LaTeX Course 2011

Part 1: Short Introduction

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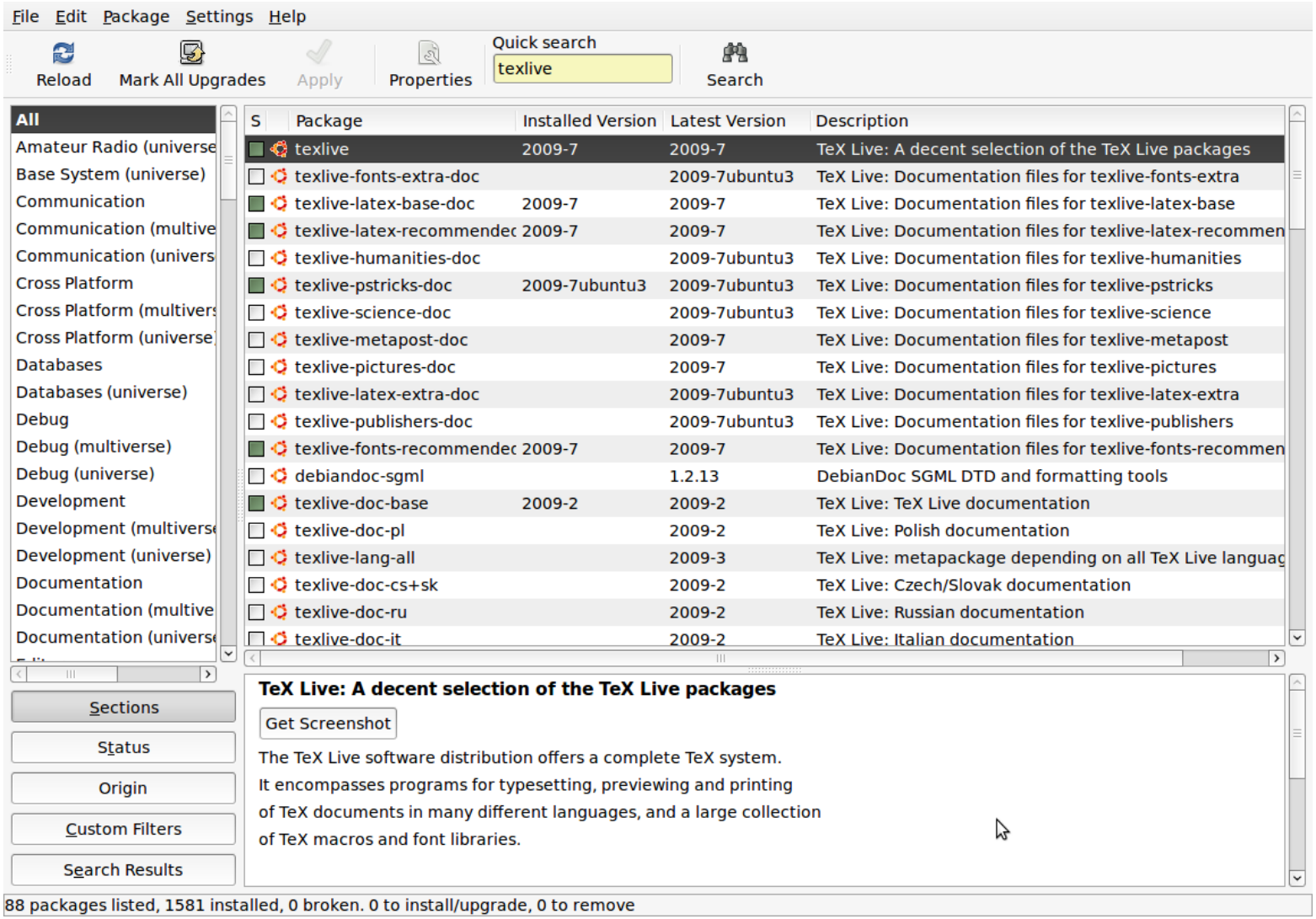
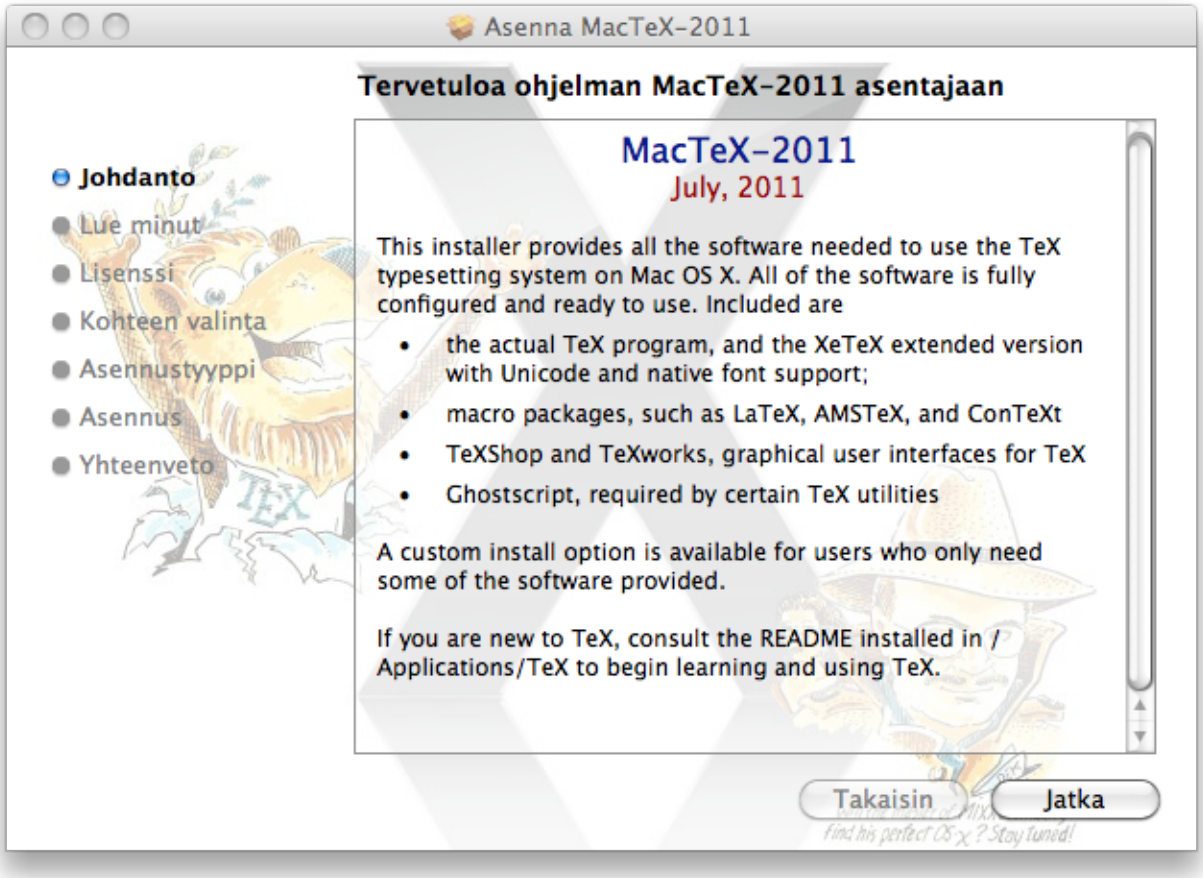
LaTeX–distribution packages

