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. 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

```
CREATE DATABASE library;
USE library;

# creation of table Branch
CREATE TABLE Branch(
    Branch_no INT PRIMARY KEY,
    Manager_id INT,
    Branch_address VARCHAR(100),
    Contact_no int
    );
```

```sql
# adding values to table branch
INSERT INTO Branch (Branch_no, Manager_id, Branch_address, Contact_no)
VALUES
    (3808, 01, 'Skill Park', 5584928),
    (3809, 02, 'Palace Street', 5554321),
    (3810, 03, 'Avenue Plaza', 5559876),
    (3811, 04, 'Oak Lane', 5552468),
    (3812, 05, 'Valley Street', 5551357),
    (3813, 06, 'Maple Street', 5558642),
    (3814, 07, 'Lotus Palace', 5557531),
    (3815, 08, 'Heavenly Lane', 5554680),
    (3816, 09, 'Pine Homes', 5551593),
    (3817, 10, 'Jane Road', 5550246);


# display table branch
SELECT * FROM Branch;
```

Branch_no	Manager_id	Branch_address	Contact_no
3808	1	Skill Park	5584928
3809	2	Palace Street	5554321
3810	3	Avenue Plaza	5559876
3811	4	Oak Lane	5552468
3812	5	Valley Street	5551357
3813	6	Maple Street	5558642
3814	7	Lotus Palace	5557531
3815	8	Heavenly Lane	5554680
3816	9	Pine Homes	5551593
3817	10	Jane Road	5550246
NULL	NULL	NULL	NULL

#	Time	Action	Message	Duration / Fetch
1	12:15:27	CREATE DATABASE library	1 row(s) affected	0.015 sec
2	12:15:27	USE library	0 row(s) affected	0.000 sec
3	12:15:33	CREATE TABLE Branch(Branch_no INT PRIMARY KEY, Manager_id INT, Bran...	0 row(s) affected	0.047 sec
4	12:15:42	INSERT INTO Branch (Branch_no, Manager_id, Branch_address, Contact_no) VALU...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec
5	12:15:42	SELECT * FROM Branch LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec

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

```sql
# creation of table employee
CREATE TABLE Employee(
    Emp_id INT PRIMARY KEY,
    Emp_name VARCHAR(50),
    Position VARCHAR(20),
    Salary INT,
    Branch_no INT,
    FOREIGN KEY(Branch_no) REFERENCES Branch(Branch_no) ON DELETE CASCADE
);
```

```sql
INSERT INTO Employee (Emp_id, Emp_name, Position, Salary, Branch_no)
VALUES
    (1001, 'Taylor Swift', 'Manager', 80000, 3809),
    (1002, 'Justin Paul', 'Assistant Manager', 60000, 3816),
    (1003, 'Alexa Wilson', 'Clerk', 40000, 3816),
    (1004, 'Niara Brown', 'Manager', 70000, 3808),
    (1005, 'Ema Vincent', 'Cleaning', 30000, 3816),
    (1006, 'Leon Paul', 'Librarian', 40000, 3816),
    (1007, 'Elsa Thomas', 'Assistant Manager', 650000, 3810),
    (1008, 'Liya Mikael', 'Clerk', 40000, 3816),
    (1009, 'Zera Elizabeth', 'Clerk', 40000, 3815),
    (1010, 'Kiara Advani', 'Clerk', 40000, 3816);
```

```sql
# displays table employee
SELECT * FROM Employee;
```

	Emp_id	Emp_name	Position	Salary	Branch_no
▶	1001	Taylor Swift	Manager	80000	3809
	1002	Justin Paul	Assistant Manager	60000	3816
	1003	Alexa Wilson	Clerk	40000	3816
	1004	Niara Brown	Manager	70000	3808
	1005	Ema Vincent	Cleaning	30000	3816
	1006	Leon Paul	Librarian	40000	3816
	1007	Elsa Thomas	Assistant Manager	650000	3810
	1008	Liya Mikael	Clerk	40000	3816
	1009	Zera Elizabeth	Clerk	40000	3815
	1010	Kiara Advani	Clerk	40000	3816
✱	NULL	NULL	NULL	NULL	NULL

✔	7	12:47:18	CREATE TABLE Employee(Emp_id INT PRIMARY KEY, Emp_name VARCHAR(50...	0 row(s) affected	0.031 sec
✔	8	12:47:29	INSERT INTO Employee (Emp_id, Emp_name, Position, Salary, Branch_no) VALUES ...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.000 sec
✔	9	12:47:33	SELECT * FROM Employee LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec

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

```sql
# creation of table Books
CREATE TABLE Books(
    ISBN INT PRIMARY KEY,
    Book_title VARCHAR(50),
    Category VARCHAR(25),
    Rental_price INT,
    Status_ VARCHAR(20),
    Author VARCHAR(25),
    Publisher VARCHAR(25));


# adding values to table Books
INSERT INTO Books (ISBN, Book_title, Category, Rental_price, Status_, Author, Publisher)
VALUES
    (71612345, 'The Revolution 2020', 'Fiction', 25, 'Available', 'Chetan Bagath', 'Rupa Publishers'),
    (71698765, 'The Exorcist', 'Horror', 10, 'Reserved', 'William Peter Blatty', 'Harper & Row'),
    (71624680, 'Lost Treasure', 'Adventure', 15, 'Available', 'Jan Stradling', 'Walker Books'),
    (71613579, 'The Secret', 'Mystery', 29, 'Reserved', 'Rhonda Byrne', 'Atria Books'),
    (71686420, 'House of Leaves', 'Horror', 11, 'Available', 'Mark Z Danielewski', 'Pantheon Books'),
    (71697531, 'Gullivers Travels', 'Satire', 27, 'Reserved', 'Jonathan Swift', 'Benjamin Motte'),
    (71675309, 'Quest for Atlantis', 'History', 33, 'Available', 'Olivia Green', 'Press Club'),
    (71646802, 'Cryptic Clues', 'Mystery', 20, 'Reserved', 'Michael Adams', 'Valley Books'),
    (71615937, 'Secret Passage', 'Adventure', 31, 'Available', 'Sophia Martinez', 'DC Publishers'),
    (71602468, 'Puzzle Manor', 'Mystery', 33, 'Reserved', 'William Turner', 'Pleater Books');


# displays table Books
select * from Books;
```

ISBN	Book_title	Category	Rental_price	Status_	Author	Publisher
71602468	Puzzle Manor	Mystery	33	Reserved	William Turner	Pleater Books
71612345	The Revolution 2020	Fiction	25	Available	Chetan Bagath	Rupa Publishers
71613579	The Secret	Mystery	29	Reserved	Rhonda Byrne	Atria Books
71615937	Secret Passage	Adventure	31	Available	Sophia Martinez	DC Publishers
71624680	Lost Treasure	Adventure	15	Available	Jan Stradling	Walker Books
71646802	Cryptic Clues	Mystery	20	Reserved	Michael Adams	Valley Books
71675309	Quest for Atlantis	History	33	Available	Olivia Green	Press Club
71686420	House of Leaves	Horror	11	Available	Mark Z Danielewski	Pantheon Books
71697531	Gullivers Travels	Satire	27	Reserved	Jonathan Swift	Benjamin Motte
71698765	The Exorcist	Horror	10	Reserved	William Peter Blatty	Harper & Row
NULL	NULL	NULL	NULL	NULL	NULL	NULL

✓	10	13:34:43	CREATE TABLE Books(ISBN INT PRIMARY KEY, Book_title VARCHAR(50), Categ...	0 row(s) affected	0.031 sec
✓	11	13:35:15	INSERT INTO Books (ISBN, Book_title, Category, Rental_price, Status_, Author, Pu...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0	0.016 sec
✓	12	13:35:15	select * from Books LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec

