**LIBRARY MANAGEMENT SYSTEM DATABASE**

**OBJECTIVE:**

This project involves creation of a database host application that interfaces with a SQL database that implements a Library Management System.

**INTRODUCTION:**

First we must connect our system with server (mysql server). After establishing a connection, the database requires an authorization to whom the system is given access. This design makes sure that the system is given access only by authorized users. We provide an authentication system where the librarian has to enter a username and password to login.

The user logs into the system and can access to the library database after authorization. The menu gives five options to choose from where the user can click on book search, borrower management, check-in, check-out, and fines. The user also has an option to exit the database by pressing exit button in the Menu. The book search section can show the user the list of books and author names that are available at each branch and number of books that are available. The user can type either book id, Authors Name or Title of the book or any key words related to any one of the listed fields in the search boxes to find a particular book or books. Always a menu button is present generally present in the top lest corner of any dialog box so that we can go to home applet.

The next section is the Borrower Management. The users can register as new users so that they can be considered as one of the valid borrowers of the library system. The design requires the librarian to enter all the fields in the Borrowers option. After clicking on the home screen once can proceed to any of the given scroll down menus available. The third option is the checkout option that allows users to checkout a book for a particular user by entering all the values correctly in the in all fields which are the book id, branch id and the card number. Check out is not allowed by the systems to users who have fines. It prompts the administrator to ask user to pay fines and blocks check out till he clear his dues. The system also does not allow the user not to allow to borrower more than three books at a time. The check in feature allows the user can to return books by updating the date the book is returned to the system. The user can enter values into the fields and search for books that have been checked out displaying the date out and due date for each user.

At last, we calculate the fines for every user who do not return their before or by the due date. The table in the user interface gives the list of all the users with the fine dues. The system administrator can settle fines of a particular user using the user’s card number. Refresh button’s functionality is to history fines which included who paid the fine and who did not pay the fine and their amount which is/was due.

**Required Software and Tools:** JAVA, Eclipse IDE, MySQL

**Application:** Java Swings

**DESIGN:**

The design specifications for all jframes that were used for the system are described in this part. The Login.java class is the main class in the project. It establishes the connection to the database. After that we require authorization credentials to access database. For authentication, the database system initially prompts for a username and a password to give access only to the librarian to use the system. The username is for the database is srinath and password is srinathr. Wrong user credentials will lead to prompting the message Login failed. Please enter the correct user id and password.

**Select Menu:**

The select menu consists of six jbuttons, which when clicked individually performs a particular function. There five functionalities that the UI provides which performed individually by clicking the respective button. The last button exit closes the menu and disconnects from the database. The menu has the following buttons:

* Book Search
* Borrower Management
* Checkout
* Checkin
* Fines
* Exit

Book Search**:** The book availability dialog box provides three text boxes where the user can enter text into one of the fields or multiple. The search fields are Book id, Title and Author’s name. When the search button is pressed a table below displays the book id, title, Author, Branch-id, Number of copies and also the available number of copies ta each branch. The Menu Button takes user back to the menu.

Borrower Management: This functionality is used to add a new borrower to the database. The dialog takes the values first name, last name, address and phone number. All values must be entered into the jtext voxes. The system also checks if an existing user is trying to add into the system by comparing the values entered in all fields except the phone number. When we have registered the user, a unique card number is generated and provided to the user. If the same details enter jtext boxes match with that of those in the system, the system throws an error message saying the user is already registered. Again here we provide the menu button that takes us to the menu display of the system.

Check-Out: This enables the user to check out a book by entering the book id, branch id and the card number. The system process requests only valid entries are entered in all the fields. Check out happens to users with only valid unique card numbers. Another feature of the check-out option is that it does not allow the user to check out more than three books for a particular user. Further requests are blocked by displayed the message exceed the limit of three books. It also blocks check out of person having fines.It displayed pay fines in order to continue checkout. If the books requested for check-out is available then the system allows the user to check-out. Finally, the button takes to the home screen when clicked.

Check-In**:** This feature allows the user to return books back to library whose return records are stored in the database. Checkin system contains four text boxes. They are search options for users to search who to return their borrowed books. The datein column will be updated. The search result table consists book first name, last name, date out and date in. We press the search button after entering tuples with related value the search results will give load id, card number, first name and last name. From the search result we can see the values. When we press checkin button a checkin dialogbox appears and ask for the librarian to manually enter the loan id manually and press confirm. For a valid loan id we will get message Updates and for incorrect loan it will say please enter the correct loan id. .

Fines: The fines option displays the loan-id, card-no, fine-amt and paid option for the refresh button. When refresh button is pressed the paid columns with both true and false values were also displayed. When the show fines button displays the loaned, cardno, fine amount for each user with pending dues. When Settle fines button is pressed a dialog box appears to enter a valid card number for conformation. Card number is related to the person who paid the fine. We refresh the table by pressing the refresh button;