Lab10: Functional Testing

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Question 1:

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

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 atriangle and classifies the triangle.

a) Equivalence Classes for the System

- **Valid Scalene Triangle**: All sides are different, and the sum of any two sidesis greater than the third.
- **Valid Isosceles Triangle**: Two sides are equal, and the sum of any two sidesis greater than the third.
- **Valid Equilateral Triangle**: All three sides are equal.
- **Valid Right Angled Triangle**: The square of one side equals the sum ofsquares 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.

b) 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

c) Test Cases for Boundary Condition A + B > C (ScaleneTriangle)

	Expected Outcome
• 3, 4, 7	Invalid Triangle

- 3, 4, 6.999   Scalene Triangle

d) Test Cases for Boundary Condition A = C (IsoscelesTriangle)

Expected Outcome

- 3, 4, 3   Isosceles Triangle
- 3, 4, 2.999   Scalene Triangle

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

Expected Outcome

- 3, 3, 3   Equilateral Triangle
- 3, 3, 2.999   Isosceles Triangle

f) 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

g) Test Cases for Non-Triangle Case

Expected Outcome

- 1, 2, 3   Invalid Triangle
- 1, 2, 2.999   Scalene Triangle

h) Test Points for Non-Positive Input

Expected Outcome

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