Module End Project

Topic : Library Management System

You are going to build a project based on 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
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 available and no if book not available]
Author
Publisher

4. Customer

Customer_Id - Set as PRIMARY KEY
Customer_name
Customer_address
Reg_date

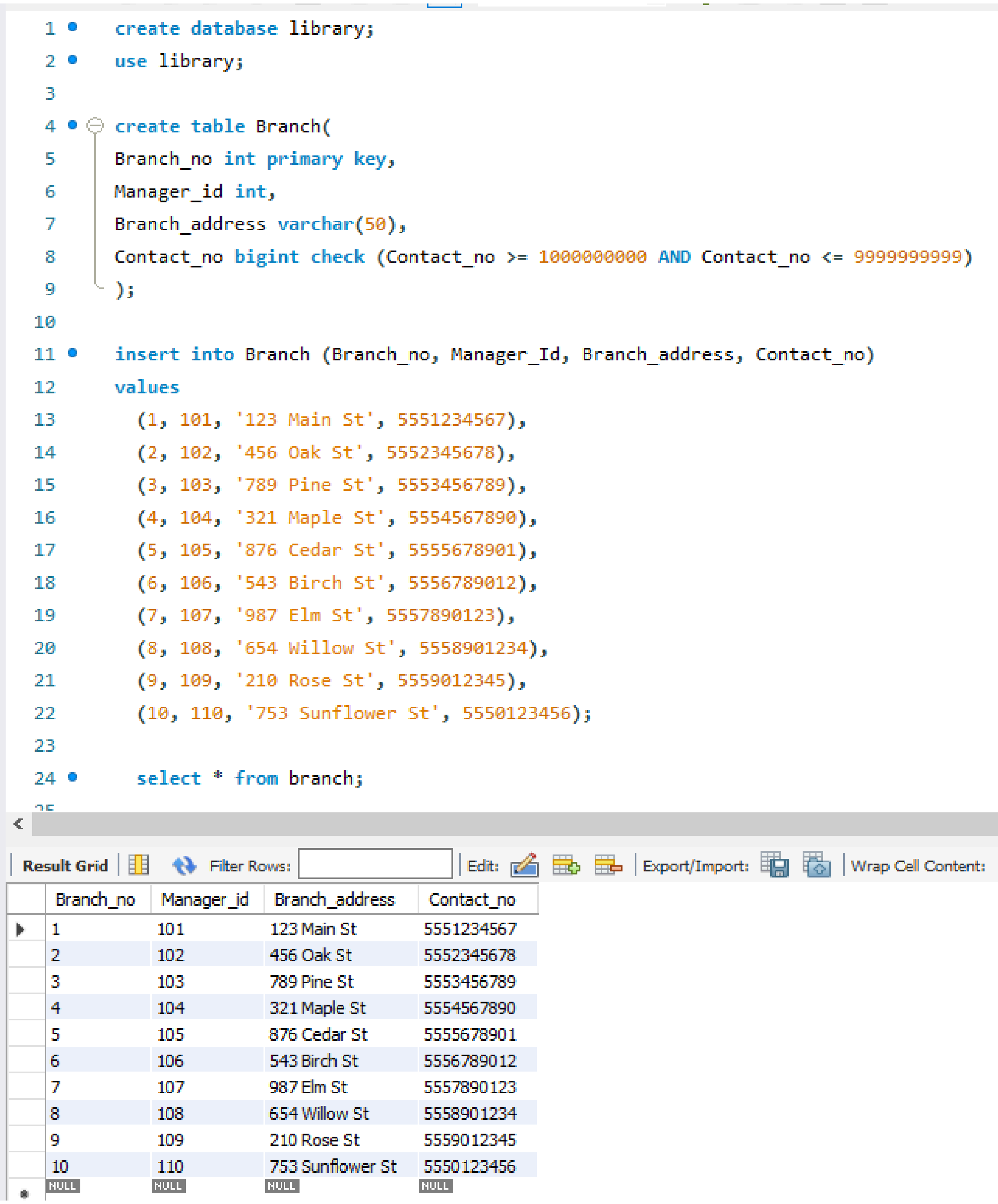
5. IssueStatus

Issue_Id - Set as PRIMARY KEY
Issued_cust – 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
Display all the tables and Write the queries for the following :

