LABEXPERIMENTS
PARTA:SQL PROGRAMMING

A. Consider thefollowingschemaforaLibraryDatabase:

BOOK (Book_id, Title, Publisher_Name, Pub_Year)

BOOK_AUTHORS (Book_id, Author_Name)

PUBLISHER (Name, Address, Phone)

BOOK_COPIES(Book_id, Programme_id, No-of_Copies)

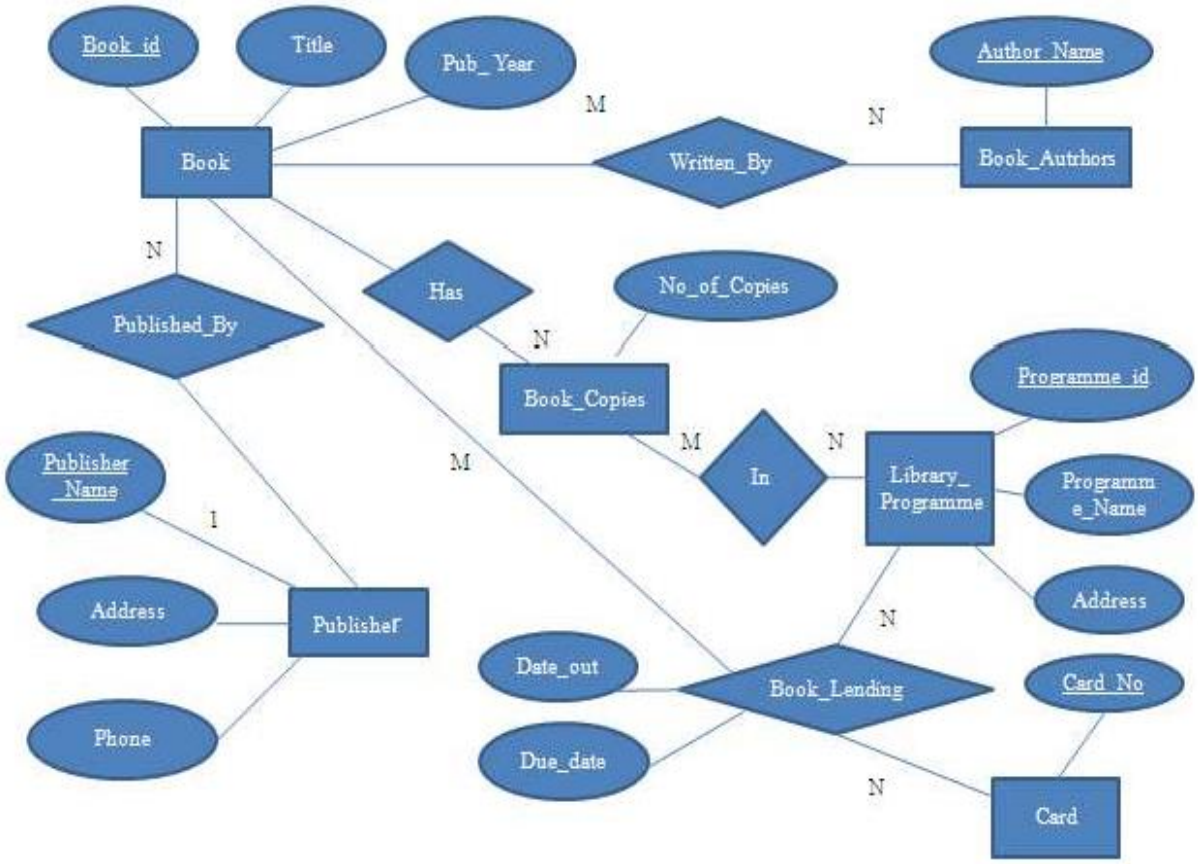
BOOK_LENDING(Book_id,Programme_id,Card_No,Date_Out,Due_Date)

LIBRARY_PROGRAMME(Programme_id,Programme_Name,Address)

