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(Channel run by ex-Amazon | Media.net(Directi) | GFG) employee, CM at Codeforces and 6\* at Codechef)

Only start doing these problems if you feel you are comfortable with solving basic problems of DSA. Once you are, you can start preparing for these problems, because these problems are solely interview based.

### Day1: (Arrays)

**1. Find the duplicate in an array of N+1 integers.**

<https://www.youtube.com/watch?v=32LI35mhWg0&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=1> (Problem link in description)

**2. Sort an array of 0's 1's 2's without using extra space or sorting algo**

<https://www.youtube.com/watch?v=oaVa-9wmpns&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=2> (Problem link in description)

**3. Repeat and Missing Number**

<https://www.youtube.com/watch?v=5nMGY4VUoRY&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=3> (Problem link in description)

**4. Merge two sorted Arrays without extra space**

<https://www.youtube.com/watch?v=hVI2b3bLzBw&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=4> (Problem link in description)

**5. Kadane's Algorithm**

[https://www.youtube.com/watch?v=w\\_KEocd\\_20&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=5](https://www.youtube.com/watch?v=w_KEocd_20&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=5)

**6. Merge Overlapping Subintervals**

<https://www.youtube.com/watch?v=2JzRBPfYbKE&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=6>

### Day2: (Arrays)

**1. Set Matrix Zeros**

(<https://www.youtube.com/watch?v=M65xBewcqcl&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=7>)

## 2. Pascal Triangle

<https://www.youtube.com/watch?v=6FLvhQjZqvM&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=8>

## 3. Next Permutation

<https://www.youtube.com/watch?v=LuLCLgMElus&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=9>

## 4. Inversion of Array (Using Merge Sort)

<https://www.youtube.com/watch?v=kQ1mJlWw-c0&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=10>

## 5. Stock Buy and Sell

<https://www.youtube.com/watch?v=eMSfBgbiEjk&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=11>

## 6. Rotate Matrix

<https://www.youtube.com/watch?v=Y72QeX0Efxw&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=12>

### Day3: (Arrays/maths)

#### 1. Search in a 2D matrix

<https://www.youtube.com/watch?v=ZYpYur0znng&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=13>

#### 2. Pow(X,n)

<https://www.youtube.com/watch?v=l0YC3876qyg&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=14>

#### 3. Majority Element (>N/2 times)

<https://www.youtube.com/watch?v=AoX3BPWNnoE&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=15>

#### 4. Majority Element (>N/3 times)

<https://www.youtube.com/watch?v=yDbkQd9t2ig&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=16>

#### 5. Grid Unique Paths

[https://www.youtube.com/watch?v=t\\_f0nwwdg5o&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=17](https://www.youtube.com/watch?v=t_f0nwwdg5o&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=17)

#### 6. Reverse Pairs (Leetcode)

[https://www.youtube.com/watch?v=S6rsAlj\\_iB4&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=18](https://www.youtube.com/watch?v=S6rsAlj_iB4&list=PLgUwDviBlf0rPG3lctpu74YWBQ1CaBkm2&index=18)

#### 7. Go through Puzzles from GFG (Search on own)

#### Day4: (Hashing)

1. **2 Sum problem**

[https://www.youtube.com/watch?v=dRUpt8vHpo&list=PLgUwDviBlf0rVwua0kKYIsS\\_ik\\_1lyVK\\_&index=1](https://www.youtube.com/watch?v=dRUpt8vHpo&list=PLgUwDviBlf0rVwua0kKYIsS_ik_1lyVK_&index=1)

2. **4 Sum problem**

[https://www.youtube.com/watch?v=4ggF3tXIAP0&list=PLgUwDviBlf0p4ozDR\\_kJJkONnb1wdx2Ma&index=20](https://www.youtube.com/watch?v=4ggF3tXIAP0&list=PLgUwDviBlf0p4ozDR_kJJkONnb1wdx2Ma&index=20)

