

Programs on Arrays

- Program to Read and Print a $R \times C$ Matrix, R and C must be input by the User : This program will read a two dimensional array (Matrix), number of rows (R) and number of columns (C) will be read through the User.
- Program to Read a Matrix and find Sum and Product of all elements : This program will read a matrix and prints sum and product of all elements of the two dimensional array.
- Program to find Sum of all elements of each row of a matrix : This Program will read a Matrix (two dimensional arrays) and print the sum of all elements of each row.
- Program to Transpose a Matrix : This Program will read a matrix and print its transpose matrix.
- Program to Read a Matrix and Print Diagonals : This Program will read a matrix of $M \times N$ dimensions and prints only diagonal's elements of the matrix.
- Program to find sum and subtraction of two matrices : This Program will read two matrices and find their sum (addition) and subtraction, in addition matrix addition of both matrixes' elements will be assigned and in the subtraction matrix, subtraction of both matrixes' elements will be assigned.
- Program to find multiplication of two matrices : This Program will read two matrices and make a third matrix, which will contain the multiplication of both input matrices.
- Program to print lower diagonal of a matrix : This Program will read a square matrix and print its lower diagonal.
- program for matrix multiplication using recursion : Given two matrices, we have to find their multiplication using the recursion.
- program to check two matrices are identical or not : Given two matrices, we have to check whether they are identical or not using Program.
- program to check a given matrix is an identity matrix or not : Given a matrix, we have to check whether the matrix is an identity matrix or not using Program.
- program to check a given matrix is a sparse matrix or not : Given a matrix, and we have to check whether the matrix is a sparse matrix or not using Program.
- program to interchange the rows in the matrix : Given a matrix, and we have to interchange the specified rows in the matrix using Program.
- program to interchange the columns in the matrix : Given a matrix, and we have to interchange the specified columns using Program.
- program to arrange row elements in ascending order : Given an array, we have to arrange the row elements in ascending order using Program.

- program to arrange column elements in ascending order : Given a matrix, we have to arrange column elements in ascending order using Program.
- program to find the frequency of even numbers in matrix : Given a matrix, we have to find the frequency of even numbers in matrix using Program.
- program to find the sum of main and opposite diagonal elements of a matrix : Given a matrix, we have to find the sum of main and opposite diagonal elements of a matrix using Program.
- program to find the normal of a matrix : Given a matrix, we have to find the normal of a matrix using Program.
- program to find the trace of matrix : Trace of a $n \times n$ square matrix is sum of diagonal elements. Given a square matrix, we have to find the trace of matrix.
- program to print the upper triangular matrix : Given a 3×3 matrix, we have to print the upper triangular matrix using Program.
- Write a Program to store elements in an array and print it.
- Write a Program to read n number of values in an array and display it in reverse order.
- Write a Program to find the sum of all elements of the array.
- Write a Program to copy the elements of one array into another array.
- Write a Program to count a total number of duplicate elements in an array.
- Write a Program to print all unique elements in an array.
- Write a Program to merge two arrays of same size sorted in descending order.
- Write a Program to count the frequency of each element of an array.
- Write a Program to find the maximum and minimum element in an array.
- Write a Program to separate odd and even integers in separate arrays.
- Write a Program to sort elements of array in ascending order.
- Write a Program to sort elements of the array in descending order.
- Write a Program to insert New value in the array (sorted list).
- Write a Program to insert New value in the array (unsorted list).
- Write a Program to delete an element at desired position from an array.
- Write a Program to find the second largest element in an array.
- Write a Program to find the second smallest element in an array.
- Write a Program for a 2D array of size 3×3 and print the matrix.
- Write a Program for addition of two Matrices of same size.
- Write a Program for subtraction of two Matrices.
- Write a Program for multiplication of two square Matrices.
- Write a Program to find transpose of a given matrix.

