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Subject- ***Software Testing***

Lab File

Experiment- 1

Aim- To perform Boundary Value Analysis for Nature of Roots of Quadratic Equation, having three inputs a, b, c, as it's variables ranging from [1, 100]-

Code-

```
#include<iostream.h>
#include<conio.h>
void nature_of_roots(int a, int b, int c)
{
if (a == 0) {
cout << "Not a Quadratic Equation" << endl;
}

int D = b * b - 4 * a * c;

// If D > 0, it will be Real Roots
if (D > 0) {
cout << "Real Roots" << endl;
}

// If D == 0, it will be Equal Roots
else if (D == 0) {
cout << "Equal Roots" << endl;
}

// If D < 0, it will be Imaginary Roots
else {
cout << "Imaginary Roots" << endl;
}
}

// Function to check for all testcases
void checkForAllTestCase()
{
cout << "\nTestcase\ta\tb\tc\tOutput" << endl;
cout << endl;
```

```
int a, b, c;
int testcase = 1;
while (testcase <= 13) {
if (testcase == 1) {
a = 50;
b = 50;
c = 50;
}
else if (testcase == 2) {
a = 1;
b = 50;
c = 50;
}
else if (testcase == 3) {
a = 2;
b = 50;
c = 50;
}
else if (testcase == 4) {
a = 99;
b = 50;
c = 50;
}
else if (testcase == 5) {
a = 100;
b = 50;
c = 50;
}
else if (testcase == 6) {
a = 50;
b = 1;
c = 50;
}
else if (testcase == 7) {
a = 50;
b = 2;
c = 50;
}
else if (testcase == 8) {
a = 50;
b = 99;
c = 50;
```

```
}
else if (testcase == 9) {
a = 50;
b = 100;
c = 50;
}
else if (testcase == 10) {
a = 50;
b = 50;
c = 1;
}
else if (testcase == 11) {
a = 50;
b = 50;
c = 2;
}
else if (testcase == 12) {
a = 50;
b = 50;
c = 99;
}
else if (testcase == 13) {
a = 50;
b = 50;
c = 100;
}
cout << testcase << "\t\t"
<< a << "\t" << b << "\t"
<< c << "\t";
nature_of_roots(a, b, c);
testcase++;
}
}

// Driver Code
void main()
{
clrscr();
checkForAllTestCase();
cout<<"\nMansimar Singh IT-2\t";
getch();
}
```

Output-

Testcase	a	b	c	Output
1	50	50	50	Imaginary Roots
2	1	50	50	Real Roots
3	2	50	50	Real Roots
4	99	50	50	Imaginary Roots
5	100	50	50	Imaginary Roots
6	50	1	50	Imaginary Roots
7	50	2	50	Imaginary Roots
8	50	99	50	Imaginary Roots
9	50	100	50	Equal Roots
10	50	50	1	Real Roots
11	50	50	2	Real Roots
12	50	50	99	Imaginary Roots
13	50	50	100	Imaginary Roots

Mansimar Singh IT-2

Experiment- 2

Aim- To perform Boundary Value Analysis for Type of Triangle, having three inputs a, b, c, as it's sides ranging from [1, 100]-

Code-

```
#include<iostream.h>
#include<conio.h>

void type(int a, int b, int c)
{
if(((a+b)>c)&&((b+c)>a)&&((c+a)>b))
{

if((a==b)&&(b==c))
cout<<"Equilatral\n";
else if((a==b)||(b==c)||(c==a))
cout<<"Isosceles\n";
else
cout<<"Scalene\n";

}
else
cout<<"Not Triangle\n";
}

void checkForAllTestCase()
{
cout << "\nTestcase\ta\tb\tc\tOutput" << endl;
cout << endl;
int a, b, c;
int testcase = 1;
while (testcase <= 13) {
if (testcase == 1) {
a = 50;
b = 50;
c = 50;
```

```
}
else if (testcase == 2) {
a = 1;
b = 50;
c = 50;
}
else if (testcase == 3) {
a = 2;
b = 50;
c = 50;
}
else if (testcase == 4) {
a = 99;
b = 50;
c = 50;
}
else if (testcase == 5) {
a = 100;
b = 50;
c = 50;
}
else if (testcase == 6) {
a = 50;
b = 1;
c = 50;
}
else if (testcase == 7) {
a = 50;
b = 2;
c = 50;
}
else if (testcase == 8) {
a = 50;
b = 99;
c = 50;
}
else if (testcase == 9) {
a = 50;
b = 100;
c = 50;
}
else if (testcase == 10) {
```

```
a = 50;
b = 50;
c = 1;
}
else if (testcase == 11) {
a = 50;
b = 50;
c = 2;
}
else if (testcase == 12) {
a = 50;
b = 50;
c = 99;
}
else if (testcase == 13) {
a = 50;
b = 50;
c = 100;
}
cout << testcase << "\t\t"
<< a << "\t" << b << "\t"
<< c << "\t";
type(a,b,c);
testcase++;
}
}

void main()
{
clrscr();
checkForAllTestCase();
cout<<"\nMansimar Singh IT-2\t";
getch();
}
```

