

Lab Assignment

SUBMITTED BY,

GROUP-1

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QUESTION

Consider the following schema for a LibraryDatabase:

BOOK (*Book_id, Title, Publisher_Name, Pub_Year*) **BOOK_AUTHORS**

(*Book_id, Author_Name*) **PUBLISHER** (*Name, Address, Phone*)

BOOK_COPIES (*Book_id, Branch_id, No-of_Copies*)

BOOK_LENDING (*Book_id, Branch_id, Card_No, Date_Out, Due_Date*)

LIBRARY_BRANCH (*Branch_id, Branch_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 branch, etc.
2. Get the particulars of borrowers who have borrowed more than 3 books, but from Jan 2017 to Jun2017
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.

SOLUTION

CREATE DATABASE LIBRARY;

USE LIBRARY;

CREATE TABLE BOOK(

BOOK_ID INTEGER PRIMARY KEY,

TITLE VARCHAR(20),

PUB_YEAR VARCHAR (20),

PUBLISHER_NAME VARCHAR(20) REFERENCES PUBLISHER (NAME) ON
DELETE CASCADE

);

CREATE TABLE PUBLISHER

(NAME VARCHAR (30) PRIMARY KEY,

PHONE INTEGER(30),

ADDRESS VARCHAR (30));

CREATE TABLE BOOK_AUTHORS

(AUTHOR_NAME VARCHAR (20),

BOOK_ID VARCHAR(20) REFERENCES BOOK (BOOK_ID) ON DELETE
CASCADE,

PRIMARY KEY (BOOK_ID, AUTHOR_NAME));

CREATE TABLE BOOK_COPIES

(NO_OF_COPIES INTEGER,

BOOK_ID VARCHAR(20) REFERENCES BOOK (BOOK_ID) ON DELETE
CASCADE,

BRANCH_ID VARCHAR(20) REFERENCES LIBRARY_BRANCH (BRANCH_ID)
ON DELETE

CASCADE,

PRIMARY KEY (BOOK_ID, BRANCH_ID));

```

CREATE TABLE BOOK_LENDING
(
    DATE_OUT DATE,
    DUE_DATE DATE,
    BOOK_ID VARCHAR(20) REFERENCES BOOK (BOOK_ID) ON DELETE
    CASCADE,
    BRANCH_ID VARCHAR(20) REFERENCES LIBRARY_BRANCH (BRANCH_ID)
    ON DELETE
    CASCADE,
    CARD_NO VARCHAR(20) REFERENCES CARD (CARD_NO) ON DELETE
    CASCADE,
    PRIMARY KEY (BOOK_ID, BRANCH_ID, CARD_NO));

```

```

CREATE TABLE LIBRARY_BRANCH
(
    BRANCH_ID
    INTEGER PRIMARY KEY, BRANCH_NAME VARCHAR
    (50),
    ADDRESS VARCHAR (50));

```

```

CREATE TABLE CARD
(
    CARD_NO INTEGER PRIMARY KEY);

```

```
mysql> use library;
```

```
Database changed
```

```
mysql> show tables;
```

```

+-----+
| Tables_in_library |
+-----+
| book              |
| book_authors      |
| book_copies       |
| book_lending      |
| card              |

```

```
| library_branch |
```

```
| publisher      |
```

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

7 rows in set (0.01 sec)

mysql> desc publisher;

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

```
| Field | Type      | Null | Key | Default | Extra |
```

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

```
| NAME   | varchar(30) | NO   | PRI | NULL    |      |
```

```
| PHONE  | int         | YES  |     | NULL    |      |
```

```
| ADDRESS | varchar(30) | YES  |     | NULL    |      |
```

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

3 rows in set (0.01 sec)

mysql> desc book;

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

```
| Field      | Type      | Null | Key | Default | Extra |
```

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

```
| BOOK_ID    | int       | NO   | PRI | NULL    |      |
```

```
| TITLE      | varchar(20) | YES  |     | NULL    |      |
```

```
| PUB_YEAR   | varchar(20) | YES  |     | NULL    |      |
```

```
| PUBLISHER_NAME | varchar(20) | YES  |     | NULL    |      |
```

