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**

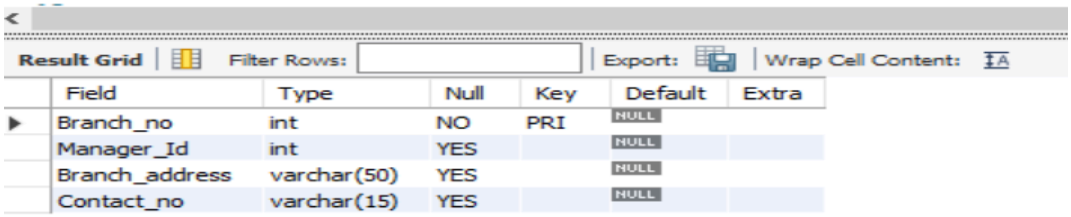
Attributes for the tables:

1. **Branch**

- **Branch_no - Set as PRIMARY KEY**
- **Manager_Id**
- **Branch_address**
- **Contact_no**

```sql
-- Create Database
CREATE DATABASE library;
USE library;

-- Create Tables
CREATE TABLE Branch (
    Branch_no INT PRIMARY KEY,
    Manager_Id INT,
    Branch_address VARCHAR(50),
    Contact_no VARCHAR(15)
);
desc Branch;
```



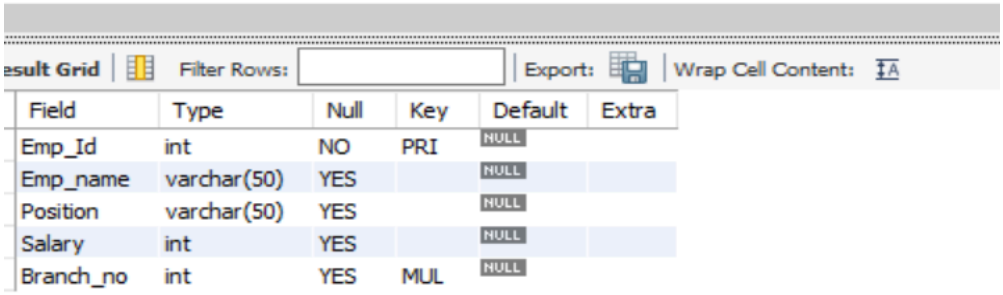
Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Field	Type	Null	Key	Default	Extra
Branch_no	int	NO	PRI	NULL	
Manager_Id	int	YES		NULL	
Branch_address	varchar(50)	YES		NULL	
Contact_no	varchar(15)	YES		NULL	

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**

```
14  CREATE TABLE Employee (
15      Emp_Id INT PRIMARY KEY,
16      Emp_name VARCHAR(50),
17      Position VARCHAR(50),
18      Salary int,
19      Branch_no INT,
20      FOREIGN KEY (Branch_no) REFERENCES Branch(Branch_no));
21  desc Employee;
```



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

Field	Type	Null	Key	Default	Extra
Emp_Id	int	NO	PRI	NULL	
Emp_name	varchar(50)	YES		NULL	
Position	varchar(50)	YES		NULL	
Salary	int	YES		NULL	
Branch_no	int	YES	MUL	NULL	

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**

```
23 • CREATE TABLE Books (
24       ISBN VARCHAR(20) PRIMARY KEY,
25       Book_title VARCHAR(25),
26       Category VARCHAR(50),
27       Rental_Price DECIMAL(10, 3),
28       Status ENUM('yes', 'no'),
29       Author VARCHAR(25),
30       Publisher VARCHAR(25));
31 •  desc Books;
32
33 • CREATE TABLE Customer (
```

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

Field	Type	Null	Key	Default	Extra
ISBN	varchar(20)	NO	PRI	NULL	
Book_title	varchar(25)	YES		NULL	
Category	varchar(50)	YES		NULL	
Rental_Price	decimal(10,3)	YES		NULL	
Status	enum('yes','no')	YES		NULL	
Author	varchar(25)	YES		NULL	
Publisher	varchar(25)	YES		NULL	

4. Customer

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

```
32
33  CREATE TABLE Customer (
34      Customer_Id INT PRIMARY KEY,
35      Customer_name VARCHAR(25),
36      Customer_address VARCHAR(25),
37      Reg_date DATE);
38  desc Customer;
39
```

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

Field	Type	Null	Key	Default	Extra
Customer_Id	int	NO	PRI	NULL	
Customer_name	varchar(25)	YES		NULL	
Customer_address	varchar(25)	YES		NULL	
Reg_date	date	YES		NULL	

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**

```
40  CREATE TABLE IssueStatus (
41      Issue_Id INT PRIMARY KEY,
42      Issued_cust INT,
43      Issued_book_name VARCHAR(25),
44      Issue_date DATE,
45      Isbn_book VARCHAR(20),
46      FOREIGN KEY (Issued_cust) REFERENCES Customer(Customer_Id),
47      FOREIGN KEY (Isbn_book) REFERENCES Books(ISBN));
48  desc IssueStatus;
```

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

Field	Type	Null	Key	Default	Extra
Issue_Id	int	NO	PRI	NULL	
Issued_cust	int	YES	MUL	NULL	
Issued_book_name	varchar(25)	YES		NULL	
Issue_date	date	YES		NULL	
Isbn_book	varchar(20)	YES	MUL	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**

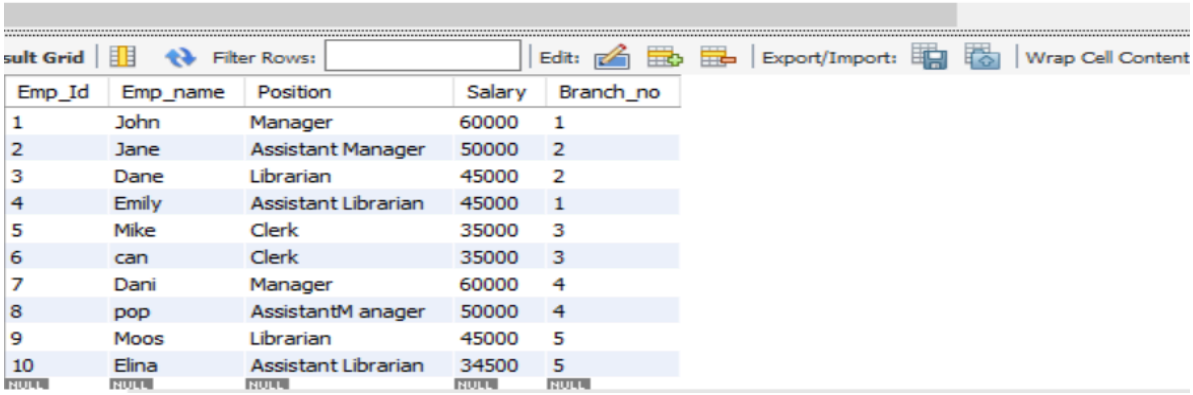
```
50  CREATE TABLE ReturnStatus (
51      Return_Id INT PRIMARY KEY,
52      Return_cust INT,
53      Return_book_name VARCHAR(25),
54      Return_date DATE,
55      Isbn_book2 VARCHAR(20),
56      FOREIGN KEY (Return_cust) REFERENCES Customer(Customer_Id),
57      FOREIGN KEY (Isbn_book2) REFERENCES Books(ISBN));
58  desc ReturnStatus;
```

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

Field	Type	Null	Key	Default	Extra
Return_Id	int	NO	PRI	NULL	
Return_cust	int	YES	MUL	NULL	
Return_book_name	varchar(25)	YES		NULL	
Return_date	date	YES		NULL	
Isbn_book2	varchar(20)	YES	MUL	NULL	

