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)

