Module 3: Library management system

MySQL Workbench — Local instance MySQL80

```
1       -- Step 1: Create Database
2   •   CREATE DATABASE library;
3
4       -- Step 2: Use the Database
5   •   USE library;
6
7       -- Step 3: Create Tables
8
9   •   CREATE TABLE Branch (
10          Branch_no INT PRIMARY KEY,
11          Manager_Id INT,
12          Branch address VARCHAR(255),
```

Output — Action Output

#	Time	Action	Message	Duration / Fetch
1	12:49:34	CREATE DATABASE library	1 row(s) affected	0.015 sec
2	12:49:37	USE library	0 row(s) affected	0.000 sec
3	12:49:42	CREATE TABLE Branch (Branch_no INT PRIMARY KEY, Manager_Id INT, B...	0 row(s) affected	0.078 sec
4	12:49:45	CREATE TABLE Employee (Emp_Id INT PRIMARY KEY, Emp_name VARCHAR...	0 row(s) affected	0.062 sec
5	12:49:54	CREATE TABLE Books (ISBN INT PRIMARY KEY, Book_title VARCHAR(255),	0 row(s) affected	0.078 sec
6	12:50:04	CREATE TABLE Customer (Customer_Id INT PRIMARY KEY, Customer_name V...	0 row(s) affected	0.031 sec
7	12:50:11	CREATE TABLE IssueStatus (Issue_Id INT PRIMARY KEY, Issued_cust INT, ...	0 row(s) affected	0.094 sec
8	12:50:19	CREATE TABLE ReturnStatus (Return_Id INT PRIMARY KEY, Return_cust INT...	0 row(s) affected	0.110 sec

MySQL Workbench — Local instance MySQL80

```
69          (3, 'Alice Brown', 'Librarian', 47000, 2);
70
71          -- Data for Books
72  •       INSERT INTO Books VALUES
73          (101, 'Book A', 'Fiction', 30, 'yes', 'Author A', 'Publisher A'),
74          (102, 'Book B', 'History', 25, 'no', 'Author B', 'Publisher B'),
75          (103, 'Book C', 'Fiction', 20, 'yes', 'Author C', 'Publisher C');
76
77          -- Data for Customer
78  •       INSERT INTO Customer VALUES
79          (1, 'Customer X', 'Street 1, City A', '2021-11-15'),
80          (2, 'Customer Y', 'Street 2, City B', '2022-03-10');
81
```

Output — Action Output

#	Time	Action	Message	Duration / Fetch
8	12:50:19	CREATE TABLE ReturnStatus (Return_Id INT PRIMARY KEY, Return_cust IN...	0 row(s) affected	0.110 sec
9	12:53:46	INSERT INTO Branch VALUES (1, 101, 'Downtown, City A', '1234567890'), (2, 102,...	2 row(s) affected Records: 2 Duplicates: 0 Warnings: 0	0.032 sec
10	12:53:49	INSERT INTO Employee VALUES (1, 'John Doe', 'Manager', 60000, 2), (2, 'Jane S...	3 row(s) affected Records: 3 Duplicates: 0 Warnings: 0	0.047 sec
11	12:53:57	INSERT INTO Books VALUES (101, 'Book A', 'Fiction', 30, 'yes', 'Author A', 'Publish...	3 row(s) affected Records: 3 Duplicates: 0 Warnings: 0	0.047 sec
12	12:54:04	INSERT INTO Customer VALUES (1, 'Customer X', 'Street 1, City A', '2021-11-15'), (...	2 row(s) affected Records: 2 Duplicates: 0 Warnings: 0	0.047 sec
13	12:54:10	INSERT INTO IssueStatus VALUES (1, 1, 'Book B', '2023-06-15', 102)	1 row(s) affected	0.047 sec
14	12:54:12	INSERT INTO ReturnStatus VALUES (1, 1, 'Book B', '2023-07-10', 102)	1 row(s) affected	0.062 sec

```
90    -- Retrieve available books
91  ● SELECT Book_title, Category, Rental_Price
92    FROM Books
93    WHERE Status = 'yes';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

Book_title	Category	Rental_Price
Book A	Fiction	30.00
Book C	Fiction	20.00

Result Grid

Form Editor   Context Help   Snippets

Output

Action Output

#	Time	Action	Message	Duration / Fetch
✓	8 12:50:19	CREATE TABLE ReturnStatus (Return_Id INT PRIMARY KEY, Return_cust I...	0 row(s) affected	0.110 sec
✓	9 12:53:46	INSERT INTO Branch VALUES (1, 101, 'Downtown, City A', '1234567890'), (2, 10...	2 row(s) affected Records: 2 Duplicates: 0 Warnings: 0	0.032 sec
✓	10 12:53:49	INSERT INTO Employee VALUES (1, 'John Doe', 'Manager', 60000, 1), (2, 'Jane S...	3 row(s) affected Records: 3 Duplicates: 0 Warnings: 0	0.047 sec
✓	11 12:53:57	INSERT INTO Books VALUES (101, 'Book A', 'Fiction', 30, 'yes', 'Author A', 'Publis...	3 row(s) affected Records: 3 Duplicates: 0 Warnings: 0	0.047 sec
✓	12 12:54:04	INSERT INTO Customer VALUES (1, 'Customer X', 'Street 1, City A', '2021-11-15'), ...	2 row(s) affected Records: 2 Duplicates: 0 Warnings: 0	0.047 sec
✓	13 12:54:10	INSERT INTO IssueStatus VALUES (1, 1, 'Book B', '2023-06-15', 102)	1 row(s) affected	0.047 sec
✓	14 12:54:12	INSERT INTO ReturnStatus VALUES (1, 1, 'Book B', '2023-07-10', 102)	1 row(s) affected	0.062 sec
✓	15 13:21:14	SELECT Book_title, Category, Rental_Price FROM Books WHERE Status = 'yes' ...	2 row(s) returned	0.000 sec / 0.000 sec

