**K J Somaiya College of Engineering, Mumbai-400077**

**Department of Computer Engineering**

List of Experiments

**Subject: Data Structures**

Year : 2024-25 (First Term) Semester –III

| **Course Outcome** | **After successful completion of the course students should be able to** |
| --- | --- |
| CO 1 | Comprehend the different data structures used in problem solving |
| CO 2 | Apply linear and non-linear data structure in application development. |
| CO 3 | Describe concepts of advanced data structures like set, map & dictionary. |
| CO 4 | Demonstrate sorting and searching methods. |

| **Sr. No** | **Topic** | **CO Mapping** | **Week No** |
| --- | --- | --- | --- |
| 1 | Implementation of ADT without using any standard library function | CO1 | 1 |
| 2 | Static Implementation of Stack- Basic operations (Creation, Insertion, Deletion, Peek) | CO2 | 2 |
| 3 | Introduction to Dynamic Memory Allocation. DMA functions malloc(), calloc(), free() etc.  Implementation of Basic Linked List -Creation, Insertion, Deletion, Traversal, Searching an element.  Vlab: https://ds1-iiith.vlabs.ac.in/exp/poly-arithmetic/index.html | CO1 | 3,4 |
| 4 | Implementation of Dynamic implementation of Stack- Creation, Insertion, Deletion, Peek) | CO2 | 5 |
| 5 | Implementation of Queue operations (Static and Dynamic implementation)- Queue, circular queue, priority queue, dequeue | CO2 | 6 |
| 6 | Implementation of various types of LL- doubly LL, circular LL, circular doubly LL etc | CO2 | 7 |
| 7 | Implementation of Binary Search Tree- insertion, search and traversal  Vlab : <https://ds1-iiith.vlabs.ac.in/exp/binary-search-trees/index.html>  Vlab: https://ds1-iiith.vlabs.ac.in/exp/tree-traversal/index.html | CO2 | 8.9 |
| 8 | Study of Graph traversal methods  Vlab: https://ds1-iiith.vlabs.ac.in/exp/depth-first-search/index.html  Vlab: https://ds1-iiith.vlabs.ac.in/exp/breadth-first-search/index.html | CO2 | 10 |
| 9 | Implement a dictionary for some real world application. Perform operations like union, intersection, and difference. Use C/C++ or python. | CO3 | 111 |
| 10 | Hashing - Linear and quadratic hashing  Vlab: https://ds1-iiith.vlabs.ac.in/exp/hash-tables/index.html | CO4 | 12 |
| 11 | Implementation of sorting Algorithms. | CO4 | 13 |
|  | Onscreen test | | 14 |

**Subject In-charges:**

Ms. Swati Mali

Ms. Jyothi Rao

Ms. Shweta Chachra

Ms. Kirti Mishra

Ms. Sushma Kadage

Ref:

<https://www.cs.usfca.edu/~galles/visualization/Algorithms.html>