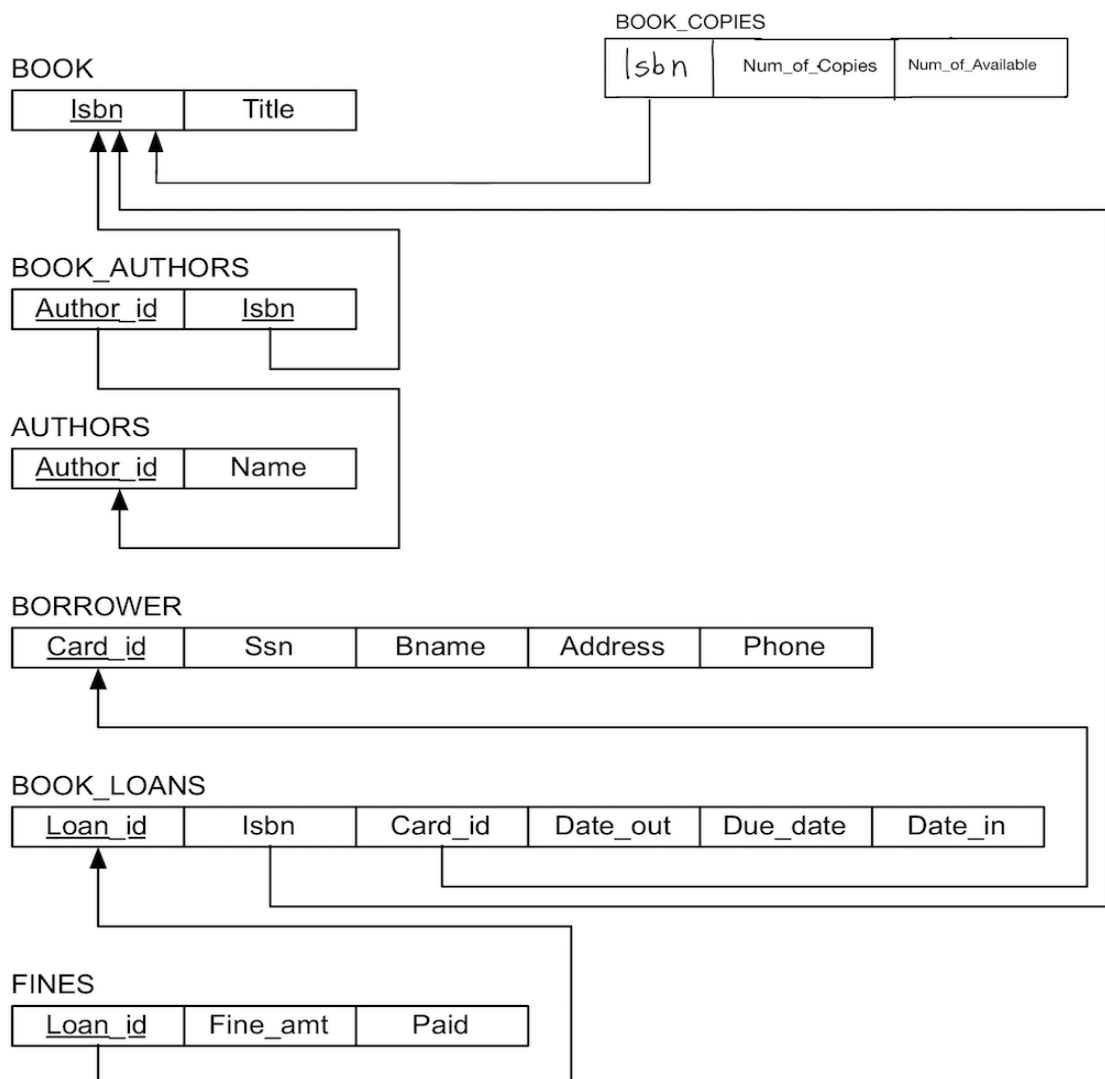# Design Document

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. Create database

My schema including five tables: BOOK, BOOK_AUTHORS, AUTHORS, BORROWER, BOOK_LOANS, FINES, BOOK_COPIES. I use MySQL and MySQL Workbench to build schemas.

3. Design application

This project GUI is developed by Java using InterlliJ IDEA, connecting schema in MySQL via JDBC.

4. Function Description

4.1 Book Search and availability

Search book using GUI, given any combination of ISBN, title or Author(s).

4.2 Book Check In

Able to locate BOOK_LOANS tuples by searching on any of book isbn, borrower card number, and borrower name. By click "CheckIn" button, the related book will be checked in and checkin date will aslo be recorded.

4.3 Book Check Out

Enter Card No. of user then click Checkout button will checkout the related book to the borrower. If this book is already checked out, an error will pop up under the frame. One borrower can borrow at most 3 books.

4.4 Fines

Check for fines that borrower need to pay for, also offering "pay fine" function. Librarians can enter payment of fines to record how much money borrowers have paid.

4.5 Borrower Management

It allows user to create a new borrower by filling in personal information as ssn, first name, last name, address, phone. There will be a validation check to control the input. A card number will be assigned to New User.