Design Document

Following describes the design considerations for the Librarian Portal.
This document describes them for each table separately.

BOOKS:

1. ISBN10 : This field contains 10 digit ISBN number for each book that is unique.
2. Title : Book title field that allowed title as long as 200 characters.
3. Cover : This contains link to the cover page of the book. Although in the current version of the product, the cover is not displayed anywhere, it can be modified to include this information using the data present in the database.
4. Publisher : Publisher information for each books is also stored to display or use it in the future.
5. Pages : Number of pages for each book is stored along with each entry.

BOOK_AUTHORS:
1. ISBN : This field contains the ISBN10 format number for each book.
2. Author_id : Author id is stored for each book. This id is unique for each author and that can give information about author by using this id with another table AUTHORS.

Here, in this table, if a book has more than one author, they are stored as a separate entry for each author as a different author id, but with the same ISBN number.

AUTHORS:

1. Author_id : This id is referenced by BOOK_AUTHORS table to resolve the information about authors for a book. It is unique for each author.
2. Author_name : This field contains full name of each author. It was divided into parts from the initial data given.
3. Title, Fname, Mname, Lname, Suffix : This all are parts of the Author name that were divided while loading the data into database.

LIBRARY_BRANCH:

1. Branch_id : This is unique id for each different library branch.
2. Branch_name : This field is library branch name, which can be upto 14 characters long.
3. Address : Address of that branch, that can be 31 characters long.

BOOK_COPIES:

1. Book_id : This is the ISBN number of the book, which is 10 character long.
2. Branch_id : This shows the book at a particular library branch. This references the branch_id in the LIBRARY_BRANCH table.
3. No_of_copies : This shows the total book copies that are available at that particular branch.

4. Remaining_copy : This field was added afterwards to keep track of the books available at that particular branch. Adding this field keeps the database backward compatible and makes it easy to use for tracking remaining copies. This field was referenced in the search results as well as during checkout to block checking out the books that are not available at that branch.

BORROWERS:

1. Card_no : This is a unique number for each borrower. This is generated automatically for each new user entered through borrowers registration module in the form of IDXXXXXX;
2. SSN : Stored in the form of XXX-XX-XXXX.
3. First_name, Last_name, email, address, city, state, phone number : This all fields are the personal information fields for the borrowers.

BOOK_LOANS:

1. Loan_id : This is a unique id for each new book_loan transaction. Generated automatically at the time of checking out a book.
2. ISBN : Unique book id. References BOOKS table.
3. Branch_id : Unique Branch_id from where this transaction was done.
4. Card_No : Unique id for each borrower. This references BORROWERS table.
5. Date_out : Date_out for each book_loans. Set to today's date at the time of checking out.
6. Due_date : Date that the book is due by. This date is generated as today's day + 14 days after that at the time of checking out.
7. Date_in : Date that the book was actually returned. May be null for the not yet returned books.

FINES:

1. Loan_id : Unique id to reference each unique transaction from BOOK_LOANS table.
2. Fine_amt : Fine amount accrued during the phase. Calculated according to given 2 scenarios :
   a. Not yet returned books : Date due and today's date * 0.25$ per day
   b. Returned books : Date due and Date in * 0.25$ per day
3. Paid : Boolean valued field to indicate if the fine is paid or not.

Application / Business constraints :

1. The application doesn't allow checking out books that have 0 remaining copies at a branch. There is no radio button displayed that can be selected to check out a book.
2. The application doesn't allow checking out more than 3 books by the same card number.
3. The application has made each field in the borrowers entry form required to be filled.
4. The application allows checking in multiple books simultaneously.

5. The application doesn't allow paying fines for not yet returned books.
6. The application doesn't allow paying partial fines. The fine is paid for all the books simultaneously for each card number.