**Exercise 6: Library Management System**

**Scenario:**

You are developing a library management system where users can search for books by title or author.

**Steps:**

1. **Understand Search Algorithms:**
   * Explain linear search and binary search algorithms.

Linear search is a straightforward method of searching for an element in a list. It works by sequentially checking each element of the list until the target element is found or the list ends.

Binary search is an efficient method for finding an element in a sorted list. It works by repeatedly dividing the search interval in half.

1. **Analysis:**
   * Compare the time complexity of linear and binary search.

- Linear Search: O(n) for all cases.

- Binary Search: O(log n) for sorted data.

* + Discuss when to use each algorithm based on the data set size and order.

- Binary Search is preferred for large, sorted datasets due to its efficiency.

- Linear Search is useful for smaller or unsorted datasets