4. Customer

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

```
# creation of table Customer
CREATE TABLE Customer(
    Customer_id INT PRIMARY KEY,
    Customer_name VARCHAR(50),
    Customer_address VARCHAR(100),
    Reg_date DATE
    );
```

```
# adding values to table Customer
INSERT INTO Customer (Customer_id, Customer_name, Customer_address, Reg_date)
VALUES
    (71, 'Alia Bhatt', 'XYZ Road', '2021-05-11'),
    (72, 'Deepika', 'Era Ave', '2024-05-12'),
    (73, 'Kriti Sonan', 'Oak Lane', '2020-05-13'),
    (74, 'Kajal', 'Pine Farm Street', '2021-05-14'),
    (75, 'Ema Jackson', 'Heaven Street', '2023-05-15'),
    (76, 'Urvashi', 'Valley Lane', '2023-05-16'),
    (77, 'Katrina Kaif', 'Willow Ave', '2019-05-17'),
    (78, 'Kareena Kapoor', 'Church Road', '2023-05-18'),
    (79, 'Isa Tulip', 'Oak Street', '2022-05-19'),
    (80, 'Julie Margeret', 'Maple Lane', '2023-05-20');
```

```
# displays table Customer
SELECT * FROM Customer;
```

Customer_id	Customer_name	Customer_address	Reg_date
71	Alia Bhatt	XYZ Road	2021-05-11
72	Deepika	Era Ave	2024-05-12
73	Kriti Sonan	Oak Lane	2020-05-13
74	Kajal	Pine Farm Street	2021-05-14
75	Ema Jackson	Heaven Street	2023-05-15
76	Urvashi	Valley Lane	2023-05-16
77	Katrina Kaif	Willow Ave	2019-05-17
78	Kareena Kapoor	Church Road	2023-05-18
79	Isa Tulip	Oak Street	2022-05-19
80	Julie Margeret	Maple Lane	2023-05-20
NULL	NULL	NULL	NULL

	13	13:41:08	CREATE TABLE Customer(Customer_id INT PRIMARY KEY, Customer_name VA...	0 row(s) affected		0.015 sec
	14	13:47:53	INSERT INTO Customer (Customer_id, Customer_name, Customer_address, Reg_da...	10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0		0.000 sec
	15	13:47:53	SELECT * FROM Customer LIMIT 0, 1000	10 row(s) returned		0.000 sec / 0.000 sec

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

```sql
# creation of table IssueStatus
CREATE TABLE IssueStatus(
    Issue_id INT PRIMARY KEY,
    Issued_cust INT,
    FOREIGN KEY(Issued_cust) REFERENCES Customer(Customer_id) ON DELETE CASCADE,
    Issue_date DATE,
    Isbn_book INT,
    FOREIGN KEY(Isbn_book) REFERENCES Books(ISBN) ON DELETE CASCADE
    );
```

```sql
# adding values to table IssueStatus
INSERT INTO IssueStatus (Issue_id, Issued_cust, Issue_date, Isbn_book)
VALUES
    (1, 71, '2023-06-11', 71686420),
    (2, 72, '2022-05-12', 71602468),
    (3, 73, '2023-05-13', 71686420),
    (4, 74, '2023-06-14', 71615937),
    (5, 75, '2021-04-15', 71646802),
    (6, 71, '2023-05-16', 71686420),
    (7, 76, '2023-06-17', 71613579),
    (8, 72, '2023-05-18', 71686420),
    (9, 79, '2021-07-19', 71613579),
    (10, 80,'2019-09-20', 71697531);
```

```sql
# displays table IssueStatus
SELECT * FROM IssueStatus;
```

