# Mini Project: Library Management System in Java

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## 1. Abstract

This mini project is a Library Management System built using Java. It helps manage book records in a library. The system supports functionalities such as adding, deleting, issuing, and returning books. It serves as a fundamental project to practice object-oriented programming in Java.

## 2. Objective

To develop a basic system for managing a library's inventory using Java classes and collections.

## 3. Software Requirements

- Java JDK
- Any Java IDE (e.g., IntelliJ, Eclipse)
- Windows/Linux OS

## 4. Features

- Add new books
- Display all books
- Issue a book
- Return a book
- Delete book record

## 5. Java Code Snippet

```
import java.util.*;

class Book {
    int id;
    String title, author;
    boolean isIssued;

    Book(int id, String title, String author) {
        this.id = id;
        this.title = title;
        this.author = author;
        this.isIssued = false;
    }
```

```
}

public class Library {
    static ArrayList<Book> books = new ArrayList<>();
    static Scanner sc = new Scanner(System.in);

    public static void main(String[] args) {
        while (true) {
              System.out.println("\n1. Add Book\n2. View Books\n3. Issue Book\n4. Return
Book\n5. Exit");
            int choice = sc.nextInt();
            switch (choice) {
                case 1: addBook(); break;
                case 2: viewBooks(); break;
                case 3: issueBook(); break;
                case 4: returnBook(); break;
                case 5: System.exit(0);
            }
        }
    }

    static void addBook() {
        System.out.print("Enter ID, Title, Author: ");
        int id = sc.nextInt();
        sc.nextLine();
        String title = sc.nextLine();
        String author = sc.nextLine();
        books.add(new Book(id, title, author));
        System.out.println("Book added successfully!");
    }

    static void viewBooks() {
        for (Book b : books)
             System.out.println(b.id + " " + b.title + " by " + b.author + (b.isIssued ?
" (Issued)" : ""));
    }

    static void issueBook() {
        System.out.print("Enter Book ID to issue: ");
        int id = sc.nextInt();
        for (Book b : books) {
            if (b.id == id && !b.isIssued) {
                b.isIssued = true;
                System.out.println("Book issued.");
                return;
            }
        }
        System.out.println("Book not available.");
    }

    static void returnBook() {
        System.out.print("Enter Book ID to return: ");
        int id = sc.nextInt();
        for (Book b : books) {
```

```
            if (b.id == id && b.isIssued) {
                b.isIssued = false;
                System.out.println("Book returned.");
                return;
            }
        }
        System.out.println("Invalid return.");
    }
}
```

## 6. Conclusion

This Java-based Library Management System mini project gives students a hands-on experience in building a command-line application using object-oriented principles and collections.