Lab 4 Flow control (I) – Conditional statements

Please test the correctness of your program in **Q1, Q2 and Q3** using PASS.

Q1.

Write a program that reads 3 integer values (>0) from the user. The 3 values are interpreted as representing the lengths of the three sides of a triangle. The program prints a message saying whether the triangle is *Equilateral* (all sides equal), *Isosceles* (only 2 sides equal), *Scalene* (all sides unequal), or *Impossible* (can't form a triangle). A triangle can be formed only if the sum of the length of *any 2* sides is greater than the length of the 3rd side and the length of all the sides of the triangle are *positive*.

Expected Output:

Example 1	Example 2
Enter the value of A, B and C: 3 4 5 Scalene	Enter the value of A, B and C: 3 3 3 Equilateral
Example 3	**Example 4**
Enter the value of A, B and C: 5 5 2 Isosceles	Enter the value of A, B and C: 1 2 10 Impossible
Example 5	**Example 6**
Enter the value of A, B and C: 0 2 10 Impossible	Enter the value of A, B and C: 1 -2 10 Impossible

> **Hint-1:** If you'd like to check for equality, you should not write something like: *if (A==B==C)*, but instead, you should use the *&&* operator: *if (A == B && B ==C)*

> **Hint-2:** The order of checking may affect the complexity of your code (although it still works). You may wish to check for impossible cases first, and identify the scalene case last.

NOTE: Your program MUST follow the EXACT input/output format! Otherwise, you may not pass the test cases even though your calculation is correct.

Q2.

Write a program that prompts the user to enter an integer and determines whether it is

a)   divisible by 3 and 5

b)   divisible by 3 only

c)   divisible by 5 only

d)   not divisible by 3 or 5

Expected Output:

Example 1	Example 2
Enter an Integer Number : **15** 15 is divisible by 3 and 5.	Enter an Integer Number : **21** 21 is divisible by 3 only.
Example 3	Example 4
Enter an Integer Number : **40** 40 is divisible by 5 only.	Enter an Integer Number : **23** 23 is not divisible by 3 or 5.

Q-3.

Write a program that calculates the result of 'a', 'operations', 'b' which are entered by users, like '1+4 = 5'.

a)   Verify whether the input 'a' and 'b' are digits.

b)   The operations include '+, -, *, /, %, <, >, ='.

c)   'True' is simplified as 'T' while 'False' is simplified as 'F'.

d)   When operation is '=', output '==' instead of '=' and add brackets to the equation, e.g., (1==2)=F.

Expected Output:

Example 1	Example 2
Enter the equation : **1 + 4** 1+4=5	Enter the equation : **10 / 6** 10/6=1.66667
Example 3	Example 4
Enter the equation : **a + 1** Invalid input.	Enter the equation : **1 < 4** 1<4=T
Example 5	Example 6
Enter the equation : **1 $ 4** Invalid operation.	Enter the equation : **5 = 5** (5==5)=T