# FIND TRIANGLE TYPE

Test Cases

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# Question:

Make test cases for a triangle that can differentiate between isosceles, equilateral, and scalene types based on sides length as input and state if their verdict is true/false. Make assumptions for actual outcome.

# Answer:

## Code:

```
import java.util.InputMismatchException;
import java.util.Scanner;

public class FindTriangleType {
  public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);

    double side1, side2, side3;

    try {
      System.out.println("Enter the lengths of the sides of the triangle:");
      side1 = scanner.nextDouble();
      side2 = scanner.nextDouble();
      side3 = scanner.nextDouble();
    } catch (InputMismatchException e) {
      System.out.println("Please enter valid numeric input only.");
      return;
    }

    if (isValidTriangle(side1, side2, side3)) {
      String type = triangleType(side1, side2, side3);
      System.out.println("The triangle is " + type + ".");
    } else {
```

```
        System.out.println("Invalid triangle. The sum of the lengths of any two sides must be greater than the length of the remaining side.");
    }

    scanner.close();
  }

  public static boolean isValidTriangle(double side1, double side2, double side3) {
    return (side1 + side2 > side3) && (side1 + side3 > side2) && (side2 + side3 > side1);
  }

  public static String triangleType(double side1, double side2, double side3) {
    if (side1 == side2 && side2 == side3) {
      return "equilateral";
    } else if (side1 == side2 || side1 == side3 || side2 == side3) {
      return "isosceles";
    } else {
      return "scalene";
    }
  }
}
```

## Test Cases:

| Test Case | Test Case Description | Input Data | Expected Outcome | Actual Outcome | Status |
|---|---|---|---|---|---|
| **TC_01** | Test Equilateral Triangle | (5, 5, 5) | Equilateral triangle | Equilateral triangle | Passed |
| **TC_02** | Test Isosceles Triangle | (5, 5, 6) | Isosceles triangle | Isosceles triangle | Passed |
| **TC_03** | Test Scalene Triangle | (3, 4, 5) | Scalene triangle | Scalene triangle | Passed |

| | | | | | |
|---|---|---|---|---|---|
| **TC_04** | Test Isosceles Triangle (First two sides are equal) | (6, 6, 5) | Isosceles triangle | Isosceles triangle | Passed |
| **TC_05** | Test Isosceles Triangle (Last two sides are equal) | (3, 4, 4) | Isosceles triangle | Isosceles triangle | Passed |
| **TC_06** | Test Scalene Triangle (All sides are different) | (8, 15, 17) | Scalene triangle | Scalene triangle | Passed |
| **TC_07** | Test Invalid Triangle (Sum of two sides equals the third side) | (7, 3, 10) | Invalid triangle | Invalid triangle | Passed |
| **TC_08** | Test Invalid Triangle (One side is greater than the sum of the other two) | (1, 1, 3) | Invalid triangle | Invalid triangle | Passed |
| **TC_09** | Test Invalid Triangle (One side is 0) | (0, 3, 3) | Invalid triangle | Invalid triangle | Passed |
| **TC_10** | Test Invalid Triangle (One side is negative) | (-2, 5, 6) | Invalid triangle | Invalid triangle | Passed |
| **TC_11** | Test Invalid Triangle (All sides are 0) | (0, 0, 0) | Invalid triangle | Invalid triangle | Passed |
| **TC_12** | Test Invalid Triangle (All sides are negative) | (-3, -4, -5) | Invalid triangle | Invalid triangle | Passed |