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

```
1 •  INSERT INTO Branch (Branch_no, Manager_Id, Branch_address, Contact_no) VALUES
2    (1, 101, '123 Main Street', '1234567890'),
3    (2, 102, '456 Avenue', '9876543210'),
4    (3, 103, '789 East', '4567890123'),
5    (4, 104, '321  Road', '7890123456'),
6    (5, 105, '654 Lane', '0123456789'),
7    (6, 106, '987 Main', '3456789012'),
8    (7, 107, '210 Street', '6789012345'),
9    (8, 108, '543  Avenue', '9012345678'),
0    (9, 109, '876 West', '2345678901'),
1    (10, 110, '1098 Road', '5678901234');
2 •  select * from Branch;
```



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Emp_Id	Emp_name	Position	Salary	Branch_no
1	John	Manager	60000	1
2	Jane	Assistant Manager	50000	2
3	Dane	Librarian	45000	2
4	Emily	Assistant Librarian	45000	1
5	Mike	Clerk	35000	3
6	can	Clerk	35000	3
7	Dani	Manager	60000	4
8	pop	AssistantM anager	50000	4
9	Moos	Librarian	45000	5
10	Elina	Assistant Librarian	34500	5
NULL	NULL	NULL	NULL	NULL

```sql
INSERT INTO Employee (Emp_Id, Emp_name, Position, Salary, Branch_no) VALUES
(1, 'John', 'Manager', 60000, 1),
(2, 'Jane', 'Assistant Manager', 50000, 2),
(3, 'Dane', 'Librarian', 45000, 2),
(4, 'Emily', 'Assistant Librarian', 45000, 1),
(5, 'Mike', 'Clerk', 35000, 3),
(6, 'can', 'Clerk', 35000, 3),
(7, 'Dani', 'Manager', 60000, 4),
(8, 'pop', 'AssistantM anager', 50000, 4),
(9, 'Moos', 'Librarian', 45000, 5),
(10, 'Elina', 'Assistant Librarian',34500, 5);
select * from  Employee;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Cor

Emp_Id	Emp_name	Position	Salary	Branch_no
1	John	Manager	60000	1
2	Jane	Assistant Manager	50000	2
3	Dane	Librarian	45000	2
4	Emily	Assistant Librarian	45000	1
5	Mike	Clerk	35000	3
6	can	Clerk	35000	3
7	Dani	Manager	60000	4
8	pop	AssistantM anager	50000	4
9	Moos	Librarian	45000	5
10	Elina	Assistant Librarian	34500	5
NULL	NULL	NULL	NULL	NULL

```sql
INSERT INTO Books  VALUES('978-0132350884', 'IntroductiontoAlgorithms', 'Computer Science', 25.00, 'yes', 'Thomas H. Cormen', 'D Press');
insert into  books values('978-0262033848', 'Artificial Intelligence', 'Computer Science', 30.00, 'yes', 'Stuart Russell', 'Pearson');
insert into  books values('978-0134171456', 'The C ProgrammingLanguage', 'Computer Science', 50.00, 'yes', 'Balaguruswammy', 'DC books');
insert into  books values('978-0262533058', 'Brida', 'Novel', 35.00, 'yes', 'Paulo Coelho', 'HarperCollins');
insert into  books values('978-0061120084', 'Ikigai', 'Story', 15.00, 'yes', 'Hector', 'Hutchinson london');
insert into  books values('978-0141182605', 'The girl in room 105', 'Fiction', 100.00, 'yes', 'Chetan bhagat', 'WestlandBooks');
insert into  books values('978-0679417649', 'Pride and Prejudice', 'Fiction', 12.00, 'No', 'Jane Austen', 'Modern Library');
insert into  books values('978-0547928210', 'Harry potter', 'Fiction', 200.00, 'yes', 'J.k rowling', 'HarperCollins');
insert into  books values('978-0321125217', 'Atomic habit', 'Story', 50.00, 'yes', 'James Clear', 'Prentice Hall');
insert into  books values('978-0132922490', 'OOP with C++', 'Computer Science', 218.00, 'yes', 'Balaguruswammy', 'MC graw hill');
select * from  Books;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

