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Department of Computer Science and Engineering
Lab Work

Subject: Analysis Design Of Algorithm   **Subject Code: CS-402**   **Session: Jan-June 2021**
Tools/Language Used: C,C++

S. No.	Title	Objective of the Experiment	Problem Statement
1	Iterative and Recursive binary search	To know the how to apply binary search method iteratively and recursively	In college library where all the books are sorted alphabetically in the racks. You have to search for a book of algorithm named Coremen. Which method will be best suited for searching. Apply the searching method iteratively and recursively
2	Divide and conquer technique method that is Merge Sort	To know the concept of Merge Sort.	A stock market manager has 300 files. He want to sort the files according the names. Some of the files were not properly sorted by time. Each file is about 150 MB, so he could not load all the data into RAM at once. Use external sorting algorithm to sort files because of limited RAM.
3	Divide and conquer technique method that is Quick Sort	To know the concept of Quick Sort.	You have a shopping list, and your mother is telling you to grab them in 15 minutes. She gives you also priorities, so you need to grab them first. You gotta rush! Eggs (4) Bread (2), Milk (6), Water (3), Meat (1), Detergent (5). For small lists, it is easy to seek through with eyes and follow priority numbers. But think about she give you list of items with count of 128? What you are going to do? Would you check entire list to find next item? So you will be reordering list by priority, by comparing them on first element which is eggs.
4	Divide and conquer technique	To understand Strassen's Matrix Multiplication	You need to find the optimal position for a firehouse in town. You generate a block-by-block fire risk matrix as matrix A and a travel time matrix generated about some fixed point in town as matrix B. Apply Strassen's Matrix Multiplication for finding optimal position.
5	Greedy Strategy	To learn Huffman coding.	Apply Huffman coding algorithm for encoding of files.
6	Minimum Spanning tree	To understand Kruskal's algorithm.	You want lay cables accross a city or group of cities. Find Minimum Cost Spanning Tree/Path of a given undirected path of cities(graph) using Kruskal's algorithm.
7	Minimum Spanning tree	To understand Prim's algorithm.	Design a network of pipes for drinking water for small outlying villages. Find Minimum Cost Spanning Tree/ Path of a given undirected path of villages using Prim's algorithm.

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8	Greedy Strategy	To know single sources shortest path algorithm..	To Study single sources shortest path algorithm and its analysis
9	Dynamic Programming	To understand Floyd Warshal algorithm	Implement All-Pairs Shortest Paths Problem using Floyd's algorithm. Parallelize this algorithm, implement it using OpenMP and determine the speed-up achieved.
10	Dynamic Programming	Tounderstand traveling salesman problem	Implement any scheme to find the optimal solution for the Traveling Salesperson problem and then solve the same problem instance using any approximation algorithm and determine the error in the approximation.