

MySQL Project

Topic : Library Management System

Building a project based on the library management system. It keeps track of all information about books in the library, including their cost, status, and the total number of books available in the library.

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DSML - D19

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Overview

Create a database named library and following TABLES in the database:

1. Branch
2. Employee
3. Books
4. Customer
5. IssueStatus
5. ReturnStatus

Attributes for the tables:

1. Branch

Branch_no - Set as PRIMARY KEY

Manager_Id

Branch_address

Contact_no

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

3. Books

ISBN - Set as PRIMARY KEY

Book_title

Category

Rental_Price

Status [Give yes if book is available and no if it is not available]

Author

Publisher

4. Customer

Customer_Id - Set as PRIMARY KEY

Customer_name

Customer_address

Reg_date

5. IssueStatus

Issue_Id - Set as PRIMARY KEY

Issued_cust is 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

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

Goals

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

- 
- 1. Retrieve the book title, category, and rental price of all available books.**
 - 2. List the employee names and their respective salaries in descending order of salary.**
 - 3. Retrieve the book titles and the corresponding customers who have issued those books.**
 - 4. Display the total count of books in each category.**
 - 5. Retrieve the employee names and their positions for the employees whose salaries are above Rs.50,000.**
 - 6. List the customer names who registered before 2022-01-01 and have not issued any books yet.**
 - 7. Display the branch numbers and the total count of employees in each branch.**
 - 8. Display the names of customers who have issued books in the month of June 2023.**
 - 9. Retrieve book_title from book table containing history.**
 - 10. Retrieve the branch numbers along with the count of employees for branches having more than 5 employees**

Displaying all the tables

Branch Table

```

4 Branch_no int primary key,
5 Manager_Id int,
6 Branch_address varchar(50),
7 Contact_no varchar(15));
8 • insert into Branch(Branch_no,Manager_Id,Branch_address,Contact_no)
9 values(1,1001,'123 Main Street','555-5678'),
10 (2,1002,'456 Oak Avenue','555-1234'),
11 (3,1003,'789 Maple Lane','555-9101');
12 • select * from Branch;

```

Branch_no	Manager_Id	Branch_address	Contact_no
1	1001	123 Main Street	555-5678
2	1002	456 Oak Avenue	555-1234
3	1003	789 Maple Lane	555-9101

Employee Table

```

13
14 • create table Employee(
15   Emp_id int primary key,
16   Emp_name varchar(30),
17   Position varchar(35),
18   Salary float,
19   Branch_no int,
20   foreign key (Branch_no)
21   references Branch(Branch_no));
22
23 • insert into Employee(Emp_id,Emp_name,Position,Salary,Branch_no)
24   values(101,'John Doe','Librarian',60000,1),
25   (102,'Jane Smith','Assistant Librarian',55000,1),
26   (103,'Robert Johnson','Bookkeeper',48000,1),
27   (104,'Samantha Rodriguez','Cataloging Specialist',58000,1),
28   (105,'Michelle Nguyen','Archivist',50000,1),
29   (106,'Kimberly Scott','Collection Development Specialist',58000,1),
30   (1001,'Emily Davis','Manager',65000,1),
31   (201,'Michael White','Librarian',60000,2),
32   (202,'Sarah Brown','Assistant Librarian',55000,2),
33   (203,'Daniel Lee','Bookkeeper',48000,2),
34   (204,'Logan Price','Archivist',50000,2),
35   (205,'Madison Hill','Collection Development Specialist',58000,2),
36   (1007,'Christopher Evans','Manager',65000,2)

```

The screenshot shows the MySQL Workbench interface with the 'Employee' table selected in the 'mysql_project_sample' database. The table contains 18 rows of employee information, including their ID, name, position, salary, and branch number.

Emp_id	Emp_name	Position	Salary	Branch_no
101	John Doe	Librarian	60000	1
102	Jane Smith	Assistant Librarian	55000	1
103	Robert Johnson	Bookkeeper	48000	1
104	Samantha Rodriguez	Cataloging Specialist	58000	1
105	Michelle Nguyen	Archivist	50000	1
106	Kimberly Scott	Collection Development Specialist	58000	1
201	Michael White	Librarian	60000	2
202	Sarah Brown	Assistant Librarian	55000	2
203	Daniel Lee	Bookkeeper	48000	2
204	Logan Price	Archivist	50000	2
205	Madison Hill	Collection Development Specialist	58000	2
301	Amanda Miller	Librarian	60000	3
302	Benjamin Hall	Assistant Librarian	55000	3
303	Sophia Allen	Bookkeeper	48000	3
1001	Emily Davis	Manager	65000	1
1002	Christopher Evans	Manager	65000	2
1003	Joseph Garcia	Manager	65000	3
*	HULL	HULL	HULL	HULL

Books Table

The screenshot shows the MySQL Workbench interface with the 'Books' table selected in the 'mysql_project_sample' database. The table is defined with columns: ISBN (primary key), Book_title, Category, Rental_Price, Status, Author, and Publisher. Data is inserted into the table, including titles like 'Introduction to SQL', 'The Great Gatsby', and 'Head First Java'.

```

43 • create table Books(
44     ISBN varchar(13) primary key,
45     Book_title varchar(80),
46     Category varchar(30),
47     Rental_Price float,
48     Status varchar(4),
49     Author varchar(30),
50     Publisher varchar(50));
51
52 • insert into Books(ISBN,Book_title,Category,Rental_Price,Status,Author,Publisher)
53     values('9780135166307','Introduction to SQL','Programming',10.99,'Yes','John Smith','Tech Publishing'),
54     ('9781451673319','The Great Gatsby','Fiction',8.99,'No','F.Scott Fitzgerald','Classic Books'),
55     ('9780596007126','Head First Java','Programming',15.99,'No','Kathy Sierra','Tech Publishing'),
56     ('9780061120084','To Kill a Mockingbird','Fiction',9.99,'Yes','Harper Lee','Harper Collins'),
57     ('9781449331818','Learning Python','Programming',14.99,'No','Mark Lutz','Tech Publishing'),
58     ('9780062315007','The Hunger Games','Young Adult',12.99,'No','Suzanne Collins','Scholastic'),
59     ('9780262530875','Artificial Intelligence','Technology',18.99,'Yes','Stuart Russel','MIT Press'),
60     ('9780743273565','The Catcher in the Rye','Fiction',7.99,'Yes','J.D.Salinger','Little Brown'),
61     ('9780596100990','Clean Code','Programming',20.99,'Yes','Robert C Martin','Prentice Hall'),
62     ('9780307277195','World History','History',16.99,'No','Roger B Beck','McDougal Littell'),
63     ('9780345538376','The Night Circus','Fiction',12.99,'Yes','Erin Morgenstern','Doubleday'),
64     ('9780062457738','Educated: A Memoir','Biography',14.99,'No','Tara Westover','Random House'),
65     ('9781984822185','Where the Crawdads Sing','Mystery',11.99,'Yes','Delia Owens','G.P. Putnam's Sons'));
66 • select * from Books;

```

The screenshot shows the MySQL Workbench interface with the 'Books' table selected in the Result Grid. The table has columns: ISBN, Book_title, Category, Rental_Price, Status, Author, and Publisher. The data grid displays 20 rows of book information, including titles like 'To Kill a Mockingbird', 'The Hunger Games', and 'The Great Gatsby', along with their respective details.

