

# Bennett University Greater Noida

## Department of CSE

Subject Lab: Algorithms & Complexity

Lab Code: ECSE202L

Lab Duration: 10:40-12:35

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 5

Q1. In this assignment, students are required to read input from user in the following format:

Number of students in class

Name of individual student, their roll no., total marks obtained.

Read the data from console and write down in lab5\_input.txt file and return the time complexity of generating input file.

For example, suppose the lab5\_input.txt holds following value:

```
Number of students in class: 5
arun 8 28
harshit 10 30
surya 7 26
satyam 27 6
arun 1 28

Complexity: 5
```

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Q2. In this question, students are required to read the file Lab5\_input.txt and sort the data using Quick Sort algorithm. The expected answer must be written in a file named Lab5\_output.txt including sorted value based on marks obtained and Time complexity of algorithm. The sample output file is given as:

```
harshit 10 30
arun 1 28
arun 8 28
surya 7 26
satyam 27 6
```

---

Complexity is: 13

Q3. In this question, students are required to read the file Lab5\_input.txt and sort the data using Quick Sort algorithm. The expected answer must be written in a file named Lab5\_output2.txt including sorted value based on student name and Time complexity of algorithm. If two students have the same name then the expected answer must be based on name and roll no. The sample output file is given as:

```
arun 1 28
arun 8 28
harshit 10 30
satyam 27 6
surya 7 26
```

Complexity is: 16