

Algorithms

SOURCE: 01 Design and Analysis of Algorithms (GATE EXAM)

- 01 [Introduction to Algorithm and Syllabus](#)
- 02 [What is Algorithm | How to Analyze an Algorithm | Prior vs Posteriori Analysis](#)
- 03 [Asymptotic Notations | Big O | Big Omega | Theta Notations](#)
- 04 [Various Properties of Asymptotic Notation with Examples](#)
- 05 [Comparison of Various Time Complexities | Different Types in Increasing Order](#)
- 06 [Time Complexities of All Searching and Sorting Algorithm](#)
- 07 [Question on Comparison of Various Time Complexities](#)
- 08 [Question on Comparison of Various Time Complexities](#)
- 09 [What is Recurrence Relation | How to Write Binary Search Recurrence Relation](#)
- 10 [Recurrence Relation \$T\(n\)=T\(n/2\)+c\$ | Substitution Method](#)
- 11 [Recurrence Relation \$T\(n\)=n*T\(n-1\)\$ | Substitution Method](#)
- 12 [Recurrence Relation \$T\(n\)=2T\(n/2\)+n\$ | Substitution Method](#)
- 13 [Recurrence Relation \$T\(n\)=T\(n-2\)+\log n\$ | Substitution Method](#)
- 14 [Recurrence Relation \$T\(n\)=8T\(n/2\)+n^2\$ | Master Theorem](#)
- 15 [Recurrence Relation \$T\(n\)=T\(n/2\)+c\$ | Master Theorem](#)
- 16 [Recurrence Relation \$T\(n\)=T\(n\)+\log n\$ | Master Theorem](#)
- 17 [Recurrence Relation \$T\(n\)=2T\(n/2\)+cn\$ | Recursive Theorem](#)
- 18 [Recurrence Relation \$T\(n\)=3T\(n/4\)+cn^2\$ | Recursive Theorem](#)
- 19 [Divide and Conquer Algorithm](#)
- 20 [How Quick Sort Works | Performance of Quick Sort with Example](#)
- 21 [Performance of Quick Sort | Worst Case Time Complexity with Example](#)
- 22 [How Merge Sort Works, Full Explanation with Example](#)
- 23 [Merge Sort Pseudocode | Merge Sort with Example](#)
- 24 [Question on Merge Sort | Divide and Conquer | Algorithm](#)
- 25 [How Bubble Sort Works | Performance of Bubble Sort with Examples](#)
- 26 [Insertion Sort | Time Complexity Analysis | Stable Sort | In-place Sorting](#)
- 27 [Selection Sort | Time Complexity \(Best, Avg and Worst\) Analysis](#)
- 28 [Radix Sort | Easiest Explanation with Example](#)
- 29 [Counting Sort | Easiest Explanation with Example](#)
- 30 [Bucket Sort | Easiest Explanation | Time Complexity Analysis with Pseudocode](#)
- 31 [Introduction to Trees \(Binary Tree, Almost Complete Binary Tree | Full BT | Complete BT\)](#)
- 32 [Introduction to Heap Tree with Examples | Max Min Heap](#)
- 33 [Insertion in Heap Tree | Max-Heap and Min-Heap Creation | Time Complexity](#)
- 34 [Question on Max Heap / Min Heap](#)
- 35 [Build Heap in \$O\(n\)\$ Time Complexity | Heapify Method | Full Derivation with Example](#)
- 36 [Deletion in Heap Tree | Time Complexity](#)
- 37 [Heap Sort with Example | Heapify Method](#)
- 38 [Introduction to Greedy Techniques with Example | What is Greedy Technique](#)
- 39 [Knapsack Problem with Example | Greedy Techniques](#)
- 40 [Huffman Coding Algorithm with Example | Greedy Techniques](#)
- 41 [Question Huffman Coding in Greedy Technique](#)
- 42 [Job Sequencing Algorithm with Example | Greedy Techniques](#)
- 43 [Optimal Merge Pattern Using Greedy Method](#)
- 44 [What is Spanning Tree with Example](#)
- 45 [Kruska Algorithm for Minimum Spanning Tree](#)

46	Prim's Algorithm for Minimum Cost Spanning Tree
47	Dijkstra's Algorithm Single Source Shortest Path – Greedy Method
48	Dijkstra's Algorithm Analysis Time Complexity Pseudocode Explanation
49	Why Does Dijkstra Fail on Negative Weights Full Explanation with Example
50	Bellman Ford Algorithm Dijkstra vs Bellman Ford Single Source Shortest Path
51	Bellman Ford Pseudocode and Time Complexity Single Source Shortest Path
52	BFS and DFS Breadth First Search Depth First Search Graph Traversing DAA
53	Introduction to Dynamic Programming Greedy vs Dynamic Programming
54	0/1 Knapsack Failed Using Greedy Approach
55	0/1 Knapsack Problem Dynamic Programming Recursion Equation Recursion Tree
56	Traveling Salesman Problem Dynamic Programming
57	Sum of Subsets Problem Dynamic Programming
58	Multistage Graph Dynamic Program
59	Introduction to All Pair Shortest Path (Floyd Warshall Algorithm)
60	Floyd Warshall Working with Example All Pair Shortest Path Algorithm
61	Floyd Warshall Time and Space Complexity All Pair Shortest Path Algorithm
62	What is Hashing with Example Hashing in Data Structure
63	Collision Resolution Techniques in Hashing What are the Collision Resolution
64	Chaining in Hashing What is Chaining in Hashing with Example
65	Linear Probing in Hashing with Example
66	Question on Hashing Linear Probing for Collision in Hash Table
67	Quadratic Probing in Hashing with Example
68	Double Hashing Collision Resolution Technique
69	Topological Sorting with Example Topological Sorting using DFS
70	Kahn's Algorithm Topological Sorting DAA
71	Branch and Bound Algorithm with Example Easiest Explanation of B&B with Example
72	0/1 Knapsack Using Branch and Bound with Example
73	Shortcut for Swaps in Bubble Sorting Best Case Worst Case
74	Optimized Bubble Sort Best Case O(n) Time Complexity Shorting Algorithm
75	Recurrence Relation $T(n)=2T(n/2)+2$ Min-Max Algorithm
76	Min-Max Algorithm without Divide and Conquer Linear Approach Find Max and Min
77	Min-Max Algorithm with Divide and Conquer
78	Time Complexity and Comparison of All Data Structures