LAB – Practice

Use either C++ or Java (your choice)

Arrays:

1. Consider two single dimensional Array of size 20 and 30 respectively. Write a program to find out the elements which are common in both arrays.

    Hint:

    $$int[\,]\,A\ =\ new\ int[20];$$
    $$int[\,]\,B\ =\ new\ int[30];$$

2. An array 'A' contains 25 positive integers. Write a program in which will find out the number of odd and even numbers in that array.

3. Suppose an array contains 'n' elements. Given a number 'x' that may occur server times in the array. Write a program to find

    i.   The number of occurrences of 'x' in the array
    ii. The position of first occurrence of 'x' in the array

Sorting:

1. Given are two one-dimensional arrays 'A' and 'B' which are sorted in ascending order. Write a program to merge them into a single sorted array 'C' that contains every item from arrays 'A' and 'B', in ascending order.

Stacks:

1. Write a program to implement Stack using Array
2. Write a program to implement Stack using LinkedList
3. Write a program to implement using Stack to determine nth element of a Fibonacci series.

    Hint e.g. n=10 //the output would be 55
4. Write a program to transform the following infix expression to postfix expression

$$(A + B\wedge D) * (D/E)$$

Queues:

1. Write a program to implement Queue using Array
2. Write a program to implement Queue using Linked List

LinkedList:

1. There are two linked lists 'A' and 'B' containing the following data

$$A: 3,7,10,15,16,9,22,17,32$$
$$B: 16,2,9,13,47,8,10,1,28$$

   Write a program to create a linked list 'C' that contains only those elements that are common in linked list A and B.

   Hint output would be $C: 16,9,10$

2. Write a program to create a linked-list 'D' which contains all elements of 'A' as well as 'B' ensuring that there is no repetition of elements. 'A' and 'B' are same as given in the above question 1.

   Hint output would be $D: 3,7,10,15,16,9,22,17,32,2,13,47,8,1,28$