Output-

Testcase	a	b	c	Output
1	50	50	50	Equilatral
2	1	50	50	Isosceles
3	2	50	50	Isosceles
4	99	50	50	Isosceles
5	100	50	50	Not Triangle
6	50	1	50	Isosceles
7	50	2	50	Isosceles
8	50	99	50	Isosceles
9	50	100	50	Not Triangle
10	50	50	1	Isosceles
11	50	50	2	Isosceles
12	50	50	99	Isosceles
13	50	50	100	Not Triangle

Mansimar Singh IT-2 _

Experiment- 3

Aim- To perform Robust Case Testing for Nature of Roots of Quadratic Equation, having three inputs a, b, c, as it's variables ranging from [1, 100]-

Code-

```
#include<iostream.h>
#include<conio.h>

void nature_of_roots(int a, int b, int c)
{

// If a = 0, D/2a will yield exception
// Hence it is not a valid Quadratic Equation
if (a == 0) {
cout << "Not a Quadratic Equation"
<< endl;
return;
}

int D = b * b - 4 * a * c;

// If D > 0, it will be Real Roots
if (D > 0) {
cout << "Real Roots" << endl;
}

// If D == 0, it will be Equal Roots
else if (D == 0) {
cout << "Equal Roots" << endl;
}

// If D < 0, it will be Imaginary Roots
else {
cout << "Imaginary Roots" << endl;
}
}
```

```
// Function to check for all testcases
void checkForAllTestCase()
{
cout << "\nTestcase\ta\tb\tc\tOutput" << endl;
cout << endl;
int a, b, c;
int testcase = 1;
while (testcase <= 19) {
if (testcase == 1) {
a = 50;
b = 50;
c = 50;
}
else if (testcase == 2) {
a = 1;
b = 50;
c = 50;
}
else if (testcase == 3) {
a = 2;
b = 50;
c = 50;
}
else if (testcase == 4) {
a = 99;
b = 50;
c = 50;
}
else if (testcase == 5) {
a = 100;
b = 50;
c = 50;
}
else if (testcase == 6) {
a = 50;
b = 1;
c = 50;
}
else if (testcase == 7) {
a = 50;
b = 2;
```

```
c = 50;
}
else if (testcase == 8) {
a = 50;
b = 99;
c = 50;
}
else if (testcase == 9) {
a = 50;
b = 100;
c = 50;
}
else if (testcase == 10) {
a = 50;
b = 50;
c = 1;
}
else if (testcase == 11) {
a = 50;
b = 50;
c = 2;
}
else if (testcase == 12) {
a = 50;
b = 50;
c = 99;
}
else if (testcase == 13) {
a = 50;
b = 50;
c = 100;
}
else if (testcase == 14) {
a = 0;
b = 50;
c = 50;
}
else if (testcase == 15) {
a = 101;
b = 50;
c = 50;
}
```

```
else if (testcase == 16) {
a = 50;
b = 0;
c = 50;
}
else if (testcase == 17) {
a = 50;
b = 101;
c = 50;
}
else if (testcase == 18) {
a = 50;
b = 50;
c = 0;
}
else if (testcase == 19) {
a = 50;
b = 50;
c = 101;
}
cout << testcase << "\t\t"
<< a << "\t" << b << "\t"
<< c << "\t";
nature_of_roots(a, b, c);
testcase++;
}
}

// Driver Code
void main()
{
clrscr();
checkForAllTestCase();
cout<<"\nMansimar Singh IT-2\t";
getch();
}
```