ISBN	Book_title	Category	Rental_Price	Status	Author	Publisher
9780061120084	To Kill a Mockingbird	Fiction	9.99	Yes	Harper Lee	Harper Collins
9780062315007	The Hunger Games	Young Adult	12.99	No	Suzanne Collins	Scholastic
9780062457738	Educated: A Memoir	Biography	14.99	No	Tara Westover	Random House
9780135166307	Introduction to SQL	Programming	10.99	Yes	John Smith	Tech Publishing
9780262530875	Artificial Intelligence	Technology	18.99	Yes	Stuart Russel	MIT Press
9780307277195	World History	History	16.99	No	Roger B Beck	McDougal Littell
9780345538376	The Night Circus	Fiction	12.99	Yes	Erin Morgenstern	Doubleday
9780062457738	'Educated: A Memoir'	Biography	14.99	No	Tara Westover	Random House
9781984822185	'Where the Crawdads Sing'	Mystery	11.99	Yes	Delia Owens	G.P. Putnam's Sons
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Customer Table

The screenshot shows the MySQL Workbench interface with the 'Customer' table being created and populated. The SQL code in the editor window includes the creation of the 'Customer' table with columns Customer_Id, Customer_name, Customer_address, and Reg_date, followed by an insert statement adding 12 customer records with details like name, address, and registration date.

```

64 ('9780062457738', 'Educated: A Memoir', 'Biography', 14.99, 'No', 'Tara Westover', 'Random House'),
65 ('9781984822185', "'Where the Crawdads Sing'", 'Mystery', 11.99, 'Yes', 'Delia Owens', "G.P. Putnam's Sons");
66 • select * from Books;

68 • create table Customer(
69   Customer_Id int primary key,
70   Customer_name varchar(40),
71   Customer_address varchar(70),
72   Reg_date date);
73
74 • insert into Customer(Customer_Id,Customer_name,Customer_address,Reg_date)
75 values(501, 'Alice Johnson', '456 Birch Street', '2020-06-15'),
76 (502, 'Bob Anderson', '789 Oak Avenue', '2022-02-20'),
77 (503, 'Catherine Davis', '123 Maple Lane', '2021-09-10'),
78 (504, 'David Smith', '890 Elm Road', '2020-11-25'),
79 (505, 'Eva Wilson', '234 Pine Drive', '2021-06-28'),
80 (506, 'Frank Thompson', '567 Cedar Avenue', '2022-01-05'),
81 (507, 'Grace Evans', '789 Pine Lane', '2021-08-12'),
82 (508, 'Henry Miller', '321 Elm Drive', '2022-06-25'),
83 (509, 'Isabel Brown', '654 Oak Road', '2020-12-11'),
84 (510, 'Jack Taylor', '987 Birch Avenue', '2022-06-10'),
85 (511, 'Karen Martinez', '123 Cedar Drive', '2021-07-22'),
86 (512, 'Leo White', '456 Maple Road', '2022-02-28');
87 • select * from Customer;

```

The screenshot shows the MySQL Workbench interface with a query editor window titled "SQL File 4*". The code in the editor is:

```

81     (507, 'Grace Evans', '789 Pine Lane', '2021-08-12'),
82     (508, 'Henry Miller', '321 Elm Drive', '2022-06-25'),
83     (509, 'Isabel Brown', '654 Oak Road', '2020-12-11'),
84     (510, 'Jack Taylor', '987 Birch Avenue', '2022-06-10'),
85     (511, 'Karen Martinez', '123 Cedar Drive', '2021-07-22'),
86     (512, 'Leo White', '456 Maple Road', '2022-02-28');
87 • select * from Customer;

```

The Result Grid shows the following data:

Customer_Id	Customer_name	Customer_address	Reg_date
501	Alice Johnson	456 Birch Street	2020-06-15
502	Bob Anderson	789 Oak Avenue	2022-02-20
503	Catherine Davis	123 Maple Lane	2021-09-10
504	David Smith	890 Elm Road	2020-11-25
505	Eva Wilson	234 Pine Drive	2021-06-28
506	Frank Thompson	567 Cedar Avenue	2022-01-05
507	Grace Evans	789 Pine Lane	2021-08-12
508	Henry Miller	321 Elm Drive	2022-06-25
509	Isabel Brown	654 Oak Road	2020-12-11
510	Jack Taylor	987 Birch Avenue	2022-06-10
511	Karen Martinez	123 Cedar Drive	2021-07-22
512	Leo White	456 Maple Road	2022-02-28
*	NULL	NULL	NULL

IssueStatus Table

The screenshot shows the MySQL Workbench interface with a query editor window titled "SQL File 4*". The code in the editor is:

```

84     (510, 'Jack Taylor', '987 Birch Avenue', '2022-06-10'),
85     (511, 'Karen Martinez', '123 Cedar Drive', '2021-07-22'),
86     (512, 'Leo White', '456 Maple Road', '2022-02-28');
87 • select * from Customer;
88
89 • create table IssueStatus(
90     Issue_Id int primary key,
91     Issued_cust int,
92     Issued_book_name varchar(80),
93     Issue_date date,
94     Isbn_book varchar(13),
95     foreign key (Issued_cust)
96     references customer(Customer_Id),
97     foreign key (Isbn_book)
98     references books(ISBN));
99
100 • insert into IssueStatus(Issue_id,Issued_cust,Issued_book_name,Issue_date,Isbn_book)
101 values(10010,502,'Head First Java','2023-06-25','9780596007126'),
102 (10011,507,'The Hunger Games','2021-08-18','9780062315007'),
103 (10012,512,'Learning Python','2022-03-11','9781449331818'),
104 (10013,510,'The Great Gatsby','2022-07-14','9781451673319'),
105 (10014,508,'Educated: A Memoir','2023-06-20','9780062457738'),
106 (10015,506,'World History','2022-02-17','9780307277195');
107 • select * from IssueStatus;

