HackathonSubmissionTemplate(Level-2-Solution)

UseCaseTitle:[LibraryBookBorrowingandManagement]

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DateofSubmission:[05-04-2025]

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1. ProblemStatement

This library management system aims to solve the basic challenge of tracking booksandborrowers.Manualtrackingofbookloansandreturnsistime-consuming and error-prone, so this system will help librarians keep accurate records of the library's collection and borrowing activities.

2. DatabaseDesign&Implementation

DatabaseCreation&Tables

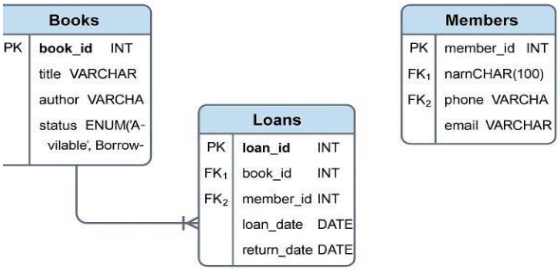
```
--Createdatabase
CREATEDATABASElibrary;
USE library;

-- Create Books table
CREATETABLEBooks(
   book_idINTPRIMARYKEYAUTO_INCREMENT, title
   VARCHAR(100) NOT NULL,
   authorVARCHAR(50)NOTNULL,
   statusENUM('Available','Borrowed')DEFAULT'Available'
);
```

```
-- Create Members table
CREATETABLEMembers(
    member_id INTPRIMARYKEYAUTO_INCREMENT,
    name VARCHAR(100) NOT NULL,
    phoneVARCHAR(20),
    emailVARCHAR(100)
);

-- Create Loans table
CREATETABLELoans(
    loan_idINTPRIMARYKEYAUTO_INCREMENT,
    book_id INT,
    member_idINT,
    loan_dateDATENOTNULL,
    return_date DATE
);
```

ERDiagram(ReverseEngineered)



3. QueriesforDataManagement

InsertSampleData

```
INSERT INTO Members (name, phone, email) VALUES
('John Doe', '9876543210', 'john.doe@example.com'),('Alice
Smith', '8765432109', 'alice.smith@example.com'),
('BobJohnson','7654321098','bob.johnson@example.com'),
('Emily Davis', '6543210987', 'emily.davis@example.com'),
('MichaelBrown','5432109876','michael.brown@example.com');

INSERTINTOLoans(book_id,member_id,loan_date,return_date)VALUES
```

(3,1,'2025-04-01',NULL),--Bookborrowed,notyetreturned (5, 2,
'2025-03-28', '2025-04-03'),
(1,3,'2025-03-30',NULL),--Bookborrowed,notyetreturned (4, 4,
'2025-03-25', '2025-03-31');

RetrievalQueries

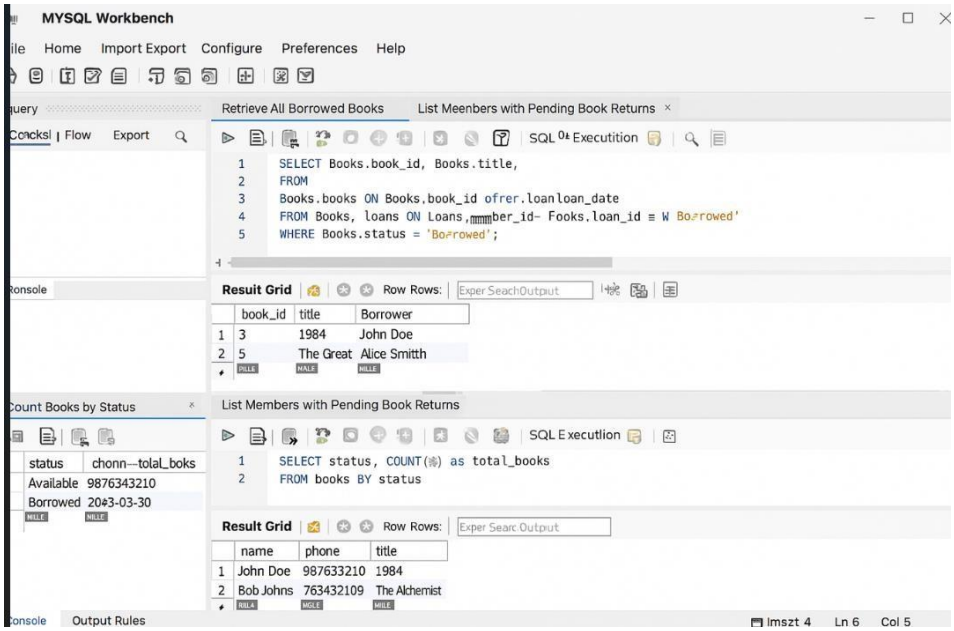
SELECTBooks.book_id,Books.title,Members.nameASBorrower, Loans.loan_dateb
FROMBooks
JOINLoansONBooks.book_id=Loans.book_id
JOIN Members ON Loans.member_id = Members.member_id
WHEREBooks.status='Borrowed';4.Implementation&Results

ExecutionEnvironment

TheLibraryManagementSystemwasimplementedandexecutedin MySQL Workbench.

- DatabaseManagementSystem(DBMS):MySQL8.0
- ExecutionPlatform:MySQLWorkbench8.0
- OperatingSystem:Windows11
- TestingData:Samplebooks,members,andloanswereinsertedtovalidate queries.
- ToolsUsed:
  - MySQLWorkbench(fordatabasecreation,queryexecution,andER diagram generation)

ScreenshotsofExecutionResults



5. GitHubRepository

Repository Link

https://github.com/poorni5/Poornima_5419EE60C2C270C9FED400790122633F

UploadedFilesinRepository

SQL-Scripts

https://github.com/poorni5/Poornima_5419EE60C2C270C9FED400790122633F/blob/main/scripts

ER-Diagram/
https://github.com/poorni5/Poornima_5419EE60C2C270C9FED400790122633F/blob/main/ERdiagram.png

Query-Results/

https://github.com/poorni5/Poornima_5419EE60C2C270C9FED400790122633F/blob/main/output.png