



**East West University**

**Department of Computer Science & Engineering**

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**Lab Manual: 02**

**Course Code: CSE207**

**Topic: Sort**

**Course Title: Data Structures**

**Instructor: Md. Manowarul Islam, Adjunct Faculty, Department of CSE**

**Objective:**

The objective of this lab is to provide a fundamental idea about the sorting element of an integer array using C/C++ programming. At the end of the lab, students are able to know:

- How to take input into an array.
- How to sort the element of the array.

**Lab Task**

**Exercise 1:**

Write a program to modify the **bubble sort algorithm** to sort the array in descending order rather than ascending order.

Sample Input	Sample Output
Input array elements: 13 1 79 22 7 12 24	Sort elements are: 79,24,22,13,12,7,1

**Exercise 2:**

Write a program using **insertion sort algorithm** to sort the array where user will input the number of elements in the array. Print the highest and the lowest element of the array.

Sample Input	Sample Output
Number of elements: 6 Input array elements: 30 50 10 20 100 1	Sort elements are: 1, 10, 20, 30, 50, 100 Highest element: 100 Lowest element: 1

**Exercise 3:**

Two departments are merging, and you need to combine their sorted salary lists into one. Use **Merge Sort** to merge the lists in **ascending order**.

Sample Input	Sample Output
Number of 1 <sup>st</sup> dept elements: 4 1 <sup>st</sup> dept salaries: 10000, 30000, 33000, 55000 Number of 2 <sup>nd</sup> dept elements: 2 2 <sup>nd</sup> dept salaries: 12000, 31000	Sort salary list: 10000, 12000, 30000, 31000, 33000, 55000

**Exercise 4:**

You are organizing a music concert and need to rank bands based on their number of songs using **any kind of sort algorithm**.

**Task:**

Given a list of bands names and their number of songs, sort them in **descending order**. If two bands have the same number of songs. keep their original order (stability).

**Input:**

- An integer n (number of bands).
- An array names of size n (bands names).
- An array scores of size n (number of songs).

Sample Input	Sample Output
<b>Number of participants:</b> 5 <b>Input names:</b> LRB, Shironamhin, Warfaze, Artcell, Aurthohin <b>Input number of songs:</b> 30, 25, 10, 26, 27	1. LRB (30) 2. Aurthohin (27) 3. Artcell (26) 4. Shironamhin (25) 5. Warfaze (10)