Ex. No: 3 Date: 11 – 08 - 2022

**Experiment 3**

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)

CARD (Card\_No)

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 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.

#### Creation of Tables

SQL> create table publisher(Name varchar2(20) primary key, Phone Integer, Address varchar2(20));

SQL> create table book(Bookid Integer primary key, Title varchar2(20), Pub\_Year Integer, Publisher\_name references Publisher(Name) on delete cascade);

SQL> create table book\_authors(Author\_name varchar(20), Book\_id references book(Book\_id) on delete cascade, primary key(Book\_id,author\_name));

SQL> create table library\_branch(Branch\_id integer primary key, Address varchar(20), Branch\_name varchar(20));

SQL> create table book\_copies(no\_of\_copies integer, Book\_id references book(book\_id) on delete cascade, Branch\_id references library\_branch(Branch\_id) on delete cascade);

SQL> create table card(Card\_no integer primary key);

SQL> create table book\_lending(Date\_Out date, Due\_date date, Branch\_id references library\_branch(Branch\_id) on delete cascade, Book\_id references book(book\_id) on delete cascade, Card\_no references card(card\_no) on delete cascade, primary key(Branch\_id, Book\_id, Card\_no));

**Insertion of Values to Tables**

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 (‘GRUPO PLANETA’, 7756120238,‘BANGALORE’);

INSERT INTO BOOK VALUES (1,’DBMS’,’JAN-2017’, ‘MCGRAWHILL’);

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);

**Queries:**

**1. Retrieve details of all books in the library – id, title, name of publisher, authors,**

number of copies in each branch, etc.

SQL> Select A.Book\_id, A.Title, A.pub\_name, B.author\_name, C.no\_of\_copies, D.Branch\_id from Book A, Book\_Authors B, Book\_copies C, Library\_Branch D where A.book\_id = B.Book\_id and A.book\_id=C.Book\_id and C.Branch\_id=D.Branch\_id;

**2. Get the particulars of borrowers who have borrowed more than 3 books, but from**

**Jan 2017 to Jun 2017**

SQL> Select card\_no from book\_lending where date\_out between '01-JAN-2017' and '01-JUN-2020' group by card\_no having count(\*)>3;

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

**manipulation operation.**

SQL> Delete from book where book\_id = 4;

**4. Partition the BOOK table based on year of publication. Demonstrate its working**

**with a simple query.**

SQL> create view v\_publication as select pub\_year from book;

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

**the library.**

SQL> create view bcop as select A.Title, A.Book\_id, B.no\_of\_copies, C.Branch\_id from Book A, Book\_copies B, Library\_Branch C where A.Book\_id = B.Book\_id and B.Branch\_id = C.Branch\_id;

**Code:**

SQL> create table publisher(Name varchar2(20) primary key, Phone Integer, Address varchar2(20));

Table created.

SQL> create table book(Bookid Integer primary key, Title varchar2(20), Pub\_Year Integer, Publisher\_name references Publisher(Name) on delete cascade);

Table created.

SQL> create table book\_authors(Author\_name varchar(20), Book\_id references book(Book\_id) on delete cascade, primary key(Book\_id,author\_name));

Table created.

SQL> create table library\_branch(Branch\_id integer primary key, Address varchar(20), Branch\_name varchar(20));

Table created.

SQL> create table book\_copies(no\_of\_copies integer, Book\_id references book(book\_id) on delete cascade, Branch\_id references library\_branch(Branch\_id) on delete cascade);

Table created.

SQL> create table card(Card\_no integer primary key);

Table created.

SQL> create table book\_lending(Date\_Out date, Due\_date date, Branch\_id references library\_branch(Branch\_id) on delete cascade, Book\_id references book(book\_id) on delete cascade, Card\_no references card(card\_no) on delete cascade, primary key(Branch\_id, Book\_id, Card\_no));

Table created.

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

1 row created.

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

1 row created.

SQL> INSERT INTO PUBLISHER VALUES ('RANDOM HOUSE', 7455679345,'HYDRABAD');

1 row created.

SQL> INSERT INTO PUBLISHER VALUES ('HACHETTE LIVRE', 8970862340, 'CHENAI');

1 row created.

SQL> INSERT INTO PUBLISHER VALUES ('GRUPO PLANETA', 7756120238, 'BANGALORE');

1 row created.

SQL> INSERT INTO BOOK VALUES (1,'DBMS',2017, 'MCGRAW-HILL');

1 row created.