3. **Longest Consecutive Sequence**

[https://www.youtube.com/watch?v=qgizvmgeyUM&list=PLgUwDviBlf0p4ozDR\\_kJJkONnb1wdx2Ma&index=21](https://www.youtube.com/watch?v=qgizvmgeyUM&list=PLgUwDviBlf0p4ozDR_kJJkONnb1wdx2Ma&index=21)

4. **Largest Subarray with 0 sum**

[https://www.youtube.com/watch?v=xmguZ6GbatA&list=PLgUwDviBlf0p4ozDR\\_kJJkONnb1wdx2Ma&index=22](https://www.youtube.com/watch?v=xmguZ6GbatA&list=PLgUwDviBlf0p4ozDR_kJJkONnb1wdx2Ma&index=22)

5. **Count number of subarrays with given XOR**(this clears a lot of problems)

[https://www.youtube.com/watch?v=IO9R5CaGRPY&list=PLgUwDviBlf0p4ozDR\\_kJJkONnb1wdx2Ma&index=23](https://www.youtube.com/watch?v=IO9R5CaGRPY&list=PLgUwDviBlf0p4ozDR_kJJkONnb1wdx2Ma&index=23)

6. **Longest substring without repeat**

[https://www.youtube.com/watch?v=qtVh-XEpsJo&list=PLgUwDviBlf0p4ozDR\\_kJJkONnb1wdx2Ma&index=25](https://www.youtube.com/watch?v=qtVh-XEpsJo&list=PLgUwDviBlf0p4ozDR_kJJkONnb1wdx2Ma&index=25)

#### Day5: (LinkedList)

1. **Reverse a LinkedList**

2. **Find middle of LinkedList**

3. **Merge two sorted Linked List**

4. **Remove N-th node from back of LinkedList**

5. **Delete a given Node when a node is given. (0(1) solution)**

6. **Add two numbers as LinkedList**

#### Day6:

1. **Find intersection point of Y LinkedList**

2. **Check if a LinkedList is palindrome or not.**

3. **Reverse a LinkedList in groups.**

4. **Detect a cycle and removing loop(two different questions and same concept)**

5. **Flattening of a LinkedList**

6. **Rotate a LinkedList**

7. Clone a Linked List with random and next pointer.

Day7: (2-pointer)

1. Merge two sorted LinkedLists
2. Find the starting point of the loop.
3. 3 sum
4. Trapping rainwater
5. Remove Duplicate from Sorted array
6. Max continuous number of 1's

Day8: (Greedy)

1. N meeting in one room
2. Activity Selection
3. Greedy algorithm to find minimum number of coins
4. Fractional Knapsack Problem
5. Minimum number of platforms required for a railway
6. Job sequencing Problem

Day9: (Backtracking)

1. N queens Problem
2. Sudoko
3. M coloring Problem (Graph prob)
4. Rat in a Maze
5. Print all Permutations of a string/array
6. Word Break (print all ways)

Day10:

1. Combination sum-1
2. Combination sum-2
3. Palindrome Partioning
4. Subset Sum-1
5. Subset Sum-2
6. K-th permutation Sequence

Day11: (Divide and Conquer)

1.  $1/N$ -th root of an integer (use binary search) (square root, cube root, ..)
2. Matrix Median
3. Find the element that appears once in sorted array, and rest element appears twice (Binary search)
4. Search element in a sorted and rotated array/ find pivot where it is rotated
5. Median of 2 sorted arrays
6. K-th element of two sorted arrays

Day12: (Bits) (Optional, very rare topic in interviews, but if you have time left, someone might ask)

1. Check if a number is a power of 2 or not in  $O(1)$
2. Count total set bits
3. Divide Integers without / operator
4. Power Set (this is very important)
5. Find MSB in  $O(1)$
6. Find square of a number without using multiplication or division operators.

