ENGI 1331: Review Problems Spring 2017

**Instructions/Summay:**

Use MATLAB to solve the problems stated in this review. Solutions are given in the ReviewSolutions.m file, however, it is to your benefit to try doing these problems without looking at the solutions. This is all optional and will affect your grade in no way, it’s purely for your benefit at understanding MATLAB.

There is an alternative way of doing Problem 2 on this review that was never taught in class. It might be worth your time to check it out the other way and see if this makes sense.

This review is in no way a definite answer to what will be on the exam, it just covers some concepts that some students struggled on.

**Problem 1: (Adapted from MA2 Problem 1)**

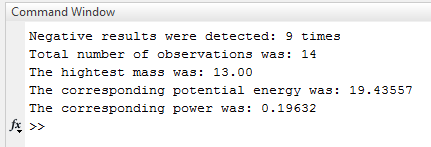
Background: Two UH students were analyzing data that they collected from the field. However, they realized that some of the data is corrupted in that there are some negative results which should be made positive, **specifically in the first row of both datasets.** The first data set (**Problem1\_M1.csv**) contains 5 measurements, with the first row being Mass [g], the second row Height [ft], and the third row Time [min]. The second data set (**Problem1\_M2.csv**) contains 3 measurements, with the first row being Mass [kg], the second row Height [in], and the third row Time [s]. All units should be in SI.

Goal:

1. You are to fix the negative results without affecting the other data entries in the first row, combine all data sets into a single data set that has the mass in the first row, the potential energy in the second, and the power in the third.
2. You will also find the highest mass and its corresponding potential energy and power, as well as the total number of observations, and the total times a negative result was detected.
3. You are then to export the combined data set to a file (**reviewProblem1.csv**).

Sample Output:

NOTE: Your code must work on different data sets. The sample code shown below is what is displayed when using the data from the test data sets. You are supposed to get a similar output using the data set shown stated in the problem statement.



**Problem 2: (Similar to MA3 Problem 1)**

Background: A car’s seatbelt alarm should be activated when the following conditions are **all true.**

Conditions:

1. Car is running
2. Car is in drive
3. Car has been driving for more than 10 seconds
4. There is someone sitting in the seat

Goal:

You are to write a program that will ask the user (with menus) for their input based on the previous conditions. The response should be either a yes or no.

Your program should error out if there are no selections made and notify the user.

Sample Output:

|  |  |  |  |
| --- | --- | --- | --- |
| Running | In Drive | Driving > 10 sec | Person in seat |
| Yes | No | Yes | Yes |

