

# **DSA Sheet by Love Babbar**

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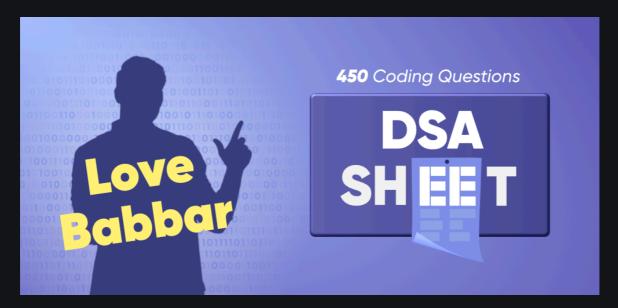


### Who is Love Babbar?

Love Babbar is a famous Youtuber, graduated from NSUT Delhi who has also worked as a Software Engineer at Amazon.

### What is a DSA Sheet?

A sheet that covers almost every concept of Data Structures and Algorithms.



So, this DSA sheet by Love Babbar contains 450 coding questions which will help in:

- Understanding each and every concept of DSA.
- Clearing the DSA round for the Interviews, as these are the questions generally asked in the companies like Amazon, Microsoft, Google, etc.
- Basic Knowledge of <u>Data Structures</u> and <u>Algorithms</u>.
- Having good knowledge of at-least one programming knowledge like <u>C++</u>,
   <u>Java</u>, <u>Python</u>.
- Know how to use <u>STL</u> as it will make data structures and few techniques easier to implement.

Below is the topic-wise distribution of 450 questions:

- Arrays(36)
- Matrix(10)
- <u>Strings(43)</u>
- Searching and Sorting (36)
- Linked List(36)
- Bit Manipulation (10)
- <u>Greedy(35)</u>
- Backtracking(19)

- <u>Dynamic Programming (60)</u>
- Stacks and Queues (38)
- Binary Trees (35)
- Binary Search Tree(22)
- **Graphs**(44)
- <u>Heap(18)</u>
- <u>Trie(6)</u>

This sheet can be completed within 2-3 months without any cheat day.

So, Start solving this 450 DSA Cracker from today itself. Keep a track of all the problems mentioned below: <a href="Practice Love Babbar DSA Sheet">Practice Love Babbar DSA Sheet</a>

### Arrays

Question	Article	Practice
Reverse an Array/String	<u>Link</u>	<u>Link</u>
Find the maximum and minimum element in an array	<u>Link</u>	<u>Link</u>
Find the "Kth" max and min element of an array	<u>Link</u>	<u>Link</u>
Given an array which consists of only 0, 1 and 2. Sort the array without using any sorting algo	<u>Link</u>	<u>Link</u>
Move all the negative elements to one side of the array	<u>Link</u>	<u>Link</u>
Find the Union and Intersection of the two sorted arrays.	<u>Link</u>	<u>Link</u>
Write a program to cyclically rotate an array by one.	<u>Link</u>	<u>Link</u>
Find Largest sum contiguous Subarray [V. IMP]	<u>Link</u>	<u>Link</u>
Minimize the maximum difference between heights [V.IMP]	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Minimum no. of Jumps to reach end of an array	<u>Link</u>	<u>Link</u>
Find duplicate in an array of N+1 Integers	<u>Link</u>	<u>Link</u>
Merge 2 sorted arrays without using Extra space.	<u>Link</u>	<u>Link</u>
Kadane's Algo [V.V.V.V IMP]	<u>Link</u>	<u>Link</u>
Merge Intervals	<u>Link</u>	<u>Link</u>
Next Permutation	<u>Link</u>	<u>Link</u>
Count Inversion	<u>Link</u>	<u>Link</u>
Best time to buy and Sell stock	<u>Link</u>	<u>Link</u>
Find all pairs on integer array whose sum is equal to given number	<u>Link</u>	<u>Link</u>
Find common elements In 3 sorted arrays	<u>Link</u>	<u>Link</u>
Rearrange the array in alternating positive and negative items with O(1) extra space	<u>Link</u>	<u>Link</u>
Find if there is any subarray with sum equal to 0	<u>Link</u>	<u>Link</u>
Find factorial of a large number	<u>Link</u>	<u>Link</u>
Find maximum product subarray	<u>Link</u>	<u>Link</u>
Find longest consecutive subsequence	<u>Link</u>	<u>Link</u>
Given an array of size n and a number k, fin all elements that appear more than " n/k " times.	<u>Link</u>	<u>Link</u>
Maximum profit by buying and selling a share at most twice	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Find whether an array is a subset of another array	<u>Link</u>	<u>Link</u>
Find the triplet that sum to a given value	<u>Link</u>	<u>Link</u>
Trapping Rain water problem	<u>Link</u>	<u>Link</u>
Chocolate Distribution problem	<u>Link</u>	<u>Link</u>
Smallest Subarray with sum greater than a given value	<u>Link</u>	<u>Link</u>
Three way partitioning of an array around a given value	<u>Link</u>	<u>Link</u>
Minimum swaps required bring elements less equal K together	<u>Link</u>	<u>Link</u>
Minimum no. of operations required to make an array palindrome	<u>Link</u>	<u>Link</u>
Median of 2 sorted arrays of equal size	<u>Link</u>	<u>Link</u>
Median of 2 sorted arrays of different size	<u>Link</u>	<u>Link</u>

