## Consider the following schema for a Library Database:

**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.

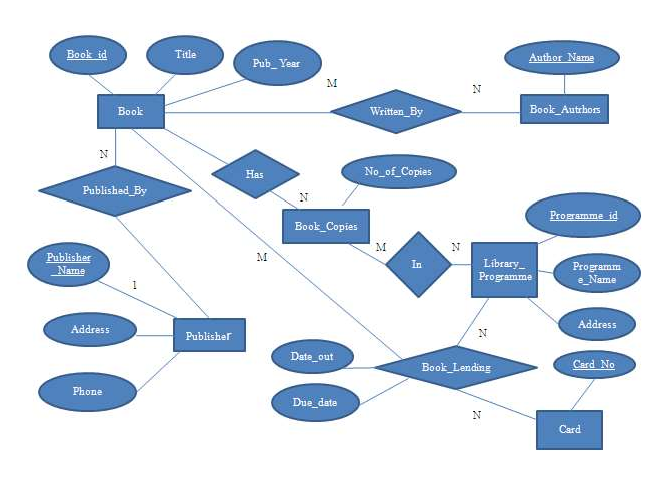
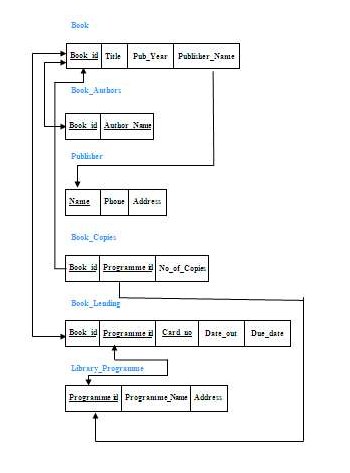
## Get the particulars of borrowers who have borrowed more than 3 books, but from Jan 2017 to Jun 2017

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

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

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

**ER Diagram:**

**Schema Diagram:**

**Table Creation**

2

CREATE TABLE BOOK ( BOOK\_ID NUMBER(10)PRIMARY KEY, TITLE VARCHAR(20),

PUB\_YEAR VARCHAR(20),

PUBLISHER\_NAME VARCHAR(20),

FOREIGN KEY(PUBLISHER\_NAME) REFERENCES PUBLISHER(NAME) ON DELETE CASCADE);

3

CREATE TABLE BOOK\_AUTHORS ( AUTHOR\_NAME VARCHA(20),

BOOK\_ID NUMBER(10),

PRIMARY KEY(BOOK\_ID, AUTHOR\_NAME),

FOREIGN KEY(BOOK\_ID) REFERENCES BOOK (BOOK\_ID) ON DELETE CASCADE);

CREATE TABLE PUBLISHER (

1

NAME VARCHAR(20) PRIMARY KEY, PHONE NUMBER(20),

ADDRESS VARCHAR(100));

7

CREATE TABLE BOOK\_COPIES ( NO\_OF\_COPIES NUMBER(5),

BOOK\_ID NUMBER(10),

BRANCH\_ID NUMBER(10),

PRIMARY KEY(BOOK\_ID, BRANCH\_ID),

FOREIGN KEY(BOOK\_ID) REFERENCES BOOK(BOOK\_ID) ON DELETE CASCADE, FOREIGN KEY(BRANCH\_ID) REFERENCES LIBRARY\_BRANCH (BRANCH\_ID) ON DELETE CASCADE);

5

CREATE TABLE BOOK\_LENDING ( DATE\_OUT DATE,

DUE\_DATE DATE, BOOK\_ID NUMBER(10),

BRANCH\_ID NUMBER(10),

CARD\_NO NUMBER(10),

PRIMARY KEY(BOOK\_ID,BRANCH\_ID, CARD\_NO),

FOREIGN KEY(BOOK\_ID) REFERENCES BOOK(BOOK\_ID) ON DELETE CASCADE, FOREIGN KEY(BRANCH\_ID) REFERENCES LIBRARY\_BRANCH(BRANCH\_ID) ON DELETE CASCADE,

FOREIGN KEY(CARD\_NO) REFERENCES CARD(CARD\_NO) ON DELETE CASCADE);

6

CREATE TABLE CARD

(CARD\_NO NUMBER(10) PRIMARY KEY);

CREATE TABLE LIBRARY\_BRANCH (

BRANCH\_ID NUMBER(10) PRIMARY KEY, BRANCH\_NAME VARCHAR(50),

4

ADDRESS VARCHAR(100));