ISBN	Book_title	Category	Rental_Price	Status	Author	Publisher
978-0061120084	Ikigai	Story	15.000	yes	Hector	Hutchinson london
978-0132350884	IntroductiontoAlgorithms	Computer Science	25.000	yes	Thomas H. Cormen	D Press
978-0132922490	OOP with C++	Computer Science	218.000	yes	Balaguruswammy	MC graw hill
978-0134171456	The C ProgrammingLanguage	Computer Science	50.000	yes	Balaguruswammy	DC books
978-0141182605	The girl in room 105	Fiction	100.000	yes	Chetan bhagat	WestlandBooks
978-0262033848	Artificial Intelligence	Computer Science	30.000	yes	Stuart Russell	Pearson
978-0262533058	Brida	Novel	35.000	yes	Paulo Coelho	HarperCollins
978-0321125217	Atomic habit	Story	50.000	yes	James Clear	Prentice Hall
978-0547928210	Harry potter	Fiction	200.000	yes	J.k rowling	HarperCollins
978-0679417649	Pride and Prejudice	Fiction	12.000	no	Jane Austen	Modern Library

```
98 •  INSERT INTO Customer (Customer_Id, Customer_name, Customer_address, Reg_date) VALUES
99    (1, 'Alice', '456 Avenue', '2021-12-15'),
100   (2, 'Bob', '789 Main', '2021-11-20'),
101   (3, 'Charli', '321 Road', '2021-10-25'),
102   (4, 'Dane', '654Lane', '2021-09-30'),
103   (5, 'Eli', '987 Road', '2021-08-05'),
104   (6, 'Rony', '210 Street', '2021-07-10'),
105   (7, 'Gracy', '543 Avenue', '2021-06-15'),
106   (8, 'Jany', '876 Fort', '2021-05-20'),
107   (9, 'Taylor', '10 Road', '2021-11-25'),
108   (10, 'Jose', '123 Main', '2022-03-30');
109 • select * from Customer ;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

Customer_Id	Customer_name	Customer_address	Reg_date
1	Alice	456 Avenue	2021-12-15
2	Bob	789 Main	2021-11-20
3	Charli	321 Road	2021-10-25
4	Dane	654Lane	2021-09-30
5	Eli	987 Road	2021-08-05
6	Rony	210 Street	2021-07-10
7	Gracy	543 Avenue	2021-06-15
8	Jany	876 Fort	2021-05-20
9	Taylor	10 Road	2021-11-25
10	Jose	123 Main	2022-03-30
NULL	NULL	NULL	NULL

```sql
INSERT INTO IssueStatus (Issue_Id, Issued_cust, Issued_book_name, Issue_date, Isbn_book) VALUES
(1, 1, 'Introductionto Algorithms', '2023-06-01', '978-0132350884'),
(2, 2, 'Artificial Intelligence', '2023-06-02', '978-0262033848'),
(3, 3, 'The C ProgrammingLanguage', '2023-06-03', '978-0134171456'),
(4, 4, 'Brida', '2023-07-04', '978-0262533058'),
(5, 5, 'Ikigai', '2023-07-05', '978-0061120084'),
(6, 6, 'The girl in room 105', '2023-08-06', '978-0141182605'),
(7, 7, 'Pride and Prejudice', '2023-06-07', '978-0679417649'),
(8, 8, 'Harry potter', '2023-05-08', '978-0547928210'),
(9, 8, 'Atomic habit', '2023-06-09', '978-0321125217'),
(10, 10, 'OOP with C++', '2023-06-10', '978-0132922490');
select * from IssueStatus;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

