

Practical work 4 : Arrays, Matrices, Sorting

Exercise 1:

Write the C program that: (Write a program for each question)

1. Given an array A of N numbers,
 - a. Initializes the elements of the array to 1
 - b. Reads the elements of the array, then display them
 - c. Finds the largest number of the array (maximum)

2. Given two vectors A1 and A2 of the same size N,
 - a. Performs the addition of the two arrays
 - b. Performs the product of the two arrays

3. Provides the reverse of a given array

4. Given two arrays of numbers AA1 and AA2 sorted into the same order, it fuses them into a third array A sorted in the same order. (optional)

Exercise 2:

Given an array T and an element X,

- a. Write the C program that provides the index of the first occurrence of this element, if it exists within the array.

- b. Write the C program that provides the index of the last occurrence of this element, if it exists within the array.

- c. Write the C program that provides all the indexes of all the occurrences of this element if it exists within the array.

Exercise3 :

1. Given a matrix of $N \times M$ dimension, write the C program that
 - a. Computes the sum of elements of each column, and the sum of elements of each row.
 - b. Computes the transpose of the given matrix

2. Given a square matrix, write the C program that
 - a. Checks if its two diagonals are equal.
 - b. Verifies, if the matrix is symmetric

Exercise 4 :

Given an array of numbers, write the C program that performs the sort of its elements according to the bubble sort.