**Exercise 5: Task Management System**

**Scenario:**

**You are developing a task management system where tasks need to be added, deleted, and traversed efficiently.**

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

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**Singly Linked List:**

A singly linked list is a type of linked list where each node contains two components: the data and a reference to the next node in the sequence. This means that each node points only to the next node, creating a unidirectional link from the start of the list (the head) to the end (where the last node points to null).

In a singly linked list, we can start at the head node and follow the next references to traverse the entire list. However, since each node only knows about the next node, you cannot easily traverse backward or access the previous node directly. This can make certain operations, such as deletion, more complex because you need to find the previous node to adjust its reference.

**Doubly Linked List:**

A doubly linked list extends the concept of a singly linked list by adding an additional reference to each node. Each node in a doubly linked list contains three components: the data, a reference to the next node, and a reference to the previous node. This setup allows traversal in both directions—forward and backward.

With a doubly linked list, you can navigate from the head node to the end of the list by following the next references, or you can traverse backwards from the tail node to the head by following the previous references. This bidirectional capability simplifies operations such as deletion, as you can directly access both the next and previous nodes, making it easier to update references when removing nodes.