Programming Tasks for Week-2 (Conditionals)

1. Take an integer input and check whether the number is zero or not. If it is zero, print ***zero*** in the output, otherwise print nothing.

2. Take an integer input and check whether the number is negative or non-negative.

3. Take two integers a and b as input and check whether they are equal or not.

4. Take an integer input and check whether a number is even or odd.

5. Take an integer input and check if the number is divisible by 3.

6. Take an integer input and check if the number is a multiple of both 7 and 8.

7. Take an integer input and check if both 5 and 6 are factors of the number or not.

8. Take the age of a person as input and see if he/she is eligible to vote or note. [A person must be 18 to vote.]

9. Print the bigger one among two integers. If the two numbers are equal, print any one.

10. Find the largest one among three integers.

11. Write a program that takes the cost price and selling price of an item as input and calculates the profit or loss. If there is a profit, print the amount of profit. Else if there's loss, print the amount of loss. Otherwise print **`No Profit or Loss.`**

    ```
    Input: 100 120
    Output: Profit of 20

    Input: 150 80
    Output: Loss of 70
    ```

12. Take an integer as input and print **Positive**, **Negative** or **Zero** depending on the value of the integer.

13. Take an English letter as input and check whether it is a vowel or a consonant.

14. Check whether a character is an alphabet or not

15. Check whether a character is an alphabet, digit, or special character.

16. Take an English letter as input and check whether it is uppercase or lowercase.

17. Take the age of a person as input (an integer) and his/her sex as a character (**M** for male or **F** for female). Check if he/she is eligible to marry.

    [Women are eligible when they turn 18. For men, the age is 21.]

    Sample Input: **20 M**
    Output: **Not eligible**

18. Write a program that takes two integers and a character **(+, -, *, /, %)** as input. Based on the character, perform the corresponding arithmetic operation between the two numbers and print the result. If the input operator is invalid, print an error message.

    ```
    Input: 5 3 +
    Output: 8
    ```

19. Take the marks (integer) of a student as input and check if he failed (obtained less than 40) in the subject or not.

20. Take a year (integer) as input and check Whether the entered year is Leap Year or not.
    (If the year is divisible by 100, it MUST BE divisible by 400 to be a leap year. All other years are leap years if they are simply divisible by 4)

21. Take marks (integer) of a student as input and print his grade as per the following chart:

Marks	Grade
0-39	F
40-59	C
60-69	B
70-79	A
80-100	A+
Below zero or above 100	Invalid

22. Write a C program that takes a month number (1-12) and a year as input and prints the number of days in the month. Handle leap years for February.

    Input: 2 2024
    Output: 29

23. Write a C program to check whether a given 5-digit integer is a palindrome or not.

    Input: 15251
    Output: Palindrome
    Input: 15315
    Output: Not Palindrome

24. Take a 5-digit integer and input and print the number of odd digits in it.

    Input: 15251
    Output: 4

25. Take a temperature (a decimal number) and a character signifying the scale as input. If the character is **C,** that means the temperature is in Celsius. You have to convert it to Fahrenheit. If the character is **F,** you have to convert it to Celsius.

Input: **36.7 C**
Output: **98.06**

26. Take the age of a person (integer) as input and check if he is eligible to vote or not (at least 18 years old or not).

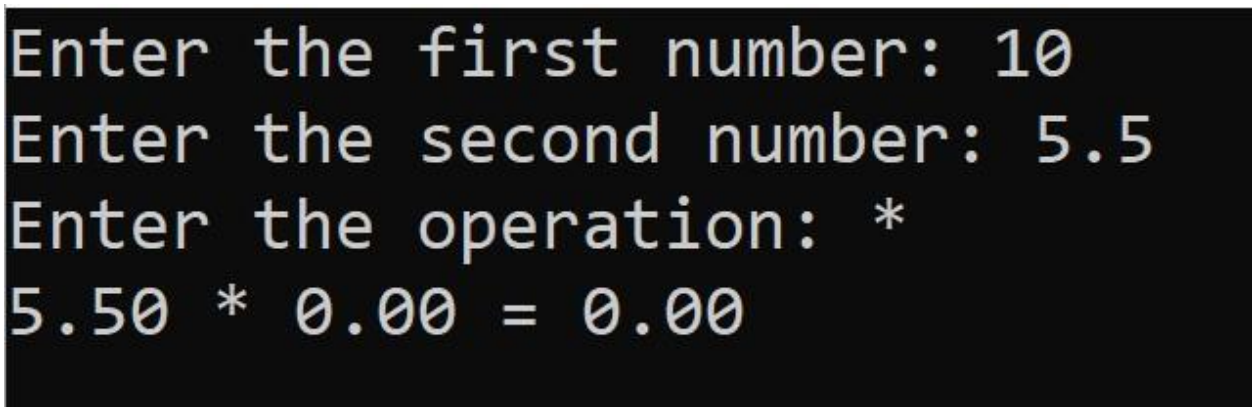
27. Take input the sizes of three sides of a triangle and check whether the triangle is equilateral, scalene, or isosceles.
(equilateral means all sides are equal, isosceles means two sides are equal, scalene means all three sides are of different size)

28. Take input the measurement of three sides (integer) of a triangle and check whether the triangle is valid or not
(sum of any two sides must be greater than the third side)

29. Take input the measurement of three angles (integer) of a triangle and check whether the triangle is valid or not (sum of three angles must be 180)

30. Take two integer numbers (x,y) as input as if they represent a point in the XY coordinate plane, and print which quadrant they belong to.
(For example- the point (1,5) belongs in the first quadrant whereas (-1,2) belongs in the second.)

31. Build a simple calculator. Take input two numbers and a character. If the character is '+', add the two numbers. Similarly do the relevant operations for '-', '*', '/' etc. See the sample input and output below:



32. Write a program that calculates the Body Mass Index (BMI) based on the input weight (in kilograms) and height (in meters).
Use the formula: $BMI = weight/height^2$

Based on the calculated BMI, print the category:

- Underweight: BMI < 18.5
- Normal weight: BMI 18.5–24.9
- Overweight: BMI 25–29.9
- Obese: BMI >= 30

```
Input: 70 1.75
Output: BMI = 22.86 (Normal weight)
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33. Write a C program to calculate the electricity bill based on the following criteria:
    - For the first 100 units: BDT 10.00 per unit
    - For the next 200 units: BDT 15.00 per unit
    - For units above 300: BDT 20.00 per unit
    - Add a surcharge of 10% on the total bill if it exceeds BDT 2000.00.