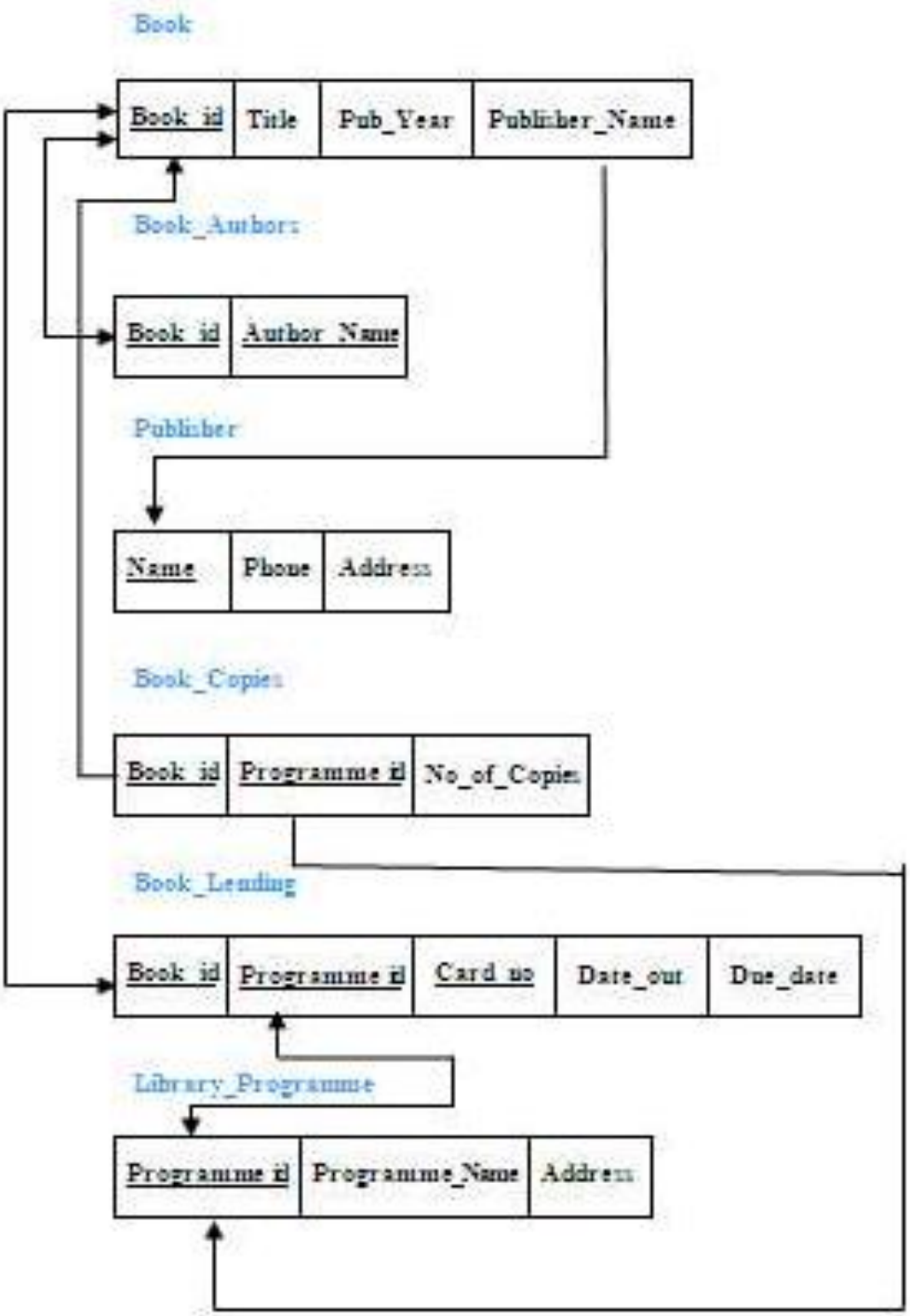
Write SQL queries to

1. **Retrieve details of all books in the library–id,title,name of publisher, authors, number of copies in each Programme, etc.**
2. **Get the particulars of borrowers who have borrowed more than 3books, but from Jan 2017 to Jun 2017**
3. **Delete a book in BOOK table. Update the contents of other tables to reflect this data manipulation operation.**
4. **Partition the BOOK table based on year of publication. Demonstrate its working with a simple query.**
5. **Create a view of all books and its number of copies that are currently available in the Library.**

