CMPSC 580
Junior Seminar
Spring 2019

Lab 1 Assignment
23 January 2019
Writing and Presenting with LaTeX and Beamer

Objectives

To enhance your understanding of the LaTeX text processing language. In this assignment, you will use an editor to create document using LaTeX and a presentation using `Beamer`.

GitHub Starter Link

<div align="center">

https://classroom.github.com/a/LExwLT5n

</div>

To use this link, please follow the steps below.

- Click on the link and accept the assignment

- Once the importing task has completed, click on the created assignment link which will take you to your newly created github repository for this lab,

- Clone this repository (bearing your name) and work locally

- As you are working on your lab, you are to commit and push regularly. The commands are the following.

  - `git add -A`
  - `git commit <nameOfFile> -m ``Your notes about commit here''`
  - `git push`

Reading Assignment

If you require help in Latex, there are many resources available online such as,

- TexMaker: `http://www.xm1math.net/texmaker/doc.html`

- General Latex: `https://www.latex-project.org/help/`

- Latex-Tutorials: `https://www.latex-tutorial.com/tutorials/`

HANDED OUT: 23 JANUARY 2019

Introduction to LaTeX

LaTeX is a typesetting system used by computer scientists and mathematicians the world over. Designed by Leslie Lamport (currently at Microsoft Research), it is actually a set of procedures that build upon an earlier typesetting system, TeX, designed by Donald Knuth (retired from Stanford University). You are strongly encouraged to read about Leslie Lamport and Donald Knuth online—they are pioneers in computer science research and are names you should know.

Unlike WYSIWYG word processors such as Microsoft Word or Open Office, LaTeX uses a set of predefined commands, environments, special characters, and etc. which are assembled by the user into a description of a document. For example, here is the LaTeX source code and the typeset output for a sample paragraph:

LaTeX Source:	Output:
```To determine the distance d of a point (x_0,y_0) from a second point (x_1,y_1), we may use the \emph{distance formula}: \[d=\sqrt{(x_1-x_0)^2+(y_1-y_0)^2}\] This generalizes to higher dimensions.```	To determine the distance d of a point (x_0, y_0) from a second point (x_1, y_1), we may use the *distance formula*: $$d = \sqrt{(x_1 - x_0)^2 + (y_1 - y_0)^2}$$ This generalizes to higher dimensions.

Your GitHub repository contains a new folder named, `sandbox` in which you will find a several templates to help you get started with your Latex and Beamer projects. As your skill becomes more focused with Beamer, you are invited to consider creating your own template for your presentations.

Latex Assignment: Articles

Copy the below file to a new file to be modified for your own work. Keep the origin file save in case is a need to check its code for syntax.

<p align="center">sandbox/thesis/seniorThesisProposal.tex</p>

Files to note:

- The main document:`seniorThesisProposal.tex`
- An image file: `flow.eps` that is used to show how figures can be included in a LaTeX document;
- A sample bibliography file: `bibliography.bib`

Use can use any text editor such as `TexMaker`, `Atom` or another software to edit the file. For editors which are specific to Latex work, there are built-in options to compile .tex files, otherwise, you can use the terminal command "`pdflatex`" (in the same directory where the file is located) to compile the file into a PDF document.

Add the following to the "Introduction" section of the proposal template:

1. **Equation**: Add an equation that uses a number of specialized mathematical characters—Greek letters, arrows, subscript, superscripts, etc. For example, can you recreate the following?

$$\sum_{i=1}^{\infty} \frac{1}{i^2} = \frac{\pi^2}{6}$$

2. **Lists**:

   - A numbered list of at least four items; include a nested itemized list ("bullet list") list as one of the items and a nested numbered list as one of the others (we will discuss the `enumerate` and `itemize` environments in class)
   - A bullet list of at least four items; include a nested numbered list as one of the items and a nested bullet list as one of the others

3. **Text**:

   - A "verbatim" paragraph (we will discuss the `verbatim` environment in class)
   - At least two paragraphs of plain text that include at least one non-trivial inline mathematical formula, one or more words in fixed-width font (e.g., names of Java classes are often typed in fixed-width font), one or more words in italic font (e.g., a newly-defined term might be italicized the first time it appears in a paper), one or more words in bold-face font, and two or more foreign accents (circumflex, tilde, acute accent, cedilla, etc.).

Compile your work to a PDF and check that the article looks as it should.

Introduction to Beamer

Beamer is a LaTeX document class that is used to create presentation slides. The beamer class uses a special syntax for defining slides (known as 'frames'). A beamer presentation is created like any other LaTeX document. Beamer also allows you to make 'handouts', that is the output suitable for printing, without the overlays.

Beamer Sample Slides

Copy the below file to a new file to be modified for your own work. Keep the origin file save in case is a need to check its code for syntax.

sandbox/beamer/alleghenyPres/SampleAllegheny.tex'

File to note:

- `SampleAllegheny.tex`, sample beamer code for creating a presentation. Copy this file to a new file to edit. The code shows how figures can be included in a presentation.
- There are other files included which help to format or are the images to include in the presentation.

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Beamer Assignment: Select a theme for your slides, you may not use 'default' or 'Berkeley' themes that we have used in class. See the top of the Beamer code for an idea of how this is done. Create a presentation with at least 5 slides. You slides should have the following:

1. A box (example block, theorem, etc.)

2. A table with at least two columns and two rows

3. At least one button to jump to another slide

4. At least one slides with creative use of overlays

5. At least one link (to a website)

Compile your Beamer source to a PDF and leave all your files together in your repository for this assignment. Please see the course instructor if you have any questions. **Finally, do not forget to push your work out to your repository. See above for the commands to do this.**