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# Top 10 algorithms in

Difficulty Level: Medium • Last Updated: 2

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In this post "Top 10 coding problems of important topics with their solutions" are written. If you are preparing for a coding interview, going through these problems is a must.

## Topics:

- 1. Graph
- 2. Linked List
- 3. Dynamic Programming
- 4. Sorting And Searching
- 5. Tree / Binary Search Tree
- 6. Number Theory
- 7. BIT Manipulation
- 8. String / Array

# Graph

- 1. Breadth First Search (BFS)
- 2. Depth First Search (DFS)
- 3. Shortest Path from source to all vertices \*\*Dijkstra\*\*
- 4. Shortest Path from every vertex to every other vertex \*\*Floyd Warshall\*\*
- 5. To detect cycle in a Graph \*\*Union Find\*\*
- 6 Minimum Snanning tree \*\*Prim\*\*

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- 9. Boggle (Find all possible words in a board of characters)
- 10. Bridges in a Graph

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Add Two Numbers Represented By Li
 Merge A Linked List Into Another Link

1. Insertion of a node in Linked List (On

2. <u>Delete a given node in Linked List (un</u>

3. Compare two strings represented as I

- 6. Reverse A List In Groups Of Given Size
- 7. Union And Intersection Of 2 Linked Lists
- 8. <u>Detect And Remove Loop In A Linked List</u>
- 9. Merge Sort For Linked Lists
- 10. <u>Select A Random Node from A Singly Linked List</u>

# **Dynamic Programming**

- 1. Longest Common Subsequence
- 2. Longest Increasing Subsequence
- 3. Edit Distance
- 4. Minimum Partition
- 5. Ways to Cover a Distance
- 6. Longest Path In Matrix
- 7. Subset Sum Problem
- 8. Optimal Strategy for a Game
- 9. <u>0-1 Knapsack Problem</u>
- 10. Boolean Parenthesization Problem

# **Sorting And Searching**

- 1. Binary Search
- 2. Search an element in a sorted and rotated array
- 3. Bubble Sort

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- 7. Quick Sort
- 8. Interpolation Search
- 9. Find Kth Smallest/Largest Element Ir
- 10. Given a sorted array and a number x

#### Tree / Bi

- 1. Find Minimum Depth of a Binary Tree
- 2. Maximum Path Sum in a Binary Tree
- 3. Check if a given array can represent F
- 4. Check whether a binary tree is a full b
- 5. <u>Bottom View Binary Tree</u>
- 6. Print Nodes in Top View of Binary Tree
- 7. Remove nodes on root to leaf paths of length < K
- 8. Lowest Common Ancestor in a Binary Search Tree
- 9. Check if a binary tree is subtree of another binary tree
- 10. Reverse alternate levels of a perfect binary tree

## **Number Theory**

- 1. Modular Exponentiation
- 2. Modular multiplicative inverse
- 3. Primality Test | Set 2 (Fermat Method)
- 4. Euler's Totient Function
- 5. Sieve of Eratosthenes
- 6. Convex Hull
- 7. <u>Basic and Extended Euclidean algorithms</u>
- 8. <u>Segmented Sieve</u>
- 9. Chinese remainder theorem
- 10. <u>Lucas Theorem</u>

## **BIT Manipulation**

1 Maximum Suharray XOR

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Got It!



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- 5. Find the element that appears once
- 6. Binary representation of a given num
- 7. Count total set bits in all numbers fro
- 8. Rotate bits of a number
- 9. Count number of bits to be flipped to
- 10. Find Next Sparse Number

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M

- 1. <u>Reverse an array without affecting sp</u>
- 2. <u>All Possible Palindromic Partitions</u>
- 3. Count triplets with sum smaller than a given value
- 4. <u>Convert array into Zig-Zag fashion</u>
- 5. <u>Generate all possible sorted arrays from alternate elements of two given sorted arrays</u>
- 6. Pythagorean Triplet in an array
- 7. Length of the largest subarray with contiguous elements
- 8. <u>Find the smallest positive integer value that cannot be represented as sum of any subset of a given array</u>
- 9. <u>Smallest subarray with sum greater than a given value</u>
- 10. Stock Buy Sell to Maximize Profit

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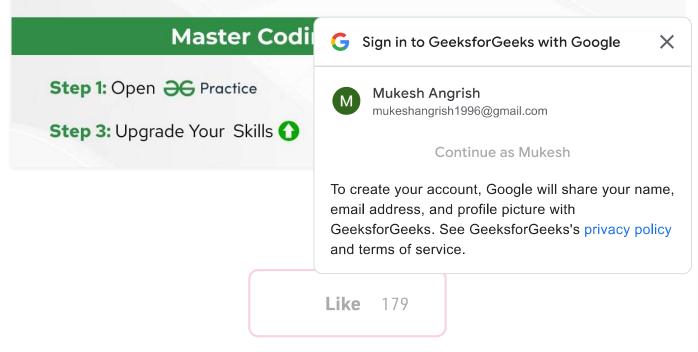
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Breadth First Search or BFS for a Graph

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