

# Cheat CODE

A Workbook to Get You Started with DSA

Made with  at [GeeksforGeeks](https://www.geeksforgeeks.org/)

# {Index}

- 1 Which Programming Language Should I Choose?
- 2 Data Structures & Algorithms
- 3 Easy Level Problems
- 4 Medium Level Problems
- 5 Hard Level Problems
- 6 Building Soft Skills
- 7 Bonus: How to Prepare for Interviews

# {The Dilemma}

## Which Programming Language Should I Choose?



### Beginner Problems

Which Programming Language Should I Start With?

[Read More](#)



### Top 10

Top 10 Programming Languages to Learn

[Read More](#)



### C++, JAVA or Python

Which one's the Best?

[Read More](#)



# {Pick your language}



[Learn More](#)



[Learn More](#)



[Learn More](#)



[Learn More](#)



[Learn More](#)



**Golang**

[Learn More](#)



# {The Frenemy}

## Data Structures & Algorithms

Time Complexity »

Space Complexity »

Arrays »

Searching »

Sorting »

String »

Hashing »

Bitwise  
Algorithms »

Linked List »

Stacks »

Queues »

Heaps »

Trees »

Graphs »

Greedy »

Dynamic  
Programming »

Algorithms »

Design Patterns »



# {Build your knowledge}

## Easy Problems

Use checkboxes to track your progress.  
Keep practicing, Geek.

### Math

☐ Missing Number  
in Array



☐ Minimum steps  
to make product  
equal to one



☐ Trailing Zeros  
in Factorial



### Array

☐ Rotate Array



☐ Majority Element



☐ Plus one



☐ Array of  
alternative +ve  
and -ve nos.



☐ Product Array  
puzzle



☐ Large Factorial



## Searching



Left most and  
right most index



Bitonic Point



Collecting Wood



## Sorting



Wave Array



Sort an array  
of 0's,1's and 2's



Chocolate  
Distribution  
Problem



## Matrix



Sort a 2D vector  
diagonally



Search in Sorted  
2D and not 2d  
matrix



Boundary  
traversal of  
matrix



## String

☐ Reverse words in a given string



☐ Longest Common Prefix



☐ Roman Number to Integer



## Hashing

☐ Key Pair



☐ Top K Frequent Elements in Array



☐ Intersection of two arrays



## Bit Masking

☐ Reverse bits



☐ Number of set bits



☐ Sum of two integers



☐ Check whether K-th bit is set or not



☐ Longest Consecutive 1's



☐ Non repeating numbers





## Linked List

☐ Merge Two Sorted Linked Lists



☐ Reverse a Linked List



☐ Delete a Node without Head Pointer



☐ Add two Numbers represented by linked lists



☐ Finding middle element in a linked list



☐ Check if linked list is palindrome



## Stack

☐ Parenthesis Checker



☐ Infix to Postfix



☐ Restrictive Candy Crush



## Queue

☐ First negative integer in every window of size k



☐ Valid Substring



☐ Maximum Diamonds



## Heap

☐ Adding Array Elements



☐ Minimum Cost of ropes



☐ Binary Heap Operations



## Binary Tree

☐ Symmetric Tree



☐ Zigzag Tree Traversal



☐ Checked for Balanced tree



☐ Height of Binary Tree



☐ Diameter of Binary tree



☐ Minimum depth of binary tree



## Binary Search Tree

☐ Check for BST



☐ Array to BST



☐ Inorder Successor in BST



## Graph

☐ Print Adjacency List



☐ BFS of Graph



☐ DFS of Graph



☐ Mother Vertex



☐ Count the Paths



☐ Eulerian Path in an Undirected Graph



## Greedy

☐ Largest number with given Sum



☐ Maximum Sum without Adjacents



☐ Maximize Toys



## Dynamic Programming

☐ Count ways to reach the n'th stair



☐ Nth Fibonacci Number



☐ Gold Mine Problem



## Recursion

☐ Number of Paths



☐ Juggler Sequence



☐ Tower of Hanoi



☐ Permutations



☐ Permutation with Spaces



☐ Pascals Triangle



## Algorithms

☐ Bubble Sort



☐ Insertion Sort



☐ Selection Sort



## Design Patterns

☐ Stack using two queues



☐ Queue using stack



☐ Queue Operations



# {Let's Step Up a Bit}

## Medium Level Problems

Use checkboxes to track your progress.  
Keep practicing, Geek.

### Math

☐ A Simple Fraction



☐ Count of sum of  
consecutives



☐ nCr()



### Array

☐ Jump Game



☐ Maximum  
number of 1's



☐ Stock Buy and  
Sell



☐ Maximum index



☐ Trapping Rain  
Water



☐ 3 sum closest



## Searching

☐ Search an element in sorted and rotated array



☐ Square root of a number



☐ Find missing in second array



## Sorting

☐ Count the number of possible triangles



☐ Triplets with sum with given range



☐ Count Inversions



☐ Relative Sorting



☐ Minimum Platforms



☐ Maximum Index



## Matrix

☐ Spiral Matrix



☐ Boolean matrix



☐ Rotate matrix by 90 degrees





Search in a  
row-column  
sorted Matrix



Find nth element  
of spiral matrix



Row with  
maximum 1s



## String



Length of longest  
prefix suffix



Validate an  
IP address



Implement Atoi



Look and say  
Pattern



Longest substring  
without repeating  
characters



Longest K  
unique characters  
substring



## Hashing



Triplet Sum in  
Array



Length of the  
longest substring



Is Sudoku Valid



Print Anagrams  
Together



Subarrays with  
sum K



Longest subarray  
with sum divisible  
by K



## Bit Masking



Find the element that appears once



Gray code



Maximum AND



## Linked List



Rearrange a linked list



Detect and Remove a loop In Linked List



Merge Sort for Linked List



Intersection of Linked List



Rotate Linked List by K places



Flattening a Linked List



## Stack



Next Larger Element



Stock span problem



The Celebrity Problem





## Queue

☐ Maximum of all subarrays of size K



☐ Circular tour (Sliding Window)



