

L^AT_EX Course 2011

Part 1: Short Introduction

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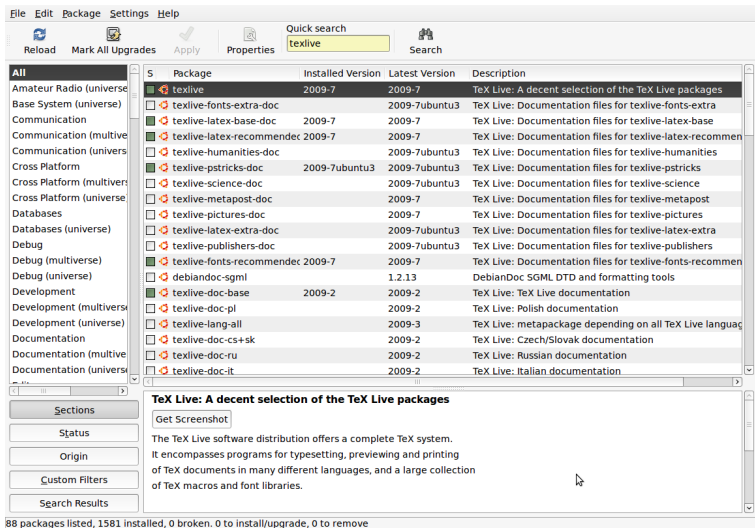
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The very same \LaTeX in different packages:

- TeXLive (Linux, Mac OS X, Windows)
- MacTeX (Mac OS X)
- MikTeX (Windows)
- ...

L^AT_EX on Ubuntu Linux through Synaptic



The screenshot shows the Synaptic Package Manager window. The top menu bar includes File, Edit, Package, Settings, and Help. Below the menu is a toolbar with icons for Reload, Mark All Upgrades, Apply, Properties, and a Quick search field containing the text 'texlive'. A Search button is also present. The main window is divided into two panes. The left pane shows a category tree with 'All' selected. The right pane displays a list of packages matching the search criteria. The packages are listed in a table with columns for Package, Installed Version, Latest Version, and Description. The first package, 'texlive', is highlighted. Below the table, there is a section titled 'TeX Live: A decent selection of the TeX Live packages' with a 'Get Screenshot' button and a description of the TeX Live system.

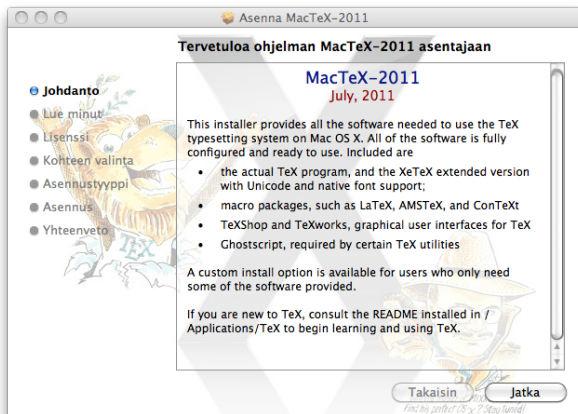
Package	Installed Version	Latest Version	Description
texlive	2009-7	2009-7	TeX Live: A decent selection of the TeX Live packages
texlive-fonts-extra-doc		2009-7ubuntu3	TeX Live: Documentation files for texlive-fonts-extra
texlive-latex-base-doc	2009-7	2009-7	TeX Live: Documentation files for texlive-latex-base
texlive-latex-recommender	2009-7	2009-7	TeX Live: Documentation files for texlive-latex-recommender
texlive-humanities-doc		2009-7ubuntu3	TeX Live: Documentation files for texlive-humanities
texlive-pstricks-doc	2009-7ubuntu3	2009-7ubuntu3	TeX Live: Documentation files for texlive-pstricks
texlive-science-doc		2009-7ubuntu3	TeX Live: Documentation files for texlive-science
texlive-metapost-doc		2009-7	TeX Live: Documentation files for texlive-metapost
texlive-pictures-doc		2009-7	TeX Live: Documentation files for texlive-pictures
texlive-latex-extra-doc		2009-7ubuntu3	TeX Live: Documentation files for texlive-latex-extra
texlive-publishers-doc		2009-7ubuntu3	TeX Live: Documentation files for texlive-publishers
texlive-fonts-recommender	2009-7	2009-7	TeX Live: Documentation files for texlive-fonts-recommender
debiandoc-sgml		1.2.13	DebianDoc SGML DTD and formatting tools
texlive-doc-base	2009-2	2009-2	TeX Live: TeX Live documentation
texlive-doc-pl		2009-2	TeX Live: Polish documentation
texlive-lang-all		2009-3	TeX Live: metapackage depending on all TeX Live languages
texlive-doc-cs+sk		2009-2	TeX Live: Czech/Slovak documentation
texlive-doc-ru		2009-2	TeX Live: Russian documentation
texlive-doc-it		2009-2	TeX Live: Italian documentation

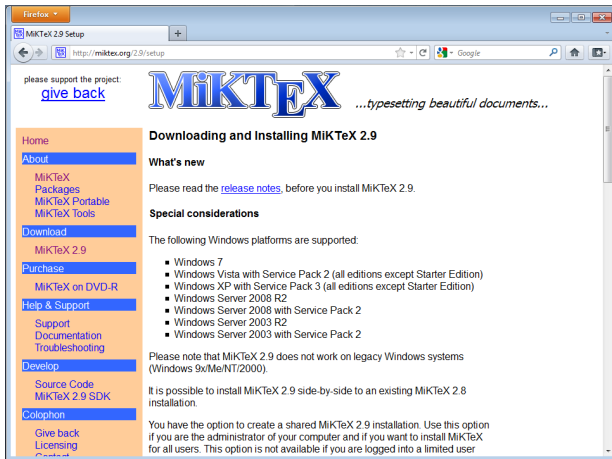
TeX Live: A decent selection of the TeX Live packages

Get Screenshot

The TeX Live software distribution offers a complete TeX system. It encompasses programs for typesetting, previewing and printing of TeX documents in many different languages, and a large collection of TeX macros and font libraries.