Output-

Testcase	a	b	c	Output
1	50	50	50	Imaginary Roots
2	1	50	50	Real Roots
3	2	50	50	Real Roots
4	99	50	50	Imaginary Roots
5	100	50	50	Imaginary Roots
6	50	1	50	Imaginary Roots
7	50	2	50	Imaginary Roots
8	50	99	50	Imaginary Roots
9	50	100	50	Equal Roots
10	50	50	1	Real Roots
11	50	50	2	Real Roots
12	50	50	99	Imaginary Roots
13	50	50	100	Imaginary Roots
14	0	50	50	Not a Quadratic Equation
15	101	50	50	Imaginary Roots
16	50	0	50	Imaginary Roots
17	50	101	50	Real Roots
18	50	50	0	Real Roots
19	50	50	101	Imaginary Roots

Mansimar Singh IT-2

Experiment- 4

Aim- To perform Robust Case Testing for Type of Triangle, having three inputs a, b, c, as it's sides ranging from [1, 100]-

Code-

```
#include<iostream.h>
#include<conio.h>

void type(int a, int b, int c)
{
if(((a+b)>c)&&((b+c)>a)&&((c+a)>b))
{

if((a==b)&&(b==c))
cout<<"Equilatral\n";
else if((a==b)||(b==c)||(c==a))
cout<<"Isosceles\n";
else
cout<<"Scalene\n";

}
else
cout<<"Not Triangle\n";
}

void checkForAllTestCase()
{
cout << "\nTestcase\ta\tb\tc\tOutput" << endl;
cout << endl;
int a, b, c;
int testcase = 1;
while (testcase <= 19) {
if (testcase == 1) {
a = 50;
b = 50;
c = 50;
```

```
}
else if (testcase == 2) {
a = 1;
b = 50;
c = 50;
}
else if (testcase == 3) {
a = 2;
b = 50;
c = 50;
}
else if (testcase == 4) {
a = 99;
b = 50;
c = 50;
}
else if (testcase == 5) {
a = 100;
b = 50;
c = 50;
}
else if (testcase == 6) {
a = 50;
b = 1;
c = 50;
}
else if (testcase == 7) {
a = 50;
b = 2;
c = 50;
}
else if (testcase == 8) {
a = 50;
b = 99;
c = 50;
}
else if (testcase == 9) {
a = 50;
b = 100;
c = 50;
}
else if (testcase == 10) {
```

```
a = 50;
b = 50;
c = 1;
}
else if (testcase == 11) {
a = 50;
b = 50;
c = 2;
}
else if (testcase == 12) {
a = 50;
b = 50;
c = 99;
}
else if (testcase == 13) {
a = 50;
b = 50;
c = 100;
}
else if (testcase == 14) {
a = 0;
b = 50;
c = 50;
}
else if (testcase == 15) {
a = 101;
b = 50;
c = 50;
}
else if (testcase == 16) {
a = 50;
b = 0;
c = 50;
}
else if (testcase == 17) {
a = 50;
b = 101;
c = 50;
}
else if (testcase == 18) {
a = 50;
b = 50;
```

```
c = 0;
}
else if (testcase == 19) {
a = 50;
b = 50;
c = 101;
}
cout << testcase << "\t\t"
<< a << "\t" << b << "\t"
<< c << "\t";
type(a,b,c);
testcase++;
}
}

void main()
{
clrscr();
checkForAllTestCase();
cout<<"\nMansimar Singh IT-2\t";
getch();
}
```

Output-

Testcase	a	b	c	Output
1	50	50	50	Equilatral
2	1	50	50	Isosceles
3	2	50	50	Isosceles
4	99	50	50	Isosceles
5	100	50	50	Not Triangle
6	50	1	50	Isosceles
7	50	2	50	Isosceles
8	50	99	50	Isosceles
9	50	100	50	Not Triangle
10	50	50	1	Isosceles
11	50	50	2	Isosceles
12	50	50	99	Isosceles
13	50	50	100	Not Triangle
14	0	50	50	Not Triangle
15	101	50	50	Not Triangle
16	50	0	50	Not Triangle
17	50	101	50	Not Triangle
18	50	50	0	Not Triangle
19	50	50	101	Not Triangle

Mansimar Singh IT-2