IT314
Software Engineering

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Lab 10
Functional Testing

Answer 1

Equivalence class test cases

- Day < 1 : Invalid
- Day > 31 : Invalid
- 1 <= Day <= 31 : Valid
- Month < 1 : Invalid
- Month > 12 : Invalid
- 1 <= Month <= 12 : Valid
- Year < 1900 : Invalid
- Year > 2015 : Invalid
- 1900 <= Year <= 2015 : Valid

Equivalence partitioning analysis :

1. For year :
   - (2, 11, 1887)

   Expected outcome : Error message (Year is less than 1900)
   - (5, 7, 2016)

   Expected outcome : Previous date (4 July,2016)
   - (19, 8, 2020)

   Expected outcome : Error message (Year is greater than 2015)

2. For Month :
   - (17, 0, 2013)

   Expected outcome : Error message (Month is less than 1)
   - (28, 11, 2003)

   Expected outcome : previous date (27 November , 2003)
   - (03, 23, 2001)

   Expected outcome : Error message (Month is greater than 12)

3. For Day :
   - (0, 3, 2005)

   Expected outcome : Error message (Day is less than 1)

● (2, 6, 2007)
Expected outcome : Previous date (1 June , 2007)
● (35, 9, 1999)
Expected outcome : Error message (Day is greater than 31)

Boundary value analysis :
1. For year :
● (1, 1, 1900)
Expected outcome : Error message (Month , Yer and Day are at
their minimum values)
● (31, 12, 2015)
Expected outcome : Previous date (30 December , 2015)● (2, 1, 1900)
Expected outcome : Previous date (1 January , 1900)

2. For Month:
● Input: (1, 1, 1900)
Expected Outcome: An Error message (Month, Day, and Year are at
their
minimum values)
● Input: (31, 12, 2015)
Expected Outcome: Previous Date (December 30, 2015)
● Input: (1, 12, 2016)
Expected Outcome: An Error message (Year is greater than
maximum value)

3. For Day:
● Input: (1, 1, 1900)
Expected Outcome: An Error message (Month, Day, and Year are at
their minimum values)
● Input: (31, 12, 2015)
Expected Outcome: Previous Date (December 30, 2015)
● Input: (31, 12, 2016)

Expected Outcome: An Error message (Year is greater than its
maximum value)
● Input: (1, 1, 1901)
Expected Outcome: Previous Date (December 31, 1900)

Answer 2

Equivalence class test cases :

● Equilateral triangle: All sides are equal (A = B = C)
● Isosceles triangle: Two sides are equal (A = B, A = C or B = C)
● Scalene triangle: No sides are equal (A ≠ B, A ≠ C and B ≠ C)
● Non-triangle: The sum of two sides is less than or equal to the third
side (A + B ≤ C, B + C ≤ A, C + A ≤ B)
● Non-positive input: Any side is less than or equal to zero

Test cases to cover the identified equivalence classes:

Equilateral triangle
• A = B = C

Isosceles triangle
• A = B, C ≠ A
• A = C, B ≠ A
• B = C, A ≠ B

Scalene triangle
• A ≠ B ≠ C

Non-triangle
• A = 1, B = 2, C = 7 (A + B < C, not a triangle)

Non-positive input
• A = 0, B = 2, C = 5 (A is non-positive)
• A = 1, B = -1, C = 2 (B is non-positive)
• A = 1, B = 2, C = -1 (C is non-positive)
• A = -1, B = -2, C = -3 (All sides are non-positive)

For the boundary condition A + B > C (scalene triangle)
- Test cases:
• A = 1, B = 2, C = 3 (A + B = C - boundary case)
• A = 1, B = 2, C = 4 (A + B < C)

For the boundary condition A = C (isosceles triangle)
- Test cases:
• A = 1, B = 2, C = 1 (A = C - boundary case)
• A = 1, B = 2, C = 2 (A = C)

For the boundary condition A = B = C (equilateral triangle)
- Test cases:
• A = 1, B = 1, C = 1 (A = B = C - boundary case)

For the boundary condition A^2 + B^2 = C^2 (right-angle triangle)
- Test cases:
• A = 3, B = 4, C = 5 (3-4-5 Pythagorean triple - boundary case)
• A = 3, B = 4, C = 6 (A^2 + B^2 < C^2)
• A = 3, B = 4, C = 7 (A^2 + B^2 > C^2)

For the non-triangle case
- Test cases:
• A = 1, B = 2, C = 4 (A + B < C)
• A = 1, B = 2, C = 1 (A + B = C)

For non-positive input
- Test cases:
• A = 0, B = 0, C = 0 (All sides are zero)
• A = -1, B = 2, C = 3 (A is negative)
• A = 1, B = -2, C = 3 (B is negative)
• A = 1, B = 2, C = -3 (C is negative)

These test cases cover all the identified equivalence classes and boundary conditions.