COP 3014: Fall 2021
Homework 1

Total Points: 50
Due: Wednesday, 09/08/2021 11:59:00 PM through Canvas

1 Objective

The purpose of this assignment is to

- Practice writing small programs in C++.
- Use the `iostream` library to perform console input and output.
- Use the `iomanip` library to format output.
- Use variables and arithmetic operators in C++ to do basic math.
- Familiarize yourself with the C++ programming environment and compiling and running C++ programs on CLion.

2 Bubble Bass' Pizza Calculator

Bubble Bass wants to know if the Krusty Krab's pizza is cost effective before he purchases one. To do this, he has decided to just hang out around Squidward's cash register and observe the customer's ordering pizza. The Krusty Krab's pizza comes in various sizes (and costs). Math is not Bubble Bass' greatest strengths, so he's hired you, a C++ programmer to design a small application to do his job for him.

The Krusty Krab only sells perfectly circular pizzas. Th application will read in the radius of the pizza in inches, the cost of the pizza, and any taxes (and fees) as a percentage. The Sea Creatures that visit the Krust Krab tend to be on the small side, so they consume pizza in square inches instead of slices.The application will calculate the after-tax cost of pizza per square inch. Multiple customers can split the cost of the pizza, so the application will also show how much each customer has to pay.

Write a C++ program to satisfy Bubble Bass' requirements. Please make sure you follow the instructions below.

1. Please call your program `Calculator.cpp` (5 points)
2. Include the basic header (to be published on the course website) in your program. (5 points)
3. Print a welcome message to the user.(5 points)
4. You can assume the Krusty Krab only makes perfectly circular pizzas.
5. Prompt the user to enter the radius of the pizza, the price and the tax percentage. Read the values in. (7 points)

6. Calculate the total price. (10 points)
7. Calculate the area and the cost per square inch. Print the cost per square inch accurate to dollars and cents (2 digits after the decimal point). (5 points)
8. Some orders might have the check split between customers. Ask the user to specify the number of parts the check should be split in. If the check is not split, the user will enter 1. You will only support equal splits, meaning all customers on that order will pay equal amounts. The number of checks will NEVER be 0.
9. Read in the number of split checks. (3 points)
10. Find the total owed by each customer for the order and print it. The total should be accurate to 2 digits after the decimal point. (5 points)
11. You don't need to be exact on the whitespace. A couple of extra or fewer newlines is not an issue as long as your output is legible.
12. Include comments in your code as required. (5 points)
13. You may assume the value of Π is 3.1415
14. You may assume that all user input will be correct (i.e. numeric entries and valid dimensions). You do not need to handle any situation in which the user enters a negative value, or a letter (Character).
15. You are restricted to the concepts introduced in the course as of 09/03/2021. DO NOT use if statements to do error checking. You do not need to do so. This is just a math calculation.

3 Sample Run

These are just a couple of possible sample runs. You should test your code for several different input values to make sure it works.

3.1 Sample Run 1

```
Welcome to the Krusty Krab pizza ordering system!
Enter the radius (in inches) of the pizza: 18.2
Enter the price (before tax) of the pizza: 26.99
Enter the tax (percentage): 2.8
The cost per square inch is : $ 0.03
Enter the number of checks: 3
Each person pays $ 9.25
```

3.2 Sample Run 2

```
Welcome to the Krusty Krab pizza ordering system!
Enter the radius (in inches) of the pizza: 17.893
Enter the price (before tax) of the pizza: 36.21
Enter the tax (percentage): 1.17
The cost per square inch is : $ 0.04
Enter the number of checks: 1
Each person pays $ 36.63
```

4 General Requirements

1. No global variables (variables outside of main())
2. All input and output must be done with streams, using the library `iostream`
3. You may only use the `iostream` and `iomanip` libraries (you do not need any others for these tasks)
4. NO C style printing is permitted. (Aka, don't use printf). Use cout if you need to print to the screen.
5. When you write source code, it should be readable and well-documented (comments).
6. Make sure you either develop with or test with JetBrains CLion (to be sure it reports no compile errors or warnings) before you submit the program.
7. **Program submissions** should be done through the Canvas class page, under the assignments tab (if it's not there yet I'll create it soon.) Do not send program submissions through e-mail – e-mail attachments will not be accepted as valid submissions.
8. The ONLY file you will submit via Canvas is Calculator.cpp
9. **General Advice** - always keep an untouched copy of your finished homework files in your email. These files will have a time-stamp which will show when they were last worked on and will serve as a backup in case you ever have legitimate problems with submitting files through Canvas. Do this for ALL programs.