**Exercise 6: Library Management System**

import java.util.Arrays;

import java.util.Comparator;

public class Main {

    public static void main(String[] args) {

        Book[] books = {

            new Book("B101", "The Alchemist", "Paulo Coelho"),

            new Book("B102", "1984", "George Orwell"),

            new Book("B103", "To Kill a Mockingbird", "Harper Lee"),

            new Book("B104", "Sapiens", "Yuval Noah Harari")

        };

        System.out.println("Linear Search (title = 'Sapiens'):");

        Book linearResult = linearSearchByTitle(books, "Sapiens");

        System.out.println(linearResult != null ? linearResult : "Book not found");

        Arrays.sort(books, Comparator.comparing(book -> book.title));

        System.out.println("\nBinary Search (title = 'Sapiens'):");

        Book binaryResult = binarySearchByTitle(books, "Sapiens");

        System.out.println(binaryResult != null ? binaryResult : "Book not found");

    }

    public static Book linearSearchByTitle(Book[] books, String title) {

        for (Book book : books) {

            if (book.title.equalsIgnoreCase(title)) {

                return book;

            }

        }

        return null;

    }

    public static Book binarySearchByTitle(Book[] books, String title) {

        int left = 0, right = books.length - 1;

        while (left <= right) {

            int mid = (left + right) / 2;

            int cmp = title.compareToIgnoreCase(books[mid].title);

            if (cmp == 0) return books[mid];

            else if (cmp < 0) right = mid - 1;

            else left = mid + 1;

        }

        return null;

    }

}

class Book {

    String bookId;

    String title;

    String author;

    public Book(String bookId, String title, String author) {

        this.bookId = bookId;

        this.title = title;

        this.author = author;

    }

    public String toString() {

        return "[" + bookId + "] " + title + " by " + author;

    }

}

Output:

