Final Report
(Library Management System)

Course Code: CS254 **Course Title:** DBMS Lab

Semester: B. Tech 4^{th} Sem **Section:** S1

Academic Year: 2020-21 **Course Instructor:**Dr. Annappa B and Mr. Sharath Yaji

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1 Abstract

Brief Description:

Front-End: A website that has several routes which can be navigated using the navbar. Styled using CSS and functionality is given by JavaScript.

Back-End: The server side scripting is done using EXPRESS.js and NODE.js, the DBMS is made with MySQL. (Note: might use REACT down the line if needed)

Key Features:

1. Login facility
2. Search Book Facility
3. Borrow or Renew Book facility
4. Return Book Facility
5. Fine Payment Facility

Software Specifications:

- Frontend: HTML, CSS, JavaScript.

- Backend: NODE.js, Express.js, MySQL.

2 Introduction

This project is based on a real Library Management system and the real workings of a library, it consists of facilities to borrow, return and fee payment at the library. The main way in which a user can access these facilities is using our website which provides login, searching, borrowing, returning books. Users can also pay the fine on the website for late returns. The search facility gives the user all the information about the book if given the correct info on the book.

3 ER Diagram

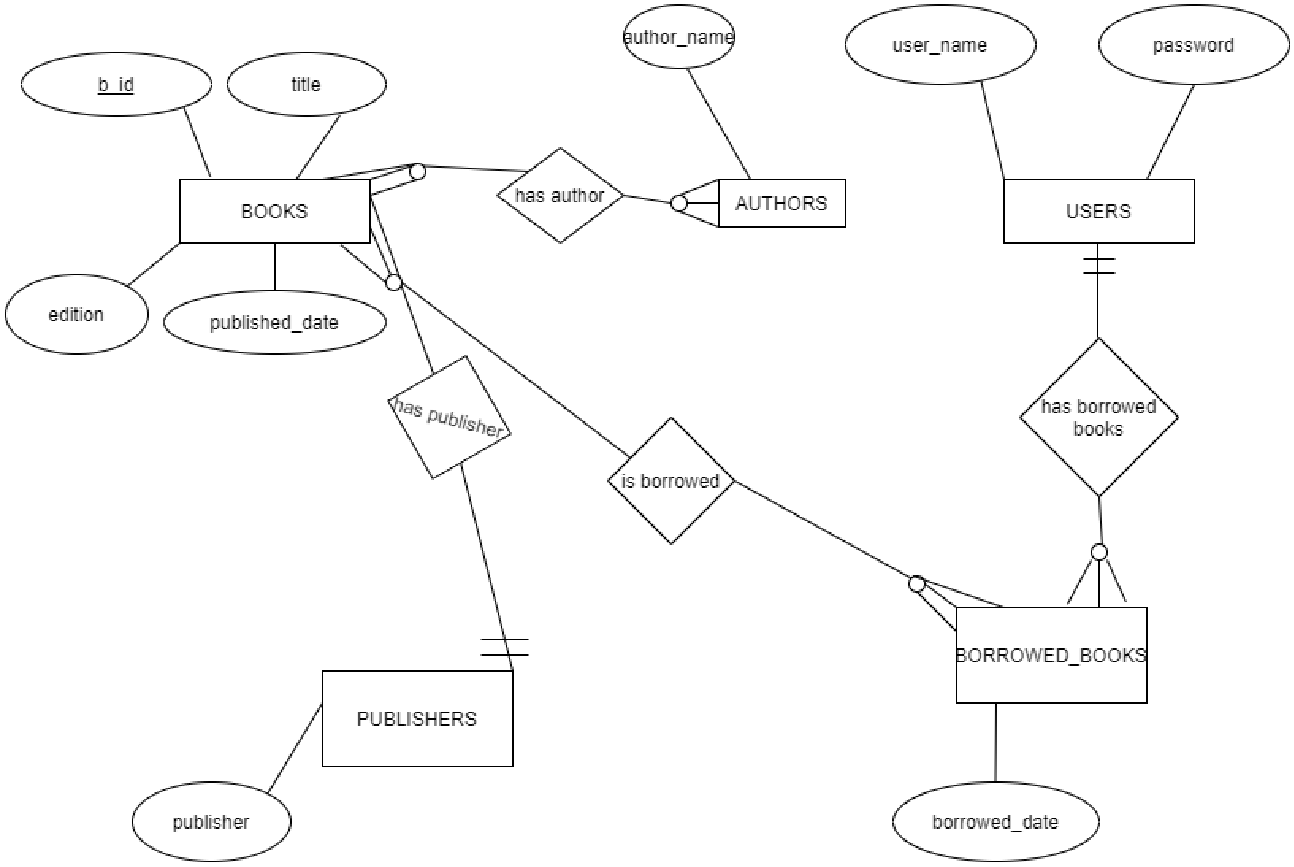


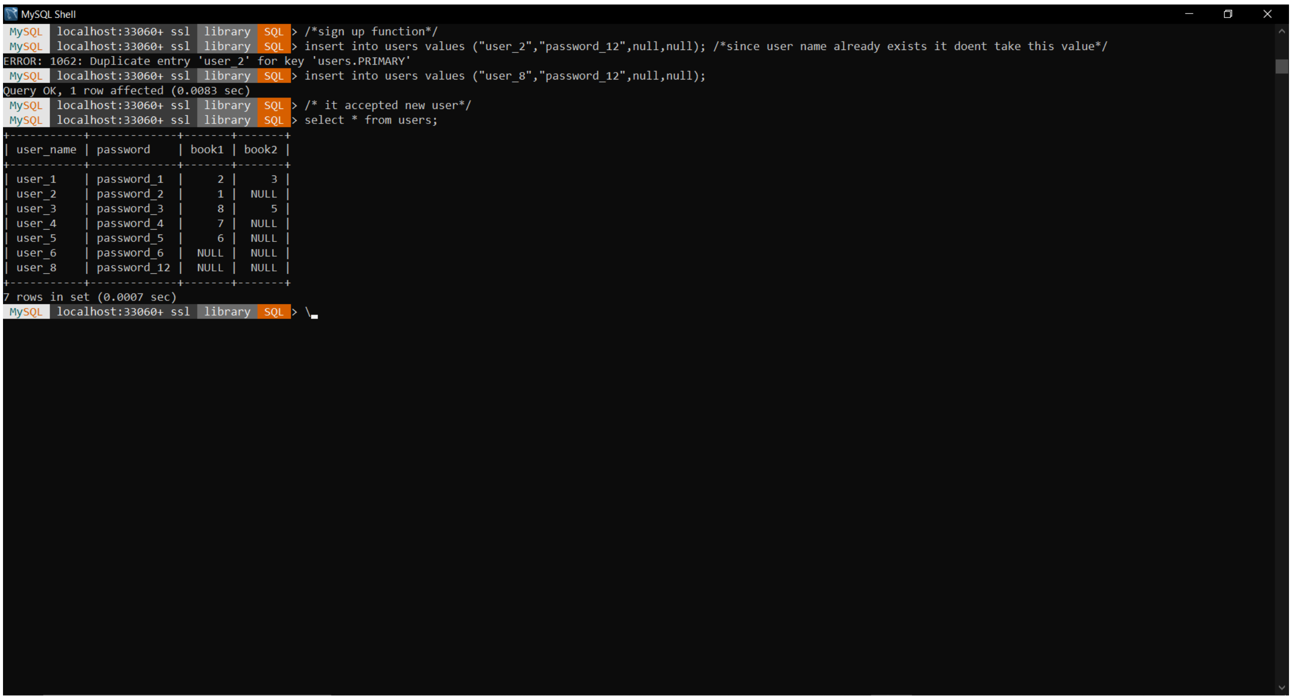
Figure 1: ER-DIAGRAM

4 Source Code

GitHub Repository Link:

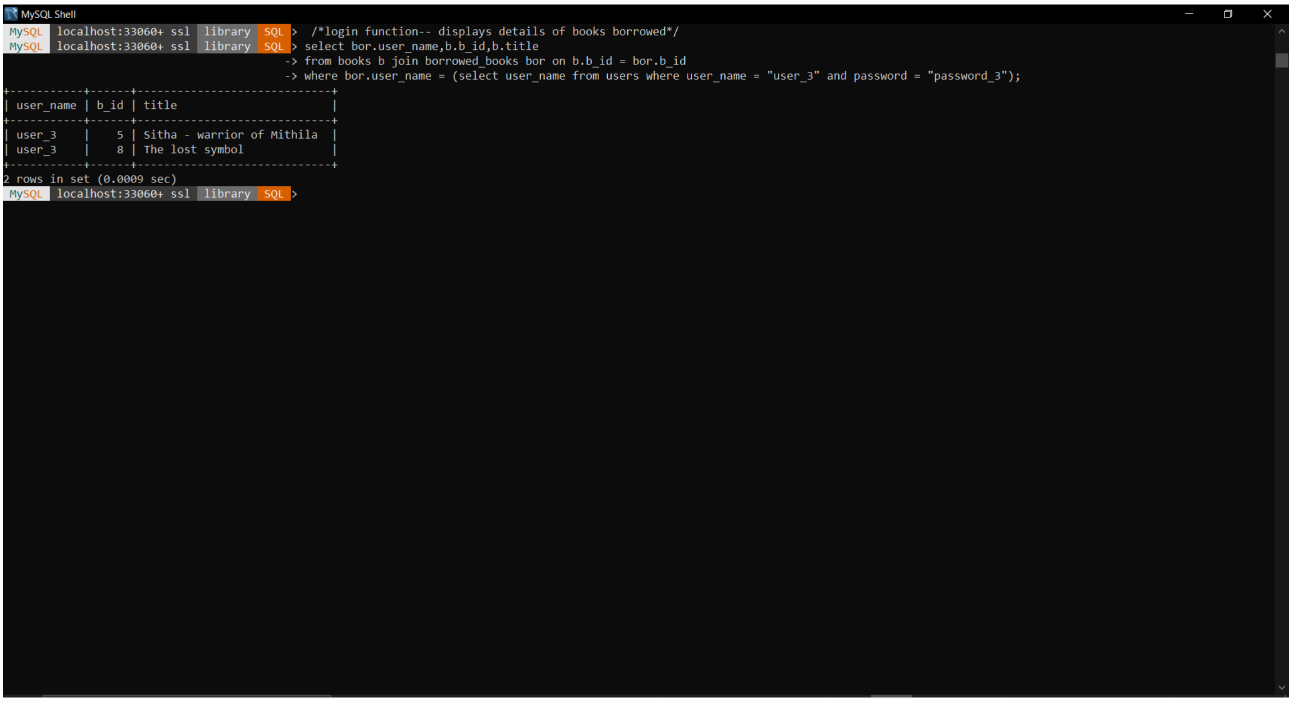
1. https://github.com/chethan-hebbar/CS255-Lib-Management-System
2. /views folder contains all the .ejs routes and HTML code.
3. app.js contains the back-end server script and the database interaction.
4. /public folder contains the CSS file and images.

