**Library Management System**

**1. Understanding Search Algorithms**  
Linear Search: Listed below is an ordinary method that involves going through the elements of the list one by one until one finds the desired element or until the list comes to an end. O(n) is the worst-case scenario depending on the number of elements present O(n).  
Binary Search: Searching method for sorting list of elements. Simply, it carries on bisecting the list and seeking the target element in the middle of each division. The worst case complexity What it means is that the big-o of this function is O(log n).  
  
**4. Analysis**  
Time Complexity Comparison  
• Linear Search: O(n)  
• Binary Search: O(logn)  
Use Cases  
• Linear Search:  
o Recommended where the data set is small or is not sorted in any way.  
o Fast moving without the need to sort it.  
• Binary Search:  
o Ashar (1999) emphasised that it is most suitable for large and sorted datasets because of the efficiency.  
o Works only for sorted list, but as it is common that list can be sorted especially if there are frequent search then it is efficient.