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
```

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: | Edit: | Export/Import: | Wrap Cell Content: IA

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;
```

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

```sql
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;
```

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

```sql
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.

```sql
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;
```

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
```

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

Result 15 ×

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: ᴵA

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: | Export: | Wrap Cell Content: ᴵA

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: | Export: | Wrap Cell Content: ᴵA

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: | Export: | Wrap Cell Content: IA

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: | Export: | Wrap Cell Content: IA

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: | Export: | Wrap Cell Content: IA

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;
```

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%';
```

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;
```

Customer_name	Rental_Price
Henry Taylor	11.00
Isabella Lee	13.00
Grace Miller	12.00
Danielle Harris	11.00
Alice Johnson	15.00