

**King Saud University**  
**College of Computer & Information Science**  
**CSC111 – Assignment 10**  
**All Sections**

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## Instructions

1- You must submit your solution using Web-CAT grading system.

Web-CAT can be accessed from eclipse using the following IP address (single line):

```
http://10.131.240.28:8080/Web-CAT/WebObjects/Web-CAT.woa/wa/assignments/eclipse
```

2r Due date: Sunday Apr 10th at 11:59pm

3- You can discuss answers with your colleagues but **cheating is prohibited and there will be extreme consequences.**

## Question 1

Declare a class **Cafe** with the following:

- Private Attributes *coffeePrice*, *teaPrice*, *donutPrice*, *coffeeTotQty*, *teaTotQty*, *donutTotQty*, *discount*, *subtotal*, *discountedPrice* and *total*.
  - *discount* is a number between 0-100 and it represents a percentage,
  - *coffeePrice*, *teaPrice* and *donutPrice* represent price of items.
  - *coffeeTotQty*, *teaTotQty* and *donutTotQty* represent quantities cups and donuts in inventory.

- **subtotal** is bill total before discount.
- **discountedPrice** is the amount discounted.
- **total** is total of final bill.
- **setters** Methods for the attributes **coffeePrice, teaPrice, donutPrice, coffeeTotQty, teaTotQty, donutTotQty, discount**. These methods must validate the data (e.g., price can not be negative).
- **getters** Methods for all attributes.
- A private method **calculateSubTotal(int coffeeQty, int teaQty, int donutQty)** to calculate the **subtotal** of the bill before discount and store it.
- A private method **calculateTotal(int coffeeQty, int teaQty, int donutQty)** to calculate the total cost of the bill, including the discount and store values in **total** and **discountedPrice**. It should use method **calculateSubTotal()**.
- Public method **double order(int coffeeQty, int teaQty, int donutQty)**. This method is called to process a customer's order. It calls the other two methods **calculateTotal()** and **display()** to calculate and display the bill to the user. It receives the number of coffee cups, tea cups and donuts that the user ordered and returns bill total. It should check first if the Café has enough cups and/or donuts before initiating and order. If the Café has inventory shortage then it prints "Error: no enough cups and/or donuts" and returns 0.
- Public void method **display(int coffeeQty, int teaQty, int donutQty)** to display an itemized bill as follows: (assume the

Cafe sells coffee for SR 5.50 a cup, Tea for SR 3.50 and Donuts for SR 2.25 and discount is 10%)

Item	Quantity	Price
Coffee	3	16.50
Tea	2	7.00
Donuts	2	4.50
Sub total		28.00
Discount	(%10.0)	2.80
Total		25.20

*Do the following:*

- (1) Declare the class **Cafe** in a separate file called **Cafe.java**.
- (2) Write the main program to test class **Cafe** using Class **TestCafe.java**.

First, Create an object **c1** or type **Cafe** to represent a Cafe that sells coffee for SR 5.50 a cup, Tea for SR 3.50 and Donuts for SR 2.25. It has 100 cups for tea, 100 cups for coffee and 50 donuts. Then, you should read, calculate and display bills for several customers using a menu driven program (*Hint*: use do while loop for the menu as done in lab06).

Your program should display a menu with 2 options:

- 1) Order: to order a drink or/and a donut to a customer.
- 2) Quit: to end program

Then it should read the option as an integer number.

(3) When the user enters 1 for Order, your program should Read the order, calculate and display bill for customer. Use method **order** of object **c1** to do all this. When the user enters 2 for Quit, print the total sales for all the operations.

## Sample Run

```
*****
*                               Welcome to Cafe :)                               *
*                               -----                                       *
*   Please enter one of the following options:                               *
*   1) order ==> this allows you to order a drink                          *
*   2) quit ==> to end this program                                         *
*                                                                           *
*****
Enter your option :> 1
Please, enter order (#cups of coffee, #cups of tea and #donuts: 3 2 2
-----
Item            Quantity          Price
-----
Coffee          3              16.5
Tea             2              7.0
Donuts          2              4.5
-----
Subtotal                28.0
discount      (%10.0)      2.8000000000000003
-----
Total                25.2
-----

*****
*                               Welcome to Cafe :)                               *
*                               -----                                       *
*   Please enter one of the following options:                               *
*   1) order ==> this allows you to order a drink                          *
*   2) quit ==> to end this program                                         *
*                                                                           *
*****
Enter your option :> 2
Total sales = 25.2
Thanks. Goodbye!
```