

AP Computer Science

Lab "CalcMPG"

In this lab, you need to create a class called "CalcMPG". The UML diagram of this class is:

CalcMPG
<ul style="list-style-type: none">- cumulmiles: double- cumulgallons: double- cumulmpg: double- currentmiles : double- currentgallons : double- currentmpg : double
CalcMPG() CalcMPG(double, double)
+ getters + updateMPG()

This "CalcMPG" class simulates the MPG information displayed on the dashboard in your car.



Since the miles and gallons information in any car can only be obtained by running the car not by manually setting them, therefore, the setters are not needed.

The parameter constructor will simulate the MPG information you will see when you sit in a car and connect the electrical circuit power before you start the car.

The “updateMPG()” function updates the cumulative MPG and current trip MPG in each trip. It will display the current trip’s MPG info. Then adds the current miles and current gallons into cumulative miles and cumulative gallons to display the cumulative MPG info as of to this current trip. Each current miles and each current gallons must be created by the random number generators with range of [28, 34] for current miles and range of [0.8, 1.2] for current gallons.

Once you complete the “CalcMPG” class, you need to construct a tester class “CalcMPGTester” to test constructors, getters and updateMPG() function. Construct a car with existing 2022.11 cumulative miles and 56.8008427 existing cumulative gallons, which means it has 35.6 existing cumulative MPG.

The suggested number of trips should be no more than 20.