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

4 rows in set (0.30 sec)

mysql> desc book_authors;

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

```
| Field      | Type      | Null | Key | Default | Extra |
```

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

```
| AUTHOR_NAME | varchar(20) | NO   | PRI | NULL    |      |
```

```
| BOOK_ID     | varchar(20) | NO   | PRI | NULL    |      |
```

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

2 rows in set (0.02 sec)

mysql> desc library_branch;

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

```
| Field      | Type      | Null | Key | Default | Extra |
```

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

```
| BRANCH_ID  | int       | NO   | PRI | NULL    |      |
```

```
| BRANCH_NAME | varchar(50) | YES  |     | NULL    |      |
```

```
| ADDRESS    | varchar(50) | YES  |     | NULL    |      |
```

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

3 rows in set (0.24 sec)

mysql> desc book_copies;

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

```
| Field      | Type      | Null | Key | Default | Extra |
```

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

```
| NO_OF_COPIES | int       | YES  |     | NULL    |      |
```

```
| BOOK_ID     | varchar(20) | NO   | PRI | NULL    |      |
```

```
| BRANCH_ID   | varchar(20) | NO   | PRI | NULL    |      |
```

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

3 rows in set (0.02 sec)

mysql> desc card;

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

```
| Field | Type | Null | Key | Default | Extra |
```

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

```
| CARD_NO | int | NO   | PRI | NULL    |      |
```

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

1 row in set (0.01 sec)

mysql> desc book_lending;

```
+-----+-----+-----+-----+-----+
| Field | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| DATE_OUT | date      | YES  |     | NULL    |       |
| DUE_DATE | date      | YES  |     | NULL    |       |
| BOOK_ID  | varchar(20) | NO   | PRI | NULL    |       |
| BRANCH_ID | varchar(20) | NO   | PRI | NULL    |       |
| CARD_NO  | varchar(20) | NO   | PRI | NULL    |       |
+-----+-----+-----+-----+-----+
```

5 rows in set (0.03 sec)

INSERT INTO PUBLISHER VALUES ('MCGRAW-HILL', 9989076587,
'BANGALORE');

INSERT INTO PUBLISHER VALUES ('PEARSON', 9889076565, 'NEWDELHI');

INSERT INTO PUBLISHER VALUES ('RANDOM_HOUSE', 7455679345,
'HYDRABAD');

INSERT INTO PUBLISHER VALUES (HACHETTE_LIVRE', 8970862340,
_CHENAI');

INSERT INTO PUBLISHER VALUES(GRUPOPLANETA', 7756120238,
_BANGALORE');

INSERT INTO BOOK VALUES (1,'DBMS', 'JAN-2017', _MCGRAW-HILL');

INSERT INTO BOOK VALUES (2,'ADBMS', 'JUN-2016', _MCGRAW-HILL');

INSERT INTO BOOK VALUES (3,'CN', 'SEP-2016', _PEARSON');

INSERT INTO BOOK VALUES (4,'CG', 'SEP-2015', 'GRUPO PLANETA');

INSERT INTO BOOK VALUES (5,'OS', 'MAY-2016', _PEARSON');

INSERT INTO BOOK_AUTHORS VALUES ('NAVATHE', 1);

INSERT INTO BOOK_AUTHORS VALUES ('NAVATHE', 2);

INSERT INTO BOOK_AUTHORS VALUES ('TANENBAUM', 3);

INSERT INTO BOOK_AUTHORS VALUES ('EDWARD_ANGEL', 4);

INSERT INTO BOOK_AUTHORS VALUES ('GALVIN', 5);

INSERT INTO LIBRARY_BRANCH VALUES (10,'RR_NAGAR','BANGALORE');

INSERT INTO LIBRARY_BRANCH VALUES (11,'RNSIT','BANGALORE');

INSERT INTO LIBRARY_BRANCH VALUES (12,'RAJAJI_NAGAR',
'BANGALORE');

INSERT INTO LIBRARY_BRANCH VALUES (13,'NITTE','MANGALORE');

INSERT INTO LIBRARY_BRANCH VALUES (14,'MANIPAL','UDUPI');

