

# MYSQL Comprehensive Assessment

## Topic : Library Management System

You are going to build a project based on Library Management System. It keeps track of all information about books in the library, their cost, status and total number of books available in the library.

Create a database named library and following TABLES in the database:

1. Branch
2. Employee
3. Books
4. Customer
5. IssueStatus
6. ReturnStatus

Attributes for the tables:

1. Branch

- Branch\_no - Set as PRIMARY KEY
- Manager\_Id
- Branch\_address
- Contact\_no

---

## 2. Employee

- Emp\_Id – Set as PRIMARY KEY
- Emp\_name
- Position
- Salary
- Branch\_no - Set as FOREIGN KEY and it refer Branch\_no in Branch table

## 3. Books

- ISBN - Set as PRIMARY KEY
- Book\_title
- Category
- Rental\_Price
- Status [Give yes if book available and no if book not available]
- Author
- Publisher

## 4. Customer

- Customer\_Id - Set as PRIMARY KEY
- Customer\_name
- Customer\_address
- Reg\_date

## 5. IssueStatus

- Issue\_Id - Set as PRIMARY KEY
- Issued\_cust – Set as FOREIGN KEY and it refer customer\_id in CUSTOMER table
- Issued\_book\_name
- Issue\_date
- Isbn\_book – Set as FOREIGN KEY and it should refer isbn in BOOKS table

## 6. ReturnStatus

- Return\_Id - Set as PRIMARY KEY
- Return\_cust
- Return\_book\_name
- Return\_date
- Isbn\_book2 - Set as FOREIGN KEY and it should refer isbn in BOOKS table

MySQL Workbench Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator Schemas SQL File 3\*

```

1 -- Create the database
2 CREATE DATABASE library;
3
4 -- Use the library database
5 USE library;
6
7 -- 1. Create the Branch table
8 CREATE TABLE Branch (
9     Branch_no INT PRIMARY KEY,
10    Manager_Id INT,
11    Branch_address VARCHAR(100),
12    Contact_no VARCHAR(15)
13 );
14
15 -- 2. Create the Employee table
16 CREATE TABLE Employee (
17     Emp_Id INT PRIMARY KEY,
18     Emp_name VARCHAR(50),
19     Position VARCHAR(50),
20     Salary DECIMAL(10, 2),
21     Branch_no INT,
22     FOREIGN KEY (Branch_no) REFERENCES Branch(Branch_no)
23 );

```

Action Output

#	Time	Action	Message	Duration / Fetch
3	14:35:59	CREATE TABLE Branch ( Branch_no INT PRIMARY KEY, Manager_Id INT, Branch_address VARCHAR(100), Contact_no VARCHAR(15) )	0 row(s) affected	0.078 sec
4	14:35:59	CREATE TABLE Employee ( Emp_Id INT PRIMARY KEY, Emp_name VARCHAR(50), Position VARCHAR(50), Salary DECIMAL(10, 2), Branch_no INT, FOREIGN KEY (Branch_no) REFERENCES Branch(Branch_no) )	0 row(s) affected	0.047 sec
5	14:35:59	CREATE TABLE Books ( ISBN INT PRIMARY KEY, Book_title VARCHAR(100), Category VARCHAR(50), Author_name VARCHAR(50), Price DECIMAL(10, 2) )	0 row(s) affected	0.031 sec
6	14:35:59	CREATE TABLE Customer ( Customer_Id INT PRIMARY KEY, Customer_name VARCHAR(50), Customer_address VARCHAR(100), Customer_email VARCHAR(50), Customer_phone VARCHAR(15) )	0 row(s) affected	0.031 sec
7	14:35:59	CREATE TABLE Issue_Status ( Issue_Id INT PRIMARY KEY, Issued_cust INT, Issued_book_name VARCHAR(50), Issue_date DATE )	0 row(s) affected	0.078 sec
8	14:35:59	CREATE TABLE Return_Status ( Return_Id INT PRIMARY KEY, Return_cust INT, Return_book_name VARCHAR(50), Return_date DATE )	0 row(s) affected	0.047 sec