# Matrix

Question	Article	Practice
Spiral traversal on a Matrix	<u>Link</u>	<u>Llnk</u>
Search an element in a Matrix	<u>Link</u>	<u>Link</u>
Find median in a row wise sorted matrix	<u>Link</u>	<u>Link</u>
Find row with maximum no. of 1's	<u>Link</u>	<u>Link</u>
Print elements in sorted order using row-column wise sorted matrix	<u>Link</u>	<u>Link</u>
Maximum size rectangle	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Find a specific pair in matrix	<u>Link</u>	NA
Rotate matrix by 90 degrees	<u>Link</u>	<u>Link</u>
Kth smallest element in a row-column wise sorted matrix	<u>Link</u>	<u>Link</u>
Common elements in all rows of a given matrix	<u>Link</u>	<u>Link</u>

# Strings

Question	Article	Practice
Reverse a String	<u>Link</u>	<u>Link</u>
Check whether a String is Palindrome or not	<u>Link</u>	<u>Link</u>
Find Duplicate characters in a string	<u>Link</u>	NA
Why strings are immutable in Java?	<u>Link</u>	NA
Write a Code to check whether one string is a rotation of another	<u>Link</u>	<u>Link</u>
Write a Program to check whether a string is a valid shuffle of two strings or not	<u>Link</u>	NA
Count and Say problem	<u>Link</u>	<u>Link</u>
Write a program to find the longest Palindrome in a string.[Longest palindromic Substring]	<u>Link</u>	<u>Link</u>
Find Longest Recurring Subsequence in String	<u>Link</u>	<u>Link</u>
Print all Subsequences of a string.	<u>Link</u>	NA
Print all the permutations of the given string	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Split the Binary string into two substring with equal 0's and 1's	<u>Link</u>	NA
Word Wrap Problem [VERY IMP].	<u>Link</u>	<u>Link</u>
EDIT Distance [Very Imp]	<u>Link</u>	<u>Link</u>
Find next greater number with same set of digits. [Very Very IMP]	<u>Link</u>	<u>Link</u>
Balanced Parenthesis problem.[Imp]	<u>Link</u>	<u>Link</u>
Word break Problem[ Very Imp]	<u>Link</u>	<u>Link</u>
Rabin Karp Algorithm	<u>Link</u>	<u>Link</u>
KMP Algorithm	<u>Link</u>	<u>Link</u>
Convert a Sentence into its equivalent mobile numeric keypad sequence.	<u>Link</u>	<u>Link</u>
Minimum number of bracket reversals needed to make an expression balanced.	<u>Link</u>	<u>Link</u>
Count All Palindromic Subsequence in a given String.	<u>Link</u>	<u>Link</u>
Count of number of given string in 2D character array	<u>Link</u>	<u>Link</u>
Search a Word in a 2D Grid of characters.	<u>Link</u>	<u>Link</u>
Boyer Moore Algorithm for Pattern Searching.	<u>Link</u>	<u>Link</u>
Converting Roman Numerals to Decimal	<u>Link</u>	<u>Link</u>
Longest Common Prefix	<u>Link</u>	<u>Link</u>
Number of flips to make binary string alternate	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Find the first repeated word in string.	<u>Link</u>	<u>Link</u>
Minimum number of swaps for bracket balancing.	<u>Link</u>	<u>Link</u>
Find the longest common subsequence between two strings.	<u>Link</u>	<u>Link</u>
Program to generate all possible valid IP addresses from given string.	<u>Link</u>	<u>Link</u>
Write a program to find the smallest window that contains all characters of string itself.	<u>Link</u>	<u>Link</u>
Rearrange characters in a string such that no two adjacent are same	<u>Link</u>	<u>Link</u>
Minimum characters to be added at front to make string palindrome	<u>Link</u>	<u>Link</u>
Given a sequence of words, print all anagrams together	<u>Link</u>	<u>Link</u>
Find the smallest window in a string containing all characters of another string	<u>Link</u>	<u>Link</u>
Recursively remove all adjacent duplicates	<u>Link</u>	<u>Link</u>
String matching where one string contains wildcard characters	<u>Link</u>	<u>Link</u>
Function to find Number of customers who could not get a computer	<u>Link</u>	NA
Transform One String to Another using Minimum Number of Given Operation	<u>Link</u>	<u>Link</u>
Check if two given strings are isomorphic to each other	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Recursively print all sentences that can be formed from list of word lists	<u>Link</u>	NA

