

Think back to your elementary school geometry class where you learned about scalene, isosceles, equilateral, and right triangles. Recall that:

- **equilateral** triangles have all three sides with the same length
- **isosceles** triangles have two sides with the same length
- **scalene** triangles have three sides with different lengths
- **right** triangles have three sides with lengths,  $a$ ,  $b$ , and  $c$  where  $a^2 + b^2 = c^2$

Your assignment is to write a program in Python to classify triangles and use an automated test platform, e.g. UnitTest or PyTest, and write test cases to test your implementation of classifying triangles. The goal is for you to gain experience using automated test tools and to think through the issues associated with testing a "system".

### These are your Requirements Specifications for this program:

*"Write a function **classify\_triangle()** that takes three parameters:  $a$ ,  $b$ , and  $c$ . The three parameters represent the lengths of the sides of a triangle. The function returns a string that specifies whether the triangle is scalene, isosceles, or equilateral, and whether it is a right triangle as well."*

**Hint:** Write a function called `classify_triangle(a, b, c)` where  $a$ ,  $b$ , and  $c$  are the lengths of the sides of the triangles. You may either allow the user to enter values that you pass to `classify_triangle()` or your "main" routine can just invoke `classify_triangle()` with values. This approach allows you to easily invoke `classify_triangle()` from your test framework.

You will not be graded on how well you write the program, but do try to do a decent job. You may want to include a few bugs in your program to demonstrate that your test script is working properly and is able to find problems.

You'll find a [partial solution](#) in Canvas to show how to use Python's UnitTest framework. Your solution should be managed using GitHub within a new repository created just for this assignment.

### Assignment Deliverables:

**Deliverable 1:** Upload the file(s) with Python source code for your classify triangle solution to Canvas. The file(s) should include the source code used to solve the problem and the test cases for the code. Your test cases should demonstrate that you've adequately tested your solution.

- Uploaded

**Deliverable 2:** Upload a text file or screen shot to show the input and output of running the program and demonstrating that your program has been adequately tested.

- Uploaded

**Deliverable 3:** Describe your experience with this assignment, specifically:

This was a good refresher on using unit tests. I took SSW 810 last spring where we went into unit testing quite a bit. So this was a good refresher on coding and testing since the summer course I took did not have a coding aspect. The tool was good as VS code does a nice job of making everything easy to use. I basically wanted to have a successful test for each type of triangle and then I used some edge cases. I wanted to test entering a float, entering abc that would not make a triangle, and testing one where it met multiple requirements. I thought this was enough as the program is fairly simple and I feel like I tested the edge cases and typical use cases well. I could have done a few more dual type triangles but these are pretty simple if statements and a few of them were also captured in the typical use case testing. I also could have tested other types that I know would fail like entering characters or non int/float types but I knew these would fail.

**Deliverable 4:** Submit the URL of the GitHub repo containing your complete solution. The files in the repo should match what you have uploaded to Canvas.

- Added to submittal

Please contact me if you have any questions.