Final Project – Coffee Shop

Learning Objective

Write a Python program that uses all python concepts that we've learned so far - variables, escape characters, branching, modules, math operations, loops and lists.

Project Description

Write a program that displays the menu of a coffee shop as a tabbed list of drink items and their costs to the user using a range-based for loop.

It allows them to choose items they want to buy one-by-one till they say they are done using while loops. For every item they choose to purchase, the program should ask the user how many of that item they want (must be 1 or more) and calculate the cost for that item.

Each item they wish to purchase should add to their total cost.

The program should also allow users to choose a mystery item, choose a random item from the menu, display the item and ask the user to choose whether they wish to purchase it or not. You should only allow "Y", "y", "N" or "n" as inputs to this question.
If they say yes, add the cost of 1 mystery item to the user's total cost.

Once they are done, the program should also add a discount of 20% if the user's total cost is more than 20 dollars.
The program should then display the total cost to the user.

For all user inputs, the program should allow both upperCase and lowerCase for valid inputs and handle invalid inputs by asking again.

Sample Output 1

```
Welcome to my Coffee Shop!

Menu:
      Latte:     5.25
      Espresso:  3.75
      Cappuccino:      4.5
      Matcha:    6.0
      Tea:  5.5
Enter an item OR Enter "M" for mystery item OR Enter "Done": latte

How many latte do you want? (1 or more): 2
2 latte - Got it! That's 10.5 dollars!

Want More? Here's the Menu again -

Menu:
      Latte:     5.25
      Espresso:  3.75
      Cappuccino:      4.5
      Matcha:    6.0
      Tea:  5.5

Enter an item OR Enter "M" for mystery item OR Enter "Done": M

Your mystery item is: matcha
Do you wish to purchase it? Y/N: f
Do you wish to purchase it? Y/N: y
1 matcha - Got it! That's 6.0 dollars!

Want More? Here's the Menu again -

Menu:
      Latte:     5.25
      Espresso:  3.75
      Cappuccino:      4.5
      Matcha:    6.0
      Tea:  5.5

Enter an item OR Enter "M" for mystery item OR Enter "Done": tea

How many tea do you want? (1 or more): 2
2 tea - Got it! That's 11.0 dollars!
```

```
Want More? Here's the Menu again -

Menu:
      Latte:     5.25
      Espresso:  3.75
      Cappuccino:      4.5
      Matcha:    6.0
      Tea:  5.5

Enter an item OR Enter "M" for mystery item OR Enter "Done": done

Your total cost is more than 20.0 dollars.
Congratulations, you receive a 20.0% discount!
Your total cost is:  22.0

Thank you for shopping here!
```

Sample Output 2

```
Welcome to my Coffee Shop!

Menu:
      Latte:     5.25
      Espresso:  3.75
      Cappuccino:      4.5
      Matcha:    6.0
      Tea:  5.5
Enter an item OR Enter "M" for mystery item OR Enter "Done": milk
Invalid item!

Want More? Here's the Menu again -

Menu:
      Latte:     5.25
      Espresso:  3.75
      Cappuccino:      4.5
      Matcha:    6.0
      Tea:  5.5

Enter an item OR Enter "M" for mystery item OR Enter "Done": Matcha

How many matcha do you want? (1 or more): 2
2 matcha - Got it! That's 12.0 dollars!
```

```
Want More? Here's the Menu again -

Menu:
      Latte:     5.25
      Espresso:  3.75
      Cappuccino:      4.5
      Matcha:    6.0
      Tea:  5.5

Enter an item OR Enter "M" for mystery item OR Enter "Done": m

Your mystery item is: matcha
Do you wish to purchase it? Y/N: n
OK, skipping this mystery item!

Want More? Here's the Menu again -

Menu:
      Latte:     5.25
      Espresso:  3.75
      Cappuccino:      4.5
      Matcha:    6.0
      Tea:  5.5

Enter an item OR Enter "M" for mystery item OR Enter "Done": Done

Your total cost is:  12.0

Thank you for shopping here!
```

Steps

1. In PyCharm, open your existing APP_Python project.
2. In the Assignments directory, create a new Python file called finalProject.py.
3. At the top of the file, put comments in the following format and replace the name, email, and section with your actual information and fill in the description:

```
# Final Project
# Name: First Last
# Description: (fill in)
```

4. Import the random module.

5. Create a list of strings to store drink items (5-6 items) and a list of integers to store their costs.

   Make sure the position (index) of the drink item in the items list matches the position (index) of that drink's cost in the cost list

   Items list :

Item 1 Name	Item 2 Name	Item 3 Name	. . .

   Costs list :

Item 1 Cost	Item 2 Cost	Item 3 Cost	. . .

6. Create a variable for the user's total cost.
7. Create a variable for the cost above which discount applies. Variable name suggestions: *discountableCost*, *discountableAmount* etc.
8. Create a variable for the discount percentage. Variable name suggestions: *discountPercent.*
9. Print the Menu as a tabbed list of items with costs. Use range-based for loop to loop though all index values. In the loop, access each element at index value in both lists to print the item and its cost using escape characters for tab. This is only possible if both lists have the same number of elements. Remember, index values always start at 0 and the last index is always equal to the total number of elements - 1. You will need this to get a sequence of integers from the range( ) function for index values. Also remember, the stop value in range( ) is up to but not including!

```
Menu:
   Latte:     5.25
   Espresso:  3.75
   Cappuccino:     4.5
   Matcha:    6.0
   Tea:  5.5
```

