

ASSIGNMENT 2: (LIBRARY SYSTEM) :

PROBLEM STATEMENT:

Book(**Book_id**, Title, Author, Subject, Price)

Borrower(**B_id**, B_name, Addr, Contact, Age)

Borrows(**Book_id**, **B_id**, Date_of_issue, Date_of_return, Fine)

Create the above tables with appropriate SQL commands. Define all integrity constraints and enter sufficient data. Write SQL commands for following queries and give the output for each query.

- i) Find out the books with maximum price.
- ii) Find out the books of Computer Science with maximum price.
- iii) Find out the total no. of books under each subject in the above database.
- iv) Find out the total no. of books priced above 500 under each subject in the database.
- v) Find out the subject of the book for which more than or equal to two books exists in the database.
- vi) Display the average age of the borrowers whose name starts with 'S'.
- vii) Display borrower name who lives in Kolkata
- viii) Display the title of Books whose author's name is of 5 characters.
- ix) Display the title of Books whose author's name's 3rd letter is 't'.

SOLUTION:

□ **DATABASE CREATION AND USE:**

```
mysql> create database first4;
```

```
Query OK, 1 row affected (0.00 sec)
```

```
mysql> use first4;
```

```
Database changed
```

□ **TABLE CREATION:**

- **BOOK**

```
mysql> create table Book
```

```
-> (  
-> Book_id varchar(7) primary key,  
-> Title varchar(20),  
-> Author varchar(20),  
-> Subject varchar(20),  
-> Price int(6)  
-> );
```

Query OK, 0 rows affected (0.09 sec)

- **BORROWER**

```
mysql> create table Borrower
```

```
-> (  
-> B_id varchar(5) primary key,  
-> B_name varchar(20) not null,  
-> Addr varchar(10),  
-> Contact bigint(15),  
-> Age int(3)  
-> );
```

Query OK, 0 rows affected (0.14 sec)

- **BORROWS**

```
mysql> create table Borrows
```

```
-> (  
-> Book_id varchar(7) references Book,  
-> B_id varchar(5) references Borrower,  
-> Date_of_issue date,  
-> Date_of_return date,  
-> Fine int(5)  
-> );
```

Query OK, 0 rows affected (0.05 sec)

□ **INTEGRITY CONSTRAINTS:**

- **BOOK**

```
mysql> desc Book;
```

```
+-----+-----+-----+-----+-----+-----+  
| Field | Type      | Null | Key | Default | Extra |  
+-----+-----+-----+-----+-----+-----+  
| Book_id | varchar(7) | NO   | PRI | NULL    |      |  
| Title   | varchar(20) | YES  |     | NULL    |      |  
| Author  | varchar(20) | YES  |     | NULL    |      |  
| Subject | varchar(10) | YES  |     | NULL    |      |  
| Price   | int(6)      | YES  |     | NULL    |      |  
+-----+-----+-----+-----+-----+-----+
```

5 rows in set (0.00 sec)

- **BORROWER**

```
mysql> desc Borrower;
```

```
+-----+-----+-----+-----+-----+-----+
```

Field	Type	Null	Key	Default	Extra
B_id	varchar(5)	NO	PRI	NULL	
B_name	varchar(20)	NO		NULL	
Addr	varchar(10)	YES		NULL	
Contact	int(15)	YES		NULL	
Age	int(3)	YES		NULL	

5 rows in set (0.02 sec)

- **BORROWS**

mysql> desc Borrows;

Field	Type	Null	Key	Default	Extra
Book_id	varchar(7)	YES		NULL	
B_id	varchar(5)	YES		NULL	
Date_of_issue	date	YES		NULL	
Date_of_return	date	YES		NULL	
Fine	int(5)	YES		NULL	

5 rows in set (0.00 sec)

□ **TUPLE INSERTION:**

- **BOOK**

mysql> insert into Book values('bk01','Initial
Mathamatics','Patra','Mathematics',800);
Query OK, 1 row affected (0.13 sec)

mysql> insert into Book values('bk02','Funda of Stats','Matariya','Statistics',800);
Query OK, 1 row affected (0.13 sec)

mysql> commit;
Query OK, 0 rows affected (0.00 sec)

mysql> select * from Book;

