C++-A03: Loops

Problem 1: Sum of Natural Numbers

Problem Statement:
Calculate the sum of the first N natural numbers.

Input:
An integer N.

Constraints:
1 <= N <= 10^5

Output:
The sum of the first N natural numbers.

Problem 2: Factorial Calculation

Problem Statement:
Find the factorial of a given number.

Input:
An integer N.

Constraints:
0 <= N <= 20

Output:
Factorial of N.

Problem 3: Reverse a Number

Problem Statement:
Reverse the digits of an integer.

Input:
An integer N.

Constraints:
1 <= N <= 10^9

Output:
Reversed number.

Problem 4: Count Digits

Problem Statement:
Count the number of digits in a given number.

Input:
An integer N.

Constraints:
1 <= N <= 10^9

Output:
Count of digits in the number.

Problem 5: Multiplication Table

Problem Statement:
Print the multiplication table of a given number up to 10.

Input:
An integer N.

Constraints:
1 <= N <= 100

Output:
Multiplication table up to 10.

Problem 6: Check Prime Number

Problem Statement:
Determine if a number is prime.

Input:
An integer N.

Constraints:
1 <= N <= 10^6

Output:
"Prime" or "Not Prime"

Problem 7: Sum of Digits

Problem Statement:
Find the sum of the digits of a given number.

Input:
An integer N.

Constraints:
1 <= N <= 10^9

Output:
Sum of digits.

Problem 8: GCD of Two Numbers

Problem Statement:
Find the Greatest Common Divisor (GCD) of two numbers.

Input:
Two integers A and B.

Constraints:
1 <= A, B <= 10^9

Output:
GCD of A and B.

Problem 9: Print Fibonacci Series

Problem Statement:
Print the first N terms of the Fibonacci series.

Input:
An integer N.

Constraints:
1 <= N <= 50

Output:
First N terms of the Fibonacci series.

Problem 10: Check Palindrome Number

Problem Statement:
Check if a number is a palindrome.

Input:
An integer N.

Constraints:
1 <= N <= 10^9

Output:
"Palindrome" or "Not Palindrome"

Problem 11: Print Even Numbers

Problem Statement:
Print all even numbers up to N.

Input:
An integer N.

Constraints:
1 <= N <= 10^5

Output:
All even numbers up to N.

Problem 12: Count Vowels in a String

Problem Statement:
Count the number of vowels in a given string.

Input:
A string S.

Constraints:
1 <= |S| <= 1000

Output:
Number of vowels in the string.

Problem 13: Find Largest Digit

Problem Statement:
Find the largest digit in a given number.

Input:
An integer N.

Constraints:
1 <= N <= 10^9

Output:
Largest digit in the number.

Problem 14: Armstrong Number

Problem Statement:
Check if a number is an Armstrong number.

Input:
An integer N.

Constraints:
1 <= N <= 100000

Output:
"Armstrong" or "Not Armstrong"

Problem 15: Sum of Odd Numbers

Problem Statement:
Calculate the sum of all odd numbers up to N.

Input:
An integer N.

Constraints:
1 <= N <= 10^5

Output:
Sum of odd numbers up to N.

Problem 16: Find LCM

Problem Statement:
Find the Least Common Multiple (LCM) of two numbers.

Input:
Two integers A and B.

Constraints:
1 <= A, B <= 10^9

Output:
LCM of A and B.

Problem 17: Count Factors

Problem Statement:
Count the number of factors of a given number.

Input:
An integer N.

Constraints:
1 <= N <= 10^6

Output:
Number of factors of N.

Problem 18: Decimal to Binary Conversion

Problem Statement:
Convert a decimal number to binary.

Input:
An integer N.

Constraints:
1 <= N <= 10^9

Output:
Binary representation of N.

Problem 19: Find Second Largest Number

Problem Statement:
Find the second largest number in an array.

Input:
An integer N followed by N space-separated integers.

Constraints:
2 <= N <= 1000

Output:
The second largest number in the array.