**Exercise 6: Library Management System**

**Program:**

package Algorithms\_DataStructures.BookSystem;

import java.util.\*;

class Book{

    public int bookId;

    public String title;

    public String author;

    Book(int id,String title,String author){

        this.bookId = id;

        this.title = title.toLowerCase();

        this.author = author.toLowerCase();

    }

    public String toString(){

         return bookId + " - " + title + " - " + author ;

    }

}

class Search{

    public Book linearSearchTitle(Book[] books, String title) {

    for (int i = 0; i < books.length; i++) {

        if (books[i].title.equals(title.toLowerCase())) {

            return books[i];

        }

    }

    return null;

}

    public Book binarySearchTitle(Book[] books, String title) {

    Arrays.sort(books, (a, b) -> a.title.compareTo(b.title));

    int i = 0, j = books.length - 1;

    while (i <= j) {

        int mid = (i + j) / 2;

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

        if (cmp == 0) {

            return books[mid];

        } else if (cmp < 0) {

            i = mid + 1;

        } else {

            j = mid - 1;

        }

    }

    return null;

}

}

public class Main {

    public static void main(String[] args) {

         Book[] books = {

            new Book(1, "The Alchemist", "Paulo Coelho"),

            new Book(2, "To Kill a Mockingbird", "Harper Lee"),

            new Book(3, "1984", "George Orwell"),

            new Book(4, "Pride and Prejudice", "Jane Austen"),

            new Book(5, "The Great Gatsby", "F. Scott Fitzgerald"),

            new Book(6, "The Catcher in the Rye", "J.D. Salinger"),

            new Book(7, "The Hobbit", "J.R.R. Tolkien")

        };

        Search search = new Search();

        System.out.println("Linear Search:");

        System.out.println(search.linearSearchTitle(books, "1984"));

        System.out.println("Binary Search:");

        System.out.println(search.binarySearchTitle(books, "The Hobbit"));

    }

}

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