

6. Arrays (1D & 2D), Searching and sorting using arrays

CO2: Design searching and sorting algorithms using arrays and strings.

B.2D Array

1. Write a C program to convert 2D array as 1D array and find the sum of all elements in the array.
2. Write a C program to read a matrix from the user and find the sum of the diagonal elements of a matrix, find the sum of elements above diagonal and find the product of elements below diagonal.
3. Write a C program to read a matrix from the user and check whether the matrix is an identity matrix or not (**Note:** The identity matrix of size n is the $n \times n$ square matrix with ones on the main diagonal and zeros elsewhere.)
4. Write a C program to find out transpose of a matrix.
5. Write a program to read 2 matrices A and B and check whether they are identical or not.
6. Write a program to read two matrices A and B and print the following :
 - (a) A-B;
 - (b) A*B.
7. Write a C program to interchange two rows in a 2D array
8. Read 3 subject marks of four students. Write a C program to calculate and display the total marks of each student. Use a 2D (two-dimensional) array to store the marks
9. Write a C program to display the different parameters of ten men in a table. The different parameters that need to be entered are, height, weight; age and chest in cm. find the number of men who satisfy the following condition.
 - a) Age should be greater than 18 and less than 25.
 - b) Height should be between 5.2 to 5.6 inches.
 - c) Weight should be in between 45 to 60 kg.
 - d) Chest should be greater than 45 cm.
10. A and B are two arrays of same size. Assume that the values in array A are already available in the memory. Write a C program to create the array B, using the elements of array A in such a way that the elements of the first column of A are the same as the last column of array B and so on. (i.e., B is a mirror image of A). The input and output arrays would appear as follows:

Array A	Array B
8 4 3 1	1 3 4 8
2 6 4 9	9 4 6 2
3 4 7 5	5 7 4 3
8 6 9 1	1 9 6 8