MySQL Workbench Local instance MySQL80

```

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Navigator Schemas
SCHEMAS
global_store_db
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school
sys
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Information
No object selected
Object Info Session
SQL File 3* x
22     FOREIGN KEY (Branch_no) REFERENCES Branch(Branch_no)
23   );
24
25 -- 3. Create the Books table
26 CREATE TABLE Books (
27   ISBN INT PRIMARY KEY,
28   Book_title VARCHAR(100),
29   Category VARCHAR(50),
30   Rental_Price DECIMAL(10, 2),
31   Status ENUM('yes', 'no'),
32   Author VARCHAR(50),
33   Publisher VARCHAR(50)
34 );
35
36 -- 4. Create the Customer table
37 CREATE TABLE Customer (
38   Customer_Id INT PRIMARY KEY,
39   Customer_name VARCHAR(50),
40   Customer_address VARCHAR(100),
41   Reg_date DATE
42 );
43
44 -- 5. Create the IssueStatus table

```

Action Output

#	Time	Action	Message	Duration / Fetch
3	14:35:59	CREATE TABLE Branch ( Branch_no INT PRIMARY KEY, Manager_Id INT, Branch_address VARCHAR... )	0 row(s) affected	0.078 sec
4	14:35:59	CREATE TABLE Employee ( Emp_Id INT PRIMARY KEY, Emp_name VARCHAR(50), Postion VARCHA... )	0 row(s) affected	0.047 sec
5	14:35:59	CREATE TABLE Books ( ISBN INT PRIMARY KEY, Book_title VARCHAR(100), Category VARCHAR(50) )	0 row(s) affected	0.031 sec
6	14:35:59	CREATE TABLE Customer ( Customer_Id INT PRIMARY KEY, Customer_name VARCHAR(50), Customer_address VARCHAR(100), Reg_date DATE )	0 row(s) affected	0.031 sec
7	14:35:59	CREATE TABLE IssueStatus ( Issue_Id INT PRIMARY KEY, Issued_cust INT, Issued_book_name VARCHAR(100), Issue_date DATE, ISBN_book INT )	0 row(s) affected	0.078 sec
8	14:35:59	CREATE TABLE ReturnStatus ( Return_Id INT PRIMARY KEY, Return_cust INT, Return_book_name VARCHAR(100), Return_date DATE, ISBN_book2 INT )	0 row(s) affected	0.047 sec

MySQL Workbench Local instance MySQL80

```

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SCHEMAS
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sales
school
sys
Administration Schemas
Information
No object selected
Object Info Session
SQL File 3* x
44 -- 5. Create the IssueStatus table
45 CREATE TABLE IssueStatus (
46   Issue_Id INT PRIMARY KEY,
47   Issued_cust INT,
48   Issued_book_name VARCHAR(100),
49   Issue_date DATE,
50   ISBN_book INT,
51   FOREIGN KEY (Issued_cust) REFERENCES Customer(Customer_Id),
52   FOREIGN KEY (ISBN_book) REFERENCES Books(ISBN)
53 );
54
55 -- 6. Create the ReturnStatus table
56 CREATE TABLE ReturnStatus (
57   Return_Id INT PRIMARY KEY,
58   Return_cust INT,
59   Return_book_name VARCHAR(100),
60   Return_date DATE,
61   ISBN_book2 INT,
62   FOREIGN KEY (Return_cust) REFERENCES Customer(Customer_Id),
63   FOREIGN KEY (ISBN_book2) REFERENCES Books(ISBN)
64 );
65

```

Action Output

#	Time	Action	Message	Duration / Fetch
3	14:35:59	CREATE TABLE Branch ( Branch_no INT PRIMARY KEY, Manager_Id INT, Branch_address VARCHAR... )	0 row(s) affected	0.078 sec
4	14:35:59	CREATE TABLE Employee ( Emp_Id INT PRIMARY KEY, Emp_name VARCHAR(50), Postion VARCHA... )	0 row(s) affected	0.047 sec
5	14:35:59	CREATE TABLE Books ( ISBN INT PRIMARY KEY, Book_title VARCHAR(100), Category VARCHAR(50) )	0 row(s) affected	0.031 sec
6	14:35:59	CREATE TABLE Customer ( Customer_Id INT PRIMARY KEY, Customer_name VARCHAR(50), Customer_address VARCHAR(100), Reg_date DATE )	0 row(s) affected	0.031 sec
7	14:35:59	CREATE TABLE IssueStatus ( Issue_Id INT PRIMARY KEY, Issued_cust INT, Issued_book_name VARCHAR(100), Issue_date DATE, ISBN_book INT )	0 row(s) affected	0.078 sec
8	14:35:59	CREATE TABLE ReturnStatus ( Return_Id INT PRIMARY KEY, Return_cust INT, Return_book_name VARCHAR(100), Return_date DATE, ISBN_book2 INT )	0 row(s) affected	0.047 sec