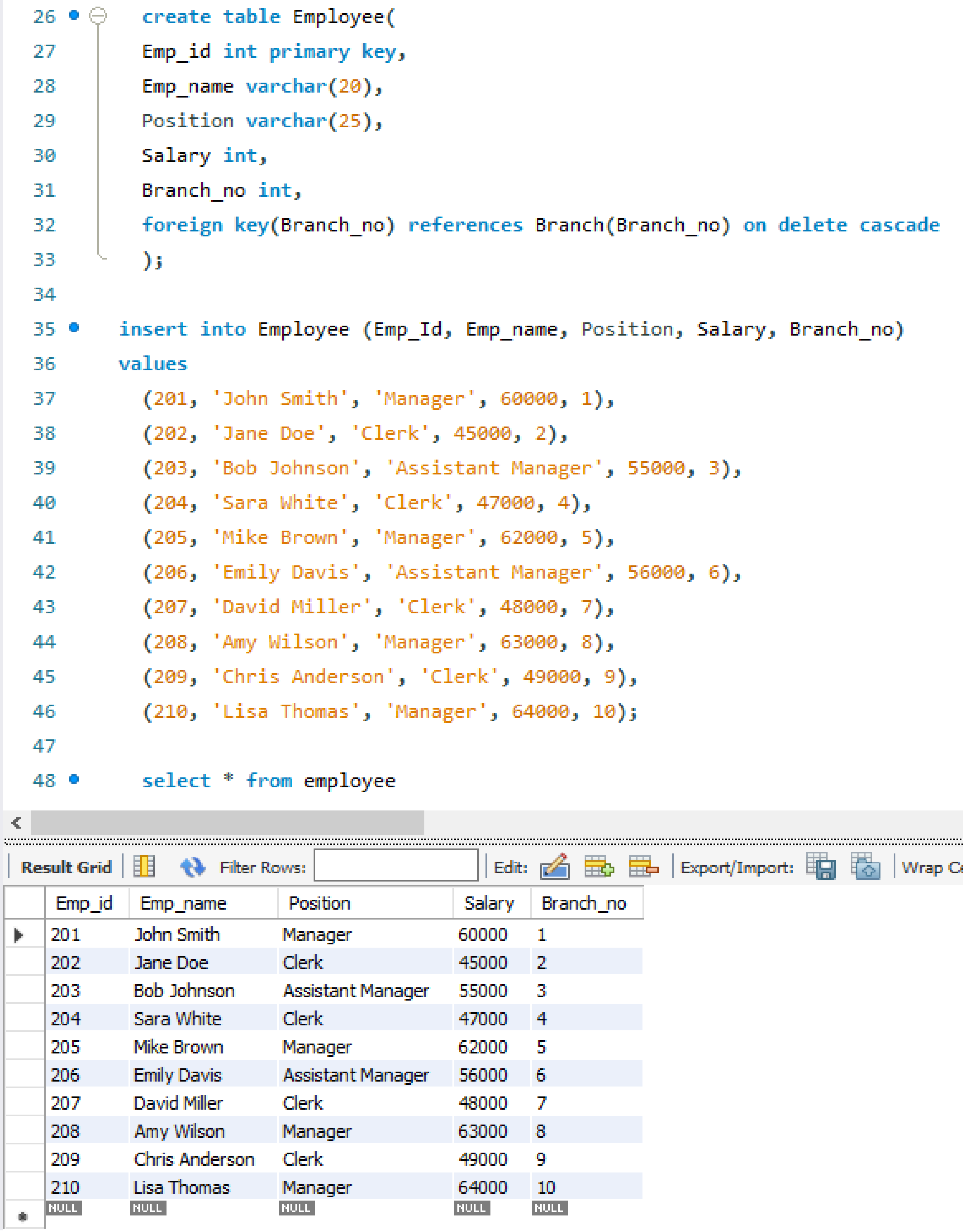
Books Table



```sql
create database library;
use library;

create table Branch(
Branch_no int primary key,
Manager_id int,
Branch_address varchar(50),
Contact_no bigint check (Contact_no >= 1000000000 AND Contact_no <= 9999999999)
);

insert into Branch (Branch_no, Manager_Id, Branch_address, Contact_no)
values
  (1, 101, '123 Main St', 5551234567),
  (2, 102, '456 Oak St', 5552345678),
  (3, 103, '789 Pine St', 5553456789),
  (4, 104, '321 Maple St', 5554567890),
  (5, 105, '876 Cedar St', 5555678901),
  (6, 106, '543 Birch St', 5556789012),
  (7, 107, '987 Elm St', 5557890123),
  (8, 108, '654 Willow St', 5558901234),
  (9, 109, '210 Rose St', 5559012345),
  (10, 110, '753 Sunflower St', 5550123456);

  select * from branch;
```

Branch_no	Manager_id	Branch_address	Contact_no
1	101	123 Main St	5551234567
2	102	456 Oak St	5552345678
3	103	789 Pine St	5553456789
4	104	321 Maple St	5554567890
5	105	876 Cedar St	5555678901
6	106	543 Birch St	5556789012
7	107	987 Elm St	5557890123
8	108	654 Willow St	5558901234
9	109	210 Rose St	5559012345
10	110	753 Sunflower St	5550123456
NULL	NULL	NULL	NULL

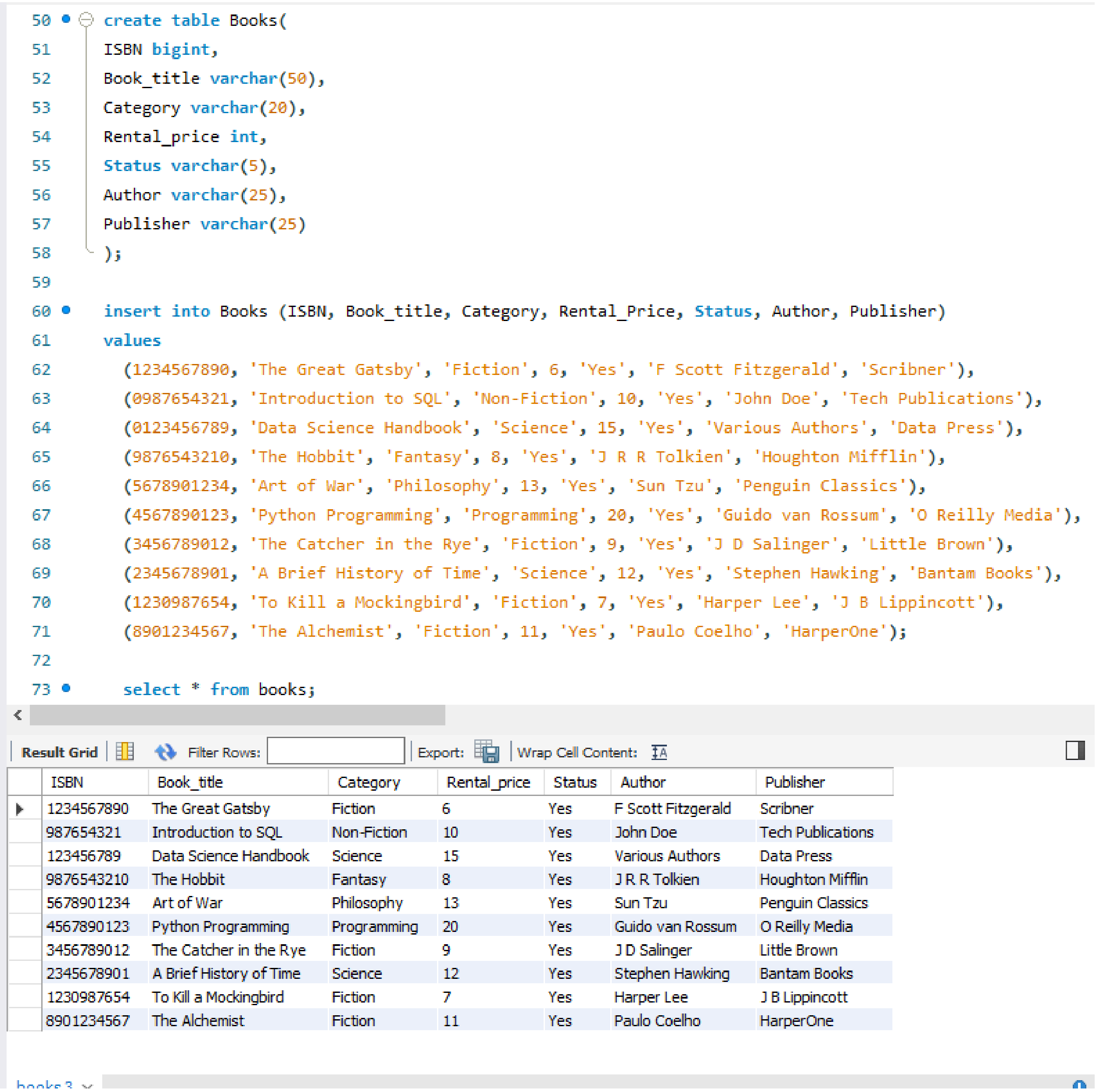
Employee Table



```sql
  create table Employee(
  Emp_id int primary key,
  Emp_name varchar(20),
  Position varchar(25),
  Salary int,
  Branch_no int,
  foreign key(Branch_no) references Branch(Branch_no) on delete cascade
  );

insert into Employee (Emp_Id, Emp_name, Position, Salary, Branch_no)
values
  (201, 'John Smith', 'Manager', 60000, 1),
  (202, 'Jane Doe', 'Clerk', 45000, 2),
  (203, 'Bob Johnson', 'Assistant Manager', 55000, 3),
  (204, 'Sara White', 'Clerk', 47000, 4),
  (205, 'Mike Brown', 'Manager', 62000, 5),
  (206, 'Emily Davis', 'Assistant Manager', 56000, 6),
  (207, 'David Miller', 'Clerk', 48000, 7),
  (208, 'Amy Wilson', 'Manager', 63000, 8),
  (209, 'Chris Anderson', 'Clerk', 49000, 9),
  (210, 'Lisa Thomas', 'Manager', 64000, 10);

  select * from employee
```

