IT314

Software Engineering

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Lab 8

Testing - Introduction

"The program reads three integer values from an input dialog. The three values represent

the lengths of the sides of a triangle. The program displays a message that states whether

the triangle is scalene, isosceles, or equilateral".

The function triangle takes three integer parameters that are interpreted as the lengths of the sides of a triangle. It returns whether the triangle is equilateral (three lengths equal), isosceles (two lengths equal), scalene (no lengths equal), or invalid (impossible lengths).

```
final int EQUILATERAL = 0;
final int ISOSCELES = 1;
final int SCALENE = 2;
final int INVALID = 3;
int triangle(int a, int b, int c)
{
    if (a >= b+c || b >= a+c || c >= a+b)
        return(INVALID);
    if (a == b && b == c)
        return(EQUILATERAL);
    if (a == b || a == c || b == c)
        return(ISOSCELES);
    return(SCALENE);
}
```

❖ Equilateral

Case	Tester Action and Input Data	Expected Outcome
General	1, 1, 1	EQUILATERAL
Boundary values	INT_MAX, INT_MAX, INT_MAX	EQUILATERAL
All zeroes	0, 0, 0	INVALID
All negative	-1, -1, -1	INVALID
Out of bound	INT_MAX+1, INT_MAX+1, INT_MAX+1	INVALID

❖ Isosceles

Case	Tester Action and Input Data	Expected Outcome
General with all permutations	1, 1, 2	ISOSCELES
	1, 2, 1	ISOSCELES
	2, 1, 1	ISOSCELES
Boundary values	INT_MAX-1, INT_MAX-1, INT_MAX	ISOSCELES
One side negative	-1, 2, 2	INVALID
	2, -1, 2	INVALID
	2, 2, -1	INVALID
One side zero	0, 2, 2	INVALID
	2, 0, 2	INVALID
	2, 2, 0	INVALID
Two side negative	2, -1, -1	INVALID
Two side zero	2, 0, 0	INVALID
Three side negative	-2, -1, -1	INVALID
Invalid combinations	1, 1, 2	INVALID
	2, 2, 3	INVALID
Out of bound	INT_MAX, INT_MAX, INT_MAX+1	INVALID

❖ Scalene

Case	Tester Action and Input Data	Expected Outcome
General with all permutations	3, 4, 5	SCALENE
	4, 5, 3	SCALENE
	5, 3, 4	SCALENE
Boundry values	INT_MAX-2, INT_MAX-1, INT_MAX	SCALENE
Invalid combinations	1, 2, 3	INVALID
	2, 3, 10	INVALID
One side negative	-1, 2, 4	INVALID
One side zero	0, 2, 5	INVALID
Two side negative	2, -1, -5	INVALID
Three side negative	-2, -6, -4	INVALID
Out of bound	INT_MAX-1, INT_MAX, INT_MAX+1	INVALID