COMSC 165

Summer 2020

Programming Assignment 9

Worth 20 points (2% of your grade)

DUE: Friday, 7/17/20 by 11:59 P.M. on Canvas

NOTE: Your submission for this assignment should be a single **.cpp** file and a single **.pdf** file. The following naming convention should be used for naming your files: **firstname_lastname_165_assign9.cpp and firstname_lastname_165_assign9.pdf**. The pdf file that you submit should contain the screenshots of your sample runs of the program (see below). For example, if your first name is "James" and your last name is "Smith", then your files should be named James_Smith_165_assign9.cpp and James_Smith_165_assign9.pdf.

COMMENTS (7.5% of programming assignment grade): Your program should have at least **ten (10)** different detailed comments explaining the different parts of your program. Each individual comment should be, at a minimum, a sentence explaining a particular part of your code. You should make each comment as detailed as necessary to fully explain your code. You should also number each of your comments (i.e., comment 1, comment 2, etc.).

SAMPLE RUNS (7.5% of programming assignment grade): You should submit screenshots of at least **five (5)** different sample runs of your program. Each sample run needs to use different user inputs, and your sample runs should **NOT** be the same as the sample runs that are used in this write-up for the assignment. **Each sample run should purposefully have invalid inputs for BOTH the menu choice AND the amount of money the user puts into the vending machine, so I can see both of your input validation loops running. Make sure to choose a different menu option for each of your five (5) sample runs.**

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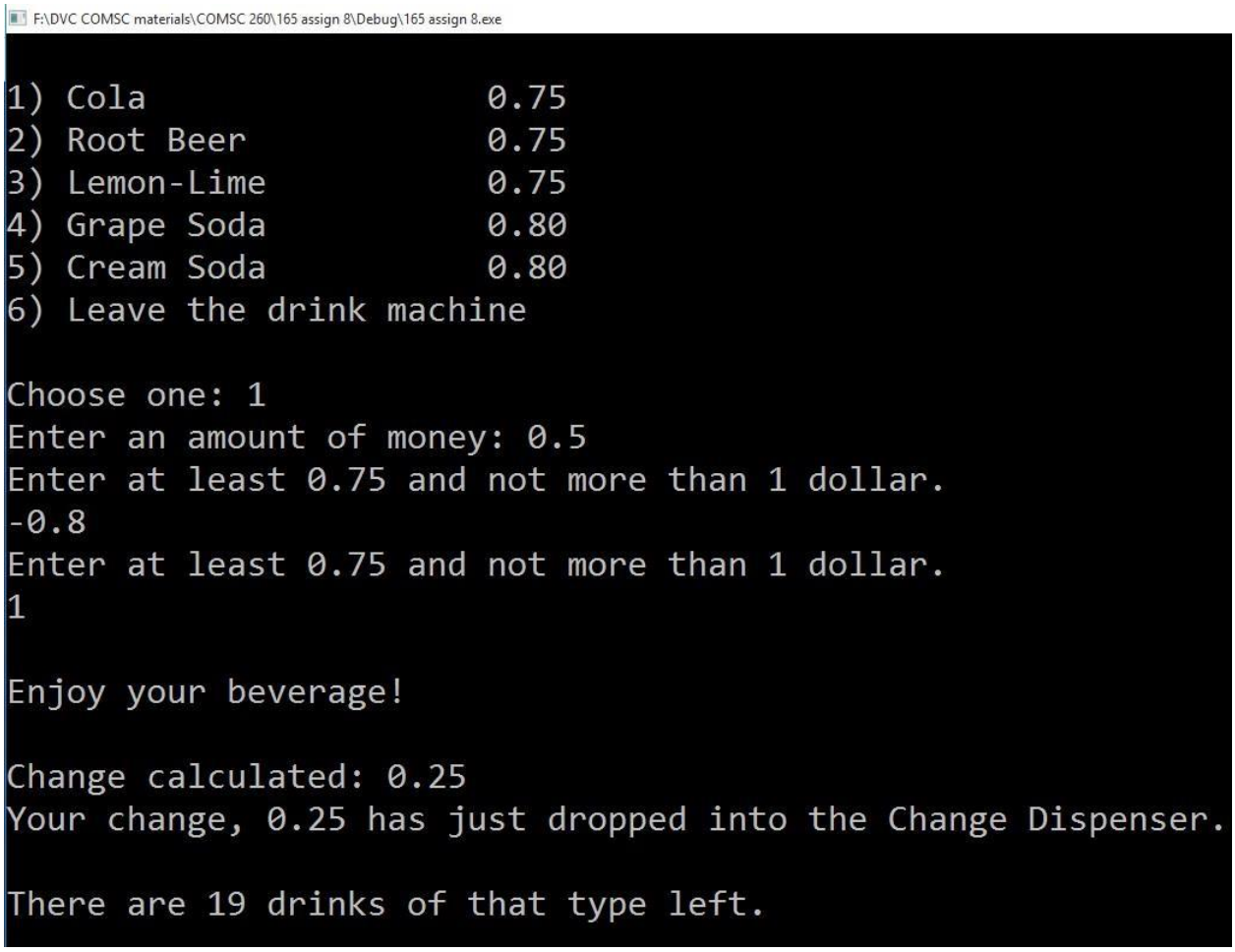
You should also number each of your sample runs (i.e., sample run 1, sample run 2, etc.). Each of your sample runs should be similar to this format:



Write a program that simulates a soft drink machine. The program should use a **structure** named Drink that stores the following data:

- Drink Name
- Drink Cost
- Number of Drinks in the Machine

The program should create an **array of five Drink structures**. The elements should be initialized with the following data:

Drink Name	Cost	Number in Machine
Cola	.75	20
Root Beer	.75	20
Lemon-Lime	.75	20
Grape Soda	.80	20
Cream Soda	.80	20

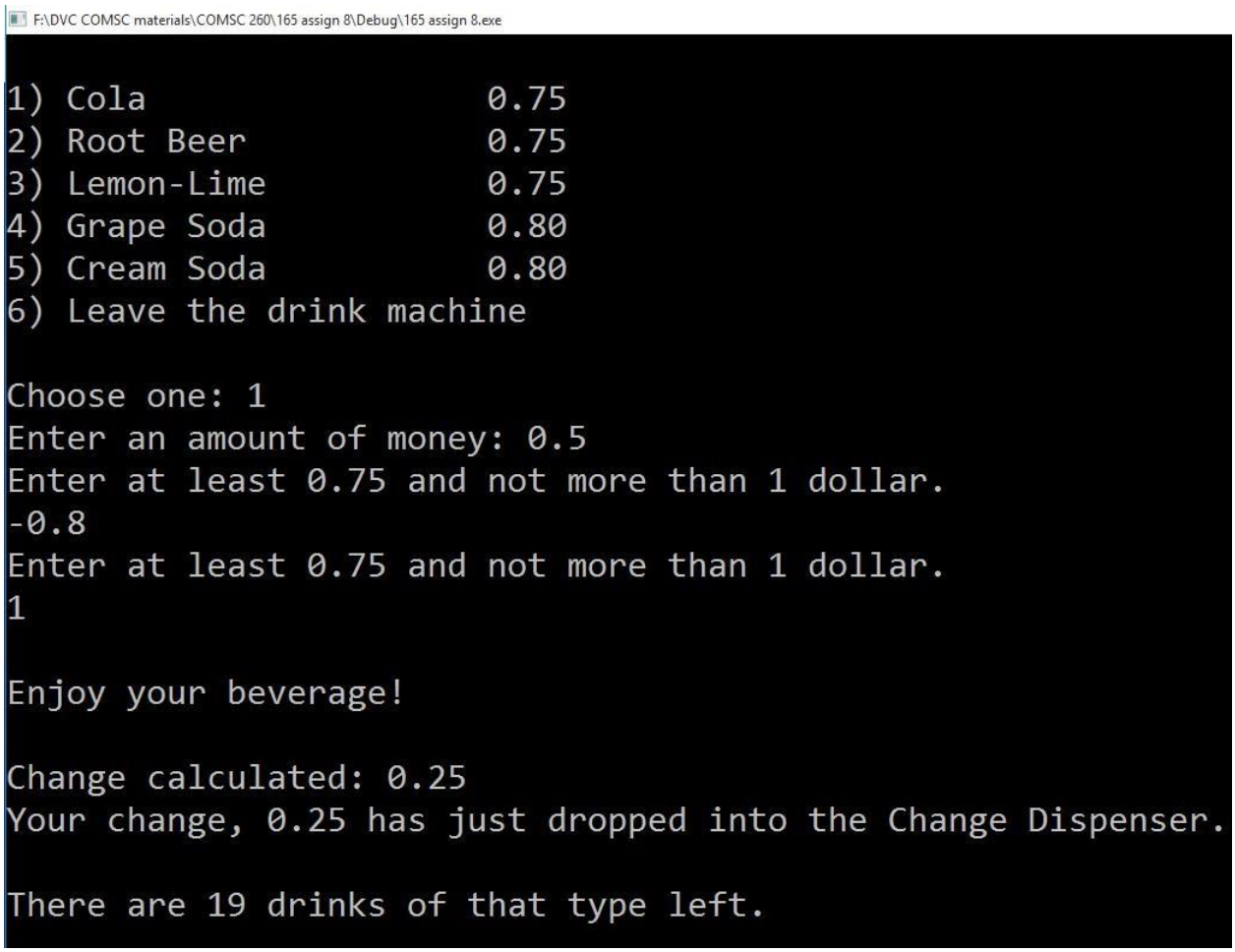
Each time the program runs, it should enter a loop that performs the following steps: A list of drinks is displayed on the screen. The user should be allowed to either quit the program or pick a drink. If the user selects a drink, he or she will next enter the amount of money that is to be inserted into the drink machine. The program should display the amount of change that would be returned and subtract one from the number of that drink left in the machine. If the user selects a drink that has sold out, a message should be displayed. The loop then repeats. When the user chooses to quit the program, it should display the total amount of money the machine earned.

