

## DDL Assignment 2

### Library System

Use the following Schema to perform the given set of assignment.

#### Tables-

**Member – It contains information about the members**

Column Name	Data Type	Description
Member_Id	Integer	Unique Member ID
Member_Name	Varchar(30)	Name of the Library member
Member_address	Varchar(50)	Address of the member
Acc_Open_Date	Date	Date of membership
Membership_type	Varchar(20)	Type of the membership such as 'Lifetime', 'Annual', 'Half Yearly', 'Quarterly'
Fees_paid	Integer	Membership fees paid
Max_Books_Allowed	Integer	Total Number of books that can be issued to the member.
Penalty_Amount	Decimal(7,2)	Penalty amount due

**Books- It contains information about the books belongs to the library**

Column Name	Data Type	Description
Book_No	Integer	Book identification number
Book_Name	VarChar(30)	Name of the book
Author_name	Varchar(30)	Author of the book
Cost	Decimal(7,2)	Cost of the book
Category	Char(10)	Category like Science , Fiction etc.

**Issue – It contains the information about issue of the books**

Column Name	Data Type	Description
Lib_Issue_Id	Integer	Library Book Issue No
Book_No	Integer	Number of the book issued
Member_Id	Integer	Member that issued the book
Issue_Date	Date	Date of Issue
Return_date	Date	Return date

## Task / Problems:

- 1) Create the table Member, Books and Issue without any constraints as mentioned in the schema description above.

```
mysql> use assignment2;
Database changed
mysql> create table member
-> (member_id int,
-> member_name varchar(30),
-> member_address varchar(50),
-> acc_open_date date,
-> membership_type varchar(20),
-> fess_paid int,
-> max_books_allowed int,
-> penalty_amount decimal(7,2));
Query OK, 0 rows affected (0.12 sec)

mysql> create table books
-> (book_no int,
-> book_name varchar(30),
-> author_name varchar(30),
-> cost decimal(7,2),
-> category char(10));
Query OK, 0 rows affected (0.06 sec)

mysql> create table issue
-> (lib_issue_id int,
-> book_no int,
-> member_id int,
-> issue_date date,
-> return_date date);
Query OK, 0 rows affected (0.06 sec)
```

- 2) View the structure of the tables.

```
mysql> desc member;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| member_id | int | YES | | NULL | |
| member_name | varchar(30) | YES | | NULL | |
| member_address | varchar(50) | YES | | NULL | |
| acc_open_date | date | YES | | NULL | |
| membership_type | varchar(20) | YES | | NULL | |
| fess_paid | int | YES | | NULL | |
| max_books_allowed | int | YES | | NULL | |
| penalty_amount | decimal(7,2) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.02 sec)

mysql> desc books;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| book_no | int | YES | | NULL | |
| book_name | varchar(30) | YES | | NULL | |
| author_name | varchar(30) | YES | | NULL | |
| cost | decimal(7,2) | YES | | NULL | |
| category | char(10) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.01 sec)

mysql> desc issue;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| lib_issue_id | int | YES | | NULL | |
| book_no | int | YES | | NULL | |
| member_id | int | YES | | NULL | |
| issue_date | date | YES | | NULL | |
| return_date | date | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

3) Drop the Member table

```
mysql> drop table member;
Query OK, 0 rows affected (0.04 sec)
```

4) Create the table Member again as per the schema description with the following constraints.

- a. Member\_Id – Primary Key
- b. Membership\_type - 'Lifetime', 'Annual', 'Half Yearly', 'Quarterly'

```
mysql> create table member
-> (member_id int primary key,
-> member_name varchar(20),
-> member_address varchar(50),
-> acc_open_date date,
-> membership_type enum('Lifetime','Annual','Half Yearly','Quarterly'),
-> fess_paid int,
-> max_books_allowed int,
-> penalty_amount decimal(7,2));
Query OK, 0 rows affected (0.07 sec)
```

```
mysql> desc member;
```

Field	Type	Null	Key	Default	Extra
member_id	int	NO	PRI	NULL	
member_name	varchar(20)	YES		NULL	
member_address	varchar(50)	YES		NULL	
acc_open_date	date	YES		NULL	
membership_type	enum('Lifetime','Annual','Half Yearly','Quarterly')	YES		NULL	
fess_paid	int	YES		NULL	
max_books_allowed	int	YES		NULL	
penalty_amount	decimal(7,2)	YES		NULL	

8 rows in set (0.01 sec)

5) Modify the table Member increase the width of the member name to 30 characters.

