PROJECT

The Library Management System project involves creating a database to manage and track all aspects of a library's operations, including books, employees, customers, and book transactions. Here's a summary of the data and the tasks covered in the project:

Database and Tables:

1. Branch Table: Stores information about library branches, including branch number, manager ID, address, and contact number.
2. Employee Table: Contains details about employees, such as employee ID, name, position, salary, and the branch they work in. The Branch_no is a foreign key referencing the Branch table.
3. Books Table: Manages information about books in the library, including ISBN, title, category, rental price, availability status, author, and publisher.
4. Customer Table: Records customer details, including customer ID, name, address, and registration date.
5. Issue Status Table: Tracks which customer has issued which book and when. It includes the issue ID, customer ID (foreign key), book ISBN (foreign key), and the issue date.
6. Return Status Table: Keeps track of the return details of books, including return ID, customer ID (foreign key), book ISBN (foreign key), and the return date.

SQL Queries:

The SQL queries are used to retrieve various information from the system:

1. Available Books: Retrieves titles, categories, and rental prices of all available books.
2. Employee Salaries: Lists employee names and their salaries in descending order.
3. Issued Books and Customers: Shows which customers have issued which books.
4. Book Categories Count: Displays the count of books in each category.

5. Employees Earning Over Rs. 50,000: Lists employees with salaries above Rs. 50,000.
6. Customers with No Book Issues: Shows customers who registered before 2022 but haven’t issued any books.
7. Employee Count by Branch: Displays the number of employees per branch.
8. Customers Issuing Books in June 2023: Lists customers who issued books in June 2023.
9. Books with ‘History’: Retrieves books with the word 'history' in their title.
10. Branches with More Than 5 Employees: Shows branches that have more than 5 employees.
11. Managers and Branches: Lists the names of employees who manage branches and their respective branch addresses.
12. Customers Who Issued Expensive Books: Shows customers who have issued books with rental prices higher than Rs. 25.

Project Deliverables:

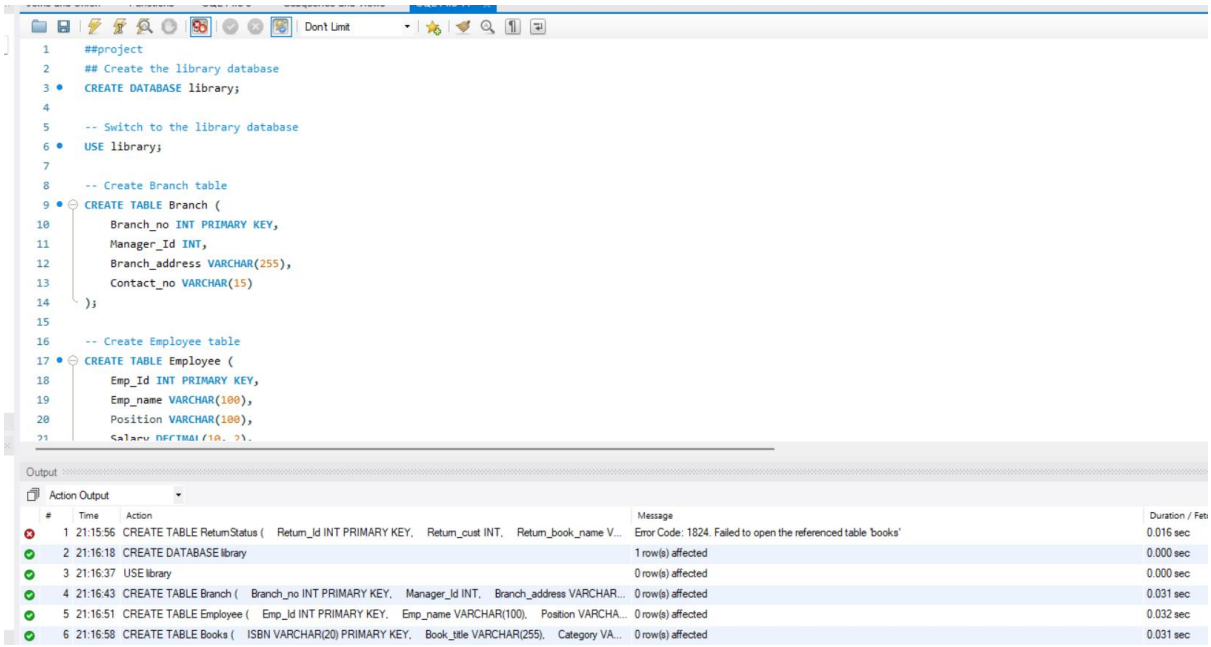
- SQL Scripts: The SQL queries for managing and retrieving data from the library database.
- Screenshots: Screenshots of the results of each query executed on the database.
- GitHub Repository: Upload the SQL scripts and output screenshots to GitHub for easy access and sharing.