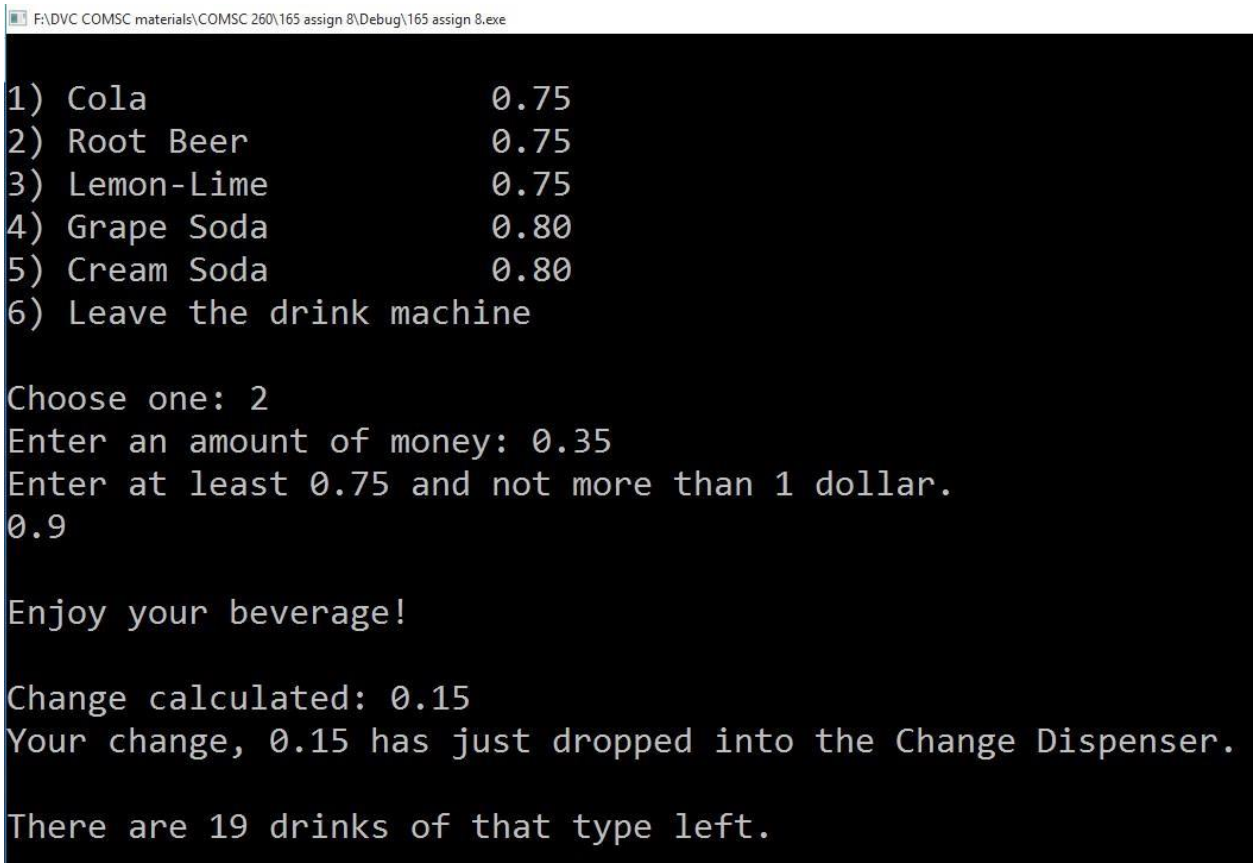
Input Validation: When the user enters an amount of money, do not accept negative values or values greater than $1.00.

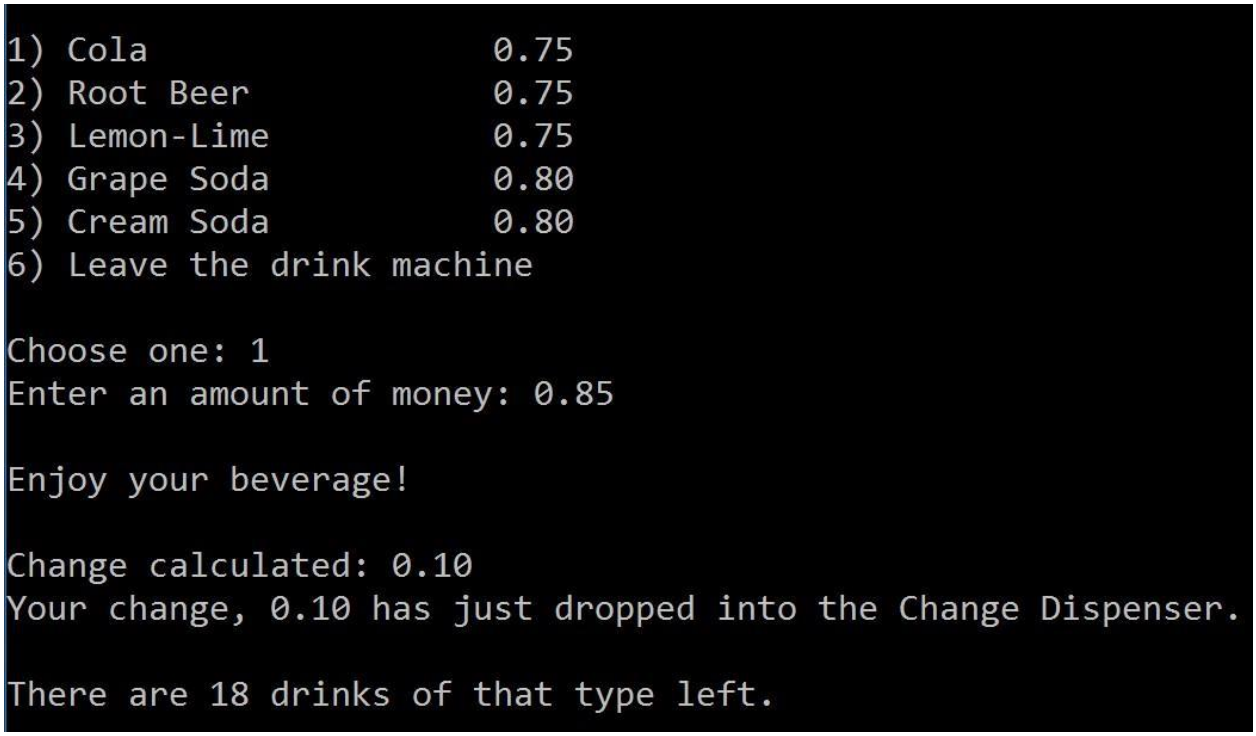
NOTE: For each of your five (5) drink objects in the array, the values for the "drink name" and "cost" fields never change. However, whenever the user purchases a particular type of drink (e.g., Cola), the "number in machine" value needs to be decremented by one.

