackage{graphicx}
```

Include in the document:

```
\begin{figure}[htbp]
\includegraphics{UoE_crest.png}
\caption{University of Edinburgh Crest}
\label{edcrest}
\end{figure}
```

To later cite this image:

```
See figure: \ref{edcrest}
```



# Images



Figure 17: University of Edinburgh Crest

See figure: 17

# Lists

```

\begin{enumerate}
  \item Enumerated List
\end{enumerate}

\begin{itemize}
  \item Itemized List
    \subitem Subcategory
\end{itemize}

\begin{description}
  \item[Word] Explanation
\end{description}

```

## 1. Enumerated List

- Itemized List

Subcategory

**Word** Explanation

# Tables

	/in/	/iŋ/	TOTAL
Adjective	7	5	12
Expletive	3	0	3
Noun	6	4	10
Verb	69	35	104
TOTAL	85	44	129

Table: Usage if /in/ or /iŋ/  
by Part of speech

- Tables automatically adjust to fit the contents of the table
- Tables will centre themselves on the page rather than be in-line
- **There are extensions for Excel and OO.org for L<sup>A</sup>T<sub>E</sub>X tables**

# Tables

```

\begin{table}
\begin{tabular}{l|ccr}
&\textit{a}{/In/} &\textit{a}{/IN/} &TOTAL \\
\hline
Adjective & 7 & 5 & 12 \\
Expletive & 3 & 0 & 3 \\
Noun & 6 & 4 & 10 \\
Verb & 69 & 35 & 104 \\
TOTAL & 85 & 44 & 129 \\
\end{tabular}
\caption{Usage if \textit{a}{/In/} or
\textit{a}{/IN/} by Part of speech}
\label{POS}
\end{table}

```

## $\LaTeX$ for Maths

# $\LaTeX$ for Maths

Remember:

$\LaTeX$  is what we use for maths in wikis - so if you take anything away from this presentation, may it be how to show your math to other folk on the CompSoc wiki or on Wikipedia

# The Maths Environment

The Maths environment can be done either as an in-line equation or as a long equation/example:  $\cos(2\theta) = \cos^2 \theta - \sin^2 \theta$

---

In-line equation:

```
$ \cos (2\theta) = \cos^2 \theta - \sin^2 \theta $
```

Block equation:

```
\[  
\cos (2\theta) = \cos^2 \theta - \sin^2 \theta  
\]
```

# The Maths Environment

The Maths environment can, alternatively, be done with `\begin{}` environment tags:  $\cos(2\theta) = \cos^2 \theta - \sin^2 \theta$

---

In-line equation:

```
\begin{math}
\cos (2\theta) = \cos^2 \theta - \sin^2 \theta
\end{math}
```

Block equation:

```
\begin{equation}
\cos (2\theta) = \cos^2 \theta - \sin^2 \theta
\end{equation}
```





# AMSMaths

Requires the tipa package:

```
\usepackage{amsmath,amssymb}
```

---

$$x = y \qquad X = Y \qquad a = b + c \quad (1)$$

$$x = y \qquad X = Y \qquad a = b \quad (2)$$

$$x + x = y + y \qquad X + X = Y + Y \qquad ab = cb \quad (3)$$

```
\begin{align}
x&=y & & X&=Y & & a&=b+c\\
x&=y & & X&=Y & & a&=b\\
x+x&=y+y & & X+X&=Y+Y & & ab&=cb
\end{align}
```

## Sourcecode Tools

# Sourcecode Tools

Remember:

You need to know how to code, you'll need to prove that to lecturers. May as well make it look pretty, too

# Verbatim

Verbatim lets you escape L<sup>A</sup>T<sub>E</sub>X code and other special characters and will display text verbatim. This verbatim text will appear as typewritertext: `print "hello"`

---

In-line text:

```
\verb!print "hello"!
```

Block of text:

```
\begin{verbatim}print "hello"\end{verbatim}
```

# Listings Package

Requires the listings package: `\usepackage{listings}`

Declare your language in the body of your document:

```
\lstinputlisting[label=helloworld,  
caption=Hello World in Java]{HelloWorld.java}
```

# Listings Package

## Listing 1: Hello World in Java