SQL> INSERT INTO BOOK VALUES (2,'ADBMS',2016,'MCGRAW-HILL');

1 row created.

SQL> INSERT INTO BOOK VALUES (3,'CN',2016,'PEARSON');

1 row created.

SQL> INSERT INTO BOOK VALUES (4,'CG',2015, 'GRUPO PLANETA');

1 row created.

SQL> INSERT INTO BOOK VALUES (5,'OS',2016,'PEARSON');

1 row created.

SQL> INSERT INTO BOOK\_AUTHORS VALUES('NAVATHE', 1);

1 row created.

SQL> INSERT INTO BOOK\_AUTHORS VALUES ('NAVATHE', 2);

1 row created.

SQL> INSERT INTO BOOK\_AUTHORS VALUES ('TANENBAUM', 3);

1 row created.

SQL> INSERT INTO BOOK\_AUTHORS VALUES ('EDWARDANGEL', 4);

1 row created.

SQL> INSERT INTO BOOK\_AUTHORS VALUES('GALVIN', 5);

1 row created.

SQL> INSERT INTO LIBRARY\_BRANCH VALUES (10,'BANGALORE','RR NAGAR');

1 row created.

SQL> INSERT INTO LIBRARY\_BRANCH VALUES (11,'BANGALORE','RNSIT');

1 row created.

SQL> INSERT INTO LIBRARY\_BRANCH VALUES (12, 'BANGALORE','RAJAJI NAGAR');

1 row created.

SQL> INSERT INTO LIBRARY\_BRANCH VALUES (13,'MANGALORE','NITTE');

1 row created.

SQL> INSERT INTO LIBRARY\_BRANCH VALUES (14,'UDUPI','MANIPAL');

1 row created.

SQL> INSERT INTO BOOK\_COPIES VALUES (10, 1, 10);

1 row created.

SQL> INSERT INTO BOOK\_COPIES VALUES (5, 1, 11);

1 row created.

SQL> INSERT INTO BOOK\_COPIES VALUES (2, 2, 12);

1 row created.

SQL> INSERT INTO BOOK\_COPIES VALUES (5, 2, 13);

1 row created.

SQL> INSERT INTO BOOK\_COPIES VALUES (7, 3, 14);

1 row created.

SQL> INSERT INTO BOOK\_COPIES VALUES (1, 5, 10);

1 row created.

SQL> INSERT INTO BOOK\_COPIES VALUES (3, 4, 11);

1 row created.

SQL> INSERT INTO CARD VALUES (100);

1 row created.

SQL> INSERT INTO CARD VALUES (101);

1 row created.

SQL> INSERT INTO CARD VALUES (102);

1 row created.

SQL> INSERT INTO CARD VALUES (103);

1 row created.

SQL> INSERT INTO CARD VALUES (104);

1 row created.

SQL> INSERT INTO BOOK\_LENDING VALUES ('01-JAN-17','01-JUN-17', 10, 1, 101);

1 row created.

SQL> INSERT INTO BOOK\_LENDING VALUES ('11-JAN-17','11-MAR-17', 14, 3, 101);

1 row created.

SQL> INSERT INTO BOOK\_LENDING VALUES ('21-FEB-17','21-APR-17', 13, 2, 101);

1 row created.

SQL> INSERT INTO BOOK\_LENDING VALUES ('15-MAR-17','15-JUL-17', 11, 4, 101);

1 row created.

SQL> INSERT INTO BOOK\_LENDING VALUES ('12-APR-17','12-MAY-17', 11, 1, 104);

1 row created.

SQL> Select \* from publisher;

NAME PHONE ADDRESS

-------------------- ---------- --------------------

MCGRAW-HILL 9989076587 BANGALORE

PEARSON 9889076565 NEWDELHI

RANDOM HOUSE 7455679345 HYDRABAD

HACHETTE LIVRE 8970862340 CHENAI

GRUPO PLANETA 7756120238 BANGALORE

SQL> Select \* from book;

BOOK\_ID TITLE PUB\_YEAR PUB\_NAME

---------- -------------------- ---------- --------------------

1 DBMS 2017 MCGRAW-HILL

2 ADBMS 2016 MCGRAW-HILL

3 CN 2016 PEARSON

5 OS 2016 PEARSON

4 CG 2015 GRUPO PLANETA

SQL> Select \* from book\_authors;

AUTHOR\_NAME BOOK\_ID

-------------------- ----------

NAVATHE 1

NAVATHE 2

TANENBAUM 3

EDWARDANGEL 4

GALVIN 5

SQL> Select \* from library\_branch;

BRANCH\_ID ADDRESS BRANCH\_NAME

---------- -------------------- --------------------

10 BANGALORE RR NAGAR

11 BANGALORE RNSIT

12 BANGALORE RAJAJI NAGAR

13 MANGALORE NITTE

14 UDUPI MANIPAL

SQL> 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

7 rows selected.

