CSCI 272 Spring 2019 **Programming Project 1**

Project Description: Complete the definitions of the functions for the Car class in the car.cpp file. The class definition and function prototypes are in the provided car.h header file. A testing program is in the provided main.cpp file. You don't need to change anything in car.h or main.cpp.

Submission: Submit the completed **car.cpp** file and a screenshot of your output on Blackboard.
Due: Friday, February 15th, 2019, end of day.

The `Car` class has the following:

private data and helper functions that are only accessible by the class member functions:

`mpg`—how many miles the car can go on a gallon of fuel.
`mileage`—the current number of miles on the car's odometer
`availableFuel`—the current number of gallons of fuel in the car's tank
`fuelCapacity`—the maximum number of gallons of fuel that can go in the car's tank

`addMiles`—this adds miles to the data member `mileage`
`useFuel`—this subtracts gallons of fuel from the data member `availableFuel`

publicly available functions:

`Car` default constructor—this is defined in car.h, you don't need to define in car.cpp
`Car` custom constructor—takes in values to initialize `mpg` and `fuelCapacity`

`getMileage`—returns the current value of data member `mileage`
`getAvailableFuel`—returns the current value of data member `availableFuel`
`getFuelCapacity`—returns the current value of `fuelCapacity`

`drive`—takes in a number of miles for the trip as a parameter. It will first calculate the number of gallons of fuel needed for the trip given the number of miles and the car's mpg. If the number of gallons needed exceeds the gallons available, the function will return a value of `false`. If the number of gallons needed is available, drive will call the helper `addMiles` function with the number of miles driven, call the helper `useFuel` function with the number of gallons used, and return a value of `true`.

`refuel`—will set the value of data member `availableFuel` to the value of data member `fuelCapacity`

Sample output: See the following screenshot for sample output using the provided main.cpp testing program.

```
Enter miles for trip 1: 78

Trip 1 not taken. Need to refuel.

Current fuel level: 2.00
New fuel level: 24.50

Enter miles for trip 2: 45

**Trip 2 taken.**
Miles driven: 45.00
Starting mileage: 5.00
Ending mileage: 50.00
Gallons used: 2.50
Gallons remaining 22.00

Enter miles for trip 3: 67

**Trip 3 taken.**
Miles driven: 67.00
Starting mileage: 50.00
Ending mileage: 117.00
Gallons used: 3.72
Gallons remaining 18.28
```