Issue_id	Issued_cust	Issue_date	Isbn_book
1	71	2023-06-11	71686420
2	72	2022-05-12	71602468
3	73	2023-05-13	71686420
4	74	2023-06-14	71615937
5	75	2021-04-15	71646802
6	71	2023-05-16	71686420
7	76	2023-06-17	71613579
8	72	2023-05-18	71686420
9	79	2021-07-19	71613579
10	80	2019-09-20	71697531
NULL	NULL	NULL	NULL

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

```sql
# creation of table ReturnStatus
CREATE TABLE ReturnStatus(
    Return_Id INT PRIMARY KEY,
    Return_cust VARCHAR(50),
    Return_book_name VARCHAR(50),
    Return_date DATE,
    Isbn_book2 INT,
    FOREIGN KEY(Isbn_book2) REFERENCES Books(ISBN) ON DELETE CASCADE
    );
```
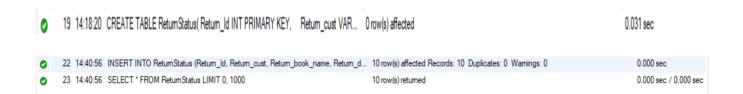
```sql
INSERT INTO ReturnStatus (Return_Id, Return_cust, Return_book_name, Return_date, Isbn_book2)
VALUES
    (11, 'Alia Bhatt', 'House of Leaves', '2023-09-11', 71686420),
    (21, 'Deepika', 'Puzzle Manor', '2023-01-12', 71602468),
    (31, 'Kriti Sonan', 'House of Leaves', '2023-07-13', 71686420),
    (41, 'Kajal', 'Secret Passage', '2023-10-14', 71615937),
    (51, 'Ema Jackson', 'Cryptic Clues', '2022-01-15', 71646802),
    (61, 'Alia Bhatt', 'House of Leaves', '2023-06-16', 71686420),
    (71, 'Urvashi', 'The Secret', '2023-08-17', 71613579),
    (81, 'Deepika', 'Cryptic Clues', '2023-11-18', 71686420),
    (91, 'Isa Tulip', 'The Secret', '2021-08-19', 71613579),
    (101, 'Julie Margeret', 'Puzzle Manor', '2020-05-20', 71697531);

# displays table ReturnStatus
SELECT * FROM ReturnStatus;
```

Return_Id	Return_cust	Return_book_name	Return_date	Isbn_book2
11	Alia Bhatt	House of Leaves	2023-09-11	71686420
21	Deepika	Puzzle Manor	2023-01-12	71602468
31	Kriti Sonan	House of Leaves	2023-07-13	71686420
41	Kajal	Secret Passage	2023-10-14	71615937
51	Ema Jackson	Cryptic Clues	2022-01-15	71646802
61	Alia Bhatt	House of Leaves	2023-06-16	71686420
71	Urvashi	The Secret	2023-08-17	71613579
81	Deepika	Cryptic Clues	2023-11-18	71686420
91	Isa Tulip	The Secret	2021-08-19	71613579
101	Julie Margeret	Puzzle Manor	2020-05-20	71697531
NULL	NULL	NULL	NULL	NULL

✓	19 14:18:20 CREATE TABLE ReturnStatus(Return_Id INT PRIMARY KEY, Return_cust VAR... 0 row(s) affected			0.031 sec
✓	22 14:40:56 INSERT INTO ReturnStatus (Return_Id, Return_cust, Return_book_name, Return_d... 10 row(s) affected Records: 10 Duplicates: 0 Warnings: 0			0.000 sec
✓	23 14:40:56 SELECT * FROM ReturnStatus LIMIT 0, 1000		10 row(s) returned	0.000 sec / 0.000 sec

Display all the tables and Write the queries for the following :

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

```
-- 1. Retrieve the book title, category, and rental price of all available books
SELECT
    Book_title,
    Category,
    Rental_Price
FROM
    Books
WHERE
    Status_ = 'Available';
```

