Lab Exercise (Chapter 3 : Part 1)

Objective: This exercise is to practice how to create a class, it's attribute, constructor, setter/getter, toString. And to learn how to create objects from the class.

Steps:

Class/Object

1. Create a main program called ***cartest*** (cartest.java)
2. Create a dummy Car class (Car.java)
3. In the cartest program, create 3 cars object from the Car class and print the car object
   Run the program and observe the output

Attribute & Constructor

4. Complete the Car class by defining the attributes
5. Complete the Car class by defining the constructors
6. In the cartest program, change the object by calling the constructor with different value.
   Run the program and observe the output

toString method

7. Complete the Car class by overwriting the toString method
   Print the output below when toString() is called:
   The car with brand ***xxx***, color ***xxx***, engine size ***xxx*** is running at speed ***xxx***
   (Note: the xxx is the correspondence value for each variable)
   Run the program and observe the output

Setter/Getter

8. Complete the Car class by defining the setter/getter
9. In the cartest program, calling the setter to change the value of the attributes. Try to print the output with separate getter methods, and with toString method.
   Run the program and observe the output

Other Methods

10. Add in additional methods accelerate(), decelerate() and stop()
    Increase and decrease the speed by 1 in the accelerate() and decelerate() methods respectively. Set the speed to zero in the stop() method.
11. In the cartest program, test your car object, try to accelerate, decelerate and stop it and call the toString() to print the output for each of the car after each action.
    Run the program and observe the output

Collection: ArrayList

12. Store all the car objects to an ArrayList. And, try to print out the car object using a for loop.
    Run the program and observe the output

The class diagram for ***Car*** class with the variables and methods are as follows:

Car
-brand: String -colour : String -engine_size : int -speed : int
<<constructor>> Car() <<constructor>> Car(b:String,c:String,e:int,s:int) +getBrand():String +setBrand(b:String) +getColour():String +setColour(c:String) +getEngine_size():int +setEngine_size(e:int) +getSpeed():int +setSpeed(s:int) +accelerate() +decelerate() +stop() +toString():String

Access modifier:

- is private
+ is public