Introduction to Professional Typesetting with LaTeX

Lecture 1

David Kraemer & Caleb Leedy

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Introduction

Welcome to our class! Just a bit about the instructors:

David Kraemer

David is an intended mathematics and computer science double major. His interests include convexity, computational finance, video games, and running.

Caleb Leedy

Caleb is a Economics and Mathematics double major. He is interested in macroeconomics and behavioral economics and likes to play Ultimate Frisbee.

What is LaTeX? (According to Wikibooks:)

- LaTeX (pronounced either "Lah-tech" or "Lay-tech") is a macro package based on TeX created by Leslie Lamport
- Its purpose is to simplify TeX typesetting, especially for documents containing mathematical formulae
- Since LaTeX comprises a group of TeX commands, LaTeX document processing is essentially programming
- Many later authors have contributed extensions, called *packages* or *styles*, to LaTeX

What is LaTeX? (According to Wikibooks:)

- TeX is a low-level markup and programming language created by Donald Knuth in the 1980s to typeset documents attractively and consistently
- Knuth wanted to explore the potential of digital printing techniques that had begun to infiltrate the publishing industry
- He designed it to be an incredibly powerful, yet incredibly robust tool for document typesetting

Paradigms of word processing

- There are two dominant schools of word processing: Programming and What You See Is What You Get (WYSIWYG)
- Classic examples of WYSIWYG are Microsoft Word, LibreOffice Writer, OpenOffice Write, etc.
- Advantages of WYSIWYG
  - You are constantly editing what is (more or less) the final printable version of your document
  - You need very little knowledge to get started
  - You have complete control over every tiny formatting option in your document
- Disadvantages of WYSIWYG
  - It is hard to have formatting consistency for complex documents
  - Small changes to documents can inadvertently cause big problems! (Inserting pictures, for example!)

Paradigms of word processing

Advantages of Programming (LaTeX)

- Document sources can be read with any text editor and understood
- You can concentrate purely on the structure and contents of the document
- You don't need to manually adjust fonts, text sizes, line heights, or text flow for readability
- In LaTeX the document structure is visible to the user, and can be easily copied to another document
- The layout, fonts, tables and so on are consistent throughout the document
- Mathematical formulae can be easily typeset
- Indexes, footnotes, citations and references are generated easily
- You are forced to structure your documents correctly

Overview of the course

'Syllabus'

1. Introduction and installing LaTeX
2. Math mode
3. Environments and commands
4. The Header
5. Document structure and format
6. Integrating LaTeXwith Graphics
7. Resume
8. Beamer Presentations

This outline is subject to change depending on your needs and interests!

We have a webpage!

`http://www.math.grinnell.edu/~kraemerd17/intro-latex/`

What you will get out of the course

- You will have a working template for nearly all of your typesetting needs
- You will know each component of the working template and can adjust your document accordingly
- You will have an operating knowledge on how LaTeXworks and should feel comfortable browsing StackExchange and the Wikibook
- You will have an understanding of professional typesetting and will be able to produce formal, elegant documents with mathematical formatting

Installing LaTeX on Windows

1. To install *Mik*TeX, go to `miktex.org/2.9/setup`
2. Choose a package based on your system's architecture (32-bit or 64-bit)
3. Download and install *Mik*TeXto your computer
4. You now have a basic program to do document typesetting!
5. To install TeX*Maker*, go to `http://www.xm1math.net/texmaker/download.html`
6. Scroll to "Texmaker 4.3 for Windows"
7. Download and install the Executable file
8. You now have TeX*Maker*!

Installing LaTeX on Macs

1. To install *MacTeX*, go to `tug.org/mactex/`
2. Download and install *MacTeX* to your computer
3. You now have a basic program to do document typesetting!
4. To install TeX*Maker*, go to `http://www.xm1math.net/texmaker/download.html`
5. Scroll to "Texmaker 4.3 for MacOsX"
6. Download and install the Package for your operating system.
7. You now have TeX*Maker*!

Installing LaTeX on Linux

You're a Linux user. If you don't already have it installed, you can figure it out. ☺