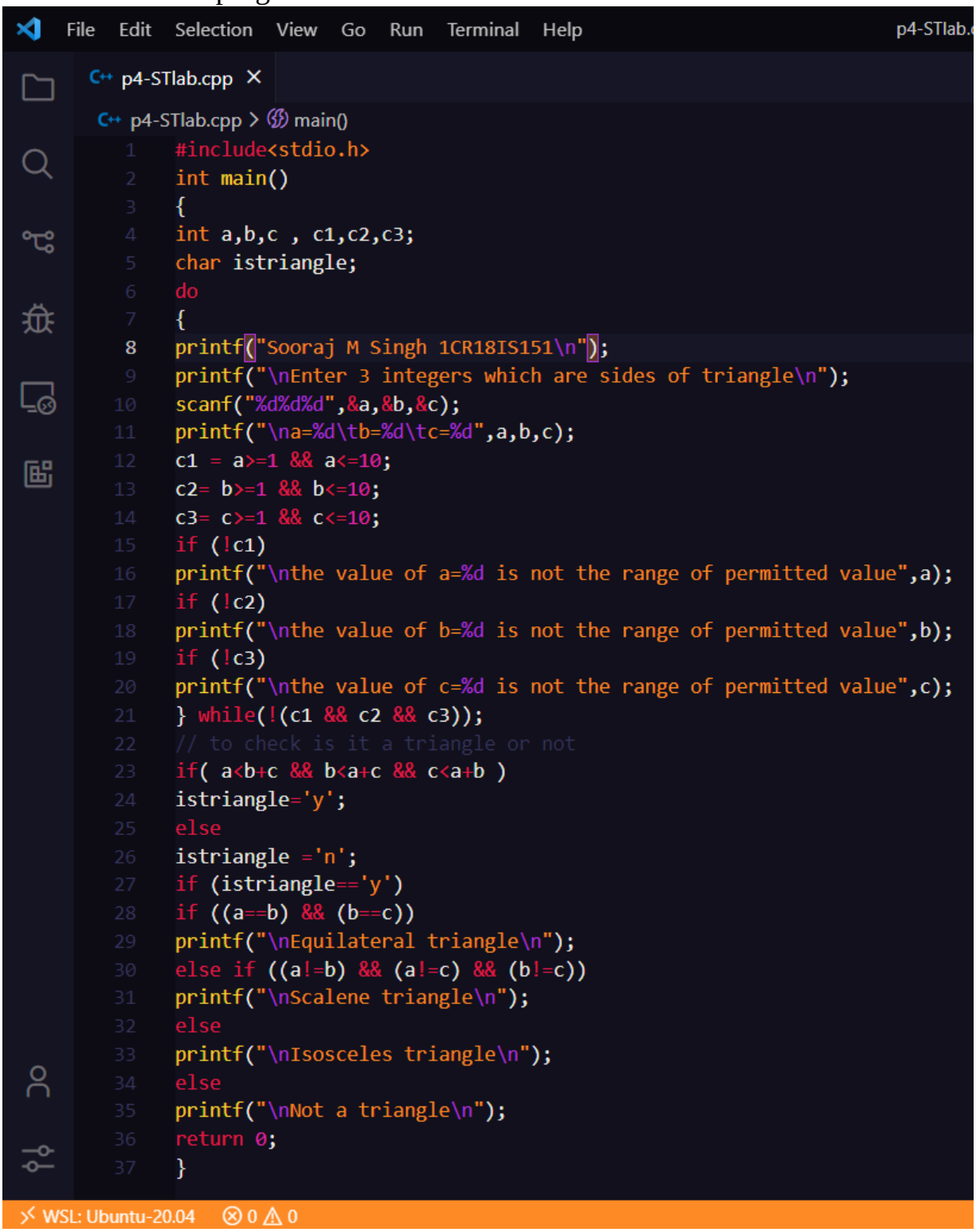
Program 3 (equivalence class partitioning program)

/* 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 triangle and determine if the three values represent an equilateral triangle, isosceles triangle, scalene triangle, or they do not form a triangle at all. Derive test cases for your program based on equivalence class partitioning, execute the test cases and discuss the results */

```
#include<stdio.h>
int main() { int
a,b,c , c1,c2,c3;
char istriangle;
do {
printf("Sooraj M Singh 1CR18IS151\n");
printf("\nEnter 3 integers which are sides of triangle\n");
scanf("%d%d%d",&a,&b,&c);
printf("\na=%d\tb=%d\tc=%d",a,b,c);
c1 = a>=1 && a<=10; c2=
b>=1 && b<=10;
c3= c>=1 && c<=10;
if (!c1)
printf("\nthe value of a=%d is not the range of permitted value",a); if
(!c2)
printf("\nthe value of b=%d is not the range of permitted value",b);
if (!c3)
printf("\nthe value of c=%d is not the range of permitted value",c);
} while(!(c1 && c2 && c3)); //
to check is it a triangle or not
if( a<b+c && b<a+c && c<a+b )
istriangle='y';
else istriangle
='n';
if (istriangle=='y') if ((a==b) &&
(b==c)) printf("\nEquilateral
triangle\n"); else if ((a!=b) &&
(a!=c) && (b!=c)) printf("\nScalene
triangle\n"); else
printf("\nIsosceles triangle\n"); else
printf("\nNot a triangle\n"); return
0;
```