Key Tasks:

- Database Design: Creating a structured database with appropriate tables and foreign key relationships.
- Data Management: Using SQL to manage and retrieve data related to books, customers, employees, and transactions.
- Reporting: Generating reports through queries to monitor library activity, such as available books, employee details, customer transactions, etc.

This project encapsulates the core functionalities of a Library Management System, providing a comprehensive overview of the library's operations.

SCREEN SHOTS….



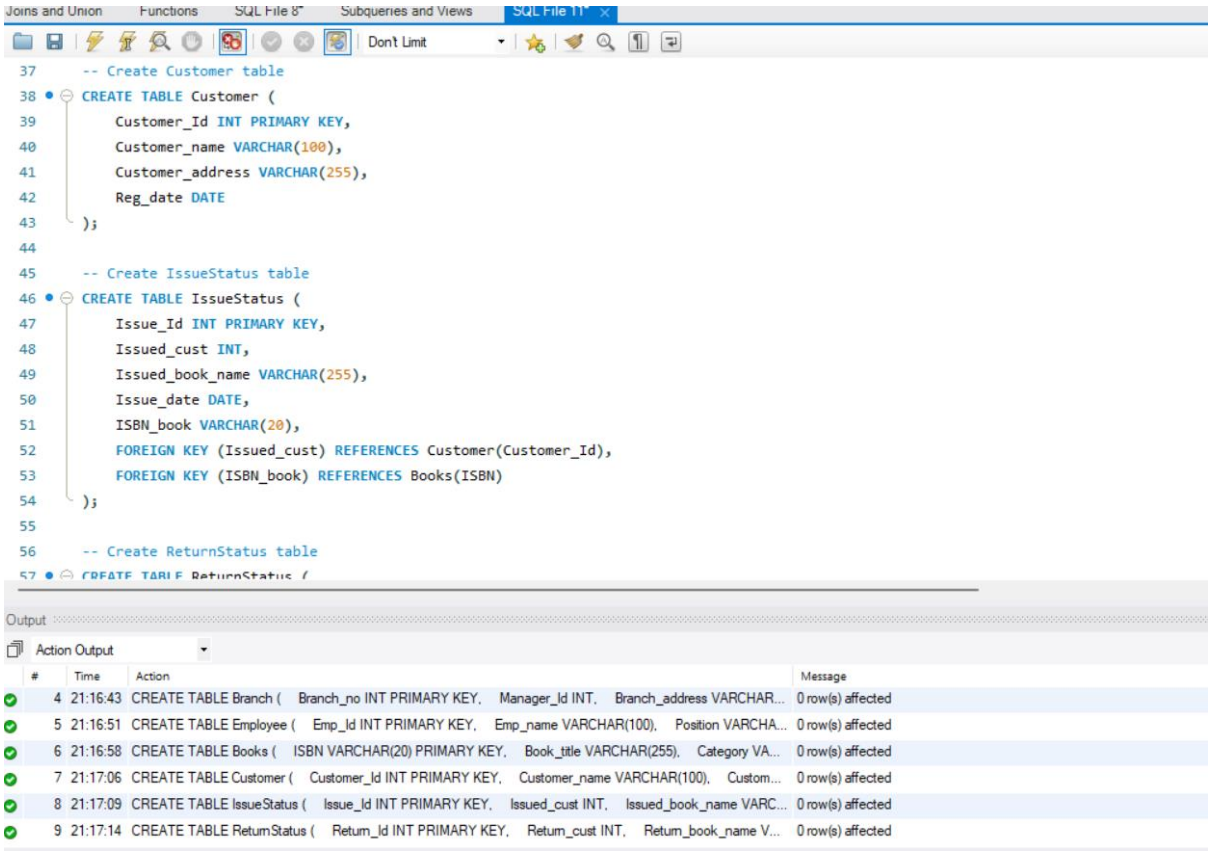
```sql
##project
## Create the library database
CREATE DATABASE library;

-- Switch to the library database
USE library;

-- Create Branch table
CREATE TABLE Branch (
    Branch_no INT PRIMARY KEY,
    Manager_Id INT,
    Branch_address VARCHAR(255),
    Contact_no VARCHAR(15)
);

-- Create Employee table
CREATE TABLE Employee (
    Emp_Id INT PRIMARY KEY,
    Emp_name VARCHAR(100),
    Position VARCHAR(100),
    Salary DECIMAL(10, 2),
```