Emp_id	Emp_name	Position	Salary	Branch_no
201	John Smith	Manager	60000	1
202	Jane Doe	Clerk	45000	2
203	Bob Johnson	Assistant Manager	55000	3
204	Sara White	Clerk	47000	4
205	Mike Brown	Manager	62000	5
206	Emily Davis	Assistant Manager	56000	6
207	David Miller	Clerk	48000	7
208	Amy Wilson	Manager	63000	8
209	Chris Anderson	Clerk	49000	9
210	Lisa Thomas	Manager	64000	10
NULL	NULL	NULL	NULL	NULL

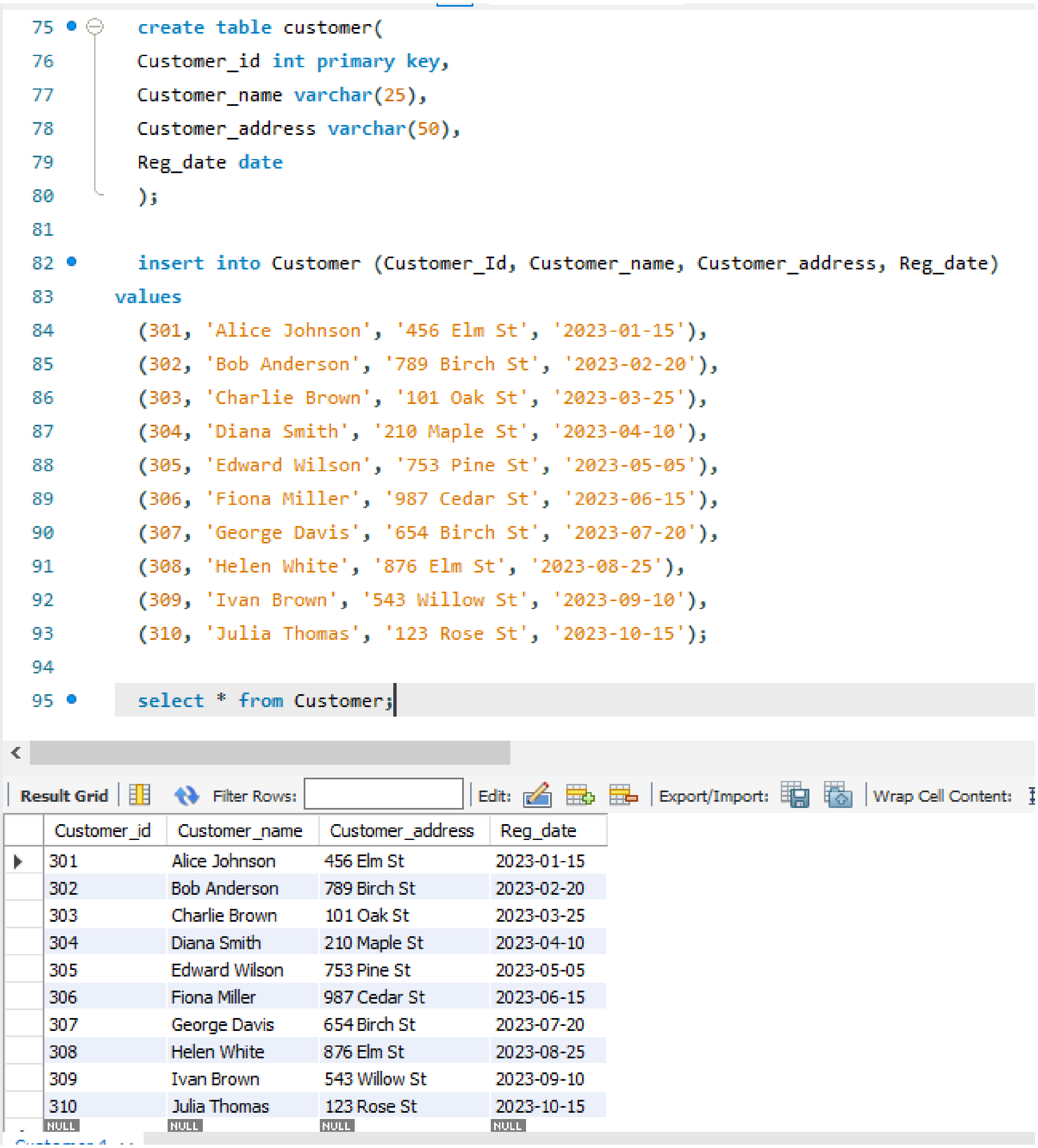
Books Table



```sql
create table Books(
ISBN bigint,
Book_title varchar(50),
Category varchar(20),
Rental_price int,
Status varchar(5),
Author varchar(25),
Publisher varchar(25)
);

insert into Books (ISBN, Book_title, Category, Rental_Price, Status, Author, Publisher)
values
  (1234567890, 'The Great Gatsby', 'Fiction', 6, 'Yes', 'F Scott Fitzgerald', 'Scribner'),
  (0987654321, 'Introduction to SQL', 'Non-Fiction', 10, 'Yes', 'John Doe', 'Tech Publications'),
  (0123456789, 'Data Science Handbook', 'Science', 15, 'Yes', 'Various Authors', 'Data Press'),
  (9876543210, 'The Hobbit', 'Fantasy', 8, 'Yes', 'J R R Tolkien', 'Houghton Mifflin'),
  (5678901234, 'Art of War', 'Philosophy', 13, 'Yes', 'Sun Tzu', 'Penguin Classics'),
  (4567890123, 'Python Programming', 'Programming', 20, 'Yes', 'Guido van Rossum', 'O Reilly Media'),
  (3456789012, 'The Catcher in the Rye', 'Fiction', 9, 'Yes', 'J D Salinger', 'Little Brown'),
  (2345678901, 'A Brief History of Time', 'Science', 12, 'Yes', 'Stephen Hawking', 'Bantam Books'),
  (1230987654, 'To Kill a Mockingbird', 'Fiction', 7, 'Yes', 'Harper Lee', 'J B Lippincott'),
  (8901234567, 'The Alchemist', 'Fiction', 11, 'Yes', 'Paulo Coelho', 'HarperOne');

  select * from books;
```