}

Screenshot of the program:



Screenshots:

```
sooraj@Asus-F-15:~/st-lab$ cd "/home/sooraj/st-lab/" && g++ p4-STlab.cpp -o p4-STlab && "/home/sooraj/st-lab/"p4-STlab
Sooraj M Singh 1CR18IS151

Enter 3 integers which are sides of triangle
-1 -1 -1

a=-1    b=-1    c=-1
the value of a=-1 is not the range of permitted value
the value of b=-1 is not the range of permitted value
the value of c=-1 is not the range of permitted valueSooraj M Singh 1CR18IS151
```

```
sooraj@Asus-F-15:~/st-lab$ cd "/home/sooraj/st-lab/" && g++ p4-STlab.cpp -o p4-STlab && "/home/sooraj/st-lab/"p4-STlab
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Enter 3 integers which are sides of triangle
2 2 2

a=2     b=2     c=2
Equilateral triangle
```

```
sooraj@Asus-F-15:~/st-lab$ cd "/home/sooraj/st-lab/" && g++ p4-STlab.cpp -o p4-STlab && "/home/sooraj/st-lab/"p4-STlab
Sooraj M Singh 1CR18IS151

Enter 3 integers which are sides of triangle
1 2 3

a=1     b=2     c=3
Not a triangle
```

INPUT CASES :

Weak Equivalence class Testing								
Case ID	Description	Input Data			Expected Output	Actual Output	Status	Comments
		a	b	c				

1	Enter the min value for a , b and c	5	5	5	Should display the message Equilateral triangle	Equilateral triangle	Working	Nothing unusual
2	Enter the min value for a , b and c	2	2	3	Should display the message Isosceles triangle	Isosceles triangle	Working	Nothing unusual
3	Enter the min value for a , b and c	3	4	5	Should display the message Scalene triangle	Scalene triangle	Working	Nothing unusual
4	Enter the min value for a , b and c	4	1	2	Message should be displayed can't form a triangle	Not a triangle	Working	Doesn’t satisfy the condition to be a triangle

Weak Robust Equivalence Class Testing								
5	Enter one invalid input and two valid values for a , b and c	-1	5	5	Should display value of a is not in the range of permitted values	the value of a=-1 is not the range of permitted value	Working	Out of range
6	Enter one invalid input and two valid values for a , b and c	5	-1	5	Should display value of a is not in the range of permitted values	the value of b=-1 is not the range of permitted value	working	Out of range
7	Enter one invalid input and two valid values for a , b and c	5	5	-1	Should display value of a is not in the range of permitted values	the value of c=-1 is not the range of permitted value	working	Out of range
8	Enter one invalid input and two valid values for a , b and c	11	5	5	Should display value of a is not in the range of permitted values	the value of a=11 is not the range of permitted value	working	Out of range
9	Enter one invalid input and two valid values for a , b and c	5	11	5	Should display value of a is not in the range of permitted values	the value of b=11 is not the range of permitted value	working	Out of range
10	Enter one invalid input and two valid values for a , b and c	5	5	11	Should display value of a is not in the range of permitted values	the value of c=11 is not the range of permitted value	working	Out of range

Strong Robust Equivalence Class Testing								
11	Enter one invalid input and two valid value for a , b and c	-1	5	5	Should display value of a is not in the range of permitted values	the value of a=-1 is not the range of permitted value	working	Out of range
12	Enter one invalid input and two valid value for a , b and c	5	-1	5	Should display value of a is not in the range of permitted values	the value of b=-1 is not the range of permitted value	working	Out of range
13	Enter one invalid input and two valid value for a , b and c	5	5	-1	Should display value of a is not in the range of permitted values	the value of c=-1 is not the range of permitted value	working	Out of range
14	Enter two invalid input and two valid value for a , b and c	-1	-1	5	Should display value of a is not in the range of permitted values	the value of a=-1 is not the range of permitted value	working	Out of range
					Should display value of b is not in the range of permitted values	the value of b=-1 is not the range of permitted value		
15	Enter two invalid input and two valid value for a , b and c	5	-1	-1	Should display value of b is not in the range of permitted values	the value of b=-1 is not the range of permitted value	working	Out of range

					Should display value of c is not in the range of permitted values	the value of c=-1 is not the range of permitted value		

16	Enter two invalid input and two valid value for a , b and c	-1	5	-1	Should display value of a is not in the range of permitted values	the value of a=-1 is not the range of permitted value	working	Out of range
					Should display value of c is not in the range of permitted values	the value of c=-1 is not the range of permitted value		
17	Enter all invalid inputs	-1	-1	-1	Should display value of a is not in the range of permitted values	the value of a=-1 is not the range of permitted value	working	Out of range
					Should display value of b is not in the range of permitted values	the value of a=-1 is not the range of permitted value		
					Should display value of c is not in the range of permitted values	the value of c=-1 is not the range of permitted value		