# Task 3: Writing Basic SELECT Queries (Library Management System)

Objective: Extract data from one or more tables in a Library Management System.  
Tools: DB Browser for SQLite / MySQL Workbench  
Deliverables: SQL script with SELECT, WHERE, ORDER BY, LIMIT  
Outcome: Clear understanding of how to retrieve data

## Sample Tables Used

-- Table: Books  
CREATE TABLE Books (  
 BookID INTEGER PRIMARY KEY,  
 Title TEXT NOT NULL,  
 Author TEXT,  
 Category TEXT,  
 Price REAL,  
 Availability TEXT  
);  
  
-- Table: Members  
CREATE TABLE Members (  
 MemberID INTEGER PRIMARY KEY,  
 Name TEXT NOT NULL,  
 Age INTEGER,  
 MembershipType TEXT,  
 JoinDate DATE  
);  
  
-- Table: Borrow  
CREATE TABLE Borrow (  
 BorrowID INTEGER PRIMARY KEY,  
 MemberID INTEGER,  
 BookID INTEGER,  
 BorrowDate DATE,  
 ReturnDate DATE  
);

## Sample Data

Books Table:  
+--------+--------------------------+----------------+------------+--------+--------------+  
| BookID | Title | Author | Category | Price | Availability |  
+--------+--------------------------+----------------+------------+--------+--------------+  
| 1 | Database Systems | C.J. Date | Computer | 550.00 | Yes |  
| 2 | Advanced Python | Mark Lutz | Computer | 675.00 | No |  
| 3 | Data Science Handbook | Jake VanderPlas| Science | 700.00 | Yes |  
| 4 | Modern Physics | Resnick | Science | 480.00 | Yes |  
| 5 | Intro to Algorithms | Cormen | Computer | 800.00 | No |  
+--------+--------------------------+----------------+------------+--------+--------------+  
  
Members Table:  
+----------+----------------+-----+----------------+------------+  
| MemberID | Name | Age | MembershipType | JoinDate |  
+----------+----------------+-----+----------------+------------+  
| 101 | Alice Kumar | 25 | Regular | 2023-03-15 |  
| 102 | Rohan Mehta | 52 | Premium | 2022-07-10 |  
| 103 | Meera Singh | 34 | Premium | 2023-11-20 |  
| 104 | Sunil Patil | 29 | Regular | 2024-01-12 |  
| 105 | Tina Thomas | 41 | Regular | 2023-05-25 |  
+----------+----------------+-----+----------------+------------+  
  
Borrow Table:  
+----------+----------+--------+------------+------------+  
| BorrowID | MemberID | BookID | BorrowDate | ReturnDate |  
+----------+----------+--------+------------+------------+  
| 201 | 101 | 1 | 2024-03-01 | 2024-03-21 |  
| 202 | 102 | 2 | 2024-04-05 | 2024-04-25 |  
| 203 | 103 | 3 | 2024-05-10 | 2024-05-30 |  
| 204 | 104 | 4 | 2024-06-01 | 2024-06-21 |  
| 205 | 105 | 5 | 2024-06-20 | NULL |  
+----------+----------+--------+------------+------------+

## SQL Queries and Expected Output

### 1. Select all books in the library

SELECT \* FROM Books;

Output:

Returns all 5 rows from the Books table.

### 2. Select book titles and authors only

SELECT Title, Author FROM Books;

Output:

+--------------------------+----------------+  
| Title | Author |  
+--------------------------+----------------+  
| Database Systems | C.J. Date |  
| Advanced Python | Mark Lutz |  
| Data Science Handbook | Jake VanderPlas|  
| Modern Physics | Resnick |  
| Intro to Algorithms | Cormen |  
+--------------------------+----------------+

### 3. Find books that cost more than 500

SELECT \* FROM Books WHERE Price > 500;

Output:

Returns 4 rows: Books with Price > 500.

### 4. List all available books in 'Science' category

SELECT Title, Author FROM Books WHERE Category = 'Science' AND Availability = 'Yes';

Output:

+-----------------------+-----------+  
| Title | Author |  
+-----------------------+-----------+  
| Data Science Handbook| Jake VanderPlas |  
| Modern Physics | Resnick |  
+-----------------------+-----------+

### 5. Find members with 'Premium' membership or aged over 50

SELECT Name, Age, MembershipType FROM Members WHERE MembershipType = 'Premium' OR Age > 50;

Output:

Returns Rohan Mehta and Meera Singh.

### 6. Find books with title containing the word 'Data'

SELECT \* FROM Books WHERE Title LIKE '%Data%';

Output:

Returns: 'Database Systems', 'Data Science Handbook'.

### 7. Find members who joined between '2023-01-01' and '2023-12-31'

SELECT \* FROM Members WHERE JoinDate BETWEEN '2023-01-01' AND '2023-12-31';

Output:

Returns: Alice Kumar, Meera Singh, Tina Thomas.

### 8. Sort members by join date (newest first)

SELECT \* FROM Members ORDER BY JoinDate DESC;

Output:

First row will be Sunil Patil (2024-01-12), last row will be Rohan Mehta (2022-07-10).

### 9. Show the last 5 books borrowed

SELECT \* FROM Borrow ORDER BY BorrowDate DESC LIMIT 5;

Output:

Returns all 5 borrow records sorted by BorrowDate descending.