## 1. Retrieve the book title, category, and rental price of all available books.

The screenshot shows the MySQL Workbench interface. In the SQL editor tab, there is a single query:63 FOREIGN KEY (Isbn\_book2) REFERENCES Books(ISBN)
64 );
65
66 • SELECT Book\_title, Category, Rental\_Price
67 FROM Books
68 WHERE Status = 'yes';
69The results grid below shows the output of the query:| Book\_title | Category | Rental\_Price |
| --- | --- | --- |
|  |  |  |

In the bottom right corner of the results grid, there is a "Result Grid" button.

## 2. List the employee names and their respective salaries in descending order of salary.

The screenshot shows the MySQL Workbench interface. In the SQL editor tab, there is a query:67 FROM Books
68 WHERE Status = 'yes';
69
70 • SELECT Emp\_name, Salary
71 FROM Employee
72 ORDER BY Salary DESC;
73The results grid below shows the output of the query:| Emp\_name | Salary |
| --- | --- |
|  |  |

In the bottom right corner of the results grid, there is a "Result Grid" button.

### 3. Retrieve the book titles and the corresponding customers who have issued those books.

The screenshot shows the MySQL Workbench interface with a query editor window titled "SQL File 3". The query is:

```

2 ORDER BY Salary DESC;
3
4 • SELECT b.Book_title, c.Customer_name
5   FROM IssueStatus i
6   JOIN Books b ON i.Iisbn_book = b.ISBN
7   JOIN Customer c ON i.Issued_cust = c.Customer_Id;
8

```

The results grid shows two columns: "Book\_title" and "Customer\_name". There are no visible rows in the result set.

### 4. Display the total count of books in each category.

The screenshot shows the MySQL Workbench interface with a query editor window titled "SQL File 3". The query is:

```

6 JOIN Books b ON i.Iisbn_book = b.ISBN
7 Execute the selected portion of the script or everything, if there is no selection.
8
9 • SELECT Category, COUNT(*) AS Total_Count
10  FROM Books
11  GROUP BY Category;
12

```

The results grid shows two columns: "Category" and "Total\_Count". There are no visible rows in the result set.

5. Retrieve the employee names and their positions for the employees whose salaries are above Rs.50,000.

```

MySQL Workbench
Local instance MySQL80

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Navigator Schemas SQL File 3*
80 FROM Books
81 GROUP BY Category;
82
83 • SELECT Emp_name, Position
84 FROM Employee
85 WHERE Salary > 50000;
86
Result Grid | Filter Rows: | Export: | Wrap Cell Content: 
Emp_name Position

```

Administration Schemas Information

No object selected Books 11 Employee 12 Result 13 Result 14 Employee 15 x

Action Output

#	Time	Action	Message	Duration / Fetch
58	14:45:16	CREATE TABLE ReturnStatus ( Return_Id INT PRIMARY KEY, Return_cust INT, Return_book_name ...)	Error Code: 1050. Table 'returnstatus' already exists	0.000 sec
59	14:45:16	SELECT Book_title, Category, Rental_Price FROM Books WHERE Status = 'yes' LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
60	14:45:16	SELECT Emp_name, Salary FROM Employee ORDER BY Salary DESC LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
61	14:45:16	SELECT b.Book_title, c.Customer_name FROM IssueStatus i JOIN Books b ON i.lbn_book = b.ISBN JOIN C...	0 row(s) returned	0.000 sec / 0.000 sec
62	14:45:16	SELECT Category, COUNT(*) AS Total_Count FROM Books GROUP BY Category LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
63	14:45:16	SELECT Emp_name, Position FROM Employee WHERE Salary > 50000 LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec

Object Info Session

6. List the customer names who registered before 2022-01-01 and have not issued any books yet.

```

MySQL Workbench
Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help
Navigator Schemas SQL File 3*
85 WHERE Salary > 50000;
86
87 • SELECT Customer_name
88 FROM Customer
89 WHERE Reg_date < '2022-01-01'
90 AND Customer_Id NOT IN (SELECT DISTINCT Issued_cust FROM IssueStatus);
91

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