```
95    -- Employees and salaries in descending order
96  ● SELECT Emp_name, Salary
97    FROM Employee
98    ORDER BY Salary DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

Emp_name	Salary
John Doe	60000.00
Alice Brown	47000.00
Jane Smith	45000.00

```
100    -- Books and corresponding customers
101 ● SELECT b.Book_title, c.Customer_name
102    FROM Books b
103    JOIN IssueStatus i ON b.ISBN = i.Isbn_book
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

Book_title	Customer_name
Book B	Customer X

```sql
106      -- Count of books in each category
107 •    SELECT Category, COUNT(*) AS Total_Books
108      FROM Books
109      GROUP BY Category;
110
```

Result Grid | Filter Rows: | Export: | Wrap Cell Conten

Category	Total_Books
▶ Fiction	2
History	1

```sql
111      -- Employees earning above Rs.50,000
112 •    SELECT Emp_name, Position
113      FROM Employee
114      WHERE Salary > 50000;
115
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Emp_name	Position
▶ John Doe	Manager

```sql
116      -- Customers registered before 2022 and not issued books
117 •    SELECT c.Customer_name
118      FROM Customer c
119      LEFT JOIN IssueStatus i ON c.Customer_Id = i.Issued_cust
120      WHERE c.Reg_date < '2022-01-01' AND i.Issue_Id IS NULL;
121
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Customer_name

```
122     -- Branch-wise employee count
123 •   SELECT Branch_no, COUNT(*) AS Total_Employees
124     FROM Employee
125     GROUP BY Branch_no;
126
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: A

Branch_no	Total_Employees
1	2
2	1

```
127     -- Customers who issued books in June 2023
128 •   SELECT DISTINCT c.Customer_name
129     FROM Customer c
130     JOIN IssueStatus i ON c.Customer_Id = i.Issued_cust
131     WHERE MONTH(i.Issue_date) = 6 AND YEAR(i.Issue_date) = 2023;
132
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: A

Customer_name
Customer X

```
133     -- Books containing 'History' in the title
134 •   SELECT Book_title
135     FROM Books
136     WHERE Book_title LIKE '%History%';
137
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: A

Book_title

```sql
138    -- Branches with more than 5 employees
139 •  SELECT Branch_no, COUNT(*) AS Total_Employees
140    FROM Employee
141    GROUP BY Branch_no
142    HAVING COUNT(*) > 5;
143
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ‡A

Branch_no	Total_Employees

```sql
144    -- Managers and their branch addresses
145 •  SELECT e.Emp_name, b.Branch_address
146    FROM Employee e
147    JOIN Branch b ON e.Emp_Id = b.Manager_Id;
148
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ‡A

Emp_name	Branch_address

```sql
149    -- Customers who issued books with rental price > 25
150 •  SELECT DISTINCT c.Customer_name
151    FROM Customer c
152    JOIN IssueStatus i ON c.Customer_Id = i.Issued_cust
153    JOIN Books b ON i.Isbn_book = b.ISBN
154    WHERE b.Rental_Price > 25;
155
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ‡A

Customer_name