**Exercise-6 Library Management System**

**Understanding Search Algorithms:**

**Linear Search:**

**Definition**: Linear search iterates through each element in the list sequentially until the desired element is found or the end of the list is reached.

**Time Complexity**: O(n), where n is the number of elements in the list.

* It is best for small or unsorted datasets.

**Binary Search:**

**Definition**: Binary search is a more efficient algorithm that works on sorted lists. It repeatedly divides the search interval in half and compares the target value to the middle element.

**Time Complexity**: O (log n), where n is the number of elements in the list.

* It is best for large, sorted datasets.

**Analysis:**

**Time Complexity:**

* Linear Search: O(n)
* Binary Search: O (log n)

**When to Use Each Algorithm?**

**Linear Search**:

* It is best for small datasets or when the list is unsorted.
* It is simple to implement and does not require sorting.

**Binary Search**:

* It is best for large, sorted datasets.
* It is more efficient for larger datasets but requires the list to be sorted beforehand.