```
mysql> alter table member modify member_name varchar(30);
Query OK, 0 rows affected (0.04 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

6) Add a column named as Reference of Char(30) to Issue table.

```
mysql> alter table issue add column reference char(30);
Query OK, 0 rows affected (0.06 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

7) Delete/Drop the column Reference from Issue.

```
mysql> alter table issue drop column reference;
Query OK, 0 rows affected (0.04 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

8) Rename the table Issue to Lib\_Issue.

```
mysql> rename table issue to lib_issue;
Query OK, 0 rows affected (0.06 sec)
```

9) Insert following data in table Member

Member ID	Member Name	Member Address	Acc_Open_Date	Membership_type	Fees_Paid	Max_Books_Allowed	Penalty_Amount
1	Richa Sharma	Pune	10-12-05	Lifetime	25000	5	50
2	Garima Sen	Pune	current date	Annual	1000	3	Null

```
mysql> insert into member
-> (member_id,member_name,member_address,acc_open_date,membership_type,fess_paid,max_books_allowed,penalty_amount)
-> values
-> (1,'richa sharma','pune','2005-12-10','lifetime',25000,5,50),
-> (2,'garima sen','pune',CURDATE(),'annual',1000,3,NULL);
Query OK, 2 rows affected (0.01 sec)
Records: 2 Duplicates: 0 Warnings: 0
```

```
mysql> table member;
+-----+-----+-----+-----+-----+-----+-----+-----+
| member_id | member_name | member_address | acc_open_date | membership_type | fess_paid | max_books_allowed | penalty_amount |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | richa sharma | pune | 2005-12-10 | Lifetime | 25000 | 5 | 50.00 |
| 2 | garima sen | pune | 2025-09-24 | Annual | 1000 | 3 | NULL |
+-----+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

10) Insert at least 5 records with suitable data.

```
mysql> insert into member
-> (member_id,member_name,member_address,acc_open_date,membership_type,fess_paid,max_books_allowed,penalty_amount)
-> values
-> (3,'Aishwarya Mane','Karad','2020-03-15','Annual',1500,4,0),
-> (4,'Sneha Joshi','Satara','2019-07-20','Half Yearly',800,2,0),
-> (5,'Rohit patil','Pune','2021-01-10','Quarterly',500,3,25),
-> (6,'Priya jadhav','nashik','2022-08-05','Annual',1200,5,0),
-> (7,'Nikhil Patel','mumbai','2020-11-25','Lifetime',25000,6,50);
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> table member;
+-----+-----+-----+-----+-----+-----+-----+-----+
| member_id | member_name | member_address | acc_open_date | membership_type | fess_paid | max_books_allowed | penalty_amount |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | richa sharma | pune | 2005-12-10 | Lifetime | 25000 | 5 | 50.00 |
| 2 | garima sen | pune | 2025-09-24 | Annual | 1000 | 3 | NULL |
| 3 | Aishwarya Mane | Karad | 2020-03-15 | Annual | 1500 | 4 | 0.00 |
| 4 | Sneha Joshi | Satara | 2019-07-20 | Half Yearly | 800 | 2 | 0.00 |
| 5 | Rohit patil | Pune | 2021-01-10 | Quarterly | 500 | 3 | 25.00 |
| 6 | Priya jadhav | nashik | 2022-08-05 | Annual | 1200 | 5 | 0.00 |
| 7 | Nikhil Patel | mumbai | 2020-11-25 | Lifetime | 25000 | 6 | 50.00 |
+-----+-----+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)
```

- 10) Modify the column **Member\_name**. Decrease the width of the member name to 20 characters. (If it does not allow state the reason for that)

```
mysql> alter table member modify column member_name varchar(20);
Query OK, 7 rows affected (0.24 sec)
Records: 7 Duplicates: 0 Warnings: 0
```

- 11) Try to insert a record with Max\_Books\_Allowed = 110, Observe the error that comes.