ER-Diagram for Library Database



Schema Diagram for Library database



TableCreation

```
CREATE TABLE BOOK (BOOK_ID INT(10)PRIMARY KEY, TITLE VARCHAR (20),
PUB_YEAR VARCHAR(20), PUBLISHER_NAMEVARCHAR(20),
FOREIGN KEY(PUBLISHER_NAME) REFERENCES PUBLISHER(NAME)
ON DELETE CASCADE);


CREATE TABLE BOOK_AUTHORS( AUTHOR_NAME VARCHAR (20),
BOOK_ID INT (10),
PRIMARY KEY(BOOK_ID, AUTHOR_NAME),
FOREIGN KEY(BOOK_ID) REFERENCES BOOK(BOOK_ID) ON DELETE
CASCADE);

CREATE TABLE PUBLISHER(
NAME VARCHAR(20) PRIMARY KEY, PHONE BIGINT (20),
ADDRESS VARCHAR(100));

CREATE TABLE BOOK_COPIES( NO_OF_COPIES INT (5),
BOOK_ID INT (10),
PROGRAMME_ID INT (10),
PRIMARY KEY(BOOK_ID, PROGRAMME_ID),
FOREIGN KEY (BOOK_ID) REFERENCES BOOK (BOOK_ID) ON DELETE
CASCADE,
FOREIGN KEY (PROGRAMME_ID) REFERENCES LIBRARY_PROGRAMME
(PROGRAMME_ID) ON DELETE CASCADE);

CREATE TABLE BOOK_LENDING(
DATE_OUT  DATE,
DUE_DATE DATE,
BOOK_ID INT(10),
PROGRAMME_ID  INT (10),
CARD_NO INT(10),
PRIMARY KEY (BOOK_ID,PROGRAMME_ID,CARD_NO),
FOREIGN KEY(BOOK_ID) REFERENCES BOOK(BOOK_ID) ON DELETE CASCADE,
FOREIGN KEY (PROGRAMME_ID) REFERENCES LIBRARY_PROGRAMME
(PROGRAMME_ID) ON DELETE CASCADE,
FOREIGN KEY (CARD_NO) REFERENCES CARD(CARD_NO) ON DELETE CASCADE);

CREATE TABLE CARD(CARD_NO INT(10)PRIMARY KEY);
```

CREATE TABLE LIBRARY_PROGRAMME (PROGRAMME_ID INT (10) PRIMARY KEY, PROGRAMME_NAME VARCHAR (50), ADDRESS VARCHAR(100));

TableDescriptions

DESCBOOK

;

```
mysql> DESC BOOK;
+----------------+-------------+------+-----+---------+-------+
| Field          | Type        | Null | Key | Default | Extra |
+----------------+-------------+------+-----+---------+-------+
| BOOK_ID        | int(10)     | NO   | PRI | NULL    |       |
| TITLE          | varchar(20) | YES  |     | NULL    |       |
| PUB_YEAR       | varchar(20) | YES  |     | NULL    |       |
| PUBLISHER_NAME | varchar(20) | YES  | MUL | NULL    |       |
+----------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

DESCBOOK_AUTHORS;

```
mysql> DESC BOOK_AUTHORS;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| AUTHOR_NAME | varchar(20) | NO   | PRI |         |       |
| BOOK_ID     | int(10)     | NO   | PRI | 0       |       |
+-------------+-------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

DESCPUBLISHER;

```
mysql> DESC PUBLISHER;
+---------+--------------+------+-----+---------+-------+
| Field   | Type         | Null | Key | Default | Extra |
+---------+--------------+------+-----+---------+-------+
| NAME    | varchar(20)  | NO   | PRI | NULL    |       |
| PHONE   | bigint(20)   | YES  |     | NULL    |       |
| ADDRESS | varchar(100) | YES  |     | NULL    |       |
+---------+--------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

DESCBOOK_COPIES

```
mysql> DESC  BOOK_COPIES;
+--------------+---------+------+-----+---------+-------+
| Field        | Type    | Null | Key | Default | Extra |
+--------------+---------+------+-----+---------+-------+
| NO_OF_COPIES | int(5)  | YES  |     | NULL    |       |
| BOOK_ID      | int(10) | NO   | PRI | NULL    |       |
| PROGRAMME_ID | int(10) | NO   | PRI | NULL    |       |
+--------------+---------+------+-----+---------+-------+
3 rows in set (0.00 sec)

mysql>
```

DESCBOOK_LENDING;

