

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:

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| --- | --- | --- | --- | --- | --- |
| **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 |