

Mysql Comprehensive Assessment

Topic : Library Management System

You are going to build a project based on the 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 • CREATE DATABASE library;  
2 • USE library;
```

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

```
4 • CREATE TABLE Branch (  
5     Branch_no INT PRIMARY KEY,  
6     Manger_id INT,  
7     Branch_address VARCHAR(255),  
8     Contact_no VARCHAR(20)  
9 );
```

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

```
11 • ○ CREATE TABLE Employee (  
12     Emp_id INT PRIMARY KEY,  
13     Emp_name VARCHAR(50),  
14     Position VARCHAR(20),  
15     Salary DECIMAL(10, 2),  
16     Branch_no INT,  
17     FOREIGN KEY (Branch_no) REFERENCES Branch(Branch_no)  
18 );
```

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

```

20 ● ○ CREATE TABLE Books (
21     ISBN INT PRIMARY KEY,
22     Book_title VARCHAR(100),
23     Category VARCHAR(50),
24     Rental_Price DECIMAL(10, 2),
25     Status VARCHAR(10),
26     Author VARCHAR(100),
27     Publisher VARCHAR(100)
28 );

```

4. Customer

- Customer_Id – Set as PRIMARY KEY
- Customer_name
- Customer_address
- Reg_date

```

30 ● ○ CREATE TABLE Customer (
31     Customer_id INT PRIMARY KEY,
32     Customer_name VARCHAR(100),
33     Customer_address VARCHAR(200),
34     Reg_date DATE
35 );

```

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

```

37 • ○ CREATE TABLE IssueStatus (
38     Issue_Id INT PRIMARY KEY,
39     Issued_cust INT,
40     Issued_book_name VARCHAR(100),
41     Issue_date DATE,
42     Isbn_book INT,
43     FOREIGN KEY (Issued_cust) REFERENCES Customer(Customer_id),
44     FOREIGN KEY (Isbn_book) REFERENCES Books(ISBN)
45 );

```

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

```

47 • ○ CREATE TABLE ReturnStatus (
48     Return_Id INT PRIMARY KEY,
49     Return_cust INT,
50     Return_book_name VARCHAR(100),
51     Return_date DATE,
52     Isbn_book2 INT,
53     FOREIGN KEY (Isbn_book2) REFERENCES Books(ISBN)
54 );

```

Insert values into tables:

- **Branch**

```

59 • INSERT INTO branch (Branch_no, Manger_id, Branch_address, Contact_no)
60 VALUES
61 (1, 101, '123 Main Street, City A', 9496957511),
62 (2, 102, '456 Oak Avenue, City B', 9876543210),
63 (3, 103, '789 Pine Lane, City C', 9497947511),
64 (4, 104, '101 Maple Drive, City A', 9896941175),
65 (5, 105, '567 Oak Avenue, City B', 9847511475);
66
67 • SELECT * FROM Branch;
68
69

```







Result Grid				
Filter Rows:		Edit:		
Export/Import:		Wrap Cell Content:		
Branch_no	Manger_id	Branch_address	Contact_no	
1	101	123 Main Street, City A	9496957511	
2	102	456 Oak Avenue, City B	9876543210	
3	103	789 Pine Lane, City C	9497947511	
4	104	101 Maple Drive, City A	9896941175	
5	105	567 Oak Avenue, City B	9847511475	
NULL	NULL	NULL	NULL	

- Employee

```

69 • INSERT INTO Employee (Emp_id, Emp_name, Position, Salary, Branch_no)
70 VALUES
71 (201, 'John Doe', 'Librarian', 50000, 1),
72 (202, 'Jane Smith', 'Assistant Librarian', 40000, 2),
73 (203, 'Michael Johnson', 'Bookkeeper', 35000, 3),
74 (204, 'Emily Davis', 'Librarian', 50000, 1),
75 (205, 'David Lee', 'Assistant Librarian', 40000, 3),
76 (206, 'Sarah Brown', 'Librarian', 55000, 2),
77 (207, 'Thomas Miller', 'Assistant Librarian', 45000, 4),
78 (208, 'Olivia Taylor', 'Bookkeeper', 38000, 5),
79 (209, 'Ethan Johnson', 'Librarian', 52000, 5),
80 (210, 'Ava Lee', 'Assistant Librarian', 43000, 1);
81
82 • SELECT * FROM Employee;
83

```

Result Grid				
Filter Rows: <input type="text"/>				
Edit:   				
Export/Import:  				
Wrap Cell Content: 				
Emp_id	Emp_name	Position	Salary	Branch_no
201	John Doe	Librarian	50000.00	1
202	Jane Smith	Assistant Librarian	40000.00	2
203	Michael Johnson	Bookkeeper	35000.00	3
204	Emily Davis	Librarian	50000.00	1
205	David Lee	Assistant Librarian	40000.00	3
206	Sarah Brown	Librarian	55000.00	2
207	Thomas Miller	Assistant Librarian	45000.00	4
208	Olivia Taylor	Bookkeeper	38000.00	5
209	Ethan Johnson	Librarian	52000.00	5
210	Ava Lee	Assistant Librarian	43000.00	1
NULL	NULL	NULL	NULL	NULL

- Books

