

Exam 1

Put all of your code in one m-file. It should be called

lastname_firstname.m

(all lower case). Include your name, section number, and CM number in the comments at the start of the program. There should be no output other than what is asked for.

PROBLEM (60 pts)

Download the Excel spreadsheet named “tide.xls” from the course web page at <http://www.rose-hulman.edu/ME123/courseware.shtml>. It contains 2 long columns of tidal-level data over a one-week period at Kahului, Hawaii. The first column is an integer hourly counter (initialized to be zero at 00:00 October 8, 2007) while the second column is the tidal height in feet at the beginning of each hour. (Acknowledgement: Data source from <http://tidesonline.nos.noaa.gov/>)

Write a MATLAB code to

- Read in the data stored in the Excel spreadsheet file. Use the built-in MATLAB command `mean` to compute the mean tidal level (in feet) over the one-week period. Print your result with some descriptive words to a file with the name `lastname_firstname.txt`. Use two decimal places for the number.
- Compute the standard deviation of the tidal level (in feet) over the one-week period. (You are not allowed to perform this task using the built-in MATLAB command `std`.) Recall that the standard deviation σ_x of a variable X is defined as $\sigma_x = \sqrt{\frac{\sum_{i=1}^N (x_i - \bar{x})^2}{N-1}}$, where \bar{x} is the mean tidal level. Print your result with some descriptive words to the file, using two decimal places for the number.
- Create a sub-array of the tidal data by copying every 12th row from the original data set. Plot the sub-array with green circles. Properly label both axes, and give your plot a title.

When you are done, post your m-file answer to the correct folder:

- Double-click on “My Network Places”. If it is not on your desktop, look in your start menu.
- Double-click on “[DFS] Root”. *Not [AFS] Root.*
- Log in with your email address and password.
- Double-click on Academic Affairs.
- Double-click on ME.
- Double-click on ME123.
- Double-click on Exams.
- Double-click on the folder with your section number.
- Copy and paste your m-file to this folder.