# Searching and Sorting:

Question	Article	Practice
Find first and last positions of an element in a sorted array	<u>Link</u>	<u>Link</u>
Find a Fixed Point (Value equal to index) in a given array	<u>Link</u>	<u>Link</u>
Search in a rotated sorted array	<u>Link</u>	<u>Link</u>
Square root of an integer	<u>Link</u>	<u>Link</u>
Maximum and minimum of an array using minimum number of comparisons	<u>Link</u>	<u>Link</u>
Optimum location of point to minimize total distance	<u>Link</u>	Link
Find the repeating and the missing	<u>Link</u>	<u>Link</u>
Find majority element	<u>Link</u>	<u>Link</u>
Searching in an array where adjacent differ by at most k	<u>Link</u>	Link
Find a pair with a given difference	<u>Link</u>	<u>Link</u>
Find four elements that sum to a given value	<u>Link</u>	<u>Link</u>
Maximum sum such that no 2 elements are adjacent	<u>Link</u>	<u>Link</u>
Count triplet with sum smaller than a given value	<u>Link</u>	<u>Link</u>
Merge 2 sorted arrays	<u>Link</u>	<u>Link</u>
Product array Puzzle	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Sort array according to count of set bits	<u>Link</u>	<u>Link</u>
Minimum no. of swaps required to sort the array	<u>Link</u>	<u>Link</u>
Bishu and Soldiers	Link	Link
Rasta and Kheshtak	Link	<u>Link</u>
Kth smallest number again	<u>Link</u>	Link
Find pivot element in a sorted array	<u>Link</u>	<u>Link</u>
K-th Element of Two Sorted Arrays	<u>Link</u>	<u>Link</u>
Aggressive cows	Link	<u>Link</u>
Book Allocation Problem	<u>Link</u>	<u>Link</u>
EKOSPOJ:	Link	<u>Link</u>
Job Scheduling Algo	<u>Link</u>	Link
Missing Number in AP	<u>Link</u>	<u>Link</u>
Smallest number with atleast n trailing zeroes in factorial	<u>Link</u>	<u>Link</u>
Painters Partition Problem:	Link	<u>Link</u>
ROTI-Prata SPOJ	Link	<u>Link</u>
DoubleHelix SPOJ	Link	<u>Link</u>
Subset Sums	Link	<u>Link</u>
Find the inversion count	<u>Link</u>	<u>Link</u>
Implement Merge-sort in-place	<u>Link</u>	Link

Question	Article	Practice
Partitioning and Sorting Arrays with Many Repeated Entries	<u>Link</u>	Link

# LinkedList:

Question	Article	Practice
Write a Program to reverse the Linked List. (Both Iterative and recursive)	<u>Link</u>	<u>Link</u>
Reverse a Linked List in group of Given Size. [Very Imp]	<u>Link</u>	<u>Link</u>
Write a program to Detect loop in a linked list.	<u>Link</u>	<u>Link</u>
Write a program to Delete loop in a linked list.	<u>Link</u>	<u>Link</u>
Find the starting point of the loop.	<u>Link</u>	Link
Remove Duplicates in a sorted Linked List.	<u>Link</u>	<u>Link</u>
Remove Duplicates in a Un-sorted Linked List.	<u>Link</u>	<u>Link</u>
Write a Program to Move the last element to Front in a Linked List.	<u>Link</u>	Link
Add "1" to a number represented as a Linked List.	<u>Link</u>	<u>Link</u>
Add two numbers represented by linked lists.	<u>Link</u>	<u>Link</u>
Intersection of two Sorted Linked List.	<u>Link</u>	<u>Link</u>
Intersection Point of two Linked Lists.	<u>Link</u>	<u>Link</u>
Merge Sort For Linked lists.[Very Important]	<u>Link</u>	<u>Link</u>
Quicksort for Linked Lists.[Very Important]	<u>Link</u>	<u>Link</u>
Find the middle Element of a linked list.	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Check if a linked list is a circular linked list.	<u>Link</u>	<u>Link</u>
Split a Circular linked list into two halves.	<u>Link</u>	<u>Link</u>
Write a Program to check whether the Singly Linked list is a palindrome or not.	<u>Link</u>	<u>Link</u>
Deletion from a Circular Linked List.	<u>Link</u>	Link
Reverse a Doubly Linked list.	<u>Link</u>	<u>Link</u>
Find pairs with a given sum in a DLL.	<u>Link</u>	Link
Count triplets in a sorted DLL whose sum is equal to given value "X".	<u>Link</u>	Link
Sort a "k"sorted Doubly Linked list.[Very IMP]	<u>Link</u>	Link
Rotate Doubly Linked list by N nodes.	<u>Link</u>	Link
Rotate a Doubly Linked list in group of Given Size.[Very IMP]	<u>Link</u>	Link
Can we reverse a linked list in less than O(n)?	Link	Link
Why Quicksort is preferred for. Arrays and Merge Sort for Linked Lists?	Link	Link
Flatten a Linked List	<u>Link</u>	<u>Link</u>
Sort a LL of 0's, 1's and 2's	<u>Link</u>	<u>Link</u>
Clone a linked list with next and random pointer	<u>Link</u>	<u>Link</u>
Merge K sorted Linked list	<u>Link</u>	<u>Link</u>
Multiply 2 no. represented by LL	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Delete nodes which have a greater value on right side	<u>Link</u>	<u>Link</u>
Segregate even and odd nodes in a Linked List	<u>Link</u>	<u>Link</u>
Program for n'th node from the end of a Linked List	<u>Link</u>	<u>Link</u>