ISBN	Book_title	Category	Rental_price	Status	Author	Publisher
1234567890	The Great Gatsby	Fiction	6	Yes	F Scott Fitzgerald	Scribner
987654321	Introduction to SQL	Non-Fiction	10	Yes	John Doe	Tech Publications
123456789	Data Science Handbook	Science	15	Yes	Various Authors	Data Press
9876543210	The Hobbit	Fantasy	8	Yes	J R R Tolkien	Houghton Mifflin
5678901234	Art of War	Philosophy	13	Yes	Sun Tzu	Penguin Classics
4567890123	Python Programming	Programming	20	Yes	Guido van Rossum	O Reilly Media
3456789012	The Catcher in the Rye	Fiction	9	Yes	J D Salinger	Little Brown
2345678901	A Brief History of Time	Science	12	Yes	Stephen Hawking	Bantam Books
1230987654	To Kill a Mockingbird	Fiction	7	Yes	Harper Lee	J B Lippincott
8901234567	The Alchemist	Fiction	11	Yes	Paulo Coelho	HarperOne

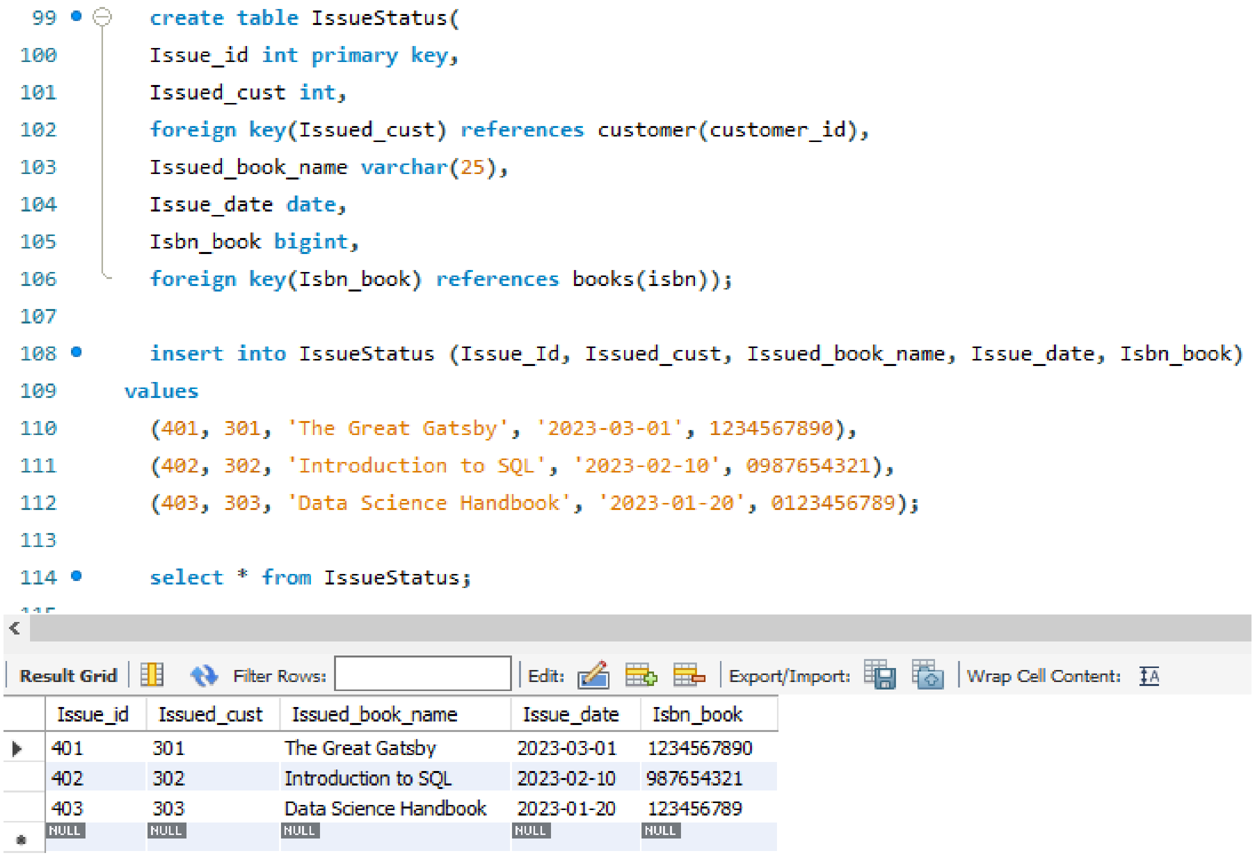
Customer Table



```
  create table customer(
  Customer_id int primary key,
  Customer_name varchar(25),
  Customer_address varchar(50),
  Reg_date date
  );

  insert into Customer (Customer_Id, Customer_name, Customer_address, Reg_date)
values
  (301, 'Alice Johnson', '456 Elm St', '2023-01-15'),
  (302, 'Bob Anderson', '789 Birch St', '2023-02-20'),
  (303, 'Charlie Brown', '101 Oak St', '2023-03-25'),
  (304, 'Diana Smith', '210 Maple St', '2023-04-10'),
  (305, 'Edward Wilson', '753 Pine St', '2023-05-05'),
  (306, 'Fiona Miller', '987 Cedar St', '2023-06-15'),
  (307, 'George Davis', '654 Birch St', '2023-07-20'),
  (308, 'Helen White', '876 Elm St', '2023-08-25'),
  (309, 'Ivan Brown', '543 Willow St', '2023-09-10'),
  (310, 'Julia Thomas', '123 Rose St', '2023-10-15');

  select * from Customer;
```

