import java.io.\*;

import java.util.\*;

class Book {

private String title;

private String author;

private int id;

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

this.title = title;

this.author = author;

this.id = id;

}

public String getTitle() {

return title;

}

public String getAuthor() {

return author;

}

public int getId() {

return id;

}

@Override

public String toString() {

return "Book{" +

"title='" + title + '\'' +

", author='" + author + '\'' +

", id=" + id +

'}';

}

}

class Library {

private ArrayList<Book> books;

private String filename;

public Library(String filename) {

this.filename = filename;

this.books = new ArrayList<>();

}

public void addBook(Book book) {

books.add(book);

}

public void removeBook(int id) {

books.removeIf(book -> book.getId() == id);

}

public Book searchBook(int id) {

for (Book book : books) {

if (book.getId() == id) {

return book;

}

}

return null;

}

public void displayBooks() {

System.out.println("Books in the library:");

for (Book book : books) {

System.out.println(book);

}

}

public void saveBooksToFile() {

try (FileOutputStream fos = new FileOutputStream(filename);

ObjectOutputStream oos = new ObjectOutputStream(fos)) {

oos.writeObject(books);

System.out.println("Books saved to file.");

} catch (IOException e) {

e.printStackTrace();

}

}

public void loadBooksFromFile() {

try (FileInputStream fis = new FileInputStream(filename);

ObjectInputStream ois = new ObjectInputStream(fis)) {

books = (ArrayList<Book>) ois.readObject();

System.out.println("Books loaded from file.");

} catch (IOException | ClassNotFoundException e) {

e.printStackTrace();

}

}

}

public class LibraryManagementSystem {

public static void main(String[] args) {

Library library = new Library("library.ser");

library.loadBooksFromFile();

Scanner scanner = new Scanner(System.in);

int choice;

do {

System.out.println("Library Management System");

System.out.println("==========================");

System.out.println("1. Add Book");

System.out.println("2. Remove Book");

System.out.println("3. Search Book");

System.out.println("4. Display Books");

System.out.println("5. Save Books to File");

System.out.println("6. Load Books from File");

System.out.println("0. Exit");

System.out.print("Enter your choice: ");

choice = scanner.nextInt();

scanner.nextLine();

switch (choice) {

case 1:

System.out.print("Enter book title: ");

String title = scanner.nextLine();

System.out.print("Enter book author: ");

String author = scanner.nextLine();

System.out.print("Enter book ID: ");

int id = scanner.nextInt();

scanner.nextLine();

Book book = new Book(title, author, id);

library.addBook(book);

System.out.println("Book added successfully.");

break;

case 2:

System.out.print("Enter book ID to remove: ");

int idToRemove = scanner.nextInt();

scanner.nextLine();

library.removeBook(idToRemove);

System.out.println("Book removed successfully.");

break;

case 3:

System.out.print("Enter book ID to search: ");

int idToSearch = scanner.nextInt();

scanner.nextLine();

Book foundBook = library.searchBook(idToSearch);

if (foundBook != null) {

System.out.println("Book found: " + foundBook);

} else {

System.out.println("Book not found.");

}

break;

case 4:

library.displayBooks();

break;

case 5:

library.saveBooksToFile();

break;

case 6:

library.loadBooksFromFile();

break;

case 0:

System.out.println("Exiting...");

break;

default:

System.out.println("Invalid choice. Please try again.");

break;

}

} while (choice != 0);

scanner.close();

}

}