#### Table Descriptions

DESC BOOK;



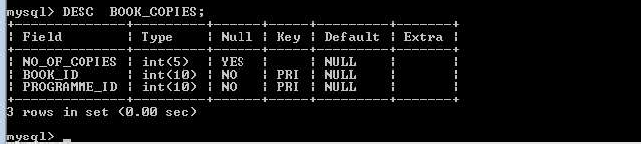
DESC BOOK\_AUTHORS;



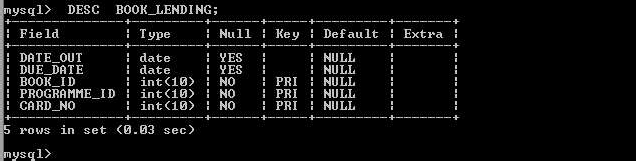
DESC PUBLISHER;



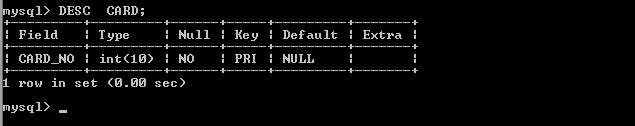
DESC BOOK\_COPIES;



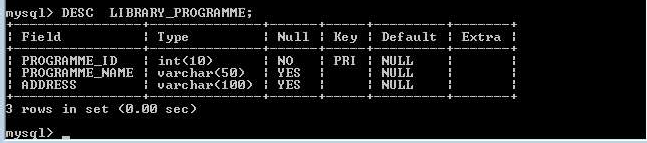
DESC BOOK\_LENDING;



DESC CARD;



DESC LIBRARY\_PROGRAMME



#### Insertion of Values to Tables

INSERT NUMBERO BOOK VALUES (1, 'DBMS','JAN-2017', 'MCGRAW-HILL');

INSERT NUMBERO BOOK VALUES (2,'ADBMS','JUN-2016','MCGRAW-HILL');

INSERT NUMBERO BOOK VALUES (3, 'CD','SEP-2016','PEARSON');

INSERT NUMBERO BOOK VALUES (4,' ALGORITHMS ','SEP-2015',' MIT'); INSERT NUMBERO BOOK VALUES (5,'OS','MAY-2016','PEARSON');

INSERT NUMBERO BOOK\_AUTHORS VALUES ('NAVATHE', 1); INSERT NUMBERO BOOK\_AUTHORS VALUES ('NAVATHE', 2); INSERT NUMBERO BOOK\_AUTHORS VALUES ('ULLMAN',3); INSERT NUMBERO BOOK\_AUTHORS VALUES ('CHARLES', 4); INSERT NUMBERO BOOK\_AUTHORS VALUES('GALVIN', 5);

INSERT NUMBERO PUBLISHER VALUES ('MCGRAW-HILL', 9989076587,'BANGALORE'); INSERT NUMBERO PUBLISHER VALUES ('PEARSON', 9889076565,'NEWDELHI');

INSERT NUMBERO PUBLISHER VALUES ('PRENTICE HALL', 7455679345,'HYEDRABAD'); INSERT NUMBERO PUBLISHER VALUES ('WILEY', 8970862340,'CHENNAI');

INSERT NUMBERO PUBLISHER VALUES ('MIT',7756120238,'BANGALORE');

INSERT NUMBERO BOOK\_COPIES VALUES (10, 1, 10);

INSERT NUMBERO BOOK\_COPIES VALUES (5, 1, 11);

INSERT NUMBERO BOOK\_COPIES VALUES (2, 2, 12);

INSERT NUMBERO BOOK\_COPIES VALUES (5, 2, 13);

INSERT NUMBERO BOOK\_COPIES VALUES (7, 3, 14);

INSERT NUMBERO BOOK\_COPIES VALUES (1, 5, 10);

INSERT NUMBERO BOOK\_COPIES VALUES (3, 4, 11);

INSERT NUMBERO BOOK\_LENDING VALUES ('2017-01-01','2017-06-01', 1, 10, 101);

INSERT NUMBERO BOOK\_LENDING VALUES ('2017-01-11 ','2017-03-11', 3, 14, 101);

INSERT NUMBERO BOOK\_LENDING VALUES ('2017-02-21','2017-04-21', 2, 13, 101);

INSERT NUMBERO BOOK\_LENDING VALUES ('2017-03-15 ','2017-07-15', 4, 11, 101);

