**Homework 4**

**Due: Sunday (see Syllabus)**

**Points: 40**

**Instructions**

Given 3 integers as lengths they may or may not be able to form a triangle. For example, if the lengths are 1, 2, 33, then it’s easy to see that no triangle can be created with those lengths for sides. The lengths 3, 4, 5 will create a triangle – a “right triangle,” one containing a 90-degree angle.

In this assignment you will need to create a Python fruitful function (a fruitful function is one that returns a value) called **kind(a, b, c)** which yields an integer. The lengths of the side are **a**, **b**, and **c**. The function returns as follows:

0 – No triangle can be created

1 – The triangle is equilateral (all three sides are the same length)

2 – The triangle is isosceles (two sides are the same length, but not all three)

3 – The triangle is a right triangle (a2 + b2 = c2)

4 – The triangle acute (all the angles in the triangle are less than 90 degrees)

5 – The triangle is obtuse (none of the above cases apply)

Write a function called **name(k)** that accepts a kind value and returns the “name” of this kind of triangle. The names are: no triangle, equilateral, isosceles, right, acute, and obtuse.

Write a main driving program that repeatedly accepts 3 integers from the user and then reports what kind of triangle (if any) can be formed. It should use **kind()** and **name()** to accomplish this. You must not assume that the lengths always will be input in non-decreasing order. Your program should continue to request inputs until any one of the lengths is less than one.

Demonstrate your program works by giving it these lengths plus at least 3 more of your own selection.

1, 2, 33

5, 5, 5

6, 6, 4

3, 4, 5

7, 8, 9

4, 5, 8

Run your program several times using different inputs – sufficient to demonstrate that your program meets all the assignment requirements. Capture a screen shot of each run and paste them into an MS Word document. Place a caption above each image.

**Submit the Python .py file (lastname\_hw4.py) containing your program and the MS Word document** **to your instructor using the appropriate Assignment Submissions link.**

**Sample Output**

Text

Description automatically generated with medium confidence