Programming Assignment: Average Miles Per Gallon

Problem Statement:

In this assignment, you will write a program that computes fuel efficiency of a multi-leg journey for a vehicle. The program

1. Asks user for the starting odometer reading (in miles). Using a while loop validates that the reading is positive, if not, prompts the user to enter a valid mileage value.
2. Next
    a. Asks the user for odometer reading and amount of fuel in gallons used for the next leg of journey.
    b. Validates that the odometer reading is more than the last odometer reading and that the fuel is a positive number, if not prompts the user again till valid values are entered.
    c. Computes the miles per gallon (mpg) for this leg.
    d. Prints the mpg for this leg.
3. Asks user if there are additional legs for which the program should continue.
    a. If yes, repeats step 2
    b. Else prints the average mpg of the entire journey.

To help you plan your code, a high level program outline for this problem is included. You can base your code on this pseudo code. At the end, two sample input/output pairs are shown. You should test the program with these samples as well as your own test data.

Save your program to a file with a name of the format first_last_AvgMPG.py. Submit this file.

High-level Program Outline:

Print greeting

Prompt the user for starting odometer reading

Use a while loop to validate that starting odometer reading is a positive number.

Initialize variables: last odometer reading, current odometer reading, leg number, total fuel, moreInput

While moreInput == 'y'

    Prompt the user for new odometer reading and fuel consumed

    If fuel is positive and new odometer reading > last odometer reading:

        Calculate MPG for this leg using mpg = (new odometer – last odometer) / fuel

        Print MPG for this leg

        Update last odometer reading, total fuel, leg number

        Ask if user wants to continue (save user response in moreInput)

    Else

        Print message saying fuel should be positive and new odometer reading should be greater than last odometer reading (see the first sample run below)

Calculate average MPG over entire journey

Print number of legs

Print average MPG over entire journey

Print Bye message.

Sample 1 with some invalid inputs

```
Type "copyright", "credits" or "license()" for more information.
>>>
================ RESTART: C:/code/Python/Playground/avgMPG.py ================
Welcome to the Average MPG Calculator

Please enter the starting odometer reading in miles: 10000

-------------------------------------------------------------------------------
Please enter new odometer reading in miles for leg #1: 10060
Please enter fuel consumed in gallons for leg #1: 2.0
Average MPG for leg #  1  =  30.0
Continue (y/n)? y
-------------------------------------------------------------------------------
Please enter new odometer reading in miles for leg #2: 10020
Please enter fuel consumed in gallons for leg #2: 2.0
Fuel consumed needs to positive and new odometer reading needs to be higher than
 10060.0
-------------------------------------------------------------------------------
Please enter new odometer reading in miles for leg #2: 10090
Please enter fuel consumed in gallons for leg #2: -1
Fuel consumed needs to positive and new odometer reading needs to be higher than
 10060.0
-------------------------------------------------------------------------------
Please enter new odometer reading in miles for leg #2: 10090
Please enter fuel consumed in gallons for leg #2: 2.0
Average MPG for leg #  2  =  15.0
Continue (y/n)? n

Total number of legs in the journey:  2
Final average MPG for the entire journey:  22.5
Bye!
>>>
```

Sample 2:

```
>>>
================ RESTART: C:/code/Python/Playground/avgMPG.py ================
Welcome to the Average MPG Calculator

Please enter the starting odometer reading in miles: 12200

-------------------------------------------------------------------------------
Please enter new odometer reading in miles for leg #1: 12285
Please enter fuel consumed in gallons for leg #1: 1.5
Average MPG for leg #  1  =  56.666666666666664
Continue (y/n)? y
-------------------------------------------------------------------------------
Please enter new odometer reading in miles for leg #2: 12310
Please enter fuel consumed in gallons for leg #2: 2.2
Average MPG for leg #  2  =  11.363636363636363
Continue (y/n)? n

Total number of legs in the journey:  2
Final average MPG for the entire journey:  29.72972972972973
Bye!
>>>
```