```

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

mysql_project_sample MySQL Project* SQL File 4*

```

99
100 • insert into IssueStatus(Issue_id,Issued_cust,Issued_book_name,Issue_date,Isbn_book)
101 values(10010,502,'Head First Java','2023-06-25','9780596007126'),
102 (10011,507,'The Hunger Games','2021-08-18','9780062315007'),
103 (10012,512,'Learning Python','2022-03-11','9781449331818'),
104 (10013,510,'The Great Gatsby','2022-07-14','9781451673319'),
105 (10014,508,'Educated: A Memoir','2023-06-20','9780062457738'),
106 (10015,506,'World History','2022-02-17','9780307277195');
107 • select * from IssueStatus;

```

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

Issue_Id	Issued_cust	Issued_book_name	Issue_date	Isbn_book
10010	502	Head First Java	2023-06-25	9780596007126
10011	507	The Hunger Games	2021-08-18	9780062315007
10012	512	Learning Python	2022-03-11	9781449331818
10013	510	The Great Gatsby	2022-07-14	9781451673319
10014	508	Educated: A Memoir	2023-06-20	9780062457738
10015	506	World History	2022-02-17	9780307277195
• NULL	NULL	NULL	NULL	NULL

No object selected

Object Info Session IssueStatus 11 x

10:53 14-03-2024

ReturnStatus Table

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

mysql_project_sample MySQL Project* SQL File 4*

```

108
109 • create table ReturnStatus(
110   Return_Id int primary key,
111   Return_cust varchar(40),
112   Return_book_name varchar(80),
113   Return_date date,
114   Isbn_book2 varchar(13),
115   foreign key (Isbn_book2)
116   references Books(ISBN));
117
118 • insert into ReturnStatus(Return_id,Return_cust,Return_book_name,Return_date,Isbn_book2)
119 values(20010,502,'Head First Java','2023-08-12','9780596007126'),
120 (20011,512,'Learning Python','2022-04-28','9781449331818'),
121 (20012,508,'Educated: A Memoir','2023-07-28','9780062457738'),
122 (20013,507,'The Hunger Games','2021-09-25','9780062315007');
123 • select * from ReturnStatus;

```

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

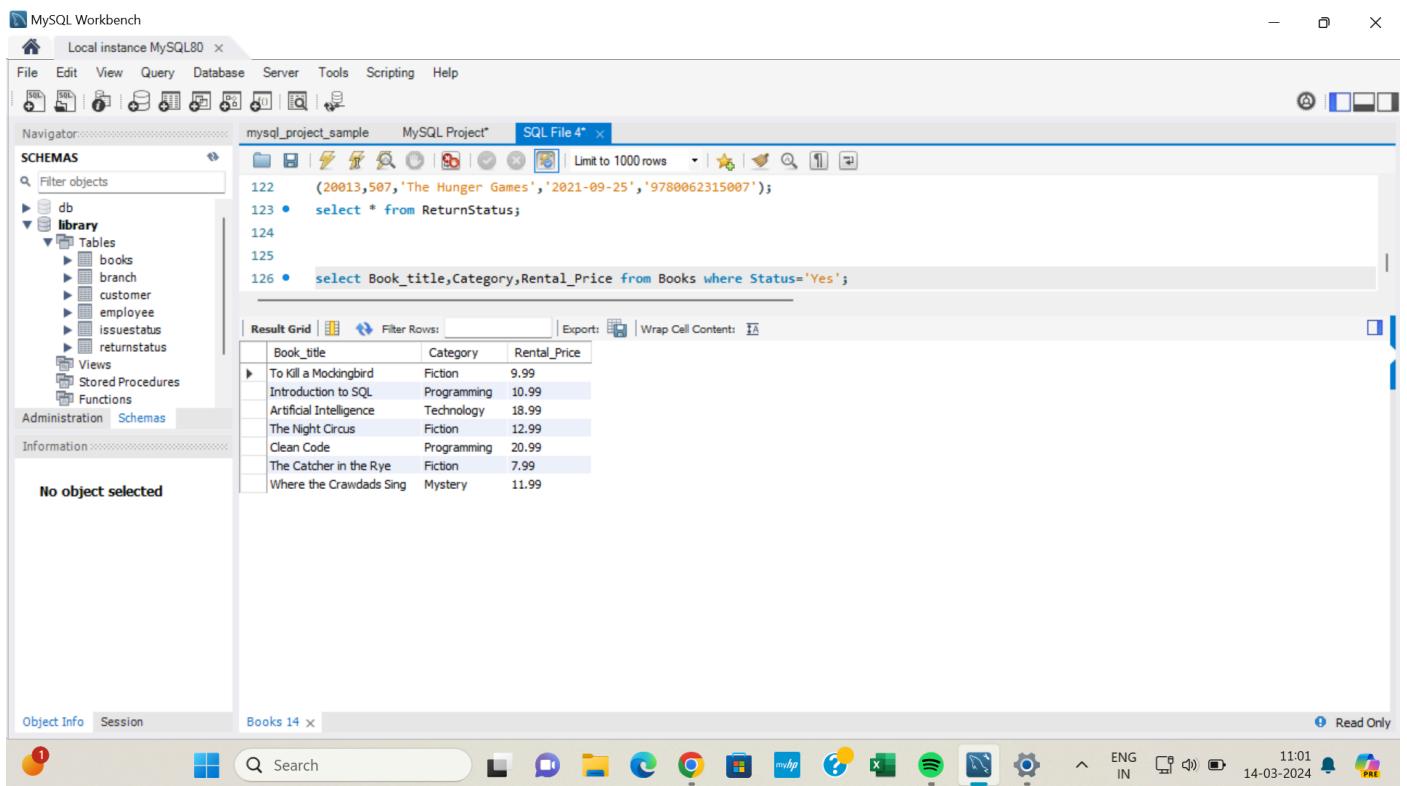
Return_Id	Return_cust	Return_book_name	Return_date	Isbn_book2
20010	502	Head First Java	2023-08-12	9780596007126
20011	512	Learning Python	2022-04-28	9781449331818
20012	508	Educated: A Memoir	2023-07-28	9780062457738
20013	507	The Hunger Games	2021-09-25	9780062315007
• NULL	NULL	NULL	NULL	NULL

