Design Document

1. Introduction

This SQL programming project involves the creation of a database host application that interfaces with a backend SQL database implementing a Library Management System. Users of the system are understood to be librarians (not book borrowers).

2. The method I use

The project is developed by Java under eclipse. There's a method called Java Swing which is used to design user interface. Furthermore, if you want to connect the DB to eclipse, you have to use JDBC connector tools.

3. Create database

First I create a database in my localhost which has book, book_author, author, book_loans, borrower, and fines tables. And then, I have to insert each data manual.(Codes are under **/6360DB-jxz172230/database/..**)

4. Workbench

We should have six tables AUTHORS, BOOK, BOOK_AUTHORS, BOOK_LOANS, BORROWER, FINES in addition of original data import: BOOKS and BORROWERS. I create four pages which will make user easily to use. These panels are used for book search, check-in, check-out, borrower management, show-fines, pay-fines.

5. Design application

5.1 Log in

I create a button call PostgreSQL connect to see does the application connect to SQL using JDCB correctly or not. If it connect to database correctly, it will show an alert then go to the library system. Mine port number is 5342 while user "jd" and password "123".

5.2 Book Search Module

We can search the data which we want by using ISBN, Title , Name or any consistent. After all, it will show up the exactly whole ISBN, Title , Name.

5.3 Book Loan Module

The left part is help you to check out. You can input ISBN or Card ID or both to check out for the book. It will create some mistake if one people has more than three books, or the book has been rented out. Otherwise, the book will be checked out, and the book_loan table will be recorded.

The right part is help you to check in. You enter ISBN or Card Id, then search, click on the book you want to check in, and click check in. If The book has the check in date, then you cannot check in this book because it is in our library.After check the book in, search it again and it will show the change in date_in.

5.4 Borrower Management Module

Allow user to create a new borrower by inputting his or her ssn, fname, lname, arddress, phone.There will be a validation to control the input.

5.5 Module of Fines

Allow user to input card_id to find out the fine records of the person. Also I create a filter which can show the fines that are paid or not. Finally, we can pay for the fine, if succeed , it will show up. Then we can click the button update file amount to update the fines table.