Customer_id	Customer_name	Customer_address	Reg_date
301	Alice Johnson	456 Elm St	2023-01-15
302	Bob Anderson	789 Birch St	2023-02-20
303	Charlie Brown	101 Oak St	2023-03-25
304	Diana Smith	210 Maple St	2023-04-10
305	Edward Wilson	753 Pine St	2023-05-05
306	Fiona Miller	987 Cedar St	2023-06-15
307	George Davis	654 Birch St	2023-07-20
308	Helen White	876 Elm St	2023-08-25
309	Ivan Brown	543 Willow St	2023-09-10
310	Julia Thomas	123 Rose St	2023-10-15
NULL	NULL	NULL	NULL

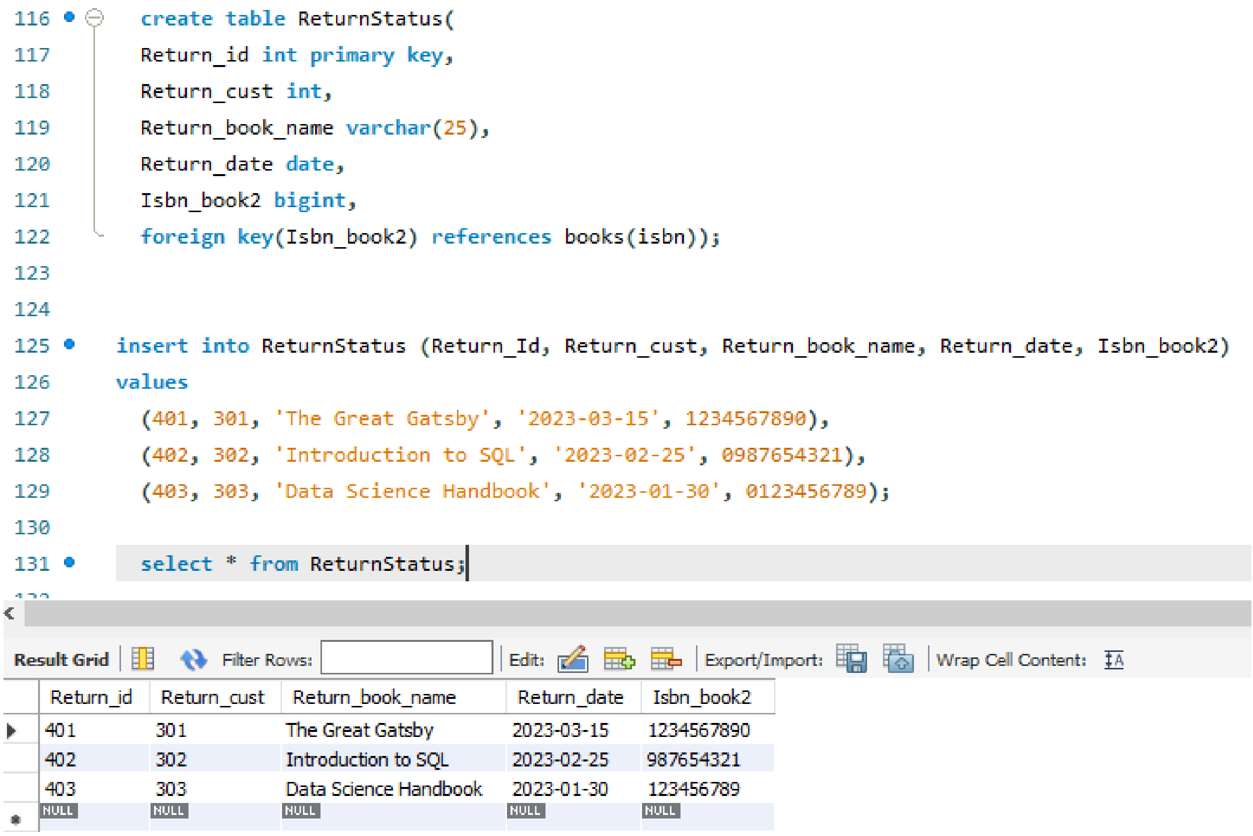
IssueStatus Table



```sql
 create table IssueStatus(
 Issue_id int primary key,
 Issued_cust int,
 foreign key(Issued_cust) references customer(customer_id),
 Issued_book_name varchar(25),
 Issue_date date,
 Isbn_book bigint,
 foreign key(Isbn_book) references books(isbn));

 insert into IssueStatus (Issue_Id, Issued_cust, Issued_book_name, Issue_date, Isbn_book)
values
 (401, 301, 'The Great Gatsby', '2023-03-01', 1234567890),
 (402, 302, 'Introduction to SQL', '2023-02-10', 0987654321),
 (403, 303, 'Data Science Handbook', '2023-01-20', 0123456789);

 select * from IssueStatus;
```

