PROGRAM - 1

Consider the following schema for a Library Database:

BOOK (Book_ID, Title, Pub_Name, Pub_Year)

BOOK_AUTHORS (Book_ID, Author_Name)

PUBLISHER (Pub_ID, Pub_Name, Address, Phone)

BOOK_COPIES (Book_ID, PGM_ID, No_of_Copies)

BOOK_LENDING (Book_ID, PGM_ID, Card_No, Date_Out, Due_Date)

LIBRARY_PROGRAM (PGM_ID, PGM_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 program, 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 the 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 Queries:

Query to create tables:

- Publisher Table –

```
CREATE TABLE PUBLISHER(
PUB_ID INT PRIMARY KEY,
PUB_NAME VARCHAR(20) UNIQUE,
ADDRESS VARCHAR(20),
PHONE INT);
```

- Book Table –

```
CREATE TABLE BOOK(
BOOK_ID INT PRIMARY KEY,
TITLE VARCHAR(20),
PUB_NAME VARCHAR(20),
FOREIGN KEY (PUB_NAME) REFERENCES PUBLISHER (PUB_NAME) ON DELETE
CASCADE,
PUB_YEAR INT);
```

- Library Program Table –

```
CREATE TABLE LIBRARY_PROGRAM(
PGM_ID INT PRIMARY KEY,
PGM_NAME VARCHAR(20),
ADDRESS VARCHAR(30));
```

- Book Authors Table –

```
CREATE TABLE BOOK_AUTHORS(
BOOK_ID INT,
AUTHOR_NAME VARCHAR(20),
PRIMARY KEY(BOOK_ID, AUTHOR_NAME),
FOREIGN KEY(BOOK_ID) REFERENCES BOOK(BOOK_ID) ON DELETE CASCADE);
```

- Book Copies Table –

```
CREATE TABLE BOOK_COPIES(
BOOK_ID INT,
PGM_ID INT,
NO_OF_COPIES INT,
PRIMARY KEY(BOOK_ID, PGM_ID),
FOREIGN KEY (BOOK_ID) REFERENCES BOOK(BOOK_ID) ON DELETE CASCADE,
FOREIGN KEY (PGM_ID) REFERENCES LIBRARY_PROGRAM(PGM_ID) ON DELETE
CASCADE);
```

- Book Lending Table –

```
CREATE TABLE BOOK_LENDING(
BOOK_ID INT,
PGM_ID INT,
CARD_NO INT,
DATE_OUT DATE,
DUE_DATE DATE,
PRIMARY KEY(BOOK_ID,PGM_ID,CARD_NO),
FOREIGN KEY (BOOK_ID) REFERENCES BOOK(BOOK_ID) ON DELETE CASCADE,
FOREIGN KEY (PGM_ID) REFERENCES LIBRARY_PROGRAM(PGM_ID) ON DELETE
CASCADE);
```

Query to insert values into the table:

- Publisher table –

```
INSERT INTO PUBLISHER VALUES (501,'KVS','BANGALORE',9535616745);
INSERT INTO PUBLISHER VALUES (502,'WESTLAND','PUNE',8768916745);
INSERT INTO PUBLISHER VALUES (503,'RUPA','BANGALORE',6478989715);
INSERT INTO PUBLISHER VALUES (504,'GANGA','MUMBAI',9876985645);
INSERT INTO PUBLISHER VALUES (505,'HACHETTE','MATTUR',7013458745);
```

PUB_ID	PUB_NAME	ADDRESS	PHONE
501	KVS	BANGALORE	9535616745
502	WESTLAND	PUNE	8768916745
503	RUPA	BANGALORE	6478989715
504	GANGA	MUMBAI	9876985645
505	HACHETTE	MATTUR	7013458745

- Book Table –

```
INSERT INTO BOOK VALUES (001,'MCGRAW-HILL','GANGA',2001);
INSERT INTO BOOK VALUES (002,'MY ARTEMIS','KVS',2004);
INSERT INTO BOOK VALUES (003,'CHEMISTRY VOL 1','WESTLAND',2006);
INSERT INTO BOOK VALUES (004,'UPRISING','RUPA',2018);
INSERT INTO BOOK VALUES (005,'CHEMISTRY VOL 2','WESTLAND',2021);
```

BOOK_ID	TITLE	PUBLISHER_NAME	PUB_YEAR
1	MCGRAW-HILL	GANGA	2001
2	MY ARTEMIS	KVS	2004
3	CHEMISTRY VOL 1	WESTLAND	2006
4	UPRISING	RUPA	2018
5	CHEMISTRY VOL 2	WESTLAND	2021

- Library Program Table –

```
INSERT INTO LIBRARY_PROGRAM VALUES (101,'BOOK AXIS','BANGALORE');
INSERT INTO LIBRARY_PROGRAM VALUES (102,'BOOK SQUARE','PUNE');
INSERT INTO LIBRARY_PROGRAM VALUES (103,'CLAUS BOOKS','MUMBAI');
INSERT INTO LIBRARY_PROGRAM VALUES (104,'COMIC CON','PUNE');
INSERT INTO LIBRARY_PROGRAM VALUES (105,'FANDOM','BANGALORE');
```

PGM_ID	PGM_NAME	ADDRESS	PGM_ID
101	BOOK AXIS	BANGALORE	101
102	BOOK SQUARE	PUNE	102
103	CLAUS BOOKS	MUMBAI	103
104	COMIC CON	PUNE	104
105	FANDOM	BANGALORE	105

