Assignment 6 – File Processing

Goals

- File processing (writing and reading)
- Working with CSV files
- Lists
- Loops

EPA Data

- **Background**
  - The EPA makes publicly provides information on all automobiles (including mileage standards).
  - You are being provided two CSV (comma-separated value) files with all the vehicle data for 2008 (called **`epaVehicleData2008.csv`**) and all of the vehicle data for 2009 (called **`epaVehicleData2009.csv`**).
    - Each row represents one line in a table, and commas separate each column
    - Generally, the first line in a CSV file will represent the header, and each subsequent row represent the data in each column
    - For example, the following CSV file would represent the table below it
    - **CSV File**
      DEPT, COURSENUMBER, SEMESTER, NUMBEROFSTUDENTS
      ITP, 115, SPRING13, 30
      BUAD, 101, SPRING13, 40
      ITP, 310, SPRING13, 35

Data Table

DEPT	COURSENUMBER	SEMESTER	NUMBEROFSTUDENTS
ITP	115	SPRING13	30
BUAD	101	SPRING13	40
ITP	310	SPRING13	35

- **Requirements**
  - All operations must be done using techniques discussed in class (including functions). You **may not** import the CSV or other modules

- Your program must complete the following tasks:
  - Provide an option for the user to select which year they would like to evaluate (2008 or 2009).
    - Let the user try again if they enter a year other than 2008 or 2009.
  - Ask user for filename to store results.
  - Calculate the maximum highway miles per gallon (MPG) and minimum highway MPG for all **`cars`** (exclude any entries for **`vans`** or **`pickups`**) and write the results to the text file (specified above)
  - Find all cars with the *minimum MPG* and write them to text file
  - Find all cars with the *maximum MPG* and write them to text file
  - Note that in each case, you are writing the answers to text file not the screen. The screen output should say something like, "Operation Success".
- Extra Credit:
  - Ask the user if they would like see mileage data from other vehicle types (e.g. vans, pickups, compacts only, etc.) and then write the data accordingly. Be sure to include error checking here (i.e. if a user enters an invalid vehicle type).

Sample Output – Screen Output

```
Welcome to EPA Mileage Calculator

What year would you like to view data for? (2008 or 2009): 2007

*Invalid input, please try again!

What year would you like to view data for? (2008 or 2009): 2008

Enter the filename to save results to: results.txt

Operation Success! Mileage data has been saved to results.txt

Thanks, and have a great day!
```

Sample Output – `results.txt` File *(not actual results)*

```
EPA Highway MPG Calculator (2008)
---------------------------------
Maximum Mileage (highway): 41
      Mercedes-Benz Smart Fortwo (Convertible)
      Mercedes-Benz Smart Fortwo (Coupe)
Minimum Mileage (highway): 16
      Ferrari F430
      Lamborghini Gallardo Spyder
```

Deliverables and Submission Instructions

- Create a folder on your computer called
  `ITP115_a#_lastname_firstname`
  (replace # with this lab number)
- Inside the folder, include your python source code
- Compress the folder (make a zip file) called
  `ITP115_a#_lastname_firstname.zip`
  (replace # with this assignment number)
- Upload zip file to Blackboard site for our course

Grading

Item	Points
Part 1: EPA File Processing	30
Total*	**30**

** Points will be deducted for poor code style, or improper submission.*