

**CSE 1141 - COMPUTER PROGRAMMING I**  
**Programming Assignment # 2**  
**DUE DATE: 29/10/2018 - 23:00 (No extension)**

For this homework, you will write a program that allows a car salesman to enter a customer's choices regarding a new car and from that information, itemize the costs of the choices and finally determine the total cost. The options and costs for the customer's choices are listed below.

The program will prompt for several pieces of information. These data items will be used to determine the cost of the car. Some the responses may affect whether you ask questions later in the process. Once you've obtained all of the information, the total cost needs to be displayed.

Your program **will need** to accept responses with a *mix* of upper and lower case letters.

**The Car Option Rules:**

1. The dealership sells five car models with the following base prices:
  - a compact (\$16,000)
  - a luxury (\$39,000)
  - a midsize (\$26,000)
  - a pickup (\$19,500)
  - an SUV (\$29,000)
2. There are six different features that might be added to a car model:
  - Protective undercoating
  - Automatic transmission
  - Sunroof
  - Multimedia package
  - Security package
  - Sports package
3. The following table presents the standard/optional/not available features and their prices for each car model.

Car model	Base price	Protective undercoating		Automatic transmission		Sunroof		Multimedia package		Security package		Sports package	
<i>compact</i>	\$16,000	o	\$125	-		-		-		o	\$800	-	
<i>luxury</i>	\$39,000	o	\$125	s		s		o	\$1250	s		-	
<i>midsize</i>	\$26,000	o	\$125	o	\$2000	o	\$1500	o	\$750	o	\$1000	o	5%
<i>pickup</i>	\$19,500	o	\$150	-		-		o	\$750	-		-	
<i>SUV</i>	\$29,000	o	\$200	o	\$2500	o	\$2300	o	\$1000	o	\$1350	o	5%

- 's' indicates that this feature has already added to the car model by default (with no additional cost).
- 'o' indicates that this feature might be added to the car model with an additional cost if the customer accepts.

- ‘-’ indicates this feature is not available for this car model.
- 
- *Protective undercoating* is an optional feature for each car model with different costs.
  - *Automatic transmission* is a standard feature for a *luxury car*; however, it might be added as an optional feature for midsize car and SUV models with additional costs of \$2000 and \$2500, respectively. It is not available for compact car and pickup models.
  - *Sunroof* is a standard feature for a *luxury car*; however, it might be added as an optional feature for midsize car and SUV models with additional costs of \$1500 and \$2300, respectively. It is not available for compact car and pickup models.
  - *Multimedia package* is an optional feature for all car models except for compact cars with different costs.
  - *Security package* is a standard feature for a *luxury car*; however, it might be added as an optional feature for compact, midsize and SUV models with additional costs of \$800, \$1000, and \$1350 respectively. It is not available for pickup models.
  - *Sports package* is an optional feature for midsize car and SUV models. The cost of the sports package is 5% of the base price of the model.
- 
4. After retrieving the customer’s choices, your program should add sales taxes to the total cost as the following:
    - Apply 35% OTV for the cars with total costs less than \$35,000.
    - Apply 40% OTV for the cars with total costs higher than (or equal) \$35,000.
    - Lastly, apply 18% KDV to the total cost after applying OTV.
  
  5. Our car company also offers following advantageous packages for *luxury*, *midsize* and *SUV* models:
    - If a customer selects protective undercoating with multimedia package for a *luxury* car, then apply 5% discount to the total cost of these packages.
    - If a customer selects sunroof with multimedia package for a *midsize* car, then the total cost of these packages should be decreased to \$2000.
    - If a customer selects security package with automatic transmission for a *midsize* car, then apply 10% discount to the total cost of these packages.
    - If a customer selects automatic transmission, sunroof, multimedia and security packages for an SUV model, then add protective undercoating for free.

Here, example runs for different cases are provided.

