**Task - 5 : Task Management System**

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

Types of Linked Lists:

Singly Linked List: Each node contains a data part and a reference to the next node.

Doubly Linked List: Each node contains a data part, a reference to the next node, and a reference to the previous node.

**Q. i) Analyze the time complexity of each operation.**

Add: O(n) time complexity in the worst case, if adding at the end.

Search: O(n) time complexity in the worst case.

Traverse: O(n) time complexity.

Delete: O(n) time complexity in the worst case.

**ii) Discuss the advantages of linked lists over arrays for dynamic data.**

Dynamic Size: Linked lists can grow and shrink dynamically.

Efficient Insertions/Deletions: Insertions and deletions can be done in O(1) time complexity if the position is known.