CS 2400 Lab #2 (Triangle Area) 100 Points
Heron's Formula

Objectives:

Use if statement, loops, and math functions.

Step 1:

Create a separate directory for this lab called `lab2` under your cs2400 directory. Open the directory `lab2` in Visual Studio Code or your favorite editor and create a program file.

Step 2: Area of a triangle:

Write a C++ program that calculates the area of a triangle using the lengths of the sides (Heron's formula). The program should read (input) the three sides of the triangle and check if the triangle is valid first. A triangle is valid if the sum of any two sides is greater than the third. Your program should run continuously until the user decides to quit. (Hint: use a do-while loop with y/n questions)

Display an error message if the triangle is not valid.

Display the area using two decimal places.

The area of the triangle can be calculated using the following formulas:

$$s = \frac{side1 + side2 + side3}{2} \qquad area = \sqrt{s(s - side1)(s - side2)(s - side3)}$$

Try the following input values:

- 5, 2, 1 (Invalid)
- 1, 1, 3 (invalid)
- 1, 3, 1 (invalid)
- 5, 5, 5 (Valid, 10.83)
- 3, 4, 5 (Valid, 6.00)
- 9, 10, 10 (Valid, 40.19)

Submit your completed program on Blackboard under lab 2.

Grading:

- 30 points (area is calculated correctly)
- 20 Checking for a valid triangle
- 10 points (Program runs continuously)
- 30 points (Error checking and output format)
- 10 points (documentation and style)