INSERT NUMBERO BOOK\_LENDING VALUES ('2017-04-12','2017-05-12', 1, 11, 104);

INSERT NUMBERO CARD VALUES (100); INSERT NUMBERO CARD VALUES (101); INSERT NUMBERO CARD VALUES (102); INSERT NUMBERO CARD VALUES (103); INSERT NUMBERO CARD VALUES (104);

INSERT NUMBERO LIBRARY\_BRANCH VALUES (10,'VIJAY NAGAR','MYSURU');

INSERT NUMBERO LIBRARY\_ BRANCH VALUES (11,'VIDYANAGAR','HUBLI');

INSERT NUMBERO LIBRARY\_ BRANCH VALUES(12,'KUVEMPUNAGAR','MYSURU'); INSERT NUMBERO LIBRARY\_ BRANCH VALUE(13,'RAJAJINAGAR','BANGALORE'); INSERT NUMBERO LIBRARY\_ BRANCH VALUES (14,'MANIPAL','UDUPI');

SELECT \* FROM BOOK;

|  |  |  |  |
| --- | --- | --- | --- |
| **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 \* FROM BOOK\_AUTHORS;

|  |  |
| --- | --- |
| **AUTHOR\_NAME** | **BOOK\_ID** |
| NAVATHE | 1 |
| NAVATHE | 2 |
| ULLMAN | 3 |
| CHARLES | 4 |
| GALVIN | 5 |

SELECT \* FROM PUBLISHER;

|  |  |  |
| --- | --- | --- |
| **NAME** | **PHONE** | **ADDRESS** |
| MCGRAW-HILL | 9989076587 | BANGALORE |
| MIT | 7756120238 | BANGALORE |
| PEARSON | 9889076565 | NEWDELHI |
| PRENTICE HALL | 7455679345 | HYEDRABAD |
| WILEY | 8970862340 | CHENNAI |

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 |
| 1 | 5 | 10 |
| 3 | 4 | 11 |

SELECT \* FROM BOOK\_LENDING;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DATEOUT** | **DUEDATE** | **BOOKID** | **BRANCH \_ID** | **CARD\_NO** |
| 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 \* FROM CARD;

|  |
| --- |
| **CARDNO** |
| 101 |
| 102 |
| 103 |
| 104 |
| 105 |

SELECT \* FROM LIBRARY\_BRANCH;

|  |  |  |
| --- | --- | --- |
| **BRANCH \_ID** | **BRANCH \_NAME** | **ADDRESS** |
| 10 | VIJAY NAGAR | MYSURU |
| 11 | VIDYANAGAR | HUBLI |
| 12 | KUVEMPUNAGAR | MYSURU |
| 13 | RAJAJINAGAR | BANGALORE |
| 14 | MANIPAL | UDUPI |

#### 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.PROGRAMME\_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.PROGRAMME\_ID;

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **BOOK\_ ID** | **TITLE** | **PUBLISHER\_ NAME** | **AUTHOR\_ NAME** | **NO\_ OF\_COPIES** | **BRANCH \_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 |

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

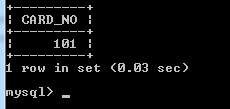
SELECT CARD\_NO

FROM BOOK\_LENDING

WHERE DATE\_OUT

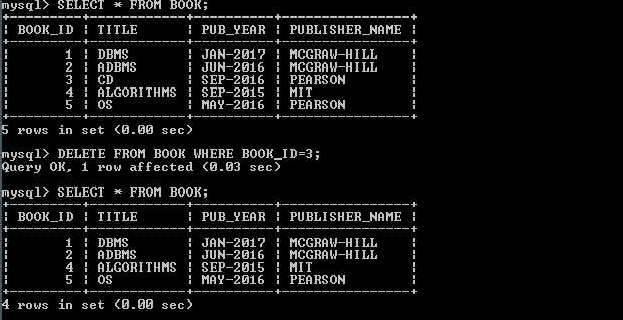
BETWEEN '2017-01-01'AND '2017-07-01'

GROUP BY CARD\_NO HAVING COUNT(\*)>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;



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

CREATE VIEW VW\_PUBLICATION AS

SELECT PUB\_YEAR

FROM BOOK;

SELECT \* FROM VW\_PUBLICATION



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

CREATE VIEW VW\_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;

SELECT \* FROM VW\_BOOKS;