5 Results



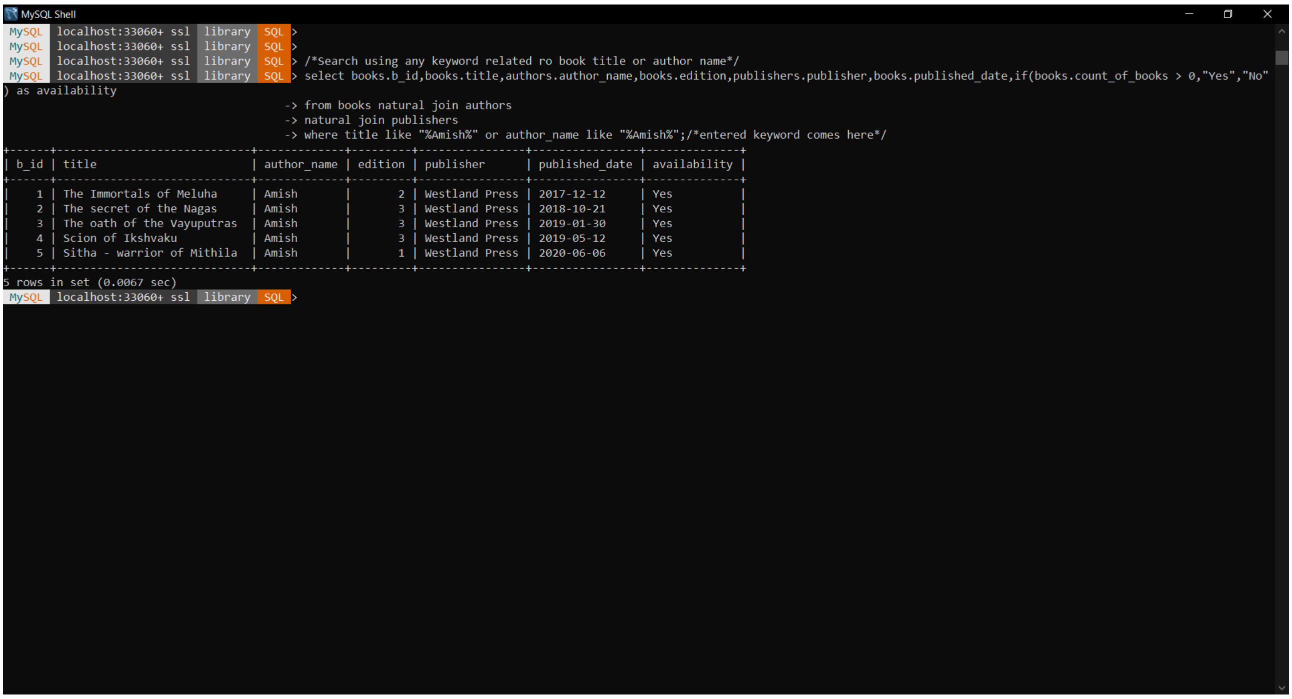
```
 MySQL  localhost:33060+ ssl  library  SQL > /*sign up function*/
 MySQL  localhost:33060+ ssl  library  SQL > insert into users values ("user_2","password_12",null,null); /*since user name already exists it doent take this value*/
ERROR: 1062: Duplicate entry 'user_2' for key 'users.PRIMARY'
 MySQL  localhost:33060+ ssl  library  SQL > insert into users values ("user_8","password_12",null,null);
Query OK, 1 row affected (0.0083 sec)
 MySQL  localhost:33060+ ssl  library  SQL > /* it accepted new user*/
 MySQL  localhost:33060+ ssl  library  SQL > select * from users;
+-----------+-------------+-------+-------+
| user_name | password    | book1 | book2 |
+-----------+-------------+-------+-------+
| user_1    | password_1  |     2 |     3 |
| user_2    | password_2  |     1 |  NULL |
| user_3    | password_3  |     8 |     5 |
| user_4    | password_4  |     7 |  NULL |
| user_5    | password_5  |     6 |  NULL |
| user_6    | password_6  |  NULL |  NULL |
| user_8    | password_12 |  NULL |  NULL |
+-----------+-------------+-------+-------+
7 rows in set (0.0007 sec)
 MySQL  localhost:33060+ ssl  library  SQL > \
```