No object selected

Object Info Session ReturnStatus 13 x

10:56 14-03-2024

1. Retrieving the Book Title, Category, and Rental Price of all available books.



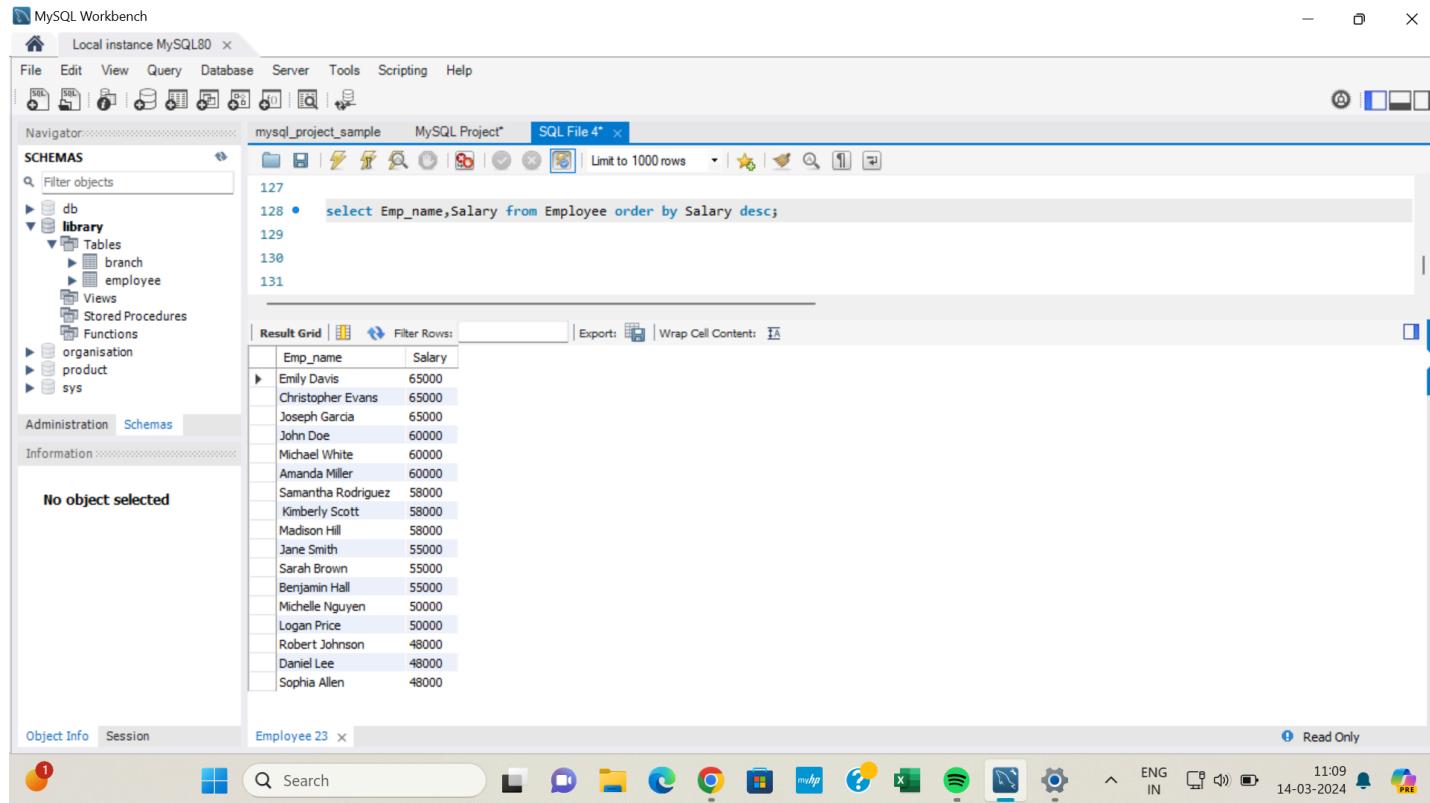
The screenshot shows the MySQL Workbench interface. In the center, there is a SQL editor tab titled "SQL File 4*" containing the following code:

```
122     (20013,507,'The Hunger Games','2021-09-25','9780062315007');
123 • select * from ReturnStatus;
124
125
126 • select Book_title,Category,Rental_Price from Books where Status='Yes';
```

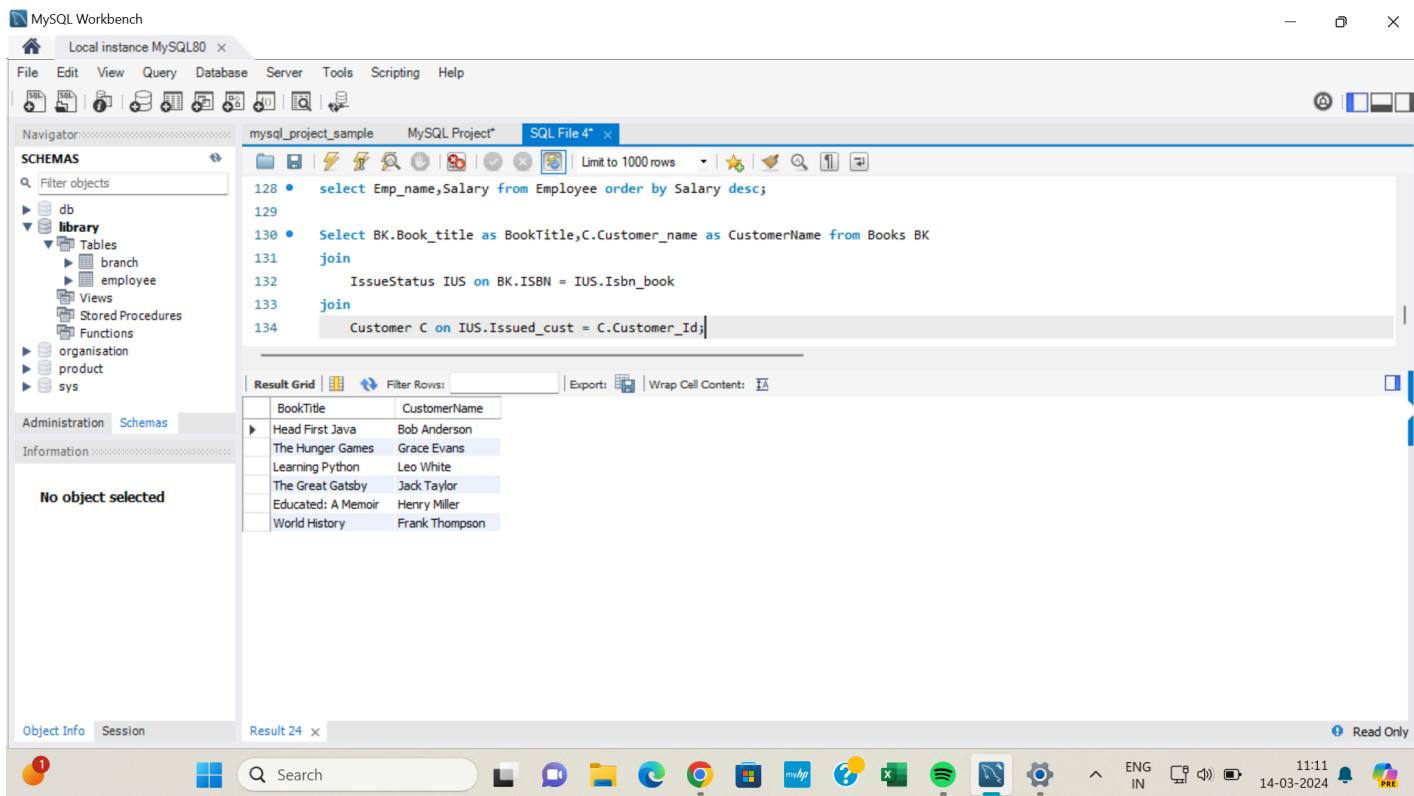
Below the SQL editor is a "Result Grid" table with the following data:

