Distributed Library System

User Manual

Version `2025-04-22`

Tuesday 22nd April, 2025

Contents

1 Introduction

The **Distributed Library System** is a desktop-style Java–Swing application backed by a MySQL database. It allows two categories of users:

- **Users** — donate books, borrow available items, and demand their own donated books back.
- **Admins** — maintain the complete catalogue and manage user accounts and sub-library locations.

2 System Requirements

Component	Minimum Requirement
Operating system	Windows 10/11, macOS 10.15 +, or any modern Linux
Java JDK	Version 17 or newer (set `JAVA_HOME`)
Database	MySQL 8.x running locally (default port 3306)
JDBC driver	`mysql-connector-j-9.2.0.jar` in the app folder
Screen	1366×768 px or higher

3 Installation

1. **Clone or copy** all `.java` files into a single directory.

2. **Adjust database credentials** in `DatabaseConnection.java` if your MySQL settings differ.

3. Open a terminal in that directory and compile:

```
javac -cp ".;mysql-connector-j-9.2.0.jar" *.java
# use ':' instead of ';' on Linux or macOS
```

4. Launch the program:

```
java -cp ".;mysql-connector-j-9.2.0.jar" MAIN
```

On first start, the application will automatically create all necessary tables in the database.

4 Key Workflows

Create an Account

1. Run the application and select `Sign Up`.
2. Fill in all fields.
3. Choose `User` (regular patron) or `Admin`.
4. Click `Create`.

Borrow a Book (User)

1. Log in and open the `Borrow Books` tab.
2. Use the search bar or scroll the list.
3. Select a row, then click `Borrow Selected`.

Donate a Book (User)

1. Open the `Donate Books` tab.
2. Enter book details, the sub-library ID, and location.
3. Click `Donate`.

Demand Back a Donated Book (Owner)

1. Open the `Demand Back` tab.
2. Search or select the book, then click `Demand Selected`.
3. Once the current borrower returns (or auto-return triggers), the item disappears from the public catalogue.

Admin Tasks

- **Add Book / Remove Book** — manage physical stock.
- **Manage Users** — view registered user information.
- **Add Sublibrary** — register a new satellite location.
- **View Books** — audit full catalogue at any time.

5 Automatic Behaviours

- **14-Day Auto-Return** — every time a dashboard is shown (and at start-up) the system marks any borrow older than 14 days as *returned.*
- If the owner had demanded that book, the row is *deleted* — the item is no longer available in the library.
- Dashboards refresh instantly after every action; logging out is *not* required to see updates.

6 Roles & Responsibilities

Users
- Donate, borrow, and demand back books.
- Keep passwords secure; notify Admins of lost credentials.

Admins
- Manage all catalogue entries and sub-libraries.
- Assist users with account issues.

System
- Persist data to MySQL and enforce borrowing rules.
- Provide real-time dashboards.

7 Limitations

- Single-copy model: the system does not track stock counts.
- No e-mail/SMS notifications; overdue alerts appear only in the console log.
- MySQL connection is hard-coded for localhost.
- Basic validation; duplicate titles or invalid IDs are possible if admins do not verify entries.

8 Scope for Improvement

- Multi-copy inventory with reservation queues.
- Email reminders and weekly digest for due items.
- Web front-end instead of Swing.

Contact / Support

For bug reports or feature requests please contact:

`cs24b038@iittp.ac.in`
`cs24b009@iittp.ac.in`