USING LaTeX TO WRITE YOUR CAPSTONE REPORT

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These instructions are included in `ischooltemplate.zip`, which contains the files you need to write your capstone proposal and report using LaTeX on Overleaf.

If you prefer, watch the video at https://youtu.be/dxP_scJGNY0 instead.

OVERVIEW

- Upload the ischooltemplate.zip file to Overleaf.
- In the Overleaf menu, change compiler to LuaLaTeX.
- In the Overleaf menu, change TexLive to 2021.
- Write your proposal or report in the `*.tex` files in the package.
- Add your bibliography to the `references.bib` file.
- Let Overleaf produce a `.pdf` file from your input files.
- Turn in that `.pdf` file.

DETAILS

Overleaf. You need an account on Overleaf. For the capstone proposal and report, the free tier will suffice. The alternative is to install LaTeX on your machine. Students often struggle to properly install and configure LaTeX, so I recommend the use of Overleaf, which handles all those details for you.

If you are working with me (Mick McQuaid), I can create the project on Overleaf. Since I have a paid account, more features are available. In that case, just let me know. I will create the project and share it with you and we can both edit it.

Otherwise, you can create an account and create the project yourself. The free tier on Overleaf allows you to have one collaborator on your file. I recommend that you make me (`mickmcquaid@gmail.com`) that collaborator if you have questions about LaTeX. Alternatively, you may want to make your committee chair the collaborator.

Once you have an account on Overleaf, you can have a *project*. The capstone proposal or report is that project. You can upload a zip file when you create the project and that zip file should be `ischooltemplate.zip`.

The parts of your capstone report. You will find the following files in the zip file, which will be automatically unzipped on Overleaf:

- `main.tex` contains the skeleton of the report as well as most of the metadata. There are only a few things in this file for you to alter, such as the title, your name, and the names of your committee members.
- `abstract.tex` contains your abstract, where you describe your work and your results in about 250 words.
- `intro.tex` contains your introduction, where you tell why your problem is important and how your solution is beneficial, as well as introducing the remaining parts of your report.
- `relatedwork.tex` contains your literature review, hopefully organized around themes with several papers supporting each theme.
- `methodology.tex` contains your method, what you did, but not the outcomes of what you did.
- `timeline.tex` contains a sample Gantt chart you may use to develop your timeline in the proposal. It should be obvious how to modify it but, if not, google pgfgantt and look at the documentation or one of the tutorials. If

you use this format for the proposal, you will not include the results and conclusions. You may comment a section out in the report by placing a percent sign before its entry in `main.tex` and comment out the other sections in the proposal in the same way.

- `results.tex` contains the specific outcomes of what you did.
- `conclusions.tex` contains your conclusions, limitations, future work, and lessons learned.
- `references.bib` contains your bibliographic database in BibTeX format. It can be converted into whatever style is required without manual reformatting should you seek to publish your work.

There are other files in the package. These control various parameters and are necessary but don't need to be edited by you, unless you want to customize your report.

Thesis or project? Proposal or final report?. There are two variables in `main.tex` that control whether you are submitting a thesis or project and whether you are submitting a proposal or the final report. You'll find these right after the `title` directive. Change them according to what you are submitting.

Bear in mind that you can use the same project for both your proposal and report. When you have finished with the proposal, download the pdf to submit and save that under a separate name, such as `proposal.pdf`. Then comment out the directive `\MSproposaltrue` in the `main.tex` file. Now the boilerplate text refers to the report rather than the proposal and you may continue editing. Also comment out the timeline inclusion in the `main.tex` file and uncomment the conclusion in the same part of that file.

The process. The main thing for you to do is to replace the boilerplate in the above files with your report. Overleaf handles much of the work of converting your input into pdf. If you want to do it manually, having installed LaTeX on your machine, say

- lualatex -shell-escape main
- biber main
- lualatex -shell-escape main
- lualatex -shell-escape main

Why do you need to do this several times? It is to handle forward references in your document. LaTeX has no way of knowing what is coming up in the document and actually produces some auxiliary files the first time through. Then `biber` uses those auxiliary files to determine what to take from the bibliographic database in `references.bib`. When you then run `lualatex` again, the page numbers may change, hence you run `lualatex` a final time.

MORE ON LaTeX

The most popular tutorial for LaTeX is the unappealingly titled *Not so short introduction to LaTeX*, which can allegedly be digested in 139 minutes. Googling may be better if you know what you're looking for. The problem is that you may not know what you're looking for unless you at least skim the *Not so short* guide.