

|  |  |
| --- | --- |
|  | Lab10: Functional Testing |
|  |  |
|  | Akshar Panchani 202101522  IT314 Software Engineering  10/30/23 |

# Question 1:

The program determines the previous date based on the input of day, month, and year.

## Equivalence Classes:

* **Valid Day**: 1 <= day <= 31
* **Valid Month**: 1 <= month <= 12
* **Valid Year**: 1900 <= year <= 2015
* **Invalid Day**: day < 1 or day > 31
* **Invalid Month**: month < 1 or month > 12
* **Invalid Year**: year < 1900 or year > 2015
* **Boundary Day**: day = 1
* **Boundary Month**: month = 1 and month = 12
* **Boundary Year**: year = 1900 or year = 2015

## Test Cases:

### Equivalence Partitioning Expected Outcome

* 15, 6, 2000 14, 6, 2000
* 1, 6, 2000 31, 5, 2000
* 31, 12, 2000 30, 12, 2000
* 32, 9, 2000 Invalid Date
* 5, 13, 2000 Invalid Date
* 5, 9, 1850 Invalid Date

### Boundary Value Analysis Expected Outcome

* 1, 1, 1900 Invalid Date (Date out of range)
* 1, 1, 2015 31, 12, 2014
* 31, 12, 2015 30 , 12 , 2015
* 1, 9, 1900 31, 8, 1900
* 1, 9, 2015 31, 8, 2015

# Question 2:

The program reads three floating values representing the lengths of the sides of a triangle and classifies the triangle.

## Equivalence Classes for the System

* + **Valid Scalene Triangle**: All sides are different, and the sum of any two sides is greater than the third.
  + **Valid Isosceles Triangle**: Two sides are equal, and the sum of any two sides is greater than the third.
  + **Valid Equilateral Triangle**: All three sides are equal.
  + **Valid Right Angled Triangle**: The square of one side equals the sum of squares of the other two sides.
  + **Invalid Triangle**: The sum of any two sides is less than or equal to the third.
  + **Non-Positive Input**: One or more sides are <= 0.

## Test Cases to Cover Identified Equivalence Classes

* + **Valid Scalene Triangle**:

*Expected Outcome*

3, 4, 5 Scalene Triangle

* + **Valid Isosceles Triangle**:

### Expected Outcome

2, 2, 3 Isosceles Triangle

* + **Valid Equilateral Triangle**:

### Expected Outcome

2, 2, 2 Equilateral Triangle

* + **Invalid Triangle**:

### Expected Outcome

1, 2, 3 Invalid Triangle

* + **Non-Positive Input**:

### Expected Outcome

-1, 2, 3 Invalid Input

## Test Cases for Boundary Condition A + B > C (Scalene Triangle)

### Expected Outcome

* + 3, 4, 7 Invalid Triangle
  + 3, 4, 6.999 Scalene Triangle

## Test Cases for Boundary Condition A = C (Isosceles Triangle)

### Expected Outcome

* + 3, 4, 3 Isosceles Triangle
  + 3, 4, 2.999 Scalene Triangle

## Test Cases for Boundary Condition A = B = C (Equilateral Triangle)

### Expected Outcome

* + 3, 3, 3 Equilateral Triangle
  + 3, 3, 2.999 Isosceles Triangle

## Test Cases for Boundary Condition A^2 + B^2 = C^2 (Right-Angle Triangle)

### Expected Outcome

* + 3, 4, 5 Right Angled Triangle
  + 3, 4, 4.999 Scalene Triangle

## Test Cases for Non-Triangle Case

### Expected Outcome

* + 1, 2, 3 Invalid Triangle
  + 1, 2, 2.999 Scalene Triangle

## Test Points for Non-Positive Input

### Expected Outcome

* + 0, 2, 3 Invalid Input
  + -1, 2, 3 Invalid Input