CSCI 1470 **Fall 2024** **Mr. Gustavo Dietrich**

Lab 3: Rounding values and formatting the output **Due:** 9/18/24

Problem: Calculate the total cost of a product and display the result on the screen.
Your solution must ask the user to enter the price followed by the percentage corresponding to taxes (in this order) at the keyboard and then calculate and display the resulting cost.

Your task: implement in C++ the algorithm solution shown below.

Algorithm solution (in pseudocode):

$$\textbf{Total} = \textbf{Price} \times \left(1 + \frac{\textbf{Taxes}}{\textbf{100}}\right)$$

To solve this problem your program must perform the following tasks:

Declare variables named **price, tax**, and **total** that hold **single** precision **real** numbers.
Prompt the user to "Enter the price and tax (%) please: ".
Read the values from the keyboard and store them in **price** and **tax** respectively.
Calculate the total cost using the expression shown above and assign the resulting value to **total**.
Round the value of total to ONE decimal digit and reassign the rounded value to total
Format the output to display the values in **fixed** format with **two decimal digits**.
Print a message like the one below:

"For a price $", **P**, "and ", **X** "% tax, the total cost of the product is $", **T**

where **P**, **X**, and **T** are the values corresponding to variables **price, tax**, and **total** respectively.

Note: ensure your expression does not use mixed data types by defining your literal values appropriately (pay attention to the data type of the variables you are using in the expression).

The program must compile without errors or warnings.

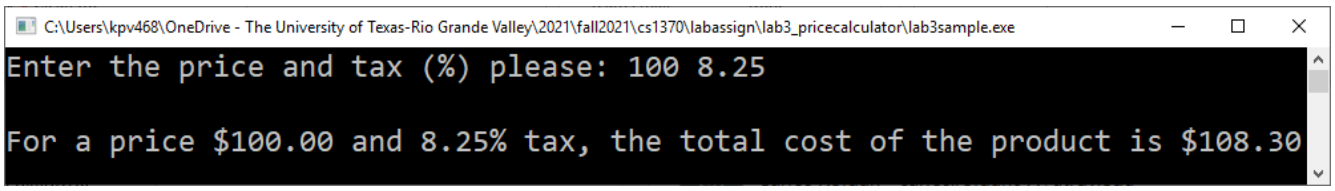
Open **lab03.cpp** in your IDE and implement the above algorithm (already provided in the source code as comments).

Implement the above algorithm (already provided in the source code as comments). **Your C++ statements MUST be right below EACH step they implement.**

Note:

- Do NOT remove or modify the statements that I use to test certain things in your program.

- Carefully analyze the following figure and use it as a reference to ensure you do the right things.



- Test and compare your solution with mine for different values of price and tax to ensure they always produce the same outputs.

To write your program, review the concepts learned in class (review examples discussed in class) and read the book (analyze the examples in it).

I am posting my solution for your reference. Please run it and ensure that your program works like mine. Try the values **100** and **8.25** for price and tax and check if you get the right result (compare with my solution). If you get an error message on the output, read the comment on the line specified in the message to find out what is wrong. Next, try different values for price and tax and compare the results returned by your solution with mine. If you have concerns or specific questions, post them on the Discussion Board of Blackboard.

Don't forget to include at the top of the program the comments shown below with your information (name, class and section number, etc.)

```
//////////////////////////////////////////////////////////////////////
//
// Name: <Put your name here>
// Date: <Today's date>
// Class: <Your class number and section number, like: CSCI 1470.02>
// Semester: <This semester, like: Fall 2012>
// CSCI/CMPE 1470 Instructor: <Your lecture instructor's name>
//
// Program Description: Enter here your description of what the program does
//
//////////////////////////////////////////////////////////////////////
```

When done, submit your solution through Blackboard using the "Assignments" tool. Do Not email it.

Paste the link to your final solution along with your source code in the textbox opened when you click on Create Submission before you click on Submit.

The following is the basic criteria to be used to grade your submission:

You start with 100 points and then lose points as you don't do something that is required.
-5: Minor mistakes
incorrect rounding of total to one decimal digit
-10: Moderate mistakes

wrong identifiers (price, tax, and total)
wrong variable types
mixed data types in expression
didn't round total to one decimal digit
didn't display the output as specified on handout
-20: Major mistakes
program does not implement the provided algorithm
program does not pass all tests
Incorrect/missing source code
Incorrect/missing link to your solution
-50: program does not compile
-100: The code submitted is not your creation (you got it from a web site or another person)
-10: Late

Important: more points may be lost for other reasons not specified here.

To avoid losing more points please ensure that:

Your comments do match the C++ statements and vice versa.
Your program does not have a wrong output formatting (ccompare with my sample solution for a reference).
You don't forget to include your name and other requested information.

Sample runs of my program