The very same LaTeX in different packages:

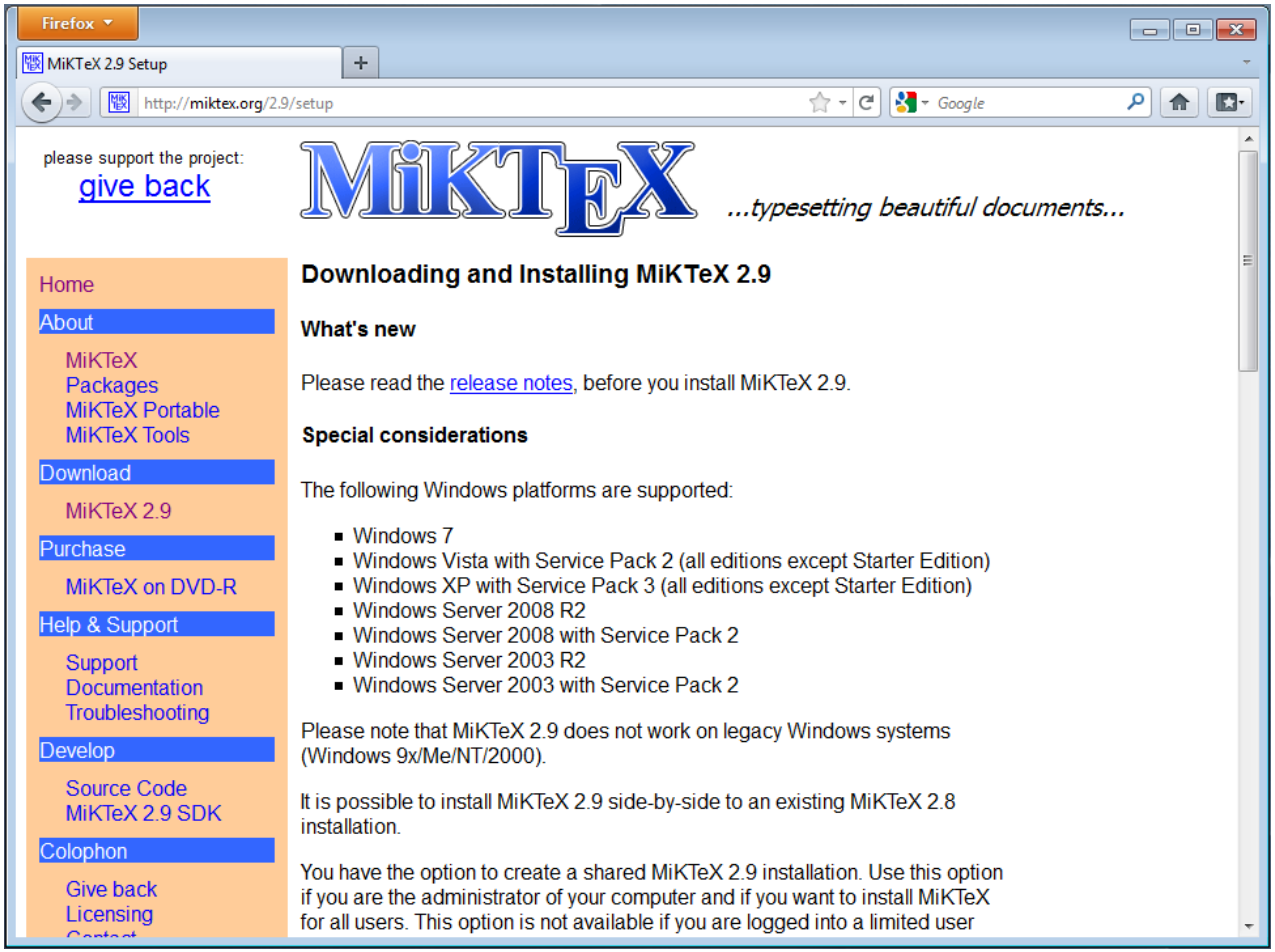
- TeXLive (Linux, Mac OS X, Windows)
- MacTeX (Mac OS X)
- MikTeX (Windows)
- ...

LaTeX on Ubuntu Linux through Synaptic




Asenna MacTeX-2011
Tervetuloa ohjelman MacTeX-2011 asentajaan
Johdanto
Lue minut
Lisenssi
Kohteen valinta
Asennustyyppi
Asennus
Yhteenveto
MacTeX-2011
July, 2011
This installer provides all the software needed to use the TeX typesetting system on Mac OS X. All of the software is fully configured and ready to use. Included are
the actual TeX program, and the XeTeX extended version with Unicode and native font support;
macro packages, such as LaTeX, AMSTeX, and ConTeXt
TeXShop and TeXworks, graphical user interfaces for TeX
Ghostscript, required by certain TeX utilities
A custom install option is available for users who only need some of the software provided.
If you are new to TeX, consult the README installed in / Applications/TeX to begin learning and using TeX.
Takaisin
Jatka

