Data Structures :

1) Linked List : ***

- Generate a linked list from given array ***
- Reverse a linked list ***
- Merge two sorted linked list without using auxiliary space ***
- Detecting a linked list if it is circular in O(n) time. **
- Remove Duplicates from Sorted List ***

2) Binary Tree : ***

- Reverse a binary tree ***
- Calculate the height/depth of a binary tree ***
- Calculate the diameter of a binary tree **
- Post Traverse a Binary Tree. ***
- Pre Order traversal Binary Tree ***
- Inorder Traversal of a Binary Tree ***

3) Binary Search Tree : ***

- Insert new element in a BST ***
- Delete Item from BST ***
- Min Heap / Priority Queue ***
- Max Heap ***

4) Stack (No need of actual Implementation Use library like stl) ***

5) Queue (No need of actual Implementation Use library like stl) ***

6) Circular Queue *

7) Sorting : ***

- Bubble / Insertion / Quick / Merge ***
- Complexity analysis (Time and Space) of Bubble / Insertion / Quick / Merge sort ***
- When worst case occurs of Bubble / Insertion / Quick / Merge sort ***
- When Best case occurs of Bubble / Insertion / Quick / Merge sort ***
- Difference between Quick Sort and Merge Sort ***
- If we know the length of the array size than which sort algorithm should we use between Quick sort and Merge sort ***
- Why should we choose the pivot in quicksort randomly? ***

6) Binary Search ***

Graph theory :

1) Depth First Search : ***

- Graph Traversal ***
- Count Connected components ***
- Cycle finding or detecting **

2) Breadth First Search : ***

- Shortest path in unweighted graph ***
- Given a graph, check whether it is bi-colorable or not. ***

3) Dijkstra **

- Complexity **
- Weakness **

4) Bellman ford **

- Complexity **
- When we should use bellman ford instead of Dijkstra **

Dynamic Programming : ***

- Basic Recursion and Dynamic Programming ***
- 0–1 Knapsack **
- Coin Change **
- Longest Increasing Subsequence **
- Longest Common Subsequence **

Object Oriented Programming (OOP): ***

- What is OOP? ***
- What are the four design principles in OOP? ***
- Encapsulation ***
- Inheritance ***
- Abstraction ***
- Polymorphism ***
- Abstract class ***
- Interface ***

- Difference between abstract class and interface ***
- What is runtime and compile time polymorphism ***

DBMS, RDBMS, SQL : ***

- What is DBMS and RDBMS? ***
- DDL (Data Definition Language) ***
- DML (Data Manipulation Language) ***
- DCL (Data Control Language) ***
- TCL (Transaction Control Language) ***
- What is meant by ACID properties in DBMS? ***
- Join (Left, Right, Full outer, Inner) ***
- Keys (Primary key, Foreign Key, Composite key, Unique Key) ***
- Practice SQL queries in Hackerrank : https://www.hackerrank.com/domains/sql ***

Miscellaneous :

- How can you reverse an array? ***
- Difference between pass by reference and pass by value. ***
- Difference between tree and graph. ***
- Finding duplicates from two arrays ***

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