

CSCE 111 – Homework 4

Submit a .zip file with your answers to eCampus, file name should be in the format LastName_FirstName_hw4.zip.

1. CREATE A CLASS CALLED CAR IN A FILE CALLED CAR.JAVA THAT HAS THE FOLLOWING:

- A String field called make
- A String field called model
- An int field called mileage
- An int field called speed
- A constructor method that accepts the car's make, model as arguments and assigns them to the class fields. Also set the car's speed and mileage to be 0.

- A method called accelerate - Increases the speed of the car by 5
- A method called brake - Decreases the speed of the car by 10
- An accessor method called getSpeed - This should just return the value of the speed field.
- An accessor method called getMileage - This should just return the value of the mileage field.
- A mutator method called setMileage - This should change the value of the mileage field to the given argument.

Write a separate main class that contains a main method (Hw4pr1.java). In the main, create a Car object with the required arguments (make up some values, no need to ask the user).

Drive your new car by writing a loop that calls accelerate on your Car object 10 times. In each iteration, after accelerating use your accessor method to get and display the speed of your car. Also update and display the mileage of your car by adding the value of the speed.

Finally, stop driving by calling your brake method. Keep calling this method until your speed is 0. Display current speed and update your mileage everytime you brake.

Note: You need to be using an instance of your Car class. Nothing (except the main method) should be static.

Remember to submit both Hw4pr1.java and Car.java

Note: Problems 2-4 should be defined in a single class (see Solution.java). You do not need to provide main class. The TA will use a main class to test your methods.

2. LARGER THAN N

Write a method that accepts two arguments: an array and a number n . Assume that the array contains integers. The method should display all of the numbers in the array that are greater than the number n .

3. LO SHU MAGIC SQUARE

The Lo Shu Magic Square is a grid with 3 rows and 3 columns. The Lo Shu Magic Square has the following properties:

- the grid contains 1 through 9 exactly;
- the sum of each row, each column and each diagonal all add up to the same number;

In a program you can simulate a magic square using a two-dimensional array. Write a method that accepts a two-dimensional array as an argument, and determines whether the array is a Lo Shu Magic Square.

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-----  
4 | 9 | 2 |  
-----  
3 | 5 | 7 |  
-----  
8 | 1 | 6 |
```

4. REVERSE AN ARRAY

Write a method that takes an array as an argument to reverse the data in this array. For example, if the given array is 1,2,3, then the output should be 3,2,1. Assume the array is an integer array.