Output

Action Output

#	Time	Action	Message	Duration / Fetch
1	21:15:56	CREATE TABLE ReturnStatus (Return_Id INT PRIMARY KEY, Return_cust INT, Return_book_name V...	Error Code: 1824. Failed to open the referenced table 'books'	0.016 sec
2	21:16:18	CREATE DATABASE library	1 row(s) affected	0.000 sec
3	21:16:37	USE library	0 row(s) affected	0.000 sec
4	21:16:43	CREATE TABLE Branch (Branch_no INT PRIMARY KEY, Manager_Id INT, Branch_address VARCHAR...	0 row(s) affected	0.031 sec
5	21:16:51	CREATE TABLE Employee (Emp_Id INT PRIMARY KEY, Emp_name VARCHAR(100), Position VARCHA...	0 row(s) affected	0.032 sec
6	21:16:58	CREATE TABLE Books (ISBN VARCHAR(20) PRIMARY KEY, Book_title VARCHAR(255), Category VA...	0 row(s) affected	0.031 sec

2.



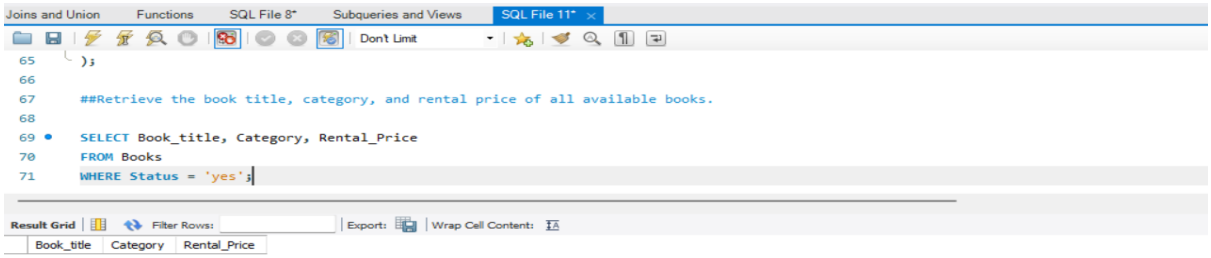
```sql
-- Create Customer table
CREATE TABLE Customer (
    Customer_Id INT PRIMARY KEY,
    Customer_name VARCHAR(100),
    Customer_address VARCHAR(255),
    Reg_date DATE
);

-- Create IssueStatus table
CREATE TABLE IssueStatus (
    Issue_Id INT PRIMARY KEY,
    Issued_cust INT,
    Issued_book_name VARCHAR(255),
    Issue_date DATE,
    ISBN_book VARCHAR(20),
    FOREIGN KEY (Issued_cust) REFERENCES Customer(Customer_Id),
    FOREIGN KEY (ISBN_book) REFERENCES Books(ISBN)
);

-- Create ReturnStatus table
CREATE TABLE ReturnStatus (
```