#### Day13: (Stack and Queue)

1. Implement Stack / Implement Queue
2. BFS
3. Implement Stack using Queue
4. Implement Queue using Stack
5. Check for balanced parentheses
6. Next Greater Element

#### Day14:

1. Next Smaller Element
2. LRU cache (vvvv. imp)
3. Largest rectangle in histogram
4. Sliding Window maximum
5. Implement Min Stack
6. Rotten Orange (Using BFS)

#### Day15: (String)

1. Reverse Words in a String
2. Longest Palindrome in a string
3. Roman Number to Integer and vice versa
4. Implement ATOI/STRSTR
5. Longest Common Prefix
6. Rabin Karp

#### Day16: (String)

1. Prefix Function/Z-Function
2. KMP algo
3. Minimum characters needed to be inserted in the beginning to make it palindromic.
4. Check for Anagrams
5. Count and Say
6. Compare version numbers

#### Day17: (Binary Tree)

1. Inorder Traversal (with recursion and without recursion)
2. Preorder Traversal (with recursion and without recursion)
3. Postorder Traversal (with recursion and without recursion)
4. LeftView Of Binary Tree
5. Bottom View of Binary Tree
6. Top View of Binary Tree

#### Day18: (Binary Tree)

1. Level order Traversal / Level order traversal in spiral form
2. Height of a Binary Tree
3. Diameter of Binary Tree
4. Check if Binary tree is height balanced or not
5. LCA in Binary Tree
6. Check if two trees are identical or not

#### Day 19: (Binary Tree)

1. Maximum path sum
2. Construct Binary Tree from inorder and preorder
3. Construct Binary Tree from Inorder and Postorder
4. Symmetric Binary Tree
5. Flatten Binary Tree to LinkedList
6. Check if Binary Tree is mirror of itself or not

#### Day 20: (Binary Search Tree)

1. Populate Next Right pointers of Tree
2. Search given Key in BST
3. Construct BST from given keys.
4. Check is a BT is BST or not
5. Find LCA of two nodes in BST
6. Find the inorder predecessor/successor of a given Key in BST.

#### Day21: (BinarySearchTree)

1. Floor and Ceil in a BST
2. Find K-th smallest and K-th largest element in BST (2 different Questions)
3. Find a pair with a given sum in BST
4. BST iterator
5. Size of the largest BST in a Binary Tree
6. Serialize and deserialize Binary Tree (requires file handling)

#### Day22: (Mixed Questions)

1. Binary Tree to Double Linked List
2. Find median in a stream of running integers.
3. K-th largest element in a stream.
4. Distinct numbers in Window.
5. K-th largest element in an unsorted array.  
also using heap
6. Flood-fill Algorithm

#### Day23: (Graph)

1. Clone a graph (Not that easy as it looks)
2. DFS
3. BFS
4. Detect A cycle in Undirected Graph/Directed Graph

5. Topo Sort
6. Number of islands (Do in Grid and Graph both)
7. Bipartite Check
8. Disjoint set data structures (to detect cycle)

#### Day24: (Graph)

1. SCC(using KosaRaju's algo)
2. Djisktra's Algorithm
3. Bellman Ford Algo
4. Floyd Warshall Algorithm
5. MST using Prim's Algo
6. MST using Kruskal's Algo

#### Day25: (Dynamic Programming)

1. Max Product Subarray
2. Longest Increasing Subsequence
3. Longest Common Subsequence
4. 0-1 Knapsack
5. Edit Distance
6. Maximum sum increasing subsequence
7. Matrix Chain Multiplication

#### Day26: (DP)

1. Maximum sum path in matrix, (count paths, and similar type do, also backtrack to find the maximum path)
2. Coin change
3. Subset Sum
4. Rod Cutting
5. Egg Dropping
6. Word Break
7. Palindrome Partitioning (MCM Variation)

#### Day27:

1. Revise OS notes that you would have made during your sem
2. If not made notes, spend 2 or 3 days and make notes from Knowledge Gate.

#### Day28:

1. Revise DBMS notes that you would have made during your semesters.
2. If not made notes, spend 2 or 3 days and make notes from Knowledge Gate.

#### Day29:

1. Revise CN notes, that you would have made during your sem.
2. If not made notes, spend 2 or 3 days and make notes from Knowledge Gate.

#### Day30:

1. Make a note of how will you represent your projects, and prepare all questions related to tech which you have used in your projects. Prepare a note which you can say for 3-10 minutes when he asks you that say something about the project.

Hurrah!! You are ready for your placement after a month of hard-work without a cheat day.