

### Problem 1: Leap Year Checker

#### Problem Statement:

Given a year, check whether it's a leap year or not.

#### Input:

An integer year ( $1900 \leq \text{year} \leq 3000$ )

#### Output:

Print "Leap Year" if it's a leap year, else print "Not a Leap Year".

#### Sample Input 1:

2000

#### Sample Output 1:

Leap Year

#### Sample Input 2:

1900

#### Sample Output 2:

Not a Leap Year

### Problem 2: Grade with Remarks

#### Problem Statement:

Given a student's marks (0–100), print the grade and an appropriate remark:

| Marks    | Grade | Remark            |
|----------|-------|-------------------|
| 90–100   | A     | Excellent         |
| 80–89    | B     | Very Good         |
| 70–79    | C     | Good              |
| 60–69    | D     | Satisfactory      |
| Below 60 | F     | Needs Improvement |

#### Input:

An integer representing the marks.

#### Output:

Print grade and remark in the format:

Grade: <grade>

Remark: <remark>

#### Sample Input:

85

#### Sample Output:

Grade: B

Remark: Very Good

### Problem 3: Triangle Type Checker

Problem Statement:

Given three sides of a triangle, determine its type:

"Equilateral", if all sides are equal

"Isosceles", if two sides are equal

"Scalene", if all sides are different

If the sides do not form a valid triangle, print "Not a Triangle"

Input:

Three integers a, b, c

Output:

Type of triangle or "Not a Triangle"

Sample Input:

3 3 3

Sample Output:

Equilateral

Sample Input 2:

1 2 3

Sample Output 2:

Not a Triangle

### Problem 4: Nature of Roots (Quadratic Equation)

Problem Statement:

Given coefficients a, b, and c of a quadratic equation  $ax^2 + bx + c = 0$ , determine the nature of its roots:

"Real and Equal"

"Real and Distinct"

"Imaginary"

Input:

Three integers a, b, c

Output:

Nature of the roots

Sample Input:

1 -2 1

Sample Output:  
Real and Equal

Sample Input 2:  
1 2 3

Sample Output 2:  
Imaginary

Problem 5: Day of the Week

Problem Statement:

Given an integer between 1 and 7, print the corresponding day of the week.  
If the input is invalid, print "Invalid".

Input:  
An integer d (1–7)

Output:  
Name of the day or "Invalid"

Sample Input:  
1

Sample Output:  
Monday

Sample Input 2:  
8

Sample Output 2:  
Invalid

Problem 6: Electricity Bill Calculator

Problem Statement:

Calculate the total electricity bill based on the number of units consumed:

| Units | Rate per Unit |
|-------|---------------|
|-------|---------------|

|       |      |
|-------|------|
| 0–100 | ₹1.5 |
|-------|------|

|         |    |
|---------|----|
| 101–300 | ₹2 |
|---------|----|

|           |    |
|-----------|----|
| Above 300 | ₹3 |
|-----------|----|

Input:

An integer units ( $0 \leq \text{units} \leq 10000$ )

Output:

Print total bill in format:

Bill: ₹<amount>.00

Sample Input:

350

Sample Output:

Bill: ₹750.00

Problem 7: Character Type Classifier

Problem Statement:

Given a single character, determine its type:

"Uppercase Vowel"

"Lowercase Vowel"

"Uppercase Consonant"

"Lowercase Consonant"

"Digit"

"Special Character"

Input:

A single character ch

Output:

Type of the character

Sample Input:

A

Sample Output:

Uppercase Vowel

Sample Input 2:

3

Sample Output 2:

Digit

Problem 8: Login Simulation

Problem Statement:

Hardcoded credentials:

Username: admin

Password: 1234

Given input username and password, validate them and display:

"Login successful"

"Invalid username"

"Invalid password"

"Invalid username and password"

Input:

Two strings: username and password

Output:

Appropriate message

Sample Input:

admin 1234

Sample Output:

Login successful

Sample Input 2:

admin 0000

Sample Output 2:

Invalid password

Problem 9: Piecewise Function Evaluation

Problem Statement:

Given an integer x, evaluate a piecewise function:

Copy

Edit

f(x) =

$$\begin{array}{ll} x^2 + 3x + 2 & \text{if } x < -1 \\ 2x + 5 & \text{if } -1 \leq x \leq 2 \\ x^3 - 4x & \text{if } x > 2 \end{array}$$

Input:

An integer x

Output:

Value of f(x)

Sample Input:

-2

Sample Output:

0

Sample Input 2:

3

Sample Output 2:

15

Problem 10: Loan Eligibility Checker

Problem Statement:

A person is eligible for a loan if they meet all of the following conditions:

Age  $\geq 21$

Income  $\geq ₹25,000$

Credit score  $\geq 700$

If any condition fails, print all reasons.

Input:

Three integers: age, income, creditScore

Output:

"Eligible"

or, "Not Eligible: Reason1, Reason2, ..." (list all reasons)

Sample Input:

20 30000 710

Sample Output:

Not Eligible: Age below requirement

Sample Input 2:

25 24000 650

Sample Output 2:

Not Eligible: Income too low, Credit score too low