DESIGN AND ANALYSIS OF ALGORITHMS

OBJECTIVE

Understanding various algorithm design techniques, and to know how to apply those techniques to various problems. Also, gives an understanding of parallel algorithm design, and provides the idea of NP-class of problems and their approximate solutions.

UNIT – I ANALYSIS & DIVIDE-AND-CONQUOR


Lab Component: 6

Implementing some recursive algorithms and study its theoretical time vs empirical time – Implement and analyze selection problem.

UNIT – II GREEDY & DYNAMIC PROGRAMMING


Lab Component: 6

Implement and analyze: Minimum spanning tree problem and Traveling salesperson problem.

UNIT – III BACKTRACKING & BRANCH-AND-BOUND


Lab Component: 6

Implement and analyze: Sum of subsets – Implement Branch and Bound based traveling salesperson problem and compare with dynamic programming.
UNIT – IV  STRING MATCHING & PARALLEL ALGORITHMS  9


Lab Component:  6

Implement and compare simple string matching and KMP algorithms. Implement prefix computation algorithm by using multiple threads or processes.

UNIT – V  NP PROBLEMS & APPROXIMATION ALGORITHMS  9


Lab Component:  6

Implement vertex cover and traveling salesman problems using approximation algorithm.

TOTAL: 45 + 30 = 75

TEXT BOOKS:


REFERENCES: