CIS 5357 Fall 2020

Programming Assignment # 4

(20 points, 10 points each)

Due Date: By 11:59 PM, Friday, September 25, 2020

**Introduction:**

You are tasked with designing two short Python programs. The first program will record distance driven and gallons of gas used to travel that distance. The data are to be persisted in CSV format in a CSV file. The second program will read the data from this CSV file, compute miles per gallon, and then persist all data to another CSV file.

**The instructor expects individual effort on this assignment. This assignment is NOT a group project. Collaboration of any type is not sanctioned and will be treated per the Academic Dishonesty policy as stated in the course syllabus. Each submission will be closely examined for plagiarism**.

**Requirements for Program Submission:**

1. Your Jupyter notebook should be named ***YourName-Assignment-4***. The notebook must have an extension of .ipynb e.g. **MayurMehta-Assignment-4.ipynb.**
2. Use markdown cells to include:
3. your first and last name as heading level 2 in the very first cell of the notebook. In the same cell, include the creation date of the assignment using level 3 heading style.
4. In the second cell of the notebook, include a level 3 heading for Program Name (e.g. Grade Determination) and Use level 4 heading to state the objective of the program
5. Save the source code for the entire program in its own single cell.
6. Each of the two programs you will design in this assignment will be saved in in its own cell in the same notebook. That is, you will include the entire source code for program 4A in one cell of the notebook. The source code for Program 4B will be saved in another cell in the same notebook. Each of these cells will be preceded by a markdown cell that include the program number (Prograom 4A or 4B) as level 3 heading.
7. Use appropriate comments to document each segment of the program – input, process, output
8. Execute the program using test data provided later in the specifications.
9. Upload your program into the Assignments section of Canvas **BEFORE** ***11:59 pm on Friday, September 25, 2020*** using the following process:
   1. Log into canvas and access course site
   2. Click on the Assignments section in the course navigation menu.
   3. Click on Assignment 3 link
   4. Click on ‘Submit Assignment’ button on the right side of the Assignment 3 page
   5. Choose the file to submit from your disk, check the original work statement and then click on Submit/Upload.
10. The assignment is considered late and will not be accepted once the due deadline has passed.

**Specifications:**

1. **Program 4A: This program will create a CSV file:**
   1. Open the file named Mileage.CSV in write mode. The file should be saved in the root directory of your hard drive (e.g. C:\ for windows and / for Mac)
   2. Request user to enter miles driven and gallons of gas consumed via keyboard input.
   3. Write these data in CSV format to file named ***mileage.csv***. Each pair of data for miles driven and corresponding gallons of gas consumed should be written as one mileage record, with values separated with a comma (,) e,g. 100,2
   4. Repeat steps (a) and (b) until the user indicates that he/she no longer wishes to continue entering data. Use the data in (f) as test data.
   5. Once all data entries are made in the CSV file, close the file and display a message in console to the effect “Program completed saving XX mileage records in CSV file”, where XX represents a count of records/lines entered in the ***mileage.csv*** file.
   6. Test data to be used:

Miles Driven Gas Consumption

225 17.0

1374 64.0

2514 79.0

274 18.5

1. **Program 4B: This program will read mileage data from the CSV file created in (4A above), compute MPG, and save the results to another CSV file.**
   1. Open the mileage.csv file to bulk read all mileage records from that file.
   2. For each mileage record in the set of records retrieved, calculate miles per gallon as:
      1. Don’t forget to convert the values read in to their correct numeric data type;
      2. Compute the miles per gallon as:

mpg = miles driven/gallons of gas consumed

round the mpg values to 2 decimal places

* 1. Save the data on miles driven, gas consumed, and calculated mpg for the record to another CSV file named ***mpg.csv***.
  2. Once all mileage records from mileage.csv are processed, make sure both the input and output files are closed. Display a message in console to the effect “Program completed processing XX mileage records in CSV file”, where XX represents a count of records/lines entered in the ***mpg.csv*** file.
  3. Your mpg.csv file should end up with the following records:

225, 17.0, 13.24

1374, 64.0, 21.47

2514, 79.0, 31.82

274, 18.5, 14.81