1. Create a database
Sample Database: Library
2. Create tables
● Tables:
○ Books (BookID, Title, Author, Genre, PublishedYear)
○ Members (MemberID, FirstName, LastName, MembershipDate)
○ BorrowingRecords (RecordID, BookID, MemberID, BorrowDate,
ReturnDate) - set BookID, MemberID as foreign keys
● Alter table by adding phone number AFTER LAST NAME AND email after
phone number

```
5 • ⊖ create table books(BookID int primary key, Title varchar(100),
6        Author varchar(50), Genre varchar(100), PublishedYear year);
7 • ⊖ create table members(MemberID int primary key, FirstName varchar(20),
8        LastName varchar(20), MembershipDate date);
9 • ⊖ create table BorrowingRecords (RecordID int primary key, BookID int ,
10       MemberID int, BorrowDate date,
11       ReturnDate date);
12 •     alter table Members
13       add column Phone varchar(20) after LastName,
14       add column Email varchar(100) after Phone;
```

3. Inserting Data

```
15 • ⊖ INSERT INTO Books (BookID, Title, Author, Genre,|
16       PublishedYear) VALUES
17       (1, '1984', 'George Orwell', 'Dystopian', 1949),
18   ⊖ (2, 'To Kill a Mockingbird', 'Harper Lee',
19       'Fiction', 1960), (3, 'The God of Small Things',
20       'Arundhati Roy', 'Fiction', 1997),
21   ⊖ (4, 'Midnight\'s Children', 'Salman Rushdie',
22       'Historical Fiction', 1981),
23   ⊖ (5, 'The White Tiger', 'Aravind Adiga', 'Fiction',
24       2008), (6, 'Interpreter of Maladies', 'Jhumpa
25       Lahiri', 'Short Stories', 1999),
26   ⊖ (7, 'Train to Pakistan', 'Khushwant Singh',
27       'Historical Fiction', 1956),
28   ⊖ (8, 'A Suitable Boy', 'Vikram Seth', 'Fiction',
29       1993),
30   ⊖ (9, 'The Immortals of Meluha', 'Amish Tripathi',
31       'Mythological Fiction', 2010),
```

```sql
32        (10, 'The Guide', 'R. K. Narayan', 'Fiction',
33          1958);
34    •   INSERT INTO Members (MemberID, FirstName,
35          LastName, MembershipDate)
36          VALUES (1, 'John', 'Doe', '2023-01-15'),
37          (2, 'Jane', 'Smith', '2023-02-10');
38    •   INSERT INTO Members (MemberID, FirstName,
39          LastName, MembershipDate)
40          VALUES (3, 'Alice', 'Johnson', '2023-03-20');
41    •   INSERT INTO BorrowingRecords (RecordID, BookID,
42          MemberID, BorrowDate, ReturnDate)
43          VALUES (1, 1, 1, '2023-03-01', NULL),
44          (2, 2, 2, '2023-03-05', '2023-03-20');
45    •   INSERT INTO BorrowingRecords (RecordID, BookID,
46          MemberID, BorrowDate, ReturnDate)
47          VALUES (3, 3, 3, '2023-03-21', NULL);
```

Select All Data

```sql
48  •    select * from books;
```

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

BookID	Title	Author	Genre	PublishedYear
1	1984	George Orwell	Dystopian	1949
2	To Kill a Mockingbird	Harper Lee	Fiction	1960
3	The God of Small Things	Arundhati Roy	Fiction	1997
4	Midnight's Children	Salman Rushdie	Historical Fiction	1981
5	The White Tiger	Aravind Adiga	Fiction	2008

```sql
49  •    select * from Members;
```

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

MemberID	FirstName	LastName	Phone	Email	MembershipDate
1	John	Doe	NULL	NULL	2023-01-15
2	Jane	Smith	NULL	NULL	2023-02-10
3	Alice	Johnson	NULL	NULL	2023-03-20
NULL	NULL	NULL	NULL	NULL	NULL

```sql
50  •    select * from BorrowingRecords;
```

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

RecordID	BookID	MemberID	BorrowDate	ReturnDate
1	1	1	2023-03-01	NULL
2	2	2	2023-03-05	2023-03-20
3	3	3	2023-03-21	NULL
NULL	NULL	NULL	NULL	NULL

Select books and author from books

```
51 •    select title,author from books;
```

title	author
1984	George Orwell
To Kill a Mockingbird	Harper Lee
The God of Small Things	Arundhati Roy
Midnight's Children	Salman Rushdie
The White Tiger	Aravind Adiga

Select all details of books with genre 'Dystopian'

```
52 •    Select * from books where genre='Dystopian';
```

BookID	Title	Author	Genre	PublishedYear
1	1984	George Orwell	Dystopian	1949
NULL	NULL	NULL	NULL	NULL

Display the details of all books in descending order of published year

```
53 •    select * from books order by publishedyear desc;
```

BookID	Title	Author	Genre	PublishedYear
9	The Immortals of Meluha	Amish Tripathi	Mythological Fiction	2010
5	The White Tiger	Aravind Adiga	Fiction	2008
6	Interpreter of Maladies	Jhumpa Lahiri	Short Stories	1999
3	The God of Small Things	Arundhati Roy	Fiction	1997
8	A Suitable Boy	Vikram Seth	Fiction	1993

Display different genres from books

```
54 •    select distinct genre from books;
```

genre
Dystopian
Fiction
Historical Fiction
Short Stories
Mythological Fiction

Count no of books in each genre

```
55 •    select count(title)as no_count,genre from books   group by genre;
```

no_count	genre
1	Dystopian
5	Fiction
2	Historical Fiction
1	Short Stories
1	Mythological Fiction

How many book titles are there in each genre that have more than
three titles?

```sql
56 •    select genre,count(title)as no_count from books  group by genre having no_count>3;
```

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

genre	no_count
▶ Fiction	5

View borrowing records sorted by borrow date

```sql
57 •    select * from BorrowingRecords order by BorrowDate;
```

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

RecordID	BookID	MemberID	BorrowDate	ReturnDate
▶ 1	1	1	2023-03-01	NULL
2	2	2	2023-03-05	2023-03-20
3	3	3	2023-03-21	NULL
NULL	NULL	NULL	NULL	NULL

Count number of books borrowed by each member

```sql
58 •    select m.FirstName,m.LastName,count(br.BookID) as no_books from members m left join
59      BorrowingRecords br on m.MemberID=br.MemberID
60      group by m.memberid, m.firstname
61      order by m.memberid;
```

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

FirstName	LastName	no_books
▶ John	Doe	1
Jane	Smith	1
Alice	Johnson	1

Show 5 records from Books

```sql
62 •    select * from Books limit 5;
```

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

BookID	Title	Author	Genre	PublishedYear
▶ 1	1984	George Orwell	Dystopian	1949
2	To Kill a Mockingbird	Harper Lee	Fiction	1960
3	The God of Small Things	Arundhati Roy	Fiction	1997
4	Midnight's Children	Salman Rushdie	Historical Fiction	1981
5	The White Tiger	Aravind Adiga	Fiction	2008

Retrieve the first two records from the Books table where the genre
is 'Fiction'?

```sql
63 •    select *from books where genre = 'Fiction' limit 2;
```

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

BookID	Title	Author	Genre	PublishedYear
▶ 2	To Kill a Mockingbird	Harper Lee	Fiction	1960
3	The God of Small Things	Arundhati Roy	Fiction	1997
NULL	NULL	NULL	NULL	NULL

update the genre of the book titled '1984' to 'Classic' in the Books table?

```
64 ●    update Books set genre='Classic' where title='1984';
```

delete records from the Books table where the published year is before 1950?

```
66 ●    delete from Books where publishedyear < 1950;
67
```

Retrieve the first name and last name of members along with the title of the books they borrowed and the borrow date?

```
68 ●    select m.firstname, m.lastname, b.title as borrowed_book_title, br.borrowdate
69      from members m
70      inner join BorrowingRecords br on m.memberid = br.memberid
71      inner join books b on br.bookid=b.bookid;
72
```