```
mysql> insert into member
-> (member_id,member_name,member_address,acc_open_date,membership_type,fess_paid,max_books_allowed,penalty_amount)
-> values
-> (8,'pratik More','umbraj','2025-02-10','Annual',20000,110,0);
Query OK, 1 row affected (0.01 sec)
```

```
mysql> table member;
```

member_id	member_name	member_address	acc_open_date	membership_type	fess_paid	max_books_allowed	penalty_amount
1	richa sharma	pune	2005-12-10	Lifetime	25000	5	50.00
2	garima sen	pune	2025-09-24	Annual	1000	3	NULL
3	Aishwarya Mane	Karad	2020-03-15	Annual	1500	4	0.00
4	Sneha Joshi	Satara	2019-07-20	Half Yearly	800	2	0.00
5	Rohit patil	Pune	2021-01-10	Quarterly	500	3	25.00
6	Priya jadhav	nashik	2022-08-05	Annual	1200	5	0.00
7	Nikhil Patel	mumbai	2020-11-25	Lifetime	25000	6	50.00
8	pratik More	umbraj	2025-02-10	Annual	20000	110	0.00

8 rows in set (0.00 sec)

- 12) Generate another table named **Member101** using a Create command along with a simple SQL query on member table.

```
mysql> create table member101 as(select *from member);
Query OK, 8 rows affected (0.19 sec)
Records: 8 Duplicates: 0 Warnings: 0
```

- 13) Add the constraints on columns max\_books\_allowed and penalty\_amt as follows

- max\_books\_allowed < 100
- penalty\_amt maximum 1000

Also give names to the constraints.

```
mysql> alter table member101
-> add constraint chk_max_books_allowed
-> check(max_books_allowed < 100);
Query OK, 8 rows affected (0.20 sec)
Records: 8 Duplicates: 0 Warnings: 0
```



```
mysql> alter table member101
-> add constraint chk_penalty_amount
-> check(penalty_amount <= 1000);
Query OK, 8 rows affected (0.18 sec)
Records: 8 Duplicates: 0 Warnings: 0
```

14) Drop the table books.

```
mysql> drop table books;
Query OK, 0 rows affected (0.03 sec)
```

15) Create table Books again as per the schema description with the following constraints.

- a. Book\_No – Primary Key
- b. Book\_Name – Not Null
- c. Category – System, Fiction, Database, RDBMS, Others.

```
mysql> create table books
-> (book_no int primary key,
-> book_name varchar(30) not null,
-> author_name varchar(30),
-> cost decimal(7,2),
-> Category ENUM('System', 'Fiction', 'Database', 'RDBMS', 'Others')
-> );
Query OK, 0 rows affected (0.06 sec)
```

16) Insert data in Book table as follows:

Book_No	Book Name	Author	Cost	Category
101	Let us C	Denis Ritchie	450	System
102	Oracle – Complete Ref	Loni	550	Database
103	Mastering SQL	Loni	250	Database
104	PL SQL-Ref	Scott Urman	750	Database



```
mysql> insert into book(book_no,book_name,author_name,cost,category)
-> values(101,'Let us C','Denis Ritchie',450,'System'),
-> (102,'Oracle - Complete Ref','Loni',550,'Database'),
-> (103,'Mastering SQL','Loni',250,'Database'),
-> (104,'PL SQL-Ref','Scott Urman',750,'Database');
Query OK, 4 rows affected (0.01 sec)
Records: 4 Duplicates: 0 Warnings: 0
```

```
mysql> table book;
```

book_no	book_name	author_name	cost	category
101	Let us C	Denis Ritchie	450.00	System
102	Oracle - Complete Ref	Loni	550.00	Database
103	Mastering SQL	Loni	250.00	Database
104	PL SQL-Ref	Scott Urman	750.00	Database

4 rows in set (0.00 sec)

17) Insert more records in Book table.

