Topic:

- Math
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Math

Question	Article	Practice
Missing Number in Array	Link	Link
Trailing Zeros in Factorial	Link	Link
A Simple Fraction	Link	Link
Nth Natural Number	Link	Link
Smallest Positive Integer that can not be represented as Sum	Link	Link

Arrays

An array is a collection of items stored at contiguous memory locations. The idea is to store multiple items of the same type together.

Question	Article	Practice
Rotate Array	Link	Link
Majority Element	Link	Link

Question	Article	Practice
Plus one	Link	Link
Array of alternative +ve and -ve no.s	Link	Link
Product Array puzzle	Link	Link
Frequencies of Limited Range Array Elements	Link	Link
Large Factorial	Link	Link
Jump Game	Link	Link
Maximum number of 1’s	Link	Link
Stock Buy and Sell	Link	Link
Longest Consecutive Subsequence	Link	Link
Maximum value of difference of a pair of elements and their Index	Link	Link
Maximum index	Link	Link
K-th element of two sorted Arrays	Link	Link
Trapping Rain Water	Link	Link
3 sum closest	Link	Link
Maximum circular Subarray Sum	Link	Link
Merge without Extra Space	Link	Link

Searching

Question	Article	Practice
Search insert position of K in a sorted array	Link	Link
Collecting Wood	Link	Link
Left most and right most index	Link	Link
Bitonic Point	Link	Link
Search an element in sorted and rotated array	Link	Link
Square root of a number	Link	Link
Find missing in second array	Link	Link
Painter's Partition Problem	Link	Link
Median of 2 sorted arrays of Different sizes	Link	Link
Allocate minimum number of pages	Link	Link

Sorting

Question	Article	Practice
Wave array	Link	Link
Count the number of possible triangles	Link	Link
Triplets with sum with given range	Link	Link
Count Inversions	Link	Link
Relative Sorting	Link	Link
Minimum Platforms	Link	Link

Question	Article	Practice
Maximum Index	Link	Link

Matrix

A matrix represents a collection of numbers arranged in an order of rows and columns. It is necessary to enclose the elements of a matrix in parentheses or brackets.

Question	Article	Practice
Sort a 2D vector diagonally	Link	Link
Spiral Matrix	Link	Link
Boolean matrix	Link	Link
Rotate matrix by 90 degrees	Link	Link
Search in a row-column sorted Matrix	Link	Link
Row with maximum 1s	Link	Link

String

Strings are defined as an array of characters. The difference between a character array and a string is the string is terminated with a special character '\0'.

Question	Article	Practice
Reverse words in a given string	Link	Link
Longest Common Prefix	Link	Link
Roman Number to Integer	Link	Link
Next higher palindrome number using the same set of digits	Link	Link

Question	Article	Practice
Length of longest prefix suffix	Link	Link
Smallest window in string containing all characters	Link	Link
Validate an IP address	Link	Link
Implement Atoi	Link	Link
Look and say Pattern	Link	Link
Longest K unique characters substring	Link	Link

Hashing

Question	Article	Practice
Key Pair	Link	Link
Top K Frequent Elements in Array	Link	Link
Intersection of two arrays	Link	Link
Array Pair Sum Divisibility Problem	Link	Link
Triplet Sum in Array	Link	Link
Length of the longest substring	Link	Link
Is Sudoku Valid	Link	Link
Print Anagrams Together	Link	Link
Subarrays with sum K	Link	Link
Longest subarray with sum divisible by K	Link	Link

Bit Masking

Question	Article	Practice
Reverse bits	Link	Link
Number of set bits	Link	Link
Sum of two integers	Link	Link
Check whether K-th bit is set or not	Link	Link
Longest Consecutive 1's	Link	Link
Find the element that appears once	Link	Link
Gray code	Link	Link
Maximum AND	Link	Link
Maximum subset XOR	Link	Link
Bit Difference	Link	Link

Linked List

A linked list is a linear data structure, in which the elements are not stored at contiguous memory locations.

