Sandesh Shrestha
2K21/CO/427

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B) I) How many copies of book titled The lost Tribe are owned by the library branch whose name is "Sharpstown"?

→

```
SELECT SUM(bc.no.of copies) As num_copies
FROM book_copies As bc
JOIN Library_branch As Lb ON bc.branch_id = Lb.branchid
JOIN book AS b ON bc.bookid = b.bookid
WHERE b.title = 'The lost Tribe' AND
      Lb.branch_name = 'Sharpstown';
```

2) How many copies of book titled The lost Tribe are owned by each library branch?

→

```
SELECT Lb.branchname, bc.no of copies
FROM book_copies AS bc
NATURAL JOIN Library_branch AS LB b
NATURAL JOIN book AS B b
WHERE b.title = 'The lost Tribe'
GROUP BY Lb.branch_name;
```

3) Retrieve names of all borrowers who don't have any books checked out.

→

```
SELECT b.name
FROM Borrower B b
left JOIN book_loans AS B bl ON b.card_no =
                                bl.card_no
WHERE bl.card_no IS NULL;
```

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

→

```
SELECT b.title, br.name, br.address
FROM book_loans AS bl
NATURAL JOIN borrowers AS br
NATURAL JOIN book AS b
NATURAL JOIN library_branch AS lb
WHERE lb.branch_name = 'Sharpstown' AND
      bl.due_date = CURDATE();
```

5) For each library branch, retrieve the branch name and the total number of book loaned out from that branch.

→

```
SELECT lb.branch_name, COUNT(*) AS
       num_books_loaned
FROM book_loans AS bl
JOIN library_branch AS lb ON bl.branch_id =
                             lb.branch_id
GROUP BY lb.branch_name;
```

6) Retrieve the names, addresses and number of books checked out for all borrowers who have more than five books checked out.

→

```
SELECT b.name, b.address, COUNT(*) AS num_books
checked_out
FROM borrower AS b
NATURAL JOIN book_loans AS bl
```

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```
GROUP by b.cardno
HAVING COUNT(*) > 5;
```

3) For each book authored(or co-authored) by "Stephen King", retrieve the title and the number of copies owned by the library branch whose name is "Central"

```
SELECT b.title, bc.no_of_copies
FROM book_authors AS ba
NATURAL JOIN book AS b
NATURAL JOIN book_copies AS bc
NATURAL JOIN library_branch AS lb
WHERE ba.author_name = 'Stephen King' AND
      lb.branch_name = 'Central';
```

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SQL Exercise

A] Write SQL or DDL statements to define this database. Include appropriate domains, constraints and referential triggered actions.

=)

```
CREATE TABLE Book(
    Book_id Int PRIMARY KEY,
    Title Varchar(100),
    Publisher_name varchar(100),
    FOREIGN KEY (Publisher_name) REFERENCES
    Publisher(Name) ON DELETE CASCADE
        ON UPDATE CASCADE
    );

CREATE TABLE Book_Authors(
    Book_id Int NOTNULL,
    Author_name VARCHAR(100) NOTNULL,
    PRIMARY KEY (Book_id, Author_name),
    FOREIGN KEY (Book_id) REFERENCES
        Book(Book_id)
        ON DELETE CASCADE ON UPDATE
            CASCADE);

CREATE TABLE Publisher(
    Name varchar(100) PRIMARY KEY,
    Address varchar(300),
    Phone Decimal(20)
    );
```

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```
CREATE TABLE Book_COPIES(
    Book_id int NOT NULL,
    Branch_id char(5) NOT NULL,
    No_of_copies Int DEFAULT 1,
    PRIMARY KEY(Book_id, Branch_id),
FOREIGN KEY(Book_id) REFERENCES Book(Book_id),
    ON DELETE CASCADE ON UPDATE CASCADE,
FOREIGN KEY(Branch_id) REFERENCES
        Library_Branch(Branch_id)
    ON DELETE CASCADE ON UPDATE CASCADE
    );

CREATE TABLE Book_Loans(
    Book_id Int NOT NULL,
    Branch_id char(5) NOT NULL,
    Card_no Int NOT NULL,
    Date_out Date,
    Due_date Date,
PRIMARY KEY(Book_id, Branch_id, Card_no),
FOREIGN KEY(Book_id) REFERENCES Book(Book_id)
    ON DELETE RESTRICT ON UPDATE CASCADE
FOREIGN KEY(Branch_id) REFERENCES
        Library_Branch(Branch_id)
    ON DELETE RESTRICT ON UPDATE CASCADE,
FOREIGN KEY(Card_no) REFERENCES Borrower
        (Card_no)
    ON DELETE RESTRICT ON UPDATE CASCADE
    );

CREATE TABLE Library_Branch(
    Branch_id char(5) PRIMARY KEY,
```

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```
Branch_name varchar(100) NOT NULL,
Address varchar(300)
);

CREATE TABLE Borrower(
    Card_no Int PRIMARY KEY,
    Name varchar(100) NOT NULL,
    Address varchar(300),
    Phone Decimal(20)
    );
```