

Design Document

1. Purpose

The purpose of this document is to specify the designing style used to construct the required application. The design document intends to verify if the current design meets all the requirement (explicit or implicit).

2. Design Constraints:

The Library system is designed from the view point of Librarian. Hence it is a single user application. The Application will create java exe file so, the clients must have java installed on their machine. The application is OS independent.

3. System Structure:

The Application provides following basic functionalities:

- Search Book
- Check-in, Check-out book
- Add Borrower details.
- Fine calculation.

4. Assumptions and functional constraint:

- The Application will work correctly and produce desirable results when backend database is up and running and has appropriate values in it. (i.e. data is populated into tables)
- The Search is made on ISBN of the book, title of the book or author of the book. It is assumed that only one copy of each book exists which have same ISBN.
- The Library will not allow multiple bookings if there is unpaid fine.
- Maximum of three books are allowed to check out per borrower.
- The book is issued for 14 days. No concept of reissuing.
- One card is issued per borrower.
- The borrower must have SSN (unique field)
- Fine per day calculated is 0.25
- There are some Japanese or Spanish characters in the book title which are not truncated, those are kept as it is.

5. Technologies Used and additional requirement for the application

- Front-end: java Swings (java version: 8)
- Back-end: MySQL (mySQL Version:6.3)
- IDE used: NetBeans IDE.

- OS: Windows 10.
- Data preprocessing done using: Perl.

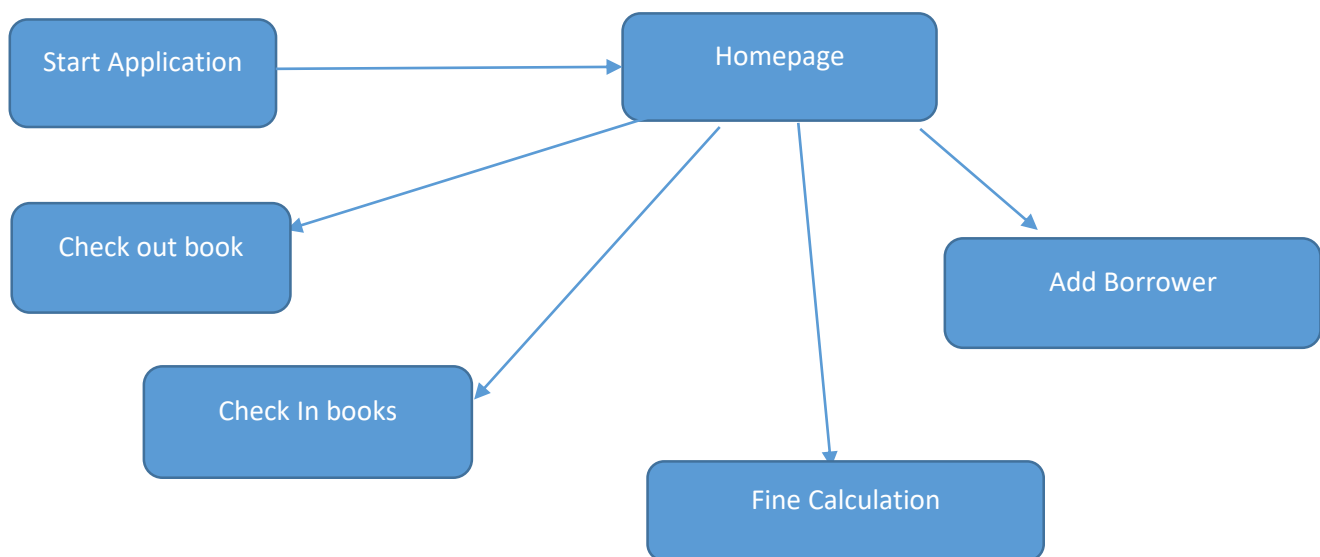
Requirements:

- Java must be installed on client machine.
- Database should be up and running and pointing to correct database. (in here MySQL)
- Perl must be installed on client machine, for the preprocessing data.
- An alternative command line prompt or some workbench to load initial data.

6. Design flow:

When you open the jar file, the application opens a homepage. According to various task that the user will do, different windows will open.

The general flow would be:



All functionalities provided by the application are linked to main page.

- On main page you have – search book functionality plus link to all the other tasks. You can search the book using ISBN, title of book or Author.
- If the book is available, the borrower would be able to check out the book. The checkout book functionality takes two inputs – the book ISBN and borrower id. If the borrower doesn't have any fine issued or no overdue books, he can check out the book.

- Check-in of the book is done using either ISBN or borrower id. If there is a record for check -in first it is checked if there is any fine due on that book, if yes, first fine needs to be paid and then borrower can check in the book.
- In fines page, the borrower can check the overdue book and fine assessed to him.
- He can then choose to pay the fine. If successful, the record is updated accordingly and now he will be able to check out book again.
- No records are deleted in this application. Only insertion and modification are allowed.

Pre-processing part:

- Data is given in the format of CSV in two files as borrower.csv and books.csv.
- Preprocessing is done on these project using 2 scripts as: book_preprocessing.pl and borrower_preprocessing.pl. The output of script is multiple csv files according to schema.
- The files generated are: book.tsv, authors.csv, book_authors.csv and borrower.tsv.
- These files are loaded into database using commands.
- Once the preprocessing part is done, you can start the application.