- Book Authors Table –

```
INSERT INTO BOOK_AUTHORS VALUES (001, 'ASHISH C');
INSERT INTO BOOK_AUTHORS VALUES (002, 'ANEESHA');
INSERT INTO BOOK_AUTHORS VALUES (003, 'ADITYA KUL C');
INSERT INTO BOOK_AUTHORS VALUES (004, 'SAQUIB M');
INSERT INTO BOOK_AUTHORS VALUES (005, 'ARJUN S');
```

BOOK_ID	AUTHOR_NAME
1	ASHISH C
2	ANEESHA
3	ADITYA KUL C
4	SAQUIB M
5	ARJUN S

- Book Copies Table –

```
INSERT INTO BOOK_COPIES VALUES (001, 102, 40);
INSERT INTO BOOK_COPIES VALUES (002, 101, 18);
INSERT INTO BOOK_COPIES VALUES (003, 104, 53);
INSERT INTO BOOK_COPIES VALUES (004, 103, 4);
INSERT INTO BOOK_COPIES VALUES (005, 105, 20);
```

BOOK_ID	PGM_ID	NO_OF_COPIES
1	102	40
2	101	18
3	104	53
4	103	4
5	105	20

- Book Lending Table –

```
INSERT INTO BOOK_LENDING VALUES (001, 101, 5001, '21-SEP-2021', '19-OCT-2021');
INSERT INTO BOOK_LENDING VALUES (001, 102, 5002, '07-JAN-2017', '18-MAY-2017');
INSERT INTO BOOK_LENDING VALUES (002, 102, 5003, '02-FEB-2017', '22-MAR-2020');
INSERT INTO BOOK_LENDING VALUES (003, 103, 5004, '14-SEP-2016', '08-OCT-2021');
INSERT INTO BOOK_LENDING VALUES (005, 104, 5005, '18-JUN-2020', '14-AUG-2021');
INSERT INTO BOOK_LENDING VALUES (002, 102, 5002, '07-JAN-2017', '18-MAY-2017');
INSERT INTO BOOK_LENDING VALUES (003, 102, 5002, '02-FEB-2017', '22-MAR-2020');
INSERT INTO BOOK_LENDING VALUES (004, 102, 5002, '14-MAR-2017', '08-MAY-2019');
```

BOOK_ID	PGM_ID	CARD_NO	DATE_OUT	DUE_DATE
1	101	5001	21-SEP-21	19-OCT-21
1	102	5002	07-JAN-17	18-MAY-17
2	102	5003	02-FEB-17	22-MAR-20
3	103	5004	14-SEP-16	08-OCT-21
5	104	5005	18-JUN-20	14-AUG-21
2	102	5002	07-JAN-17	18-MAY-17
3	102	5002	02-FEB-17	22-MAR-20
4	102	5002	14-MAR-17	08-MAY-19

Query for given questions:

1)
```
SELECT LP.PGM_NAME, B.BOOK_ID,TITLE, PUB_NAME, AUTHOR_NAME,
NO_OF_COPIES
FROM BOOK B, BOOK_AUTHORS BA, BOOK_COPIES BC, LIBRARY_PROGRAM LP,
PUBLISHER P
WHERE B.BOOK_ID = BA.BOOK_ID AND
BA.BOOK_ID = BC.BOOK_ID AND
BC.PGM_ID = LP.PGM_ID
GROUP BY LP.PGM_NAME, B.BOOK_ID, TITLE,
PUB_NAME, AUTHOR_NAME, NO_OF_COPIES;
```

PGM_NAME	BOOK_ID	TITLE	PUB_NAME	AUTHOR_NAME	NO_OF_COPIES
CLAUS BOOKS	4	UPRISING	KVS	SAQUIB M	4
COMIC CON	3	CHEMISTRY VOL 1	GANGA	ADITYA KUL C	53
FANDOM	5	CHEMISTRY VOL 2	KVS	ARJUN S	20
FANDOM	5	CHEMISTRY VOL 2	GANGA	ARJUN S	20
BOOK AXIS	2	MY ARTEMIS	RUPA	ANEESHA	18

2) SELECT CARD_NO FROM BOOK_LENDING
WHERE DATE_OUT > '01-JAN-2017' AND
DATE_OUT < '01-JUN-2017'
GROUP BY CARD_NO
HAVING COUNT (*) > 3;

CARD_NO
5002

3) DELETE FROM BOOK WHERE BOOK_ID = 001;

BOOK_ID	TITLE	PUBLISHER_NAME	PUB_YEAR
2	MY ARTEMIS	KVS	2004
3	CHEMISTRY VOL 1	WESTLAND	2006
4	UPRISING	RUPA	2018
5	CHEMISTRY VOL 2	WESTLAND	2021

4) SELECT PUB_YEAR FROM BOOK;

PUB_YEAR
2004
2006
2018
2021

5) CREATE VIEW BOOKS_AVAILABLE AS
SELECT B.BOOK_ID, B.TITLE, C.NO_OF_COPIES
FROM LIBRARY_PROGRAM L, BOOK B, BOOK_COPIES C
WHERE B.BOOK_ID = C.BOOK_ID AND
L.PGM_ID=C.PGM_ID;
SELECT * FROM BOOKS_AVAILABLE

BOOK_ID	TITLE	NO_OF_COPIES
2	MY ARTEMIS	18
3	CHEMISTRY VOL 1	53
4	UPRISING	4
5	CHEMISTRY VOL 2	20