```
mysql> insert into book(book_no,book_name,author_name,cost,category)
-> values(105,'Database Management Systems','Raghu Ramakrishnan',6000,'McGraw Hill'),
-> (106,'Operating System Concepts','Silberschatz',700,'Wiley'),
-> (107,'Java Complete Reference','Herbert Schildt',750,'McGraw Hill');
Query OK, 3 rows affected (0.01 sec)
Records: 3 Duplicates: 0 Warnings: 0
```

18) View the data in the tables using simple SQL query.

```
mysql> table book;
```

book_no	book_name	author_name	cost	category
101	Let us C	Denis Ritchie	450.00	System
102	Oracle - Complete Ref	Loni	550.00	Database
103	Mastering SQL	Loni	250.00	Database
104	PL SQL-Ref	Scott Urman	750.00	Database
105	Database Management Systems	Raghu Ramakrishnan	6000.00	McGraw Hill
106	Operating System Concepts	Silberschatz	700.00	Wiley
107	Java Complete Reference	Herbert Schildt	750.00	McGraw Hill

7 rows in set (0.00 sec)

19) Insert into Book following data.

105, National Geographic, Adis Scott, 1000, Science

```
mysql> update book
-> set book_name='National Geographic',
-> author_name='Adis Scott',
-> cost=1000,
-> category='Science'
-> where book_no=105;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> table book;
```

book_no	book_name	author_name	cost	category
101	Let us C	Denis Ritchie	450.00	System
102	Oracle - Complete Ref	Loni	550.00	Database
103	Mastering SQL	Loni	250.00	Database
104	PL SQL-Ref	Scott Urman	750.00	Database
105	National Geographic	Adis Scott	1000.00	Science
106	Operating System Concepts	Silberschatz	700.00	Wiley
107	Java Complete Reference	Herbert Schildt	750.00	McGraw Hill

```
7 rows in set (0.00 sec)
```

20) Rename the table Lib\_Issue to Issue.

```
mysql> alter table lib_issue
-> rename to issue;
Query OK, 0 rows affected (0.04 sec)
```

21) Drop table Issue.

```
mysql> drop table issue;
Query OK, 0 rows affected (0.03 sec)
```

22) As per the given structure Create table Issue again with following constraints.

- Lib\_Issue\_Id-Primary key
- Book\_No- foreign key
- Member\_id - foreign key
- Issue\_date
- Return\_date

```
mysql> create table issue
-> (lib_issue_id int primary key,
-> book_no int,
-> member_id int,
-> issue_date date,
-> return_date date,
-> constraint fk_book foreign key(book_no)references book(book_no),
-> constraint fk_member foreign key(member_id)references
member101(member_id));
Query OK, 0 rows affected (0.10 sec)
```



23) Insert following data into Issue table.

```
mysql> insert into issue
-> (lib_issue_id,book_no,member_id,issue_date)
-> values
-> (7001,101,1,'10-12-06'),
-> (7002,102,2,'25-12-06'),
-> (7003,104,1,'15-01-06'),
-> (7004,101,1,'04-07-06'),
-> (7005,104,2,'15-11-06'),
-> (7006,101,3,'18-02-06');
Query OK, 6 rows affected (0.05 sec)
Records: 6 Duplicates: 0 Warnings: 0

mysql> table issue;
+-----+-----+-----+-----+-----+
| lib_issue_id | book_no | member_id | issue_date | return_date |
+-----+-----+-----+-----+-----+
| 7001 | 101 | 1 | 2010-12-06 | NULL |
| 7002 | 102 | 2 | 2025-12-06 | NULL |
| 7003 | 104 | 1 | 2015-01-06 | NULL |
| 7004 | 101 | 1 | 2004-07-06 | NULL |
| 7005 | 104 | 2 | 2015-11-06 | NULL |
| 7006 | 101 | 3 | 2018-02-06 | NULL |
+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