# Bit Manipulation:

Question	Article	Practice
Count set bits in an integer	<u>Link</u>	<u>Link</u>
Find the two non-repeating elements in an array of repeating elements	<u>Link</u>	<u>Link</u>
Count number of bits to be flipped to convert A to B	<u>Link</u>	<u>Link</u>
Count total set bits in all numbers from 1 to n	<u>Link</u>	<u>Link</u>
Program to find whether a no is power of two	<u>Link</u>	<u>Link</u>
Find position of the only set bit	<u>Link</u>	<u>Link</u>
Copy set bits in a range	<u>Link</u>	<u>Link</u>
Divide two integers without using multiplication, division and mod operator	<u>Link</u>	<u>Link</u>
Calculate square of a number without using *, / and pow()	<u>Link</u>	Link
Power Set	<u>Link</u>	<u>Link</u>

# Greedy

Question	Article	Practice
Activity Selection Problem	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Job Sequencing Problem	<u>Link</u>	<u>Link</u>
Huffman Coding	<u>Link</u>	<u>Link</u>
Water Connection Problem	<u>Link</u>	<u>Link</u>
Fractional Knapsack Problem	<u>Link</u>	<u>Link</u>
Greedy Algorithm to find Minimum number of Coins	<u>Link</u>	<u>Link</u>
Maximum trains for which stoppage can be provided	<u>Link</u>	Link
Minimum Platforms Problem	<u>Link</u>	<u>Link</u>
Buy Maximum Stocks if i stocks can be bought on i-th day	<u>Link</u>	Link
Find the minimum and maximum amount to buy all N candies	<u>Link</u>	<u>Link</u>
Minimize Cash Flow among a given set of friends who have borrowed money from each other	<u>Link</u>	Link
Minimum Cost to cut a board into squares	<u>Link</u>	Link
Check if it is possible to survive on Island	<u>Link</u>	Link
Find maximum meetings in one room	<u>Link</u>	Link
Maximum product subset of an array	<u>Link</u>	Link
Maximize array sum after K negations	<u>Link</u>	<u>Link</u>
Maximize the sum of arr[i]*i	<u>Link</u>	<u>Link</u>
Maximum sum of absolute difference of an array	<u>Link</u>	Link
Maximize sum of consecutive differences in a circular	<u>Link</u>	<u>Link</u>

Question	Article	Practice
array		
Minimum sum of absolute difference of pairs of two arrays	<u>Link</u>	Link
Program for Shortest Job First (or SJF) CPU Scheduling	<u>Link</u>	Link
Program for Least Recently Used (LRU) Page Replacement algorithm	<u>Link</u>	<u>Link</u>
Smallest subset with sum greater than all other elements	<u>Link</u>	Link
Chocolate Distribution Problem	<u>Link</u>	<u>Link</u>
DEFKIN -Defense of a Kingdom	Link	<u>Link</u>
DIEHARD -DIE HARD	Link	<u>Link</u>
GERGOVIA -Wine trading in Gergovia	Link	<u>Link</u>
Picking Up Chicks	Link	<u>Link</u>
CHOCOLA –Chocolate	Link	<u>Link</u>
ARRANGE -Arranging Amplifiers	Link	<u>Link</u>
K Centers Problem	<u>Link</u>	Link
Minimum Cost of ropes	<u>Link</u>	<u>Link</u>
Find smallest number with given number of digits and sum of digits	<u>Link</u>	<u>Link</u>
Rearrange characters in a string such that no two adjacent are same	<u>Link</u>	<u>Link</u>
Find maximum sum possible equal sum of three stacks	<u>Link</u>	Link