Issue_id	Issued_cust	Issued_book_name	Issue_date	Isbn_book
401	301	The Great Gatsby	2023-03-01	1234567890
402	302	Introduction to SQL	2023-02-10	987654321
403	303	Data Science Handbook	2023-01-20	123456789
NULL	NULL	NULL	NULL	NULL

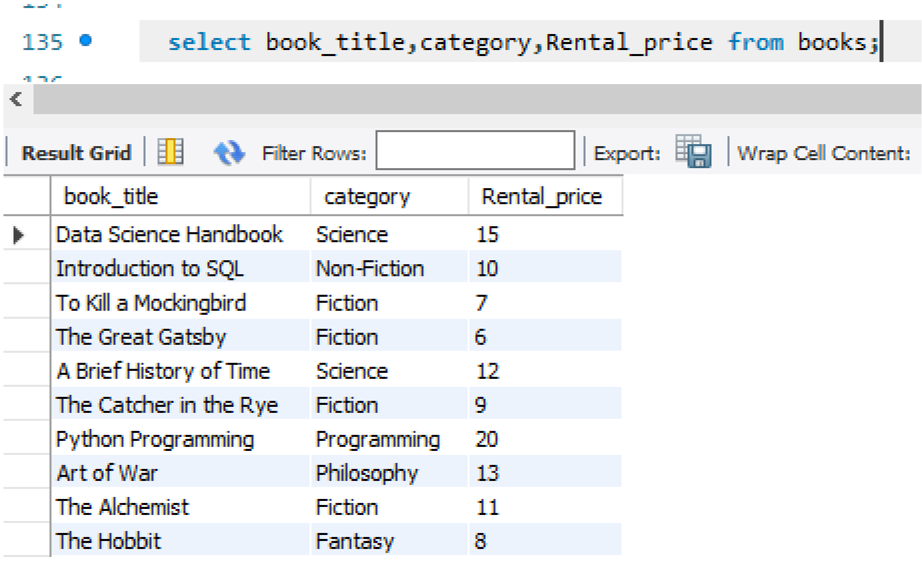
ReturnStatus Table



```sql
create table ReturnStatus(
Return_id int primary key,
Return_cust int,
Return_book_name varchar(25),
Return_date date,
Isbn_book2 bigint,
foreign key(Isbn_book2) references books(isbn));


insert into ReturnStatus (Return_Id, Return_cust, Return_book_name, Return_date, Isbn_book2)
values
  (401, 301, 'The Great Gatsby', '2023-03-15', 1234567890),
  (402, 302, 'Introduction to SQL', '2023-02-25', 0987654321),
  (403, 303, 'Data Science Handbook', '2023-01-30', 0123456789);

  select * from ReturnStatus;
```

Return_id	Return_cust	Return_book_name	Return_date	Isbn_book2
401	301	The Great Gatsby	2023-03-15	1234567890
402	302	Introduction to SQL	2023-02-25	987654321
403	303	Data Science Handbook	2023-01-30	123456789
NULL	NULL	NULL	NULL	NULL

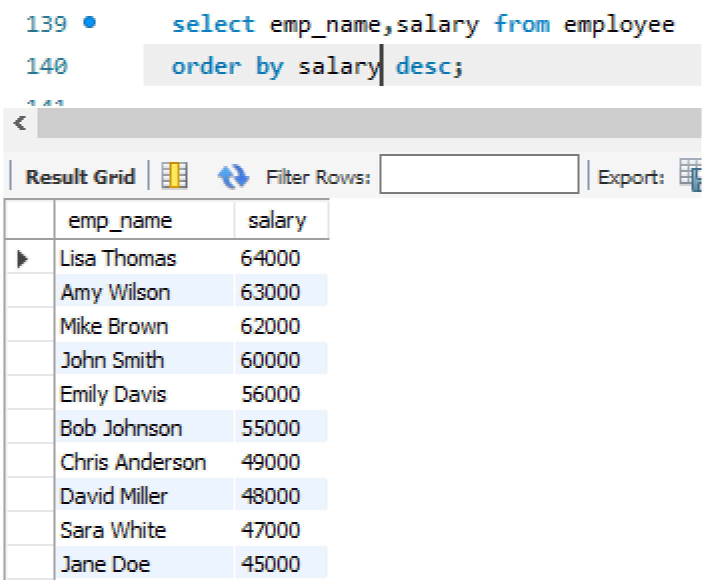
1. Retrieve the book title, category, and rental price of all available books.



```sql
select book_title,category,Rental_price from books;
```

book_title	category	Rental_price
Data Science Handbook	Science	15
Introduction to SQL	Non-Fiction	10
To Kill a Mockingbird	Fiction	7
The Great Gatsby	Fiction	6
A Brief History of Time	Science	12
The Catcher in the Rye	Fiction	9
Python Programming	Programming	20
Art of War	Philosophy	13
The Alchemist	Fiction	11
The Hobbit	Fantasy	8

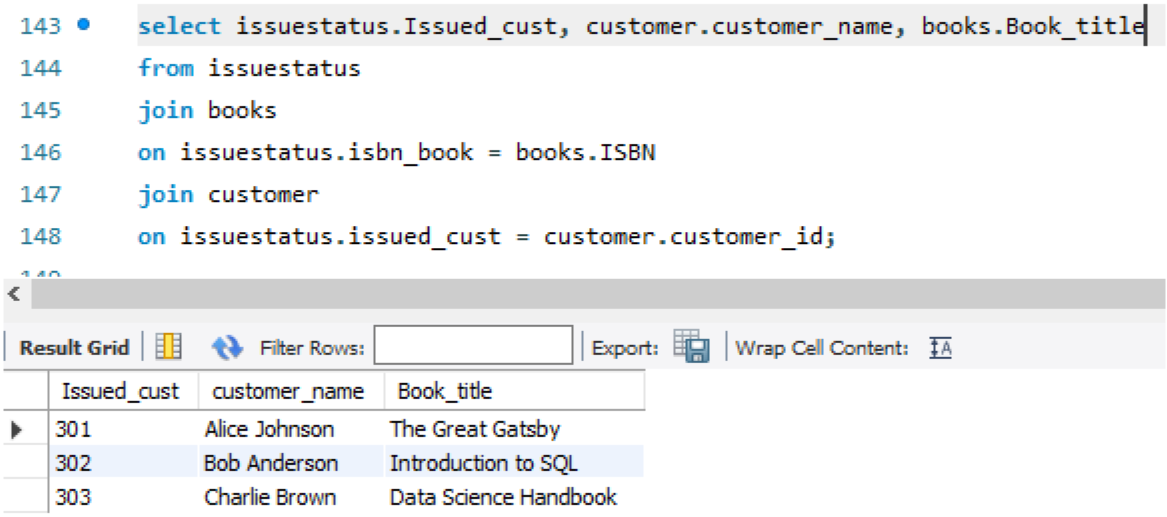
2. List the employee names and their respective salaries in descending order of salary.



```sql
select emp_name,salary from employee
order by salary desc;
```

emp_name	salary
Lisa Thomas	64000
Amy Wilson	63000
Mike Brown	62000
John Smith	60000
Emily Davis	56000
Bob Johnson	55000
Chris Anderson	49000
David Miller	48000
Sara White	47000
Jane Doe	45000

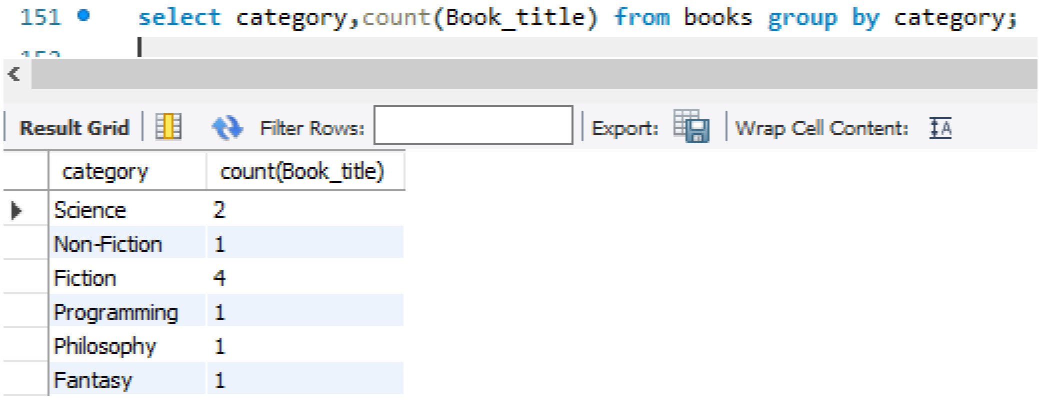
3. Retrieve the book titles and the corresponding customers who have issued those books.



```sql
select issuestatus.Issued_cust, customer.customer_name, books.Book_title
from issuestatus
join books
on issuestatus.isbn_book = books.ISBN
join customer
on issuestatus.issued_cust = customer.customer_id;
```

Issued_cust	customer_name	Book_title
301	Alice Johnson	The Great Gatsby
302	Bob Anderson	Introduction to SQL
303	Charlie Brown	Data Science Handbook

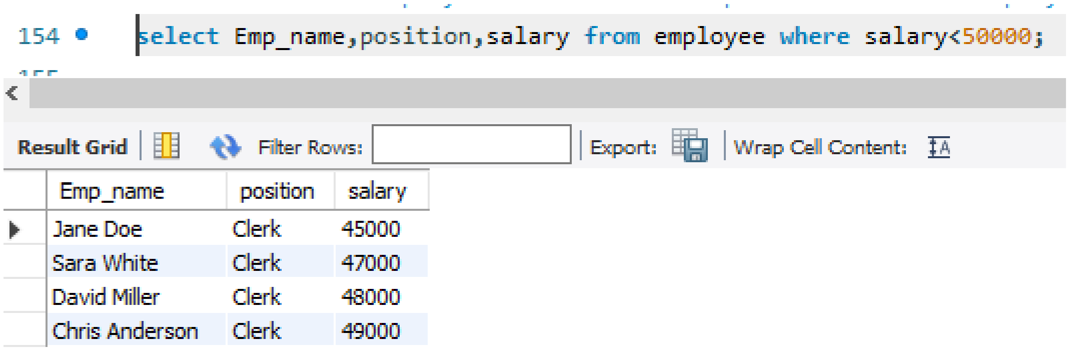
4. Display the total count of books in each category.



```sql
select category,count(Book_title) from books group by category;
```

category	count(Book_title)
Science	2
Non-Fiction	1
Fiction	4
Programming	1
Philosophy	1
Fantasy	1

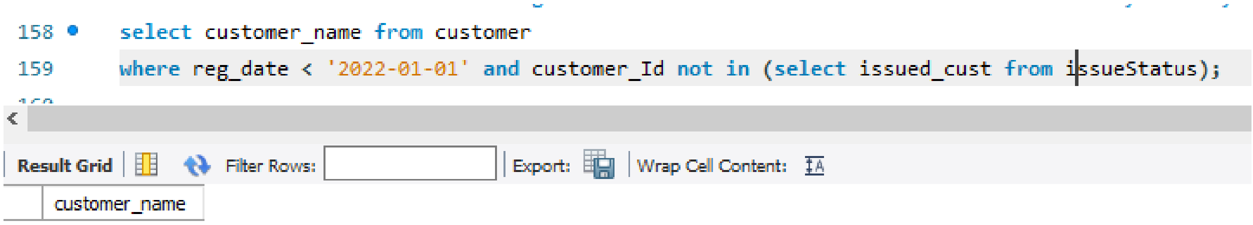
5. Retrieve the employee names and their positions for the employees whose salaries are above Rs.50,000.



```sql
select Emp_name,position,salary from employee where salary<50000;
```

Emp_name	position	salary
Jane Doe	Clerk	45000
Sara White	Clerk	47000
David Miller	Clerk	48000
Chris Anderson	Clerk	49000