Book_title	Category	Rental_Price
To Kill a Mockingbird	Fiction	9.99
Introduction to SQL	Programming	10.99
Artificial Intelligence	Technology	18.99
The Night Circus	Fiction	12.99
Clean Code	Programming	20.99
The Catcher in the Rye	Fiction	7.99
Where the Crawdads Sing	Mystery	11.99

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



3. Retrieving the Book Titles and the Corresponding Customers who have issued those books.



MySQL Workbench - Local instance MySQL80

SQL File 4*

```

128 •  select Emp_name,Salary from Employee order by Salary desc;
129
130 •  Select BK.Book_title as BookTitle,C.Customer_name as CustomerName from Books BK
131   join
132     IssueStatus IUS on BK.ISBN = IUS.Isbn_book
133   join
134     Customer C on IUS.Issued_cust = C.Customer_Id;

```

Result Grid

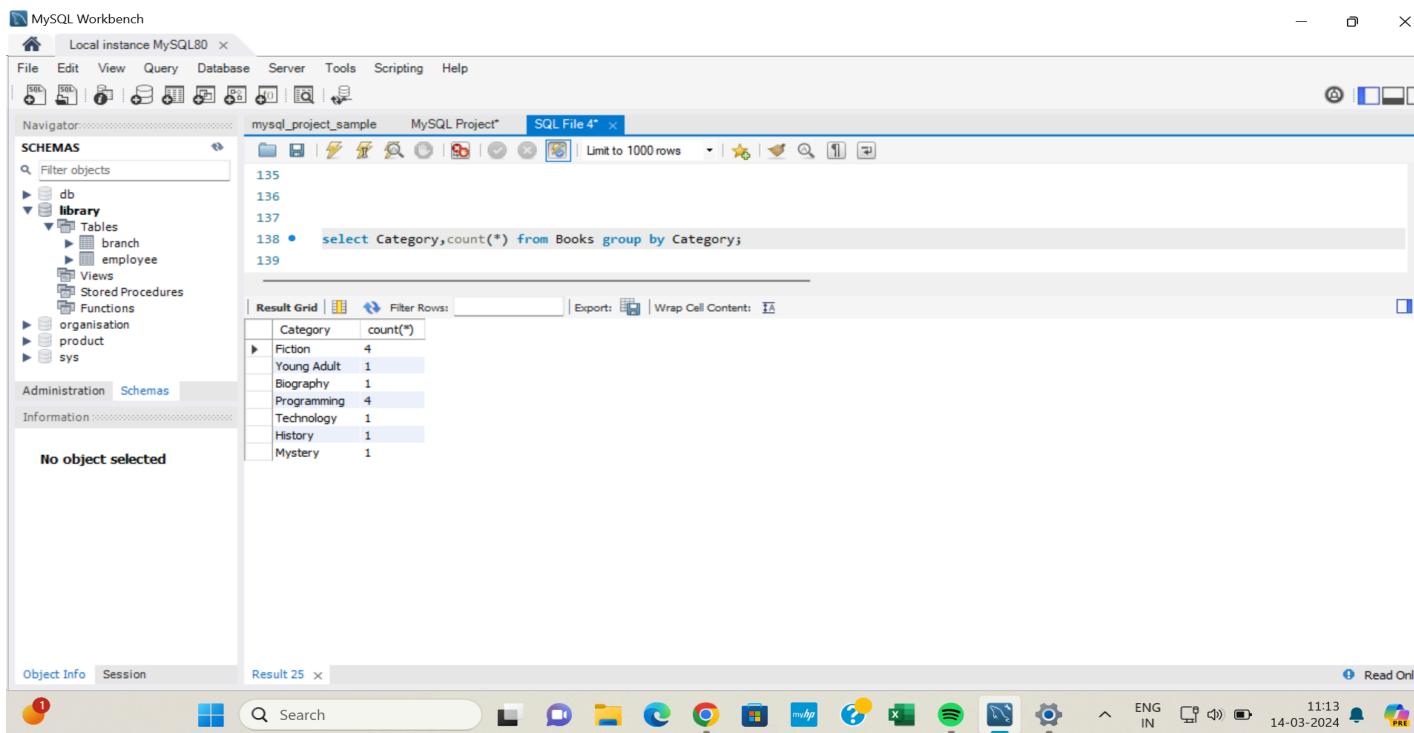
BookTitle	CustomerName
Head First Java	Bob Anderson
The Hunger Games	Grace Evans
Learning Python	Leo White
The Great Gatsby	Jack Taylor
Educated: A Memoir	Henry Miller
World History	Frank Thompson

No object selected

Object Info Session Result 24 x

Read Only

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



MySQL Workbench - Local instance MySQL80

SQL File 4*

```

135
136
137
138 •  select Category,count(*) from Books group by Category;
139

