

Library mangement system using sql:

Books:

```
-- Create Books Table
CREATE TABLE Books (
    book_id INT PRIMARY KEY,
    title VARCHAR(100),
    author VARCHAR(100),
    genre VARCHAR(50),
    published_year INT,
    available_copies INT
);
-- Insert Data into Books
INSERT INTO Books VALUES
(1, 'The Great Gatsby', 'F. Scott Fitzgerald', 'Fiction', 1925, 3),
(2, 'To Kill a Mockingbird', 'Harper Lee', 'Fiction', 1960, 2),
(3, '1984', 'George Orwell', 'Dystopian', 1949, 5),
(4, 'Pride and Prejudice', 'Jane Austen', 'Romance', 1813, 4),
(5, 'Moby-Dick', 'Herman Melville', 'Adventure', 1851, 2),
(6, 'The Catcher in the Rye', 'J.D. Salinger', 'Fiction', 1951, 3),
(7, 'War and Peace', 'Leo Tolstoy', 'Historical', 1869, 1),
(8, 'Crime and Punishment', 'Fyodor Dostoevsky', 'Psychological', 1866, 2),
(9, 'The Hobbit', 'J.R.R. Tolkien', 'Fantasy', 1937, 4),
(10, 'Brave New World', 'Aldous Huxley', 'Dystopian', 1932, 3);

select * from books;
```

book_id	title	author	genre	published_year	available_copies
1	The Great Gatsby	F. Scott Fitzgerald	Fiction	1925	3
2	To Kill a Mockingbird	Harper Lee	Fiction	1960	2
3	1984	George Orwell	Dystopian	1949	5
4	Pride and Prejudice	Jane Austen	Romance	1813	4
5	Moby-*****	Herman Melville	Adventure	1851	2
6	The Catcher in the Rye	J.D. Salinger	Fiction	1951	3
7	War and Peace	Leo Tolstoy	Historical	1869	1
8	Crime and Punishment	Fyodor Dostoevsky	Psychological	1866	2
9	The Hobbit	J.R.R. Tolkien	Fantasy	1937	4
10	Brave New World	Aldous Huxley	Dystopian	1932	3

Members:

```
select * from books;
-- Create Members Table
CREATE TABLE Members (
    member_id INT PRIMARY KEY,
    name VARCHAR(100),
    email VARCHAR(100),
    join_date DATE
);
-- Insert Data into Members
INSERT INTO Members VALUES
(1, 'Alice Johnson', 'alice@mail.com', '2023-01-10'),
(2, 'Bob Smith', 'bob@mail.com', '2023-03-15'),
(3, 'Charlie Brown', 'charlie@mail.com', '2023-06-20'),
(4, 'David Miller', 'david@mail.com', '2023-02-25'),
(5, 'Ella White', 'ella@mail.com', '2023-04-12'),
(6, 'Frank Harris', 'frank@mail.com', '2023-05-18'),
(7, 'Grace Lee', 'grace@mail.com', '2023-06-30');

select * from members;
```

member_id	name	email	join_date
1	Alice Johnson	alice@mail.com	2023-01-10
2	Bob Smith	bob@mail.com	2023-03-15
3	Charlie Brown	charlie@mail.com	2023-06-20
4	David Miller	david@mail.com	2023-02-25
5	Ella White	ella@mail.com	2023-04-12
6	Frank Harris	frank@mail.com	2023-05-18
7	Grace Lee	grace@mail.com	2023-06-30

BorrowedBooks:

```
select * from members;
-- Create BorrowedBooks Table
CREATE TABLE BorrowedBooks (
    borrow_id INT PRIMARY KEY,
    member_id INT,
    book_id INT,
    borrow_date DATE,
    return_date DATE,
    FOREIGN KEY (member_id) REFERENCES Members(member_id),
    FOREIGN KEY (book_id) REFERENCES Books(book_id)
);
-- Insert Data into BorrowedBooks
INSERT INTO BorrowedBooks VALUES
(1, 1, 3, '2023-07-01', '2023-07-15'),
(2, 2, 1, '2023-07-05', NULL),
(3, 3, 4, '2023-07-10', '2023-07-20'),
(4, 4, 2, '2023-07-12', '2023-07-22'),
(5, 5, 6, '2023-07-15', NULL),
(6, 6, 5, '2023-07-18', '2023-07-30'),
(7, 7, 8, '2023-07-20', '2023-08-02');

select * from BorrowedBooks;
```

borrow_id	member_id	book_id	borrow_date	return_date
1	1	3	2023-07-01	2023-07-15
2	2	1	2023-07-05	NULL
3	3	4	2023-07-10	2023-07-20
4	4	2	2023-07-12	2023-07-22
5	5	6	2023-07-15	NULL
6	6	5	2023-07-18	2023-07-30
7	7	8	2023-07-20	2023-08-02

```
/* a) Get all available books */
SELECT title, author, available_copies
FROM Books
WHERE available_copies > 0;
```

title	author	available_copies
The Great Gatsby	F. Scott Fitzgerald	3
To Kill a Mockingbird	Harper Lee	2
1984	George Orwell	5
Pride and Prejudice	Jane Austen	4
Moby-*****	Herman Melville	2
The Catcher in the Rye	J.D. Salinger	3
War and Peace	Leo Tolstoy	1
Crime and Punishment	Fyodor Dostoevsky	2
The Hobbit	J.R.R. Tolkien	4
Brave New World	Aldous Huxley	3

-- b) List all borrowed books with member names

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

name	title	borrow_date	return_date
Alice Johnson	1984	2023-07-01	2023-07-15
Bob Smith	The Great Gatsby	2023-07-05	NULL
Charlie Brown	Pride and Prejudice	2023-07-10	2023-07-20
David Miller	To Kill a Mockingbird	2023-07-12	2023-07-22
Ella White	The Catcher in the Rye	2023-07-15	NULL
Frank Harris	Moby-*****	2023-07-18	2023-07-30
Grace Lee	Crime and Punishment	2023-07-20	2023-08-02

-- c) Count how many books each member borrowed

```
SELECT m.name, COUNT(bb.borrow_id) AS total_borrowed
FROM Members m
LEFT JOIN BorrowedBooks bb ON m.member_id = bb.member_id
GROUP BY m.name;
```

name	total_borrowed
Alice Johnson	1
Bob Smith	1
Charlie Brown	1
David Miller	1
Ella White	1
Frank Harris	1
Grace Lee	1

/ d) Delete a returned record (Example: Borrow ID = 1) */*

```
DELETE FROM BorrowedBooks
WHERE borrow id = 0;
```

name	total_borrowed
Alice Johnson	1
Bob Smith	1
Charlie Brown	1
David Miller	1
Ella White	1
Frank Harris	1
Grace Lee	1