Starter \LaTeX\ 2\varepsilon

Ryan Hansen
History

\[ \text{TEx} \downarrow \text{LATEX 2\text{\textepsilon}} \]
What Is It?

Text Document

\texttt{LaTeX \text{2e}}

Compiler

Finished Document
Best For

- Technical Papers
- Mathematics
- Bibliographies
- Simple Graphics
Basic Syntax

• Case Sensitive!
• Start With \n• Some:
  - Optional Arguments - [ ]
  - Mandatory Arguments - { }
Starting Documents

• \documentclass{...
  - article (amsart)
  - report
  - book
  - slides

• Defaults: 10pt, letterpaper, portrait
\begin And \end

- Begin And End Environments
  - \begin{document}, \end{document}
  - itemize
  - enumerate
  - quote
  - verbatim
Whitespace

- Multiple Spaces = One Space
  - \hspace{0.5cm} demo spacing
  - \quad demo spacing
  - \qquad demo spacing
- \newpage
Simple Example

\documentclass{article}
\begin{document}
Hello World!
\end{document}

Hello World!
% paragraphs.tex
\documentclass{article}
\begin{document}
It was the best of times\
It was the worst of times
The End.
\end{document}
Here are some lists:

1. Lists are cool!
   - Just a note
   - Another note
2. Next item here
Compiling

• Source Files: filename.tex
• Multiple Outputs
  – DVI, PS, PDF, HTML
• Output: filename.pdf
# Special Characters

<table>
<thead>
<tr>
<th>Character</th>
<th>LATEX2e</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>#</td>
</tr>
<tr>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>^</td>
<td>^{}</td>
</tr>
<tr>
<td>&amp;</td>
<td>&amp;</td>
</tr>
<tr>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>{</td>
<td>{</td>
</tr>
<tr>
<td>}</td>
<td>}</td>
</tr>
<tr>
<td>~</td>
<td>~{}</td>
</tr>
<tr>
<td>\</td>
<td>$\textbackslash$</td>
</tr>
</tbody>
</table>
Common Error Message

• “overfull hbox”
  - \texttt{sloppy} or \texttt{fussy}
Sectioning

- \chapter{...} (report/book)
- \section{...}
- \subsection{...}
- \subsubsection{...} (book)
- \part{...} (no number change)
- \paragraph{...}
- \subparagraph{...}
- \subsubparagraph{...} (book)
- \subsubsubparagraph{...} (book)
Sectioning

• End When New Begins

• \section*{...}

  *: Unnumbered
Referencing Sections

• Use \label{...}
  - \ref{...}
  - \pageref{...}
Referencing Sections

1 This is a section
Hey, check this out!

1.1 Subsection here!
Woo!

2 Next section
Go to 1.1.
It’s on page 1.
Table Of Contents

• Based On Sectioning
  - \tableofcontents

• Compile twice


% sections.tex
\documentclass{article}
\begin{document}
\tableofcontents

\newpage
\section{This is a section}
Hey, check this out!
\subsection{This is a subsection}
Awesome!
\section{Next section}
Cool.
\end{document}

\tableofcontents

\contentsline{section}{This is a section}{2}
\contentsline{subsection}{This is a subsection}{2}
\contentsline{section}{Next section}{2}

1 This is a section

Hey, check this out!

1.1 This is a subsection

Awesome!

2 Next section

Cool.
Titles

- Automatically Created
  - \maketitle \textbf{After} \texttt{\begin{document}}
How I Solved my Imaginary Problems

Ryan Hansen

Blah blah blah.
How I Solved my Imaginary Problems

Ryan Hansen

Math Department, West Virginia University, Morgantown, WV 26505
E-mail address: rhansen@math.wvu.edu

Blah blah blah.
More stuff goes here.

1991 Mathematics Subject Classification. subject classification.
Key words and phrases. These would be the keywords.
Thanks can go here!
Footnotes

- Automatically Numbered
  - \footnote{...}
Font Changes

• \textrm{...} - Default \hspace{3cm} roman
• \texttt{...} \hspace{3cm} typewriter
• \textit{...} \hspace{3cm} italic
• \textsc{...} \hspace{3cm} SMALL CAPITAL
• \textsf{...} \hspace{3cm} sans-serif
• \textbf{...} \hspace{3cm} bold
Font Changes

- \textit{tiny}\{...\}
- \textit{small}\{...\}
- \textit{normalsize}\{...\}
- \textit{large}\{...\}
- \textit{Large}\{...\}
- \textit{huge}\{...\}
- \textit{Huge}\{...\}

tiny
small
normalsize
large
Large
huge
Huge
Font Changes

• \underline{...}
• \textit{...}
Writing Math

- Inline $...$
- Math Mode \[...\]
Some say that $2 + 2 = 4$ but I say that $2^2 = 4$ and also that $2 \cdot 2 = 4$.

Fermat’s Last Equation:

$$x^n + y^n \neq z^n \text{ for } n \geq 3$$
Equations

- \begin{equation}...\end{equation}
- eqnarray - Two Or More

- Unlabeled
  - equation*
  - eqnarray*
    - \nonumber
Equations

Pythagorean Theorem:
\begin{equation}
\label{py}
c^2 = a^2 + b^2
\end{equation}

Please refer to (1).
Packages

- Add New Commands
- \usepackage{...}
- amssymb
Fermat’s Last Theorem:

\[ x^n + y^n \neq z^n : \forall n \geq 3 \text{ and } n,x,y,z \in \mathbb{Z} \setminus \{0\} \]