1. Problem Description

Ice Cream price calculator

Yummy Gelataria is a popular ice cream outlet in western Sydney. The owner of the Gelataria has recently decided to sell gelato packs online. The website can be used to estimate the cost of an order. You have been asked to design and create a cost calculator for Yummy Gelataria. The calculator estimates the total price of purchased gelato packs based on the information provided by the user. The user can choose between buying minimum 1 tub of ice cream to a maximum of 10 tubs. The user may input details such as number of tubs, gelato pack size, extra topping etc.

A gelato pack order should include number of ice cream tubs, chosen tub size and a choice of extra topping for each tub. Yummy Gelataria has three different size of ice cream tubs available- "Small", "Regular" and "Party". For the cost to be calculated, for each ice cream tub, customers need to enter the size of ice-cream tub that they want to purchase, and whether they wish to add extra toppings or not.

The price of each ice cream tub sizes is given in the 2nd column in the Table 1 and the 3rd column shows the extra cost for a topping. For example, the price of a small pack is $5.50; whereas a regular pack with extra toppings costs $19.50 and a Party Pack without extra toppings costs $35.

Yummy Gelataria would also like to accept a coupon code with each order. If the customer uses the coupon code "VIP", then they will receive a discount of $2 from their final order total.

While calculating the cost of the ice cream, in cases where a user enters an invalid input, the calculator should display an appropriate error message and ask the user to enter valid input again. Valid input should be checked for the number of ice cream tubs, the tub size and the extra topping.

Table1: Standard Gelato Prices

Tub Size	Price (standard)	Extra topping (Diced Almonds, mini marshmallows and 100s & 1000s)
Small pack (250 ml)	$5.50	$2.00
Regular pack (1 litre)	$15.00	$4.50
Party Pack (3.5 litre)	$35.00	$8.50

2. Input/Output Specification

The input, processing and output of the program have been demonstrated with the following sample runs, where text formatted **bold** is the output of the program and *italics* show the user input.

Sample Run 1

A sample run of the program using valid input is given below.

Enter number of ice cream tubs (1-10): 2

Enter the ice cream tub size (Small/Regular/Party): *Small*

Do you need extra topping (Y/N): *Y*

Enter the ice cream tub size (Small/Regular/Party): *Party*

Do you need extra topping (Y/N): *N*

Please enter you coupon code here. Press enter key for no code: *VIP*

The cost of the ice cream is $ 40.5

Sample Run 2

Here is a sample run of the program using invalid input, which then asks for valid input.

Enter number of ice cream tubs (1-10): 2

Enter the ice cream tub size (Small/Regular/Party): *Large*

Do you need extra topping (Y/N): *N*

Incorrect input, please add size and topping again

Enter the ice cream tub size (Small/Regular/Party): *Small*

Do you need extra topping (Y/N): *N*

Enter the ice cream tub size (Small/Regular/Party): *Party*

Do you need extra topping (Y/N): *Y*

Please enter you coupon code here. Press enter key for no code: *VIP*

The cost of the ice cream is $ 47.0

3. Task Specification

For this project, you need to prepare the followings deliverables. **It is important to note that you must use an iteration control structure and modularisation in your solution.**

You must design at least 3 meaningful modules with independent functionality for the above task.

i. Structure chart using the notation used in the Workbook.
ii. Flowchart using the notation used in the Workbook, where there is one flowchart for each module corresponding to the structure chart.
iii. Python code of your solution.
iv. Test data containing at least two sets of data; one dataset for positive testing which verifies that a valid set of input to the program produces an expected output. The other dataset must be for negative testing to test the ability of the program to handle invalid input and guide the user so they finish their order successfully.
v. Test execution results for both positive and negative testing of the code. You can take screenshot of the test execution results and place them in the given template file.