88 packages listed, 1581 installed, 0 broken. 0 to install/upgrade, 0 to remove





<http://miktex.org/2.9/setup>

An example document preamble:

```
\documentclass[a4paper,10pt]{article} % style
\usepackage[latin1]{inputenc} % or [ansinew]
\usepackage[finnish]{babel}      % hyphenation
\usepackage{graphicx}            % for images

\begin{document}
\section{Introduction}
During the last few decades, the amount of digital
content has increased enormously
\dots
\end{document}
```

Just call LaTeX or PDFLaTeX directly

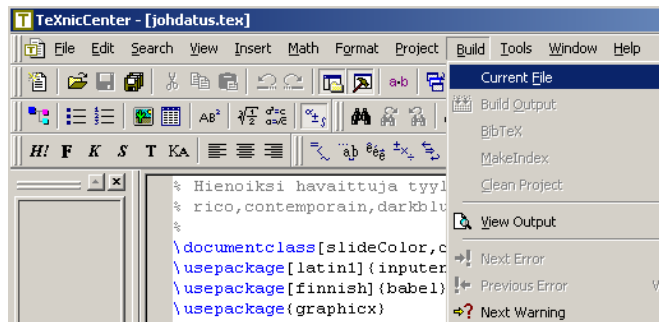
```
$ latex myfile.tex; dvipdf myfile # or  
$ pdflatex myfile
```

and then inspect the content:

```
$ gnome-open myfile.pdf # Linux  
$ open myfile.pdf       # Mac
```

Compilation: Windows

Point and click - depending on the chosen interface



Equations are written between the \$ -characters. For example,

$$\text{\$}\text{\textbackslash sqrt}\{\text{x}^3\}\text{\$} \quad \mapsto \quad \sqrt{x^3}$$

or separately as

$$\text{\textbackslash[} \quad \text{\textbackslash sqrt}\{\text{x}^3\} \quad \text{\textbackslash]}$$

or using

```
\begin{equation}
\sqrt{x^3}
\end{equation}
```

where the latter gives the equation also a number.

Examples:

```
\begin{equation}\label{eq:gammaf}  
  \Gamma (n) :=  
  \int_0^{\infty} x^{n-1}e^{-x} dx  
\end{equation}
```

Observe that (\ref{eq:gammaf}) does not converge when $n=0$

$$\Gamma(n) := \int_0^{\infty} x^{n-1} e^{-x} dx \quad (1)$$

Observe that (1) does not converge when $n = 0$.

```
\[ \neg A := X \setminus A \]
```

$$\neg A := X \setminus A$$

```
\[ \zeta(s) :=  
  \sum_{k=1}^{\infty} \frac{1}{k^s} \]
```

$$\zeta(s) := \sum_{k=1}^{\infty} \frac{1}{k^s}$$

It is best to learn the basic commands

`\frac{}{}`

`\int`

`\sum`

`\dots`

by heart. There are just a few of them and they are rather logical.

(Observe that `\int` = integral, not an integer...)

Structures define how the text is displayed.

Examples:

```
\begin{enumerate}  
\item Firstly,  
\item Secondly\dots  
\end{enumerate}
```

- 1 Firstly,
- 2 Secondly...

```
\begin{itemize}  
\item gloves  
\item shoes  
\end{itemize}
```

- gloves
- shoes

```
My maths teaches was a genius to explain things:  
\begin{quote}  
We define the determinant like a civil service  
department would, in a rather boring way: It is just  
thrown to your face with the motivation being  
"learn it or die".  
\end{quote}
```

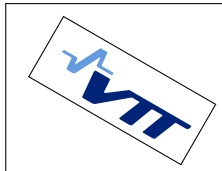
My maths teaches was a genius to explain things:

*We define the determinant like a civil service
department would, in a rather boring way: It is just
thrown to your face with the motivation being "learn it
or die".*

In \LaTeX , everything can be thought of being composed of boxes, aligned with respect to each other, and the distances between them.

Examples:

```
\begin{center}  
\fbox{  
\rotatebox{-30}{  
\fbox{  
\includegraphics[width=2cm]{  
/img/vttplain}}}  
\vspace*{1cm}
```




```
\reflectbox{  
\rotatebox{30}{  
\resizebox{!}{5mm}{Tricky stuff}  
}}
```

```
\vspace*{1cm}  
\rule{3cm}{1ex}
```

Tricky stuff



Summary

- The LaTeX manuscript file consists of plain text. It takes only a little amount of disk space and it is simple to send to others.
- The manuscript always begins with the `"\documentclass [<params>] {<class>}"` command¹.
- The text consists of the commands (called tags in HTML) and the actual text.
- This is not harder than writing HTML5 / CSS3 by hand. To be honest, LaTeX is much easier!

¹I suggest to copy the preamble from an existing template. Try to avoid the ancient templates from the early 80's, as things have changes since that.