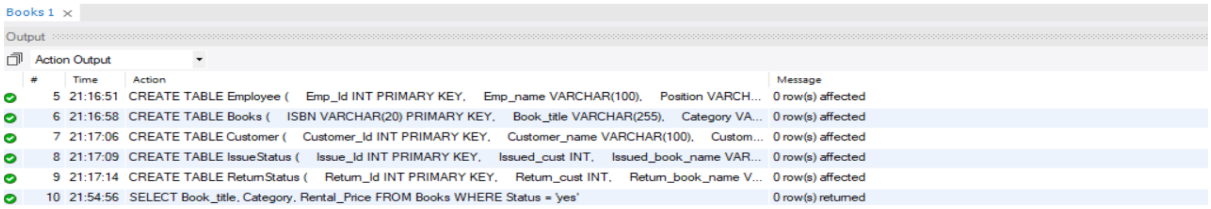
Output

Action Output

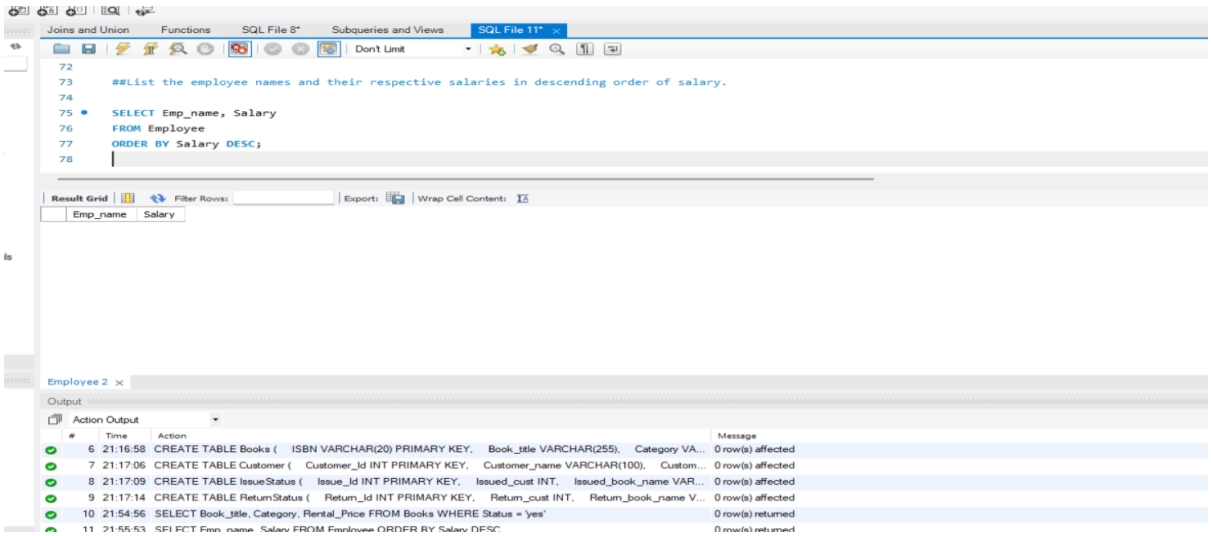
#	Time	Action	Message
4	21:16:43	CREATE TABLE Branch (Branch_no INT PRIMARY KEY, Manager_Id INT, Branch_address VARCHAR...	0 row(s) affected
5	21:16:51	CREATE TABLE Employee (Emp_Id INT PRIMARY KEY, Emp_name VARCHAR(100), Position VARCHA...	0 row(s) affected
6	21:16:58	CREATE TABLE Books (ISBN VARCHAR(20) PRIMARY KEY, Book_title VARCHAR(255), Category VA...	0 row(s) affected
7	21:17:06	CREATE TABLE Customer (Customer_Id INT PRIMARY KEY, Customer_name VARCHAR(100), Custom...	0 row(s) affected
8	21:17:09	CREATE TABLE IssueStatus (Issue_Id INT PRIMARY KEY, Issued_cust INT, Issued_book_name VARC...	0 row(s) affected
9	21:17:14	CREATE TABLE ReturnStatus (Return_Id INT PRIMARY KEY, Return_cust INT, Return_book_name V...	0 row(s) affected

3.

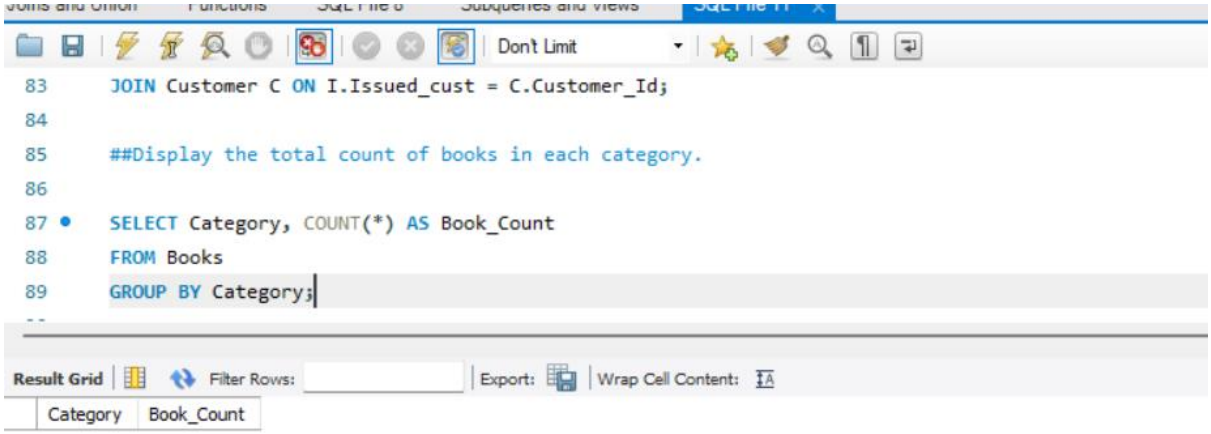

Joins and Union
Functions
SQL File 8*
Subqueries and Views
SQL File 11*
Don't Limit
);
##Retrieve the book title, category, and rental price of all available books.
SELECT Book_title, Category, Rental_Price
FROM Books
WHERE Status = 'yes';
Result Grid
Filter Rows:
Export:
Wrap Cell Content:
Book_title
Category
Rental_Price

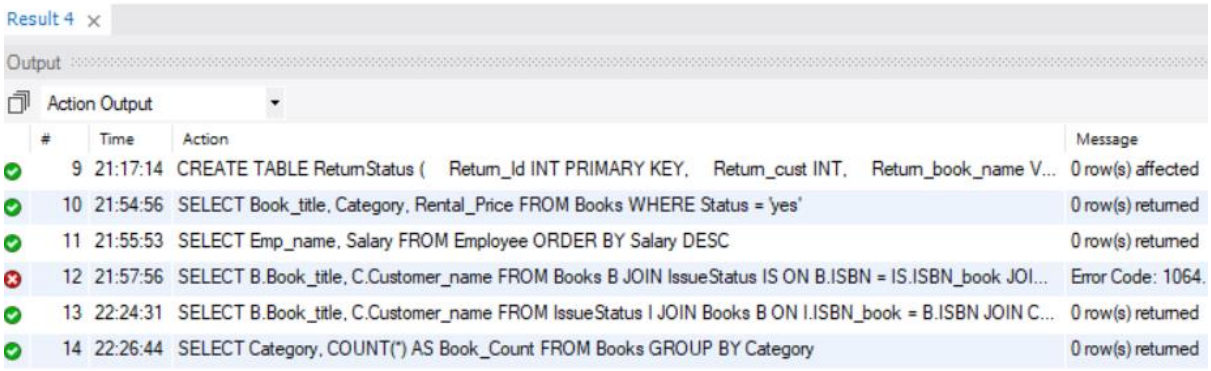

Books 1
Output
Action Output
Time Action Message
5 21:16:51 CREATE TABLE Employee (Emp_Id INT PRIMARY KEY, Emp_name VARCHAR(100), Position VARCH... 0 row(s) affected
6 21:16:58 CREATE TABLE Books (ISBN VARCHAR(20) PRIMARY KEY, Book_title VARCHAR(255), Category VA... 0 row(s) affected
7 21:17:06 CREATE TABLE Customer (Customer_Id INT PRIMARY KEY, Customer_name VARCHAR(100), Custom... 0 row(s) affected
8 21:17:09 CREATE TABLE IssueStatus (Issue_Id INT PRIMARY KEY, Issued_cust INT, Issued_book_name VAR... 0 row(s) affected
9 21:17:14 CREATE TABLE ReturnStatus (Return_Id INT PRIMARY KEY, Return_cust INT, Return_book_name V... 0 row(s) affected
10 21:54:56 SELECT Book_title, Category, Rental_Price FROM Books WHERE Status = 'yes' 0 row(s) returned

4.


