Applied Numerical Computing for Scientists and Engineers

Computational Assignment 1

Electronic submission via Bitbucket and course website.
Assignment weight: 5%.

The purpose of this assignment is to give you practice with version control in Git and document typesetting in LaTeX. Exercise 1 uses the files you generate in Exercise 2, so the two exercises are NOT independent. Exercise 1 is explained first so that you don't overlook the version control instructions when working on Exercise 2.

1. Git Exercise

In your bitbucket.org account with your @okstate.edu email account, create or use a repository named FirstnameLastnameApplNumComp (change firstname and lastname to your own name). Setup the repository to have a local directory on your personal computer and connect the local directory to the online repository. If you haven't done so yet, share the repository online (read only access) with Dr. Ford Versypt ashleefv@okstate.edu and TA Duncan Mullins duncahm@okstate.edu as this is how you will submit computational assignments in this class with commits showing version control history on codes and .tex documents. Create a subfolder called "CA 1". Work on Exercise 2 of this assignment in this repository and the "CA 1" subfolder. Make at least three commits for the .tex file and at least one for the .bib file. The files you wish to submit for a grade should have the commit -m message "assignment 1 submission". The other previous commits should have comments that briefly explain states of progress on the assignment, e.g., "table of contents and figure added".

For the course website Computational Assignment 1 submission, use the text box to enter the web address for the commit that corresponds to the submission. For example, `https://bitbucket.org/ashleefv/ashleefordversyptapplnumcomp/commits/d8390344f1b0ef0faed7db84c01ffce95c2f0423`. This is simply to have a clear time stamp for your submission. See Figs. 1 and 2 for reference. **Submissions and/or final commits after the deadline submitted on the due date will receive maximum of half credit for the assignment**.

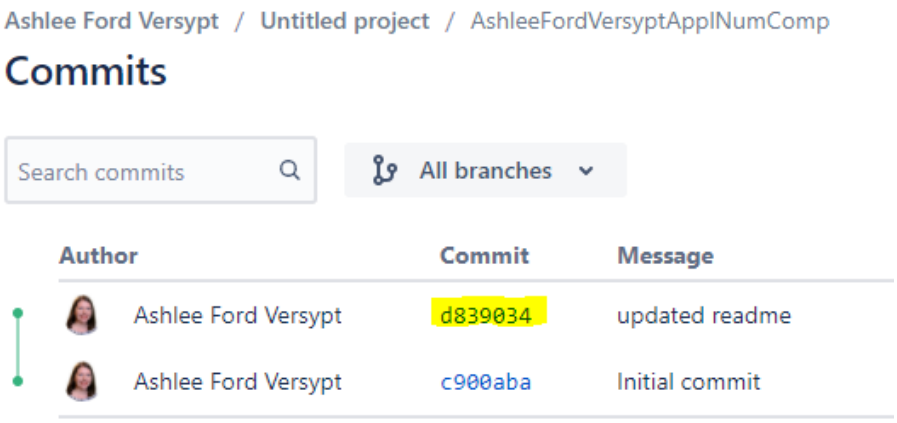

Figure 1: Commit list with most recent commit highlighted in yellow. Click this commit number to go to the screen shown in the next figure.

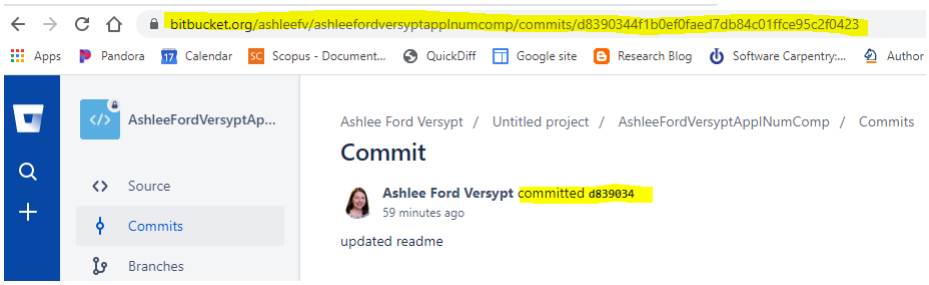

Figure 2: Screen for the last commit. Copy the web address for this as a submission. For the assignment this should correspond to the final commit that you want graded.

2. LaTeX Exercise

You should use your research or course work from your major as the topic for this exercise. You are encouraged to explore electronic resources on the internet to complete this exercise. The content of the document should be from your own work or subject area, and it may be highly truncated (single sentences rather than a full report) as the science is not being evaluated, just the typesetting of the content. The .tex, .bib, and .pdf files should be tracked in Git using the instructions in Exercise 1.

Use the built-in article class in LaTeX with TeXMaker as the editor to create a document titled "CA1_firstname_lastname.tex" that has the following features:

- title
- author
- at least two sections and at least two subsections in each section with at least one paragraph of text in each subsection (minimum: four paragraphs total for the entire document)
- a table of contents
- at least two equations numbered on the right side as (1) and (2): one of these must be a differential equation
- 12 pt font
- one figure
- one table
- one numbered list
- cross references to Section 1 and Section 2 that are generated by LaTeX using labels
- equation references to Equations 1 and 2 that are generated by LaTeX using labels. You should use `eqref` and the package `amsmath`.

- a BibTeX bibliography file titled "bib_firstname_lastname.bib" with one article and one book using the `abbrv` bibliography style shown at the following link:
  `https://www.overleaf.com/learn/latex/Bibtex_bibliography_styles`
- citation to both the article and the book listed in your .bib file in the document
- a .pdf file generated from the .tex and .bib files