

## Q1: Test Case Design for Previous Date Program

### 1. Equivalence Partitioning and Boundary Value Analysis Test Cases:

#### Equivalence Partitioning (EP) Test Cases:

Tester Action and Input Data	Expected Outcome	Notes
15, 5, 2010	Previous Date: 14, 5, 2010	Valid date
31, 4, 2010	Error: Invalid Date	April has 30 days (Invalid Day)
1, 1, 2000	Previous Date: 31, 12, 1999	Valid Date (Year boundary)
30, 2, 2010	Error: Invalid Date	February has 28/29 days (Invalid Day)
32, 5, 2010	Error: Invalid Date	Day > 31
15, 13, 2010	Error: Invalid Date	Month > 12
15, 5, 1899	Error: Invalid Date	Year < 1900

#### Boundary Value Analysis (BVA) Test Cases:

Tester Action and Input Data	Expected Outcome	Notes
1, 1, 1900	Previous Date: 31, 12, 1899	Minimum Year boundary
31, 12, 2015	Previous Date: 30, 12, 2015	Maximum Year boundary
0, 5, 2010	Error: Invalid Date	Day < 1
32, 5, 2010	Error: Invalid Date	Day > 31
1, 0, 2010	Error: Invalid Date	Month < 1
1, 13, 2010	Error: Invalid Date	Month > 12

Tester Action and Input Data	Expected Outcome	Notes
15, 5, 2016	Error: Invalid Date	Year > 2015

## Q2: Programs Test Cases

### P1: Linear Search

Equivalence Partitioning (EP):

Tester Action and Input Data	Expected Outcome
Search for 5 in array [1, 2, 5, 6, 9]	Index: 2
Search for 4 in array [1, 2, 5, 6, 9]	Return -1
Search for 9 in array [1, 2, 5, 9, 9]	Index: 4

Boundary Value Analysis (BVA):

Tester Action and Input Data	Expected Outcome
Search for 1 in array [1, 2, 3, 4, 5]	Index: 0
Search for 5 in array [1, 2, 3, 4, 5]	Index: 4

### P2: Count Item

Equivalence Partitioning (EP):

Tester Action and Input Data	Expected Outcome
Count 5 in array [5, 5, 5, 1, 2]	3
Count 4 in array [1, 2, 3, 4, 5]	1
Count 6 in array [1, 2, 3, 4, 5]	0

Boundary Value Analysis (BVA):

Tester Action and Input Data	Expected Outcome
Count 1 in array [1]	1
Count 2 in array [1, 1, 1, 1]	0

### P3: Binary Search

Equivalence Partitioning (EP):

Tester Action and Input Data	Expected Outcome
Search for 5 in array [1, 2, 3, 5, 9]	Index: 3
Search for 6 in array [1, 2, 3, 5, 9]	Return -1
Search for 1 in array [1, 2, 3, 4, 5]	Index: 0

Boundary Value Analysis (BVA):

Tester Action and Input Data	Expected Outcome
Search for 1 in array [1, 2, 3, 4, 5]	Index: 0
Search for 5 in array [1, 2, 3, 4, 5]	Index: 4

### P4: Triangle Classification

Equivalence Partitioning (EP):

Tester Action and Input Data	Expected Outcome
3, 3, 3	Equilateral
4, 4, 6	Isosceles
3, 4, 5	Scalene
1, 2, 3	Invalid

Boundary Value Analysis (BVA):

Tester Action and Input Data	Expected Outcome
3, 3, 3	Equilateral
3, 4, 7	Invalid

## P5: Prefix Function

Equivalence Partitioning (EP):

Tester Action and Input Data	Expected Outcome
Prefix "ab" of "abcde"	True
Prefix "abc" of "ab"	False
Prefix "a" of "b"	False

Boundary Value Analysis (BVA):

Tester Action and Input Data	Expected Outcome
Prefix "" of "abc"	True
Prefix "abc" of "abc"	True

## Q6: Floating Point Triangle Classification

a) **Equivalence Classes:**

1. Valid triangle sides.
2. Invalid triangle sides.
3. Equilateral triangle.
4. Isosceles triangle.
5. Scalene triangle.
6. Right-angled triangle.

b) **Test Cases to Cover Equivalence Classes:**

Test Case Action & Input Data (A, B, C)	Expected Outcome	Equivalence Class
3.0, 3.0, 3.0	Equilateral	Equilateral Triangle
5.0, 5.0, 8.0	Isosceles	Isosceles Triangle
5.0, 4.0, 3.0	Scalene	Scalene Triangle
1.0, 2.0, 3.0	Invalid	Invalid Triangle

c) **Boundary Condition for Scalene ( $A + B > C$ ):**

Test Case Action & Input Data (A, B, C)	Expected Outcome	Boundary Condition
2.0, 3.0, 5.0	Invalid	$A + B = C$
2.0, 3.0, 4.9	Scalene	$A + B > C$

d) **Boundary Condition for Isosceles ( $A = C$ ):**

Test Case Action & Input Data (A, B, C)	Expected Outcome	Boundary Condition
4.0, 5.0, 4.0	Isosceles	$A = C$

e) **Boundary Condition for Equilateral ( $A = B = C$ ):**

Test Case Action & Input Data (A, B, C)	Expected Outcome	Boundary Condition
5.0, 5.0, 5.0	Equilateral	$A = B = C$

f) **Boundary Condition for Right-Angled Triangle ( $A^2 + B^2 = C^2$ ):**

Test Case Action & Input Data (A, B, C)	Expected Outcome	Boundary Condition
3.0, 4.0, 5.0	Right-angled	$A^2 + B^2 = C^2$

g) **Boundary for Non-Triangle ( $A + B \leq C$ ):**

Test Case Action & Input Data (A, B, C)	Expected Outcome	Boundary Condition
1.0, 2.0, 3.0	Invalid	$A + B \leq C$

h) **Non-Positive Inputs:**

Test Case Action & Input Data (A, B, C)	Expected Outcome	Notes
-1.0, 3.0,		