- Write a Program to find sum of right diagonals of a matrix.
- Write a Program to find the sum of left diagonals of a matrix.
- Write a Program to find sum of rows and columns of a Matrix.
- Write a Program to print or display the lower triangular of a given matrix.
- Write a Program to print or display upper triangular matrix.
- Write a Program to calculate determinant of a 3 x 3 matrix.
- Write a Program to accept a matrix and determine whether it is a sparse matrix.
- Write a Program to accept two matrices and check whether they are equal.
- Write a Program to check whether a given matrix is an identity matrix.
- Write a Program to find a pair with given sum in the array.
- Write a Program to find the majority element of an array
- Write a Program to find the number occurring odd number of times in an array.
- Write a Program to find the largest sum of contiguous subarray of an array.
- Write a Program to find the missing number from a given array. There are no duplicates in list.
- Write a Program to find the pivot element of a sorted and rotated array using binary search.
- Write a Program to merge one sorted array into another sorted array.
- Write a Program to rotate an array by N positions.
- Write a Program to find the ceiling in a sorted array.
- Write a Program to find the Floor and Ceil of the number 0 to 10 from a sorted array.
- Write a Program to find the smallest missing element from a sorted array.
- Write a Program to print next greater elements in a given unsorted array. Elements for which no greater element exist, consider next greater element as -1.
- Write a Program to find the two repeating elements in a given array.
- Write a Program to find two elements whose sum is closest to zero.
- Write a Program to find the smallest positive number missing from an unsorted array.
- Write a Program to find a subarray with given sum from the given array.
- Write a Program to find if a given integer x appears more than $n/2$ times in a sorted array of n integers.
- Write a Program to find majority element of an array.
- Write a Program to print a matrix in spiral form.
- Write a Program to find the maximum circular subarray sum of a given array.
- Write a Program to count the number of triangles can be formed from a given array.
- Write a Program to find the number of times (frequency) occurs a given number in an array.
- Write a Program to sort an array of 0s, 1s and 2s.

- Write a Program to check whether an array is subset of another array.
- Write a Program to return the minimum number of jumps to reach the end of the array.
- Write a Program to find minimum element in a sorted and rotated array.
- Write a Program to move all zeroes to the end of a given array.
- Write a Program to return the counting sort on an array.
- Write a Program to find the row with maximum number of 1s.
- Write a Program to find maximum product subarray in a given array.
- Write a Program to find the largest subarray with equal number of 0s and 1s.
- Write a Program to replace every element with the greatest element on its right side.
- Write a Program to find the median of two sorted arrays of same size.
- Write a Program to find the product of an array such that product is equal to the product of all the elements of arr[] except arr[i].
- Write a Program to count the number of inversion in a given array.
- Write a Program to search an element in a row wise and column wise sorted matrix.
- Write a Program to return maximum sum such that no two elements are adjacent.
- Write a Program to find out the maximum difference between any two elements such that larger element appears after the smaller number.
- Write a Program to find two numbers that occur odd number of times in an array.
- Write a Program to find the median of two sorted arrays of different size.
- Write a Program to return only the unique rows from a given binary matrix.
- Write a Program to print all unique elements of an unsorted array.
- Write a Program to find the sum of upper triangular elements of a matrix.
- Write a Program to find the sum of lower triangular elements of a matrix.
- Write a Program to find largest number possible from the set of given numbers.
- Write a Program to generate a random permutation of array elements.
- Write a Program to find four array elements whose sum is equal to given number.
- Write a Program to sort n numbers in range from 0 to n^2 .
- Write a Program to count all distinct pairs for a specific difference.
- Write a Program to find the maximum repeating number in a given array.
- Write a Program to print all possible combinations of r elements in a given array.
- Write a Program to find a pair with the given difference.
- Write a Program to find the minimum distance between two numbers in a given array.
- Write a Program to Count all possible paths from top left to bottom right of a m X n matrix.
- Write a Program find the equilibrium index of an array.

- Write a Program to find the maximum element in an array which is first increasing and then decreasing.
- Write a Program to find the maximum $n - m$ such that $\text{array}[n] > \text{array}[m]$ from a given array[].
- Write a Program to find maximum size square sub-matrix with all 1s.
- Given an array of size n such that every element is in the range from 0 to $n-1$. Write a Program to rearrange the given array so that $\text{arr}[i]$ becomes $\text{arr}[\text{arr}[i]]$.
- Given an unsorted array of specific size. Write a Program to find the minimum length of subarray such that, sorting this subarray makes the whole array sorted.
- Write a Program that checks whether the elements in an unsorted array appears consecutively or not.
- Write a Program to rearrange positive and negative numbers alternatively in a given array.
- Write a Program to find the maximum for each and every contiguous subarray of size k from a given array.
- Write a Program to segregate 0s and 1s in an array.
- Write a Program to segregate even and odd elements on an array.
- Write a Program to find the index of first peak element in a given array.
- Write a Program to return the largest span found in the leftmost and rightmost appearances of same value(values are inclusive) in a given array.
- Write a Program to check if an array can be splitted in such a position that, the sum of left side of the splitting is equal to the sum of the right side.
- Write a Program to return the number of clumps(a series of 2 or more adjacent elements of the same value) in a given array.
- Write a Program to rearrange an array such that $\text{arr}[i]=i$.
- Write a Program to rearrange an array in such an order that– smallest, largest, 2nd smallest, 2nd largest and on.
- Write a Program to update every array element with multiplication of previous and next numbers in array.
- Write a Program to rearrange an array such that even index elements are smaller and odd index elements are greater than their next.
- Write a Program to find minimum number of swaps required to gather all elements less than or equals to k .