```
1 class HelloWorld
2 {
3     public static void main(String[] args)
4     {
5         System.out.println("Hello!");
6     }
7 }
```

---

## Dissertation and Project Tools

# Dissertation and Project Tools

Remember:

You'll have to write a few papers— it's not all maths assignments.

# Automatic Reference Pages

L<sup>A</sup>T<sub>E</sub>X can create Reference pages with simple commands

Title page `\maketitle`

Tables of Contents `\tableofcontents`

Bibliography `\bibliography{mybibliography.bib}`

Bibliography Style `\bibliographystyle{jmb}`

# Automatic Reference Pages - Title Pages

## Variations in Realisations of Word-Final ⟨*-ing*⟩ in Scots English

Denise Wood      s0675940

20 March 2008

The realisations of the morpheme ⟨*ing*⟩ is one of the more widely studied linguistic segments in the English Language The two common forms Present Day English forms are /ɪn/ and /ɪŋ/. Quite often, with the use of /ɪŋ/



# Automatic Reference Pages - Bibliography

## Bibliography

- [Daly, 2007] Daly, M. (2007). *Nottingham Modern Languages Publications Archive*, .
- [Hazen, 2006] Hazen, K. (2006). *Encyclopedia of Language and Linguistics* chapter IN/ING Variable. Oxford: Elsevier.
- [Labov, 1989] Labov, W. (1989). *Language Variation and Change*, chapter The Child as Linguistic Historian. Cambridge University Press.
- [Meyerhoff, 2006] Meyerhoff, M. (2006). *Introducing Sociolinguistics*. Routledge.
- [Trudgill, 2000] Trudgill, P. (2000). *Sociolinguistics: An introduction to language and society*. Penguin Books, fourth edition.

# Including Other Documents

In the main document:

```
\input{filename}
```

In the document to be included:

```
Document Content Only
```

# Including Other Documents

```
\section{Results}  
\input{results.tex}
```

```
\appendix  
\section{Transcription}  
I have taken the extra steps of transcribing the  
dialogue for ease of reference. The transcription  
follows below:
```

