Java Programming - Problem Solving Questions

1. Sum of Natural Numbers

Write a program to calculate the sum of the first n natural numbers using a loop.

Input: n = 5

Output: 15

2. Multiplication Table

Write a program to print the multiplication table of a given number x.

Input: x = 4

Output:

4 x 1 = 4

4 x 2 = 8

...

4 x 10 = 40

3. Factorial

Write a function factorial(int n) to compute the factorial of a number using a loop.

Input: 5

Output: 120

4. Reverse a Number

Write a program to reverse the digits of a number.

Input: 1234

Output: 4321

5. Check Prime Number

Write a function to check if a given number is a prime number.

Input: 11

Output: Prime Number

6. Fibonacci Series

Write a program to print the first n terms of the Fibonacci series using a loop.

Input: n = 6

Output: 0, 1, 1, 2, 3, 5

7. Pattern - Right-angled Triangle

Write a program to print the following pattern:

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8. Pattern - Inverted Triangle

Write a program to print the following pattern:

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9. Check Perfect Number

Write a program to check if a number is a perfect number (sum of its divisors excluding itself equals the number).

Input: 28

Output: Perfect Number

10. Sum of Digits

Write a program to calculate the sum of the digits of a number.

Input: 1234

Output: 10

11. LCM and GCD

Write a program to calculate the LCM (Least Common Multiple) and GCD (Greatest Common Divisor) of two numbers using loops.

Input: 12, 18

Output: LCM = 36, GCD = 6

12. Count Factors

Write a program to count the number of factors of a number.

Input: 6

Output: 4 (Factors: 1, 2, 3, 6)

13. Sum of Series

Write a program to calculate the sum of the series:

1 + 1/2 + 1/3 + ... + 1/n

Input: n = 4

Output: 2.08333

14. Pattern - Number Pyramid

Write a program to print the following pattern:

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   1
  121
 12321
1234321
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15. Count Vowels and Consonants

Write a program to count the number of vowels and consonants in a given string using functions.

Input: 'Hello'

Output: Vowels = 2, Consonants = 3