

**Symbiosis Institute of Technology**

**Faculty of Engineering**

**CSE- Academic Year 2023-24**

**Data Structures – Lab Batch 2022-26**

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| **Lab Assignment No: - 1,2,3** | |
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| **Name of Student** | KUSH DEO SHUKLA |
| **PRN No.** | 22070122103 |
| **Batch** | B1 (2022-26) |
| **Class** | CS-B1 |
| **Academic Year & Semester** | 2nd Year | 3rd Semester |
| **Date of Submission** | 27/08/2023 |
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| **Title of Assignment:** | A. Implement following searching algorithm: Linear search with multiple occurrences  B. Implement following searching algorithms in menu:  1. Binary search with iteration  2. Binary search with recursion |
| **Theory:** | 1. Prepare table for following searching and sorting algorithms for their best case, average case and worst-case time complexities.   Linear search, binary search, bubble sort, Insertion sort, selection sort, merge sort, quick sort.   1. Discuss on Best case and Worst-case time complexities of   Linear search, binary search, bubble sort, Insertion sort, selection sort, merge sort, quick sort. |
| **Source Code/Algorithm/Flow Chart:** | Linear Search with multiple occurrences:    1. Binary Search with iteration and recursion in menu driven code: |
| **Output Screenshots (if applicable)** | Linear Search with multiple occurrences: 1.Element not found:    2.Element found 1 time:    3.Element found 2 times:       1. Binary Search with iteration and recursion in menu driven code:   1. Using Iteration:    2. Using Recursion: |
| **Conclusion** | Thus we have studied different sorting algorithms and their time complexities. |