



**VIT**<sup>®</sup>  
Vellore Institute of Technology  
(Deemed to be University under section 3 of UGC Act, 1956)

**FALL Semester 2022-23**

**ITA5002 - Problem Solving with Data Structures and Algorithms  
Lab**

**LAB DIGITAL ASSESSMENT – II**

**Due Date: 05-12-2022**

**SOLVE THE PROBLEMS GIVEN BELOW**

1. Try to create an array of N elements as input which consists of Positive, Negative numbers and also the duplicate values. Perform any sorting procedure to get output as two sorted array one with positive numbers and one with negative numbers and print the number of comparisons made for each sorted array and also the say count for the each the duplicate values.

Exapmle : input[15]= { 10,4,-3,-1,0,4,3,-15,-8,4,-1,9,3,1,7}

Output1[15]={-1,-1,-3,-8,-15} and print Number of Comparisons

Output2[15]={0,1,3,3,4,4,4,7,9,10} and print Number of Comparisons

-1 has been present twice  
+ 3 has been present twice  
+ 4 has been present thrice

2. Perform Binary Search for the given input

A[14]={11,22,33,44,55,66,77,88,99,111,222,333,444}

And try to print the position of the number present in the upper half starting from 1 to n N is the middle element.

After middle element again the position should start from 1 to n. Here N is the last element.

Example  $\text{mid} = (0+14)/2 == 7$  middle element is 88

Numbers 33 present in the third position

88 is present in the ninth position

99 is present in first position

333 is present in fourth position