Question	Article	Practice
Rat in a maze Problem	<u>Link</u>	<u>Link</u>
Printing all solutions in N-Queen	<u>Link</u>	Link
Word Break Problem using Backtracking	<u>Link</u>	<u>Link</u>
Remove Invalid Parentheses	<u>Link</u>	Link
Sudoku Solver	<u>Link</u>	<u>Link</u>
M Coloring Problem	<u>Link</u>	<u>Link</u>
Print all palindromic partitions of a string	<u>Link</u>	Link
Subset Sum Problem	<u>Link</u>	<u>Link</u>
The Knight's tour problem	<u>Link</u>	Link
Tug of War	<u>Link</u>	Link
Find shortest safe route in a path with landmines	<u>Link</u>	Link
Combinational Sum	<u>Link</u>	<u>Link</u>
Find Maximum number possible by doing at-most K swaps	<u>Link</u>	<u>Link</u>
Print all permutations of a string	<u>Link</u>	<u>Link</u>
Find if there is a path of more than k length from a source	<u>Link</u>	Link
Longest Possible Route in a Matrix with Hurdles	<u>Link</u>	Link
Print all possible paths from top left to bottom right of a mXn matrix	<u>Link</u>	Link
Partition of a set into K subsets with equal sum	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Find the K-th Permutation Sequence of first N natural numbers	<u>Link</u>	Link

# Dynamic Programming

Question	Article	Practice
Coin Change Problem	<u>Link</u>	<u>Link</u>
Knapsack Problem	<u>Link</u>	<u>Link</u>
Binomial Coefficient Problem	<u>Link</u>	<u>Link</u>
Permutation Coefficient Problem	<u>Link</u>	Link
Program for nth Catalan Number	<u>Link</u>	Link
Matrix Chain Multiplication	<u>Link</u>	Link
Edit Distance	<u>Link</u>	<u>Link</u>
Subset Sum Problem	<u>Link</u>	Link
Friends Pairing Problem	<u>Link</u>	<u>Link</u>
Gold Mine Problem	<u>Link</u>	Link
Assembly Line Scheduling Problem	<u>Link</u>	Link
Painting the Fence problem	<u>Link</u>	<u>Link</u>
Maximize The Cut Segments	<u>Link</u>	<u>Link</u>
Longest Common Subsequence	<u>Link</u>	<u>Link</u>
Longest Repeated Subsequence	<u>Link</u>	<u>Link</u>
Longest Increasing Subsequence	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Space Optimized Solution of LCS	<u>Link</u>	Link
LCS (Longest Common Subsequence) of three strings	<u>Link</u>	<u>Link</u>
Maximum Sum Increasing Subsequence	<u>Link</u>	<u>Link</u>
Count all subsequences having product less than K	<u>Link</u>	Link
Longest subsequence such that difference between adjacent is one	<u>Link</u>	<u>Link</u>
Maximum subsequence sum such that no three are consecutive	<u>Link</u>	Link
Egg Dropping Problem	<u>Link</u>	<u>Link</u>
Maximum Length Chain of Pairs	<u>Link</u>	<u>Link</u>
Maximum size square sub-matrix with all 1s	<u>Link</u>	<u>Link</u>
Maximum sum of pairs with specific difference	<u>Link</u>	<u>Link</u>
Min Cost Path Problem	<u>Link</u>	<u>Link</u>
Maximum difference of zeros and ones in binary string	<u>Link</u>	<u>Link</u>
Minimum number of jumps to reach end	<u>Link</u>	<u>Link</u>
Minimum cost to fill given weight in a bag	<u>Link</u>	<u>Link</u>
Minimum removals from array to make max –min <= K	<u>Link</u>	Link
Longest Common Substring	<u>Link</u>	<u>Link</u>
Count number of ways to reach a given score in a game	<u>Link</u>	<u>Link</u>
Count Balanced Binary Trees of Height h	<u>Link</u>	<u>Link</u>

Question	Article	Practice
LargestSum Contiguous Subarray [V>V>V>V IMP ]	<u>Link</u>	<u>Link</u>
Smallest sum contiguous subarray	<u>Link</u>	Link
Unbounded Knapsack (Repetition of items allowed)	<u>Link</u>	<u>Link</u>
Word Break Problem	<u>Link</u>	<u>Link</u>
Largest Independent Set Problem	<u>Link</u>	<u>Link</u>
Partition problem	<u>Link</u>	<u>Link</u>
Longest Palindromic Subsequence	<u>Link</u>	<u>Link</u>
Count All Palindromic Subsequence in a given String	<u>Link</u>	<u>Link</u>
Longest Palindromic Substring	<u>Link</u>	<u>Link</u>
Longest alternating subsequence	<u>Link</u>	<u>Link</u>
Weighted Job Scheduling	<u>Link</u>	Link
Coin game winner where every player has three choices	<u>Link</u>	Link
Count Derangements (Permutation such that no element appears in its original position) [IMPORTANT]	<u>Link</u>	Link
Maximum profit by buying and selling a share at most twice [ IMP ]	<u>Link</u>	<u>Link</u>
Optimal Strategy for a Game	<u>Link</u>	<u>Link</u>
Optimal Binary Search Tree	<u>Link</u>	<u>Link</u>
Palindrome Partitioning Problem	<u>Link</u>	<u>Link</u>
Word Wrap Problem	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Mobile Numeric Keypad Problem [ IMP ]	<u>Link</u>	<u>Link</u>
Boolean Parenthesization Problem	<u>Link</u>	<u>Link</u>
Largest rectangular sub-matrix whose sum is 0	<u>Link</u>	Link
Largest area rectangular sub-matrix with equal number of 1's and 0's [IMP]	<u>Link</u>	Link
Maximum sum rectangle in a 2D matrix	<u>Link</u>	<u>Link</u>
Maximum profit by buying and selling a share at most k times	<u>Link</u>	<u>Link</u>
Find if a string is interleaved of two other strings	<u>Link</u>	<u>Link</u>
Maximum Length of Pair Chain	<u>Link</u>	<u>Link</u>

