

The Joys of \LaTeX

A ≤ 45 minute lecture, with examples, introducing the world's standard typesetting language.

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<http://www-rohan.sdsu.edu/~vadim/latex-reut09.pdf>

<http://www-rohan.sdsu.edu/~vadim/latex-reut09.tex>



What is \LaTeX ?

\LaTeX is not:

- Word processor
- Editor
- Computer program

\LaTeX is:

- Language in which documents are specified in a logical (not physical) manner



Benefits

- Professional-looking output

Ligatures: of fluffing (MS Word) of fluffing (L^AT_EX)

Kerning: Table (MS Word) Table (L^AT_EX)

- math formulas, footnotes, references, tables of contents, indices, bibliographies, etc.
- Device and platform independent
- Text-based
- Encourages good organization
- Free



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- Professional-looking output

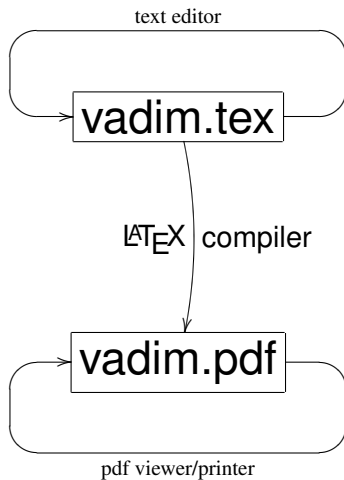
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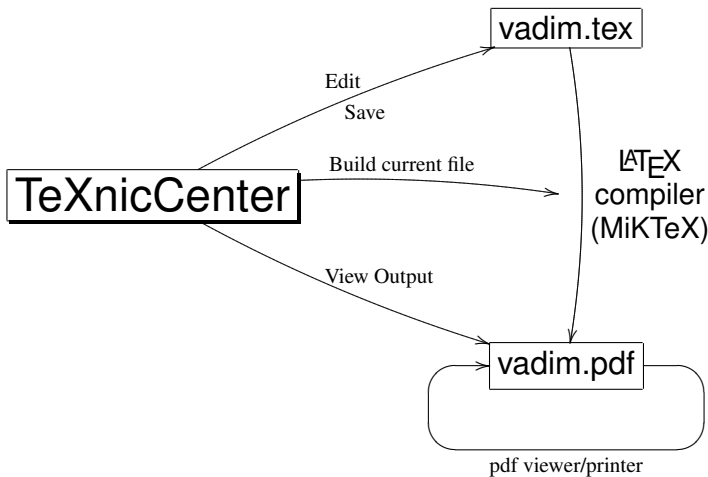
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Simplified Usage



Less Simplified Usage



TeXnicCenter

The screenshot displays the TeXnicCenter application window titled "TeXnicCenter - [Latex 30mins.tex]". The interface includes a menu bar (File, Edit, Search, View, Insert, Math, Format, Project, Build, Tools, Window, Help) and a toolbar with various icons. A green circle highlights the toolbar icons for compilation, including a green arrow pointing to the "LaTeX => PDF" dropdown menu. The main text area shows LaTeX source code with line numbers 254 through 266. The code defines an "Other Resources" section with several items, each containing a URL. The error window at the bottom shows the following message:

```
I found no \bibstyle command---while reading file D:\Inactive\Talks\Latex 30mins.aux
(There were 3 error messages)
Couldn't find input index file D:\Inactive\Talks\Latex 30mins nor D:\Inactive\Talks\Latex
Usage: C:\Program Files\MiKTeX 2.5\miktex\bin\makeindex.exe [-ilqrcgLT] [-s sty] [-o ind]

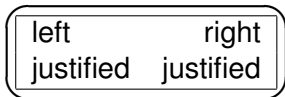
LaTeX-Result: 1 Error(s), 0 Warning(s), 11 Bad Box(es), 12 Page(s)
```

The status bar at the bottom indicates "Ln 257, Col 5" and "UNIX" mode. The bottom-most status bar shows "Press F1 to get help" and navigation buttons for Build, Find 1, Find 2, and Parse.



Example 2

```
\usepackage{fancybox}
\begin{document}
\Ovalbox{
  \begin{tabular}{|lr|}
  \hline left & right \\
  justified & justified \\
  \hline \end{tabular}
}
\end{document}
not compiled
```



Example 4

```
\newtheorem{vthm}{Theorem}
\begin{vthm}good theorem\label{good}\end{vthm}
\begin{proof}blah, blah\end{proof}    (amsthm)
\begin{vthm}great theorem\label{great}\end{vthm}
We now generalize Theorem \ref{good}
and Theorem \ref{great}.
```

Theorem 1. *good theorem*

Proof.

blah, blah



Theorem 2. *great theorem*

We now generalize Theorem 1 and Theorem 2.



Example 5

```
$$\sum_{i=1}^73i \hspace{1in}
\underbrace{\sum}_{i=1}^73i \hspace{1in}
\underbrace{x \rightarrow \infty}_{\lim} x^2$\\
\vspace{3.6mm}
```

$$\sum_{i=1}^7 3i$$

$$\sum_{i=1}^7 3i$$

$$\lim_{x \rightarrow \infty} x^2$$

Use ‘ and ’; avoid the sweet temptation of "

Other units: in, cm, pt, weird ones like bp(=1.00375pt),
`\textwidth`, `\pagewidth`



Basics

- Always load:
`amsmath, amsthm, amssymb, amsfonts`
- Often useful: `fullpage`
- All packages at: <http://www.ctan.org>



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Including Graphics

- Use package `graphicx` (not needed with Beamer), and LaTeX => PDF.

- For raster images (png, jpg, gif) and pdf, use:

```
\includegraphics[width=2in]{vadims_image}
```

No extension needed, the wrong file is picked automatically

- For vector images, convert eps to pdf using `epstopdf`.
- If it didn't work, or is misaligned, prepare to waste an afternoon. Try: `minipage`, `raisebox`, `figure`



Beamer

- Packages `latex-beamer`, `pgf`, `xcolor` must be installed.
- Pick a theme, e.g. `Singapore`
- Most \LaTeX commands unchanged, some new ones (e.g. `\pause`)
Find other people's code and steal it.
- Manual available at:
<http://www.ctan.org/tex-archive/macros/latex/contrib/beamer/doc/beameruserguide.pdf>



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BibTeX

```
\cite{lamport}  
\bibliography{vadim} \bibliographystyle{plain}
```

```
@BOOK{lamport,  
  author = "Leslie Lamport",  
  title = "{\LaTeX:} {A} Document ...",  
  publisher = "Addison-Wesley",  
  year = 1986 }
```

<http://www.ams.org/mathscinet/search>



