

Pointers

Q1 : Write a C program that swaps two numbers without using a temporary variable, using pointers. Explain how the swapping is achieved using pointer dereferencing and how pointer manipulation works.

2D / 3D Arrays

Q2: Write a C program to initialize a 3x3 matrix, and then print the sum of the elements in the main diagonal (i.e., elements at positions [0][0], [1][1], [2][2]).

Q3: Given a 3D array `arr[2][3][4]`, write a function to find the sum of all the elements in the array. Also, explain how memory is allocated and accessed in 3D arrays using pointers.

Recursion

Q4: Write a recursive function to compute the factorial of a given number. Demonstrate the base case and the recursive case in your solution.

Q5: Write a recursive function to find the maximum element in a given array of integers.