Issue_Id	Issued_cust	Issued_book_name	Issue_date	Isbn_book
1	1	Introductionto Algorithms	2023-06-01	978-0132350884
2	2	Artificial Intelligence	2023-06-02	978-0262033848
3	3	The C ProgrammingLanguage	2023-06-03	978-0134171456
4	4	Brida	2023-07-04	978-0262533058
5	5	Ikigai	2023-07-05	978-0061120084
6	6	The girl in room 105	2023-08-06	978-0141182605
7	7	Pride and Prejudice	2023-06-07	978-0679417649
8	8	Harry potter	2023-05-08	978-0547928210
9	8	Atomic habit	2023-06-09	978-0321125217
10	10	OOP with C++	2023-06-10	978-0132922490
NULL	NULL	NULL	NULL	NULL

```sql
INSERT INTO ReturnStatus (Return_Id, Return_cust, Return_book_name, Return_date, Isbn_book2) VALUES
(1, 1, 'Introduction toAlgorithms', '2023-07-01', '978-0132350884'),
(2, 2, 'Artificial Intelligence', '2023-07-02', '978-0262033848'),
(3, 3, 'The C ProgrammingLanguage', '2023-07-03', '978-0134171456'),
(4, 4, 'Brida', '2023-08-04', '978-0262533058'),
(5, 5, 'Ikigai', '2023-08-05', '978-0061120084'),
(6, 6, 'The girl in room 105', '2023-09-06', '978-0141182605'),
(7, 7, 'Pride and Prejudice', '2023-07-07', '978-0679417649'),
(8, 8, 'Harry potter', '2023-07-08', '978-0547928210'),
(9, 8, 'Atomic habit', '2023-07-09', '978-0321125217'),
(10, 10, 'OOP with C++', '2023-07-10', '978-0132922490');
select * from ReturnStatus;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

Return_Id	Return_cust	Return_book_name	Return_date	Isbn_book2
1	1	Introduction toAlgorithms	2023-07-01	978-0132350884
2	2	Artificial Intelligence	2023-07-02	978-0262033848
3	3	The C ProgrammingLanguage	2023-07-03	978-0134171456
4	4	Brida	2023-08-04	978-0262533058
5	5	Ikigai	2023-08-05	978-0061120084
6	6	The girl in room 105	2023-09-06	978-0141182605
7	7	Pride and Prejudice	2023-07-07	978-0679417649
8	8	Harry potter	2023-07-08	978-0547928210
9	8	Atomic habit	2023-07-09	978-0321125217
10	10	OOP with C++	2023-07-10	978-0132922490
NULL	NULL	NULL	NULL	NULL

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

```
137     -- 1. Retrieve the book title, category, and rental price of all available books.
138 •   select book_title,category,rental_price from books where status="yes";
```

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

book_title	category	rental_price
Ikigai	Story	15.000
IntroductiontoAlgorithms	Computer Science	25.000
OOP with C++	Computer Science	218.000
The C ProgrammingLanguage	Computer Science	50.000
The girl in room 105	Fiction	100.000
Artificial Intelligence	Computer Science	30.000
Brida	Novel	35.000
Atomic habit	Story	50.000
Harry potter	Fiction	200.000

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

```
139
140     -- 2. List the employee names and their respective salaries in descending order of salary.
141 •   select emp name,salary from employee order by salary desc;
```

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

emp_name	salary
John	60000
Dani	60000
Jane	50000
pop	50000
Dane	45000
Emily	45000
Moos	45000
Mike	35000
can	35000
Elina	34500

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

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

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

Book_title	Customer_name
Ikigai	Eli
IntroductiontoAlgorithms	Alice
OOP with C++	Jose
The C ProgrammingLanguage	Charli
The girl in room 105	Rony
Artificial Intelligence	Bob
Brida	Dane
Atomic habit	Jany
Harry potter	Jany
Pride and Prejudice	Gracy

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

```
150     -- 4. Display the total count of books in each category.
151 •   select  category,count(*) as Total_count from books group by category;
```

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

category	Total_count
Story	2
Computer Science	4
Fiction	3
Novel	1

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

```
152     -- 5. Retrieve the employee names and their positions for the employees whose salaries are above Rs.50,000.
153 •   select emp_name,position,salary from employee where salary>50000;
154
```

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

emp_name	position	salary
John	Manager	60000
Dani	Manager	60000

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

```
155     -- 6. List the customer names who registered before 2022-01-01 and have not issued any books yet.
156 •   select customer_name,reg_date from customer where reg_date < '2022-01-01'
157     AND Customer_Id NOT IN (SELECT DISTINCT Issued_cust FROM IssueStatus);
158
```

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

customer_name	reg_date
Taylor	2021-11-25

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