```

Administration Schemas Information

No object selected Books 16 Employee 17 Result 18 Result 19 Employee 20 Customer 21 x

Action Output

#	Time	Action	Message	Duration / Fetch
72	14:46:01	SELECT Book_title, Category, Rental_Price FROM Books WHERE Status = 'yes' LIMIT 0, 2000	0 row(s) returned	0.016 sec / 0.000 sec
73	14:46:01	SELECT Emp_name, Salary FROM Employee ORDER BY Salary DESC LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
74	14:46:01	SELECT b.Book_title, c.Customer_name FROM IssueStatus i JOIN Books b ON i.lbn_book = b.ISBN JOIN C...	0 row(s) returned	0.000 sec / 0.000 sec
75	14:46:01	SELECT Category, COUNT(*) AS Total_Count FROM Books GROUP BY Category LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
76	14:46:01	SELECT Emp_name, Position FROM Employee WHERE Salary > 50000 LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
77	14:46:01	SELECT Customer_name FROM Customer WHERE Reg_date < '2022-01-01' AND Customer_Id NOT IN (SEL...	0 row(s) returned	0.000 sec / 0.000 sec

Object Info Session

## 7. Display the branch numbers and the total count of employees in each branch.

The screenshot shows the MySQL Workbench interface with a query editor window titled "SQL File 3". The query is:

```
89 WHERE Reg_date < '2022-01-01';
90 AND Customer_Id NOT IN (SELECT DISTINCT Issued_cust FROM IssueStatus);
91
92 • SELECT Branch_no, COUNT(*) AS Total_Employees
93 FROM Employee
94 GROUP BY Branch_no;
95
```

The result grid shows the output:

Branch_no	Total_Employees

The "Output" tab displays the execution log:

#	Time	Action	Message	Duration / Fetch
87	14:46:52	SELECT Emp_name, Salary FROM Employee ORDER BY Salary DESC LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
88	14:46:52	SELECT b.Book_title, c.Customer_name FROM IssueStatus i JOIN Books b ON i.IBn_book = b.ISBN JOIN C...	0 row(s) returned	0.000 sec / 0.000 sec
89	14:46:52	SELECT Category, COUNT(*) AS Total_Count FROM Books GROUP BY Category LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
90	14:46:52	SELECT Emp_name, Postion FROM Employee WHERE Salary > 50000 LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
91	14:46:52	SELECT Customer_name FROM Customer WHERE Reg_date < '2022-01-01' AND Customer_Id NOT IN (SEL...	0 row(s) returned	0.000 sec / 0.000 sec
92	14:46:52	SELECT Branch_no, COUNT(*) AS Total_Employees FROM Employee GROUP BY Branch_no LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec

## 8. Display the names of customers who have issued books in the month of June 2023.

The screenshot shows the MySQL Workbench interface with a query editor window titled "SQL File 3". The query is:

```
94 GROUP BY Branch_no;
95
96 • SELECT DISTINCT c.Customer_name
97 FROM IssueStatus i
98 JOIN Customer c ON i.Issued_cust = c.Customer_Id
99 WHERE YEAR(Issue_date) = 2023 AND MONTH(Issue_date) = 6;
100
```

The result grid shows the output:

Customer_name

The "Output" tab displays the execution log:

#	Time	Action	Message	Duration / Fetch
103	14:47:49	SELECT b.Book_title, c.Customer_name FROM IssueStatus i JOIN Books b ON i.IBn_book = b.ISBN JOIN C...	0 row(s) returned	0.000 sec / 0.000 sec
104	14:47:49	SELECT Category, COUNT(*) AS Total_Count FROM Books GROUP BY Category LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
105	14:47:49	SELECT Emp_name, Postion FROM Employee WHERE Salary > 50000 LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
106	14:47:49	SELECT Customer_name FROM Customer WHERE Reg_date < '2022-01-01' AND Customer_Id NOT IN (SEL...	0 row(s) returned	0.000 sec / 0.000 sec
107	14:47:49	SELECT Branch_no, COUNT(*) AS Total_Employees FROM Employee GROUP BY Branch_no LIMIT 0, 2000	0 row(s) returned	0.000 sec / 0.000 sec
108	14:47:49	SELECT DISTINCT c.Customer_name FROM IssueStatus i JOIN Customer c ON i.Issued_cust = c.Customer_Id...	0 row(s) returned	0.000 sec / 0.000 sec

