

Indian Institute of Technology Kharagpur
Programming Language Lab (MA49015/MA69003)
Assignment – 6

1. Write a program to find the second largest element in an array.
Eg: Input arr[]: 7 2 3 8 6 6 75 38 3 2.
Output: Second largest = 38.
2. Write a program to search an element in a 2D array.
3. Write a function to print minimum and maximum value in a 2d array.
4. Write program to generate n Fibonacci numbers and print them.
5. Write a program to Reverse an array without using any extra array.
6. Given an unsorted integer array, find the first missing positive integer.
Eg: arr[]: [1,2,0] Output: 3
 arr[]: [3,4,-1,1] Output: 2
 arr[]: [-8, -7, -6] Output: 1
7. Write a C program to insert element in array at specified position. The program should also print an error message if the insert position is invalid.
Input arr[]:10, 20, 30, 40, 50
 element to insert: 25
 position where to insert: 3
Output: arr[]: 10, 20, 25, 30, 40, 50
8. Given an array arr[], check if it is sorted in non-decreasing order or not. Print “True” if sorted, “False” otherwise.
e.g. Input: arr[] = 10 20 30 40 50
 Output: True
9. Write a program to input elements in an array and find frequency of each element in the array.
Input: arr[]: 5, 10, 2, 5, 50, 5, 10, 1, 2, 2.
Output:
 Frequency of 5 = 3
 Frequency of 10 = 2
 Frequency of 2 = 3
 Frequency of 50 = 1
 Frequency of 1 = 1

10. Write a program to read elements in a matrix and interchange the two diagonals.

Input: mat[][]:

```
1 2 3
4 5 6
7 8 9
```

Output: Matrix after interchanging its diagonal:

```
3 2 1
4 5 6
9 8 7
```

11. Write a program for transpose of a matrix.

12. Given two numbers in the form of arrays. Add the two numbers and output the result in the form of array.

Input: arr1[]: 2 5 8 4 arr2[]: 7 4 7 2

Output: 1 0 0 5 6

Input: arr1[]: 9 9 9 arr2[]: 1

Output: 1 0 0 0

13. Take an unsorted array arr[], rotate it by D elements clockwise and output the modified array.

Eg: Input: arr[] = 1 2 3 4 5, D = 2

Output: 3 4 5 1 2

14. Write a program to print the matrix in spiral form.

Eg: Input: mat[][]:

```
[[1 2 3],
 [4 5 6],
 [7 8 9]]
```

Output: 1 2 3 6 9 8 7 4 5