# Stacks and Queues

Question	Article	Practice
Implement Stack from Scratch	<u>Link</u>	<u>Link</u>
Implement Queue from Scratch	<u>Link</u>	<u>Link</u>
Implement 2 stack in an array	<u>Link</u>	<u>Link</u>
Find the middle element of a stack	<u>Link</u>	Link
Implement "N" stacks in an Array	<u>Link</u>	Link
Check the expression has valid or Balanced parenthesis or not.	<u>Link</u>	<u>Link</u>
Reverse a String using Stack	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Design a Stack that supports getMin() in O(1) time and O(1) extra space.	<u>Link</u>	<u>Link</u>
Find the next Greater element	<u>Link</u>	<u>Link</u>
The celebrity Problem	<u>Link</u>	<u>Link</u>
Arithmetic Expression evaluation	<u>Link</u>	Link
Evaluation of Postfix expression	<u>Link</u>	<u>Link</u>
Implement a method to insert an element at its bottom without using any other data structure.	<u>Link</u>	Link
Reverse a stack using recursion	<u>Link</u>	Link
Sort a Stack using recursion	<u>Link</u>	<u>Link</u>
Merge Overlapping Intervals	<u>Link</u>	<u>Link</u>
Largest rectangular Area in Histogram	<u>Link</u>	<u>Link</u>
Length of the Longest Valid Substring	<u>Link</u>	<u>Link</u>
Expression contains redundant bracket or not	<u>Link</u>	Link
Implement Stack using Queue	<u>Link</u>	<u>Link</u>
Implement Stack using Deque	<u>Link</u>	Link
Stack Permutations (Check if an array is stack permutation of other)	<u>Link</u>	Link
Implement Queue using Stack	<u>Link</u>	<u>Link</u>
Implement "n" queue in an array	<u>Link</u>	Link

Question	Article	Practice
Implement a Circular queue	<u>Link</u>	Link
LRU Cache Implementation	<u>Link</u>	<u>Link</u>
Reverse a Queue using recursion	<u>Link</u>	<u>Link</u>
Reverse the first "K" elements of a queue	<u>Link</u>	<u>Link</u>
Interleave the first half of the queue with second half	<u>Link</u>	Link
Find the first circular tour that visits all Petrol Pumps	<u>Link</u>	<u>Link</u>
Minimum time required to rot all oranges	<u>Link</u>	<u>Link</u>
Distance of nearest cell having 1 in a binary matrix	<u>Link</u>	<u>Link</u>
First negative integer in every window of size "k"	<u>Link</u>	<u>Link</u>
Check if all levels of two trees are anagrams or not.	<u>Link</u>	Link
Sum of minimum and maximum elements of all subarrays of size "k".	<u>Link</u>	Link
Minimum sum of squares of character counts in a given string after removing "k" characters.	<u>Link</u>	<u>Link</u>
Queue based approach or first non-repeating character in a stream.	<u>Link</u>	<u>Link</u>
Next Smaller Element	<u>Link</u>	Link

# Binary Trees

Question	Article	Practice
Level order traversal	<u>Link</u>	<u>Link</u>
Reverse Level Order traversal	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Height of a tree	<u>Link</u>	<u>Link</u>
Diameter of a tree	<u>Link</u>	<u>Link</u>
Mirror of a tree	<u>Link</u>	<u>Link</u>
Inorder Traversal of a tree both using recursion and Iteration	<u>Link</u>	Link
Preorder Traversal of a tree both using recursion and Iteration	<u>Link</u>	Link
Postorder Traversal of a tree both using recursion and Iteration	<u>Link</u>	Link
Left View of a tree	<u>Link</u>	<u>Link</u>
Right View of Tree	<u>Link</u>	<u>Link</u>
Top View of a tree	<u>Link</u>	<u>Link</u>
Bottom View of a tree	<u>Link</u>	<u>Link</u>
Zig-Zag traversal of a binary tree	<u>Link</u>	<u>Link</u>
Check if a tree is balanced or not	<u>Link</u>	<u>Link</u>
Diagonal Traversal of a Binary tree	<u>Link</u>	<u>Link</u>
Boundary traversal of a Binary tree	<u>Link</u>	<u>Link</u>
Construct Binary Tree from String with Bracket Representation	<u>Link</u>	Link
Convert Binary tree into Doubly Linked List	<u>Link</u>	<u>Link</u>
Convert Binary tree into Sum tree	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Construct Binary tree from Inorder and preorder traversal	<u>Link</u>	<u>Link</u>
Find minimum swaps required to convert a Binary tree into BST	<u>Link</u>	Link
Check if Binary tree is Sum tree or not	<u>Link</u>	<u>Link</u>
Check if all leaf nodes are at same level or not	<u>Link</u>	<u>Link</u>
Check if a Binary Tree contains duplicate subtrees of size 2 or more [IMP]	<u>Link</u>	<u>Link</u>
Check if 2 trees are mirror or not	<u>Link</u>	<u>Link</u>
Sum of Nodes on the Longest path from root to leaf node	<u>Link</u>	<u>Link</u>
Check if given graph is tree or not. [IMP]	<u>Link</u>	Link
Find Largest subtree sum in a tree	<u>Link</u>	Link