Question	Article	Practice
Merge Two Sorted Linked Lists	Link	Link
Reverse a Linked List	Link	Link
Delete a Node without Head Pointer	Link	Link
Add two Numbers represented by linked lists	Link	Link

Question	Article	Practice
Finding middle element in a linked list	Link	Link
Check if linked list is palindrome	Link	Link
Rearrange a linked list	Link	Link
Detect and Remove a loop In Linked List	Link	Link
Merge Sort for Linked List	Link	Link
Intersection of Linked List	Link	Link
Rotate Linked List by K places	Link	Link
Flattening a Linked List	Link	Link
Reverse a linked list in groups of given size	Link	Link
Partition a linked list around a given value	Link	Link
Clone a linked list with next and random pointers	Link	Link

Stack

A stack is a linear data structure in which elements can be inserted and deleted only from one side of the list, called the top. A stack follows the LIFO (Last In First Out) principle.

Question	Article	Practice
Parenthesis Checker	Link	Link
Infix to Postfix	Link	Link
Restrictive Candy Crush	Link	Link
Next Larger Element	Link	Link

Question	Article	Practice
Stock span problem	Link	Link
The Celebrity Problem	Link	Link
Maximum Rectangular Area in a Histogram	Link	Link
Longest Valid Parentheses	Link	Link
Maximum of minimum for every window size	Link	Link
Remove K digits	Link	Link
132 Geeky Buildings	Link	Link

Queue

A queue is a linear data structure in which elements can be inserted only from one side of the list called rear, and the elements can be deleted only from the other side called the front. The queue data structure follows the FIFO (First In First Out) principle.

Question	Article	Practice
Maximum of all subarrays of size K	Link	Link
Circular tour (Sliding Window)	Link	Link

Heap

A Heap is a special Tree-based data structure in which the tree is a complete binary tree.

Question	Article	Practice
Rearrange Characters	Link	Link
Minimum Cost of ropes	Link	Link

Question	Article	Practice
Kth largest element of stream	Link	Link
Merge k sorted arrays	Link	Link
Median of stream	Link	Link

Binary Tree

A tree whose elements have at most 2 children is called a binary tree. Since each element in a binary tree can have only 2 children, we typically name them the left and right child.

Question	Article	Practice
Symmetric Tree	Link	Link
Zigzag Tree Traversal	Link	Link
Checked for Balanced tree	Link	Link
Height of Binary Tree	Link	Link
Diameter of Binary tree	Link	Link
Determine if two trees are identical	Link	Link
Minimum depth of binary tree	Link	Link
Check if subtree	Link	Link
Inorder Traversal (iterative)	Link	Link
Preorder Traversal (iterative)	Link	Link
Postorder Traversal(iterative)	Link	Link
Vertical Traversal of a Binary Tree	Link	Link

Question	Article	Practice
Construct Binary Tree from Preorder and Inorder Traversal	Link	Link
Connect nodes at same level	Link	Link
Lowest Common Ancestor of a Binary Tree	Link	Link
Boundary Traversal	Link	Link
Sum tree	Link	Link
Binary Tree to Doubly Linked List	Link	Link
Maximum sum path between two leaf nodes	Link	Link
Burning Tree	Link	Link

Binary Search Tree

Binary Search Tree is a node-based binary tree data structure which has the following properties:

- The left subtree of a node contains only nodes with keys lesser than the node's key.
- The right subtree of a node contains only nodes with keys greater than the node's key.
- The left and right subtree each must also be a binary search tree.

Question	Article	Practice
Check for BST	Link	Link
Array to BST	Link	Link
Inorder Successor in BST	Link	Link
Kth Largest Element in a BST	Link	Link
Remove BST keys outside the given range	Link	Link

Question	Article	Practice
Pair with given target in BST	Link	Link
Unique BSTs	Link	Link
Preorder Traversal and BST	Link	Link
Merge two BST's	Link	Link
Fixing two nodes of a BST	Link	Link

Graph

A Graph is a non-linear data structure consisting of nodes and edges. The nodes are sometimes also referred to as vertices and the edges are lines or arcs that connect any two nodes in the graph.

Question	Article	Practice
Number of Islands	Link	Link
COVID Spread	Link	Link
Prerequisite tasks	Link	Link
Strongly Connected Component	Link	Link
Minimum swaps to sort	Link	Link
Shortest path	Link	Link
Circle of Strings	Link	Link
Snake and Ladder Problem	Link	Link
Detect cycle in an undirected graph	Link	Link

Question	Article	Practice
Detect cycle in a directed graph	Link	Link
Check for Bipartite graph	Link	Link
Unit Area of Largest region of 1s	Link	Link
Alien Dictionary	Link	Link
Word Ladder	Link	Link

Trie

Trie is an efficient information retrieval data structure. Using Trie, search complexities can be brought to optimal limit (key length).