```

Result Grid

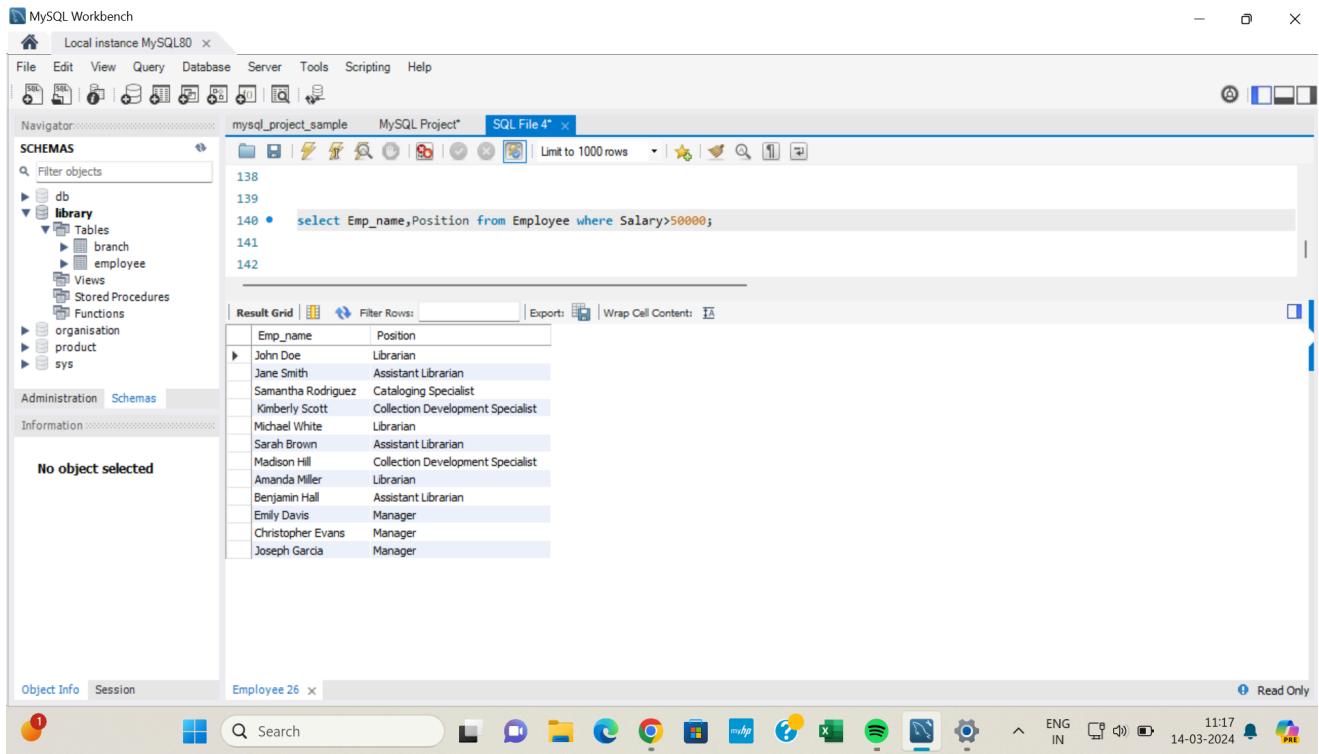
Category	count(*)
Fiction	4
Young Adult	1
Biography	1
Programming	4
Technology	1
History	1
Mystery	1

No object selected

Object Info Session Result 25 x

Read Only

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



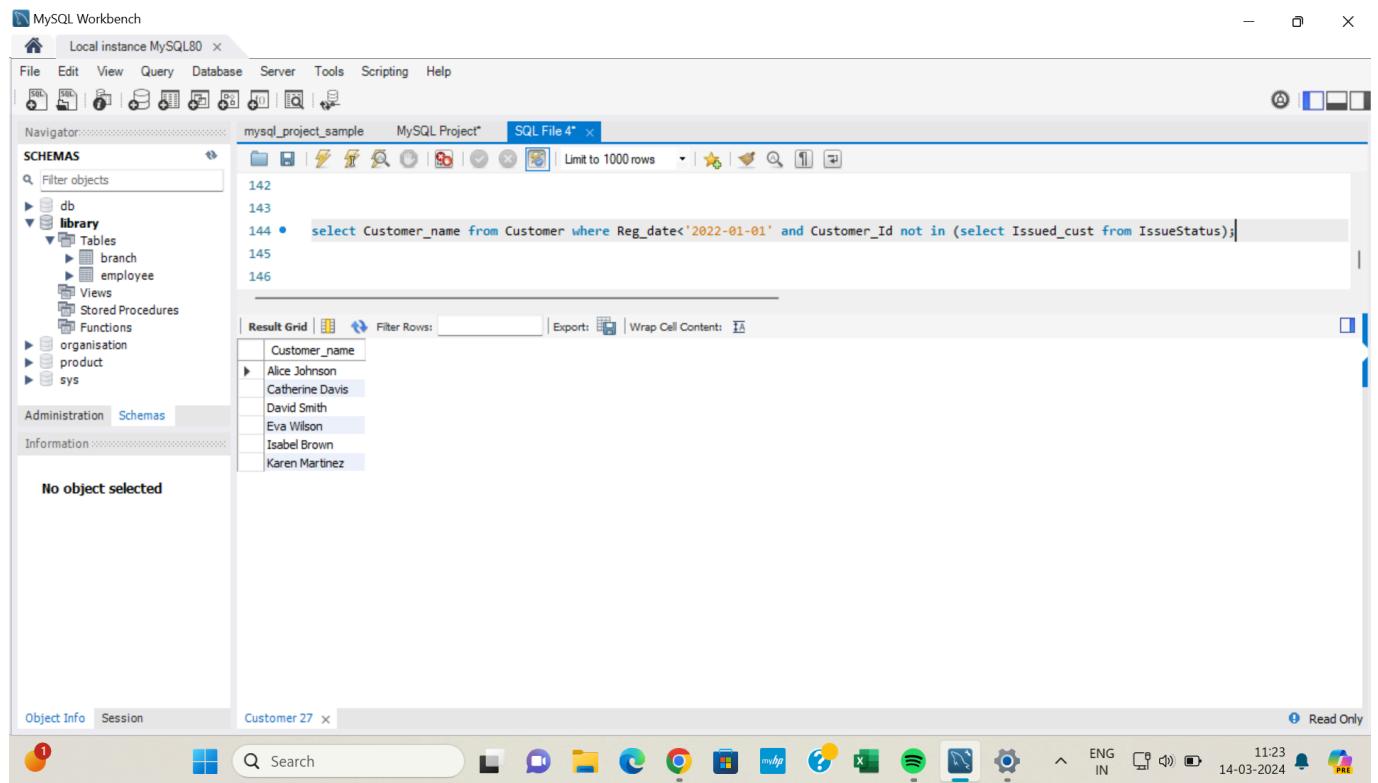
The screenshot shows the MySQL Workbench interface. In the center, there is a SQL editor tab titled "SQL File 4*" containing the following query:

```
138
139
140 • select Emp_name,Position from Employee where Salary>50000;
141
142
```

