Engr 220 Programming and Problem Solving in Engineering Instructor: Pat Homen
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QUIZ #1a—MATLAB Coding
90 minutes-ish

Use MATLAB commands in your solutions of these problems unless otherwise specified. You **WILL** be graded on simplicity of your solution and the effective use of MATLAB (comments are not only welcome but also mandatory!!). Generate your code for the entire quiz in an "m-file" or "mlx-file". If you generate an m-file: publish your script using the MATLAB publisher – make sure it publishes as a PDF file. If you generate an mlx-file (live script), you will export to pdf. Upload your script file (.m file or .mlx file) and your published or exported PDF file to the appropriate link on Canvas before the time deadline. Your published file should have a table of contents, your name, the quiz number and any figure files included. Lastly, any file you upload should have your last name in the filename (put your last name first in the filename). Example: the filename on my quiz would be "HomenQuiz1Sp23.pdf".

1. Complete the following:
    a. Create a vector, **A**, with evenly spaced values from 0 to 32 in increments of 4.
    b. Create a vector, **B**, with 8 evenly spaced values starting at 0 and ending at 32.
    c. Create a vector, **C**, with 10 logarithmically spaced values between 100 and 100,000.
    d. Create an array, **D**, with first column containing the values 5**B**, second column containing the values **2B + 13**, and third column is the vector **B**.
    e. Create two-column array **E** such that its first and second columns are the last two rows of array **D,** respectively.

    In this problem, suppress the output of the vectors and arrays in your code, and then show your vectors and arrays using the "display" function.

2. Complete the following:
    a. Create a vector, **X**, which ranges from 10 to 30 with increments of 2.
    b. Using your vector **X** from part a. create a vector, **Y1** = $4\mathbf{X}^2 - 6\mathbf{X} + 10$.
    c. Using your vector **X** from part a. create a vector, **Y2** = $2\mathbf{X}^2 - 3\mathbf{X} + 10$.
    d. Create a single plot of both **Y1** and **Y2** versus **X**, with **X** on the abscissa and **Y1** and **Y2** on the ordinate (regular orientation). Show the points for **Y1** on the plot as green asterisks and those for **Y2** as red squares. Show a blue line through the **Y1** points and a black line through the **Y2** points.
    e. Use a legend to differentiate between **Y1** & **Y2**.
    f. Title the plot and label the axes.
    g. Show grids on the plot.

    In this problem, suppress all output in your code. If done correctly, the plot will show all necessary output.

3. Create a vector called myInfo containing 3 elements: the first element is the number of siblings you have, the second element is how many miles you live from Sierra College (to the nearest tenth of a mile), and the third element is the year you expect to graduate with your bachelor's degree. Use the fprintf function and your myInfo variable to output the following, except use your information. The fprintf function should call your myInfo variable—do not hard code the numbers. Be sure your output follows precisely:

    Name: "Pat"; number of siblings: 2; reside: 5.2 miles from SC; Bachelor's expected: 1979.