Bennett University Greater Noida
Department of CSE

Subject Lab: Algorithms & Complexity **Lab Duration: 10:40-12:35**
Lab Code: ECSE202L **Max Marks: 10**

Submission Guidelines:

1. The purpose of the course is to learn how to analyse the complexity of the algorithm.
2. You are supposed to do this assignment on your own. While you may discuss the problem with other students, you are not allowed to copy any part of the code from other students or to copy from any other source. Any form of **plagiarism** will not be tolerated. If there is substantial overlap between the codes submitted by two students, both will get reduction in the course grade.
3. The assignment should be **shown to lab instructor** in the lab session and **must be submitted** on LMS by **given date**.

It should also carry the following statement:

"***I have done this assignment on my own. I have not copied any code from another student or any online source. I understand if my code is found similar to somebody else's code, my case can be sent to the Disciplinary committee of the institute for appropriate action.***"

Lab Assignment 4

Q1. In this assignment, students are required to read a file (Lab3_input.txt) created in assignment 3 and write down the content in a file named Lab4_input.txt with the time complexity (No. of required iterations) for reading and writing data in file.

For example, suppose the lab3_input.txt holds following value:

```
12
34
5
2
56
78
32
5
1
45
```

Expected output: A output file by name “Lab4_input.txt”

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```
12
34
5
2
56
78
32
5
1
45

Complexity is: 10
```

Q2. In this question, students are required to read the file Lab4_input.txt and sort the data using Merge Sort algorithm. The expected answer must be written in a file named Lab4_output.txt including sorted value and Time complexity of algorithm. The sample output file is given as:

```
1
2
5
5
12
32
34
45
56
78

Complexity is: 34
```

Q3. In this question, student read the output file generated in question 2 (Lab4_output.txt) and remove the duplicate entries. Then the remaining data will undergo again in merge sort algorithm and return the sorted data with Time complexity in file Lab4_output2.txt.

Expected Output:

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