Joins and Union
Functions
SQL File 8*
Subqueries and Views
SQL File 11*
Don't Limit
##List the employee names and their respective salaries in descending order of salary.
SELECT Emp_name, Salary
FROM Employee
ORDER BY Salary DESC;
Result Grid
Filter Rows:
Export:
Wrap Cell Content:
Emp_name
Salary
Employee 2
Output
Action Output
Time Action Message
6 21:16:58 CREATE TABLE Books (ISBN VARCHAR(20) PRIMARY KEY, Book_title VARCHAR(255), Category VA... 0 row(s) affected
7 21:17:06 CREATE TABLE Customer (Customer_Id INT PRIMARY KEY, Customer_name VARCHAR(100), Custom... 0 row(s) affected
8 21:17:09 CREATE TABLE IssueStatus (Issue_Id INT PRIMARY KEY, Issued_cust INT, Issued_book_name VAR... 0 row(s) affected
9 21:17:14 CREATE TABLE ReturnStatus (Return_Id INT PRIMARY KEY, Return_cust INT, Return_book_name V... 0 row(s) affected
10 21:54:56 SELECT Book_title, Category, Rental_Price FROM Books WHERE Status = 'yes' 0 row(s) returned

5.


Don't Limit
JOIN Customer C ON I.Issued_cust = C.Customer_Id;
##Display the total count of books in each category.
SELECT Category, COUNT(*) AS Book_Count
FROM Books
GROUP BY Category;
Result Grid
Filter Rows:
Export:
Wrap Cell Content:
Category
Book_Count


Result 4
Output
Action Output
Time Action Message
9 21:17:14 CREATE TABLE ReturnStatus (Return_Id INT PRIMARY KEY, Return_cust INT, Return_book_name V... 0 row(s) affected
10 21:54:56 SELECT Book_title, Category, Rental_Price FROM Books WHERE Status = 'yes' 0 row(s) returned
11 21:55:53 SELECT Emp_name, Salary FROM Employee ORDER BY Salary DESC 0 row(s) returned
12 21:57:56 SELECT B.Book_title, C.Customer_name FROM Books B JOIN IssueStatus IS ON B.ISBN = IS.ISBN_book JOI... Error Code: 1064.
13 22:24:31 SELECT B.Book_title, C.Customer_name FROM IssueStatus I JOIN Books B ON I.ISBN_book = B.ISBN JOIN C... 0 row(s) returned
14 22:26:44 SELECT Category, COUNT(*) AS Book_Count FROM Books GROUP BY Category 0 row(s) returned

6.

```
FROM Customer C
LEFT JOIN IssueStatus I ON C.Customer_Id = I.Issued_cust
WHERE C.Reg_date < '2022-01-01' AND I.Issue_Id IS NULL;
##Display the branch numbers and the total count of employees in each branch.
SELECT Branch_no, COUNT(*) AS Employee_Count
FROM Employee
GROUP BY Branch_no;
```

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

Branch_no	Employee_Count

Result 7

Output

Action Output

#	Time	Action	Message
12	21:57:56	SELECT B.Book_title, C.Customer_name FROM Books B JOIN IssueStatus IS ON B.ISBN = IS.ISBN_book JOI...	Error Code: 1064. You have an error in your SQL syntax; check
13	22:24:31	SELECT B.Book_title, C.Customer_name FROM IssueStatus I JOIN Books B ON I.ISBN_book = B.ISBN JOIN C...	0 row(s) returned
14	22:26:44	SELECT Category, COUNT(*) AS Book_Count FROM Books GROUP BY Category	0 row(s) returned
15	22:28:10	SELECT Emp_name, Position FROM Employee WHERE Salary > 50000	0 row(s) returned
16	22:31:46	SELECT Customer_name FROM Customer C LEFT JOIN IssueStatus I ON C.Customer_Id = I.Issued_cust WHE...	0 row(s) returned
17	22:34:33	SELECT Branch_no, COUNT(*) AS Employee_Count FROM Employee GROUP BY Branch_no	0 row(s) returned