```
mysql> DESC BOOK_LENDING;
+---------------+---------+------+-----+---------+-------+
| Field         | Type    | Null | Key | Default | Extra |
+---------------+---------+------+-----+---------+-------+
| DATE_OUT      | date    | YES  |     | NULL    |       |
| DUE_DATE      | date    | YES  |     | NULL    |       |
| BOOK_ID       | int(10) | NO   | PRI | NULL    |       |
| PROGRAMME_ID  | int(10) | NO   | PRI | NULL    |       |
| CARD_NO       | int(10) | NO   | PRI | NULL    |       |
+---------------+---------+------+-----+---------+-------+
5 rows in set (0.03 sec)

mysql>
```

DESCCARD;

```
mysql> DESC CARD;
+---------+---------+------+-----+---------+-------+
| Field   | Type    | Null | Key | Default | Extra |
+---------+---------+------+-----+---------+-------+
| CARD_NO | int(10) | NO   | PRI | NULL    |       |
+---------+---------+------+-----+---------+-------+
1 row in set (0.00 sec)

mysql>
```

DESCLIBRARY_PROGRAMME

```
mysql> DESC LIBRARY_PROGRAMME;
+----------------+--------------+------+-----+---------+-------+
| Field          | Type         | Null | Key | Default | Extra |
+----------------+--------------+------+-----+---------+-------+
| PROGRAMME_ID   | int(10)      | NO   | PRI | NULL    |       |
| PROGRAMME_NAME | varchar(50)  | YES  |     | NULL    |       |
| ADDRESS        | varchar(100) | YES  |     | NULL    |       |
+----------------+--------------+------+-----+---------+-------+
3 rows in set (0.00 sec)

mysql>
```

InsertionofValuestoTables

```
INSERT INTO BOOK VALUES (1,'DBMS','JAN-2017', 'MCGRAW-HILL');
INSERTINTOBOOKVALUES(2,'ADBMS','JUN-2016','MCGRAW-HILL'); INSERT
INTO BOOK VALUES (3, 'CD','SEP-2016','PEARSON');
INSERTINTOBOOKVALUES(4,'ALGORITHMS','SEP-2015','MIT'); INSERT
INTO BOOK VALUES (5,'OS','MAY-2016','PEARSON');

INSERTINTOBOOK_AUTHORSVALUES('NAVATHE',1);
INSERTINTOBOOK_AUTHORSVALUES('NAVATHE',2); INSERT
INTOBOOK_AUTHORS VALUES ('ULLMAN',3); INSERT
INTOBOOK_AUTHORS VALUES ('CHARLES', 4); INSERT
INTOBOOK_AUTHORS VALUES('GALVIN', 5);


INSERTINTOPUBLISHERVALUES('MCGRAW-HILL',9989076587,'BANGALORE');
INSERT INTOPUBLISHER VALUES ('PEARSON', 9889076565,'NEWDELHI');
INSERTINTOPUBLISHERVALUES('PRENTICEHALL',7455679345,'HYEDRABAD');
INSERT INTOPUBLISHER VALUES ('WILEY', 8970862340,'CHENNAI');
INSERTINTOPUBLISHERVALUES('MIT',7756120238,'BANGALORE');

INSERTINTOBOOK_COPIES VALUES(10,1,10);
INSERTINTOBOOK_COPIESVALUES (5,1,11);
INSERTINTOBOOK_COPIESVALUES (2,2,12);
INSERTINTOBOOK_COPIESVALUES (5,2,13);
INSERTINTOBOOK_COPIESVALUES (7,3,14);
INSERTINTOBOOK_COPIESVALUES (1,5,10);
INSERTINTOBOOK_COPIESVALUES (3,4,11);