Figure 2: Sign Up



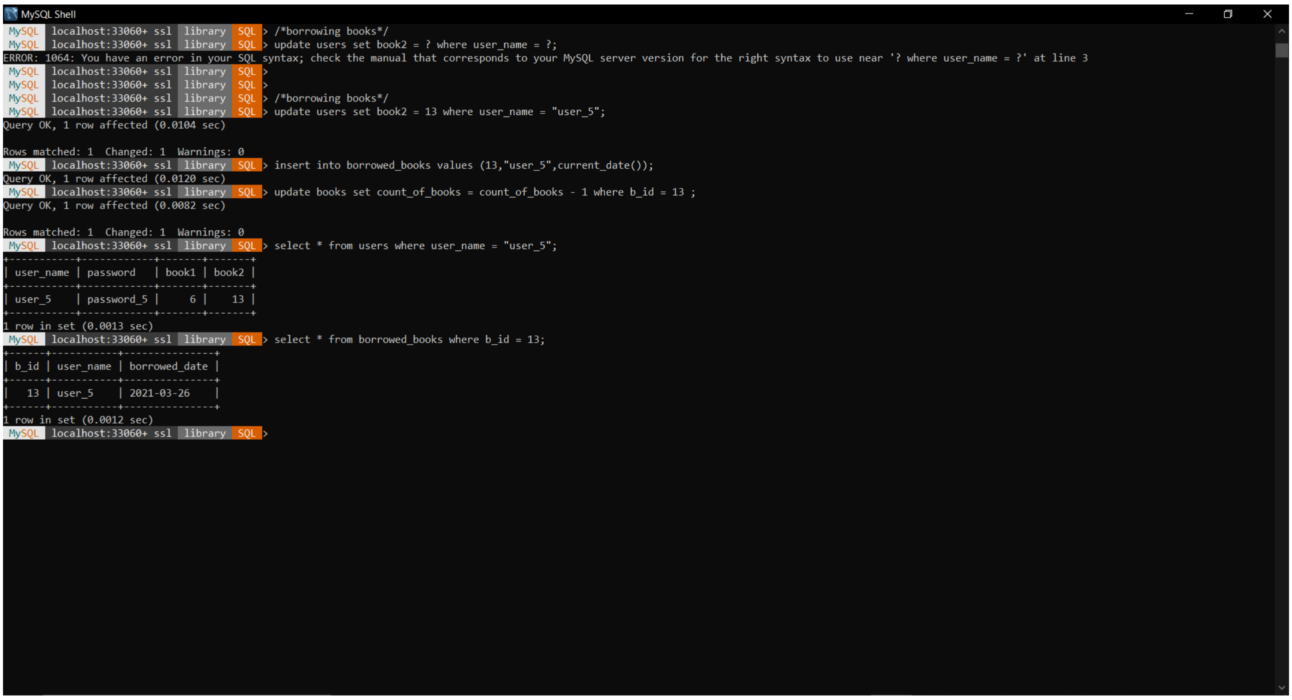
```
 MySQL  localhost:33060+ ssl  library  SQL >  /*login function-- displays details of books borrowed*/
 MySQL  localhost:33060+ ssl  library  SQL > select bor.user_name,b.b_id,b.title
                                          -> from books b join borrowed_books bor on b.b_id = bor.b_id
                                          -> where bor.user_name = (select user_name from users where user_name = "user_3" and password = "password_3");
+-----------+------+----------------------------+
| user_name | b_id | title                      |
+-----------+------+----------------------------+
| user_3    |    5 | Sitha - warrior of Mithila |
| user_3    |    8 | The lost symbol            |
+-----------+------+----------------------------+
2 rows in set (0.0009 sec)
 MySQL  localhost:33060+ ssl  library  SQL >
```

