**Exercise 6: Library Management System**

1. **Understanding Search Algorithms**:
   1. Linear Search Algorithm: In Linear Search, we traverse the entire data set from the start to the end (if needed), to find the element we are looking for. It works when the data is unsorted and is inefficient for larger data sets. It has a time complexity of O(n) (n being the number of elements to be traversed).
   2. Binary Search Algorithm: Binary Search algorithm works only with sorted data sets, so we need to make sure that the data set is sorted beforehand before starting to search. In binary search, with each iteration, the array is broken into halves and checked if the element we are looking for is the middle element, or if the element is higher or lower than the middle element, then the array is halved accordingly. It has a time complexity of O(log n).
2. And 3. **Setup and Implementation**: Shown in code.

4. **Analysis**:

a. Comparing time complexities of linear and binary search: Linear Search has O(N) time complexity whereas Binary Search has O(log n) time complexity. Hence, Binary Search is a better option if the array is/can be sorted.

b. When our required dataset is unsorted and smaller, we can use linear search.

If our data set is large and can be sorted, we can use Binary Search.