1. Factorial of a Number

Write a program to calculate the factorial of a number using recursion or iteration.

Example:

- Input: 5
- Output: 120 (5! = 5 × 4 × 3 × 2 × 1)

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2. Prime Numbers in a Range

Write a program to print all prime numbers between 1 and a given number n.

Example:

- Input: n = 20
- Output: 2, 3, 5, 7, 11, 13, 17, 19

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3. Reverse a Number

Write a program to reverse a given number without converting it into a string.

Example:

- Input: 12345
- Output: 54321

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4. Armstrong Number

Write a program to check if a number is an Armstrong number or not. An Armstrong number (or Narcissistic number) is a number that is equal to the sum of its own digits raised to the power of the number of digits.

Example:

- Input: 153
- Output: 153 is an Armstrong number (since $1^3 + 5^3 + 3^3 = 153$)

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5. Sum of Digits of a Number

Write a program to find the sum of digits of a given number.

Example:

- Input: 12345
- Output: 15 (1 + 2 + 3 + 4 + 5)

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6. Palindrome Number

Write a program to check if a given number is a palindrome. A number is a palindrome if it reads the same backward as forward.

Example:

- Input: 121
- Output: Palindrome number

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7. Nth Fibonacci Number (Efficient Approach)

Write a program to find the nth Fibonacci number using dynamic programming or memoization to improve efficiency.

Example:

- Input: n = 10
- Output: 55 (The 10th Fibonacci number is 55)

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8. Perfect Number

Write a program to check if a given number is a perfect number. A perfect number is a number that is equal to the sum of its proper divisors (excluding itself).

Example:

- Input: 6
- Output: 6 is a perfect number (since divisors of 6 are 1, 2, 3 and 1 + 2 + 3 = 6)

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9. Sum of Even Numbers in a Range

Write a program to find the sum of all even numbers between 1 and a given number n.

Example:

- Input: n = 10
- Output: 30 (2 + 4 + 6 + 8 + 10)

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10. Fibonacci Series up to Nth Term

Write a program to print the Fibonacci series up to the nth term.

Example:

- Input: n = 6
- Output: 0 1 1 2 3 5

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11. GCD (Greatest Common Divisor) of Two Numbers

Write a program to calculate the GCD (or greatest common divisor) of two numbers using Euclid's algorithm.

Example:

- Input: a = 56, b = 98
- Output: 14 (The GCD of 56 and 98 is 14)

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12. LCM (Least Common Multiple) of Two Numbers

Write a program to calculate the LCM (or least common multiple) of two numbers.

Example:

- Input: a = 4, b = 5
- Output: 20 (The LCM of 4 and 5 is 20)

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13. Sum of Odd Numbers in a Range

Write a program to find the sum of all odd numbers between 1 and a given number n.

Example:

- Input: n = 10
- Output: 25 (1 + 3 + 5 + 7 + 9)

---

14. Count the Number of Digits in a Number

Write a program to count the number of digits in a given number.

Example:

- Input: n = 12345
- Output: 5

---

15. Fibonacci Series Using Recursion

Write a program to print the Fibonacci series using recursion.

Example:

- Input: n = 6
- Output: 0 1 1 2 3 5

---

16. Pascal's Triangle

Write a program to generate Pascal's Triangle for a given number of rows.

Example:

- Input: n = 5
- Output:

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1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

---

17. Generate Fibonacci Series up to Nth Term (Non-Recursive)

Write a program to generate Fibonacci numbers up to the nth term without using recursion.

Example:

- Input: n = 8
- Output: 0 1 1 2 3 5 8 13

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18. Check for Even or Odd Number

Write a program to check whether a given number is even or odd.

Example:

- Input: n = 4
- Output: Even number

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19. Find the Largest Prime Factor of a Number

Write a program to find the largest prime factor of a given number.

Example:

- Input: n = 100
- Output: 5 (The prime factors of 100 are 2 and 5, and 5 is the largest.)

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20. Generate Multiplication Table

Write a program to generate the multiplication table for a given number n.

Example:

- Input: n = 5
- Output:

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5 x 1 = 5

5 x 2 = 10

5 x 3 = 15

5 x 4 = 20

5 x 5 = 25