Lab 04: Generic Cheese Shop v2
CSE-021-01, Spr 2018 **Points: 20**

Overview

We will gain some hands-on experience with methods in this lab.

Getting Started

After starting Eclipse, create a new project called Lab 21_4. Import `GenCheeseShopv2.java` from the assignment page.

To get some idea of what needs to be done, examine the slides from lecture 04. You will see a method called `intro()` in slide 12. This method implements the first process (labelled "A" in slides 10 and 11), and prints out the names and prices of the three special cheeses. Instead, we can create a method that extends this process to print the names and prices of all cheeses sold, while populating the `names` and `prices` arrays, and initializing the `amounts` array. This new method is declared in the following way:

```
public static void intro(String[] names, double[]prices, int[] amounts)
```

The method `intro` gets three arguments: pointer to `names` array, pointer to `prices` array and pointer to `amounts` array. They are of types `String`, `double` and `int` respectively. We can invoke the method by calling it like this:

```
intro(names, prices, amounts);
```

Another method called `getAmount` is used to get the amounts of each type of cheese. Instead of calling `getAmount` for each type of cheese as shown in slide 12, we can create a method which will obtain order amounts for all cheeses at once (see slide 21). We use the following declaration of `getAmount` using three parameters:

```
public static void getAmount(Scanner input, String[] names, int[] amounts)
```

Note that this method no longer returns an `int`, but just fills the `amounts` array. Other methods go through a similar transformation to now deal with arrays instead of just the fixed set of 3 cheeses.

Part 1: Fix `GenCheeseShopv2.java`

Only fill-in the parts as indicated in `GenCheeseShopv2.java`. The expectation is you know what code belongs in these methods that are called by main by matching the specification to the names of the methods. Some code will be similar to Lab 03 with some minor changes. Think about how to tell how many cheeses there are based on the arrays passed into each method without needing the variable MAXCHEESE to control the loops. Do NOT change main or the method declarations. Fix the code where it indicates to fix (right now it is always returning just 0). The program will compile and run as given but obviously it is not doing much.

Your program will do the following:

A. List all the cheese types available and the prices
B. Asks the user how many pounds of each type of cheese to purchase
C. Calculate Sub Total (price*amount of each cheese added together)
D. Discount of Sub Total -
   - A $10 discount if their purchase is $50 or over
   - An additional $15 discount ($25 total) if $100 or over
E. Ask the user if they would like to see a list of what they purchased

- If yes, a list comes up showing how much of each type of cheese they bought and the cost of each cheese
- Display only the cheese they actually bought
- If no, then no itemized information is displayed