**Example run 1:**

```
Welcome to Marmara Motor Cars
-----
Compact (C)
Luxury (L)
Midsize (M)
Pickup (P)
SUV (S)
What model of car do you want? (C, L, M, P, S): c
Do you want protective undercoating for $125.0 (Y/N)? Y
Do you want the security package for $800.0 (Y/N)? n

You ordered a Compact car with a base price of $16000.0
Your additional cost is $125.0
Sales Tax: $9562.125
Total cost of car & options: $25687.125
Program ends...
```

**Example run 2:**

```
Welcome to Marmara Motor Cars
-----
Compact (C)
Luxury (L)
Midsize (M)
Pickup (P)
SUV (S)
What model of car do you want? (C, L, M, P, S): S
Do you want protective undercoating for $200.0 (Y/N)? n
Do you like to replace the normal transmission by an automatic transmission
for $2500.0 (Y/N)? y
Do you want sunroof for $2300.0 (Y/N)? Y
Do you want the multimedia package for $1000.0 (Y/N)? y
Do you want the security package for $1350.0 (Y/N)? Y
Do you want the sports package for an increased 5.0% This will increase your
cost by $1450.0 (Y/N)? N
You won protective undercoating for free!

You ordered an SUV with a base price of $29000
Your additional cost is $7150.0
Sales Tax: $23569.8
Total cost of car & options: $59719.8
Program ends...
```

### Example run 3:

```
Welcome to Marmara Motor Cars
-----
Compact (C)
Luxury (L)
Midsize (M)
Pickup (P)
SUV (S)
What model of car do you want? (C, L, M, P, S): L
Do you want protective undercoating for $125.0 (Y/N)? y
Do you want the multimedia package for $1250.0 (Y/N)? Y

You ordered a Luxury car with a base price of $39000.0
Your additional cost is $1306.25
Sales Tax: $26279.675
Total cost of car & options: $66585.925
Program ends...
```

***Note:** Your program should execute correctly for different test cases.*

### **Submission Instructions**

Please zip and submit all your files using filename YourNumberHW2.zip (ex: 150713852HW2.zip) to Canvas system (under Assignments tab).

Your zip file should contain the followings:

1. Java source code (HW2\_150713852.java)
2. Java class file (HW2\_150713852.class)

### **Notes:**

1. Write a comment at the beginning of each program to explain the purpose of the program. Write your name and student ID as a comment. Include necessary comments to explain your actions. Comments are very important for this homework.
2. Select meaningful names for your variables.
3. You are allowed to use the materials that you have learned in lectures & labs.
4. Do not use the things that you did not learn in the course.
5. Each student should submit his/her own homework. You can discuss with your peers about the homework but you are not allowed to exchange code or pseudocode. This also applies to material found on the web. Should some submitted homework assignments be identical or suspected to be identical, all involved parties will get a grade of **ZERO** from all homeworks. In case of any forms of cheating or copying, both giver and receiver are equally culpable and suffer equal penalties.
6. No late submission will be accepted.

## **Grading:**

### Automating Car Sales (92 points)

- Case 1: Compact car (8 points)
  - Protective undercoating (4 points)
  - Security package (4 points)
- Case 2: Luxury car (13 points)
  - Protective undercoating (4 points)
  - Multimedia package (4 points)
  - Apply 5% discount for protective undercoating + multimedia package (5 points)
- Case 3: Midsize car (34 points)
  - Protective undercoating (4 points)
  - Automatic transmission (4 points)
  - Sunroof (4 points)
  - Multimedia package (4 points)
  - Security package (4 points)
  - Sports package (4 points)
  - Apply 10% discount for security package + automatic transmission (5 points)
  - The total cost for sunroof + multimedia should be \$2000 (5 points)
- Case 4: Pickup (8 points)
  - Protective undercoating (4 points)
  - Multimedia package (4 points)
- Case 5: SUV (29 points)
  - Protective undercoating (4 points)
  - Automatic transmission (4 points)
  - Sunroof (4 points)
  - Multimedia package (4 points)
  - Security package (4 points)
  - Sports package (4 points)
  - Apply protective undercoating for free if the customer selects automatic transmission, sunroof, multimedia package and security package. (5 points)

### Submission format (8 points)

- 1 java + 1 class files
- Make sure that your class file can be executed on another computer.
- Make sure that the input/output of your program must be the same with the examples above (all informative strings & spaces).
- Comments are necessary!