7.

```
106     FROM IssueStatus I
107     JOIN Customer C ON I.Issued_cust = C.Customer_Id
108     WHERE I.Issue_date BETWEEN '2023-06-01' AND '2023-06-30';
109     ##Retrieve book_title from the book table containing the word 'history'
110     SELECT Book_title
111     FROM Books
112     WHERE Book_title LIKE '%history%';
```

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

Book_title

Books 9

Output

Action Output

#	Time	Action	Message
14	22:26:44	SELECT Category, COUNT(*) AS Book_Count FROM Books GROUP BY Category	0 row(s) returned
15	22:28:10	SELECT Emp_name, Position FROM Employee WHERE Salary > 50000	0 row(s) returned
16	22:31:46	SELECT Customer_name FROM Customer C LEFT JOIN IssueStatus I ON C.Customer_Id = I.Issued_cust WHE...	0 row(s) returned
17	22:34:33	SELECT Branch_no, COUNT(*) AS Employee_Count FROM Employee GROUP BY Branch_no	0 row(s) returned
18	22:40:50	SELECT DISTINCT C.Customer_name FROM IssueStatus I JOIN Customer C ON I.Issued_cust = C.Customer_I...	0 row(s) returned
19	22:41:29	SELECT Book_title FROM Books WHERE Book_title LIKE '%history%'	0 row(s) returned

8.

oins and Union | Functions | SQL File 8* | Subqueries and Views | SQL File 11*

Don't Limit

```
111     FROM Books
112     WHERE Book_title LIKE '%history%';
113     ##Retrieve the branch numbers along with the count of employees for branches having more than 5 employees.
114 •   SELECT Branch_no, COUNT(*) AS Employee_Count
115     FROM Employee
116     GROUP BY Branch_no
117     HAVING COUNT(*) > 5;
```

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

Branch_no	Employee_Count

tesult 10

Output

Action Output

#	Time	Action	Message
15	22:28:10	SELECT Emp_name, Position FROM Employee WHERE Salary > 50000	0 row(s) returned
16	22:31:46	SELECT Customer_name FROM Customer C LEFT JOIN IssueStatus I ON C.Customer_Id = I.Issued_cust WHE...	0 row(s) returned
17	22:34:33	SELECT Branch_no, COUNT(*) AS Employee_Count FROM Employee GROUP BY Branch_no	0 row(s) returned
18	22:40:50	SELECT DISTINCT C.Customer_name FROM IssueStatus I JOIN Customer C ON I.Issued_cust = C.Customer_I...	0 row(s) returned
19	22:41:29	SELECT Book_title FROM Books WHERE Book_title LIKE '%history%'	0 row(s) returned
20	22:44:50	SELECT Branch_no, COUNT(*) AS Employee_Count FROM Employee GROUP BY Branch_no HAVING COUN...	0 row(s) returned

9.

```
116    GROUP BY Branch_no
117    HAVING COUNT(*) > 5;
118    ##Retrieve the names of employees who manage branches and their respective branch addresses.
119    SELECT E.Emp_name, B.Branch_address
120    FROM Employee E
121    JOIN Branch B ON E.Branch_no = B.Branch_no
122    WHERE E.Position = 'Manager';
```

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

Emp_name	Branch_address

Result 11

Output

Action Output

#	Time	Action	Message
16	22:31:46	SELECT Customer_name FROM Customer C LEFT JOIN IssueStatus I ON C.Customer_Id = I.Issued_cust WHE...	0 row(s) returned
17	22:34:33	SELECT Branch_no, COUNT(*) AS Employee_Count FROM Employee GROUP BY Branch_no	0 row(s) returned
18	22:40:50	SELECT DISTINCT C.Customer_name FROM IssueStatus I JOIN Customer C ON I.Issued_cust = C.Customer_I...	0 row(s) returned
19	22:41:29	SELECT Book_title FROM Books WHERE Book_title LIKE '%history%'	0 row(s) returned
20	22:44:50	SELECT Branch_no, COUNT(*) AS Employee_Count FROM Employee GROUP BY Branch_no HAVING COUN...	0 row(s) returned
21	22:47:48	SELECT E.Emp_name, B.Branch_address FROM Employee E JOIN Branch B ON E.Branch_no = B.Branch_no ...	0 row(s) returned