LaTeX on Windows



http://miktex.org/2.9/setup

Document structure

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}
```

Compilation: Linux & Mac command line

Just call LaTeX or PDFLaTeX directly

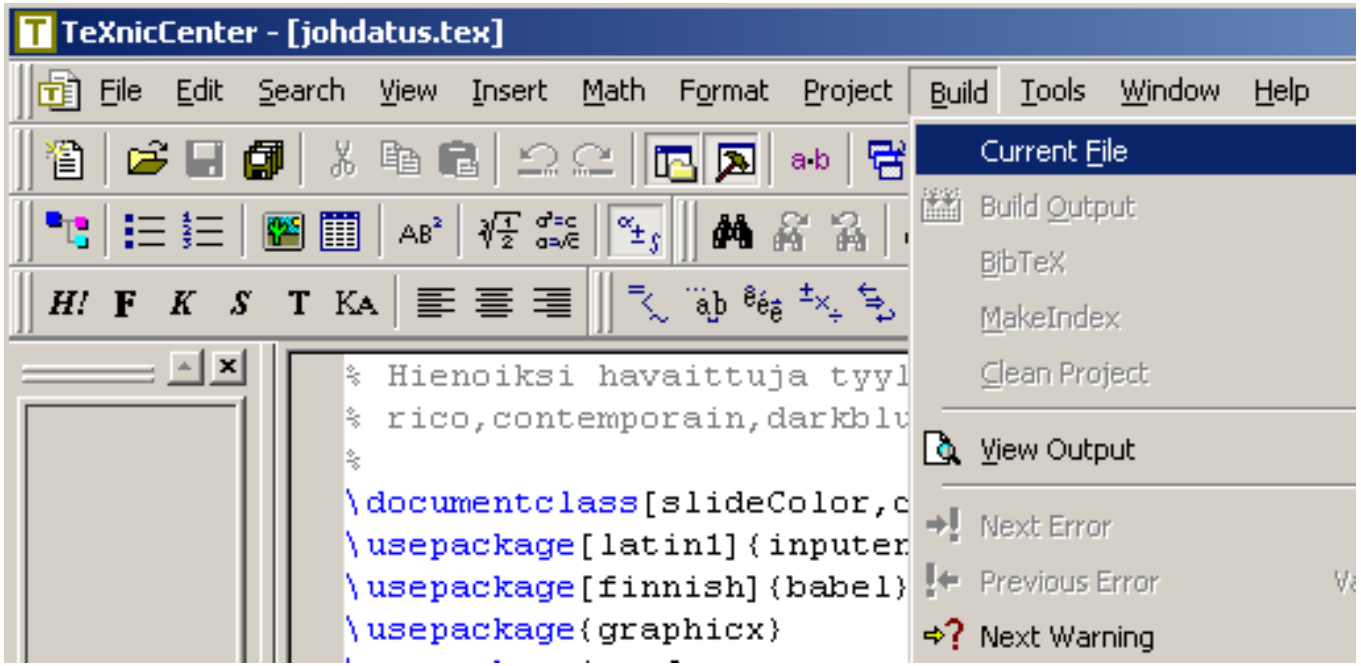
```
$ latex myfile.tex; dvipdf myfile  # or
$ pdflatex myfile
```

and then inspect the content:

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

Compilation: Windows

Point and click - depending on the chosen interface



Mathematics

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

`$\sqrt{x^3}$` $\mapsto$ $\sqrt{x^3}$

or separately as

```
\[  \sqrt{x^3}  \]
```

or using

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

where the latter gives the equation also a number.

Mathematics...

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 $n=0$
```

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

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

Mathematics...

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

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

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

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

Mathematics...

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

Structures define how the text is displayed.

Examples:

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

1. Firstly,
2. Secondly...

Structures...

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

- gloves
- shoes

Structures...

```
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:

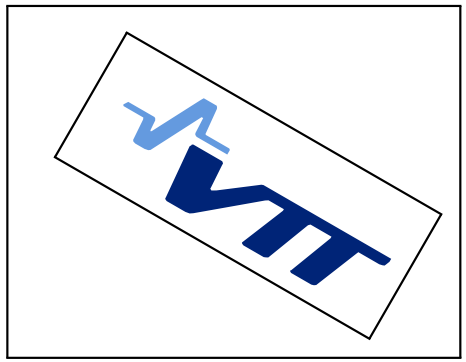
> *We define the determinant like a civil service department would, in a rather boring way: It is just thrown to your face with the motivation being "learn it or die".*

Graphics

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}
```



Graphics...

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

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

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>}`" command[1].
- The text consists of the commands (called tags in HTML) and the actual text.
- This is not harder that writing HTML5 / CSS3 by hand. To be honest, LaTeX is much easier!

[1] I 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.