Problems on Arrays

1. Write a program in C to store elements in an array and print it.

Test Data :

Input 10 elements in the array :

element - 0 : 1

element - 1 : 1

element - 2 : 2

....

Expected Output :

Elements in array are: 1 1 2 3 4 5 6 7 8 9

2. Write a program in C to read n number of values in an array and display it in reverse order.

Test Data :

Input the number of elements to store in the array :3

Input 3 number of elements in the array :

element - 0 : 2

element - 1 : 5

element - 2 : 7

Expected Output :

The values store into the array are :

2 5 7

The values store into the array in reverse are :

7 5 2

3. Write a program in C to find the sum of all elements of the array.

Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 2

element - 1 : 5

element - 2 : 8

Expected Output :

Sum of all elements stored in the array is : 15

4. Write a program in C to copy the elements of one array into another array.

Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 15

element - 1 : 10

element - 2 : 12

Expected Output :

The elements stored in the first array are :

15 10 12

The elements copied into the second array are :

15 10 12

5. Write a program in C to count a total number of duplicate elements in an array.
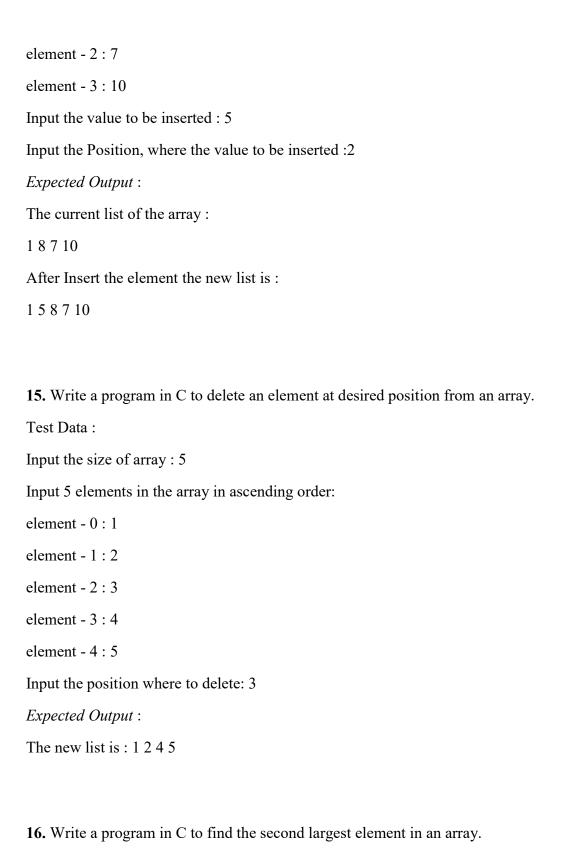
Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 5

element - 1 : 1

element - 2 : 1

Expected Output :

Total number of duplicate elements found in the array is : 1

6. Write a program in C to print all unique elements in an array.

Test Data :

Print all unique elements of an array:

Input the number of elements to be stored in the array: 4

Input 4 elements in the array :

element - 0 : 3

element - 1 : 2

element - 2 : 2

element - 3 : 5

Expected Output :

The unique elements found in the array are:

3 5

7. Write a program in C to merge two arrays of same size sorted in decending order.

Test Data :

Input the number of elements to be stored in the first array :3

Input 3 elements in the array :

element - 0 : 1

element - 1 : 2

element - 2 : 3

Input the number of elements to be stored in the second array :3

Input 3 elements in the array :

element - 0 : 1

element - 1 : 2

element - 2 : 3

Expected Output :

The merged array in decending order is :

3 3 2 2 1 1

8. Write a program in C to count the frequency of each element of an array.

Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 25

element - 1 : 12

element - 2 : 43

Expected Output :

The frequency of all elements of an array :

25 occurs 1 times

12 occurs 1 times

43 occurs 1 times

9. Write a program in C to find the maximum and minimum element in an array.

Test Data :

Input the number of elements to be stored in the array :3

Input 3 elements in the array :

element - 0 : 45

element - 1 : 25

element - 2 : 21

Expected Output :

Maximum element is : 45

Minimum element is : 21

10. Write a program in C to separate odd and even integers in separate arrays.

Test Data :

Input the number of elements to be stored in the array :5

Input 5 elements in the array :

element - 0 : 25

element - 1 : 47

element - 2 : 42

element - 3 : 56

element - 4 : 32

Expected Output :

The Even elements are :

42 56 32

The Odd elements are :

25 47

11. Write a program in C to sort elements of array in ascending order.

Test Data :

Input the size of array : 5

Input 5 elements in the array :

element - 0 : 2

element - 1 : 7

element - 2 : 4

element - 3 : 5

element - 4 : 9

Expected Output :

Elements of array in sorted ascending order:

2 4 5 7 9

12. Write a program in C to sort elements of the array in descending order.

Test Data :

Input the size of array : 3

Input 3 elements in the array :

element - 0 : 5

element - 1 : 9

element - 2 : 1

Expected Output :

Elements of the array in sorted descending order:

9 5 1

13. Write a program in C to insert New value in the array (sorted list)..

Test Data :

Insert New value in the sorted array :

Input the size of array : 5

Input 5 elements in the array in ascending order:

element - 0 : 2

element - 1 : 5

element - 2 : 7

element - 3 : 9

element - 4 : 11

Input the value to be inserted : 8

The exist array list is :

2 5 7 9 11

After Insert the list is :

2 5 7 8 9 11

Process exited after 39.33 seconds with return value 10

Press any key to continue . . .