INSERT INTO BOOK_COPIES VALUES (10, 1, 10);

INSERT INTO BOOK_COPIES VALUES (5, 1,11);

INSERT INTO BOOK_COPIES VALUES (2, 2,12);

INSERT INTO BOOK_COPIES VALUES (5, 2,13);

INSERT INTO BOOK_COPIES VALUES (7, 3,14);

INSERT INTO BOOK_COPIES VALUES (1, 5,10);

INSERT INTO BOOK_COPIES VALUES (3, 4,11);

INSERT INTO CARD VALUES (100);

INSERT INTO CARD VALUES (101);

INSERT INTO CARD VALUES (102);

INSERT INTO CARD VALUES (103);

INSERT INTO CARD VALUES (104);

INSERT INTO BOOK_LENDING VALUES ('01-JAN-17','01-JUN-17', 1, 10, 101);

INSERT INTO BOOK_LENDING VALUES ('11-JAN-17','11-MAR-17', 3, 14, 101);

INSERT INTO BOOK_LENDING VALUES ('21-FEB-17','21-APR-17', 2, 13, 101);

INSERT INTO BOOK_LENDING VALUES ('15-MAR-17','15-JUL-17', 4, 11, 101);

INSERT INTO BOOK_LENDING VALUES ('12-APR-17','12-MAY-17', 1, 11, 104);

mysql> select * from publisher;

```
+-----+-----+-----+
| NAME           | PHONE   | ADDRESS |
+-----+-----+-----+
| GRUPOPLANETA   | 7756120238 | BANGALORE |
| HACHETTE_LIVRE | 8970862340 | CHENNAI  |
| PEARSON        | 9889076565 | NEWDELHI  |
| RANDOM_HOUSE   | 7455679345 | HYDRABAD  |
| Westland_Publications | 9989076587 | BANGALORE |
+-----+-----+-----+
```

5 rows in set (0.01 sec)

mysql> select * from book;

```
+-----+-----+-----+-----+
| BOOK_ID | TITLE | PUB_YEAR | PUBLISHER_NAME |
+-----+-----+-----+-----+
| 1 | DBMS | JAN-2017 | Westland_Publications |
| 2 | ADBMS | JUN-2016 | Westland_Publications |
| 3 | CN | SEP-2016 | PEARSON |
| 4 | CG | SEP-2015 | GRUPO PLANETA |
| 5 | OS | MAY-2016 | PEARSON |
+-----+-----+-----+-----+
```

5 rows in set (0.00 sec)

mysql> select * from book_authors;

```
+-----+-----+
| AUTHOR_NAME | BOOK_ID |
+-----+-----+
| NAVATHE     | 1       |
| NAVATHE     | 2       |
| TANENBAUM   | 3       |
```

```
| EDWARD_ANGEL | 4 |
```

```
| GALVIN | 5 |
```

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

5 rows in set (0.00 sec)

mysql> select * from library_branch;

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

```
| BRANCH_ID | BRANCH_NAME | ADDRESS |
```

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

```
| 10 | RR_NAGAR | BANGALORE |
```

```
| 11 | RNSIT | BANGALORE |
```

```
| 12 | RAJAJI_NAGAR | BANGALORE |
```

```
| 13 | NITTE | MANGALORE |
```

```
| 14 | MANIPAL | UDUPI |
```

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

5 rows in set (0.00 sec)

mysql> select * from book_copies;

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

```
| NO_OF_COPIES | BOOK_ID | BRANCH_ID |
```

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

```
| 10 | 1 | 10 |
```

```
| 5 | 1 | 11 |
```

```
| 2 | 2 | 12 |
```

```
| 5 | 2 | 13 |
```

```
| 7 | 3 | 14 |
```

```
| 3 | 4 | 11 |
```

```
| 1 | 5 | 10 |
```

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

7 rows in set (0.00 sec)

```
mysql> select * from card;
```

```
+-----+
| CARD_NO |
+-----+
| 100 |
| 101 |
| 102 |
| 103 |
| 104 |
+-----+
```

