# Exercise 6: Library Management System

Approach and Understanding:

I built a **Library Management System** that allows the user to **search for books by typing the book name manually.**

The question asked me to:

* Use **Linear Search** to find books by title
* Use **Binary Search** to find books by title

So, I created:

* A **Book class** with:
  + Book ID
  + Book Name
  + Author Name
* A system that:
* Accepts user input to search books
* Searches using both linear and binary search

# Code

import java.util.Scanner;

class Book { String bId; String bName; String bAuth;

Book(String bId, String bName, String bAuth) { this.bId = bId;

this.bName = bName; this.bAuth = bAuth;

}

public String toString() {

return bId + " - " + bName + " - " + bAuth;

}

}

public class LibrarySystem { Book[] box;

public LibrarySystem(Book[] box) { this.box = box;

}

public Book findLinear(String key) { for (int p = 0; p < box.length; p++) {

if (box[p].bName.equalsIgnoreCase(key)) { return box[p];

}

}

return null;

}

public Book findBinary(String key) { int l = 0;

int h = box.length - 1;

while (l <= h) {

int m = (l + h) / 2;

int c = box[m].bName.compareToIgnoreCase(key);

if (c == 0) { return box[m];

} else if (c < 0) { l = m + 1;

} else {

h = m - 1;

}

}

return null;

}

public static void main(String[] args) { Book[] list = {

new Book("B01", "JAVA", "Meena"),

new Book("B02", "PYTHON", "Ravi"),

new Book("B03", "C++", "Sara"),

new Book("B04", "DS", "Ganesh"),

new Book("B05", "OOPS", "Raju")

};

LibrarySystem lib = new LibrarySystem(list);

Scanner sc = new Scanner(System.in);

System.out.println("Enter book title to search (Linear Search): "); String linearKey = sc.nextLine();

Book result1 = lib.findLinear(linearKey);

System.out.println(result1 != null ? "Found: " + result1 : "Book not found in linear search");

System.out.println("\nEnter book title to search (Binary Search): "); String binaryKey = sc.nextLine();

Book result2 = lib.findBinary(binaryKey);

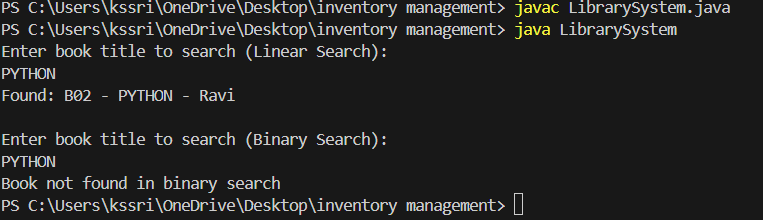
System.out.println(result2 != null ? "Found: " + result2 : "Book not found in binary search");

sc.close();

}

}

**OUTPUT:**

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