14. Write a program in C to insert New value in the array (unsorted list).

Test Data :

Input the size of array : 4

Input 4 elements in the array in ascending order:

element - 0 : 1

element - 1 : 8

element - 2 : 7

element - 3 : 10

Input the value to be inserted : 5

Input the Position, where the value to be inserted :2

Expected Output :

The current list of the array :

1 8 7 10

After Insert the element the new list is :

1 5 8 7 10

15. Write a program in C to delete an element at desired position from an array.

Test Data :

Input the size of array : 5

Input 5 elements in the array in ascending order:

element - 0 : 1

element - 1 : 2

element - 2 : 3

element - 3 : 4

element - 4 : 5

Input the position where to delete: 3

Expected Output :

The new list is : 1 2 4 5

16. Write a program in C to find the second largest element in an array.

Test Data :

Input the size of array : 5

Input 5 elements in the array :

element - 0 : 2

element - 1 : 9

element - 2 : 1

element - 3 : 4

element - 4 : 6

Expected Output :

The Second largest element in the array is : 6

17. Write a program in C to find the second smallest element in an array.

Test Data :

Input the size of array : 5

Input 5 elements in the array (value must be <9999) :

element - 0 : 0

element - 1 : 9

element - 2 : 4

element - 3 : 6

element - 4 : 5

Expected Output :

The Second smallest element in the array is : 4

18. Write a program in C for a 2D array of size 3x3 and print the matrix.
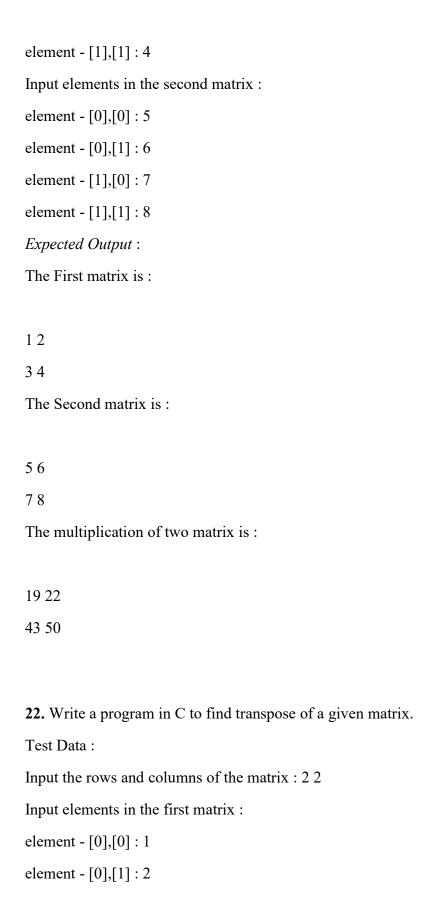
Test Data :
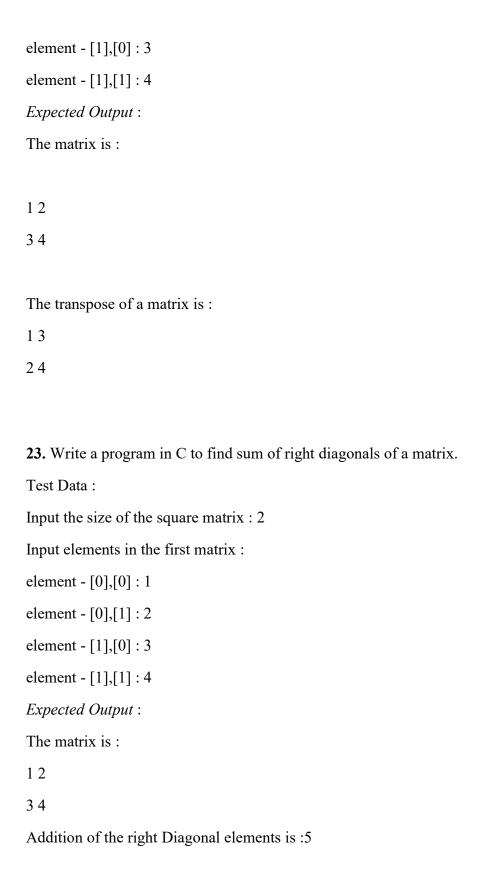
Input elements in the matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [0],[2] : 3

element - [1],[0] : 4

element - [1],[1] : 5

element - [1],[2] : 6

element - [2],[0] : 7

element - [2],[1] : 8

element - [2],[2] : 9

Expected Output :

The matrix is :

1 2 3

4 5 6

7 8 9

19. Write a program in C for addition of two Matrices of same size.

Test Data :

Input the size of the square matrix (less than 5): 2

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Input elements in the second matrix :

element - [0],[0] : 5

element - [0],[1] : 6

element - [1],[0] : 7

element - [1],[1] : 8

Expected Output :

The First matrix is :

1 2

3 4

The Second matrix is :

5 6

7 8

The Addition of two matrix is :

6 8

10 12

20. Write a program in C for subtraction of two Matrices.

Test Data :

