UCF Physics PHZ 3150: Introduction to Numerical Computing
Fall 2022 - Homework 3
Due September 8 2022 12pm.

Read: ThinkPython2 chapter 2

Problem 1 (**5 points**). Make a new folder named `hw3_<yourname>` under your `homework` folder. For this assignment, your log is now just a part of your homework. In one of the entries, it should identify the start and end of HW3 and list the problem numbers in order. After each problem number, give your answer and the names of any files you are handing in for each problem. If you made a HW3 entry in your log in a prior session and want to change it, just copy it to the current (last) session, and edit there. We will grade the last entry only. All text related to one assignment should be in one entry, with the problems done in order.

Problem 2. (**30 points total**) We will continue our practice using Git. You will add a new directory from your computer to a new repository. Remember that to add a new repo from the GitHub Desktop app, you can go to File → New Repository → then, in the pop up window name your repository and determine its local path (e.g., in class we pointed to where `phz3150/` is in your laptop). If you have already set a local repository up, you can go to File → Add Local Repository. Then you can publish your repository to your personal GitHub account (chose "organization: None" option). If you now go to the GitHub webpage, it will appear under your repositories.

a) (**5 points**) If you haven't done so yet, set up the GitHub repository (get the GitHub desktop app, and set your name and email for the Git log). Explain how you did it in your log (use past notes, or from memory if you did it in the classroom last Tuesday).

b) (**5 points total**)

   I. (2.5 points) If you haven't done so yet, put your course log under revision control. In your log explain how you did this in detail (again, use past notes, or from memory if you did it in the classroom last Tuesday). Your log should contain information about how you added the file to the list of files Git keeps a track of, how you committed the file (including the commit message) and how you made sure there is a backup on GitHub.

   II. (2.5 points) Use your favorite browser to navigate to your personal GitHub repository. Find your phz3150/ repository and click on it. Make a screenshot of the browser showing that the folder contains your log, and all the folders of your phz3150/ folder. Rename the screenshot using the appropriate naming conventions and add it to your `hw3_<yourname>` folder.

c) (**5 points**) Make a new folder named `test_git` in your computer (can be anywhere, you can delete it later on). Put it under revision control. Explain how you did this in your log (up to, but not including, publishing it).

d) (**10 points total**)

(1 point) Take file hw1-survey.txt from Webcourses. Move it to your `test_git` folder.
(2 points) Go to the GitHub desktop app. Get a screenshot that shows the status of the repository on the GitHub Desktop app (i.e., that something was added).
(1 point) Commit the change with an informative comment.
(2 points) Once done, remove the file from the `test_git` folder. Go to the GitHub desktop app. Get a screenshot that shows the status of the repository changed (i.e., that something was removed).
(1 point) Commit the change with an informative comment.
(1 point) Explain how you did all these to your log.
(2 points) Rename the screenshots using the appropriate naming conventions and add them to your `hw3_<yourname>` folder.

(**5 points**) Make a screenshot of the commit history for your log (showing all the commit messages, when they were made, and by whom).

Problem 3. (**10 points total**) Start Jupyter. Navigate to your `hw3_<yourname>` folder and start a new Python 3 notebook.

(2 points) Change the name of the notebook to `hw3_<yourname>`.ipynb (remember, the extension is automatically set from Jupyter).

(2 points) Use Markdown to write a descriptive text about your notebook at the start of the notebook (something like “practice notebook” …).

(2 points) Define variable `x` equal to 10 and variable `y` equal to 100. Define variable `z` equal to the product of `x` and `y` and variable `w` equal to the difference of `y` and `x`. Print `z` and `w`.

(2 points) Make a variable named `min` that is equal to 3. What do you notice? Is `min` a good name to use for your variable? Why/ why not? Explain in your Jupyter notebook (make a comment in your notebook using #, do not do it in markdown).

(2 points) Make a variable `q` equal to 1. Print `q`. Add one to `q`. Print `q`. In one line multiply `q` by 10 and print the result.

Problem 4 (**10 points**). Prepare and submit your homework. Make sure that the `hw3_<yourname>` contains all necessary files. Write what you will do to make and submit the zip file into your log. Don't forget to also commit your finalized log and push it to GitHub. When satisfied, close the log, copy it to your homework directory, and make the zip file. Turn the file in on WebCourses.