

Disclaimer: The sheet belongs to [takeUforward](#). Please do not redistribute or republish this content without permission from takeUforward.

Arrays

2-pointers

- Two Sum (Sorted)
- 3Sum
- 4Sum

Sliding Window

- Maximum Subarray (Kadane's Algorithm)
- Minimum Size Subarray Sum
- Longest Subarray with Sum K

Sorting and Reordering

- Sort Colors (Dutch National Flag)
- Move Zeroes
- Rotate Array

Merge Sort

- Count Inversions
- Reverse Pairs

Voting Algorithm

- Majority Element ($> N/2$ times)
- Majority Element ($> N/3$ times)

Hashing

Frequency & Set

- Two Sum (Hashing)
- Valid Anagram
- Longest Consecutive Sequence

Subarray with Prefix Sum + HashMap

- Subarray Sum Equals K
- Count Subarrays with Equal Number of 0's and 1's
- Longest Subarray with Equal 0s and 1s

Binary Search

Bound Problems

- Lower bound
- Upper bound
- Number of Occurrences

Simple BS

- Find Peak Element
- Search in Rotated Sorted Array

On Answers

- Aggressive Cows
- Allocate Minimum Number of Pages
- Koko Eating Bananas
- Minimum Days to Make M Bouquets

2D

- Search in a 2D Matrix
- Search in a 2D Matrix - II

Recursion

Subsequence

- Combination Sum
- Combination Sum II
- Combination Sum III

Backtracking

- N Queens
- Sudoku Solver

LinkedList

Pointer Techniques

- Reverse a Linked List
- Detect Cycle in a Linked List
- Merge Two Sorted Lists
- Find the intersection point of Y linkedlist
- Check if LL is palindrome or not
- Length of loop in LL

Advanced

- Sort LL
- Clone a LL
- Flattenning of LL

Greedy Algorithms

Interval Scheduling

- N Meetings in One Room
- Minimum Number of Platforms
- Merge Intervals

Optimization via Sorting

- Fractional Knapsack
- Job Sequencing Problem

Sliding Window

Fixed Window Size

- Max Sum Subarray of Size K
- Longest Substring of All 1s After K Flips

Variable Window Size

- Minimum Window Substring
- Longest Substring Without Repeating Characters
- Substring with K Distinct Character

Counting in Window

- Number of Substrings Containing All Three Characters
- Binary Subarrays With Sum
- Count number of Nice subarrays

Stack/Queue

Monotonic Stack

- Next Greater Element
- Trapping Rain Water
- Asteroid Collision
- Remove K Digits

Cache

- LRU Cache
- LFU Cache

Binary Tree

Traversal

- Inorder, Preorder, Postorder
- Level Order, Zigzag Level Order
- **Morris Traversals**

Tree Views

- Vertical Order
- Top View
- Bottom View

Tree Properties

- Height of Binary Tree
- Diameter of Binary Tree
- Balanced Binary Tree

Tree Construction

- Construct Binary Tree from Inorder and Preorder
- Construct Binary Tree from Inorder and Postorder
- Construct Binary Tree from Level Order and Inorder

Binary Search Tree

Core BST Operations

- Validate BST
- Kth Smallest Element in BST
- Delete Node in BST
- Lowest Common Ancestor
- Two sum in BST
- LCA in BST

Heaps

Heapify

- Heapify Algorithm
- Heap Sort

- Build heap from a given Array
- Implement Min Heap

Kth Element Problems

- Kth Largest Element
- Top K Frequent Elements

Graphs

Traversals

- BFS
- DFS
- Number of Provinces
- Number of Islands

Cycle Detection

- Detect Cycle in Directed Graph
- Detect Cycle in Undirected Graph

Topological Sort

- Topological Sort (BFS - Kahn's Algorithm)
- Course Schedule
- Detect Cycle in Directed Graph via Topo Sort
- Course Schedule II
- Alien Dictionary
- Word Ladder
- Word Ladder II

Shortest Path Algorithms

- Dijkstra's Algorithm
- Shortest Path in DAG
- Bellman-Ford Algorithm
- Cheapest flight within K stops
- Floyd warshall algorithm

MST

- Disjoint Set
- Kruskal Algorithm

- Prim's Algorithm
- Number of operations to make network connected
- Accounts merge
- Number of islands II
- Most stones removed with same row or column

Dynamic Programming

1D/2D

- Climbing Stairs
- House robber
- Ninja's training

DP on Grids

- Grid unique paths
- Grid unique paths II
- Cherry pickup II

DP on Stocks

- Best time to buy and sell stock I to V

DP on Subsequences

- Subset sum equals to target
- Partition a set into two subsets with minimum absolute sum difference
- 0 and 1 Knapsack
- Target sum
- Unbounded knapsack

LIS

- Longest Increasing Subsequence (Also print it)
- Longest Bitonic Subsequence

DP on Strings

- Longest common subsequence
- Minimum insertions to make string palindrome
- Edit distance

MCM DP

- Matrix chain multiplication
- Burst balloons

Tries

Basic Trie Operations

- Insert/Search/StartsWith
- Longest Word With All Prefixes

Trie-Based Problem Patterns

- Longest Common Prefix
- Word Search II
- Replace Words