

DEPARTMENT OF MATHEMATICS, UNIVERSITY OF UTAH  
**Analysis of Numerical Methods I**  
**MATH 6610 – Section 001 – Spring 2020**  
**General Homework Submission Instructions**  
**August 18, 2020**

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I will accept homework submissions only through a repository created on Github. You will grant me read/write access to this repository, which constitutes submission of your homework. The repository will contain all  $\LaTeX$  needed to compile a report, and all code source needed to reproduce the figures in the report.

The general procedure for submitting an assignment involves the following (unordered) steps:

- use  $\LaTeX$  to type up a report
- write code generating figures/data for inclusion in your report
- commit the above files to a git repository on your local machine

Once you have finalized your assignment, you will submit to me by completing three additional steps: (a) creating an empty repository on `github.com`, (b) pushing your local commits to the Github repo, (c) granting me (username `akilnarayan`) write access to the repository.

More detailed information is below.

## Submission instructions

These instructions are a template for all future homework assignments. You are required to submit all assignments via the version control system Git. You will do so by “pushing” updates to a remote repository. You will need to

- 1 Complete the assignment, including writing any code necessary to solve the problems.
- 2 Type up your solutions in  $\LaTeX$ . Your solutions should contain as much detail as you would normally include in a handwritten assignment. Any problems requiring computer simulation should have documented results (e.g., a table or plots) in the solution document.
- 3 Create a git repository on your computer (the “local” repository) that contains both a  $\LaTeX$  report with tables/figures as appropriate, and any source code that reproduces figures/tabular values as they appear in the solution.
- 4 Create an account on github (`github.com`). Do not submit your work through another remote system (such as bitbucket).
- 5 On Github, create a (private) repository named `math6610-homework-X` on your account (the “remote” repository). The `X` should be replaced with the appropriate homework identifier. In your local repository, create a pointer to the remote repository with the `git remote` command. (Github will have instructions for how to do this.)
- 6 Submit your project to the remote repository with a `git push` command from your local repository. (You typically need to create an SSH public/private keypair and upload your public key to Github to accomplish this.)

- 7 Give me (username `akilnarayan`) write access to your `math6610-homework-X` github repository.

Note that the instructions above are the same for all future assignments **except** that the homework assignment identifier `X` will change. ( $X = 1, 2, 3, \dots$ ).

## Submission expectations

A  $\text{\LaTeX}$  solution report is *always* a component of the submission. Proofs and/or arguments are expected to be cogent, well-articulated, and well-formatted. If the assignment requires coding, then submitting the source code is also mandatory.

### General repository etiquette

- If there are unusual things about the way you've organized your files, provide a `README` text file that documents the general structure of the repository.
- Provide a `makefile` that allows me to easily compile your  $\text{\LaTeX}$  report. Your `makefile` should be in the top-level directory, and I should be able to compile your solution report immediately upon cloning your repository. (You can check this yourself by performing a fresh clone on your local machine and trying it yourself.)
- Your repository should in general only track ASCII-type text files (images are an exception). It should in general not track compiled binaries, pdf output from tex compilation, or datasets generated by your code. In general your repositories should be *small* in disk space, with the largest files probably being any images used in your  $\text{\LaTeX}$  reports.
- General rule of thumb: if I cannot figure out how to generate your  $\text{\LaTeX}$  report and/or use your computer code within 10 seconds of looking at your repository, I will return it to you for you to document things properly.

### Submission structure

The base folder of your repository should contain the  $\text{\LaTeX}$  file (`.tex` file) for your report. You may structure all dependent files (images, bib files, secondary tex files, etc.) in any way you choose. The base folder should contain a subfolder called `code` that contains *all* code that reproduces figures in your  $\text{\LaTeX}$  document.

### $\text{\LaTeX}$ submission expectations

- Write your solutions so that someone can understand the assignment without having seen the assignment sheet. You need not be meticulous, but you should ideally write your document as if it presents solutions/proofs as found in a textbook. Please note that it is very normal for producing good scientific writing to require a **lot** of time.
- Extreme verbosity is unnecessary (and should be avoided), but enough detail should be provided so that the general idea of your solution is reasonably clear to someone educated in the course material. Any plots or tables included should be referenced in the explanatory text.
- Do not include any source code text in your report.

- Your solution report is largely an explanation of the mathematics required for your solution, possibly along with a compilation of numerical results.
- Number all figures and tables, e.g., **Figure 2**, **Table 1**, etc.

#### Code expectations

- All computer code should be located in the `code` subfolder.
- Include a README text file that explains the purpose of the main files in the subfolder. You should write your README file with the intention of giving a clear guide to a recipient about what they are supposed to do once they receive your code.
- Each figure/table in your report should be paired with a file in the `code` subfolder that reproduces that figure/table. E.g., if you are coding in Matlab and your report contains **Figure 2** and **Table 1**, files `figure_2.m` and `table_1.m` should exist in the `code` subdirectory, and running those files should reproduce the figures. (If using a compiled language, binaries named, e.g., `figure_2.o` and `table_1.o` should be generated by your makefile.)

## Example submission

I have provided an example submission for this assignment online:

<https://github.com/akilnarayan/math6610-homework-0/>

Please check this for a demonstration of the above procedures.

In particular, you may (or may not) choose to use the above repository as a template for the structure of all your homework repositories.