Phys 177 Lab Assignment
Week 01

1) Set up your own Github repository by going to https://github.com. Create a folder with a name of your choice. You will update and submit all your assignments and homework into that directory in the future. Avoid obvious names like "Phys_177" if you care about privacy and your work not getting "copied" by others. Please send me the link to this repository by the end of the week. (Remember name convention for different folders as explained in the syllabus).

2) Students' final grades

Write a small computer program to calculate the final grades of the course for a group of 8 students, assuming that the partial grades were:
Homework=[10, 10, 8, 9.5, 3, 9, 0, 6]
Mid-term = [10, 10, 10, 10, 8, 5, 10, 7]
Final Project=[9, 10, 10, 6, 10, 6, 8, 9]

The program should:
- Print a file with a single column with all final grades
- Print to screen the number of "failed" students (grade < 6) and their grades
- Print to screen the fraction of "outstanding" students (grade > 9.5)
- Make a histogram of all grades
- Save and store the histogram

Note: remember name convention for programs. In this case the root of the name should be "ex2"

3) A ball drops from a very tall tower.

3a. Write a small program to compute the time it takes for a ball to reach the ground when thrown from the "Burj Khalifa" tower in Dubai with initial velocity v. Assume that the tower has a height h=800m (it's actually 829.8m and the currently tallest in the world according to Wikipedia!). Ignore air resistance. Print result to standard output.

3b. Modify the program such that the user can enter a minimum and a maximum velocity (vmin, vmax) from standard input. The program should explore the time taken "t" for a number of 10 bins in initial velocity that cover the range between vmin and vmax (please take bins equally spaced). The result should be kept in an ascii file. Additionally, the program should create and save a plot showing the time "t" as a function of "v_init", where v_init is the initial velocity. (x-axis = v_init, y-axis = t).

Note: remember name convention for programs. In this case, I expect two programs with names "ex3a.py", "ex3b.py" if written in python, or the same root "ex3a" and "ex3b" but different extension if you program in a different language.
Note2: This is a slightly fancier version of the program we already solved during the first class.