```

84 • INSERT INTO Books (ISBN, Book_title, Category, Rental_Price, Status, Author, Publisher)
85 VALUES
86 (97800081, 'To Kill a Mockingbird', 'Fiction', 10, 'Yes', 'Harper Lee', 'HarperCollins'),
87 (97801431, '1984', 'Fiction', 10, 'No', 'George Orwell', 'Penguin Books'),
88 (97800608, 'Pride and Prejudice', 'Fiction', 8, 'Yes', 'Jane Austen', 'Penguin Classics'),
89 (97805900, 'The Lord of the Rings', 'Fantasy', 15, 'No', 'J.R.R. Tolkien', 'HarperCollins'),
90 (97803167, 'The Hitchhiker's Guide to the Galaxy', 'Science Fiction', 11, 'Yes', ' Douglas Adams', 'Pan Books'),
91 (97800074, 'The Great Gatsby', 'Fiction', 9, 'Yes', 'F. Scott Fitzgerald', 'Scribner'),
92 (97800065, 'The Catcher in the Rye', 'Fiction', 10, 'No', 'J.D. Salinger', 'Little, Brown'),
93 (97800072, 'The Harry Potter Series', 'Fantasy', 12, 'Yes', 'J.K. Rowling', 'Bloomsbury'),
94 (97800064, 'The Hunger Games', 'Science Fiction', 11, 'No', 'Suzanne Collins', 'Scholastic'),
95 (97800070, 'The Chronicles of Narnia', 'Fantasy', 13, 'Yes', 'C.S. Lewis', 'HarperCollins');
96
97 • SELECT * FROM Books;

```

Result Grid							
Filter Rows:		Edit:		Export/Import:		Wrap Cell Content:	
ISBN	Book_title	Category	Rental_Price	Status	Author	Publisher	
97800064	The Hunger Games	Science Fiction	11.00	No	Suzanne Collins	Scholastic	
97800065	The Catcher in the Rye	Fiction	10.00	No	J.D. Salinger	Little, Brown	
97800070	The Chronicles of Narnia	Fantasy	13.00	Yes	C.S. Lewis	HarperCollins	
97800072	The Harry Potter Series	Fantasy	12.00	Yes	J.K. Rowling	Bloomsbury	
97800074	The Great Gatsby	Fiction	9.00	Yes	F. Scott Fitzgerald	Scribner	
97800081	To Kill a Mockingbird	Fiction	10.00	Yes	Harper Lee	HarperCollins	
97800608	Pride and Prejudice	Fiction	8.00	Yes	Jane Austen	Penguin Classics	
97801431	1984	Fiction	10.00	No	George Orwell	Penguin Books	
97803167	The Hitchhiker's Guide to the Galaxy	Science Fiction	11.00	Yes	Douglas Adams	Pan Books	

• Customer

```

99 • INSERT INTO Customer (Customer_id, Customer_name, Customer_address, Reg_date)
100 VALUES
101 (301, 'Alice Johnson', '789 Pine Lane, City A', '2023-01-01'),
102 (302, 'Bob Brown', '101 Maple Drive, City B', '2023-02-15'),
103 (303, 'Charlie Green', '567 Oak Avenue, City C', '2023-03-20'),
104 (304, 'Danielle Harris', '456 Main Street, City A', '2023-04-10'),
105 (305, 'Emily Wilson', '123 Main Street, City B', '2023-05-25'),
106 (306, 'Frank Johnson', '789 Pine Lane, City C', '2023-06-15'),
107 (307, 'Grace Miller', '101 Maple Drive, City A', '2023-07-20'),
108 (308, 'Henry Taylor', '567 Oak Avenue, City B', '2023-08-10'),
109 (309, 'Isabella Lee', '123 Main Street, City C', '2023-09-25'),
110 (310, 'Jacob Wilson', '789 Pine Lane, City A', '2023-10-15');

```

Customer_id	Customer_name	Customer_address	Reg_date
301	Alice Johnson	789 Pine Lane, City A	2023-01-01
302	Bob Brown	101 Maple Drive, City B	2023-02-15
303	Charlie Green	567 Oak Avenue, City C	2023-03-20
304	Danielle Harris	456 Main Street, City A	2023-04-10
305	Emily Wilson	123 Main Street, City B	2023-05-25
306	Frank Johnson	789 Pine Lane, City C	2023-06-15
307	Grace Miller	101 Maple Drive, City A	2023-07-20
308	Henry Taylor	567 Oak Avenue, City B	2023-08-10
309	Isabella Lee	123 Main Street, City C	2023-09-25
310	Jacob Wilson	789 Pine Lane, City A	2023-10-15
NULL	NULL	NULL	NULL

- IssueStatus


