Library Management System

This is 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. Creation of a DATABASE named library and following TABLES in the database:

Tables and their attributes :

1. Branch
    - Branch_no - Set as PRIMARY KEY
    - Manager_Id
    - Branch_address
    - Contact_no
2. Employee
    - Emp_Id – Set as PRIMARY KEY
    - Emp_name
    - Emp_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
    - Stock_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 -Set as FOREIGN KEY and it refer customer_id in CUSTOMER table
    - Return_book_name
    - Return_date
    - Isbn_book2 - Set as FOREIGN KEY and it should refer isbn in BOOKS table

Create the library database and use the library database :

```
13      -- Create the library database
14  •   create database library;
15
16      -- Use the library database
17  •   use library;
```

Creation of the required tables and inserting values to the corresponding tables :

1. **<u>Table Branch</u>**

```
19      -- Create the Branch table
20  •   create table Branch ( Branch_no int PRIMARY KEY,
21                            Manager_Id int,
22                            Branch_address varchar(100),
23                            Contact_no varchar(10)
24                          );
```

```
25      -- Insert data into Branch table
26  •   insert into Branch values
27      (1, 1001, 'Main Street', '1234567890'),
28      (2, 1002, 'Elm Street', '9876543210'),
29      (3, 1003, 'Oak Avenue', '1112223333'),
30      (4, 1004, 'Pink Street', '4445556666'),
31      (5, 1005, 'Maple Avenue', '7778889999'),
32      (6, 1006, 'Cedar Street', '0001112222'),
33      (7, 1007, 'Birch Avenue', '3334445555'),
34      (8, 1008, 'Walnut Street', '6667778888'),
35      (9, 1009, 'Cherry Avenue', '9990001111'),
36      (10, 1010, 'Pinecone Street', '2223334444');
```

2. Table Employee

```
41    -- Create the Employee table
42    create table Employee ( Emp_Id int PRIMARY KEY,
43                            Emp_Name varchar(20),
44                            Emp_Position varchar(25),
45                            Salary decimal(10,2),
46                            Branch_no int,
47                            FOREIGN KEY (Branch_no) REFERENCES Branch(Branch_no)
48                          );
49
50    -- Insert data into Employee table
51    insert into Employee values
52    (1, 'John Michael', 'Librarian', 55000.00, 1),
53    (2, 'Smith Jane', 'Assistant Librarian', 48000.00, 1),
54    (3, 'Johnson Doe', 'Cataloguer', 60000.00, 2),
55    (4, 'Emily Brown', 'Cataloguer', 40000.00, 8),
56    (5, 'David Wilson', 'Assistant Librarian', 38000.00, 3),
57    (6, 'Sarah Miller', 'Shelver', 35000.00, 3),
58    (7, 'Robert Jones', 'Assistant Librarian', 38000.00, 1),
59    (8, 'Jennifer Davis', 'Librarian', 45000.00, 4),
60    (9, 'William Taylor', 'Cataloguer', 40000.00, 4),
61    (10, 'Jessica Martinez', 'Assistant Manager', 50000.00, 5),
62    (11, 'Alexander Smith', 'Manager', 60000.00, 1),
63    (12, 'Erick Doe', 'Assistant Manager', 50000.00, 1),
64    (13, 'Michael Johnson', 'Librarian', 45000.00, 7),
65    (14, 'Kiran Susmith', 'Manager', 60000.00, 1),
66    (15, 'Farhan Khan', 'Assistant Manager', 50000.00, 1);
```

3. Table Books

```sql
-- Create the Books table
create table Books ( ISBN bigint PRIMARY KEY,
                     Book_title varchar(100),
                     Category varchar(20),
                     Rental_Price decimal(10,2),
                     Stock_Status enum('Yes','No'),
                     Author varchar(25),
                     Publisher varchar(50)
                   );

-- Insert data into Books table
INSERT INTO Books (ISBN, Book_title, Category, Rental_Price, Stock_Status, Author, Publisher)
VALUES
(2345678912, 'Sapiens: A Brief History of Humankind', 'History', 14.99, 'Yes', 'Yuval Noah Harari', 'Harper'),
(3456789123, 'Guns, Germs, and Steel: The Fates of Human Societies', 'History', 16.99, 'Yes', 'Jared Diamond', 'W. W. Norton & Company'),
(4567891234234, 'The Sixth Extinction: An Unnatural History', 'Science', 15.99, 'Yes', 'Elizabeth Kolbert', 'Henry Holt and Company'),
(5678912345, 'A Short History of Nearly Everything', 'Science', 17.99, 'Yes', 'Bill Bryson', 'Broadway Books'),
(1234567890, 'The Great Gatsby', 'Fiction', 15.99, 'Yes', 'F. Scott Fitzgerald', 'Scribner'),
(2345678901567, 'To Kill a Mockingbird', 'Fiction', 12.99, 'Yes', 'Harper Lee', 'J. B. Lippincott & Co.'),
(3456789012, '1984', 'Fiction', 14.99, 'No', 'George Orwell', 'Secker & Warburg'),
(4567890123539, 'The Catcher in the Rye', 'Fiction', 11.99, 'Yes', 'J.D. Salinger', 'Little, Brown and Company'),
(5678901234, 'Pride and Prejudice', 'Fiction', 13.99, 'Yes', 'Jane Austen', 'T. Egerton, Whitehall'),
(6789012345176, 'To the Lighthouse', 'Fiction', 16.99, 'No', 'Virginia Woolf', 'The Hogarth Press'),
(7890123456, 'Brave New World', 'Fiction', 17.99, 'Yes', 'Aldous Huxley', 'Chatto & Windus'),
(8901234567456, 'Animal Farm', 'Fiction', 10.99, 'Yes', 'George Orwell', 'Secker & Warburg'),
(9012345678, 'The Hobbit', 'Fantasy', 18.99, 'Yes', 'J.R.R. Tolkien', 'Allen & Unwin'),
(1234567891, 'Harry Potter and the Philosopher''s Stone', 'Fantasy', 19.99, 'Yes', 'J.K. Rowling', 'Bloomsbury');
```

4. **Table Customer**

```
102    -- Create the Customer table
103 •  create table Customer ( Customer_Id int PRIMARY KEY,
104                            Customer_Name varchar(20),
105                            Customer_Address varchar(100),
106                            Reg_date date
107                          );
108
109    -- Insert data into Customer table
110 •  insert into Customer values
111    (1, 'Jerin Johnson', 'Oak Avenue', '2021-12-01'),
112    (2, 'Ishoya Smith', '567 Pine Street', '2022-02-15'),
113    (3, 'Jennifer Justin', 'Main Street, Cityville, USA', '2023-01-15'),
114    (4, 'Idom Smith', 'Elm Street, Townsville, USA', '2022-11-30'),
115    (5, 'Charlie Brown', 'Oak Avenue, Villageton, USA', '2023-03-10'),
116    (6, 'Diana Martinez', '101 Maple Lane, Hamletville, USA', '2023-02-05'),
117    (7, 'Emily Wilson', 'Pine Street, Countryside, USA', '2022-09-20'),
118    (8, 'Frank Miller', 'Cedar Avenue, Lakeside, USA', '2022-12-18'),
119    (9, 'Grace Taylor', '404 Oak Street, Hilltop, USA', '2023-04-25'),
120    (10, 'Henry Clark', '505 Elm Avenue, Riversend, USA', '2023-05-12'),
121    (11, 'Isabel Garcia', 'Birch Lane, Mountainview, USA', '2020-10-08'),
122    (12, 'Jack Harris', 'Pine Avenue, Lakeshore, USA', '2022-08-15');
```

5. Table IssueStatus

```sql
-- Create the IssueStatus table
create table IssueStatus ( Issue_Id int PRIMARY KEY,
                           Issued_cust int,
                           Issued_book_name varchar(100),
                           Issue_date date,
                           Isbn_book bigint,
                           FOREIGN KEY(Issued_cust) REFERENCES customer(Customer_Id),
                           FOREIGN KEY(Isbn_book) REFERENCES books(ISBN)
                           );

-- Insert data into IssueStatus table
INSERT INTO IssueStatus (Issue_Id, Issued_cust, Issued_book_name, Issue_date, Isbn_book)
VALUES
(1, 10, 'The Great Gatsby', '2023-01-20', 1234567890),
(2, 3, 'To Kill a Mockingbird', '2023-02-05', 2345678901567),
(3, 2, 'Sapiens: A Brief History of Humankind', '2023-03-15', 2345678912),
(4, 4, '1984', '2023-04-10', 3456789012),
(5, 12, 'The Hobbit', '2023-05-20', 9012345678),
(6, 7, 'To the Lighthouse', '2023-06-05', 6789012345176),
(7, 6, 'Pride and Prejudice', '2023-07-10', 5678901234),
(8, 9, 'Brave New World', '2023-08-15', 7890123456),
(9, 5, 'The Catcher in the Rye', '2023-09-20', 4567890123539),
(10, 1, 'Harry Potter and the Philosopher''s Stone', '2023-10-25', 1234567891);
```

6. Table ReturnStatus

```sql
-- Create the ReturnStatus table
create table ReturnStatus ( Return_Id int PRIMARY KEY,
                            Return_cust int,
                            Return_book_name varchar(100),
                            Return_date date,
                            Isbn_book2 bigint,
                            FOREIGN KEY (Return_cust) REFERENCES customer(Customer_Id),
                            FOREIGN KEY (Isbn_book2) REFERENCES books(ISBN)
                            );

-- Insert data into ReturnStatus table
insert into ReturnStatus values
(1, 10, 'The Great Gatsby', '2023-01-25', 1234567890),
(2, 3, 'To Kill a Mockingbird', '2023-02-15', 2345678901567),
(3, 2, 'Sapiens: A Brief History of Humankind', '2023-03-25', 2345678912),
(4, 4, '1984', '2023-04-20', 3456789012),
(5, 12, 'The Hobbit', '2023-05-25', 9012345678),
(6, 7, 'To the Lighthouse', '2023-06-15', 6789012345176),
(7, 6, 'Pride and Prejudice', '2023-07-20', 5678901234),
(8, 9, 'Brave New World', '2023-08-25', 7890123456),
(9, 5, 'The Catcher in the Rye', '2023-09-30', 4567890123539),
(10, 1, 'Harry Potter and the Philosopher''s Stone', '2023-10-30', 1234567891);
```

Display of tables:

```
38      # Display of table:
39 •    select * from Branch;
```

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

Branch_no	Manager_Id	Branch_address	Contact_no
1	1001	Main Street	1234567890
2	1002	Elm Street	9876543210
3	1003	Oak Avenue	1112223333
4	1004	Pink Street	4445556666
5	1005	Maple Avenue	7778889999
6	1006	Cedar Street	0001112222
7	1007	Birch Avenue	3334445555
8	1008	Walnut Street	6667778888
9	1009	Cherry Avenue	9990001111
10	1010	Pinecone Street	2223334444

```
68      # Display of the table:
69 •    select * from Employee;
70
```

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

Emp_Id	Emp_Name	Emp_Position	Salary	Branch_no
1	John Michael	Librarian	55000.00	1
2	Smith Jane	Assistant Librarian	48000.00	1
3	Johnson Doe	Cataloguer	60000.00	2
4	Emily Brown	Cataloguer	40000.00	8
5	David Wilson	Assistant Librarian	38000.00	3
6	Sarah Miller	Shelver	35000.00	3
7	Robert Jones	Assistant Librarian	38000.00	1
8	Jennifer Davis	Librarian	45000.00	4
9	William Taylor	Cataloguer	40000.00	4
10	Jessica Martinez	Assistant Manager	50000.00	5
11	Alexander Smith	Manager	60000.00	1
12	Erick Doe	Assistant Manager	50000.00	1
13	Michael Johnson	Librarian	45000.00	7
14	Kiran Susmith	Manager	60000.00	1
15	Farhan Khan	Assistant Manager	50000.00	1

```
99    # Display of the table:
100 • select * from Books;
101
```

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

ISBN	Book_title	Category	Rental_Price	Stock_Status	Author	Publisher
1234567890	The Great Gatsby	Fiction	15.99	Yes	F. Scott Fitzgerald	Scribner
1234567891	Harry Potter and the Philosopher's Stone	Fantasy	19.99	Yes	J.K. Rowling	Bloomsbury
2345678912	Sapiens: A Brief History of Humankind	History	14.99	Yes	Yuval Noah Harari	Harper
3456789012	1984	Fiction	14.99	No	George Orwell	Secker & Warburg
3456789123	Guns, Germs, and Steel: The Fates of Human Societies	History	16.99	Yes	Jared Diamond	W. W. Norton & Company
5678901234	Pride and Prejudice	Fiction	13.99	Yes	Jane Austen	T. Egerton, Whitehall
5678912345	A Short History of Nearly Everything	Science	17.99	Yes	Bill Bryson	Broadway Books
7890123456	Brave New World	Fiction	17.99	Yes	Aldous Huxley	Chatto & Windus
9012345678	The Hobbit	Fantasy	18.99	Yes	J.R.R. Tolkien	Allen & Unwin
2345678901567	To Kill a Mockingbird	Fiction	12.99	Yes	Harper Lee	J. B. Lippincott & Co.
4567890123539	The Catcher in the Rye	Fiction	11.99	Yes	J.D. Salinger	Little, Brown and Comp...
4567891234234	The Sixth Extinction: An Unnatural History	Science	15.99	Yes	Elizabeth Kolbert	Henry Holt and Company
6789012345176	To the Lighthouse	Fiction	16.99	No	Virginia Woolf	The Hogarth Press
8901234567456	Animal Farm	Fiction	10.99	Yes	George Orwell	Secker & Warburg

```
125   # Display of the table:
126 • select * from Customer;
127
```

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

Customer_Id	Customer_Name	Customer_Address	Reg_date
1	Jerin Johnson	Oak Avenue	2021-12-01
2	Ishoya Smith	567 Pine Street	2022-02-15
3	Jennifer Justin	Main Street, Cityville, USA	2023-01-15
4	Idom Smith	Elm Street, Townsville, USA	2022-11-30
5	Charlie Brown	Oak Avenue, Villageton, USA	2023-03-10
6	Diana Martinez	101 Maple Lane, Hamletville, USA	2023-02-05
7	Emily Wilson	Pine Street, Countryside, USA	2022-09-20
8	Frank Miller	Cedar Avenue, Lakeside, USA	2022-12-18
9	Grace Taylor	404 Oak Street, Hilltop, USA	2023-04-25
10	Henry Clark	505 Elm Avenue, Riversend, USA	2023-05-12
11	Isabel Garcia	Birch Lane, Mountainview, USA	2020-10-08
12	Jack Harris	Pine Avenue, Lakeshore, USA	2022-08-15

```
152    # Display of the table:
153 •  select * from IssueStatus;
154
```

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

Issue_Id	Issued_cust	Issued_book_name	Issue_date	Isbn_book
1	10	The Great Gatsby	2023-01-20	1234567890
2	3	To Kill a Mockingbird	2023-02-05	2345678901567
3	2	Sapiens: A Brief History of Humankind	2023-03-15	2345678912
4	4	1984	2023-04-10	3456789012
5	12	The Hobbit	2023-05-20	9012345678
6	7	To the Lighthouse	2023-06-05	6789012345176
7	6	Pride and Prejudice	2023-07-10	5678901234
8	9	Brave New World	2023-08-15	7890123456
9	5	The Catcher in the Rye	2023-09-20	4567890123539
10	1	Harry Potter and the Philosopher's Stone	2023-10-25	1234567891

```
178    # Display of the table:
179 •  select * from ReturnStatus;
180
```

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

Return_Id	Return_cust	Return_book_name	Return_date	Isbn_book2
1	10	The Great Gatsby	2023-01-25	1234567890
2	3	To Kill a Mockingbird	2023-02-15	2345678901567
3	2	Sapiens: A Brief History of Humankind	2023-03-25	2345678912
4	4	1984	2023-04-20	3456789012
5	12	The Hobbit	2023-05-25	9012345678
6	7	To the Lighthouse	2023-06-15	6789012345176
7	6	Pride and Prejudice	2023-07-20	5678901234
8	9	Brave New World	2023-08-25	7890123456
9	5	The Catcher in the Rye	2023-09-30	4567890123539
10	1	Harry Potter and the Philosopher's Stone	2023-10-30	1234567891

Write the queries for the following :

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

```
181    # 1. Retrieve the book title, category, and rental price of all available books.
182 •  select Book_title, Category, Rental_Price,Stock_Status from Books where Stock_Status='Yes';
183
```

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

Book_title	Category	Rental_Price	Stock_Status
The Great Gatsby	Fiction	15.99	Yes
Harry Potter and the Philosopher's Stone	Fantasy	19.99	Yes
Sapiens: A Brief History of Humankind	History	14.99	Yes
Guns, Germs, and Steel: The Fates of Human Societies	History	16.99	Yes
Pride and Prejudice	Fiction	13.99	Yes
A Short History of Nearly Everything	Science	17.99	Yes
Brave New World	Fiction	17.99	Yes
The Hobbit	Fantasy	18.99	Yes
To Kill a Mockingbird	Fiction	12.99	Yes
The Catcher in the Rye	Fiction	11.99	Yes
The Sixth Extinction: An Unnatural History	Science	15.99	Yes
Animal Farm	Fiction	10.99	Yes

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

```
184    # 2. List the employee names and their respective salaries in descending order of salary.
185 •  select Emp_name, Salary from Employee order by Salary desc;
186
187
```

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

Emp_name	Salary
Johnson Doe	60000.00
Alexander Smith	60000.00
Kiran Susmith	60000.00
John Michael	55000.00
Jessica Martinez	50000.00
Erick Doe	50000.00
Farhan Khan	50000.00
Smith Jane	48000.00
Jennifer Davis	45000.00
Michael Johnson	45000.00
Emily Brown	40000.00
William Taylor	40000.00
David Wilson	38000.00
Robert Jones	38000.00
Sarah Miller	35000.00

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

```
188     # 3. Retrieve the book titles and the corresponding customers who have issued those books.
189 •   select b.Book_title, c.Customer_name
190     from Books b
191     inner join IssueStatus i on b.ISBN = i.Isbn_book
192     join Customer c on i.Issued_cust = c.Customer_Id;
193
```

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

Book_title	Customer_name
The Great Gatsby	Henry Clark
To Kill a Mockingbird	Jennifer Justin
Sapiens: A Brief History of Humankind	Ishoya Smith
1984	Idom Smith
The Hobbit	Jack Harris
To the Lighthouse	Emily Wilson
Pride and Prejudice	Diana Martinez
Brave New World	Grace Taylor
The Catcher in the Rye	Charlie Brown
Harry Potter and the Philosopher's Stone	Jerin Johnson

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

```
194     # 4. Display the total count of books in each category.
195 •   select Category,count(*) as Total_count_of_books from Books group by Category;
196
```

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

Category	Total_count_of_books
Fiction	8
Fantasy	2
History	2
Science	2

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

```
197    # 5. Retrieve the employee names and their positions for the employees whose salaries are above Rs.50,000.
198 •  select Emp_Name, Emp_Position, Salary from Employee where Salary > 50000;
199
```

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

Emp_Name	Emp_Position	Salary
John Michael	Librarian	55000.00
Johnson Doe	Cataloguer	60000.00
Alexander Smith	Manager	60000.00
Kiran Susmith	Manager	60000.00

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

```
200    # 6. List the customer names who registered before 2022-01-01 and have not issued any books yet.
201 •  select Customer_name, Reg_date from Customer where Reg_date < '2022-01-01' and
202    Customer_Id not in (select Issued_cust from IssueStatus);
203
```

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

Customer_name	Reg_date
Isabel Garcia	2020-10-08

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

```
205    # 7. Display the branch numbers and the total count of employees in each branch.
206 •  select Branch_no, count(*) Total_Employees from Employee group by Branch_no;
207
```

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

Branch_no	Total_Employees
1	7
2	1
3	2
4	2
5	1
7	1
8	1

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

```
208    # 8. Display the names of customers who have issued books in the month of June 2023.
209 •  select distinct c.Customer_name, i.Issue_date from Customer c
210    join IssueStatus i on c.Customer_Id = i.Issued_cust
211    where year(i.Issue_date) = 2023 and month(i.Issue_date) = 6;
212
```

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

Customer_name	Issue_date
Emily Wilson	2023-06-05

9. Retrieve book_title from a book table containing history.

```
213    # 9. Retrieve book_title from book table containing history.
214    select Book_title from books where Category = 'History';
215
```

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

Book_title
Sapiens: A Brief History of Humankind
Guns, Germs, and Steel: The Fates of Human Societies

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

```
216    # 10.Retrieve the branch numbers along with the count of employees for branches having more than 5 employees.
217    select Branch_no, count(*) as Total_Employees from Employee
218    group by Branch_no
219    having Total_Employees > 5;
220
```

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

Branch_no	Total_Employees
1	7

Conclusion:

The system provides functionalities for book issuance, returns, employee management, and customer registration, among others. This system enables users to perform various queries and operations to efficiently manage library resources and services. The queries outlined in the project requirements allow us to retrieve valuable insights and perform necessary actions within the library management system.