LaTeX Tutorial

Brief History

- TeX was written by Donald Knuth in the 1970's (See `http://www.tug.org/whatis.html` for details.)

- Designed for typesetting material that uses mathematical notation.

- TeX is a "low-level" interpreter.

- LaTeX is a package of macro commands that allows a "high-level" approach to writing a TeX file.

    1. Examples later

- Think of LaTeX as a program that takes a file you type (which has both the text you want typeset and commands for how to typeset that text) and generates a file that you can print with all of the pretty typesetting done for you.

    1. There are intermediate steps that can be hidden (examples later)
        (a) LaTeX generates a **"DVI"** (Device Independent) file.
        (b) Programs exist (one such is PDFLaTeX) that convert a DVI file into a PDF file (Portable Document Format)
        (c) Most computer setups can print a PDF file.
        (d) There are other programs that can convert the DVI file into other formats.

How to Install LaTeX (Do this before installing a front end)

Windows (Excerpted from the MiKTeX website)

- MikTeX Project (`http://miktex.org/`) is the most common package to use with Microsoft Windows.

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    1. Free
    2. Contains all programs needed to run LaTeX on a file you want typeset.
    3. Does not contain all programs needed to write those files. (See "How to Use LaTeX" below.)

- Go to `http://miktex.org/2.7/setup`

    1. Decide whether to install the basic package or the Net (full) package
       (see `http://docs.miktex.org/2.7/manual/installing.html` for details)
        (a) I recommend the full package – but it is very big.
    2. While at http://miktex.org/2.7/setup, download the Installer for the package you chose (Basic or Net)
    3. After the download completes, run the installer
        (a) Choose Download MiKTeX
        (b) Choose your installation size (Basic or Complete)
        (c) Choose a download source – pick one that is geographically close to you.
        (d) Choose a directory on your hard drive where you want the complete MiKTeX distribution stored.
        (e) Remember this directory.
    4. This download could take a very long time (several hours).
        (a) If something goes wrong, just run the MiKTeX installer again and it will resume the download.

- Now, install MiKTeX by

    1. Navigating to the directory where you downloaded the MiKTeX distribution
    2. Finding the file "setup"
    3. Double clicking on this file.

MAC (Excerpted from MacTeX website.)

- MacTeX Project (`http://www.tug.org/mactex/`) is a common package to use with the MacIntosh.

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    1. Free
    2. Downloads contain all programs needed to run LaTeX on a file you want typeset.
    3. Downloads contain programs to write those files. (See "How to Use LaTeX" below.)
        (a) The files MacTeX-2008 and MacTeXtras: MacTeX-2008 is an install package which installs everything needed to run TeX on Mac OS X. The package uses Apple's standard installer; installation takes four to eight minutes and is automatic. MacTeXtras is a collection of optional extras: Additional Front Ends, Spell Checkers, Documentation, and Showcase items.

Linux

- LaTeX Project (`http://www.latex-project.org/ftp.html`) gives much useful information for using LaTeX under Linux.

- Most distributions either have LaTeX support built in or it is easy to find in their software archives.

    1. If you need to install, I recommend TeX Live (http://www.tug.org/texlive/).

Do this only after installing a LaTeX package:

Programs to use while writing your LaTeX files

- The file you want to typeset is just a text file.

    1. You can use an editor or word processor as long as you save the file as text.
    2. There are (free and for-cost) programs that make writing a LaTeX file easier than just using an editor. Most of them will automatically configure themselves to use the LaTeX package you previously installed. Otherwise, read the directions so you can make the configuration changes by hand.
        (a) LyX has versions for Windows, OS X, and Linux
            (http://www.lyx.org/Download)
        (b) Texmaker has versions for Windows, OS X, and Linux
            (http://www.xm1math.net/texmaker/download.html)
        (c) TeXNic Center has a version only for Windows
            (http://www.toolscenter.org/resources/required-components/29)
        (d) Kile has a version with works with the KDE desktop. The KDE desktop can be installed on either Linux or Windows.

Resources

- Not so Short Introduction to LaTeX 2e (`http://tobi.oetiker.ch/lshort/lshort.pdf`)

- NASA Hypertext help for LaTeX (`http://www.giss.nasa.gov/tools/latex/ltx-2.html`)

- Our library has a number of books on TeX and LaTeX.