```
159     -- 7. Display the branch numbers and the total count of employees in each branch.
160 •   SELECT Branch_no, COUNT(*) AS Total_Employees FROM Employee GROUP BY Branch_no;
161
```

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

Branch_no	Total_Employees
1	2
2	2
3	2
4	2
5	2

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

```
164 •    SELECT DISTINCT c.Customer_name ,i.Issue_date
165      FROM Customer c
166      JOIN IssueStatus i ON c.Customer_Id = i.Issued_cust
167      WHERE MONTH(i.Issue_date) = 6 AND YEAR(i.Issue_date) = 2023;
168
169
```

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

Customer_name	Issue_date
Alice	2023-06-01
Bob	2023-06-02
Charli	2023-06-03
Gracy	2023-06-07
Jany	2023-06-09
Jose	2023-06-10

9. Retrieve book_title from a book table containing history.

```
169      -- 9. Retrieve book_title from book table containing history.
170 •    INSERT INTO Books (ISBN, Book_title, Category, Rental_Price, Status, Author, Publisher)
171      VALUES ('9781234567890', 'A Brief History of Time', 'History', 20.00, 'yes', 'Stephen Hawking', 'Bantam Books');
172
173 •    SELECT Book_title FROM Books WHERE Category LIKE '%history%';
174
```

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

Book_title
A Brief History of Time

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

```
175    -- 10. Retrieve the branch numbers along with the count of employees for branches having more than 5 employees.
176
177 •  INSERT INTO Employee (Emp_Id, Emp_name, Position, Salary, Branch_no) VALUES
178    (11, 'Dani', 'Clerk', 30000, 2),
179    (12, 'Thomas', 'Ass.manger', 48000, 2),
180    (13, 'johny', 'Clerk', 30000, 2),
181    (14, 'sanem', 'librarian', 670000, 2);
182
183 •  select branch_no,count(*)  Total_Employees from employee group by branch_no having count(*)>5;
```

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

branch_no	Total_Employees
2	6

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

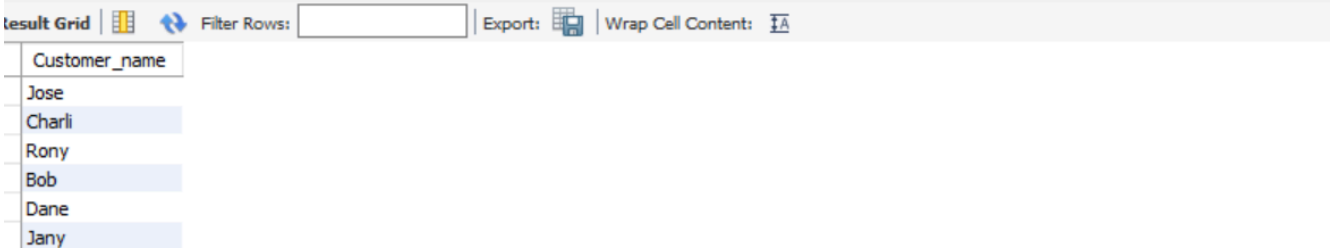
```
176    -- 11. Retrieve the names of employees who manage branches and their respective branch addresses.
177
178 •  SELECT e.Emp_name,e.position, b.Branch_address
179    FROM Employee e
180    JOIN Branch b ON e.Branch_no = b.Branch_no
181    WHERE e.Position = 'Manager';
182
183
```

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

Emp_name	position	Branch_address
John	Manager	123 Main Street
Dani	Manager	321 Road

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

```
193     -- 12. Display the names of customers who have issued books with a rental price higher than Rs. 25.
194
195 •   SELECT DISTINCT c.Customer_name
196     FROM Customer c
197     JOIN IssueStatus i ON c.Customer_Id = i.Issued_cust
198     JOIN Books b ON i.Isbn_book = b.ISBN
199     WHERE b.Rental_Price > 25;
200
201
```



Customer_name
Jose
Charli
Rony
Bob
Dane
Jany