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 in this document

- LaTeX is 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 computer processing steps (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 like Postscript (PS).

How to Install LaTeX (Do this before installing the front end you will use to type your file.)

Windows (Excerpted from the MiKTeX website)

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

- 1. Free
  2. MikTeXis a package that contains all needed programs for converting a file once it has been written as well as an integrated version of the front end program TeXWorks.

- Go to `http://miktex.org/2.8/setup`

  1. Decide whether to install the basic package or the Net (full) package.
     (a) I recommend the basic package.
  2. While at http://miktex.org/2.8/setup, download the Installer for the package you chose (Basic or Net)
  3. After the download completes, go to http://docs.miktex.org/2.8/manual/ and click on the "Installing a Basic MiKTeX system.
  4. Follow the directions.

MAC (Excerpted from MacTeX website.)

- MacTeX Project (`http://www.tug.org/mactex/2009/`) has the most common package to use with the MacIntosh. Note that the install file (MacTeX.mpkg.zip) is quite large so will take a while to download.

- 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 file MacTeX.mpkg.zip is an install package which installs everything needed to run TeX on Mac OS X.

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 TeXLive (http://www.tug.org/texlive/).
    2. You should also install a front end. TEXworks seems to be one of the most popular and is the program used in the Thompson Hall computer lab.

Do this only after installing a LATEX package like MikTEX or MacTEX:

Programs to use while writing your LATEX files

- The file you write that will be used to typeset your document is just a text file. This file needs to contain both the material you want typeset and "commands" that the LATEX programs will interpret when they compute spacing, margins, etc.

    1. You can use an editor or word processor as long as you save the file as text.
    2. There are free 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) TEXworks has versions for Windows, OS X and Linux
            (http://www.tug.org/texworks/)
        (b) LyX has versions for Windows, OS X, and Linux
            (http://www.lyx.org/Download)
        (c) Texmaker has versions for Windows, OS X, and Linux
            (http://www.xm1math.net/texmaker/download.html)
        (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. The book I use is *"A Guide to LATEX 2ε"* by Kopka and Daly.