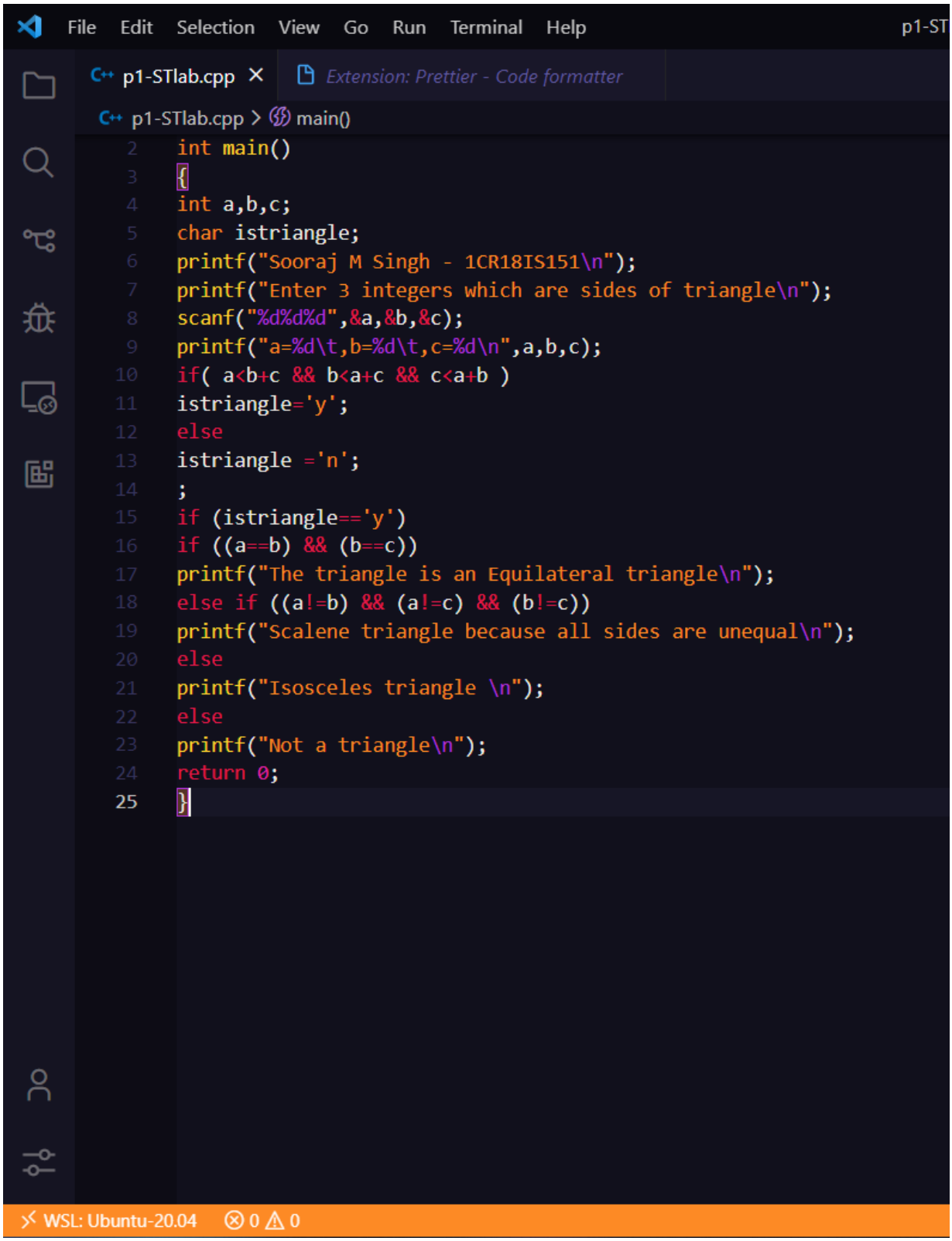
Program 1 (Boundary value analysis program)

/* 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 Boundary value analysis, execute the test cases and discuss the results */