Question	Article	Practice
Minimum XOR value pair	Link	Link
Word Boggle – II	Link	Link
Most frequent word in an array of strings	Link	Link
Minimum XOR value pair	Link	Link

Greedy

Greedy is an algorithmic paradigm that builds up a solution piece by piece, always choosing the next piece that offers the most obvious and immediate benefit.

Question	Article	Practice
N meetings in one room	Link	Link
Coin Piles	Link	Link

Question	Article	Practice
Maximize Toys	Link	Link
Largest number with given sum	Link	Link
Minimize the heights	Link	Link
Fractional Knapsack	Link	Link
Job Sequencing	Link	Link
Police and Thieves	Link	Link
Water the Plants	Link	Link

DP

Dynamic Programming is mainly an optimization over plain recursion. Wherever we see a recursive solution that has repeated calls for same inputs, we can optimize it using Dynamic Programming.

Question	Article	Practice
Count ways to reach the n'th stair	Link	Link
Get Minimum Squares	Link	Link
Nth Fibonacci Number	Link	Link
0 – 1 Knapsack Problem	Link	Link
Number of Coins	Link	Link
Edit distance	Link	Link
Maximize The Cut Segments	Link	Link

Question	Article	Practice
Box Stacking	Link	Link
Longest Increasing Subsequence	Link	Link
Longest Palindromic Substring	Link	Link
Longest Common Substring	Link	Link
Longest Common Subsequence	Link	Link
Wildcard Pattern Matching	Link	Link
Total Decoding Messages	Link	Link
Max length chain	Link	Link
Maximum sum increasing subsequence	Link	Link
Minimum number of jumps	Link	Link
Subset Sum Problem	Link	Link
Maximum path sum in matrix	Link	Link
Player with max score	Link	Link
Shortest Common Supersequence	Link	Link
Palindrome Partitioning	Link	Link
Form a Palindrome	Link	Link
Boolean Parenthesization	Link	Link
Matrix Chain	Link	Link
Maximum Profit	Link	Link

Question	Article	Practice
Minimum Cost Path	Link	Link
Partition Equal Subset Sum	Link	Link

Recursion

The process in which a function calls itself directly or indirectly is called recursion and the corresponding function is called as recursive function.

Question	Article	Practice
Number of Paths	Link	Link
Pascals Triangle	Link	Link
Josephus problem	Link	Link
Tower of Hanoi	Link	Link
Special Keyboard	Link	Link
Flood Fill Algorithm	Link	Link

Backtracking

Backtracking is an algorithmic-technique for solving problems recursively by trying to build a solution incrementally, one piece at a time, removing those solutions that fail to satisfy the constraints of the problem at any point of time (by time, here, is referred to the time elapsed till reaching any level of the search tree).

Question	Article	Practice
Permutations	Link	Link
Letter Combinations of a Phone Number	Link	Link

Question	Article	Practice
Generate Parentheses	Link	Link
Word Boggle – 1	Link	Link
Rat in a Maze Problem	Link	Link
Largest number in K swaps	Link	Link
Combination Sum	Link	Link
Palindrome Partitioning	Link	Link
N-Queen Problem	Link	Link
Solve the Sudoku	Link	Link

Algorithms

Question	Article	Practice
Bubble Sort	Link	Link
Insertion Sort	Link	Link
Selection Sort	Link	Link
Merge Sort	Link	Link
Quick Sort	Link	Link
Heap Sort	Link	Link
Count Sort	Link	Link
Kadane Algorithm	Link	Link

Question	Article	Practice
Minimum Spanning Tree	Link	Link
Implementing Dijkstra Algorithm	Link	Link
Floyd Warshall	Link	Link
Bellman Ford Algorithm	Link	Link
Rabin-Karp Algorithm	Link	Link
KMP algorithm	Link	Link
Z Algorithm	Link	Link
Huffman Encoding	Link	Link

Design

Question	Article	Practice
Stack using two queues	Link	Link
Queue using stack	Link	Link
Ternary Search	Link	Link
Binary Heap Operations	Link	Link
LRU cache	Link	Link
Trie | (Insert and Search)	Link	Link

You may also check our **latest online course series** to learn DS & Algo is named DSA, which covers everything about Data Structures from Basic to Advanced.

Note: