

Midterm Test CS5008

Answer the following questions

Question 1 (20 Marks)

Jill is starting a new retail business and would like to make a net profit of approximately 10% after paying all the expenses, which include merchandise cost, store rent, employees' salary, and electricity cost for the store.

She would like to know how much the merchandise should be marked up so that after paying all the expenses at the end of the year she gets approximately 10% net profit on the merchandise cost.

Note that after marking up the price of an item she would like to put the item on 15% sale. Write a program that prompts

Jill to enter the total cost of the merchandise, the salary of the employees (including her own salary), the yearly rent, and the estimated electricity cost. The program then outputs how much the merchandise should be marked up so that Jill gets the desired profit.

Question 2 (30 Marks)

Jason opened a coffee shop at the beach and sells coffee in three sizes: small (9oz), medium (12oz), and large (15oz). The cost of one small cup is \$1.75, one medium cup is \$1.90, and one large cup is \$2.00.

Write a menu-driven program that will make the coffee shop operational.

Your program should allow the user to do the following:

- a. Buy coffee in any size and in any number of cups.
- b. Display total cost of the total coffee bought to the user
- c. At any time shows the total money made by the shop owner for all the coffee sold.

Your program should consist of the following functions:

- a function to show the user how to use the menu program to order coffee.,

- a function to compute cost of coffee bought.
- a function to show the total money made.

Your program should not use any global variables and special values such as coffee cup sizes and cost of a coffee cup must be declared as named constants.

Question 3 (20 Marks)

a) Write a C++ program to implement the Queue Class. Write implementations for the methods of the Queue class. Write the main program to test all the methods implemented. The Queue class can be implemented to store integer values.

b) Give three differences between an ***array*** and a ***linked list***.

Question 4: (20 Marks)

Write a C++ program to store the names of students in the class. The program should display the names in the reverse order. Use an STL container for storing the names and explain the reason for the choice.