Recursion Assignment Questions

1. Print elements of an array (forward and backward)

Problem Statement:
Given an array, print all elements using recursion in both forward and reverse order.

Examples

- **Example 1:**
  Input: arr = [1, 2, 3, 4]
  Output (Forward): 1 2 3 4
  Output (Backward): 4 3 2 1

2. Find the sum of digits of a number

Problem Statement:
Given an integer N, find the sum of its digits using recursion.

Examples

- **Example 1:**
  Input: N = 1234
  Output: 10
  Explanation: 1 + 2 + 3 + 4 = 10

3. Find the product of digits of a number

Problem Statement:
Given an integer N, find the product of its digits using recursion.

Examples

- **Example 1:**
  Input: N = 231
  Output: 6
  Explanation: 2 × 3 × 1 = 6

4. Count number of digits in a number

Problem Statement:
Given an integer N, count how many digits it contains using recursion.

Examples

- **Example 1:**
  Input: N = 98765
  Output: 5

5. Find the maximum element in an array

Problem Statement:
Given an array of integers, find the maximum element using recursion.

Examples

- **Example 1:**
  Input: arr = [2, 5, 9, 1, 6]
  Output: 9

6. Check if an array is sorted (strictly increasing)

Problem Statement:
Given an array, check whether it is sorted in strictly increasing order using recursion.

Examples

- **Example 1:**
  Input: arr = [1, 2, 3, 4]
  Output: true
- **Example 2:**
  Input: arr = [1, 2, 2, 3]
  Output: false

7. Check if a number is prime

Problem Statement:
Given an integer N, check whether it is prime or not. A prime number is a number that is only divisible by 1 and itself and the total number of divisors is 2.

Examples

- **Example 1:**
  Input: N = 2
  Output: true

- **Example 2:**
  Input: N = 10
  Output: false

8. Find the first index of an element in an array

Problem Statement:
Given an array and a key, find the first occurrence (index) of the key using recursion.

Examples

- **Example 1:**
  Input: arr = [4, 2, 7, 7, 9], key = 7
  Output: 2

9. Find the last index of an element in an array

Problem Statement:
Given an array and a key, find the last occurrence (index) of the key using recursion.

Examples

- **Example 1:**
  Input: arr = [4, 2, 7, 7, 9], key = 7
  Output: 3

10. Reverse a number using recursion

Problem Statement:
Given an integer N, reverse its digits using recursion.

Examples

- **Example 1:**
  Input: N = 1234
  Output: 4321

11. Count how many times a digit appears in a number

Problem Statement:
Given an integer N and a digit D, count how many times D appears in N using recursion.

Examples

- **Example 1:**
  Input: N = 717237, D = 7
  Output: 3

12. Check if a number is a palindrome

Problem Statement:
Given an integer N, check if it is a palindrome using recursion.

Examples

- **Example 1:**
  Input: N = 121
  Output: true
- **Example 2:**
  Input: N = 123
  Output: false

13. Find GCD (HCF) of two numbers using recursion

Problem Statement:
Given two integers A and B, find their greatest common divisor (GCD) using recursion.

Examples

- **Example 1:**
  Input: A = 24, B = 36
  Output: 12

14. Print all numbers from 1 to N divisible by 3

Problem Statement:
Given an integer N, print all numbers from 1 to N that are divisible by 3 using recursion.

Examples

- **Example 1:**
  Input: N = 10
  Output: 3 6 9

15. Find power of a number using recursion

Problem Statement:
Given two integers A and B, compute A raised to the power B (A^B) using recursion.

Examples

- **Example 1:**
  Input: A = 2, B = 4
  Output: 16
  Explanation: 2^4 = 2×2×2×2 = 16