5 rows in set (0.00 sec)

```
mysql> select * from book_lending;
```

```
+-----+-----+-----+-----+-----+
| DATE_OUT | DUE_DATE | BOOK_ID | BRANCH_ID | CARD_NO |
+-----+-----+-----+-----+-----+
| 2017-01-01 | 2017-06-01 | 1 | 10 | 101 |
| 2017-04-12 | 2017-05-12 | 1 | 11 | 104 |
| 2017-02-21 | 2017-04-21 | 2 | 13 | 101 |
| 2017-01-11 | 2017-03-11 | 3 | 14 | 101 |
| 2017-03-15 | 2017-07-15 | 4 | 11 | 101 |
+-----+-----+-----+-----+-----+
```

5 rows in set (0.00 sec)

QUERIES

1. Retrieve details of all books in the library – id, title, name of publisher, 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.BRANCH_ID FROM BOOK B, BOOK_AUTHORS A,
BOOK_COPIES C, LIBRARY_BRANCH L WHERE B.BOOK_ID=A.BOOK_ID
AND B.BOOK_ID=C.BOOK_ID AND L.BRANCH_ID=C.BRANCH_ID;
```

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

BOOK_ID	TITLE	PUBLISHER_NAME	AUTHOR_NAME	NO_OF_COPIES	BRANCH_ID
1	DBMS	Westland_Publications	NAVATHE	10	10
1	DBMS	Westland_Publications	NAVATHE	5	11
2	ADBMS	Westland_Publications	NAVATHE	2	12
2	ADBMS	Westland_Publications	NAVATHE	5	13
4	CG	GRUPO PLANETA	EDWARD_ANGEL	3	11
5	OS	PEARSON	GALVIN	1	10

6 rows in set (0.01 sec)

2. Get the particulars of borrowers who have borrowed more than 3 books, but from Jan 2017 to Jun2017.

```
SELECT CARD_NO FROM BOOK_LENDING WHERE DATE_OUT BETWEEN
'01-JAN-2017' AND '01-JUL-2017' GROUP BY CARD_NO HAVING COUNT
(*)>3;
```

CARD_NO
101

1 row in set (0.01 sec)

3. Delete a book in BOOK table. Update the contents of other tables to reflect this data manipulation operation.

```
DELETE FROM BOOK WHERE BOOK_ID=3;
```

Query OK, 1 row affected (0.01 sec)

```
mysql> SELECT * FROM BOOK;
```

BOOK_ID	TITLE	PUB_YEAR	PUBLISHER_NAME
1	DBMS	JAN-2017	Westland_Publications

2	ADBMS	JUN-2016	Westland_Publications
4	CG	SEP-2015	GRUPO PLANETA
5	OS	MAY-2016	PEARSON

+-----+-----+-----+-----+

4 rows in set (0.00 sec)

4. Partition the BOOK table based on year of publication. Demonstrate its working with a simple query.

```
CREATE VIEW V_PUBLICATION AS SELECT PUB_YEAR FROM BOOK;
```

Query OK, 0 rows affected (0.02 sec)

```
mysql> SELECT * FROM V_PUBLICATION;
```

+-----+

PUB_YEAR

+-----+

JAN-2017

JUN-2016

SEP-2015

MAY-2016

+-----+

4 rows in set (0.00 sec)

5. Create a view of all books and its number of copies that are currently available in the Library.

```
CREATE VIEW V_BOOKS AS SELECT B.BOOK_ID, B.TITLE,
C.NO_OF_COPIES FROM BOOK B, BOOK_COPIES C, LIBRARY_BRANCH L
WHERE B.BOOK_ID=C.BOOK_ID AND C.BRANCH_ID=L.BRANCH_ID;
```

Query OK, 0 rows affected (0.02 sec)

```
mysql> SELECT * FROM V_BOOKS;
```

+-----+-----+-----+

BOOK_ID	TITLE	NO_OF_COPIES
---------	-------	--------------

+-----+-----+-----+

1	DBMS	10
---	------	----

1	DBMS	5
---	------	---

	2	ADBMS		2	
	2	ADBMS		5	
	4	CG		3	
	5	OS		1	
+-----+-----+-----+					

6 rows in set (0.01 sec)