DATABASE DETAILS:

The SQL database used here is MySQL.

The database consists of the following tables:

1.Librarians: It consists of two columns “Empid” and “Password”, both the columns has a unique constraint on them.
Column “Empid” is of type integer, whereas “Password” is of type varchar.

2.Authors: It consists of two columns “Author_id” and “Name” , here “Author_id” is the primary key.
Column “Author_id” is of type integer and “Name” is of type varchar.

3. Book: It consists of two columns “Isbn” and “Title”, here Isbn is the primary key.
“Isbn” is of type bigint and “Title” is of type varchar.

4.Book_Authors: It consists of two columns “Author_id” and “Isbn”, here both columns combined form a primary key.
“Author_id” is of type integer and “Isbn” is of type bigint
“Author_id” has a foreign key constraint and it refers to “Author_id” of Authors.
“Isbn” has a foreign key constraint and it refers to “Isbn” of Book table.

5.Book_Loans: It consists of six columns, “Loan_id”, “Isbn”, “Card_id”, “Date_out”, “Due_date”, “Date_in”, here “Loan_id” column is the primary key.
“Isbn” and “Card_id” have foreign key constraints and they refer to “Isbn” of Book and “Card_id” of Borrower respectively.

6.Borrower: It consists of six columns, “Card_id”, “Ssn”, “Bname”, “Address”, “Phone”, here “Card_id” column is the primary key and “Ssn” column has a unique constraint on it.

7.Fines: It consists of 3 columns “Loan_id”, “Fine_amt”, “Paid”, here “Loan_id” is the primary key.
“Loan_id” also has a foreign key constraint and it refers to “Loan_id” of Book_Loans.

GUI DETAILS:

The GUI is implemented using Python programming language. Here, Tkinter which is the standard GUI library for Python is used and we query the database using pymysql.

At first, the user is prompted to either register or login. After this, the user can perform the following things:

1. The user can search for a book, after which he is given the option to issue the book to the borrower provided the borrower hasn't already borrowed 3 books and the book is available.

2. The user can add details of new borrowers.

3. When the user clicks the refresh button, the fine amounts of all the checked out books is updated.

4. The user can check-in a book by searching for a book and then clicking the check-in button, before the book check-in the user will be asked to confirm whether the borrower has cleared the fine amount or not related to the book.