Input the size of the square matrix (less than 5): 2

Input elements in the first matrix :

element - [0],[0] : 5

element - [0],[1] : 6

element - [1],[0] : 7

element - [1],[1] : 8

Input elements in the second matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Expected Output :

The First matrix is :

5 6

7 8

The Second matrix is :

1 2

3 4

The Subtraction of two matrix is :

4 4

4 4

21. Write a program in C for multiplication of two square Matrices.

Test Data :

Input the rows and columns of first matrix : 2 2

Input the rows and columns of second matrix : 2 2

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Input elements in the second matrix :

element - [0],[0] : 5

element - [0],[1] : 6

element - [1],[0] : 7

element - [1],[1] : 8

Expected Output :

The First matrix is :

1 2

3 4

The Second matrix is :

5 6

7 8

The multiplication of two matrix is :

19 22

43 50

22. Write a program in C to find transpose of a given matrix.

Test Data :

Input the rows and columns of the matrix : 2 2

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Expected Output :

The matrix is :

1 2

3 4

The transpose of a matrix is :

1 3

2 4

23. Write a program in C to find sum of right diagonals of a matrix.

Test Data :

Input the size of the square matrix : 2

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Expected Output :

The matrix is :

1 2

3 4

Addition of the right Diagonal elements is :5

Elements in array are:

24. Write a program in C to find the sum of left diagonals of a matrix.

Test Data :

Input the size of the square matrix : 2

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Expected Output :

The matrix is :

1 2

3 4

Addition of the left Diagonal elements is :5

25. Write a program in C to find sum of rows an columns of a Matrix.

Test Data :

Input the size of the square matrix : 2

Input elements in the first matrix :

element - [0],[0] : 5

element - [0],[1] : 6

element - [1],[0] : 7

element - [1],[1] : 8

Expected Output :

The First matrix is :

The matrix is :

5 6

7 8

The sum or rows and columns of the matrix is :

5 6 11

7 8 15

12 14

26. Write a program in C to print or display the lower triangular of a given matrix.

Test Data :

Input the size of the square matrix : 3

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [0],[2] : 3

element - [1],[0] : 4

element - [1],[1] : 5

element - [1],[2] : 6

element - [2],[0] : 7

element - [2],[1] : 8

element - [2],[2] : 9

Expected Output :

The matrix is :

1 2 3

4 5 6

7 8 9

Setting zero in lower triangular matrix

1 2 3

0 5 6

0 0 9

27. Write a program in C to print or display upper triangular matrix.

Test Data :

Input the size of the square matrix : 3

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [0],[2] : 3

element - [1],[0] : 4

element - [1],[1] : 5

element - [1],[2] : 6

element - [2],[0] : 7

element - [2],[1] : 8

element - [2],[2] : 9

Expected Output :

The matrix is :

1 2 3

4 5 6

7 8 9

Setting zero in upper triangular matrix

1 0 0

4 5 0

7 8 9

28. Write a program in C to calculate determinant of a 3 x 3 matrix.

Test Data :

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 0

element - [0],[2] : -1

element - [1],[0] : 0

element - [1],[1] : 0

element - [1],[2] : 1

element - [2],[0] : -1

element - [2],[1] : -1

element - [2],[2] : 0

Expected Output :

The matrix is :

1 0 -1

0 0 1

-1 -1 0

The Determinant of the matrix is: 1

29. Write a program in C to accept a matrix and determine whether it is a sparse matrix.

Test Data :

Input the number of rows of the matrix : 2

Input the number of columns of the matrix : 2

Input elements in the first matrix :

element - [0],[0] : 0

element - [0],[1] : 0

element - [1],[0] : 1

element - [1],[1] : 0

Expected Output :

The given matrix is sparse matrix.

There are 3 number of zeros in the matrix

30. Write a program in C to accept two matrices and check whether they are equal.

Test Data :

Input Rows and Columns of the 1st matrix :2 2

Input Rows and Columns of the 2nd matrix :2 2

Input elements in the first matrix :
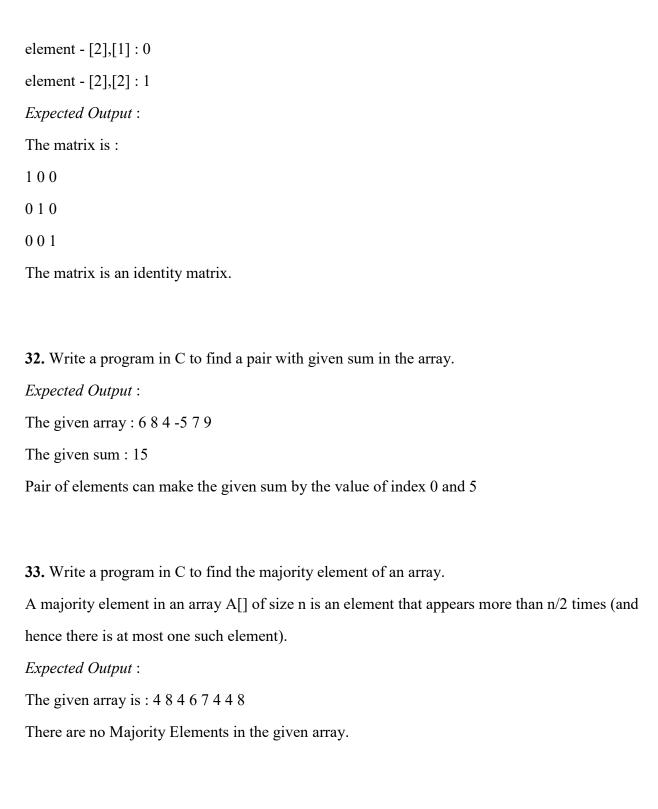
element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Input elements in the second matrix :

element - [0],[0] : 1

element - [0],[1] : 2

element - [1],[0] : 3

element - [1],[1] : 4

Expected Output :

The first matrix is :

1 2

3 4

The second matrix is :

1 2

3 4

The Matrices can be compared :

Two matrices are equal.

