CIS 1057

Assignment 2

This assignment will use branching in C to determine the type of triangle a user enters and then calculate the area of the triangle.
Your program should be able to identify the following shapes:

Triangle	Definition
Equilateral	all three sides are the same length
Right	any two side lengths where the sum of their squares is equal to the square of the other side length • $a^2 + b^2 = c^2$
Obtuse	any two side lengths where the sum of their squares is less than the square of the other side length • $a^2 + b^2 < c^2$
Acute	a triangle is an acute triangle if it is neither a right triangle nor an obtuse triangle • $a^2 + b^2 > c^2$
Isosceles	any two sides are the same length • note that *Isosceles* triangles are also either *Right*, *Obtuse*, or *Acute*

Your program must conform to the following requirements:

1. Add a comment at the beginning of your program with your name, a description of the program, contact information, and the due date

2. Your program must have 2 functions in addition to main, and must include the function prototypes
   1. A function that accepts the lengths of all 3 sides and returns whether it is a valid triangle
      - If the length of any side is greater than or equal to the sum of the lengths of the other two sides, then there is no triangle.
   2. A function that accepts the lengths of all 3 sides and returns the area
      - Calculate and the area of the triangle using the following formula:

        $$area = \sqrt{s\,(s-a)\,(s-b)\,(s-c)}$$

        where a,b, and c are the lengths of the sides, and s = ½ the perimeter

3. - If the given sides **do not** create a valid triangle, a message must be shown to the user explaining this and the program should not attempt to identify the shape
   - If the given sides **do** create a valid triangle then continue with the rest of the program as described

4. Use **double** variables to store the lengths of each side of the triangle

Please submit the **.c** file for your project to Blackboard by the deadline below.

DUE DATE: February 15, at 11:59 PM