

Project 7 - Group Project

Part 1 ... Calculus Toolbox Sub-Project

- a) No one in your entire group can make changes to their calculus toolbox as of April 26.
- b) Get the calculus toolbox of one of the members of your group that is NOT in this sub-project.
- c) Write an evaluation of installing and using their toolbox. Check the function of each of their functions in the toolbox. Write up a report of using the toolbox like you would a software evaluation.
- d) Use their calculus toolbox to solve the following problems:
 - i) Create a function that will internally call `simpint` to integrate given functions, $f(x)$, and it will plot $f(x)$ along with its parabolic approximations. Test it with the integrals given in the take home for exam 3.
 - ii) Use the linear algebra functions from the calcbx to evaluate two systems of linear equations given in the Math 511 textbook used by the math department.
 - iii) Collect data temperature data for Wichita over the next 5 days in the following way: Each morning collect the 10 day outlook and at the end of the day collect the day's high and low temperatures. At the end of 5 days you use the 5 real highs and lows, 5 current day projections, 5 next day projections, and five 2 day projections. Perform and write up what you think is a reasonable analysis on the data using data plots and data fitting.

Part 2 ... Graph Theory Sub-Project

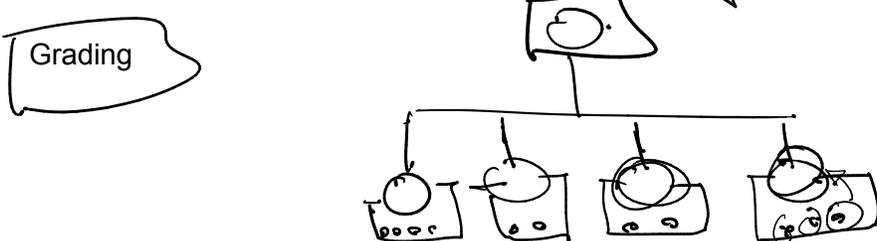
- a) You will use the `djk.m` and `centrality.m` functions for this sub-project.
- b) Create a function that you think gives each vertex a metric for a "middle-ness" value. Write a reasonable explanation of your metric (basically, try to convince others that it is useful).
- c) Use the graphs given in Project 6 to test your functions.
- d) Use the attached .csv file to find people of interest within the American Revolution.
- e) Based upon what you have learned from the American Revolution data write a project idea for using these functions to study a programming business like NetApp.

Part 3 ... Cryptography Library Sub-Project

- a) Create the following Number Theory and Cryptographic functions: `div_mod`, `mymod`, `mydiv`, `makeprimes`, `myfactor`, `powermod`, `mygcd`, `inverse_mod`, `shift`, `onetimepad`, `affine_encrypt`, `affine_decrypt`, `publickeyencrypt`, `publickeydecrypt`, and `publickeybreak`.
- b) Create a cryptobox directory with appropriate Contents.m file.

Part 4 ... Treasure (Extra Credit for the Final) Hunt

- a) First clue is posted on Thursday April 27th.



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See video