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Maximum Sum of nodes in Binary tree such that no two are adjacent	<u>Link</u>	<u>Link</u>
Print all "K" Sum paths in a Binary tree	<u>Link</u>	<u>Link</u>
Find LCA in a Binary tree	<u>Link</u>	<u>Link</u>
Find distance between 2 nodes in a Binary tree	<u>Link</u>	<u>Link</u>
Kth Ancestor of node in a Binary tree	<u>Link</u>	<u>Link</u>
Find all Duplicate subtrees in a Binary tree [ IMP ]	<u>Link</u>	<u>Link</u>
Tree Isomorphism Problem	<u>Link</u>	<u>Link</u>

Binary Search Tree:

Question	Article	Practice
Find a value in a BST	<u>Link</u>	Link
Deletion of a node in a BST	<u>Link</u>	Link
Find min and max value in a BST	<u>Link</u>	<u>Link</u>
Find inorder successor and inorder predecessor in a BST	<u>Link</u>	<u>Link</u>
Check if a tree is a BST or not	<u>Link</u>	<u>Link</u>
Populate Inorder successor of all nodes	<u>Link</u>	<u>Link</u>
Find LCA of 2 nodes in a BST	<u>Link</u>	<u>Link</u>
Construct BST from preorder traversal	<u>Link</u>	Link
Convert Binary tree into BST	<u>Link</u>	<u>Link</u>
Convert a normal BST into a Balanced BST	<u>Link</u>	<u>Link</u>
Merge two BST [ V.V.V>IMP ]	<u>Link</u>	<u>Link</u>
Find Kth largest element in a BST	<u>Link</u>	<u>Link</u>
Find Kth smallest element in a BST	<u>Link</u>	<u>Link</u>
Count pairs from 2 BST whose sum is equal to given value "X"	<u>Link</u>	<u>Link</u>
Find the median of BST in O(n) time and O(1) space	<u>Link</u>	<u>Link</u>
Count BST nodes that lie in a given range	<u>Link</u>	<u>Link</u>
Replace every element with the least greater element on its right	<u>Link</u>	Link
Given "n" appointments, find the conflicting appointments	<u>Link</u>	Link

Question	Article	Practice
Check preorder is valid or not	<u>Link</u>	<u>Link</u>
Check whether BST contains Dead end	<u>Link</u>	<u>Link</u>
Largest BST in a Binary Tree [ V.V.V.V.V IMP ]	<u>Link</u>	<u>Link</u>
Flatten BST to sorted list	<u>Link</u>	Link

# Graphs

Question	Article	Practice
Create a Graph, print it	<u>Link</u>	Link
Implement BFS algorithm	<u>Link</u>	<u>Link</u>
Implement DFS Algo	<u>Link</u>	Link
Detect Cycle in Directed Graph using BFS/DFS Algo	<u>Link</u>	Link
Detect Cycle in UnDirected Graph using BFS/DFS Algo	<u>Link</u>	<u>Link</u>
Search in a Maze	<u>Link</u>	<u>Link</u>
Minimum Step by Knight	<u>Link</u>	<u>Link</u>
Flood fill algo	<u>Link</u>	<u>Link</u>
Clone a graph	<u>Link</u>	Link
Making wired Connections	<u>Link</u>	Link
Word Ladder	<u>Link</u>	<u>Link</u>
Dijkstra algo	<u>Link</u>	<u>Link</u>
Implement Topological Sort	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Minimum time taken by each job to be completed given by a Directed Acyclic Graph	<u>Link</u>	Link
Find whether it is possible to finish all tasks or not from given dependencies	<u>Link</u>	Link
Find the no. of Islands	<u>Link</u>	<u>Link</u>
Given a sorted Dictionary of an Alien Language, find order of characters	<u>Link</u>	<u>Link</u>
Implement Kruksal'sAlgorithm	<u>Link</u>	Link
Implement Prim's Algorithm	<u>Link</u>	<u>Link</u>
Total no. of Spanning tree in a graph	<u>Link</u>	Link
Implement Bellman Ford Algorithm	<u>Link</u>	<u>Link</u>
Implement Floyd warshall Algorithm	<u>Link</u>	<u>Link</u>
Travelling Salesman Problem	<u>Link</u>	<u>Link</u>
Graph Colouring Problem	<u>Link</u>	Link
Snake and Ladders Problem	<u>Link</u>	<u>Link</u>
Find bridge in a graph	<u>Link</u>	<u>Link</u>
Count Strongly connected Components(Kosaraju Algo)	<u>Link</u>	<u>Link</u>
Check whether a graph is Bipartite or Not	<u>Link</u>	<u>Link</u>
Detect Negative cycle in a graph	<u>Link</u>	Link
Longest path in a Directed Acyclic Graph	<u>Link</u>	Link