```

114 • INSERT INTO Issuestatus (Issue_Id, Issued_cust, Issued_book_name, Issue_date, Isbn_book)
115 VALUES
116 (401, 301, 'To Kill a Mockingbird', '2023-03-10', 97800081),
117 (402, 302, '1984', '2023-04-05', 97801431),
118 (403, 303, 'Pride and Prejudice', '2023-05-15', 97800608),
119 (404, 301, 'The Lord of the Rings', '2023-06-20', 97805900),
120 (405, 304, 'The Hitchhiker's Guide to the Galaxy', '2023-07-10', 97803167),
121 (406, 305, 'The Great Gatsby', '2023-08-15', 97800074),
122 (407, 306, 'The Catcher in the Rye', '2023-09-20', 97800065),
123 (408, 307, 'The Harry Potter Series', '2023-10-10', 97800072),
124 (409, 308, 'The Hunger Games', '2023-11-15', 97800064),
125 (410, 309, 'The Chronicles of Narnia', '2023-12-20', 97800070);
126
127 • SELECT * FROM IssueStatus;

```

Result Grid

Filter Rows:

Edit:

Export/Import:

Wrap Cell Content:

	Issue_Id	Issued_cust	Issued_book_name	Issue_date	Isbn_book
▶	401	301	To Kill a Mockingbird	2023-03-10	97800081
	402	302	1984	2023-04-05	97801431
	403	303	Pride and Prejudice	2023-05-15	97800608
	404	301	The Lord of the Rings	2023-06-20	97805900
	405	304	The Hitchhiker's Guide to the Galaxy	2023-07-10	97803167
	406	305	The Great Gatsby	2023-08-15	97800074
	407	306	The Catcher in the Rye	2023-09-20	97800065
	408	307	The Harry Potter Series	2023-10-10	97800072
	409	308	The Hunger Games	2023-11-15	97800064
	410	309	The Chronicles of Narnia	2023-12-20	97800070
*	NULL	NULL	NULL	NULL	NULL

• ReturnStatus

```

129 • INSERT INTO Returnstatus (Return_Id, Return_cust, Return_book_name, Return_date, Isbn_book2)
130 VALUES
131 (501, 301, 'To Kill a Mockingbird', '2023-03-25', 97800081),
132 (502, 302, '1984', '2023-04-20', 97801431),
133 (503, 303, 'Pride and Prejudice', '2023-06-01', 97800608),
134 (504, 301, 'The Lord of the Rings', '2023-08-05', 97805900),
135 (505, 304, 'The Hitchhiker's Guide to the Galaxy', '2023-09-10', 97803167);
136
137 • SELECT * FROM Returnstatus;
138

```

Return_Id	Return_cust	Return_book_name	Return_date	Isbn_book2
501	301	To Kill a Mockingbird	2023-03-25	97800081
502	302	1984	2023-04-20	97801431
503	303	Pride and Prejudice	2023-06-01	97800608
504	301	The Lord of the Rings	2023-08-05	97805900
505	304	The Hitchhiker's Guide to the Galaxy	2023-09-10	97803167
NULL	NULL	NULL	NULL	NULL

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

```

140 • SELECT Book_title, Category, Rental_Price FROM Books;

```

Book_title	Category	Rental_Price
The Hunger Games	Science Fiction	11.00
The Catcher in the Rye	Fiction	10.00
The Chronicles of Narnia	Fantasy	13.00
The Harry Potter Series	Fantasy	12.00
The Great Gatsby	Fiction	9.00
To Kill a Mockingbird	Fiction	10.00
Pride and Prejudice	Fiction	8.00
1984	Fiction	10.00
The Hitchhiker's Guide to the Galaxy	Science Fiction	11.00
The Lord of the Rings	Fantasy	15.00

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

```
142 • SELECT Emp_name, Salary FROM Employee ORDER BY Salary DESC;
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
	Emp_name	Salary	
▶	Sarah Brown	55000.00	
	Ethan Johnson	52000.00	
	John Doe	50000.00	
	Emily Davis	50000.00	
	Thomas Miller	45000.00	
	Ava Lee	43000.00	
	Jane Smith	40000.00	
	David Lee	40000.00	
	Olivia Taylor	38000.00	
	Michael Johnson	35000.00	