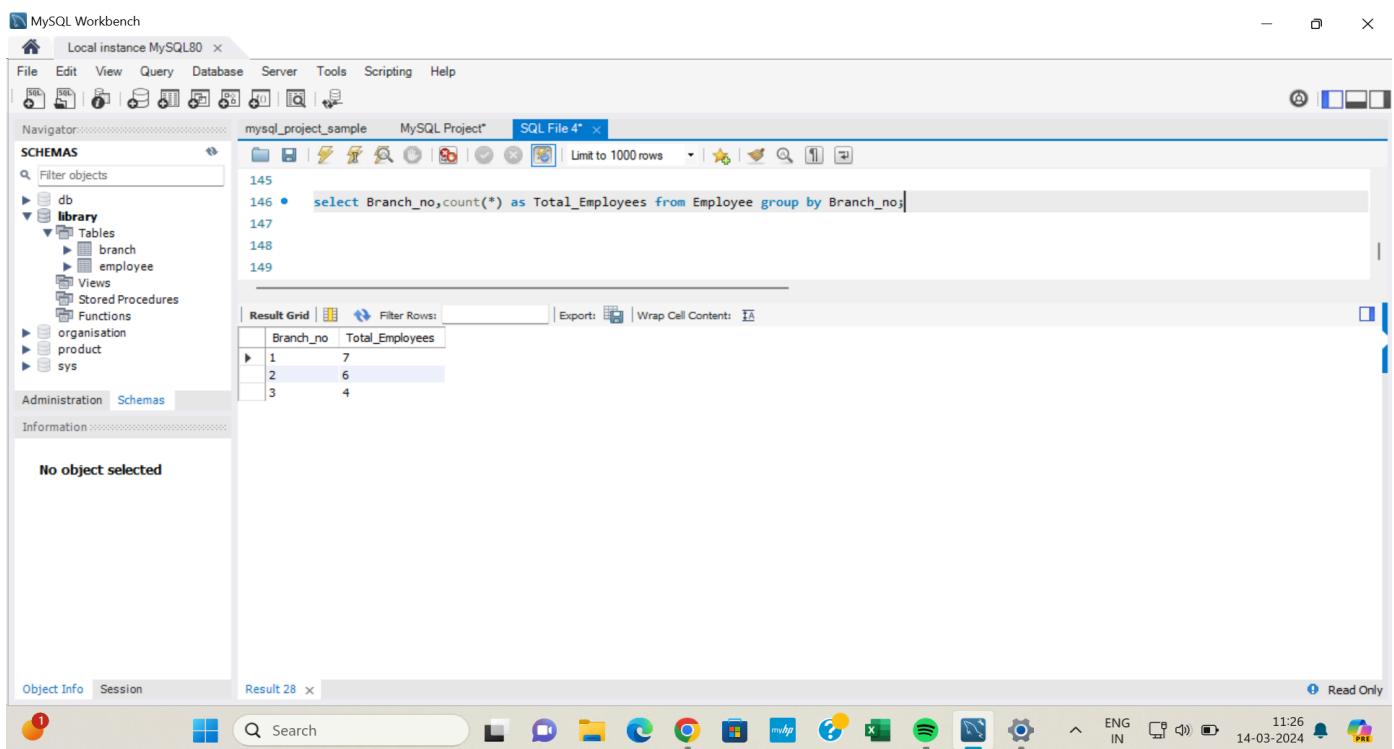
Below the SQL editor is a "Result Grid" table with two columns: "Emp_name" and "Position". The data is as follows:

Emp_name	Position
John Doe	Librarian
Jane Smith	Assistant Librarian
Samantha Rodriguez	Cataloging Specialist
Kimberly Scott	Collection Development Specialist
Michael White	Librarian
Sarah Brown	Assistant Librarian
Madison Hill	Collection Development Specialist
Amanda Miller	Librarian
Benjamin Hall	Assistant Librarian
Emily Davis	Manager
Christopher Evans	Manager
Joseph Garcia	Manager

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



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



MySQL Workbench - Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator: mysql_project_sample MySQL Project* SQL File 4*

```
145
146 • select Branch_no,count(*) as Total_Employees from Employee group by Branch_no;
147
148
149
```