Book_title	Category	Rental_Price
The Revolution 2020	Fiction	25
Secret Passage	Adventure	31
Lost Treasure	Adventure	15
Quest for Atlantis	History	33
House of Leaves	Horror	11

24 14:44:41 SELECT Book_title, Category, Rental_Price FROM Books WHERE Status_ = '... 5 row(s) returned   0.000 sec / 0.000 sec

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

```
-- 2. List the employee names and their respective salaries in descending order of salary
SELECT
  Emp_name,
  Salary
FROM
  Employee
ORDER BY
  Salary DESC;
```

Emp_name	Salary
Elsa Thomas	650000
Taylor Swift	80000
Niara Brown	70000
Justin Paul	60000
Alexa Wilson	40000
Leon Paul	40000
Liya Mikael	40000
Zera Elizabeth	40000
Kiara Advani	40000
Ema Vincent	30000

25 14:46:45 SELECT Emp_name, Salary FROM Employee ORDER BY Salary DESC LIMIT ... 10 row(s) returned   0.000 sec / 0.000 sec

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

```
-- 3. Retrieve the book titles and the corresponding customers who have issued those books
SELECT
  b.Book_title,
  c.Customer_name
FROM
  IssueStatus i
  JOIN Books b ON i.Isbn_book = b.ISBN
  JOIN Customer c ON i.Issued_cust = c.Customer_Id;
```

Book_title	Customer_name
House of Leaves	Alia Bhatt
Puzzle Manor	Deepika
House of Leaves	Kriti Sonan
Secret Passage	Kajal
Cryptic Clues	Ema Jackson
House of Leaves	Alia Bhatt
The Secret	Urvashi
House of Leaves	Deepika
The Secret	Isa Tulip
Gullivers Travels	Julie Margeret

26 14:48:44 SELECT b.Book_title, c.Customer_name FROM IssueStatus i JOIN Books b ON... 10 row(s) returned   0.000 sec / 0.000 sec

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

```
-- 4. Display the total count of books in each category
SELECT
  Category,
  COUNT(*) AS Total_Count
FROM
  Books
GROUP BY
  Category;
```

Category	Total_Count
Mystery	3
Fiction	1
Adventure	2
History	1
Horror	2
Satire	1

27 14:50:37 SELECT Category, COUNT(*) AS Total_Count FROM Books GROUP BY Categ... 6 row(s) returned   0.000 sec / 0.000 sec

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

```
-- 5. Retrieve the employee names and their positions for the employees whose salaries are above Rs.50,000
SELECT
    Emp_name,
    Position
FROM
    Employee
WHERE
    Salary > 50000;
```

Emp_name	Position
Taylor Swift	Manager
Justin Paul	Assistant Manager
Niara Brown	Manager
Elsa Thomas	Assistant Manager

28 14:52:36 SELECT Emp_name, Position FROM Employee WHERE Salary > 50000 LIMIT ... 4 row(s) returned   0.000 sec / 0.000 sec

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

```sql
-- 6. List the customer names who registered before 2022-01-01 and have not issued any books yet
SELECT
    Customer_name
FROM
    Customer
WHERE
    Reg_date < '2022-01-01'
    AND Customer_Id NOT IN (
        SELECT
            Issued_cust
        FROM
            IssueStatus
    );
```

	Customer_name
▶	Katrina Kaif

✅ 29 14:54:42 SELECT Customer_name FROM Customer WHERE Reg_date < '2022-01-01' A... 1 row(s) returned   0.016 sec / 0.000 sec

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

```sql
-- 7. Display the branch numbers and the total count of employees in each branch
SELECT
    Branch_no,
    COUNT(*) AS Total_Employees
FROM
    Employee
GROUP BY
    Branch_no;
```