INSERTINTOBOOK_LENDINGVALUES('2017-01-01','2017-06-01', 1, 10,101);
INSERTINTOBOOK_LENDINGVALUES ('2017-01-11','2017-03-11',3, 14,101);
INSERTINTOBOOK_LENDINGVALUES ('2017-02-21','2017-04-21', 2,13,101);
INSERTINTOBOOK_LENDINGVALUES ('2017-03-15','2017-07-15',4, 11,101);
INSERTINTOBOOK_LENDINGVALUES ('2017-04-12','2017-05-12', 1,11,104);

INSERTINTOCARDVALUES(100);
INSERTINTOCARDVALUES(101);
INSERTINTOCARDVALUES(102);
INSERTINTOCARDVALUES(103);
INSERTINTOCARDVALUES(104);

INSERT INTOLIBRARY_PROGRAMMEVALUES (10,'VIJAY NAGAR','MYSURU');
INSERT INTOLIBRARY_PROGRAMMEVALUES (11,'VIDYANAGAR','HUBLI'); ;
INSERTINTOLIBRARY_PROGRAMMEVALUES(12,'KUVEMPUNAGAR','MYSURU');
INSERTINTOLIBRARY_PROGRAMMEVALUE(13,'RAJAJINAGAR','BANGALORE');
INSERT INTOLIBRARY_PROGRAMME VALUES (14,'MANIPAL','UDUPI');
```

SELECT*FROMBOOK;

BOOK_ID	TITLE	PUB_YEAR	PUBLISHER_NAME
1	DBMS	Jan-2017	MCGRAW-HILL
2	ADBMS	Jun-2017	MCGRAW-HILL
3	CD	Sep-2016	PEARSON
4	ALGORITHMS	Sep-2015	MIT
5	OS	May-2016	PEARSON

SELECT*FROMBOOK_AUTHORS;

AUTHOR_NAME	BOOK_ID
NAVATHE	1
NAVATHE	2
ULLMAN	3
CHARLES	4
GALVIN	5

SELECT*FROMPUBLISHER;

NAME	PHONE	ADDRESS
MCGRAW-HILL	9989076587	BANGALORE
MIT	7756120238	BANGALORE
PEARSON	9889076565	NEWDELHI
PRENTICEHALL	7455679345	HYEDRABAD
WILEY	8970862340	CHENNAI

SELECT*FROMBOOK_COPIES;

NO_OF_COPIES	BOOK_ID	PROGRAMME_ID
10	1	10
5	1	11
2	2	12
5	2	13
7	3	14
1	5	10
3	4	11

SELECT *FROMBOOK_LENDING;

DATEOUT	DUEDATE	BOOKID	PROGRAMME_ID	CARDNO
2017-01-01	2017-06-01	1	10	
2017-01-11	2017-03-11	3	4	101
2017-02-21	2017-04-21	2	13	101
2017-03-15	2017-07-15	4	11	101
2017-04-12	2017-05-12	1	11	104

SELECT*FROMCARD;

CARDNO
101
102
103
104
105

SELECT*FROMLIBRARY_PROGRAMME;

PROGRAMME_ID	PROGRAMME_NAME	ADDRESS
10	VIJAYNAGAR	MYSURU
11	VIDYANAGAR	HUBLI
12	KUVEMPUNAGAR	MYSURU
13	RAJAJINAGAR	BANGALORE
14	MANIPAL	UDUPI

Queries:

1. **Retrievedetailsofallbooksinthelibrary –id,title,nameofpublisher,authors, number of copies in each branch, etc.**

SELECT B.BOOK_ID, B.TITLE, B.PUBLISHER_NAME, A.AUTHOR_NAME, C.NO_OF_COPIES,L.PROGRAMME_IDFROMBOOKB,BOOK_AUTHORS A,BOOK_COPIES C, LIBRARY_PROGRAMME LWHERE B.BOOK_ID=A.BOOK_ID AND B.BOOK_ID=C.BOOK_ID AND L.PROGRAMME_ID=C.PROGRAMME_ID;

BOOK_ ID	TITLE	PUBLISHER_ NAME	AUTHOR_ NAME	NO_ OF_COPIES	PROGRAMME _ID
1	DBMS	MCGRAW-HILL	NAVATHE	10	10
1	DBMS	MCGRAW-HILL	NAVATHE	5	11
2	ADBMS	MCGRAW-HILL	NAVATHE	2	12
2	ADBMS	MCGRAW-HILL	NAVATHE	5	13
3	CD	PEARSON	ULLMAN	7	14
4	ALGORITHMS	MIT	CHARLES	1	11
5	OS	PEARSON	GALVIN	3	10

2. **Get theparticulars ofborrowerswhohaveborrowedmorethan3books, butfromJan 2017 to Jun 2017.**

SELECTCARD_NOFROMBOOK_LENDINGWHEREDATE_OUT BETWEEN'2017-01-01'AND'2017-07-01'GROUPBYCARD_NO HAVING COUNT(*)>3;