Question	Article	Practice
Journey to the Moon	Link	<u>Link</u>
Cheapest Flights Within K Stops	<u>Link</u>	<u>Link</u>
Oliver and the Game	Link	<u>Link</u>
Water Jug problem using BFS	<u>Link</u>	Link
Find if there is a path of more thank length from a source	<u>Link</u>	Link
M-Colouring Problem	<u>Link</u>	<u>Link</u>
Minimum edges to reverse to make path from source to destination	<u>Link</u>	Link
Paths to travel each nodes using each edge(Seven Bridges)	<u>Link</u>	Link
Vertex Cover Problem	<u>Link</u>	Link
Chinese Postman or Route Inspection	<u>Link</u>	Link
Number of Triangles in a Directed and Undirected Graph	<u>Link</u>	Link
Minimise the cashflow among a given set of friends who have borrowed money from each other	<u>Link</u>	Link
Two Clique Problem	<u>Link</u>	Link

# Неар

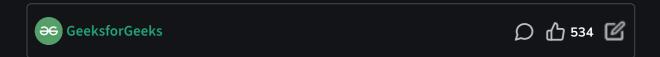
Question	Article	Practice
Implement a Maxheap/MinHeap using arrays and recursion.	<u>Link</u>	Link
Sort an Array using heap. (HeapSort)	<u>Link</u>	Link

Question	Article	Practice
Maximum of all subarrays of size k.	<u>Link</u>	Link
"K" largest element in an array	<u>Link</u>	<u>Link</u>
Kth smallest and largest element in an unsorted array	<u>Link</u>	Link
Merge "K" sorted arrays. [ IMP ]	<u>Link</u>	<u>Link</u>
Merge 2 Binary Max Heaps	<u>Link</u>	<u>Link</u>
Kth largest sum continuous subarrays	<u>Link</u>	Link
Leetcode- reorganize strings	<u>Link</u>	Link
Merge "K" Sorted Linked Lists [V.IMP]	<u>Link</u>	<u>Link</u>
Smallest range in "K" Lists	<u>Link</u>	<u>Link</u>
Median in a stream of Integers	<u>Link</u>	<u>Link</u>
Check if a Binary Tree is Heap	<u>Link</u>	<u>Link</u>
Connect "n" ropes with minimum cost	<u>Link</u>	<u>Link</u>
Convert BST to Min Heap	<u>Link</u>	Link
Convert min heap to max heap	<u>Link</u>	Link
Rearrange characters in a string such that no two adjacent are same.	<u>Link</u>	<u>Link</u>
Minimum sum of two numbers formed from digits of an array	<u>Link</u>	<u>Link</u>

Question	Article	Practice
Construct a trie from scratch	<u>Link</u>	Link
Find shortest unique prefix for every word in a given list	<u>Link</u>	Link
Word Break Problem   (Trie solution)	<u>Link</u>	Link
Given a sequence of words, print all anagrams together	<u>Link</u>	<u>Link</u>
Implement a Phone Directory	<u>Link</u>	<u>Link</u>
Print unique rows in a given boolean matrix	<u>Link</u>	<u>Link</u>

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A subarray is a portion of an array that consists of consecutive elements from the original array. Characteristics of a Subarray: Contiguity: The elements in a...

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Disjoint Set is a data structure that keeps track of a set of elements partitioned into a number of disjoint subsets and it is used to efficiently solve problems th...

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## Deque meaning in DSA

Deque, which stands for Double Ended Queue, is a special type of queue that allows adding and removing elements from both front and rear ends....

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## Balanced Binary Tree definition & amp; meaning in DSA

Balanced binary tree is defined as a binary tree data structure where there is no more than one height difference between the left and right subtrees of any...

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### Min Heap meaning in DSA

A min heap is a binary tree-based data structure where the value of each node is less than or equal to its child nodes. In other words, the root node is always...

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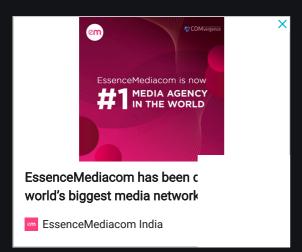
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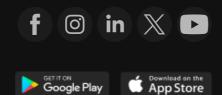


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