**Task Management System**

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

* Singly Linked List:

1. Structure: Each node contains data and a reference to the next node.
2. Operations: Efficient for insertions and deletions at the beginning but requires traversal to access or modify nodes.

* Doubly Linked List:

1. Structure: Each node contains data, a reference to the next node, and a reference to the previous node.
2. Operations: Allows traversal in both directions and efficient insertions/deletions at both ends.
3. Analyze the time complexity of each operation.

* Add: O(n) – traverses to the end of the list.
* Search: O(n) – requires traversal to find the task.
* Traverse: O(n) – visits each node once.
* Delete: O(n) – requires traversal to find and remove the node.

1. Discuss the advantages of linked lists over arrays for dynamic data.

* Dynamic Size: Linked lists can grow and shrink dynamically without the need for resizing.
* Efficient Insertions/Deletions: Insertions and deletions are more efficient compared to arrays, especially when done at the beginning or in the middle.