## 9. Retrieve book\_title from book table containing history.

The screenshot shows the MySQL Workbench interface with a query editor window titled "SQL File 3". The query is:

```

98 JOIN Customer c ON i.Issued_cust = c.Customer_Id
99 WHERE YEAR(Issue_date) = 2023 AND MONTH(Issue_date) = 6;
100
101 • SELECT Book_title
102 FROM Books
103 WHERE Category = 'History';
104

```

The results grid shows a single column "Book\_title" with one row: "Book title". The output pane shows the execution log with 125 entries, all completed in 0.000 sec / 0.000 sec.

## 10. Retrieve the branch numbers along with the count of employees for branches having more than 5 employees

The screenshot shows the MySQL Workbench interface with a query editor window titled "SQL File 3". The query is:

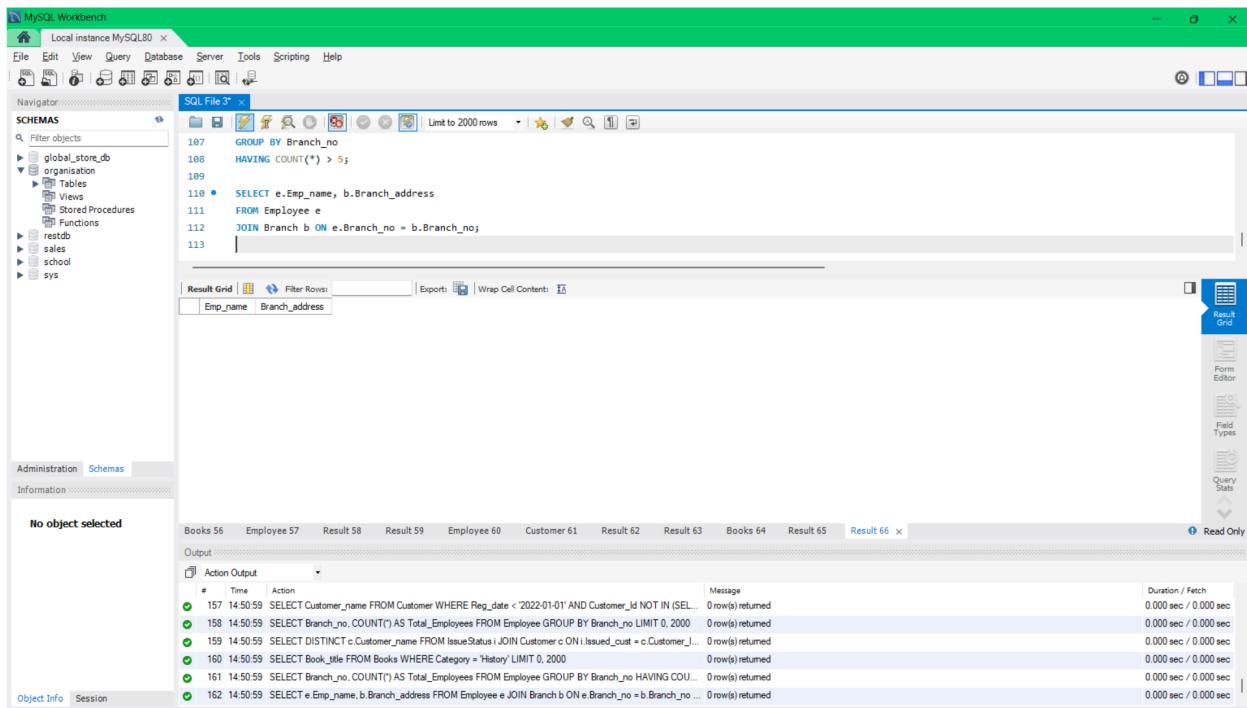
```

103 WHERE Category = 'History';
104 Execute the selected portion of the script or everything, if there is no selection
105 • SELECT Branch_no, COUNT(*) AS Total_Employees
106 FROM Employee
107 GROUP BY Branch_no
108 HAVING COUNT(*) > 5;
109

```

The results grid shows two columns: "Branch\_no" and "Total\_Employees". The output pane shows the execution log with 143 entries, all completed in 0.000 sec / 0.000 sec.