F. Display Sub Total, Discount and Total Price

Sample Output:

```
We sell 0 kinds of Cheese

Sub Total: $0.0
-Discount: $0.0
Total    : $0.0
-----------------------------------------------------------------------------------------
We sell 1 kinds of Cheese
Dalaran Sharp: $1.25 per pound
Enter the amount of Dalaran Sharp : 1
Display the itemized list? (1 for yes) 1
1 lbs of Dalaran Sharp @ 1.25 = $1.25

Sub Total: $1.25
-Discount: $0.0
Total    : $1.25
-----------------------------------------------------------------------------------------
We sell 2 kinds of Cheese
Dalaran Sharp: $1.25 per pound
Stormwind Brie: $10.0 per pound
Enter the amount of Dalaran Sharp : 1
Enter the amount of Stormwind Brie : 1
Display the itemized list? (1 for yes) 1
1 lbs of Dalaran Sharp @ 1.25 = $1.25
1 lbs of Stormwind Brie @ 10.0 = $10.0

Sub Total: $11.25
-Discount: $0.0
Total    : $11.25
-----------------------------------------------------------------------------------------
We sell 3 kinds of Cheese
Dalaran Sharp: $1.25 per pound
Stormwind Brie: $10.0 per pound
Alterac Swiss: $40.0 per pound
Enter the amount of Dalaran Sharp : 1
Enter the amount of Stormwind Brie : 1
Enter the amount of Alterac Swiss : 1
Display the itemized list? (1 for yes) 1
1 lbs of Dalaran Sharp @ 1.25 = $1.25
1 lbs of Stormwind Brie @ 10.0 = $10.0
1 lbs of Alterac Swiss @ 40.0 = $40.0

Sub Total: $51.25
-Discount: $10.0
Total    : $41.25
-----------------------------------------------------------------------------------------
We sell 4 kinds of Cheese
Dalaran Sharp: $1.25 per pound
Stormwind Brie: $10.0 per pound
Alterac Swiss: $40.0 per pound
Cheese Type D: $9.15 per pound
Enter the amount of Dalaran Sharp : 1
Enter the amount of Stormwind Brie : 1
```

```
Enter the amount of Alterac Swiss : 1
Enter the amount of Cheese Type D : 1
Display the itemized list? (1 for yes) 1
1 lbs of Dalaran Sharp @ 1.25 = $1.25
1 lbs of Stormwind Brie @ 10.0 = $10.0
1 lbs of Alterac Swiss @ 40.0 = $40.0
1 lbs of Cheese Type D @ 9.15 = $9.15

Sub Total: $60.4
-Discount: $10.0
Total    : $50.4
-----------------------------------------------------------------------------------------
We sell 4 kinds of Cheese
Dalaran Sharp: $1.25 per pound
Stormwind Brie: $10.0 per pound
Alterac Swiss: $40.0 per pound
Cheese Type D: $9.15 per pound
Enter the amount of Dalaran Sharp : 0
Enter the amount of Stormwind Brie : 0
Enter the amount of Alterac Swiss : 0
Enter the amount of Cheese Type D : 0
Display the itemized list? (1 for yes) 1

Sub Total: $0.0
-Discount: $0.0
Total    : $0.0
-----------------------------------------------------------------------------------------
We sell 10 kinds of Cheese
Dalaran Sharp: $1.25 per pound
Stormwind Brie: $10.0 per pound
Alterac Swiss: $40.0 per pound
Cheese Type D: $9.15 per pound
Cheese Type E: $2.5 per pound
Cheese Type F: $8.74 per pound
Cheese Type G: $9.88 per pound
Cheese Type H: $2.91 per pound
Cheese Type I: $6.66 per pound
Cheese Type J: $0.36 per pound
Enter the amount of Dalaran Sharp : 1
Enter the amount of Stormwind Brie : 1
Enter the amount of Alterac Swiss : 1
Enter the amount of Cheese Type D : 1
Enter the amount of Cheese Type E : 1
Enter the amount of Cheese Type F : 1
Enter the amount of Cheese Type G : 1
Enter the amount of Cheese Type H : 1
Enter the amount of Cheese Type I : 1
Enter the amount of Cheese Type J : 1
Display the itemized list? (1 for yes) 1
1 lbs of Dalaran Sharp @ 1.25 = $1.25
1 lbs of Stormwind Brie @ 10.0 = $10.0
1 lbs of Alterac Swiss @ 40.0 = $40.0
1 lbs of Cheese Type D @ 9.15 = $9.15
1 lbs of Cheese Type E @ 2.5 = $2.5
1 lbs of Cheese Type F @ 8.74 = $8.74
1 lbs of Cheese Type G @ 9.88 = $9.88
1 lbs of Cheese Type H @ 2.91 = $2.91
1 lbs of Cheese Type I @ 6.66 = $6.66
1 lbs of Cheese Type J @ 0.36 = $0.36

Sub Total: $91.44999999999999
```

```
-Discount: $10.0
Total    : $81.44999999999999
-------------------------------------------------------------------------------------------
We sell 10 kinds of Cheese
Dalaran Sharp: $1.25 per pound
Stormwind Brie: $10.0 per pound
Alterac Swiss: $40.0 per pound
Cheese Type D: $9.15 per pound
Cheese Type E: $2.5 per pound
Cheese Type F: $8.74 per pound
Cheese Type G: $9.88 per pound
Cheese Type H: $2.91 per pound
Cheese Type I: $6.66 per pound
Cheese Type J: $0.36 per pound
Enter the amount of Dalaran Sharp : 1
Enter the amount of Stormwind Brie : 1
Enter the amount of Alterac Swiss : 1
Enter the amount of Cheese Type D : 1
Enter the amount of Cheese Type E : 1
Enter the amount of Cheese Type F : 1
Enter the amount of Cheese Type G : 1
Enter the amount of Cheese Type H : 1
Enter the amount of Cheese Type I : 1
Enter the amount of Cheese Type J : 1
Display the itemized list? (1 for yes) 0

Sub Total: $91.44999999999999
-Discount: $10.0
Total    : $81.44999999999999
-------------------------------------------------------------------------------------------
We sell 10 kinds of Cheese
Dalaran Sharp: $1.25 per pound
Stormwind Brie: $10.0 per pound
Alterac Swiss: $40.0 per pound
Cheese Type D: $9.15 per pound
Cheese Type E: $2.5 per pound
Cheese Type F: $8.74 per pound
Cheese Type G: $9.88 per pound
Cheese Type H: $2.91 per pound
Cheese Type I: $6.66 per pound
Cheese Type J: $0.36 per pound
Enter the amount of Dalaran Sharp : 1
Enter the amount of Stormwind Brie : 0
Enter the amount of Alterac Swiss : 2
Enter the amount of Cheese Type D : 0
Enter the amount of Cheese Type E : 3
Enter the amount of Cheese Type F : 0
Enter the amount of Cheese Type G : 4
Enter the amount of Cheese Type H : 0
Enter the amount of Cheese Type I : 5
Enter the amount of Cheese Type J : 0
Display the itemized list? (1 for yes) 1
1 lbs of Dalaran Sharp @ 1.25 = $1.25
2 lbs of Alterac Swiss @ 40.0 = $80.0
3 lbs of Cheese Type E @ 2.5 = $7.5
4 lbs of Cheese Type G @ 9.88 = $39.52
5 lbs of Cheese Type I @ 6.66 = $33.3

Sub Total: $161.57
-Discount: $25.0
Total    : $136.57
```

Part 2: (Assessment) Logic Check for `GenCheeseShopv2.java`

1) What parts did you copy from Lab 02 (A-F)?
2) What parts did you copy from Lab 03 (A-F)?
3) How many parts did you change, or create as new (A-F)?
4) Can changing the declaration of `calcSubTotal` to the following (and invocation) still work?
    i. `public static double calcSubTotal(double[] p, int[] a)`
    ii. `public static double calcSubTotal(double[] a, int[] p)`
    iii. `public static double calcSubTotal(double[] p, double[] a)`
    iv. `public static double calcSubTotal(int[] a, double[] p)`
    v. `public static double calcSubTotal(double[] p1, int[] p2);`
5) What must you do so that `discount` prints out a decimal instead of just an integer?
   Prints out: `-Discount: $10.0`
   Instead of: `-Discount: $10`

What to hand in

When you are done with this lab assignment, submit all your work through CatCourses.

Before you click submit, make sure you have done the following:

- Verified your solution with your TA or instructor
- Included the answers to Assessment questions (1 – 5) and your list of collaborators in a Word document or text file named `Part2`
- Attached the fixed `GenCheeseShopv2.java` and `Part2` files