Figure 3: Log In



```
MySQL  localhost:33060+ ssl  library  SQL >
MySQL  localhost:33060+ ssl  library  SQL >
MySQL  localhost:33060+ ssl  library  SQL > /*Search using any keyword related ro book title or author name*/
MySQL  localhost:33060+ ssl  library  SQL > select books.b_id,books.title,authors.author_name,books.edition,publishers.publisher,books.published_date,if(books.count_of_books > 0,"Yes","No"
) as availability
                                         -> from books natural join authors
                                         -> natural join publishers
                                         -> where title like "%Amish%" or author_name like "%Amish%";/*entered keyword comes here*/
+------+-----------------------------+-------------+---------+---------------+----------------+--------------+
| b_id | title                       | author_name | edition | publisher     | published_date | availability |
+------+-----------------------------+-------------+---------+---------------+----------------+--------------+
|    1 | The Immortals of Meluha     | Amish       |       2 | Westland Press | 2017-12-12     | Yes          |
|    2 | The secret of the Nagas     | Amish       |       3 | Westland Press | 2018-10-21     | Yes          |
|    3 | The oath of the Vayuputras  | Amish       |       3 | Westland Press | 2019-01-30     | Yes          |
|    4 | Scion of Ikshvaku           | Amish       |       3 | Westland Press | 2019-05-12     | Yes          |
|    5 | Sitha - warrior of Mithila  | Amish       |       1 | Westland Press | 2020-06-06     | Yes          |
+------+-----------------------------+-------------+---------+---------------+----------------+--------------+
5 rows in set (0.0067 sec)
MySQL  localhost:33060+ ssl  library  SQL >
```

Figure 4: Search



```
MySQL  localhost:33060+ ssl  library  SQL > /*borrowing books*/
MySQL  localhost:33060+ ssl  library  SQL > update users set book2 = ? where user_name = ?;
ERROR: 1064: You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near '? where user_name = ?' at line 3
MySQL  localhost:33060+ ssl  library  SQL >
MySQL  localhost:33060+ ssl  library  SQL >
MySQL  localhost:33060+ ssl  library  SQL > /*borrowing books*/
MySQL  localhost:33060+ ssl  library  SQL > update users set book2 = 13 where user_name = "user_5";
Query OK, 1 row affected (0.0104 sec)

Rows matched: 1  Changed: 1  Warnings: 0
MySQL  localhost:33060+ ssl  library  SQL > insert into borrowed_books values (13,"user_5",current_date());
Query OK, 1 row affected (0.0120 sec)
MySQL  localhost:33060+ ssl  library  SQL > update books set count_of_books = count_of_books - 1 where b_id = 13 ;
Query OK, 1 row affected (0.0082 sec)

Rows matched: 1  Changed: 1  Warnings: 0
MySQL  localhost:33060+ ssl  library  SQL > select * from users where user_name = "user_5";
+-----------+------------+-------+-------+
| user_name | password   | book1 | book2 |
+-----------+------------+-------+-------+
| user_5    | password_5 |     6 |    13 |
+-----------+------------+-------+-------+
1 row in set (0.0013 sec)
MySQL  localhost:33060+ ssl  library  SQL > select * from borrowed_books where b_id = 13;
+------+-----------+----------------+
| b_id | user_name | borrowed_date  |
+------+-----------+----------------+
|   13 | user_5    | 2021-03-26     |
+------+-----------+----------------+
1 row in set (0.0012 sec)
MySQL  localhost:33060+ ssl  library  SQL >
```