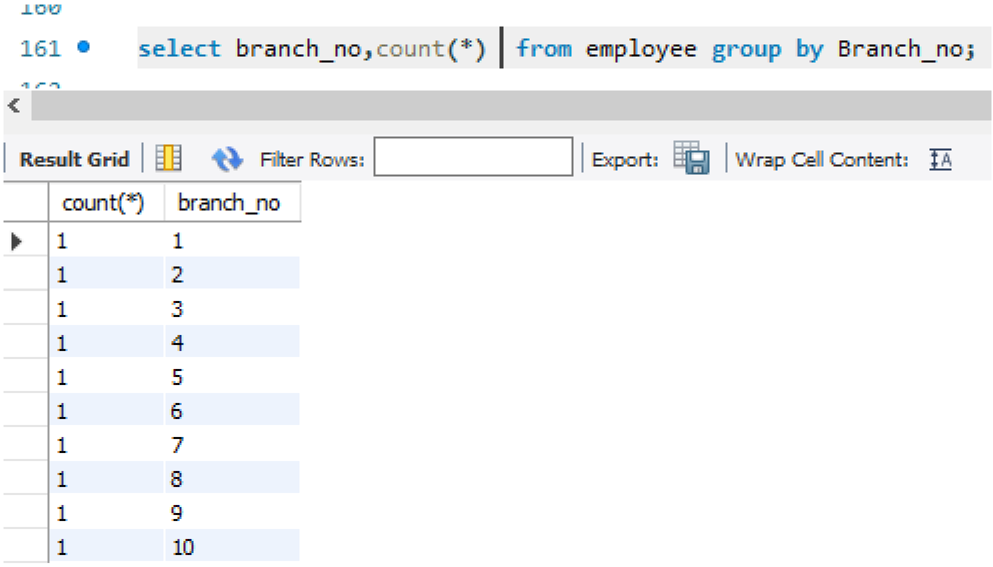
6. List the customer names who registered before 2022-01-01 and have not issued any books yet.



```sql
select customer_name from customer
where reg_date < '2022-01-01' and customer_Id not in (select issued_cust from issueStatus);
```

customer_name

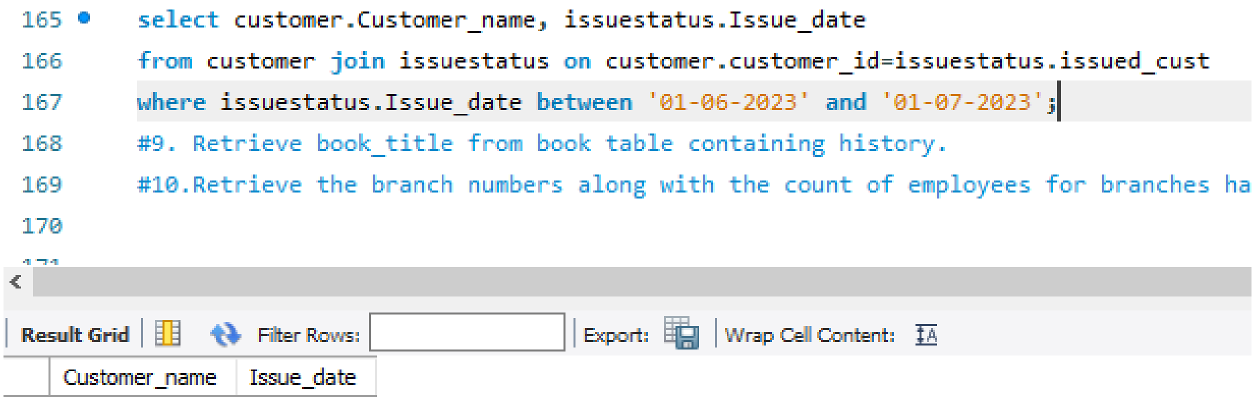
7. Display the branch numbers and the total count of employees in each branch.



```sql
select branch_no,count(*) from employee group by Branch_no;
```

count(*)	branch_no
1	1
1	2
1	3
1	4
1	5
1	6
1	7
1	8
1	9
1	10

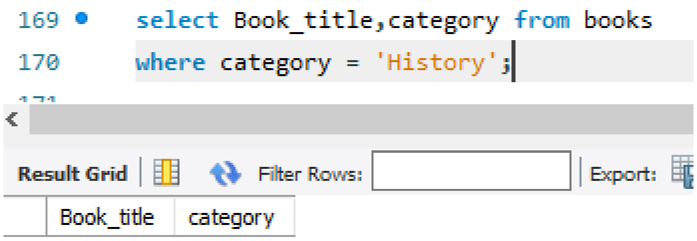
8. Display the names of customers who have issued books in the month of June 2023.



```
select customer.Customer_name, issuestatus.Issue_date
from customer join issuestatus on customer.customer_id=issuestatus.issued_cust
where issuestatus.Issue_date between '01-06-2023' and '01-07-2023';
#9. Retrieve book_title from book table containing history.
#10.Retrieve the branch numbers along with the count of employees for branches ha

```

	Customer_name	Issue_date

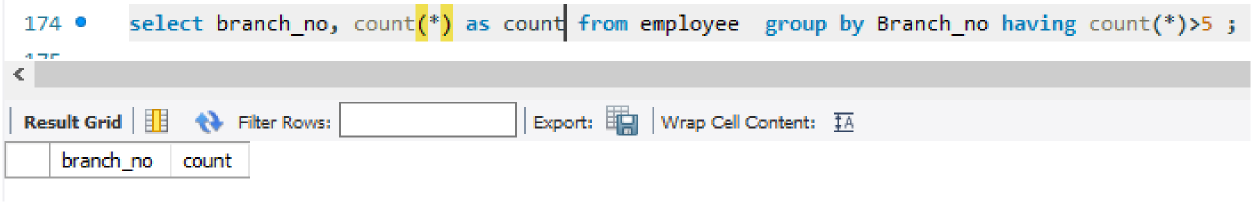
9. Retrieve book_title from book table containing history.



```
select Book_title,category from books
where category = 'History';
```

	Book_title	category

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



```
select branch_no, count(*) as count from employee  group by Branch_no having count(*)>5 ;
```

	branch_no	count