

SYLLABUS: Design and Analysis of Algorithm

Introduction to algorithms and its importance, mathematical foundations; growth functions, complexity analysis of algorithms, summations, recurrences, sorting algorithms design and analysis: Insertion sort, divide and conquer, merge sort, heap sort, radix sorting.

Hash table, B-trees, Binomial Heaps, Fibonacci Heaps.

Dynamic Programming: Introduction, Matrix chain multiplication, Greedy Algorithms, Elementary Graph algorithms: Minimum spanning trees, Single source shortest path, all pair shortest path.

String matching: Robin-Karp algorithm, Knuth-Morris Pratt algorithm, Algorithm for parallel computers, parallelism, the PRAM models, simple PRAM algorithms, P and NP class, some NP-complete problems.

Books recommended:

1. Thomas H. Cormas H. Cormen, Charles E. Leiserson, R.L. Rivest, Introduction to Algorithms, Prentice Hall of India Publications, New-Delhi, 2009.
2. Sara Baase and Allen Van Gelder, Computer Algorithms: Introduction to Design and Analysis, Pearson Education (Singapore) Pvt. Ltd. New Delhi, 2002.
3. Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman. The Design and Analysis of Computer Algorithms. Pearson Education (Singapore) Pvt. Ltd New Delhi, 2002.