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Lab7.java

/*

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*/

package com.mycompany.lab7;

/**

*

* @author krish

*/

public class Lab7 {

public static void main(String[] args) {

 // Instantiate the car

 Car myCar = new Car("BMW-M5 CS", "Mercedese AMG", 2024, "Black");

 // Display car information

 myCar.displayCarInfo();

 // Change the car color

 myCar.setColour("Blue");

 System.out.println("Car color changed to: " + myCar.getColour());

```
// Display car state
```

```
myCar.displayState();
```

```
// Try to accelerate without starting
```

```
myCar.accelerate(20);
```

```
// Start the car
```

```
myCar.start();
```

```
// Switch gear to 'd'
```

```
myCar.switchGear('d');
```

```
// Accelerate the car
```

```
myCar.accelerate(50);
```

```
// Display car state
```

```
myCar.displayState();
```

```
// Brake the car
```

```
myCar.brake(50);
```

```
// Switch gear to 'r'
```

```
myCar.switchGear('r');
```

```
// Accelerate in reverse
```

```
myCar.accelerate(20);
```

```
// Display car state  
myCar.displayState();
```

```
// Brake to stop  
myCar.brake(20);
```

```
// Stop the car  
myCar.stop();
```

```
// Switch gear to 'p'  
myCar.switchGear('p');
```

```
// Display car state  
myCar.displayState();
```

```
// Honk  
myCar.honk();
```

```
}
```

```
}
```

Car.java

```
package com.mycompany.lab7;
```

```
/**
```

```
*
```

```
* @author krish
```

```
*/
```

```
public class Car {
```

```
    private String make;
```

```
    private String model;
```

```
    private int year;
```

```
    private String colour;
```

```
    private int currentSpeed;
```

```
    private boolean isRunning;
```

```
    private char gear;
```

```
    public static final int MAX_SPEED = 200;
```

```
    public Car(String make, String model, int year, String colour) {
```

```
        this.make = make;
```

```
        this.model = model;
```

```
        this.year = year;
```

```
        this.colour = colour;
```

```
        this.currentSpeed = 0;
```

```
        this.isRunning = false;
```

```
        this.gear = 'p';
```

```
    }
```

```
    public String getMake() {
```

```
        return make;
```

```
    }
```

```
public String getModel() {  
    return model;  
}
```

```
public int getYear() {  
    return year;  
}
```

```
public String getColour() {  
    return colour;  
}
```

```
public void setColour(String colour) {  
    this.colour = colour;  
}
```

```
public int getCurrentSpeed() {  
    return currentSpeed;  
}
```

```
public boolean isRunning() {  
    return isRunning;  
}
```

```
public void displayCarInfo() {
```

```
System.out.println("Make: " + make);  
System.out.println("Model: " + model);  
System.out.println("Year: " + year);  
System.out.println("Colour: " + colour);  
}
```

```
public void start() {  
    isRunning = true;  
    System.out.println("Car started.");  
}
```

```
public void stop() {  
    isRunning = false;  
    currentSpeed = 0;  
    System.out.println("Car stopped.");  
}
```

```
public void accelerate(int speedChange) {  
    if (!isRunning) {  
        System.out.println("Please start the car.");  
        return;  
    }  
    if (currentSpeed + speedChange <= MAX_SPEED) {  
        currentSpeed += speedChange;  
        System.out.println("Accelerated by " + speedChange + " units. Current speed: " +  
currentSpeed);  
    }  
}
```

```
    } else {  
        System.out.println("Cannot exceed the maximum speed of " + MAX_SPEED + "  
units.");  
    }  
}
```

```
public void brake(int speedChange) {  
    if (currentSpeed - speedChange >= 0) {  
        currentSpeed -= speedChange;  
        System.out.println("Braked by " + speedChange + " units. Current speed: " +  
currentSpeed);  
    } else {  
        currentSpeed = 0;  
        System.out.println("The car is already stopped.");  
    }  
}
```

```
public void switchGear(char newGear) {  
    gear = newGear;  
    System.out.println("Gear switched to: " + newGear);  
}
```

```
public void displayState() {  
    System.out.println("Car Status:");  
    System.out.println("Status: " + (isRunning ? "Started" : "Stopped"));  
    System.out.println("Speed: " + currentSpeed);  
    switch (gear) {
```

```
    case 'p':  
        System.out.println("The car is in Park.");  
        break;  
    case 'd':  
        System.out.println("The car is in Drive.");  
        break;  
    case 'n':  
        System.out.println("The car is in Neutral.");  
        break;  
    case 'r':  
        System.out.println("The car is in Reverse.");  
        break;  
    default:  
        System.out.println("Unknown gear.");  
    }  
}
```

```
public void honk() {  
    System.out.println("Honk! Honk!");  
}  
}
```

Output:-


```
Output - Run (Lab7) x
cd C:\Users\krish\Desktop\Krishna\Study\Algorithm\Labs\Lab7; "JAVA_HOME=C:\Program Files\Java\jdk-23" cmd /c "%C:\Program Files\NetBeans-23\netbeans\
Make: BMW-M5 CS
Model: Mercedes AMG
Year: 2024
Colour: Black
Car color changed to: Blue
Car Status:
Status: Stopped
Speed: 0
The car is in Park.
Please start the car.
Car started.
Gear switched to: d
Accelerated by 50 units. Current speed: 50
Car Status:
Status: Started
Speed: 50
The car is in Drive.
Braked by 50 units. Current speed: 0
Gear switched to: r
Accelerated by 20 units. Current speed: 20
Car Status:
Status: Started
Speed: 20
The car is in Reverse.
Braked by 20 units. Current speed: 0
Car stopped.
Gear switched to: p
Car Status:
Status: Stopped
Speed: 0
The car is in Park.
Honk! Honk!
```