11. Retrieve the names of employees who manage branches and their respective branch addresses.

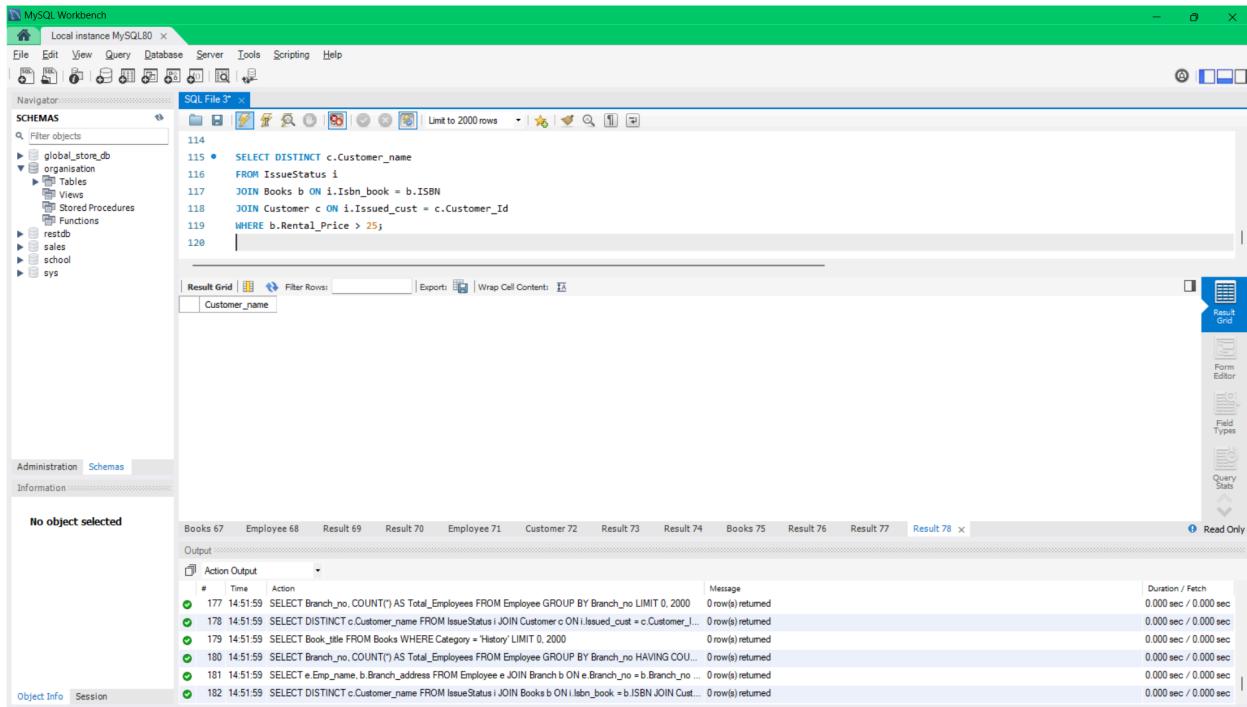


```

MySQL Workbench - Local instance MySQL80 X
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Navigator: Schemas
SCHEMAS
global_store_db
organisation
restdb
sales
school
sys
SQL File 3* x
107 GROUP BY Branch_no
108 HAVING COUNT(*) > 5;
109
110 • SELECT e.Emp_name, b.Branch_address
111 FROM Employee e
112 JOIN Branch b ON e.Branch_no = b.Branch_no;
113
Result Grid | Filter Rows: Export: Wrap Cell Content: 
Emp_name Branch_address
Object Info Session

```

12. Display the names of customers who have issued books with a rental price higher than Rs. 25.



```

MySQL Workbench - Local instance MySQL80 X
File Edit View Query Database Server Tools Scripting Help
Navigator: Schemas
SCHEMAS
global_store_db
organisation
restdb
sales
school
sys
SQL File 3* x
114
115 • SELECT DISTINCT c.Customer_name
116 FROM IssueStatus i
117 JOIN Books b ON i.Iisbn_book = b.ISBN
118 JOIN Customer c ON i.Issued_cust = c.Customer_Id
119 WHERE b.Rental_Price > 25;
120
Result Grid | Filter Rows: Export: Wrap Cell Content: 
Customer_name
Object Info Session

```