Comprehensive Lab 2:

Time to Buy a Car

It is difficult to design a user-friendly interface for customers who are looking to buy a new car. In this assignment, we will design a new interface for customers who are planning to buy a new car.

Step One:

Nowadays, it is important to personalize the customer's shopping experience, so we need to ask users to sign up in our interface. Hence, the first task for us is to design an interface that asks the user for his/her username and password.

The username must be at least 6 characters, and the password must be at least 8 characters. Password must have at least one lowercase letter, one uppercase letter, one digit, and one special character (@, #, $, &). Keep in your mind, to prevent any password mistyping, you need to ask for the password twice, and compare them together. Your program will display messages if the username or password doesn't meet the requirements, and you program must tell the user which criteria didn't pass.

* There is no need to verify the username and password from a database or store them there since they are signing up, not signing in.

Step Two:

Your program needs to help customers by filtering the cars in inventory by asking questions below:

- Are you looking to buy a new or a used car?

- What is the maximum budget you want to pay for the car?

You need to store these answers in separate variables and apply them when you want to display cars to the user.

Step Three:

You need to read cars' information from the CSV file that is provided for you with this assignment. This file has the list of cars with their id, model, manufacture name, price, new/used, color, year.

You need to display these cars after applying the user's filters (step two). The user will choose the car by entering the car's id.

Step Four:

When the customer is ready to finalize the purchase, we should check if they are eligible for discount programs. The program should ask the following questions before proceeding.

1- Are you a student? ($500 discount)
2- Are you military? Active, reserve, veteran ($500 discount)
3- Are you a first responder? ($500 discount)

Your program should add the total discounts together and store the total discount in a variable. Then, deduct the total discount from total price of the car.

Your program should ask the user for the type of purchase, meaning they will have the option to pay in cash, or to finance the car.

After calculating and applying the eligible discounts to the car price, you need to apply the tax and fees. To do so, you need to declare a function called totalValue(double carPrice) which will add 5% as tax and a $109 registration fee and return the new price after tax and fees.

If the user chooses to pay in cash, you will show the final price and a thank you message.

If the user chooses to finance, you need to ask for the number of months they would like to pay in and add a loan interest to the price. The user can choose from 48 months, 60 months, or 72 months.

You need to declare a function called paymentCalculator(double finalPrice, int month) to calculate the loan payments. This function will calculate the payments and return the payment amount for each month based on the following criteria:

The 48-month loan has a 3.5% APR

The 60-month loan has a 4.2% APR

The 72-month loan has a 5.2% APR

You need to display the payment due for each month to the user and display a thank you message.

Terminal output example:

Black = terminal output

Blue text = info from file

Red text = user input

```
Please enter your username..
cs1student
Please enter your password..
@MinersStudent1
Are you looking to buy a new or a used car?[new/used]
new
What is the maximum budget you want to pay for the car?
25000
id: 11184, model is rogue, manufacture is nissan, this is a new car,
color is black, this car made at 2020, and the price is 24600
-----------------------------------------------------------------
id: 19562, model is accord, manufacture is honda, this is a new car,
color is white, this car made at 2020, and the price is 24750
-----------------------------------------------------------------
id: 19361, model is camery, manufacture is toyota, this is a new car,
color is black, this car made at 2020, and the price is 24980
-----------------------------------------------------------------
id: 5953, model is kick, manufacture is nissan, this is a new car,
color is orange, this car made at 2020, and the price is 19100
-----------------------------------------------------------------
id: 1869, model is fusion, manufacture is ford, this is a new car,
color is silver, this car made at 2020, and the price is 24365
-----------------------------------------------------------------
```

```
id: 13300, model is civic, manufacture is honda, this is a new car,
color is silver, this car made at 2021, and the price is 19950
-------------------------------------------------------------------------
please choose a car by its id..
11184
Are you a student?[yes/no] ($500 discount)
yes
Are you an active or reserve military/a veteran?[yes/no] ($500
discount)
no
Are you a first-responder?[yes/no] ($500 discount)
no
you are eligible for $500.0 discount
Choose one of ways below to pay: [1/2]
1-pay in full price
2-finacnce the car
2
how many months do you want to finance the car. [48/60/72]
60
you need to pay $441.35646666666673 each month for 60 months
Thank you for your purchase..
```

Rubric

> 15% - Pseudocode

> 10% - Appropriate use of input/output operations (in Java)

> 10% - Appropriate use of conditional (i.e., if-then) statements (in Java)

> 15% - Appropriate use of functions (in Java)

> 10% - Appropriate use of iterations (i.e., for-loop, while-loop) statements (in Java)

> 10% - Appropriate documentation (in Java)

> 10% - Appropriate notation and indentation (in Java)

> 15% - Program compiles, runs, and contains the functionality required.

> 5% - Student answers all questions during demo.

> Up to 20% - Bonus feature

Tips

> Start early.

> Plan to work 5 to 7 additional hours outside the lab to complete this assignment.

> Ask clarifying questions to the instruction team if something is not clear.

> Plan to submit at least 1 hr. before the deadline to deal with potential Blackboard bugs.

> Have fun and keep it simple!