**LIBRARY MANAGEMENT APPLICATION SYSTEM**

This application manages all the library functions like searching for a book, checking out a book, checking in a book, borrower management and fine management.

User Instructions: All the following functionalities are provided as Menu Options. Suitable screen displayed on menu selection. Use Button Reset (if exists) on any page to clear all fields and tables.

**Functionalities (Menu Options)**

* **Searching for a Book**

**Input:** Book Id and Author Name(search works on any part of the author name and Title of the Book (search works on any part of author name and substring of title).

**Output**: All books satisfying the search criteria displayed with Book id, Title, Author(s), Branch id, No of copies at a branch and no of available copies at a branch.

If no books found, suitable message displayed.

On selecting a book and pressing the “Check Out” button, user is navigated to the checkout page with book id and branch id of the book. If no book is selected, suitable message displayed and check out fails.

* **Checking out a Book**

**Input**: Book Id, Branch id and card No

**Output**: Book is checked out on pressing the “Check Out” button with success message

If a borrower tries to check out more than 4 books, error message is displayed and check out fails.

If a Branch does not have any copies, error message is displayed and check out fails.

**Added Functionality** (not in requirements): If a borrower has any pending fines for checked in books, suitable error message displayed and check out fails.

* **Checking In a Book**

**Input**:

Search for books: on Card no and/or book id and/or any part of borrower name

Check In: Select a book from table, enter Check-in date using the Spinner and Press “Check In” to check-in a book

**Output:** Selected book is checked in on entered date and the table is refreshed

If check-in date is beyond current date and before check-out date, check in fails with suitable error message

**Added functionality**: If check-in date is greater than the due date, Fines table in database is updated.

If check-in date is greater than current day, check in fails with suitable error message.

If date entered is invalid, check in fails with suitable error message

If no book is selected, check in fails with suitable error message

* **Adding a new Borrower**

**Input:** Required fields - First name and Last name, Address

**Other fields:** Phone Number

**Output**: New Borrower created on pressing “Add New Borrower”, Unique Card Number assigned is displayed.

If combination of first name, last name, address already exists then the adding a new borrower fails with error message

If required fields are not provided, suitable error message displayed

**Added Functionality**: Phone no is not a required field but if entered and not valid, adding a new borrower fails with error message.

* **Pay Fines** – For only books returned

**Input**: Card No

**Output**: On pressing “Search”, table display of individual transaction of fines for the borrower.

Payment received success message displayed on selecting a transaction and paying the fine.

If no fines found, suitable message displayed

If no card number is provided as input, suitable message displayed

If no transaction selected to pay fine, suitable error message displayed

* **View/Update Fines**

On selection,

1. **View Individual Borrower Fine** :
   1. **Input** : Card No

**Output**: Borrower name, Sum of paid fines, sum of unpaid fines is displayed

If no card No is given, retains previous state

**View/Refresh Fines**: All Borrower names, card number, Sum of paid fines, sum of unpaid fines is displayed .This refreshes the FINES table in the database and also the display table.

**Technical Requirements and Specifications**

* The application runs on Java 7 or higher
* GUI is Java Swing based and requires Java Swing Package (included in the JDK)
* RDBMS used is MySQL 5.5 and MysqlConnector for the same