☐ First non repeating character in a stream



## Heap

☐ Kth largest element of stream



☐ Merge k sorted arrays



☐ Nearly Sorted



## Binary Tree

☐ Inorder Traversal (iterative)



☐ Preorder Traversal (iterative)



☐ Postorder Traversal (iterative)



☐ Connect nodes at same level



☐ Boundary Traversal



☐ Sum tree



# Binary Search Tree

☐ Pair with given target in BST



☐ Unique BSTs



☐ Preorder Traversal and BST



## Graph

☐ Number of Islands



☐ COVID Spread



☐ Prerequisite tasks



☐ Minimum swaps to sort



☐ Snake and Ladder Problem



☐ Unit Area of Largest region of 1s



## Greedy

☐ N meetings in one room



☐ Coin Piles



☐ Maximize Toys



☐ Job Sequencing



☐ Police and Thieves



☐ Water the Plants



## Dynamic Programming

☐ Number of Coins



☐ Box Stacking



☐ Longest Palindromic Substring



☐ Wildcard Pattern Matching



☐ Minimum number of jumps



☐ Player with max score



## Recursion

☐ Special Keyboard



☐ Flood Fill Algorithm



☐ Word Boggle – 1



☐ Rat in a Maze Problem



☐ Letter Combinations of a Phone Number



☐ Generate Parentheses



# Algorithms

☐ Merge Sort



☐ Quick Sort



☐ Heap Sort



☐ Kadane Algorithm



☐ Minimum Spanning Tree



☐ Huffman Encoding



# Design

☐ Ternary Search



☐ Binary Heap Operations



☐ LRU cache



# {When the Going Gets Tough}

## Hard Level Problems

Use checkboxes to track your progress.  
Keep practicing, Geek.

### Math

☐ Nth Natural Number



☐ Smallest Positive Integer that can not be represented as Sum



☐ Generalised Fibonacci Number



### Array

☐ Maximum circular Subarray Sum



☐ Merge without Extra Space



☐ Number of subsets with product less than K



## Searching

☐ Painter's Partition Problem



☐ Median of 2 sorted arrays of Different sizes



☐ Allocate minimum number of pages



## String

☐ Numbers with one absolute difference



☐ Longest Palindromic Substring



☐ Distinct Palindromic substrings



## Bit Masking

☐ Maximum subset XOR



☐ Minimum X (xor) A



☐ Bit Difference



## Linked List

☐ Clone a linked list with next and random pointers



☐ Reorder List



☐ QuickSort on Doubly Linked List



## Stack

☐ Longest Valid Parentheses



☐ Remove K digits



☐ 132 Geeky Buildings



## Heap

☐ Median of stream



☐ Smallest range in K lists



☐ Rearrange characters



## Binary Tree

☐ Binary Tree to Doubly Linked List



☐ Maximum sum path between two leaf nodes



☐ Burning Tree



## Binary Search Tree

☐ Merge two BST's



☐ Fixing two nodes of a BST



☐ Sorted Linked List to BST



## Graph

☐ Number of Provinces



☐ Alien Dictionary



☐ Word Ladder



☐ Word Ladder II



☐ Minimum Cost Path



☐ Strongly Connected Components (Tarjan's Algo)





# Dynamic Programming

☐ Matrix Chain



☐ Partition Equal Subset Sum



☐ Palindromic Partitioning



# Recursion

☐ Palindrome Partitioning



☐ N-Queen Problem



☐ Solve the Sudoku



# Algorithms

☐ Bellman Ford Algorithm



☐ Dijkstra Algorithm



☐ Floyd Warshall



☐ Rabin-Karp Algorithm



☐ KMP algorithm



☐ Z Algorithm



# {The Endgame}

## Building Soft Skills

Resume Building-  
Resources and  
Tips

[Read More](#)



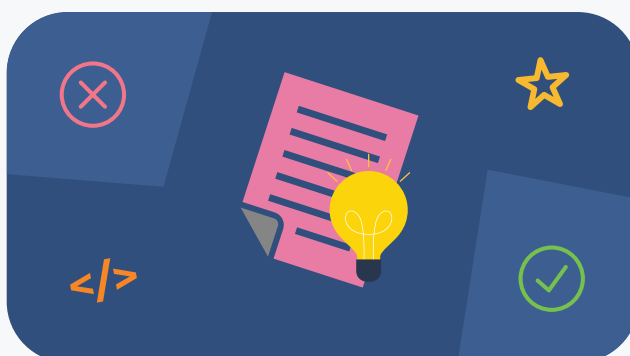
7 Ways to Highlight  
Achievements in  
Your Resume

[Read More](#)



12 Best Resume  
Do's & Don'ts

[Read More](#)



# {Bonus}

## How to Prepare for Interviews

Tell me  
about yourself!

[Read Answer](#)

What are your  
strengths &  
weaknesses?

[Read Answer](#)

Why should you  
be hired?

[Read Answer](#)





{Liked the workbook?}  
Tell us about it!



Share your progress