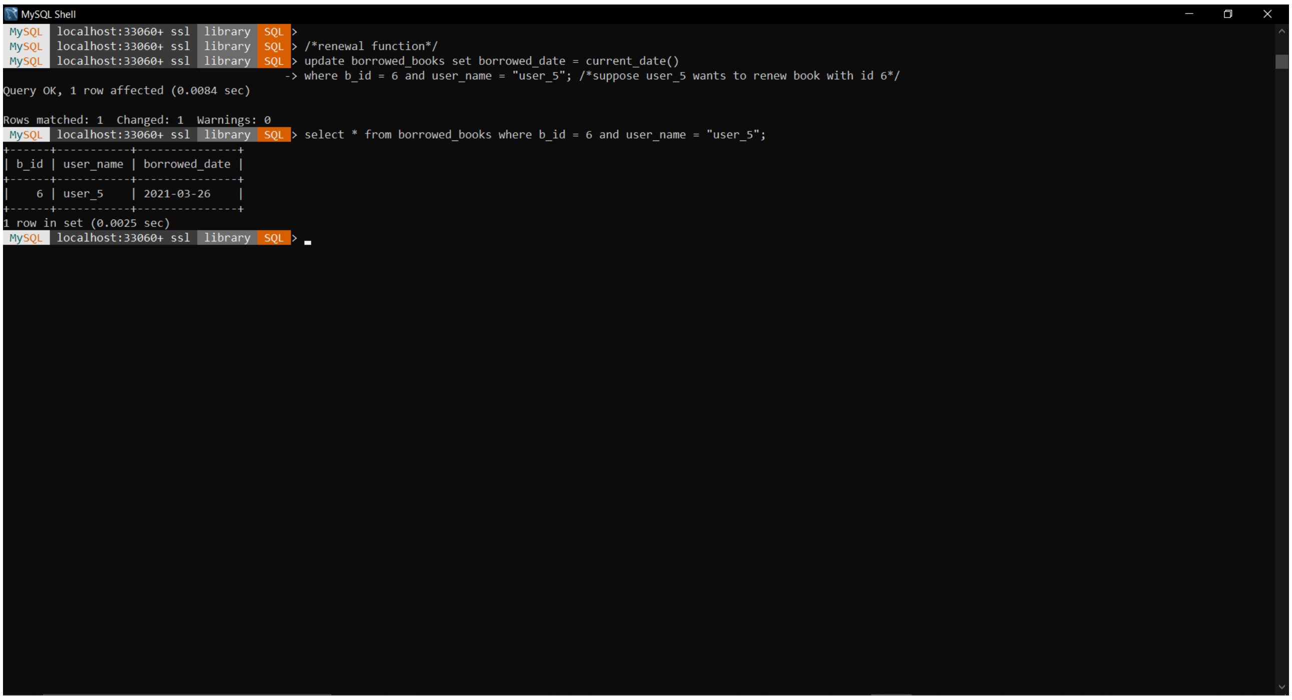
Figure 5: Borrow

6 References:

1. https://www.geeksforgeeks.org/use-case-diagram-for-library-management-system/

2. https://github.com/chethan-hebbar/CS255-Lib-Management-System

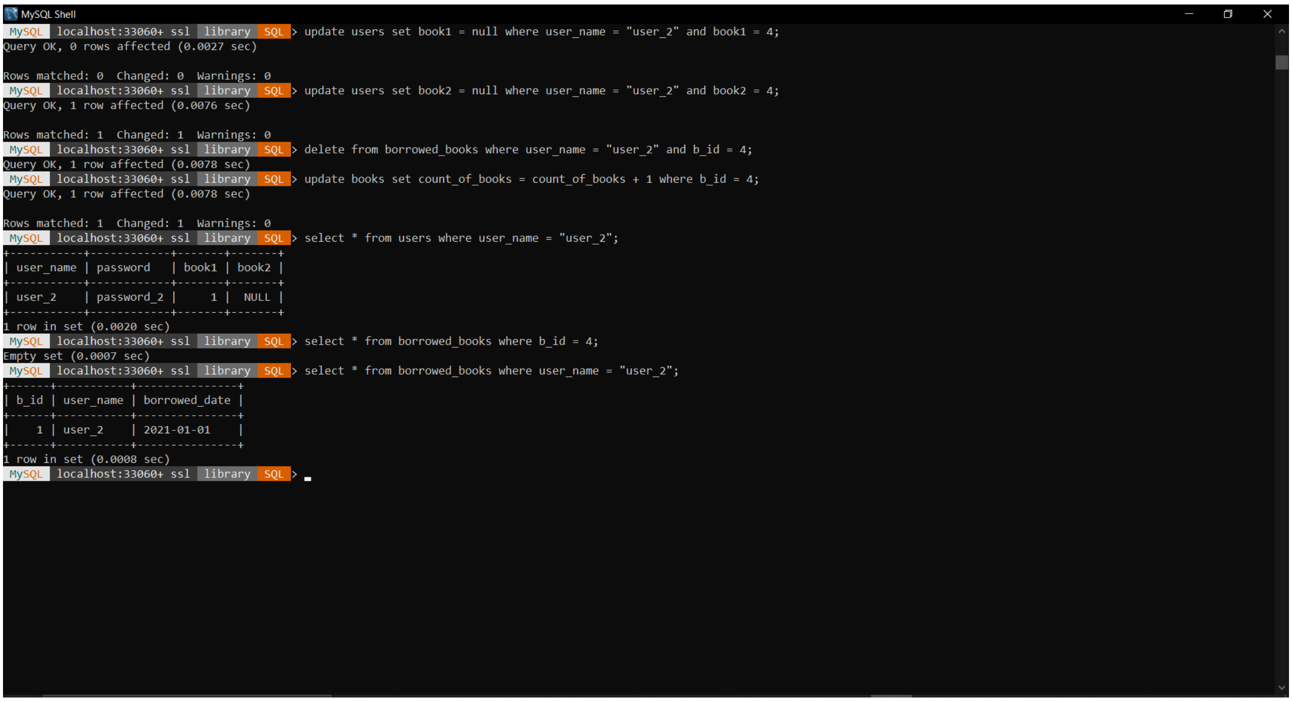
**** END ****



```
MySQL  localhost:33060+ ssl  library  SQL >
MySQL  localhost:33060+ ssl  library  SQL > /*renewal function*/
MySQL  localhost:33060+ ssl  library  SQL > update borrowed_books set borrowed_date = current_date()
                                         -> where b_id = 6 and user_name = "user_5"; /*suppose user_5 wants to renew book with id 6*/
Query OK, 1 row affected (0.0084 sec)

Rows matched: 1  Changed: 1  Warnings: 0
MySQL  localhost:33060+ ssl  library  SQL > select * from borrowed_books where b_id = 6 and user_name = "user_5";
+------+-----------+---------------+
| b_id | user_name | borrowed_date |
+------+-----------+---------------+
|    6 | user_5    | 2021-03-26    |
+------+-----------+---------------+
1 row in set (0.0025 sec)
MySQL  localhost:33060+ ssl  library  SQL >
```

Figure 6: Renew



```
MySQL  localhost:33060+ ssl  library  SQL > update users set book1 = null where user_name = "user_2" and book1 = 4;
Query OK, 0 rows affected (0.0027 sec)

Rows matched: 0  Changed: 0  Warnings: 0