- Write a Program to convert the array in such a way that double its value and replace the next number with 0 if current and next element are same and rearrange the array such that all 0's shifted to the end.
- Basic array operations (Insert, delete and search an element)
- Smallest and largest element in an array
- Sum of elements in an array
- Check if two arrays are the same or not
- Finding the array type
- Sum of positive square elements in an array
- Second smallest element in an array
- Sorting the elements of an array
- Reversing an array
- Longest palindrome in an array
- Count distinct elements of an array
- Non-repeating elements of an array
- Repeating elements in an array
- Remove duplicate elements in an array
- Minimum scalar product of two vectors
- Maximum scalar product of two vectors
- Can the numbers of an array be made equal?
- Missing elements of a range
- Triplets with a given sum
- Number of even and odd elements in an array
- Frequency of each element of an array
- Symmetric pairs in an array
- Maximum product subarray in a given array
- Arrays are disjoint or not
- Array is a subset of another array or not
- Can all numbers of an array be made equal
- Minimum sum of absolute difference of given array
- Sorting elements of an array by frequency
- Sort an array according to the order defined by another array
- Replace each element of the array by its rank in the array
- Equilibrium index of an array

- Array rotation - Left and right
- Block swap algorithm for array rotation
- Juggling algorithm for array rotation
- Circular rotation of an array by K positions
- Convert an array into a zig-zag fashion
- Merge two sorted arrays
- Longest subarray having an average greater than or equal to k
- Rearrange positive and negative numbers in an array
- Sum of all odd frequency elements in an array
- Median of two sorted arrays
- 0-1 Knapsack problem

2-D Arrays

- Matrix operations (Addition, subtraction and multiplication)
- Transpose of a matrix
- Upper triangular matrix or not
- Lower triangular matrix or not
- The maximum element in a row
- The maximum element in a column
- Sum of each row and column of a matrix
- Saddle point coordinates of a given matrix
- Sum of elements in the zig-zag sequence of a matrix
- Sum of boundary elements of a matrix
- Matrix printing in aspiral form
- Rotate the matrix by K times
- Matrix rotation by 90 degrees clockwise and anticlockwise
- Maximum size of square submatrix with all 1s in a binary matrix
- Reverse an Array
- Insert Element to Array
- Delete Element from Array
- Largest and Smallest Element in Array
- Sum of N Numbers using Arrays
- Sort Array Elements
- Remove Duplicate Elements

- Sparse Matrix
- Square Matrix
- Determinant of 2x2 matrix
- Normal and Trace of Square Matrix
- Addition and Subtraction of Matrices
- Matrix Multiplication

List of array and matrix programming exercises

- Write a Program to read and print elements of array. - using recursion.
- Write a Program to print all negative elements in an array.
- Write a Program to find sum of all array elements. - using recursion.
- Write a Program to find maximum and minimum element in an array. - using recursion.
- Write a Program to find second largest element in an array.
- Write a Program to count total number of even and odd elements in an array.
- Write a Program to count total number of negative elements in an array.
- Write a Program to copy all elements from an array to another array.
- Write a Program to insert an element in an array.
- Write a Program to delete an element from an array at specified position.
- Write a Program to count frequency of each element in an array.
- Write a Program to print all unique elements in the array.
- Write a Program to count total number of duplicate elements in an array.
- Write a Program to delete all duplicate elements from an array.
- Write a Program to merge two array to third array.
- Write a Program to find reverse of an array.
- Write a Program to put even and odd elements of array in two separate array.
- Write a Program to search an element in an array.
- Write a Program to sort array elements in ascending or descending order.
- Write a Program to sort even and odd elements of array separately.
- Write a Program to left rotate an array.
- Write a Program to right rotate an array.

List of matrix programming exercises

- Write a Program to add two matrices.
- Write a Program to subtract two matrices.

- Write a Program to perform Scalar matrix multiplication.
- Write a Program to multiply two matrices.
- Write a Program to check whether two matrices are equal or not.
- Write a Program to find sum of main diagonal elements of a matrix.
- Write a Program to find sum of minor diagonal elements of a matrix.
- Write a Program to find sum of each row and column of a matrix.
- Write a Program to interchange diagonals of a matrix.
- Write a Program to find upper triangular matrix.
- Write a Program to find lower triangular matrix.
- Write a Program to find sum of upper triangular matrix.
- Write a Program to find sum of lower triangular matrix.
- Write a Program to find transpose of a matrix.
- Write a Program to find determinant of a matrix.
- Write a Program to check Identity matrix.
- Write a Program to check Sparse matrix.
- Write a Program to check Symmetric matrix.