31. Write a program in C to check whether a given matrix is an identity matrix.

Test Data :

Input number of Rows for the matrix :3

Input number of Columns for the matrix :3

Input elements in the first matrix :

element - [0],[0] : 1

element - [0],[1] : 0

element - [0],[2] : 0

element - [1],[0] : 0

element - [1],[1] : 1

element - [1],[2] : 0

element - [2],[0] : 0

element - [2],[1] : 0

element - [2],[2] : 1

Expected Output :

The matrix is :

1 0 0

0 1 0

0 0 1

The matrix is an identity matrix.

32. Write a program in C to find a pair with given sum in the array.

Expected Output :

The given array : 6 8 4 -5 7 9

The given sum : 15

Pair of elements can make the given sum by the value of index 0 and 5

33. Write a program in C to find the majority element of an array.

A majority element in an array A[] of size n is an element that appears more than n/2 times (and hence there is at most one such element).

Expected Output :

The given array is : 4 8 4 6 7 4 4 8

There are no Majority Elements in the given array.

34. Write a program in C to find the number occurring odd number of times in an array.

All numbers occur even number of times except one number which occurs odd number of times.

Expected Output :

The given array is : 8 3 8 5 4 3 4 3 5

The element odd number of times is : 3

35. Write a program in C to find the largest sum of contiguous subarray of an array.

Expected Output :

The given array is : 8 3 8 -5 4 3 -4 3 5

The largest sum of contiguous subarray is : 21

36. Write a program in C to find the missing number from a given array. There are no duplicates in list.

Expected Output :

The given array is : 1 3 4 2 5 6 9 8

The missing number is : 7

37. Write a program in C to find the pivot element of a sorted and rotated array using binary search.

Pivot element is the only element in input array which is smaller than it's previous element.

A pivot element divided a sorted rotated array into two monotonically increasing array.

Expected Output :

The given array is : 14 23 7 9 3 6 18 22 16 36

The Pivot Element in the array is : 3

38. Write a program in C to merge one sorted array into another sorted array.

Pivot element is the only element in input array which is smaller than it's previous element.

A pivot element divided a sorted rotated array into two monotonically increasing array.

Expected Output :

The given Large Array is : 10 12 14 16 18 20 22

The given Small Array is : 11 13 15 17 19 21

After merged the new Array is :

10 11 12 13 14 15 16 17 18 19 20 21 22

39. Write a program in C to rotate an array by N positions.

Expected Output :

The given array is : 0 3 6 9 12 14 18 20 22 25 27

From 4th position the values of the array are : 12 14 18 20 22 25 27

Before 4th position the values of the array are : 0 3 6 9

After rotating from 4th position the array is:

12 14 18 20 22 25 27 0 3 6 9

40. Write a program in C to find the ceiling in a sorted array.

N.B.: Given a sorted array in ascending order and a value x, the ceiling of x is the smallest element in array greater than or equal to x, and the floor is the greatest element smaller than or equal to x.

Expected Output :

The given array is : 1 3 4 7 8 9 9 10

The ceiling of 5 is: 7

41. Write a program in C to find the Floor and Ceil of the number 0 to 10 from a sroted array.

Expected Output :

The given array is : 1 3 5 7 8 9

Number: 0 ceiling is: 1 floor is: -1

Number: 1 ceiling is: 1 floor is: 1

Number: 2 ceiling is: 3 floor is: 1

Number: 3 ceiling is: 3 floor is: 3

Number: 4 ceiling is: 5 floor is: 3

Number: 5 ceiling is: 5 floor is: 5

Number: 6 ceiling is: 7 floor is: 5

Number: 7 ceiling is: 7 floor is: 7

Number: 8 ceiling is: 8 floor is: 8

Number: 9 ceiling is: 9 floor is: 9

Number: 10 ceiling is: -1 floor is: 9

42. Write a program in C to find the smallest missing element from a sorted array.

Expected Output :

The given array is : 0 1 3 4 5 6 7 9

The missing smallest element is: 2

43. Write a program in C to to print next greater elements in a given unsorted array. Elements for which no greater element exist, consider next greater element as -1.