MySQL  localhost:33060+ ssl  library  SQL > update users set book2 = null where user_name = "user_2" and book2 = 4;
Query OK, 1 row affected (0.0076 sec)

Rows matched: 1  Changed: 1  Warnings: 0
MySQL  localhost:33060+ ssl  library  SQL > delete from borrowed_books where user_name = "user_2" and b_id = 4;
Query OK, 1 row affected (0.0078 sec)
MySQL  localhost:33060+ ssl  library  SQL > update books set count_of_books = count_of_books + 1 where b_id = 4;
Query OK, 1 row affected (0.0078 sec)

Rows matched: 1  Changed: 1  Warnings: 0
MySQL  localhost:33060+ ssl  library  SQL > select * from users where user_name = "user_2";
+-----------+------------+-------+-------+
| user_name | password   | book1 | book2 |
+-----------+------------+-------+-------+
| user_2    | password_2 |     1 |  NULL |
+-----------+------------+-------+-------+
1 row in set (0.0020 sec)
MySQL  localhost:33060+ ssl  library  SQL > select * from borrowed_books where b_id = 4;
Empty set (0.0007 sec)
MySQL  localhost:33060+ ssl  library  SQL > select * from borrowed_books where user_name = "user_2";
+------+-----------+---------------+
| b_id | user_name | borrowed_date |
+------+-----------+---------------+
|    1 | user_2    | 2021-01-01    |
+------+-----------+---------------+
1 row in set (0.0008 sec)
MySQL  localhost:33060+ ssl  library  SQL >
```

Figure 7: Return