University of the People

Writing Assignment Unit 5

CS 2401 - Software Engineering 1

March 2 ,2023

The Classic Triangle Testing Problem, (Myer's Triangle): A program reads three integer values. The three values are interpreted as representing the lengths of the sides of a triangle. The program prints a message that states whether the triangle is scalene, isosceles, or equilateral.

Let **a**, **b**, and **c** be the three lengths of the triangle.
The conditions to be considered for the test triangle can be as follows:

- The values of a, b, and c can never be equal to 0.
- If it one or more of the values is 0, then, it is not a triangle.
- If all three values of the triangle a and b and c are not equal to each other, it is scalene.
- If two of the three values are equal to one another, it is isosceles.
- If all three values are the same, it is equilateral.
- The value will only be valid for positive integers.

And the program code to test the triangle problem can be as follows:

main.py

```
def Myres_triangle(num1,num2,num3):
    if not(isinstance(num1,int) and isinstance(num2,int)
and isinstance(num3,int)):
        return "Invalid Input Please enter integer values
only"
    elif num1==0 or num2==0 or num3==0:
        return "Invalid Input Please enter the values
greater than zero"
    elif num1<0 or num2<0 or num3<0:
        return "Invalid Input Please enter only positive
integer values"
    elif not(num1+num2>=num3 and num2+num3>=num1 and
num3+num1>=num2):
        return "Cannot form a valid triangle"
    elif num1==num2==num3:
        return "Equilateral triangle"
    elif num1==num2 or num2==num3:
        return "Isosceles triangle"
    elif num1!=num2 and num1!=num3 and num2!=num3:
        return "Scalene triangle"
```

And we can develop a set of test cases (at least 6) that will adequately test this program as follows.

Inputs

main.py

```
16
17
18  print(Myres_triangle(1.6,1.8,1.1))
19  print(Myres_triangle(0,0,1))
20  print(Myres_triangle(3,3,-3))
21  print(Myres_triangle(8,8,3))
22  print(Myres_triangle(8,2,2))
23  print(Myres_triangle(1,1,1))
24  print(Myres_triangle(1,2,3))
```

Outputs

Console × Shell ×

```
Invalid Input Please enter integer values only
Invalid Input Please enter the values greater than zero
Invalid Input Please enter only positive integer values
Isosceles triangle
Cannot form a valid triangle
Equilateral triangle
Scalene triangle
```

Reference

Marsic, I. (2012). *Software engineering.* Rutgers Unversity. **http://www.ece.rutgers.edu/~marsic/books/SE/book-SE_marsic.pdf**.