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

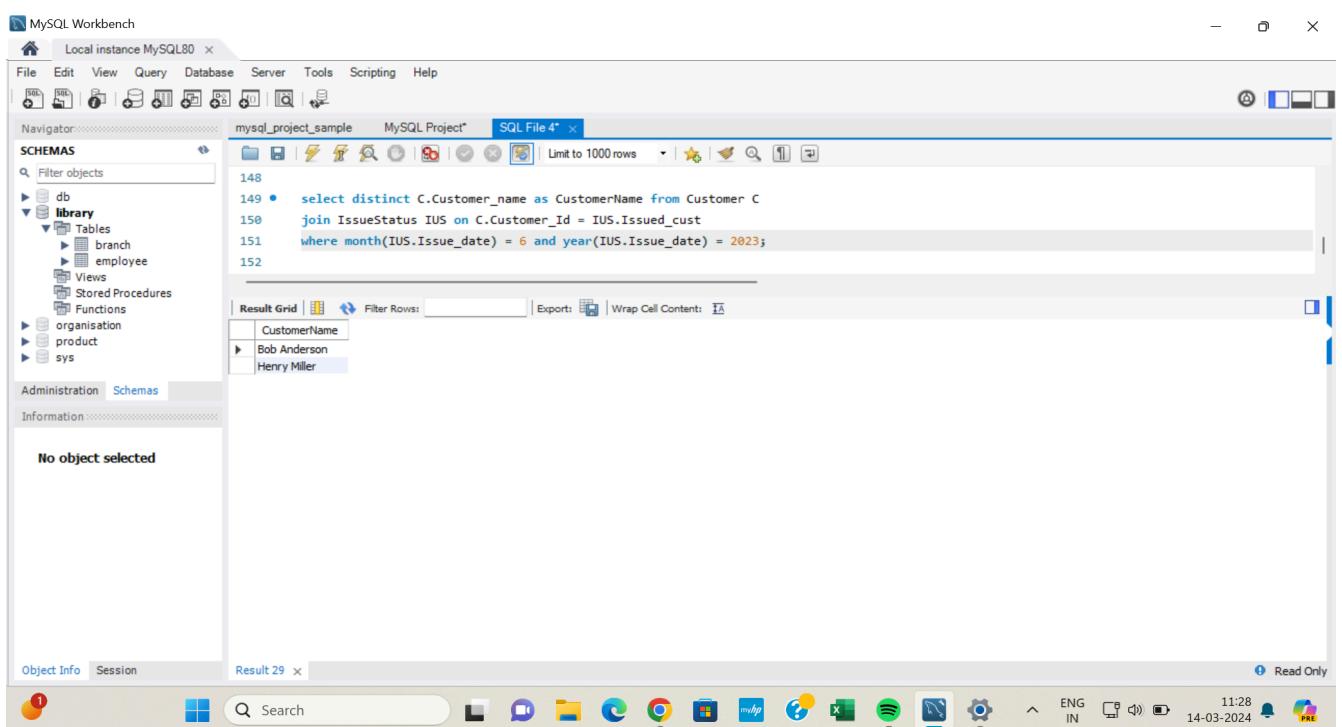
Branch_no	Total_Employees
1	7
2	6
3	4

No object selected

Object Info Session Result 28 x

11:26 14-03-2024

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



MySQL Workbench - Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator: mysql_project_sample MySQL Project* SQL File 4*

```
148
149 • select distinct C.Customer_name as CustomerName from Customer C
join IssueStatus IUS on C.Customer_Id = IUS.Issued_cust
150 where month(IUS.Issue_date) = 6 and year(IUS.Issue_date) = 2023;
152
```

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

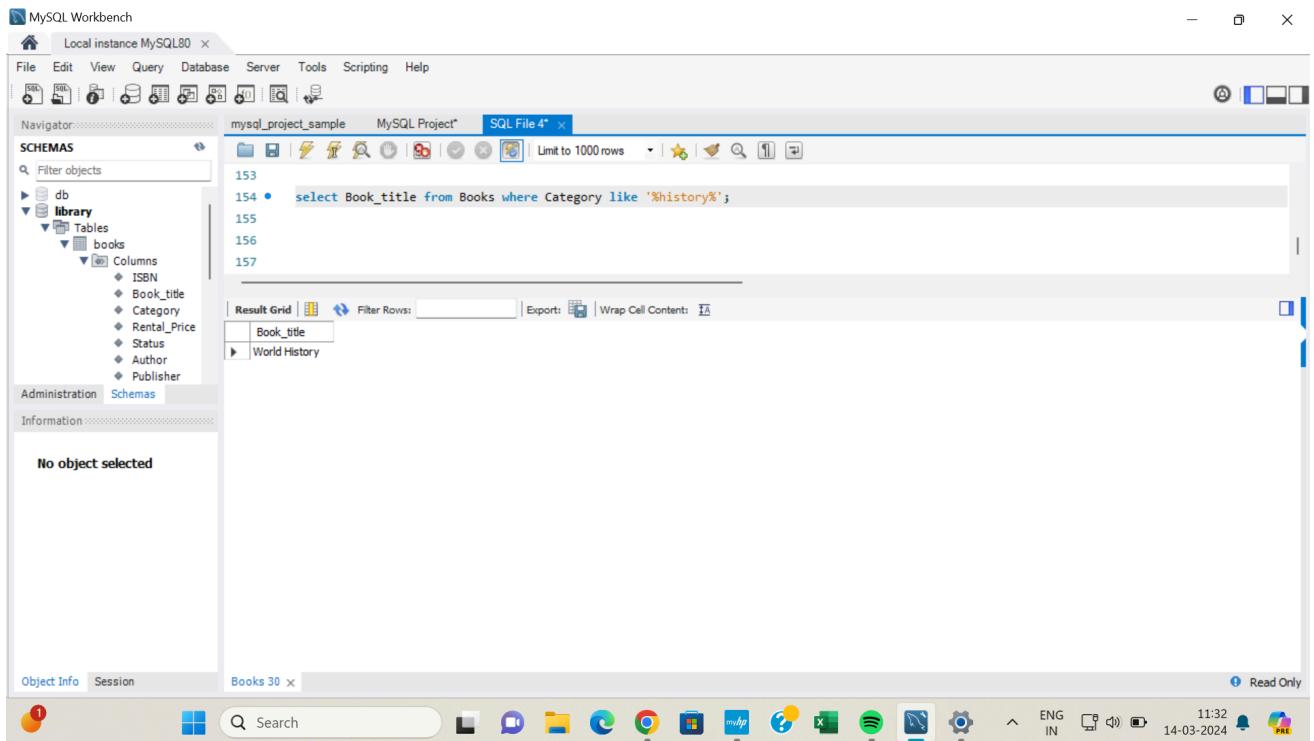
CustomerName
Bob Anderson
Henry Miller

No object selected

Object Info Session Result 29 x

11:28 14-03-2024

9. Retrieving Book_title from the Book table containing history.



The screenshot shows the MySQL Workbench interface. In the top navigation bar, 'File', 'Edit', 'View', 'Query', 'Database', 'Server', 'Tools', 'Scripting', and 'Help' are visible. The 'Navigator' pane on the left shows the database structure: 'Schemas' (db, library), 'Tables' (books), and 'Columns' (ISBN, Book_title, Category, Rental_Price, Status, Author, Publisher). The 'SQL File 4*' tab contains the following SQL code:

```
153
154 • select Book_title from Books where Category like '%history%';
155
156
157
```

The 'Result Grid' pane below shows the output of the query:

Book_title
World History

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

The screenshot shows the MySQL Workbench interface. In the top navigation bar, the database is set to "Local instance MySQL80". The main area displays a SQL query in the "SQL File 4" tab:

```
156
157 •  select Branch_no,count(*) as TotalEmployees from Employee
158   group by Branch_no having count(*) > 5;
159
160
161
```

The results are shown in a "Result Grid" table:

Branch_no	TotalEmployees
1	7
2	6

The "Information" pane at the bottom left shows "No object selected". The system tray at the bottom right indicates the date as 14-03-2024, time as 11:35, and language as ENG IN.