SQL> Select \* from card;

CARD\_NO

----------

100

101

102

103

104

SQL> Select \* from book\_lending;

DATE\_OUT DUE\_DATE BRANCH\_ID BOOK\_ID CARD\_NO

--------- --------- ---------- ---------- ----------

01-JAN-17 01-JUN-17 10 1 101

11-JAN-17 11-MAR-17 14 3 101

21-FEB-17 21-APR-17 13 2 101

15-MAR-17 15-JUL-17 11 4 101

12-APR-17 12-MAY-17 11 1 104

SQL> set linesize 1500;

SQL> Select A.Book\_id, A.Title, A.pub\_name, B.author\_name, C.no\_of\_copies, D.Branch\_id from Book A, Book\_Authors B, Book\_copies C, Library\_Branch D where A.book\_id = B.Book\_id and A.book\_id=C.Book\_id and C.Branch\_id=D.Branch\_id;

BOOK\_ID TITLE PUB\_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 CN PEARSON TANENBAUM 7 14

5 OS PEARSON GALVIN 1 10

4 CG GRUPO PLANETA EDWARDANGEL 3 11

7 rows selected.

SQL> Select card\_no from book\_lending where date\_out between '01-JAN-2017' and '01-JUN-2020' group by card\_no having count(\*)>3;

CARD\_NO

----------

101

SQL> delete from book where book\_id = 4;

1 row deleted.

SQL> SELECT \* FROM PUBLISHER;

NAME PHONE ADDRESS

-------------------- ---------- --------------------

MCGRAW-HILL 9989076587 BANGALORE

PEARSON 9889076565 NEWDELHI

RANDOM HOUSE 7455679345 HYDRABAD

HACHETTE LIVRE 8970862340 CHENAI

GRUPO PLANETA 7756120238 BANGALORE

SQL> SELECT \* FROM BOOK;

BOOK\_ID TITLE PUB\_YEAR PUB\_NAME

---------- -------------------- ---------- --------------------

1 DBMS 2017 MCGRAW-HILL

2 ADBMS 2016 MCGRAW-HILL

3 CN 2016 PEARSON

5 OS 2016 PEARSON

SQL> SELECT \* FROM BOOK\_AUTHORS;

AUTHOR\_NAME BOOK\_ID

-------------------- ----------

NAVATHE 1

NAVATHE 2

TANENBAUM 3

GALVIN 5

SQL> SELECT \* FROM LIBRARY\_BRANCH;

BRANCH\_ID ADDRESS BRANCH\_NAME

---------- -------------------- --------------------

10 BANGALORE RR NAGAR

11 BANGALORE RNSIT

12 BANGALORE RAJAJI NAGAR

13 MANGALORE NITTE

14 UDUPI MANIPAL

SQL> 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

6 rows selected.

SQL> SELECT \* FROM CARD;

CARD\_NO

----------

100

101

102

103

104

SQL> SELECT \* FROM BOOK\_LENDING;

DATE\_OUT DUE\_DATE BRANCH\_ID BOOK\_ID CARD\_NO

--------- --------- ---------- ---------- ----------

01-JAN-17 01-JUN-17 10 1 101

11-JAN-17 11-MAR-17 14 3 101

21-FEB-17 21-APR-17 13 2 101

12-APR-17 12-MAY-17 11 1 104

SQL> create view V\_Publications as select pub\_year from book;

View created.

SQL> select \* from V\_publications;

PUB\_YEAR

----------

2017

2016

2016

2016

SQL> create view bcop as select A.Title, A.Book\_id, B.no\_of\_copies, C.Branch\_id from Book A, Book\_copies B, Library\_Branch C where A.Book\_id = B.Book\_id and B.Branch\_id = C.Branch\_id;

View created.

SQL> Select \* from bcop;

TITLE BOOK\_ID NO\_OF\_COPIES BRANCH\_ID

-------------------- ---------- ------------ ----------

DBMS 1 10 10

DBMS 1 5 11

ADBMS 2 2 12

ADBMS 2 5 13

CN 3 7 14

OS 5 1 10

6 rows selected.