NOTE: You need to think about and decide on which functions to implement. Each function should represent a different task. All of the code should **NOT** be in main. Remember that you can pass structure objects to functions and return them from functions (as you saw from the code examples from today).

Sample Run:


F:\DVC COMSC materials\COMSC 260\165 assign 8\Debug\165 assign 8.exe
1) Cola 0.75
2) Root Beer 0.75
3) Lemon-Lime 0.75
4) Grape Soda 0.80
5) Cream Soda 0.80
6) Leave the drink machine
Choose one: 1
Enter an amount of money: 0.5
Enter at least 0.75 and not more than 1 dollar.
-0.8
Enter at least 0.75 and not more than 1 dollar.
1
Enjoy your beverage!
Change calculated: 0.25
Your change, 0.25 has just dropped into the Change Dispenser.
There are 19 drinks of that type left.


F:\DVC COMSC materials\COMSC 260\165 assign 8\Debug\165 assign 8.exe
1) Cola 0.75
2) Root Beer 0.75
3) Lemon-Lime 0.75
4) Grape Soda 0.80
5) Cream Soda 0.80
6) Leave the drink machine
Choose one: 2
Enter an amount of money: 0.35
Enter at least 0.75 and not more than 1 dollar.
0.9
Enjoy your beverage!
Change calculated: 0.15
Your change, 0.15 has just dropped into the Change Dispenser.
There are 19 drinks of that type left.


1) Cola 0.75
2) Root Beer 0.75
3) Lemon-Lime 0.75
4) Grape Soda 0.80
5) Cream Soda 0.80
6) Leave the drink machine
Choose one: 1
Enter an amount of money: 0.85
Enjoy your beverage!
Change calculated: 0.10
Your change, 0.10 has just dropped into the Change Dispenser.
There are 18 drinks of that type left.

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1) Cola                         0.75
2) Root Beer                    0.75
3) Lemon-Lime                   0.75
4) Grape Soda                   0.80
5) Cream Soda                   0.80
6) Leave the drink machine

Choose one: 5
Enter an amount of money: 0.8

Enjoy your beverage!

Change calculated: 0.00
There are 19 drinks of that type left.
```

```
1) Cola                 0.75
2) Root Beer            0.75
3) Lemon-Lime           0.75
4) Grape Soda           0.80
5) Cream Soda           0.80
6) Leave the drink machine

Choose one: 1
Enter an amount of money: 0.78

Enjoy your beverage!

Change calculated: 0.03
Your change, 0.03 has just dropped into the Change Dispenser.

There are 17 drinks of that type left.
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```
1) Cola                 0.75
2) Root Beer            0.75
3) Lemon-Lime           0.75
4) Grape Soda           0.80
5) Cream Soda           0.80
6) Leave the drink machine

Choose one: 6
Total earnings: $3.80
Press any key to continue . . .
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