Problem Set 4 Exercise #06: Car

Reference: Lecture 10 Unit 2 notes

Learning objective: Object-oriented programming

Estimated completion time: 40 minutes

Problem statement:

You are to write two classes in **PS4_Ex06_Car.java** and **PS4_Ex06_TestCar.java**.

The **`Car`** class should contain the following attributes:

- **Model**: Model of the toy car, a String.
- **Colour**: Colour of the toy car, a String.
- **Odometer value**: An odometer is an instrument in a car for measuring the distance travelled. The odometer value (**double** type) on a car displays up to maximum value of 999.9, after which it starts from 000.0 again.

There is no absolute need to add more attributes to the **`Car`** class. But if you choose to do so, justify that the attributes you add are logically essential information of a car.

You are to write a constructor **`Car(String mod, String col, double odo)`** to create a **`Car`** object with given information.

Fill in the following member methods of the **`Car`** class. You may add more methods as necessary.

- **`String getModel()`** to return model of this car.
- **`String getColour()`** to return colour of this car.
- **`double getOdometer()`** to return odometer value of this car.
- **`void updateOdometer(double distance)`** to update the odometer with the distance travelled.

In the driver class **`TestCar`**, you are to read in data about a car and create a **`Car`** object accordingly. The input data includes the model, colour, initial odometer value, the number of trips (a positive integer), and for each trip, the distance travelled (a positive real number). After that, the program is to display the outputs as shown in the sample runs below.

Sample run #1:

```
Enter model: Viaxer III
Enter colour: white
Enter odometer value: 981.5
Enter number of trips: 3
```

```
Distance for trip 1: 23.5
Distance for trip 2: 19
Distance for trip 3: 8.5
Model: Viaxer III
Colour: white
Odometer: 32.5
Trips: 3
Distance per trip: 17.0
```

Sample run #2:

```
Enter model: Ultimate 2100
Enter colour: black
Enter odometer value: 100
Enter number of trips: 5
Distance for trip 1: 1084.9
Distance for trip 2: 900
Distance for trip 3: 1230.5
Distance for trip 4: 1508
Distance for trip 5: 1450.2
Model: Ultimate 2100
Colour: black
Odometer: 273.6
Trips: 5
Distance per trip: 1234.7
```

Sample run #3:

```
Enter model: Zeus
Enter colour: blue
Enter odometer value: 820.3
Enter number of trips: 1
Distance for trip 1: 1563.2
Model: Zeus
Colour: blue
Odometer: 383.5
Trips: 1
Distance per trip: 1563.2
```