

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC:Design and Analysis of Algorithms

Subject Co-ordinator - Prof. Madhavan Mukund

Co-ordinating Institute - Chennai Mathematical Institute

- Lecture 1 - Course Outline
- Lecture 2 - Example
- Lecture 3 - Example
- Lecture 4 - Example
- Lecture 5 - Introduction and motivation
- Lecture 6 - Input size, worst case, average case
- Lecture 7 - Quantifying efficiency
- Lecture 8 - Examples
- Lecture 9 - Arrays and lists
- Lecture 10 - Searching in an array
- Lecture 11 - Selection Sort
- Lecture 12 - Insertion sort
- Lecture 13 - Merge sort
- Lecture 14 - Merge sort - analysis
- Lecture 15 - Quicksort
- Lecture 16 - Quicksort - analysis
- Lecture 17 - Sorting - Concluding remarks
- Lecture 18 - Introduction to graphs
- Lecture 19 - Representing graphs
- Lecture 20 - Breadth first search (BFS)
- Lecture 21 - Depth first search (DFS)
- Lecture 22 - Applications of BFS and DFS
- Lecture 23 - Directed acyclic graphs
- Lecture 24 - Directed acyclic graphs
- Lecture 25 - Single source shortest paths
- Lecture 26 - Dijkstras algorithm
- Lecture 27 - Negative edge weights
- Lecture 28 - All pairs shortest paths
- Lecture 29 - Minimum Cost Spanning Trees
- Lecture 30 - Prims Algorithm
- Lecture 31 - Kruskals algorithm
- Lecture 32 - Union-Find using arrays
- Lecture 33 - Union-Find using pointers

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- Lecture 34 - Priority queues
- Lecture 35 - Heaps
- Lecture 36 - Heaps
- Lecture 37 - Counting inversions
- Lecture 38 - Closest pair of points
- Lecture 39 - Binary Search Trees
- Lecture 40 - Balanced search trees
- Lecture 41 - Interval scheduling
- Lecture 42 - Scheduling with deadlines
- Lecture 43 - Huffman codes
- Lecture 44 - Introduction to dynamic programming
- Lecture 45 - Memoization
- Lecture 46 - Grid Paths
- Lecture 47 - Common subwords and subsequences
- Lecture 48 - Edit distance
- Lecture 49 - Matrix multiplication
- Lecture 50 - Linear Programming
- Lecture 51 - LP modelling
- Lecture 52 - LP modelling
- Lecture 53 - Network Flows
- Lecture 54 - Reductions
- Lecture 55 - Checking Algorithms
- Lecture 56 - P and NP