3. Design and develop a program in a language of your choice to solve the triangle problem defined as follows: Accept three integers which are supposed to be the three sides of a triangle and determine if the three values represent an equilateral triangle, isosceles triangle, scalene triangle, or they do not form a triangle at all. Assume that the upper limit for the size of any side is 10. Derive test cases for your program based on equivalence class partitioning, execute the test cases and discuss the results.

ALGORITHM:

Step 1: Input a, b & c i.e three integer values which represent three sides of the triangle.

Step 2: if (a < (b + c)) and (b < (a + c)) and (c < (a + b) then do step 3

else print not a triangle. do step 6.

Step 3: if (a=b) and (b=c) then

Print triangle formed is equilateral. do step 6.

Step 4: if (a ≠ b) and (a ≠ c) and (b ≠ c) then Print triangle formed is scalene. do step 6.

Step 5: Print triangle formed is Isosceles.

Step 6: stop

#include<stdio.h>

#include<ctype.h>

#include<conio.h>

#include<process.h>

int main()

{

int a, b, c;

clrscr();

printf("Enter three sides of the triangle");

scanf("%d%d%d", &a, &b, &c);

if((a > 10) || (b > 10) || (c > 10))

{

printf("Out of range");

getch();

exit(0);

}

if((a<b+c)&&(b<a+c)&&(c<a+b))

{

if((a==b)&&(b==c))

{

printf("Equilateral triangle");

}

else if((a!=b)&&(a!=c)&&(b!=c))

{

printf("Scalene triangle");

}

else

printf("Isosceles triangle");

}

else

{

printf("triangle cannot be formed");

}

getch();

return 0;

}

**TEST CASE 1 :**

Enter 3 integers which are sides of triangle

6 6 2

a=6 b=6 c=2

Values Are Strong Normal Values

It is an Isosceles Triangle

**TEST CASE 2 :**

Enter 3 integers which are sides of triangle

5 5 5

a=5 b=5 c=5

Values Are Normal Values

It is an Equilateral Triangle

**TEST CASE 3 :**

Enter 3 integers which are sides of triangle

10 9 5

a=10 b=9 c=5

Values Are Strong Normal Values

It is an Scalene Triangle

**TEST CASE 4:**

Enter 3 integers which are sides of triangle

8 4 4

a=8 b=4 c=4

Values Are Weak Normal Values

Triangle Can’t be Formed

**TEST CASE 5 :**

Enter 3 integers which are sides of triangle

-1 4 11

a=-1 b=4 c=11

Values Are Totally Robust and Triangle can’t be Formed

Process returned 0 ( 0x0 ) execution time : 8.920 s