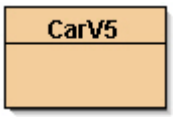
08.05 Assignment Instructions

Instructions: Calculate the fuel economy of your family or personal car in terms of gallons per mile and the total cost for one fill-up.

1. If the 08.05 Assignment project has not yet been created in the Mod08 Assignments folder, please do so now.
2. Be sure to save a copy of these instructions in the Mod08 Documents folder.
3. Print a copy for your notebook.
4. Carefully read the instructions before you attempt the assignment.
5. Create a class called CarV5 in the newly created folder. Copy the V3 version of the program to the new class and update the necessary statements to V5.



6. At the beginning of the module you were asked to begin recording data about the miles driven and fuel purchased for at least three fill-ups of your car (or the family car). If you have not already done so, please download the **Gas Mileage Record Sheet** now; you will need this information later to produce a model of your carbon footprint.
7. At this time, your program should still only calculate results for the first fill-up logged on your Gas Mileage Record Sheet.
8. Maintain the OOP format with a single object called **`car1`**. Additional cars will be added in the future.
9. All variable names in the **`main()`** method should end with the number 1 (e.g., startMiles1, gallons1, etc., to represent results for the first car).
10. The previous program used a default constructor and all values were passed directly to the methods. Modify the program so that the appropriate startup values are passed to a constructor to initialize private instance variables. Use the following header for the constructor.

CarV5 car1 = new CarV5(carType1, endMiles1, startMiles1, gallonsUsed1, pricePerGallon1);

The parameter list indicates which private instance variables will be needed. Some methods may still take parameters.

11. Add two new methods, one to calculate gallons/mile and the second to calculate the cost of a fill-up. Use the following headers for the methods:

```
public double calcGPM(int dist)
public double totalCost()
```

12. Add columns for the Price, Cost, and Gal/Mile (see Expected Output).
13. Print the results in a user-friendly format.

Expected Output: When the program runs correctly, the output will resemble the following screen shot, but the data should be for the first fill-up logged on your Gas Mileage Record Sheet.

```
                                    Gas Mileage Calculations
  Type of Car    Start Miles  End Miles  Distance   Gallons    Price     Cost    Miles/Gal    Gal/Mile
=============================================================================================================
06 Saturn Vue        14373       14731        358       16.2      2.98    48.28       22.1        0.045
```

Grading: Your assignment will be graded according to the following rubric.

Components	Points Possible	Points Earned
Comments include name, date, and purpose of program.	1	
Constructor correctly written.	2	
Private instance variables declared.	2	
Private instance variables initialized.	1	
Statement to invoke constructor included.	1	
Method headers correctly written including documentation.	2	
Individual methods invoked on an object from **main()** method.	2	
All calculations correct.	1	
Output formatted with **printf()**.	1	
No compiler or runtime errors.	1	
Thoughtful PMR included.	1	
Total	**15**	

Submission: Submit the CarV5.java file as Assignment 08.05 for a grade.