

Reference: Glenford Myers, *The Art of Software Testing*.

A program accepts as input three integers which it interprets as the lengths of sides of a triangle. It reports whether the triangle is equilateral, isosceles, or scalene (neither equilateral nor isosceles). Write a set of test data to test this program.

Equivalence Classes

- 1) Valid
 - a. Equilateral
 - b. Isosceles
 - i. All three permutations
 - c. Scalene
- 2) Invalid
 - a. Impossible
 - i. Side lengths that are not a valid triangle
 - ii. The side lengths of a valid triangle must satisfy the following:
 $a < b + c$, $b < a + c$, $c < a + b$
 - b. One or more sides of length 0
 - c. Negative side lengths
 - d. Floating point side lengths
 - e. Wrong number of parameters

Boundary Conditions

- 1) Isosceles triangles that are almost Equilateral
- 2) Scalene triangles that are almost Isosceles or Equilateral
- 3) Very small triangles
- 4) Very large triangles
- 5) Combinations of very long and very short sides in all possible orders
- 6) Side lengths that are out of range (i.e., bigger than max allowed value)
- 7) Triangles where the length of one side is equal to the sum of the other two (all three permutations)
- 8) Triangles where the length of one side is barely smaller than the sum of the other two (all three permutations)
- 9) Triangles where the length of one side is barely greater than the sum of the other two (all three permutations)