**COMP112-Object Oriented Programming**

**Homework-1**

Write a program for calculating the money earned in a parking area. The parking area can take up to 20 vehicles. Vehicles’ type can be “*small*”, “*medium*” or “*large*”. Payment amount is calculated according to the following rule:

* Small vehicles pay 5TL for up to 2 hours. If they stay longer, they pay 1TL for each extra hour.
* Medium vehicles pay 6TL for up to 2 hours. If then they stay longer, they pay 2TL for each additional hour.
* Large vehicles pay 7TL for the first two hours and then they pay 3TL for each additional hour.

Ex: If a small vehicle stays in the parking lot for 5 hours it pays 8TL (5 + 3\*1).

**The program runs as below.**

First the user chooses one of three options:

(1) Enter Vehicle

(2) Exit Vehicle

(3) Terminate

The program continues until the user wants to terminate the program.

**Enter Vehicle**: If there are already 20 vehicles inside the parking area, the program gives a warning and asks to choose another option. Otherwise, the program asks the plate number, type and the entrance hour of the vehicle and saves the vehicle to the array.

**Exit Vehicle**: The program asks the plate of the exiting car and finds it in the array. Then the program asks the exiting hour of the car and calculates the total money that the car should pay. Also the program deletes the car from the array.

**Terminate:** The program prints the total money earned in the parking area and exits.

The user will not enter any incorrect data (i.e. trying to exit a car which is not in the parking area) so the programmer does not need to make any error check.

**Example:** There is an example execution of the program. In the example, to be able to save some space, the maximum number of the cars is limited to 3 instead of 20.

Choose:

(1) Car Enter

(2) Car Exit

(3) Terminate

1

Enter vehicle's plate:01abc01

Enter vehicle's type:small

Enter vehicle's entrance hour:7

Choose:

(1) Car Enter

(2) Car Exit

(3) Terminate

1

Enter vehicle's plate:02abc02

Enter vehicle's type:small

Enter vehicle's entrance hour:6

Choose:

(1) Car Enter

(2) Car Exit

(3) Terminate

1

Enter vehicle's plate:03abc03

Enter vehicle's type:medium

Enter vehicle's entrance hour9

Choose:

(1) Car Enter

(2) Car Exit

(3) Terminate

1

There is NO room in the parking area

Choose:

(1) Car Enter

(2) Car Exit

(3) Terminate

2

Enter exiting vehicle's plate:02abc02

Enter exiting hour:10

The vehicle pays 7TL

Choose:

(1) Car Enter

(2) Car Exit

(3) Terminate

2

Enter exiting vehicle's plate:03abc03

Enter exiting hour:11

The vehicle pays 6TL

Choose:

(1) Car Enter

(2) Car Exit

(3) Terminate

2

Enter exiting vehicle's plate:01abc01

Enter exiting hour:22

The vehicle pays 18TL

Choose:

(1) Car Enter

(2) Car Exit

(3) Terminate

3

The Total Money Earned is 31TL

**Programming Tips:**

Vehicle: In the application, you need to implement Vehicle class. Besides the required field, you also need to define a method to calculate the money paid by the vehicle.

Array of Vehicles: You need to manage an array of vehicles in your main method. For this homework, you are NOT allowed to use any Collection class like ArrayList. For adding and deleting vehicles to the array you may have two options:

*Option1)* Keep an index showing the last empty place in the array, every time you add a vehicle to the array, increment the index. When a vehicle is deleted from the array (eg. the 5th vehicle in the array is deleted), shift the vehicles after the deleted vehicle to the previous location (eg. move vehicle 6 to the 5th location, vehicle 7 to 6th location etc.).

*Option2)* When you delete a vehicle from the array, put null value to the deleted location. When you need to add a new vehicle to the array, first find the location with null value.

**Naming and Submission Rules:**

Your homework will be evaluated by an automated computer script. If you do not obey the following rules, you may end up having zero grade even if your homework is correct.

Name of the project: HW1

Name of the java files: Vehicle.java and Main.java

Given messages to the console:

Choose:

(1) Enter Vehicle

(2) Exit Vehicle

(3) Terminate

Enter vehicle's plate:

Enter vehicle's type:

Enter vehicle's entrance hour:

Enter vehicle's exiting hour:

The vehicle pays #TL

The Total Money Earned is #TL

Ps1.Be careful with println and print according to the example.

Submission:

* Make a directory and name it as name\_surname\_number.
* Put Vehicle.java and Main.java file under it.
* Zip your directory.
* e-mail it to: Osman Gökhan Uyan <gokhan.uyan@agu.edu.tr>