

SR23 ADS&AA Lab Sheet

- 1) Construct an AVL tree for a given set of elements which are stored in a file. And implement insert and delete operation on the constructed tree. Write contents of tree into a new file using in-order.
- 2) Construct B-Tree an order of 5 with a set of 100 random elements stored in array. Implement searching, insertion and deletion operations.
- 3) Construct Min and Max Heap using arrays, delete any element and display the content of the Heap.
- 4) Implement BFT and DFT for given graph, when graph is represented by a) Adjacency Matrix
b) Adjacency Lists
- 5) Write a program for finding the bi-connected components in a given graph.
- 6) Implement Quick sort and Merge sort and observe the execution time for various input sizes (Average, Worst and Best cases).
- 7) Compare the performance of Single Source Shortest Paths using Greedy method when the graph is represented by adjacency matrix and adjacency lists.
- 8) Implement Job sequencing with deadlines using Greedy strategy.
- 9) Write a program to solve 0/1 Knapsack problem Using Dynamic Programming.
- 10) Implement N-Queens Problem Using Backtracking.
- 11) Use Backtracking strategy to solve 0/1 Knapsack problem.
- 12) Implement Travelling Sales Person problem using Branch and Bound approach

Reference Books:

1. Fundamentals of Data Structures in C++, Horowitz Ellis, Sahni Sartaj, Mehta, Dinesh, 2nd Edition, Universities Press
2. Computer Algorithms/C++ Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, 2nd Edition, University Press
3. Data Structures and program design in C, Robert Kruse, Pearson Education Asia
4. An introduction to Data Structures with applications, Trembley & Sorenson, McGraw Hill

Online Learning Resources:

1. <http://cse01-iiith.vlabs.ac.in/> (Minimum of two experiments will be conducted through vlab)