SOFTWARE ENGINEERING
LAB 08
ID:202201003

1]

Equivalence Partitioning

Identified Equivalence Classes:
1. Valid Dates:
1 <= month <= 12
Day should be valid for the given month and year (considering leap years).
1900 <= year <= 2015

2. Invalid Dates:
Month out of range (e.g., 0, 13).
Invalid days for a valid month (e.g., February 30, April 31).
Year out of range (e.g., 1899, 2016).

Test Cases Using Equivalence Partitioning

Tester Action and Input Data	Expected Outcome
15,8,2015	14,8,2015
1,1,1900	31,12,1899
29,2,2012	28,2,2012
31,4,2015	Error
15,13,2015	Error
1,0,2015	Error
31, 1, 1900	30, 1, 1900
30,2,2015	Error
1,3,2015	28,2,2015

Boundary Value Analysis

Identified Boundary Values:

1. Lower and upper limits for year, month, day.
2. Special cases for days in months (end of month, leap years).

Test Cases Using Boundary Value Analysis

Test Action and Input Data	Expected Outcome
1 , 1, 1900	31, 12, 1899
1, 1, 2015	31,12,2014
1,12, 2015	30,11,2015
1,2,2012	31,1,2012
29,2,2015	An Error Message
30,4,2015	29,4,2015
1,12,1900	30,11,1900
31,12,2015	30,12,2015
29,2,2016	28,2,2016

2]

Identify the Equivalence Classes

Valid Triangle Classes:
Equilateral: All sides equal.
Isosceles: Exactly two sides equal.
Scalene: All sides different.
Right-Angled: Follows Pythagorean theorem ($a^2 + b^2 = c^2$).

Invalid Triangle Classes:
Non-triangle: The sum of any two sides must be greater than the third side.
Non-positive lengths: Any side length is less than or equal to zero.

Test Cases for the Equivalence Classes

Test Case	Input	Outcome
TC 1	3,3,3	Valid

TC 2	3,4,3	Valid
TC 3	1,2,3	Invalid
TC 4	-1,2,3	Invalid
TC 5	3,4,5	Valid
TC 6	3,4,6	Valid

Boundary Condition A + B > C (Scalene Triangle)
To test the boundary condition where the sum of two sides equals the third side:

Test Case	Input	Expected Outcome
TC 7	2,3,5	Invalid
TC 8	3,4,7	Invalid
TC 9	3,4,6	Scalene

Boundary Condition A = C (Isosceles Triangle)
To test the case where two sides are equal:

Test Case	Input	Expected Outcome
TC 10	3,4,3	Valid
TC 11	5,5,3	Valid
TC 12	1,1,2	Boundary

Boundary Condition A = B = C (Equilateral Triangle)
To test the equilateral triangle condition:

Test Case	Input	Expected Outcome
TC 13	2,2,2	Equilateral
TC 14	0,0,0	Invalid
TC 15	1,1,1	Valid

Boundary Condition $A^2 + B^2 = C^2$ (Right-Angled Triangle)
To verify the right-angled triangle condition:

Test Case	Input	Expected Outcome
TC 16	3,4,5	Right Angled
TC 17	1,1,2	Invalid

Non-Triangle Case Test Cases
To explore the boundaries of non-triangle conditions:

Test Case	Input	Expected Outcome
TC 18	1,2,3	Invalid
TC 19	5,10,15	Invalid
TC 20	7,3,10	Invalid

Non-Positive Input Test Points
To check non-positive input values:

Test Case	Input	Expected Outcome	Notes
TC 21	0,3,4	Invalid	Non-positive
TC 22	-1,2,3	Invalid	Non-positive
TC 23	1,-2,3	Invalid	Non-positive