CS 1101 – Introduction to Computer Science

Spring 2022

Lab 4 – Part 1

Due Date: Wednesday, February 16, end of day.

Objective: The goal of this assignment is to get familiar with taking input using **Scanner**, processing **variables**, and **branching**.

Background: You are to create a program that simulates a coffee shop. A customer will have the ability to select a drink or a pastry to purchase, along with the quantity of that item. If the customer selects a drink, then your program should offer him a pastry. After obtaining the item selection and desired quantity from the customer, your program should calculate the final cost, after tax and discount, then display these to the customer.

Assignment: You are to create a program that:

1. To Begin, ask the user for their name. Then, display the following welcome message to the customer, where name is the name entered by the customer:
   Welcome to CS 1101 Coffee Shop, *customer's name*!

2. Display the menu on the screen, with each item numbered.
   MENU

   COFFEE
   1) Americano - $1.50
   2) Latte - $3.50
   3) Cappuccino - $3.25
   4) Espresso - $2.00

   PASTRIES
   5) Coffee Cake - $5.00
   6) Muffin pastry - $3.00
   7) Lemon Bread - $2.25

3. Prompt the customer to select an item. The customer will select an item by entering the number that corresponds to the desired item.

4. Use a switch statement that checks customer selection. For all, store the price and display the following message:
   You have selected a [item].
   where the item is the name of the coffee or pastry

If the number selected does not exist, print the following:
Selection not found.

5. Prompt the customer to enter the quantity for the selected item.

6. Calculate the total cost of the order.
    a. Orders that have a total that is $10 or more should receive a 10% discount. If the customer earned a discount, calculate the dollar amount of the discount.
    b. Calculate the price-after-discount by subtracting the discount dollar amount from the total.
    c. Calculate the tax dollar amount. Apply tax to the price-after-discount. The tax rate is 7%.
    d. Calculate the final cost by adding the tax dollar amount to the price-after-discount.
    e. Display the total cost (i.e., cost before discount and tax), price-after-discount, tax amount, and final cost to the customer. Format all dollar amounts to two decimal places in the output. Also, be sure to display each dollar amount with a dollar sign ($).

Sample output:

Example 1-

```
Please enter your name:
joe
Welcome to CS 1101 Coffe Shop, joe

*MENU*
COFFEE
1) Americano - $1.50
2) Latte - $3.50
3) Cappuccino - $3.25
4) Espresso - $2.00

PASTRIES
5) Coffee Cake - $5.00
6) Muffin pastry - $3.00
7) Lemon Bread - $2.25

Please enter the item number:
4
You have selected a Espresso.
Please enter the quantity:
50
Total before discount and tax: $100.0
Discount is: $10.00
Price after discount: $90.00
Tax: $6.30
Total: $96.30
```

Example 2-

```
Please enter your name:
Bianca
Welcome to CS 1101 Coffe Shop, Bianca

*MENU*
COFFEE
1) Americano - $1.50
2) Latte - $3.50
3) Cappuccino - $3.25
4) Espresso - $2.00

PASTRIES
5) Coffee Cake - $5.00
6) Muffin pastry - $3.00
7) Lemon Bread - $2.25

Please enter the item number:
5
You have selected a Coffe Cake.
Please enter the quantity:
500
Total before discount and tax: $2500.0
Discount is: $250.00
Price after discount: $2250.00
Tax: $157.50
Total: $2407.50
```

Deliverables: You are expected to submit two files in Blackboard:

(i) Lab4_Lastname.doc--- containing the algorithm /pseudocode of your program, and
(ii) Lab4_Lastname.java --- the java file of your program.

Extra Credit:

A switch statement can be written using a multi-branch if-else statement, but the switch statement may make the programmer's intent clearer. For this assignment, create another program (java file) solving the same problem described in this Lab using **only** the if-else statement.

In addition to the deliverables described above, submit another java file to Blackboard:

(iii) Lab4_Lastname_ExtraCredit.java --- the java file of your program.

Grading Criteria:

- [10 points] Algorithm.
  - Sequential, executable, finite, and correct.

- [87 points] Java program that is similar to the algorithm.
  - [35 points] Program compiles and runs.
  - [40 points] The program has correct logic and generates correct output.
  - [5 points] The program is indented properly.
  - [5 points] The program uses meaningful variable names.
  - [2 points] The program has proper documentation.

- [3 points] The deliverables follow the proper name Lab4_LastName

- [10 points] Extra credit

- Late submission: [**-10**] points for every 24 hours after the deadline.

If you need any clarification, please ask your TA for further details.