**PSG COLLEGE OF TECHNOLOGY, COIMBATORE -641 004**

**Department of Applied Mathematics and Computational Sciences**

**II Semester MSc Software Systems**

**18XW26 Data Structures Lab – Arrays**

**Problem Sheet – 2**

**Solve the following problems using ARRAYS:**

1. Write a C/C++ program to do the following operations on an array (Array of integers).
2. Insert an element in the beginning or middle or end of the array depends on the choice of the user
3. Insert an element in the index position specified by the user
4. Delete an element in the beginning or middle or end of the array by getting the choice of the user
5. Delete an element in the index position specified by the user
6. A List of N numbers is given. Write program(s) to find
7. Total and average
8. The number of integers, which are greater than or equal to a specified number in the list.
9. Read an integer x and determine whether x is present in the list or not
10. Count the number of positive and negative numbers in the list
11. Count the number of odd and even number of the given list, also split and display the given array into two arrays as Odd and Even.
12. Read an integer value y and replace the elements in even index position of the array by y.
13. Read an integer value y and search y in the given list, also find the sum of index values where y is the element of these positions.
14. Create three arrays a1, a2, and a3 and accept values into a1 and a2 from the user. Do the following.
15. Compute the sum of a1 and a2.
16. Copy the contents of a1 in to another array a4 (where a4 is initially empty array).
17. Reverse the contents of the array a3.
18. Remove the elements of a1 from a2 (i.e. a2-a1)
19. Find the common elements of a1 and a2 (i.e. a1∩a2)
20. Add the corresponding elements of a1 and a2 in to another array a5 (ensure that there is no duplicate elements in a5).
21. Find whether a1 is the subset of a3. (i.e. a1⊆a3)
22. Write a C/C++ program to do the following:
23. Swap any two numbers
24. Swap the contents of any two given position
25. Copy the content of one array into another array
26. Remove the sub elements from the given array and copy into another
27. Beginning
28. Middle (Specify positions)
29. End
30. There are two arrays A and B. Merge them into a single array by adding the content of B after A into C.
31. There are two sorted arrays A and B. Merge them into a single sorted array C.
32. Write a C/C++ program to read a non negative 6 X 5 matrix and perform the following.
33. Sum of all array elements
34. Find maximum and minimum elements
35. Find second largest element
36. Find frequency of each element
37. Count total number of duplicates elements
38. Replace all duplicates elements with -1
39. Display all unique elements
40. Find sum of main diagonal elements
41. Find sum of minor diagonal elements
42. Find sum of each row and column
43. Find maximum element in each row and each column
44. Find minimum element in each row and each column
45. Find sum of upper triangular matrix
46. Find sum of lower triangular matrix
47. Find transpose of the matrix.
48. Check whether the given matrix is symmetric matrix or not
49. Interchange diagonals of the matrix.