**Understand Linked Lists**

**Explain the different types of linked lists (Singly Linked List, Doubly Linked List)?**

A linked list is a linear data structure where elements are not stored at contiguous memory locations. Instead, each element (node) contains data and a reference (link) to the next node in the sequence.

Types of Linked Lists:

1. Singly Linked List: Each node points to the next node.
2. Doubly Linked List: Each node points to both the next and previous nodes.

**Analysis**

**Analyze the time complexity of each operation?**

Time Complexity Analysis Add: O(n) Search: O(n) Traverse: O(n) Delete: O(n)

**Discuss the advantages of linked lists over arrays for dynamic data?**

Advantages of Linked Lists over Arrays are:

1. Dynamic size: Linked lists can grow or shrink as needed, unlike arrays which have a fixed size.
2. Efficient insertions and deletions: Inserting or deleting elements in a linked list is generally faster than in an array, especially in the middle of the list.
3. Flexibility: Linked lists can be used to implement various data structures like stacks, queues, and graphs.