Lib_Issue_Id	Book No	Member ID	Issue Date
7001	101	1	10-Dec-06
7002	102	2	25-Dec-06
7003	104	1	15-Jan-06
7004	101	1	04-Jul-06
7005	104	2	15-Nov-06
7006	101	3	18-Feb-06

24) Remove the constraints on Issue table

```
mysql> alter table issue drop foreign key fk_book;
Query OK, 0 rows affected (0.11 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> alter table issue drop foreign key fk_member;
Query OK, 0 rows affected (0.03 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> alter table issue drop primary key;
Query OK, 6 rows affected (1.58 sec)
Records: 6 Duplicates: 0 Warnings: 0
```



25) Insert a record in Issue table. The member\_id should not exist in member table.

```
mysql> insert into issue
-> (lib_issue_id,book_no,member_id,issue_date)
-> values
-> (7007,2,9,'2025-01-12');
Query OK, 1 row affected (0.10 sec)

mysql> table issue;
+-----+-----+-----+-----+-----+
| lib_issue_id | book_no | member_id | issue_date | return_date |
+-----+-----+-----+-----+-----+
| 7001 | 101 | 1 | 2010-12-06 | NULL |
| 7002 | 102 | 2 | 2025-12-06 | NULL |
| 7003 | 104 | 1 | 2015-01-06 | NULL |
| 7004 | 101 | 1 | 2004-07-06 | NULL |
| 7005 | 104 | 2 | 2015-11-06 | NULL |
| 7006 | 101 | 3 | 2018-02-06 | NULL |
| 7007 | 2 | 9 | 2025-01-12 | NULL |
+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)
```

26) Now enable the constraints of Issue table. Observe the error

```
mysql> alter table issue
-> add primary key(lib_issue_id);
Query OK, 0 rows affected (0.97 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table issue
-> add constraint fk_book foreign key(book_no)references book(book_no);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails
```

27) Delete the record inserted at Q-27) and enable the constraints.

```
mysql> DELETE FROM issue
-> WHERE book_no NOT IN (SELECT book_no FROM book);
Query OK, 1 row affected (0.03 sec)

mysql> alter table issue
-> add constraint fk_book foreign key(book_no)references book(book_no),
-> add constraint fk_member foreign key(member_id)references member101(member_id);
Query OK, 6 rows affected (0.23 sec)
Records: 6 Duplicates: 0 Warnings: 0
```

28) Try to delete the record of member id 1 from member table and observe the error .

```
mysql> delete table member101
-> where member_id=1;
ERROR 1064 (42000): You have an error in your SQL syntax; c
where member_id=1' at line 1
```



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29) View the data and structure of all the three tables Member, Issue, Book.

```
mysql> table member101;  
mysql> table issue;  
mysql> table book;  
mysql> desc member101;  
mysql> desc issue;  
mysql> desc book;
```

30) Modify the Return\_Date of 7004,7005 to 15 days after the Issue\_date.

```
mysql> UPDATE issue  
-> SET return_date = DATE_ADD(issue_date, INTERVAL 15 DAY)  
-> where lib_issue_id IN (7004, 7005);  
Query OK, 2 rows affected (0.01 sec)  
Rows matched: 2 Changed: 2 Warnings: 0
```

31) Remove all the records from Issue table where member\_ID is 1 and Issue date in before 10-Dec-06.

```
mysql> delete from issue  
-> where member_id=1 and issue_date < '2006-12-10';  
Query OK, 1 row affected (0.01 sec)
```

32) Remove all the records from Book table with category other than RDBMS and Database.

```
mysql> DELETE FROM issue
-> WHERE book_no IN (
->     SELECT book_no FROM book
->     WHERE category IN ('RDBMS','Database')
-> );
Query OK, 3 rows affected (0.02 sec)

mysql> delete from book
-> where category in ('RDBMS','Database');
Query OK, 3 rows affected (0.02 sec)
```

33) Remove the table Member.

```
mysql> DROP TABLE member101;
```

Query OK, 0 rows affected (0.06 sec)

34) Remove the table Book.