Escuela Superior Politécnica del Litoral

# SOFTWARE ENGINEERING II

## EMPIRICAL TESTING WORKSHOP

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# Contents

# 1. Algorithm

```
Program triangle'
Dim a, b, c As Integer
Dim c1, c2, c3, IsATriangle As Boolean

'Step 1: Get Input
Do
     Output("Enter 3 integers which are sides of a triangle")
     Input(a, b, c)
     c1 = (1 ≤ a) AND (a ≤ 200)
     c2 = (1 ≤ b) AND (b ≤ 200)
     c3 = (1 ≤ c) AND (c ≤ 200)
     If NOT(c1)
          Then Output("Value of a is not in the range of permitted values")
     EndIf
     If NOT(c2)
          Then Output("Value of b is not in the range of permitted values")
     EndIf
     If NOT(c3)
          ThenOutput("Value of c is not in the range of permitted values")
     EndIf
Until c1 AND c2 AND c3
Output("Side A is",a)
Output("Side B is",b)
Output("Side C is",c)

'Step 2: Is A Triangle?
If (a < b + c) AND (b < a + c) AND (c < a + b)
     Then IsATriangle = True
     Else IsATriangle = False
EndIf

'Step 3: Determine Triangle Type
If IsATriangle
     Then If (a = b) AND (b = c)
          Then Output ("Equilateral")
          Else If (a ≠ b) AND (a ≠ c) AND (b ≠ c)
               Then Output ("Scalene")
               Else Output ("Isosceles")
          EndIf
     EndIf
     Else Output("Not a Triangle")
EndIf
End triangle
```

# 2. Test cases

| TEST ID | INPUT VALUES (a,b,c) | EXPECTED OUTPUT |
|---|---|---|
| 1 | 18, 18, 9 | “Isoceles” |
| 2 | 24, 24, 24 | “Equilateral” |
| 3 | 54, 58, 62 | “Escalene” |
| 4 | 0, 0, 0 | “Value not in the range” |
| 5 | 15.4, 5 , 1.6 | “Invalid input” |
| 6 | “W”, 4, “Q” | “Invalid input” |
| 7 | -7, 14, 25 | “Value not in the range” |
| 8 | “”, “”, “” | “Invalid input” |
| 9 | “G”, “G”, “G” | “Invalid input” |

# 3. Assumptions

- The input of this program only supports integer values between 1 and 200.
- Non-numeric characters are not allowed, therefore they are invalid.
- Float and Double values are not allowed, therefore they are invalid.
- Empty values are not allowed, therefore they are invalid.
- This program only can determine 3 types of triangles: Isoceles, Equilateral, Escalene.

# 4. Implementation

You can find our implementation of the algorythm and the testings with Java in this repository:

- https://github.com/demonpo/EmpriricalTesting