CS 1150 Principles of Computer Science
Assignment #3

Purpose: Learn to use boolean expressions, relational and logical operators and if statements
Effort: Individual
Points: **3**
Deliverables: Upload a **.zip** file with **ONLY** your source code (.java file) to Canvas by due date. Use file naming convention **StudentID–StudentLastname.zip**. Include your design notebook artifacts with your submission.

Assignment Description

Create a "very" simple Smoothie Bar that allows an employee to take an order and produce a receipt. The program reports the type of smoothie the customer ordered, any "add-in" that is selected, taxes, and total cost. The program must handle ***invalid selections*** as described in specification #6 below.

Assume the following for this Smoothie Bar program:
- The program will process only 1 customer.
- The Smoothie Bar is limited to the 3 types of smoothies and 2 add-ins listed in table below.
- All add-ins have the same price - $1.50
- The prices are fixed as stated in the table:

Smoothie	Price
Berry Banana	$7.50
Tropical	$6.75
Green Jolt	$5.00
Add Ins	**Price**
Almond Butter	$1.50
Lime juice	$1.50

- The customer can order only 1 smoothie
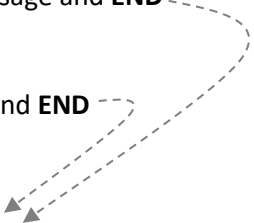- There is a 8.25% charge for taxes

Specifications

1. Add this assignment to your project called **CS1150**
2. Create a Java class within that project called **LastNameFirstNameAssignment3**
3. Follow "CS1150 Programming Assignments Policy"
    a. Using proper indentation, follow naming conventions, commenting code, etc.
    b. Create design notebook with the required sections. See example posted on Canvas.

4. Use **correct data types** and **constants** where possible
    - Use constants for numeric values that will not change while code runs.
    - For example, use constants for smoothie prices, tax rate, menu selection numbers, etc.

    ```java
    final double BERRY_BANANA_PRICE = 7.50;
    final double TAX_RATE = 8.25/100;
    ```

5. Write code in main that:
    - Displays a menu with the different types of smoothies

- Prompts user for:
  - Type of smoothie
  - If any add-in is wanted
- Displays
  - Cost for the smoothie ordered,
  - Cost for add-in,
  - Taxes,
  - Total cost

6. The code must handle *invalid user selections* for:
   - Smoothie selection in the menu
     - If an invalid **smoothie** option is entered in the menu, **MUST** print message and **END PROGRAM**
   - Add-in selection in the menu
     - If invalid **add-in** option is entered in the menu, **MUST** print message and **END PROGRAM**

   - **Note:**
     - **End program means: once an input error occurs, the program must display an error message and perform no more processing.** For example:
       - If the user enters **0** when asked to select a smoothie, the program must display an error message and complete execution.
       - At this point, your code must **NOT** present the add-in menu or ask the user for an add-in option.
       - See output example #3 below.

     - Use **NESTED IF** statements to make this happen properly.
       - **DO NOT use System.exit(0) to exit program if error occurs**
       - **DO NOT use break or return statements if error occurs**
       - The purpose of this assignment is to learn to properly use nested if-statements so using System.exit(0), break, returns may result in a 0 on correctness grade.

Must Do and Tips

Must Do: Use constants for at least the smoothie prices and tax rate

Must Do: Nested-if statements must be used to handle invalid user input.
- Use nested if statements not multiway if to handle invalid user input.
- As stated above, the purpose of this assignment is to learn to properly use nested if-statements.
- Be sure you understand the difference between nested and multiway before writing the code.
- You may use multiway if statements elsewhere in the code.

Tip: Use String data type to store name of smoothie and add-in
- The **String** data type is a sequence of characters in double quotes.
- Use the **String** data type to store the class level name.
  - For example, initialize string to an empty string, then set it based on selected smoothie
    ```
    String smoothieName = "";
    if (smoothie == BERRY_BANANA) {
        smoothieName = "Berry Banana Smoothie";
    }
    ```

- See section 4.4 for more information about Strings

Tip: To simplify if-statements use logical operators
- See section 3.10 in your book for help with logical operators.

Tip: Write code incrementally.
- First get the if statement for the menu working (selecting the smoothie type)
- Second add the if statement for the add-in selection

Tip: Formatting Output to the Console (getting those numbers to look right)
- As in assignment 2, use **System.out.printf** to produce a nice-looking output
- See Section 4.6

Output
Your output should look like the following:

Output - Example 1 – Valid Smoothie, Valid Add-in

```
CS1150 Beach Smoothie Bar!

Option   Type                Price
-----------------------------------
1        Berry Banana        $7.50
2        Tropical            $6.75
3        Green Jolt          $5.00

Select a smoothie: 1, 2, or 3: 1


Option   Add-In              Price
-----------------------------------
0        No add-in           $0.00
1        Almond Butter       $1.50
2        Lime juice          $1.50

Select an add-in: 0

-------------------------------
Berry Banana Smoothie $ 7.50
Taxes                 $ 0.62
-------------------------------
Total Cost            $ 8.12
```

==Bolded values are the values I entered when running the code==

Output - Example 2 – Valid Smoothie, Valid Add-in

```
CS1150 Beach Smoothie Bar!

Option   Type                Price
-----------------------------------
1        Berry Banana        $7.50
2        Tropical            $6.75
3        Green Jolt          $5.00

Select a smoothie: 1, 2, or 3: 2
```

```
Option   Add-In            Price
-----------------------------------
0        No add-in         $0.00
1        Almond Butter     $1.50
2        Lime juice        $1.50

Select an add-in: 1


-----------------------------
Tropical Smoothie    $ 6.75
Almond Butter        $ 1.50
Taxes                $ 0.68
-----------------------------
Total Cost           $ 8.93
```

Output - Example 3 – Invalid Smoothie Menu Selection

```
CS1150 Beach Smoothie Bar!

Option  Type              Price
-----------------------------------
1       Berry Banana      $7.50
2       Tropical          $6.75
3       Green Jolt        $5.00

Select a smoothie: 1, 2, or 3: 0
0 is not a valid menu item.  Please run program again, good bye!
```

User entered invalid menu option, so display error message and end program.

Output - Example 4 – Invalid Add-In Menu Selection

```
CS1150 Beach Smoothie Bar!

Option  Type              Price
-----------------------------------
1       Berry Banana      $7.50
2       Tropical          $6.75
3       Green Jolt        $5.00

Select a smoothie: 1, 2, or 3: 3

Option  Add-In            Price
-----------------------------------
0       No add-in
1       Almond Butter     $1.50
2       Lime juice        $1.50

Select an add-in: 3
3 is not a valid menu item.  Please run program again, good bye!
```

Here the smoothie option is correct but the add-in is outside the valid range 0-2. The code displays a message and then terminates