**6. LIBRARY MANAGEMENT SYSTEM**

**Understanding Search Algorithms**

Linear and binary search algorithms are used to find elements in a dataset. **Linear search** scans each item one by one and works well on unsorted data, but is slower for large lists. **Binary search**, on the other hand, requires the data to be sorted and divides the search space in half repeatedly, making it faster and more efficient for large and sorted datasets.

**Analysis**

* **Linear Search** has a time complexity of **O(n)** and is suitable for small or unsorted datasets.
* **Binary Search** has a time complexity of **O(log n)** but requires the list to be sorted beforehand.

For small or dynamically changing datasets where sorting isn't feasible, linear search is easier to use. However, for large and mostly static datasets, binary search is preferred due to its superior speed and performance.

**Output**

**A screen shot of a computer

AI-generated content may be incorrect.**