Expected Output :

The given array is : 5 3 10 9 6 13

Next Bigger Elements are:

Next bigger element of 5 in the array is: 10

Next bigger element of 3 in the array is: 10

Next bigger element of 10 in the array is: 13

Next bigger element of 9 in the array is: 13

Next bigger element of 6 in the array is: 13

Next bigger element of 13 in the array is: -1

Next Bigger Elements Array:

10 10 13 13 13 -1

44. Write a program in C to find the two repeating elements in a given array.

Expected Output :

The given array is : 2 7 4 7 8 3 4

The repeating elements are: 7 4

45. Write a program in C to find two elements whose sum is closest to zero.

Expected Output :

The given array is : 38 44 63 -51 -35 19 84 -69 4 -46

The Pair of elements whose sum is minimum are:

[44, -46]

46. Write a program in C to find the smallest positive number missing from an unsorted array.

Expected Output :

The given array is : 3 1 4 10 -5 15 2 -10 -20

The smallest positive number missed is: 5

47. Write a program in C to find a subarray with given sum from the given array.

Expected Output :

The given array is : 3 4 -7 1 3 3 1 -4

[0..1] -- { 3 4 }

[0..5] -- { 3 4 -7 1 3 3 }

[3..5] -- { 1 3 3 }

[4..6] -- { 3 3 1 }

48. Write a program in C to find if a given integer x appears more than n/2 times in a sorted array of n integers.

Expected Output :

The given array is : 1 3 3 5 4 3 2 3 3

The given value is : 3

3 appears more than 4 times in the given array[]

49. Write a program in C to find majority element of an array.

Expected Output :

The given array is : 1 3 3 7 4 3 2 3 3

The majority of the Element : 3

50. Write a program in C to print a matrix in spiral form.

Expected Output :

The given array in matrix form is :

1 2 3 4 5

6 7 8 9 10

11 12 13 14 15

16 17 18 19 20

The spiral form of above matrix is:

1 2 3 4 5 10 15 20 19 18 17 16 11 6 7 8 9 14 13 12

51. Write a program in C to find the maximum circular subarray sum of a given array.

Expected Output :

The given array is : 10 8 -20 5 -3 -5 10 -13 11

The maximum circular sum in the above array is: 29

52. Write a program in C to count the number of triangles can be fromed from a given array.

Expected Output :

The given array is : 6 18 9 7 10

Number of possible triangles can be formed from the array is: 5

53. Write a program in C to find the number of times (frequency) occurs a given number in an array.

Expected Output :

The given array is : 2 3 4 4 4 4 5 5 5 6 7 7

The number of times the number 4 occurs in the given array is: 4

54. Write a program in C to sort an array of 0s, 1s and 2s.

Expected Output :

The given array is : 0 1 2 2 1 0 0 2 0 1 1 0

After sortig the elements in the array are:

0 0 0 0 0 1 1 1 1 2 2 2

55. Write a program in C to check whether an array is subset of another array.

Expected Output :

The given first array is : 4 8 7 11 6 9 5 0 2

The given second array is : 5 4 2 0 6

The second array is the subset of first array.

56. Write a program in C to return the minimum number of jumps to reach the end of the array.

Expected Output :

The given array is : 1 3 5 8 9 2 6 7 6 8 9 1 1 1

The minimum of number of jumps is required to reach the end is: 3

57. Write a program in C to find minimum element in a sorted and rotated array.

Expected Output :

The given array is : 3 4 5 6 7 9 2

The minimum element in the above array is: 2

58. Write a program in C to move all zeroes to the end of a given array.

Expected Output :

The given array is : 2 5 7 0 4 0 7 -5 8 0

The new array is:

2 5 7 8 4 -5 7 0 0 0

59. Write a program in C to return the counting sort on an array.

Expected Output :

The given array is : 4 14 8 0 2 5 2 1 0 17 9 0 5

After sorting the elements in the array are: 0 0 0 1 2 2 4 5 5 8 9 14 17

60. Write a program in C to find the row with maximum number of 1s.

Expected Output :

The given 2D array is :

0 1 0 1 1

1 1 1 1 1

1 0 0 1 0

0 0 0 0 0

1 0 0 0 1

The index of row with maximum 1s is: 1

61. Write a program in C to find maximum product subarray in a given array.

Expected Output :

The given array is : -4 9 -7 0 -15 6 2 -3

The maximum product of a sub-array in the given array is: 540

62. Write a program in C to find the largest subarray with equal number of 0s and 1s.

Expected Output :

The given array is : 0 1 0 0 1 1 0 1 1 1

Subarray found from the index 0 to 7

63. Write a program in C to replace every element with the greatest element on its right side.

Expected Output :

The given array is : 7 5 8 9 6 8 5 7 4 6

After replace the modified array is: 9 9 9 8 8 7 7 6 6 0

64. Write a program in C to find the median of two sorted arrays of same size.

Expected Output :

The given array - 1 is : 1 5 13 24 35

The given array - 2 is : 3 8 15 17 32

The Median of the 2 sorted arrays is: 14

65. Write a program in C to find the product of an array such that product is equal to the product of all the elements of arr[] except arr[i].

