**Lab 4 Part 1**

Harris Siddiqui, Yifan Liu, Jared Daniel  
  
A function foo takes three integers as input arguments, i.e., foo(int a, int b, int c). The three inputs represent the three sides of a triangle in centimeter. The function is expected to return the type of a triangle: “equilateral”, “isosceles”, or “scalene”. Assume the domains of the three variables are 1 ≤ a ≤ 100, 50 ≤ b ≤ 150 and 100 ≤ c ≤ 200, respectively. A test case is in a tuple format <a, b, c, expected\_output> with test inputs and the expected output.

S1 is a set of test cases for the “Boundary Value Analysis” approach. (0.5 pt)

S1 =

{

* < 1, 100, 150, "Not a Triangle">,
* < 2, 100, 150, " Not a Triangle">,
* <50, 100, 150, "Not a Triangle">,
* <99, 100, 150, "Scalene">,
* <100, 100, 150, "Isosceles">,
* <50, 50, 150, "Not a Triangle">,
* <50, 51, 150, "Not a Triangle">,
* <50, 149, 150, "Scalene">,
* < 50, 150, 150, "Isosceles">,
* <50, 100, 100, "Isosceles">,
* <50, 100, 101, "Scalene">,
* <50, 100, 199, "Not a Triangle">,
* < 50, 100, 200, "Not a Triangle">

}

S2 is a set of test cases for the “Robustness testing” approach. (0.5 pt)

S2 =

{

* < 0, 100, 150, "Exception">, // Out of bounds
* < 1, 100, 150, "Not a Triangle">,
* < 2, 100, 150, "Not a Triangle">,
* < 50, 100, 150, "Not a Triangle">,
* < 99, 100, 150, "Scalene">,
* <100, 100, 150, "Isosceles">,
* <101, 100, 150, "Exception">, // Out of bounds
* <50, 49, 150, "Exception">, // Out of bounds
* <50, 50, 150, "Not a Triangle">,
* <50, 51, 150, "Not a Triangle">,
* <50, 149, 150, "Scalene">,
* <50, 150, 150, "Isosceles">,
* <50, 151, 150, "Exception">, // Out of bounds
* <50, 100, 99, "Exception">, // Out of bounds
* <50, 100, 100, "Isosceles">,
* <50, 100, 101, "Scalene">,
* <50, 100, 199, "Not a Triangle">,
* <50, 100, 200, "Not a Triangle">,
* <50, 100, 201, "Exception">, // Out of bounds

}

S2 – S1 =

{

* < 0, 100, 150, "Not a Triangle">,
* <101, 100, 150, "Scalene">,
* <50, 49, 150, "Not a Triangle">,
* < 50, 151, 150, "Scalene">,
* <50, 100, 99, "Scalene">,
* < 50, 100, 201, "Not a Triangle">,

}

S3 is a set of tests cases for the “Robust Worst-Case testing” approach. Are there any types of triangles that S3 cannot reveal? If yes, what are they? If no, why? (1 pt)

No, all types of triangles are revealed in S3 set for Robust Worst-Case Testing. There are several cases for scalene and isosceles triangles, as well as cases for non-triangles. While there is only one, there is a case for an equilateral triangle as well (<100,100,100>).

A table with text and numbers

Description automatically generated