

## DATABASE LAB 2



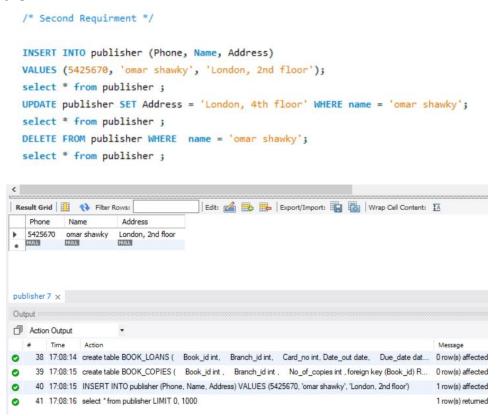
ID	NAME
43	OMAR SHAWKY ABDELSALAM ABDELAAL

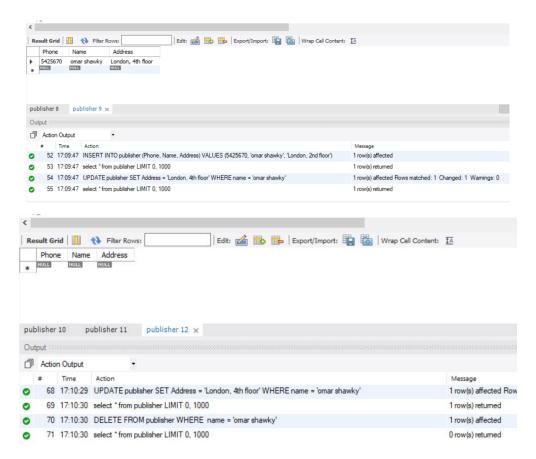
1- Login to MySQL workbench and implement the given schema on MySQL using suitable DDL statements.

```
create table BOOK_AUTHORS (
      Book_id int,
      Author_name varchar(255) NOT NULL,
       foreign key (Book id) REFERENCES Book(Book id),
       PRIMARY KEY (Author name, Book id)
   create table LIBRARY_BRANCH (
       Branch_id int not null,
       Branch_name varchar(255),
      Address varchar(255),
       PRIMARY KEY (Branch_id)
  );
   create table BORROWER (
      Card_no int not null,
       Name varchar(255),
      Address varchar(255),
      Phone int,
       PRIMARY KEY (Card no)
  drop schema if exists LIBRARY;
  /* First Requirment */
  create schema LIBRARY;
  use LIBRARY;
  create table PUBLISHER (
      Phone int,
      Name varchar(255) NOT NULL,
      Address varchar(255),
      PRIMARY KEY (Name)
  );
  create table Book (
      Book_id int NOT NULL,
      Title varchar(255),
      Publisher_name varchar(255),
      PRIMARY KEY (Book_id),
      foreign key (Publisher_name) REFERENCES PUBLISHER(Name)
  );
create table BOOK_LOANS (
   Book_id int,
   Branch id int,
   Card no int,
   Date_out date,
   Due_date date,
   foreign key (Book_id) REFERENCES Book(Book_id),
    foreign key (Branch id) REFERENCES LIBRARY BRANCH(Branch id),
    foreign key (Card_no) REFERENCES BORROWER(Card_no),
    PRIMARY KEY (Card_no,Branch_id,Book_id)
);
```

```
create table BOOK_COPIES (
     Book_id int ,
     Branch_id int ,
     No of copies int ,
     foreign key (Book_id) REFERENCES Book(Book_id),
     foreign key (Branch id) REFERENCES LIBRARY BRANCH(Branch id),
     PRIMARY KEY (Branch id, Book id)
);
 7 17:05:49 drop schema if exists LIBRARY
                                                                                                             2 row(s) affected
 8 17:05:50 create schema LIBRARY
                                                                                                             1 row(s) affected
 9 17:05:50 use LIBRARY
                                                                                                             0 row(s) affected
10 17:05:50 create table PUBLISHER ( Phone int, Name varchar(255) NOT NULL, Address varchar(255), PRIMA...
                                                                                                            0 row(s) affected
11 17:05:50 create table Book ( Book_id int NOT NULL, Title varchar(255), Publisher_name varchar(255), PRIMA...
                                                                                                            0 row(s) affected
12 17:05:51 create table BOOK_AUTHORS ( Book_id int, Author_name varchar(255) NOT NULL, foreign key (Book...
13 17:05:52 create table LIBRARY_BRANCH (
                                              Branch_id int not null, Branch_name varchar(255), Address varcha... 0 row(s) affected
14 17:05:54 create table BORROWER ( Card_no int not null, Name varchar(255), Address varchar(255), Phone int, PRI... 0 row(s) affected
15 17:05:54 create table BOOK_LOANS ( Book_id int, Branch_id int, Card_no int, Date_out date, Due_date dat... 0 row(s) affected
16 17:05:56 create table BOOK COPIES ( Book id int , Branch id int , No of copies int , foreign key (Book id) R... 0 row(s) affected
```