Expected Output :

The given array is : 1 2 3 4 5 6

The product array is: 720 360 240 180 144 120

66. Write a program in C to count the number of inversion in a given array.

Expected Output :

The given array is : 1 9 6 4 5

The inversions are: (9, 6) (9, 4) (9, 5) (6, 4) (6, 5)

The number of inversion can be formed from the array is: 5

67. Write a program in C to search an element in a row wise and column wise sorted matrix.

Expected Output :

The given array in matrix form is :

15 23 31 39

18 26 36 43

25 28 37 48

30 34 39 50

The given value for searching is: 37

The element Found at the position in the matrix is: 2, 2

68. Write a program in C to return maximum sum such that no two elements are adjacent.

Expected Output :

The given array is : 1 3 5 9 7 10 1 10 100

The maximum sum from the array such that no two elements are adjacent is: 122

69. Write a program in C to find out the maximum difference between any two elements such that larger element appears after the smaller number.
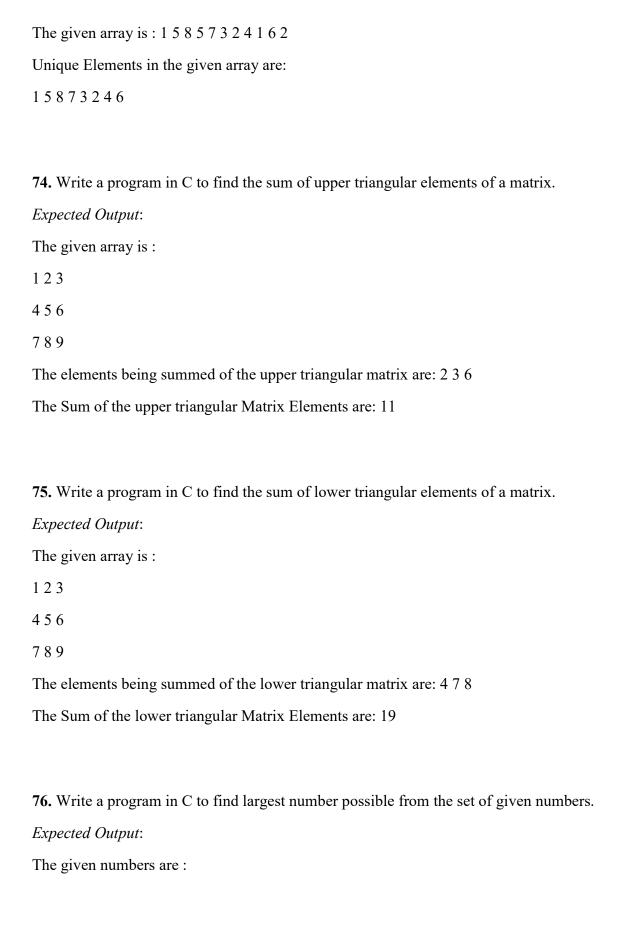
Expected Output :

The given array is : 7 9 5 6 13 2

The elements which provide maximum difference is: 5, 13

The Maximum difference between two elements in the array is: 8

70. Write a program in C to find two numbers that occur odd number of times in an array.

Expected Output:

The given array is: 6 7 3 6 8 7 6 8 3 3

The two numbers occuring odd number of times are: 3 & 6

71. Write a program in C to find the median of two sorted arrays of different size.

Expected Output:

The given first array is : 90 240 300

The given second array is : 10 13 14 20 25

The median of two different size arrays are : 22.500000

72. Write a program in C to return only the unique rows from a given binary matrix.

Expected Output:

The given array is :

0 1 0 0 1

1 0 1 1 0

0 1 0 0 1

1 0 1 0 0

The unique rows of the given array are :

0 1 0 0 1

1 0 1 1 0

1 0 1 0 0

73. Write a program in C to print all unique elements of an unsorted array.

Expected Output:

The given array is : 1 5 8 5 7 3 2 4 1 6 2

Unique Elements in the given array are:

1 5 8 7 3 2 4 6

74. Write a program in C to find the sum of upper triangular elements of a matrix.

Expected Output:

The given array is :

1 2 3

4 5 6

7 8 9

The elements being summed of the upper triangular matrix are: 2 3 6

The Sum of the upper triangular Matrix Elements are: 11

75. Write a program in C to find the sum of lower triangular elements of a matrix.

Expected Output:

The given array is :

1 2 3

4 5 6

7 8 9

The elements being summed of the lower triangular matrix are: 4 7 8

The Sum of the lower triangular Matrix Elements are: 19

76. Write a program in C to find largest number possible from the set of given numbers.

Expected Output:

The given numbers are :

15 628 971 9 2143 12

The largest possible number by the given numbers are: 997162821431512

77. Write a program in C to generate a random permutation of array elements.

Expected Output:

The given array is:

1 2 3 4 5 6 7 8

The shuffled elements in the array are:

2 8 7 3 4 5 1 6

78. Write a program in C to find four array elements whose sum is equal to given number.

Expected Output:

The given array is:

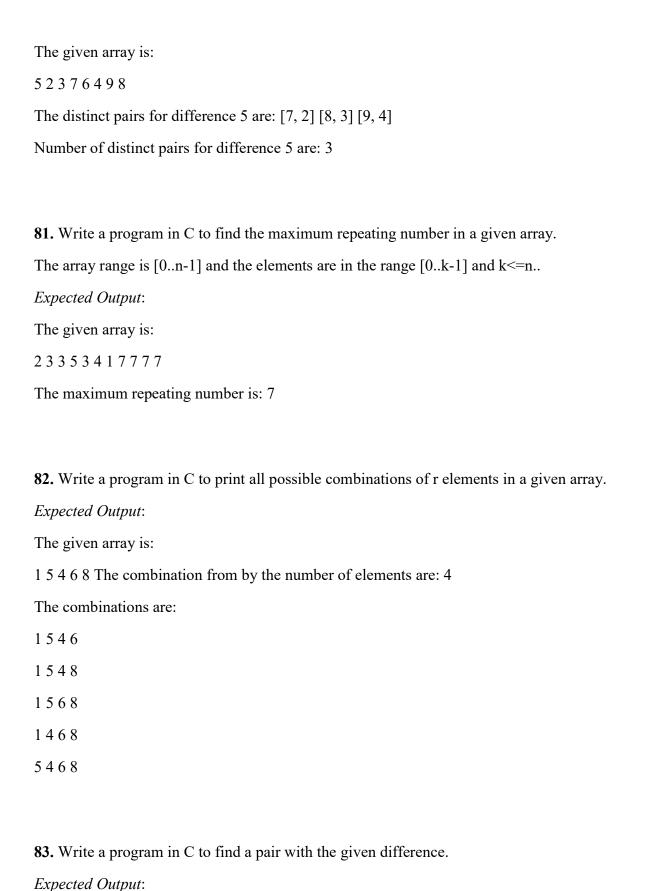3 7 1 9 15 14 6 2 5 7

The elements are:

3, 15, 14, 5

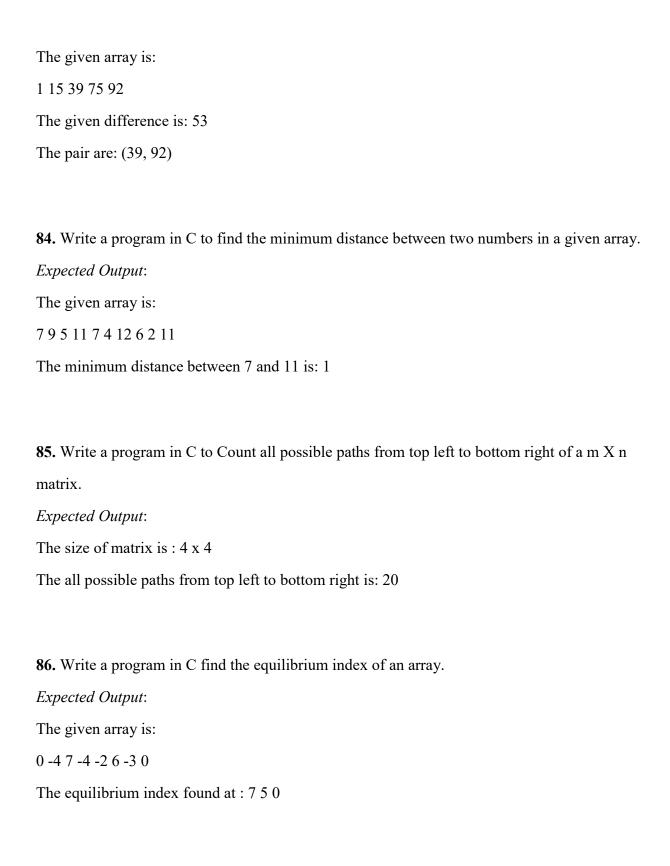**79.** Write a program in C to sort n numbers in range from 0 to n^2.

Expected Output:

The given array is: 37 62 52 7 48 3 15 61

Sorted array is: 3 7 15 37 48 52 61 62

80. Write a program in C to count all distinct pairs for a specific difference.

Expected Output:

The given array is:

5 2 3 7 6 4 9 8

The distinct pairs for difference 5 are: [7, 2] [8, 3] [9, 4]

Number of distinct pairs for difference 5 are: 3

81. Write a program in C to find the maximum repeating number in a given array.

The array range is [0..n-1] and the elements are in the range [0..k-1] and k<=n..

Expected Output:

The given array is:

2 3 3 5 3 4 1 7 7 7 7

The maximum repeating number is: 7

82. Write a program in C to print all possible combinations of r elements in a given array.

Expected Output:

The given array is:

1 5 4 6 8 The combination from by the number of elements are: 4

The combinations are:

1 5 4 6

1 5 4 8

1 5 6 8

1 4 6 8

5 4 6 8

83. Write a program in C to find a pair with the given difference.

Expected Output:

The given array is:

1 15 39 75 92

The given difference is: 53

The pair are: (39, 92)

84. Write a program in C to find the minimum distance between two numbers in a given array.

Expected Output:

The given array is:

7 9 5 11 7 4 12 6 2 11

The minimum distance between 7 and 11 is: 1

85. Write a program in C to Count all possible paths from top left to bottom right of a m X n matrix.

Expected Output:

The size of matrix is : 4 x 4

The all possible paths from top left to bottom right is: 20

86. Write a program in C find the equilibrium index of an array.

Expected Output:

The given array is:

0 -4 7 -4 -2 6 -3 0

The equilibrium index found at : 7 5 0

87. Write a program in C to find the maximum element in an array which is first increasing and then decreasing.

Expected Output:

The given array is:

2 7 12 25 4 57 27 44

The maximum element which is increasing then decreasing is: 57

88. Write a program in C to find the maximum n – m such that array[n] > array[m] from a given array[].

Given an array arr[], find the maximum j – i such that arr[j] > arr[i]

Expected Output:

The given array is:

7 5 8 2 3 2 4 2 1 0

m = 0, n = 2, arr1[m] = 7 arr1[n] = 8 difference = 2

m = 3, n = 6, arr1[m] = 2 arr1[n] = 4 difference = 3

The maximum differcences between two position of array index is: 3

89. Write a program in C to find maximum size square sub-matrix with all 1s.

Expected Output:

The given array in matrix form is :

0 1 0 1 1

1 1 1 1 0

1 1 1 1 0

1 1 1 1 0

1 1 1 1 1

0 1 0 1 0

The maximum size sub-matrix is:

1 1 1 1

1 1 1 1

1 1 1 1

1 1 1 1

90. Given an array of size n such that every element is in the range from 0 to n-1. Write a program in C to rearrange the given array so that arr[i] becomes arr[arr[i]].

Expected Output:

The Original array is

2 1 4 3 0 The modified array is:

4 1 0 3 2

91. Given an unsorted array of specific size. Write a program in C to find the minimum length of subarray such that,

sorting this subarray makes the whole array sorted.

Expected Output:

The given array is:

10 12 15 17 28 32 42 18 56 59 67

The minimum length of unsorted subarray which makes the given array sorted

lies between the indeces 4 and 7

92. Write a program in C that checks whether the elements in an unsorted array appears consecutively or not.

Expected Output:

The given array is:

7 4 3 5 6 2

The appearence of elements in the array are consecutive.

The given array is:

7 4 4 5 6 2

The appearence of elements in the array are not consecutive.

The given array is:

7 4 9 5 6 3

The appearence of elements in the array are not consecutive.

93. Write a program in C to rearrange positive and negative numbers alternatively in a given array.

N.B.: If positive numbers are more they appear at the end and for also negative numbers, they too appear in the end of the array.

Expected Output:

The given array is:

-4 8 -5 -6 5 -9 7 1 -21 -11 19

The rearranged array is:

-4 7 -5 1 -21 5 -11 8 -9 19 -6

94. Write a program in C to find the maximum for each and every contigious subarray of size k from a given array.

Expected Output:

The given array is:

1 3 6 21 4 9 12 3 16 10

The length of each subarray is: 4

The contigious subarray of length 4 and their maximum value are:

1 3 6 21 ----> 21

3 6 21 4 ----> 21

6 21 4 9 ----> 21

21 4 9 12 ----> 21

4 9 12 3 ----> 12

9 12 3 16 ----> 16

12 3 16 10 ----> 16

95. Write a program in C to segregate 0s and 1s in an array.

Expected Output:

The given array is:

1 0 1 0 0 1 0 1 1

The array after segregation is: 0 0 0 0 1 1 1 1 1

96. Write a program in C to segregate even and odd elements on an array.

Expected Output:

The given array is:

17 42 19 7 27 24 30 54 73

The array after segregation is: 54 42 30 24 27 7 19 17 73

97. Write a program in C to find the index of first peak element in a given array.

Expected Output:

The given array is:

5 12 13 20 16 19 11 7 25

The index of first peak element in the array is: 3

98. Write a program in C to return the largest span found in the leftmost and rightmost appearances of same value(values are inclusive) in a given array.

Expected Output:

The given array is:

17 42 19 7 27 24 17 54 73

The span between the same values in the array is: 7

99. Write a program in C 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.

Expected Output:

The given array is : 1 3 3 8 4 3 2 3 3

The array can be split in a position where the sum of both side are equal.

100. Write a program in C to return the number of clumps(a series of 2 or more adjacent elements of the same value) in a given array.

Expected Output:

The given array is:

17 42 42 7 24 24 17 54 17

The number of clumps in the array is: 2

101. Write a program in C to rearrange an array such that arr[i]=i.

N.B.: Given array contains N elements, from 0 to N – 1. All elements within the range may not be present in the array. There will be -1 if an element within the range is not present in the array.

Expected Output:

The given array is:

2 5 -1 6 -1 8 7 -1 9 1

The new array is: -1 1 2 -1 -1 5 6 7 8 9

102. Write a program in C to rearrange an array in such an order that– smallest, largest, 2nd smallest, 2nd largest and on.

Expected Output:

The given array is:

5 8 1 4 2 9 3 7 6

The new array is:

1 9 2 8 3 7 4 6 5

103. Write a program in C to update every array element with multiplication of previous and next numbers in array.

Expected Output:

The given array is:

1 2 3 4 5 6

The new array is:

2 3 8 15 24 30

104. Write a program in C to rearrange an array such that even index elements are smaller and odd index elements are greater than their next.

Expected Output:

The array given is:

6 4 2 1 8 3

The new array after rearranging:

4 6 1 8 2 3

105. Write a program in C to find minimum number of swaps required to gather all elements less than or equals to k.

Expected Output:

The given array is:

2 7 9 5 8 7 4

The minimum swap required is: 2

106. Write a program in C 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.

Expected Output:

The given array is: 0 3 3 3 0 0 7 7 0 9

The new array is: 6 3 14 9 0 0 0 0 0 0

107. Write a program in C to concatenate two given arrays of integers.

Sample Data:

({ 10, 20, 30, 40, 50, 60 }, { 70, 80, 90, 100, 110, 120 }) -> "10 20 30 40 50 60 70 80 90 100 110

120"