

Library Management System - SQL

Database Schema

This document contains the SQL schema, records, queries, and design notes for the Library Management System.

ER Diagram

Books Table

```
BookID INT PRIMARY KEY
Title VARCHAR(100) NOT NULL
Author VARCHAR(100)
Category VARCHAR(50)
Total_Copies INT
Available_Copies INT
```

Members Table

```
MemberID INT PRIMARY KEY
Name VARCHAR(100) NOT NULL
Email VARCHAR(100) UNIQUE
Phone VARCHAR(15)
Join_Date DATE
```

Borrowed_Books Table

```
BorrowID INT PRIMARY KEY
BookID INT FOREIGN KEY REFERENCES Books(BookID)
MemberID INT FOREIGN KEY REFERENCES Members(MemberID)
Borrow_Date DATE
Return_Date DATE (nullable)
```

Sample Queries

- 1. List all borrowed books with member names and dates

```
SELECT m.name, b.title, bb.borrow_date, bb.return_date
FROM Borrowed_Books bb
JOIN Members m ON bb.member_id = m.member_id
JOIN Books b ON bb.book_id = b.book_id;
```

- 2. Show overdue books (>7 days, not returned)

```

SELECT m.name, b.title, bb.borrow_date
FROM Borrowed_Books bb
JOIN Members m ON bb.member_id = m.member_id
JOIN Books b ON bb.book_id = b.book_id
WHERE bb.return_date IS NULL
AND DATEDIFF(CURDATE(), bb.borrow_date) > 7;

```

- 3. Count total borrowed books by each member

```

SELECT m.name, COUNT(bb.book_id) AS total_borrowed
FROM Borrowed_Books bb
JOIN Members m ON bb.member_id = m.member_id
GROUP BY m.name
ORDER BY total_borrowed DESC;

```

- 4. Count total books per category

```

SELECT category, COUNT(*) AS total_books
FROM Books
GROUP BY category;

```

ER Diagram (Graphical)

