Conditional Statements Problem Set

1. Write a program to check if a given integer is even or odd.

Input	Output
4	Even
7	Odd

2. Write a program to classify a given number as positive, negative, or zero.

Input	Output
-5	Negative
0	Zero
8	Positive

3. Write a program to determine if a given year is a leap year.

Input	Output
2020	Leap Year
2023	Not a Leap Year

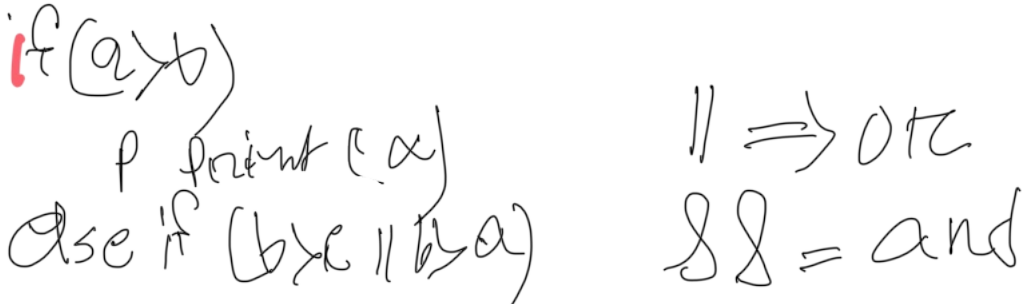
4. Write a program to assign grades based on a score:

- 90-100: A
- 80-89: B
- 70-79: C
- Below 70: Fail

Input	Output
85	B
67	Fail

5.Write a program to find the largest of three given numbers.

Input	Output
5, 8, 3	8
10, 2, 7	10



print b
else

6. Write a program to check if a number is divisible by both 3 and 5.

Input	Output
15	Divisible by both
10	Not divisible by both

if(n/3==0 && n/5==0) Both
else Not by both

7. Write a program to determine if three sides can form a valid triangle.

Input	Output
3, 4, 5	Valid Triangle
1, 2, 3	Not a Triangle

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

8. Write a program to check if a character is a vowel or consonant.

Input	Output
a	Vowel
b	Consonant

if(c=='a'||c=='e'||c=='i'||c=='o'||c=='u')
vowel
else consonant

9. Write a program to compute the roots of a quadratic equation $\mathbf{ax^2 + bx + c = 0}$.

Input	Output
a=1, b=-3, c=2	Roots are 2 and 1
a=1, b=2, c=1	Roots are -1 and -1

10. Write a program to calculate an employee's bonus based on years of service:

- If years of service > 10, the bonus is 15% of the salary.
- If years of service is between 5 and 10 (inclusive), the bonus is 10% of the salary.
- If years of service < 5, the bonus is 5% of the salary.
  Use **nested conditionals** to calculate the bonus.

Input	Output
Salary: 50000, Years: 12	Bonus: 7500
Salary: 40000, Years: 7	Bonus: 4000
Salary: 30000, Years: 3	Bonus: 1500

11. Write a program to classify a single character input as one of the following:

- Alphabet
- Digit
- Special Character

Input	Output
A	Alphabet
5	Digit
@	Special Character

12. Write a program to calculate the electricity bill based on the following rules:

- For the first 100 units, the charge is $0.5 per unit.
- For the next 100 units (101–200), the charge is $0.75 per unit.
- For the next 100 units (201–300), the charge is $1.20 per unit.
- Above 300 units, the charge is $1.50 per unit.

Input will be the total number of units consumed.

Input	Output
50	$25.00
150	$87.50
250	$210.00
350	$330.00