

Lab – BV & EP Test Case Design

Consider the following triangle problem and the associated component Java implementation called Determine Triangle.

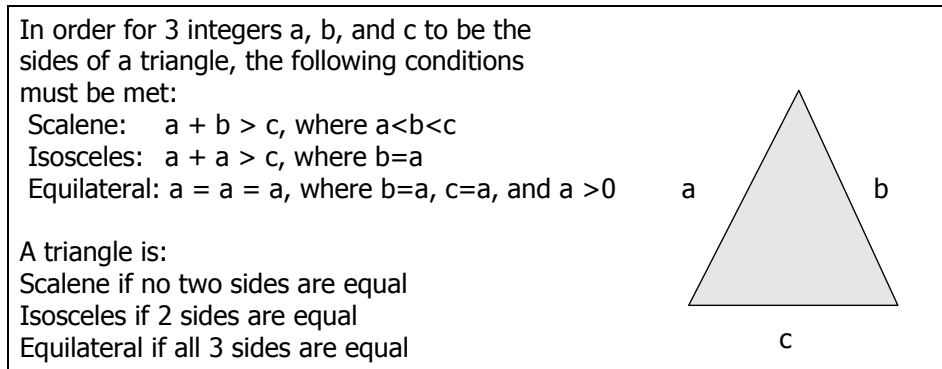


Figure 1. The Triangle Problem

- a) Assuming the range of a,b,c take the following ranges (with minimum increments of 1):

$$10 < a \leq 50$$

$$0 \leq b < 38$$

$$0 \leq c \leq 100$$

Derive the most minimum set of test cases based on Equivalence Partitioning as well as Boundary Value Analysis to test the method **public static void triangle (int a, int b, int c)**

- b) Consider the following conditions

Scalene: $a + b > c$, where $a < b < c$

Isosceles: $a + a > c$, where $b = a$

Equilateral: $a = a = a$, where $b = a$, $c = a$, and $a > 0$

If necessary, develops additional test cases to cover the aforementioned conditions.

- c) Based on the developed test cases, derive the appropriate test oracle. (Hint: use Excel table)

```
class DetermineTriangle
{
    public static void triangle (int a, int b, int c)
    {
        int min,med, max;
        if (a>b)
        {
            max=a;
            min = b;
        }
        else
        {
            max = b;
            min = a;
        }
        if (c>max)
            max = c;
        else if (c<min)
            min = c;
        med = a+b+c-min-max;
        if (max>min+med)
            System.out.println( "Impossible triangle");
        else if (max==min)
            System.out.println( "Equilateral triangle");
        else if (max==med || med==min)
            System.out.println( "Isoceles triangle");
        else if (max*max==min*min + med*med)
            System.out.println( "Rightangled triangle");
        else
            System.out.println("Any triangle");;
    }
}
```

Figure 2. Code Unit to DetermineTriangle.java