GLS UNIVERSITY
Faculty of Computer Applications & IT, BCA Programme
SEM III
DATA STRUCTURE PRACTICAL
Module – 1

*** Perform below all the practical using C++ concepts.**

1.	Write a program that will perform following operations on single dimension array: • Insert an element into an array • Delete an element from an array • Read an array elements • Display the array elements • Search an array element
2.	Write a program that will perform all the following array operations: • Sort the array • Reverse the array • Allocate the memory using new operator
2.	Write a program to check matrix is a sparse matrix or not.
3.	Write a program to convert matrix into sparse.
4.	Write a program to check whether the matrix is Lower tringular matrix or Upper tringular matrix.
5.	Write a program to find sum and average of diagonal elements.
6.	Write a program to convert matrix into diagonal, lower tringular and upper tringular matrix.
7.	Write a program to check whether the matrix is identity matrix or diagonal.
8.	Write an algorithm to search for given ITEM in a given array X[n] using linear search technique. If the ITEM is found, move it at the top of the array. If the ITEM is not found, insert it at the end of the array.
9.	Write a program to check whether the matrix is Lower tringular matrix or Upper tringular matrix.
10.	Write a program that will perform perform merging of two single dimensional array into third array. Note: Make array dynamically.
11.	Write a program that will perform addition of two single dimensional array.
12.	Write a program that will perform following operations on two double dimension array: • addition • subtraction • multiplication • sum of all the elements of first and second matrix • transpose
13.	Write a program that will perform following operations double dimension array: Note create array dynamically. ◦ print in row major ◦ print in column major
14.	Write a program that will perform following operations on single dimension array: • count odd elements

	⁝ count even elements ⁝ count prime numbers
15.	Write an algorithm to print all those elements of a matrix X[4 x 4] that are not diagonal elements.
16.	Write a program to print both the diagonal from a matrix.
17.	Take a two dimensional array A, with N rows and N columns as argument and point the upper half of the array. **Write a user-define function Upper-half() which takes a two dimensional array A, with N rows and N columns as argument and point the upper half of the array.** **e.g., If A is** 2 3 1 5 0 7 1 5 3 1 2 5 7 8 1 0 1 5 0 1 3 4 9 1 5 **The output will be** 2 3 1 5 0 1 5 3 1 7 8 1 0 1 5
18.	Write a user-defined function in C++ to find and display the sum of both the diagonal elements of a two dimensional array MATRIX[6][6] containing integers.
19.	Write a user defined function in C++ to display the sum of row elements of two dimensional array A[5][6] containing integers. 1 2 4 6 5 7 2 9 6 8 3 5 7 9 4 7 1 2 4 6 13 5 7 2 9 23 6 8 3 5 22 7 9 4 7 27
20.	Write a user defined function in C++ to display the sum of column elements of two dimensional array R[3][3] containing integers.
21.	From a two-dimensional array A[4 x 4], write an algorithm to prepare a one dimensional array B[16] that will have all the elements of A as if they are stored in row-major form. For example for the following array: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 the resultant array should be 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
22.	Write a function in C++ which accepts a 2D array of integers and its size as arguments and display the elements of middle row and the elements of middle column.