Branch_no	Total_Employees
▶ 3808	1
3809	1
3810	1
3815	1
3816	6

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

```
    -- 8. Display the names of customers who have issued books in the month of June 2023
SELECT
   c.Customer_name
FROM
   IssueStatus i
   JOIN Customer c ON i.Issued_cust = c.Customer_Id
WHERE
   MONTH (Issue_date) = 6
   AND YEAR (Issue_date) = 2023;
```
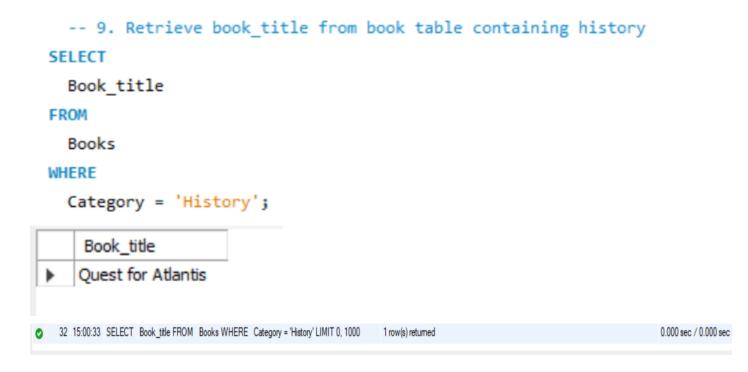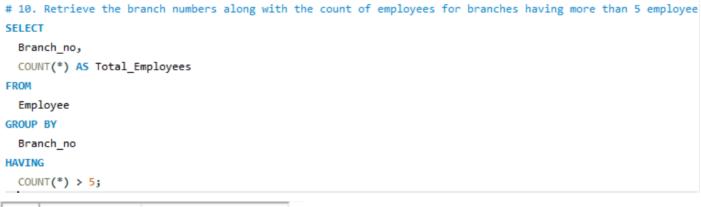
Customer_name
▶ Alia Bhatt
Kajal
Urvashi

9. Retrieve book_title from book table containing history.

```sql
-- 9. Retrieve book_title from book table containing history
SELECT
    Book_title
FROM
    Books
WHERE
    Category = 'History';
```

Book_title
▶ Quest for Atlantis

✓	32 15:00:33 SELECT Book_title FROM Books WHERE Category = 'History' LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec

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

```sql
# 10. Retrieve the branch numbers along with the count of employees for branches having more than 5 employee
SELECT
    Branch_no,
    COUNT(*) AS Total_Employees
FROM
    Employee
GROUP BY
    Branch_no
HAVING
    COUNT(*) > 5;
```

Branch_no	Total_Employees
▶ 3816	6

✓	33 15:02:01 SELECT Branch_no, COUNT(*) AS Total_Employees FROM Employee GROUP ...	1 row(s) returned	0.000 sec / 0.000 sec

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

```
-- 11. Retrieve the names of employees who manage branches and their respective branch addresses
SELECT
  e.Emp_name,
  b.Branch_address
FROM
  Employee e
  JOIN Branch b ON e.Branch_no = b.Branch_no
WHERE
  e.Position = 'Manager';
```

	Emp_name	Branch_address
▶	Taylor Swift	Palace Street
	Niara Brown	Skill Park

| ✔ | 34 15:07:56 SELECT e.Emp_name, b.Branch_address FROM Employee e JOIN Branch b O... 2 row(s) returned | 0.000 sec / 0.000 sec |

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

```
-- 12. Display the names of customers who have issued books with a rental price higher than Rs. 25
SELECT
  c.Customer_name
FROM
  IssueStatus i
  JOIN Customer c ON i.Issued_cust = c.Customer_Id
  JOIN Books b ON i.Isbn_book = b.ISBN
WHERE
  b.Rental_Price > 25;
```

	Customer_name
▶	Deepika
	Urvashi
	Isa Tulip
	Kajal
	Julie Margeret

● 35 15:09:04 SELECT c.Customer_name FROM IssueStatus i JOIN Customer c ON i.Issued_c... 5 row(s) returned   0.000 sec / 0.000 sec