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

```

146 • SELECT b.Book_title, c.Customer_name FROM issuestatus i
147 JOIN Customer c ON c.Customer_id = i.Issued_cust
148 JOIN books b ON b.ISBN = i.Isbn_book
149

```

Result Grid			Filter Rows:	Export:	Wrap Cell Content:
	Book_title	Customer_name			
▶	To Kill a Mockingbird	Alice Johnson			
	1984	Bob Brown			
	Pride and Prejudice	Charlie Green			
	The Lord of the Rings	Alice Johnson			
	The Hitchhiker's Guide to the Galaxy	Danielle Harris			
	The Great Gatsby	Emily Wilson			
	The Catcher in the Rye	Frank Johnson			
	The Harry Potter Series	Grace Miller			
	The Hunger Games	Henry Taylor			
	The Chronicles of Narnia	Isabella Lee			

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

```

151 • SELECT Category, COUNT(*) as Total_Num_of_Books FROM Books
152 GROUP BY Category;

```

Result Grid			Filter Rows:	Export:	Wrap Cell Content:
	Category	Total_Num_of_Books			
▶	Science Fiction	2			
	Fiction	5			
	Fantasy	3			

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

```

154 • SELECT Emp_name, Position, Salary FROM Employee
155 WHERE Salary > 50000;

```

Result Grid			Filter Rows: <input type="text"/>	Export:	Wrap Cell Content:
	Emp_name	Position	Salary		
▶	Sarah Brown	Librarian	55000.00		
	Ethan Johnson	Librarian	52000.00		

6. List the customer names who registered before 2024-01-01 and have not issued any books yet.

```

157 • SELECT c.Customer_name, c.Reg_date FROM Customer c
158 LEFT JOIN issuestatus i ON c.Customer_id = i.Issued_cust
159 WHERE c.reg_date < '2024-01-01' AND i.Issued_cust IS NULL;

```

Result Grid			Filter Rows: <input type="text"/>	Export:	Wrap Cell Content:
	Customer_name	Reg_date			
▶	Jacob Wilson	2023-10-15			

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

```

162 • SELECT Branch_no, COUNT(*) AS Number_of_employees FROM Employee
163 GROUP BY Branch_no;

```

Result Grid			Filter Rows: <input type="text"/>	Export:	Wrap Cell Content:
	Branch_no	Number_of_employees			
▶	1	3			
	2	2			
	3	2			
	4	1			
	5	2			

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

```
166 • SELECT c.Customer_name, i.issue_date FROM Issuestatus i
167 JOIN customer c ON i.Issued_cust = c.Customer_id
168 WHERE YEAR(i.Issue_date) = 2023 AND MONTH(i.Issue_date) = 6;
```

Result Grid			Filter Rows: <input type="text"/>	Export:	Wrap Cell Content:
	Customer_name	issue_date			
▶	Alice Johnson	2023-06-20			

9. Retrieve book_title from book table containing history.

```
171 • SELECT Book_title FROM Books WHERE Category = 'History';
```

Result Grid			Filter Rows: <input type="text"/>	Export:	Wrap Cell Content:
	Book_title				

10. Retrieve the branch numbers along with the count of employees for branches having more than 2 employees

```
173 • SELECT Branch_no, COUNT(*) AS count_of_employees FROM Employee
174 GROUP BY Branch_no
175 HAVING COUNT(*) > 2;
```

Result Grid			Filter Rows: <input type="text"/>	Export:	Wrap Cell Content:
	Branch_no	count_of_employees			
▶	1	3			

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

```

178 • SELECT e.Emp_name, b.Branch_address FROM Employee e
179 JOIN Branch b ON e.Branch_no = b.Branch_no
180 WHERE e.Position like '%Manager%';

```

Result Grid			Filter Rows:		Export:		Wrap Cell Content:	
	Emp_name		Branch_address					

12. Display the names of customers who have issued books with a rental price higher than Rs. 10.

```

182 • SELECT c.Customer_name, b.Rental_Price FROM customer c
183 JOIN issuestatus i ON i.Issued_cust = c.Customer_id
184 JOIN books b ON b.ISBN = i.Isbn_book
185 WHERE b.Rental_Price >10;

```

Result Grid			Filter Rows:		Export:		Wrap Cell Content:	
	Customer_name		Rental_Price					
▶	Henry Taylor		11.00					
	Isabella Lee		13.00					
	Grace Miller		12.00					
	Danielle Harris		11.00					
	Alice Johnson		15.00					