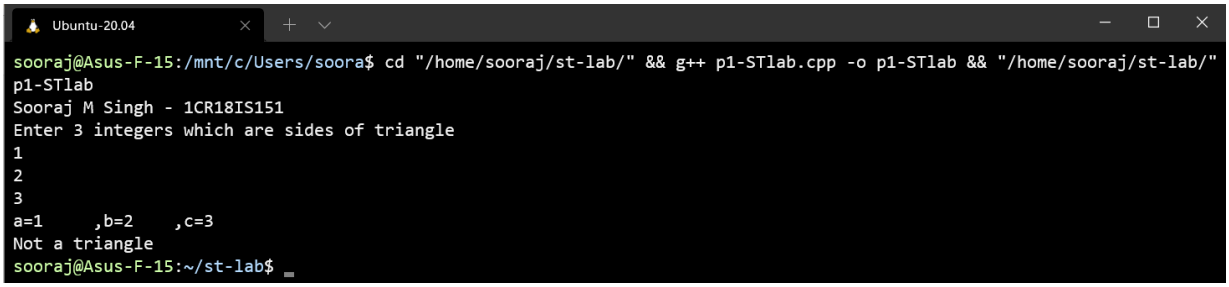
```
#include<stdio.h> int
main()
{
        int a,b,c,c1,c2,c3;
        char istriangle;
        do
        {
                printf("Sooraj m Singh 1CR18IS151\n");
        printf("\nEnter 3 integers which are sides of triangle\n");
                scanf("%d%d%d",&a,&b,&c);
        printf("\na=%d\tb=%d\tc=%d",a,b,c);
                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));
        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
```

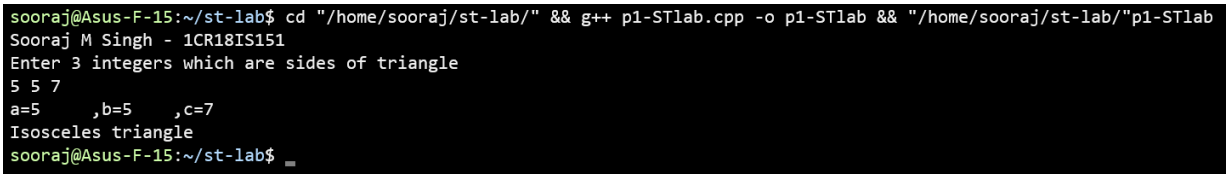
```
if ((a!=b) && (a!=c) && (b!=c))
        printf("\nScalene triangle\n");              else
                        printf("\nIsosceles triangle\n");
        else
  printf("\nNot a triangle\n"); return 0;
}
```

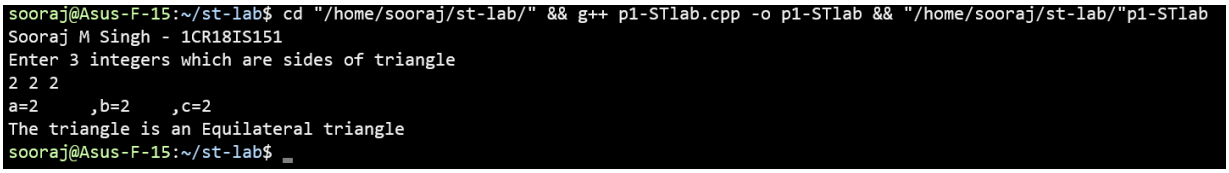
Screenshot of the program:



Screenshots:







INPUT CASES :

Case Id	Description	Input Data			Expected Output	Actual Output	Status	Comments
		a	b	c				
1	Enter the min value for a, b and c	1	1	1	Should display the message Equilateral triangle	Equilateral triangle	working	Nothing unusual
2	Enter the min value for 2 items and min + 1 for any one item	1	1	2	Message should be displayed can't form a triangle	Not a triangle	Working	Doesn't satisfy triangle condition
3	Enter the min value for 2 items and min + 1 for any one item	1	2	1	Message should be displayed can't form a triangle	Not a triangle	Working	Doesn't satisfy triangle condition
		2	1	1				

4	Enter the min value for 2 items and min + 1 for any one item				Message should be displayed can't form a triangle	Not a triangle	Working	Doesn’t satisfy triangle condition
5	Enter the normal value for 2 items and one item is min value	5	5	1	Should display the message Isosceles triangle	Isosceles triangle	working	Nothing unusual
6	Enter the normal value for 2 items and one item is min value	5	1	5	Should display the message Isosceles triangle	Isosceles triangle	Working	Nothing unusual
7	Enter the normal value for 2 items and one item is min value	1	5	5	Should display the message Isosceles triangle	Isosceles triangle	Working	Nothing unusual

8	Enter normal values for a, b and c.	5	5	5	Message should be displayed can't form a triangle	Equilateral triangle	Working	Nothing unusual
9	Enter random values for a, b and c	3	4	5	Should display the message Scalene triangle	Scalene triangle	Working	Nothing unusual