**Types of Linked Lists:**

* **Singly Linked List:**
  + **Structure:** Each node contains data and a reference (or link) to the next node in the sequence.
  + **Advantages:** Simple to implement, uses less memory per node compared to doubly linked lists.
  + **Disadvantages:** Only allows traversal in one direction, which can make certain operations less efficient.
* **Doubly Linked List:**
  + **Structure:** Each node contains data, a reference to the next node, and a reference to the previous node.
  + **Advantages:** Allows traversal in both directions, making certain operations like deletion more efficient.
  + **Disadvantages:** More complex to implement, uses more memory per node due to the extra reference.

**Time Complexity Analysis:**

* **Add Task:**
  + **Best Case:** O(1)
  + **Worst Case:** O(n)
  + **Average Case:** O(n)
* **Search Task:**
  + **Best Case:** O(1)
  + **Worst Case:** O(n)
  + **Average Case:** O(n)
* **Traverse Tasks:**
  + **Best Case:** O(n)
  + **Worst Case:** O(n)
  + **Average Case:** O(n)
* **Delete Task:**
  + **Best Case:** O(1)
  + **Worst Case:** O(n)
  + **Average Case:** O(n)

**Advantages of Linked Lists Over Arrays for Dynamic Data:**

* **Dynamic Size:** Linked lists can easily grow and shrink in size by adding or removing nodes. This flexibility makes them more suitable for dynamic data where the size is not known in advance.
* **Efficient Insertions and Deletions:** Inserting or deleting elements in a linked list can be done in O(1) time if the position is known (e.g., adding/removing from the head), whereas arrays require shifting elements, resulting in O(n) time complexity.
* **Memory Utilization:** Linked lists do not require contiguous memory allocation, which can help avoid memory fragmentation and make better use of available memory.

However, linked lists have some disadvantages compared to arrays, such as higher memory usage due to storing references and potentially slower access times due to the need to traverse nodes. The choice between linked lists and arrays depends on the specific requirements and constraints of the application.