**Assignment 1**

**Programming Fundamentals**

**Group 2**

**Program Requirements**

The program is required to calculate total and generate a receipt when items are entered to the system.

1. Program should prompt to enter the item name.
   1. Item name must be string.
   2. The system should validate if the entered item number is of type string, else users should be displayed error message: “Item Name is incorrect. Please enter a valid item name”
   3. If users enter space as item name. consider as empty. Display error message: “item name is required.”
2. Program should prompt to enter the price of the item.
   1. System should validate the price entered is of type float.
   2. System should validate if negative values are entered. Display error message “Incorrect Price.”
   3. If users enter space as item price they should be trimmed, and system should consider as empty. Display error message: “item price is required.”
3. Program should prompt to enter the quantity. Quantity must be float.
   1. System should validate if users enter quantity as zero, display message “quantity should be greater than zero.”
   2. System should validate quantity according to the type of item.
   3. If users enter space as item name, they should be trimmed, and system should consider as empty. Display error message: “item name is required.”
4. Program should store the items and the quantity entered to the shopping cart.
   1. System should assign unique identifiers to the items entered by the user.
   2. The system should check the items entered with the existing list of items in the shopping cart.
   3. If any item is already in the shopping cart, then the quantity of that item should be updated.
5. Program should store the discounted items on a separate list.
   1. Assumption: in order to identify the discounted items, there will be a flag in the database, which would allow us to identify which items are eligible for the discount.
6. The program should calculate total discount for the items entered.
   1. Program should check if the item is eligible for the discount.
   2. If only 1 quantity of the eligible item is purchased, then no discount will be given, and the item price should remain the same.
   3. The system should increase the discount in 5% increments for each additional item purchased.
      1. For the second unit, a 5% discount is applied to the total cost of both items.
      2. For the third unit, a 10% discount is applied to the total cost of all three items.
      3. For 5 or more items, a discount of 20% discount is applied.
   4. The system should cap the maximum at 20%, regardless of the number of units purchased.
7. Program should calculate the total cost.
   1. The system should maintain a running total of all items.
   2. Type should be float.
   3. Total cost should be rounded to 2 decimal places.
8. Program should display a receipt.
   1. Itemized list of each item with its name, quantity, price per item, and total cost.
   2. The format for the receipt should be:
      1. Item name | quantity x unit price = total item price
   3. Overall total cost of all items.
   4. Total discount amount applied.

1. Program must calculate and display the receipt until the user presses ‘Enter.’
   1. Program should not exit or close if the user presses any other Key.
   2. If users press enter at the beginning of the program user should exit from the program.

**Assumptions**

1. The system will validate the item name against the database to ensure that the item exists. Else system will display message “Item not found.”
2. The price entered by the user is valid with the database values.
3. The system will store measurements according to the item name entered.
4. The system will display information message ‘A maximum of 20% discount will be given.’
5. If the user presses enter after entering the item name and quantity the system will generate the receipt according to the default price defined in the system.
6. If values are null, the user will be directed to the shopping cart.

**Clarifications**

1. If the quantity is entered as 2.5 does the stakeholder want the item to be rounded off and how should the discount be applied in such scenario
   1. EX: if the type is eggs and users input quantity as 2.5 system will automatically round off the value to 3. Or consider invalid input.
2. How to apply discount when there are several types of containers for the same item.
   1. EX: chicken soup could be in the state of powder or can. In this stage how do we calculate the discount.
3. If promotions are available to the items on discount, are we allowing multiple discounts?
4. If the user needs to re start or exit the system will utilize escape buttons.
5. Case sensitive: if the user enter Eggs as egg are we allowing or validating as incorrect item name.
6. Should we display the net total as well in the receipt.

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