Introduction to Making Documents with LaTeX

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Introduction

What LaTeX is

- A cross-platform typesetting environment
- Best way to produce aesthetically pleasing, logically coherent documents, especially when dealing with mathematical equations
- Free and customizable

What LaTeX isn't

- WYSIWYG (What You See is What You Get)
  - MS Word, LibreOffice
- Bloated memory hog

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Separates design from content $\rightarrow$ enhanced logical structure

What you Need

1. Text editor or IDE
   - Texmaker, Vim/Emacs/gedit with plugins, Notepad++, Sublime
   - Look for built-in output viewer, code completion
2. Sane LaTeX installation
   - Windows - MikTeX
   - Mac - MacTeX
   - Linux - texlive

Special Characters, commands, and comments

Input file structure and layout

Packages and external files

Typesetting

paragraphs, line and page breaks, hyphenation, sections, chapters, alignment, itemize, enumerate, font sizes (table 6.3, 6.4)

Some useful commands and characters

emph, bold, under, degree, tilde, quotation, ö, A^n, α_i

Some useful environments

verbatim, tabular

Mathematical Formulae

AMS math, inline, single line display (numbered/unnumbered), multiple line display

Some useful commands

Greek, super and sub script, sum (substack), integral, product
operators, dots, frac, predefined functions, partial

Arrays and matrices

uses array environment for arrays, amsmath uses matrix
environments

Graphics

use graphicx package (options), no real standard find what works,
figure env. center, caption, includegraphics, remove extensions to
avoid conflict b/w latex pdflatex

Bibliographies

Use BibTeX, keep main bib file w/ consistent naming convention,
bibliography command at end, bibliographystyle at beginning

Cross referencing and citation

Cleveref package, cite, ref, naming labels

Custom commands

newcommand-name, num of args, definition, hashtag w/ number
for arguments, bra, ket, braket, 2x2 matrix
newenvironment, renewenvironment to override existing commands

Chemistry specific packages

https://www.ctan.org/topic/chemistry, chemfig-rings, rxn, achemso

Putting it all together

Keep a universal header, bib, and main document template. Copy and edit as needed. Example file with header, equations, cross reference, citations, and sections

Resources

lshort, ctan, http://www.xm1math.net/texmaker/