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

firstname	lastname	borrowed_book_title	borrowdate
Jane	Smith	To Kill a Mockingbird	2023-03-05
Alice	Johnson	The God of Small Things	2023-03-21

Retrieve the first name and last name of members along with the title of the books they borrowed (if any) and the borrow date (if any), including members who haven't borrowed any books?
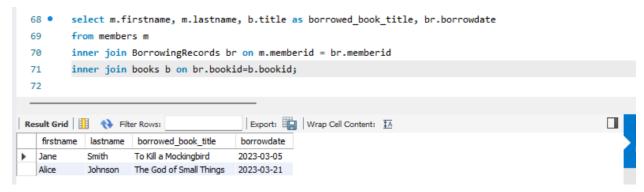
```
73 ●    select m.firstname, m.lastname, b.title as borrowed_book_title, br.borrowdate
74      from members m
75      left join BorrowingRecords br on m.memberid = br.memberid
76      left join books b on br.bookid=b.bookid
77      order by m.lastname, m.firstname;
78
79
```

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

firstname	lastname	borrowed_book_title	borrowdate
John	Doe	NULL	2023-03-01
Alice	Johnson	The God of Small Things	2023-03-21
Jane	Smith	To Kill a Mockingbird	2023-03-05

1. Write a query to retrieve the list of books that have never been borrowed.

```
78
79 •    select * from books
80  ⊖  where bookid not in (
81          select distinct bookid
82          from borrowingrecords);
83
```

BookID	Title	Author	Genre	PublishedYear
4	Midnight's Children	Salman Rushdie	Historical Fiction	1981
5	The White Tiger	Aravind Adiga	Fiction	2008
6	Interpreter of Maladies	Jhumpa Lahiri	Short Stories	1999
7	Train to Pakistan	Khushwant Singh	Historical Fiction	1956
8	A Suitable Boy	Vikram Seth	Fiction	1993

2. Write a query to retrieve all members who have borrowed more than one Book.

```
84 •    select memberid, COUNT(*) as no_borrowed_books
85      from borrowingrecords group by memberid having COUNT(*) > 1;
```

memberid	no_borrowed_books

3. Write a query to find the most borrowed book and the number of times it has been borrowed.

```
86 •    select b.bookid, b.title, COUNT(*) as num_borrowings
87      from borrowingrecords br
88      join books b on br.bookid = b.bookid
89      group by b.bookid, b.title
90      order by num_borrowings desc
91      limit 1;
```

bookid	title	num_borrowings
2	To Kill a Mockingbird	1

4. Write a query to retrieve all borrowing records along with member details and book details, sorted by borrowing date in descending order.

```
93 •    select br.recordid, m.memberid, m.firstname as member_name, b.bookid, b.title
94       as book_title, br.borrowdate
95      from borrowingrecords br
96      join members m on br.memberid = m.memberid
97      join books b on br.bookid = b.bookid
98      order by br.borrowdate desc;
99
```

recordid	memberid	member_name	bookid	book_title	borrowdate
3	3	Alice	3	The God of Small Things	2023-03-21
2	2	Jane	2	To Kill a Mockingbird	2023-03-05

5. List Books by Genre with Total Borrowings

```
 99
100 ●    select b.Genre, b.Title, count(br.RecordID) as TotalBorrowings
101      from Books b
102      left join BorrowingRecords br on b.BookID = br.BookID
103      group by b.Genre, b.Title
104      order by b.Genre, TotalBorrowings desc;
```

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

Genre	Title	TotalBorrowings
Fiction	To Kill a Mockingbird	1
Fiction	The God of Small Things	1
Fiction	The White Tiger	0
Fiction	A Suitable Boy	0
Fiction	The Guide	0

6. Count Number of Borrowings per Member

```
106 ●    select m.memberid, m.firstname as member_name, COUNT(*) as num_borrowings
107      from borrowingrecords br
108      join members m on br.memberid = m.memberid
109      group by m.memberid, m.firstname
110      order by num_borrowings desc;
```

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

memberid	member_name	num_borrowings
1	John	1
2	Jane	1
3	Alice	1