## 2- Try the INSERT, UPDATE and DELETE statements on the Publisher table



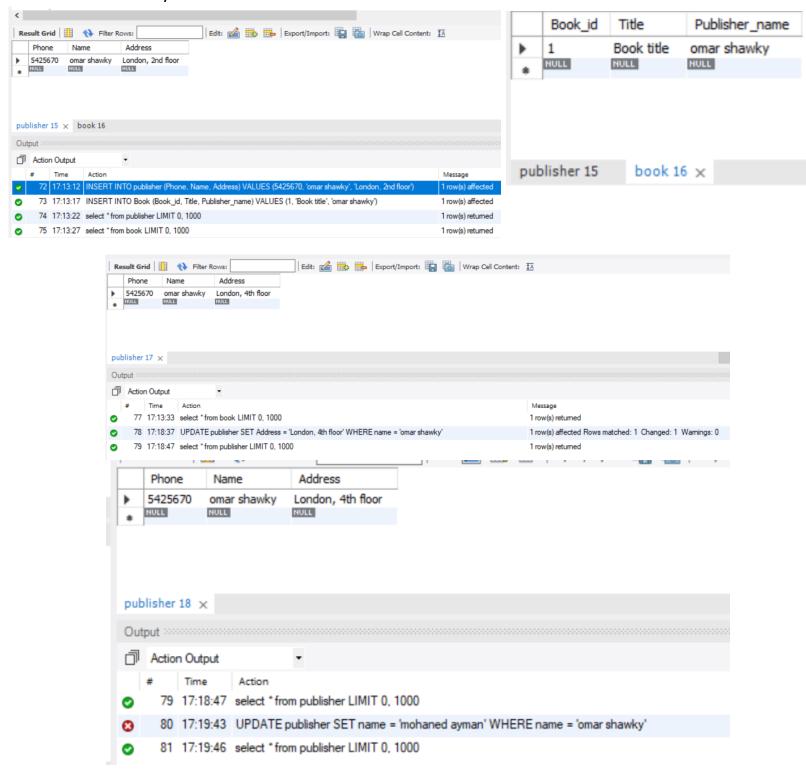


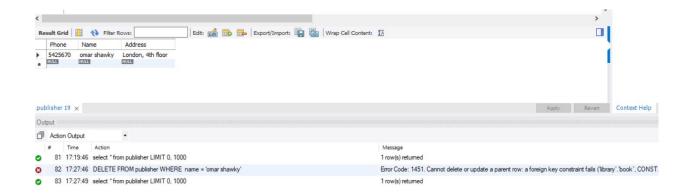
3- Insert a row in the Book table that references a row in the Publisher table. Then try to update and delete the referenced row. Comment on the DBMS response regarding the referential integrity constraints specified in the DDL script.

```
/* Third requirement */
INSERT INTO publisher (Phone, Name, Address)
VALUES (5425670, 'omar shawky', 'London, 2nd floor');
INSERT INTO Book (Book_id, Title, Publisher_name)
VALUES (1, 'Book title', 'omar shawky');
select * from publisher;
select * from book;
UPDATE publisher SET Address = 'London, 4th floor' WHERE name = 'omar shawky';
UPDATE publisher SET name = 'mohaned ayman' WHERE name = 'omar shawky';
select * from publisher;
DELETE FROM publisher WHERE name = 'omar shawky';
```

## **Comment:**

- You can update the contents of referenced row on condition that you don't include any column that's being referenced as a foreign key in another table.
- You can't delete a row that contains a value being referenced as a foreign key in another table.





- 4- Write SELECT statements to answer the queries of parts (a), (c),
  - (e) and (g) of the problem.
  - a) How many copies of the book titled The Lost Tribe are owned by the library branch whose name is 'Sharpstown'?

```
FROM Book
NATURAL JOIN (BOOK_COPIES NATURAL JOIN library_branch )
where branch_name ='Sharpstown' and title = 'The Lost Tribe';
```

b) How many copies of the book titled The Lost Tribe are owned by each library branch?

```
select branch_id ,branch_name,no_of_copies
FROM Book NATURAL JOIN (BOOK_COPIES NATURAL JOIN library_branch )
where title = 'The Lost Tribe'
group by branch_id;
```

 Retrieve the names of all borrowers who do not have any books checked out.

```
SELECT name FROM borrower WHERE NOT EXISTS (

SELECT 1

FROM (borrower NATURAL JOIN book_loans)

WHERE borrower.card_no = book_loans.card_no
);
```

d) For each book that is loaned out from the Sharpstown branch and whose Due\_date is today, retrieve the book title, the borrower's name, and the borrower's address.

- e) For each library branch, retrieve the branch name and the total number of books loaned out from that branch.
- f) Retrieve the names, addresses, and number of books checked out for all borrowers who have more than five books checked out.
- g) For each book authored (or coauthored) by Stephen King, retrieve the title and the number of copies owned by the library branch whose name

```
SELECT branch_name,COUNT(book_id) as total_number_of_books
Select * from (
    SELECT name,address,COUNT(book_id) as total_number_of_books
    FROM (borrower natural join book_loans)
    GROUP BY card_no) as R1
where total_number_of_books >=5;
is Central.
```

```
(Select title , sum(no_of_copies) as total_number_of_copies
from ((library_branch natural join book_copies) natural join book_authors) natural join book
where author_name = 'Stephen King' and branch_name = 'Central'
group by book_id )
union
#co-authored == publisher
(Select title , sum(no_of_copies) as total_number_of_copies
from (select name as publisher_name,address as publisher_address,phone from publisher) as publisher
natural join (book_natural join (library_branch_natural join book_copies))
where publisher_name = 'Stephen King' and branch_name = 'Central'
group by book_id );
```