```
\input{transcription.tex}
```

# L<sup>A</sup>T<sub>E</sub>X frontends

For writing L<sup>A</sup>T<sub>E</sub>X , any text editor will do with some form of L<sup>A</sup>T<sub>E</sub>X compiler is necessary to compile it.

There are many frontends and compilers available:

- LyX (any OS) (pseudo-WYSIWYG frontend)
- MikT<sub>E</sub>X with WinShell (WinEdt on open-access uni computers) (Windows XP, Vista)
- TeXShop (Mac OSX)
- Kile (on the DICE lab computers) (Linux, KDE)
- Text file and command-line compiling

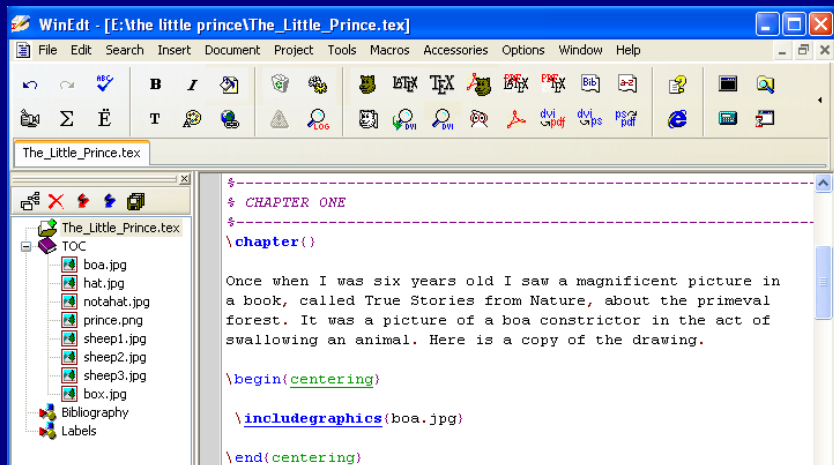
# MikT<sub>E</sub>X with WinEdt (Windows)

MikT<sub>E</sub>X and WinEdt are available on the University computers.

For a how-to guide on using WinEdt, check their website at  
[www.winedt.com](http://www.winedt.com)

Click on Winedt and TeX for a step-by-step guide

# WinEdt for Windows

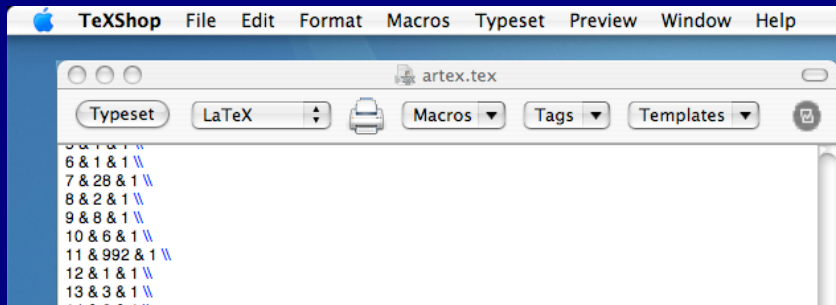


# TeXShop

TeXShop is available for Mac users

For a how-to guide on using TeXShop, check their website at  
[www.uoregon.edu/ koch/texshop](http://www.uoregon.edu/~koch/texshop)

# TeXShop for Mac



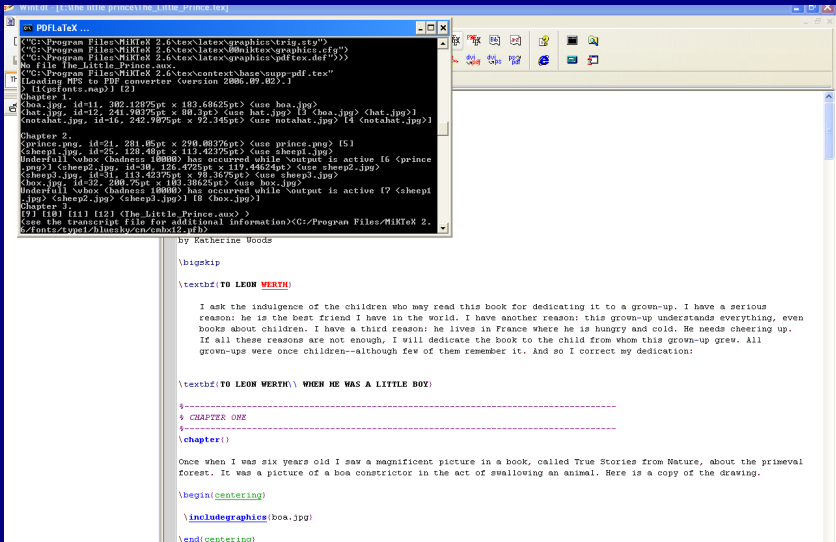


# Compiling $\LaTeX$

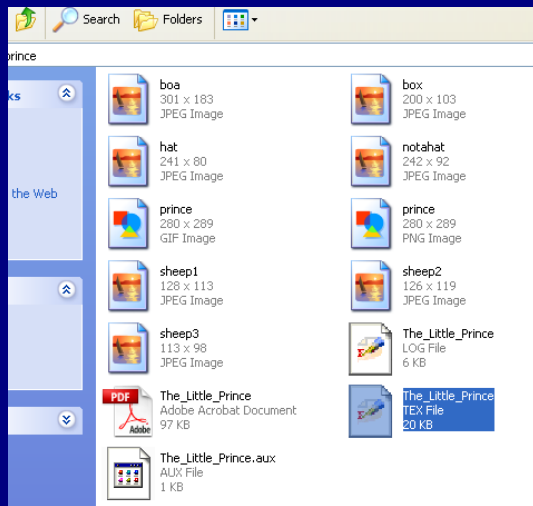
Some notes about compiling:

- You must compile the  $\LaTeX$  code twice to match up references
- Different frontends have different ways of compiling - use PDF  $\LaTeX$
- Don't worry about problems compiling - there IS a solution

# Run PDF LaTeX



# Files Created



# L<sup>A</sup>T<sub>E</sub>X errors

There are 3 different types of problems that L<sup>A</sup>T<sub>E</sub>X will notify you about:

- 1** Errors - L<sup>A</sup>T<sub>E</sub>X will not compile
- 2** Warnings - L<sup>A</sup>T<sub>E</sub>X will compile - maybe ignore
- 3** Badboxes - L<sup>A</sup>T<sub>E</sub>X will compile - can be ignored

When in doubt - query “LaTeX (problem)”. The internet is your friend.

# Resources

LaTeX cheat-sheet:

`http://stdout.org/winston/latex/latexsheet-a4.pdf`

AMS Maths: `http://www.ams.org/tex/amslatex.html`

WikiBooks  $\LaTeX$  Maths

`http://en.wikibooks.org/wiki/LaTeX/Mathematics`

# Conclusion

If you have any questions about L<sup>A</sup>T<sub>E</sub>X or this presentation, feel free to ask now or e-mail me at:

[d.n.wood@sms.ed.ac.uk](mailto:d.n.wood@sms.ed.ac.uk)

If you'd like a copy of these slides, just send me an e-mail or find them at [www.techaddiction.co.uk/portfolio](http://www.techaddiction.co.uk/portfolio).

# Thanks

Special thanks go to Chris ‘Xoebus’ Brown for doing the slide on the Listings Package and the work that entailed.