10. Use input( ) function with a while loop to keep asking the user to enter their item of choice or "M" for a mystery item until they enter "Done". Handle invalid inputs (items not in the list or anything other than "m", "M" or any variation of "done") and ask again. Allow for both upperCase and lowerCase inputs for valid inputs. You can use string methods (lower() or upper()) on the user's input or logical operators (and, or) in while & branding conditions for this.

```
Enter an item OR Enter "M" for mystery item OR Enter "Done": milk
Invalid Item!
Display menu again and ask for input again
Enter an item OR Enter "M" for mystery item OR Enter "Done": latte
Calculate costs, add to total cost, display menu again and ask for input again
Enter an item OR Enter "M" for mystery item OR Enter "Done": m
Choose random mystery item, add cost to total cost if Y, display menu again and
ask for input again
Enter an item OR Enter "M" for mystery item OR Enter "Done": Done
Exit loop, do things after loop (outside of loop)
```

11. Inside this while loop, use branching to check if they entered an option for a mystery item, else if they entered an item from the menu or they entered something invalid.
12. If the user chooses “M” or “m” option for a mystery item, use the random module to choose a random item from the list of items, store it in a variable and display the item to the user using print( ) function.

```
Your mystery item is: Latte
```

13. Then, use input( ) to ask the user if they wish to purchase the mystery item by entering Y or N. Handle invalid inputs (anything other than “Y”, “y”, “n” or “N”) using while loops. Allow for both upperCase and lowerCase inputs for valid inputs. Using branching, if the user says “y”or “Y”, find the item’s index in the items list (use list methods), then use that index to access the cost of that item in the costs list and add it to the total. If they say “n” or “N”, print that the item was skipped.

```
Do you wish to purchase it? Y/N: g
Do you wish to purchase it? Y/N: y
1 latte - Got it! That's 5.75 dollars!
OR
Do you wish to purchase it? Y/N: N
OK, skipping this mystery item!
Add to total cost, display menu again and ask for item choice input again
```

14. If the user enters an item from the menu, use branching to check if it is a valid item, it should be in the list of items. If it’s a valid item, use input( ) to ask how many of that item the user wants to purchase. It should be a value greater than 0. Use a while loop to keep asking until they enter a valid number. Remember to convert this number to an integer.

```
Enter an item OR Enter "M" for mystery item OR Enter "Done": milk
```

```
Invalid Item!
Enter an item OR Enter "M" for mystery item OR Enter "Done": latte
How many latte do you want? (1 or more): 0
How many latte do you want? (1 or more): -2
How many latte do you want? (1 or more): 2
Calculate costs, add to total cost, display menu again and ask for input again
```

15. Once the user enters a valid number for how many of that item they want to purchase, find the item's index in the items list, then use that index to access the cost of that item in the costs list, multiply the cost by the number of that item the user wants and add it to the total cost. Print the item they just purchased and how many, and also Print the cost of the total number of that item.

```
2 latte - Got it! That's 10.5 dollars!
Display menu again and ask for input again.
```

16. Once the user enters "Done", the first while loop should end.

17. After the user is "Done", use branching to check if the user didn't buy anything. Their total cost should be 0 if they didn't buy anything. If they did buy something, use branching to check if the total cost is eligible for a discount. Any amount above *discountableCost* qualifies for a discount of *discountPercent* on the total cost. If the discount applies, calculate the discounted total cost. Finally, only if they bought something, print the total cost.

    If the discount applies, print:

```
Your total cost is more than 20.0 dollars.
Congratulations, you receive a 20.0% discount!
Your total cost is:  22.0.
```

    If discount doesn't apply, print:

```
Your total cost is:  12.0.
```

18. At the end of the program, display this:

```
Thank you for shopping here!
```

19. Remember to update your while loop variables inside the while loops. Otherwise, they may lead to infinite loops.
20. Follow coding conventions. Use camelCase or snake_case for variable names.
21. Test the program. Look at the Sample Outputs.

22. Submit your finalProject.py file to your LA through WhatsApp.

Grading Rubric

Fall 2025	Final Project (40 points total)	Points
Point Breakdown	Import random module	1
	List of string for items, list of integers for costs.	2
	Print menu as a tabbed list using range-based for loop to loop through index values and accessing list items using those indices. Escape characters for tabs.	4
	Create integer variables for total cost, discountable amount and discount percent	3
	User input with while loop to get user's choice of item from menu or mystery item till they enter done, handling invalid inputs to ask again.	2
	Branching to check if they chose mystery item or an item from the menu (from the items list), handling upperCase and lowerCase for valid inputs	2
	If mystery item, use of random module to select a random item from the items list and display it.	1
	If mystery item, User input with while loop to get user's choice to purchase it or not, handling invalid inputs to ask again and allowing both upper and lower cases for valid inputs	2
	If mystery item, branching to add its cost when user says Y, or display "skipping" message when N	2
	If mystery item, adding cost: by finding its index in the items list, using the index to find the cost in the cost list and adding to total cost	3
	If mystery item, print the item and its cost.	2
	If menu item, User input with while loop to get a number > 0 for how many of that item they want to purchase and converting to int. Handling invalid input to ask again.	2

	If menu item, calculating cost: by finding its index in the items list, using the index to find the cost in the cost list, calculating the cost for the total number of that item and adding to total cost	4
	If menu item, print the item, how many and cost for total number of that item.	3
	After use enters "done", Branching to see if user purchased anything (total cost more than 0)	1
	If user purchase something, Branching to see if the total cost is eligible for discount by comparing it with the discountable amount (20.0 dollars)	1
	If total cost eligible for discount, calculating the final total cost by applying a discount of discountPercent (20%)	2
	Print total cost if user bought something	1
	Print "Thank you for shopping" message.	1
	Comments	1
Total		**40**