Book_id	Title	Author	Subject	Price
bk01	Initial Mathamatics	Patra	Mathematics	800
bk02	Funda of Stats	Matariya	Statistics	800
bk03	Computer A B C D	Sinha	Computer Science	720
bk04	Calculus Analysis	Abel	Mathematics	650
bk05	Maths Analysis	Rudin	Mathematics	330
bk06	Computer Fundamental	Simona	Computer Science	470

6 rows in set (0.00 sec)

- **BORROWER**

```
mysql> insert into Borrower values('bo01','Saheb','Kolkata',9847752101,25);
Query OK, 1 row affected (0.06 sec)
```

```
mysql> insert into Borrower values('bo02','Smita','Asam',7454845210,30);
Query OK, 1 row affected (0.11 sec)
```

```
mysql> commit;
Query OK, 0 rows affected (0.00 sec)
```

```
mysql> select * from Borrower;
+-----+-----+-----+-----+-----+
| B_id | B_name | Addr   | Contact | Age |
+-----+-----+-----+-----+-----+
| bo01 | Saheb  | Kolkata | 9847752101 | 25 |
| bo02 | Smita  | Asam    | 7454845210 | 30 |
| bo03 | Aman   | Kolkata | 9899845120 | 55 |
| bo04 | Kabita | Kolkata | 8958412561 | 45 |
| bo05 | Sima   | Krishnagar | 8899747152 | 65 |
| bo06 | Ananta | Bidhanpur | 9932254125 | 20 |
+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

- **BORROWS**

```
mysql> insert into Borrows values('bk05','b02','2019-05-14','2019-06-21',31);
Query OK, 1 row affected (0.13 sec)
```

```
mysql> insert into Borrows values('bk04','b01','2018-07-14','2018-07-30',9);
Query OK, 1 row affected (0.06 sec)
```

```
mysql> commit;
Query OK, 0 rows affected (0.00 sec)
```

```
mysql> select * from Borrows;
+-----+-----+-----+-----+-----+
| Book_id | B_id | Date_of_issue | Date_of_return | Fine |
+-----+-----+-----+-----+-----+
| bk05    | b02  | 2019-05-14    | 2019-06-21    | 31 |
| bk04    | b01  | 2018-07-14    | 2018-07-30    | 9 |
| bk05    | b03  | 2019-05-14    | 2019-06-21    | 62 |
| bk02    | b06  | 2018-11-22    | 2019-01-21    | 53 |
| bk05    | b02  | 2019-05-15    | 2019-06-21    | 30 |
| bk05    | b02  | 2019-10-19    | 2019-10-26    | 0 |
+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

□ **QUERY EXECUTION:**

i> mysql> select * from Book where price in(select max(price) from Book);

Book_id	Title	Author	Subject	Price
bk01	Initial Mathamatics	Patra	Mathematics	800
bk02	Funda of Stats	Matariya	Statistics	800

2 rows in set (0.05 sec)

ii> mysql> select * from Book where Subject like 'Computer Science' and price in(select max(price) from Book where subject like 'Computer Science');

Book_id	Title	Author	Subject	Price
bk03	Computer A B C D	Sinha	Computer Science	720

1 row in set (0.00 sec)

iii> mysql> select Subject,count(Book_id) 'Total number of Books' from Book group by Subject;

Subject	Total number of Books
Computer Science	2
Mathematics	3
Statistics	1

3 rows in set (0.11 sec)

iv> mysql> select Subject,count(Book_id) 'Total number of Books where price>500' from Book where price>500 group by Subject;

Subject	Total number of Books where price>500
Computer Science	1
Mathematics	2
Statistics	1

3 rows in set (0.00 sec)

v> mysql> select Subject 'Subject for which more than equal to 2 books exists in the database',count(Book_id) from Book group by Subject having count(Book_id)>=2;

Subject for which more than equal to 2 books exists in the database	count(Book_id)
Computer Science	2

Mathematics	3

2 rows in set (0.00 sec)

```
vi> mysql> select avg(age) 'Average age' from Borrower where b_name like 'S%';
```

Average age
40.0000

1 row in set (0.02 sec)

```
vii> mysql> select b_name from Borrower where Addr like 'Kolkata';
```

b_name
Saheb
Aman
Kabita

3 rows in set (0.00 sec)

```
viii> mysql> select title from book where author like '____';
```

title
Initial Mathamatics
Computer A B C D
Maths Analysis

3 rows in set (0.00 sec)

```
ix> mysql> select title from book where author like '__t%';
```

title
Initial Mathamatics
Funda of Stats

2 rows in set (0.00 sec)