```
+---------+
| CARD_NO |
+---------+
|     101 |
+---------+
1 row in set (0.03 sec)

mysql> _
```

3. **Deleteabookin BOOKtable. Update thecontentsofothertablestoreflect thisdata manipulation operation.**

DELETEFROMBOOKWHEREBOOK_ID=3;

```
mysql> SELECT * FROM BOOK;
+---------+------------+----------+-----------------+
| BOOK_ID | TITLE      | PUB_YEAR | PUBLISHER_NAME |
+---------+------------+----------+-----------------+
|       1 | DBMS       | JAN-2017 | MCGRAW-HILL     |
|       2 | ADBMS      | JUN-2016 | MCGRAW-HILL     |
|       3 | CD         | SEP-2016 | PEARSON         |
|       4 | ALGORITHMS | SEP-2015 | MIT             |
|       5 | OS         | MAY-2016 | PEARSON         |
+---------+------------+----------+-----------------+
5 rows in set (0.00 sec)

mysql> DELETE FROM BOOK WHERE BOOK_ID=3;
Query OK, 1 row affected (0.03 sec)

mysql> SELECT * FROM BOOK;
+---------+------------+----------+-----------------+
| BOOK_ID | TITLE      | PUB_YEAR | PUBLISHER_NAME |
+---------+------------+----------+-----------------+
|       1 | DBMS       | JAN-2017 | MCGRAW-HILL     |
|       2 | ADBMS      | JUN-2016 | MCGRAW-HILL     |
|       4 | ALGORITHMS | SEP-2015 | MIT             |
|       5 | OS         | MAY-2016 | PEARSON         |
+---------+------------+----------+-----------------+
4 rows in set (0.00 sec)
```

4. **PartitiontheBOOKtablebasedonyearofpublication.Demonstrateitsworkingwitha simple query.**

CREATEVIEWVW_PUBLICATIONASSELECTPUB_YEARFROMBOOK;

SELECT * FROM VW_PUBLICATION

```
mysql> SELECT * FROM VW_PUBLICATION;
+----------+
| PUB_YEAR |
+----------+
| JAN-2017 |
| JUN-2016 |
| SEP-2016 |
| SEP-2015 |
| MAY-2016 |
+----------+
5 rows in set (0.00 sec)
```

5. **Createaviewofallbooksand itsnumberofcopiesthatarecurrentlyavailablein the Library.**

CREATE VIEW VW_BOOKSASSELECTB.BOOK_ID,B.TITLE, C.NO_OF_COPIES FROM BOOK B, BOOK_COPIES C, LIBRARY_PROGRAMMEL WHERE B.BOOK_ID=C.BOOK_ID AND C.PROGRAMME_ID=L.PROGRAMME_ID;

SELECT*FROMVW_BOOKS;

```
mysql> SHOW TABLES;
+-------------------+
| Tables_in_library |
+-------------------+
| book              |
| book_authors      |
| book_copies       |
| book_lending      |
| card              |
| library_programme |
| publisher         |
| vw_books          |
+-------------------+
8 rows in set (0.00 sec)

mysql> SELECT * FROM  VW_BOOKS;
+---------+--------------+--------------+
| BOOK_ID | TITLE        | NO_OF_COPIES |
+---------+--------------+--------------+
|       1 | DBMS         |           10 |
|       1 | DBMS         |            5 |
|       2 | ADBMS        |            2 |
|       2 | ADBMS        |            5 |
|       3 | CD           |            7 |
|       5 | OS           |            1 |
|       4 |  ALGORITHMS  |            3 |
+---------+--------------+--------------+
7 rows in set (0.00 sec)

mysql> _
```