Program 1 :

Aim: Demonstrating creation of tables, applying the view concepts on the tables.

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, Programme_id, No-of_Copies)

BOOK_LENDING(Book_id, Programme_id, Card_No, Date_Out, Due_Date)

LIBRARY_PROGRAMME(Programme_id, Programme_Name, Address)

Syntax for create table:

CREATE TABLE
table_name
(column_name1 datatype constraint,
column_name2 datatype,...
column_nameNdatatype);

Create Table PUBLISHER with Primary Key as NAME

```
CREATE TABLE PUBLISHER
(NAME VARCHAR(20) PRIMARY KEY,
PHONE INTEGER,
ADDRESS VARCHAR(20));

DESC PUBLISHER;
```

Create Table BOOK with Primary Key as BOOK_ID and Foreign Key PUBLISHER_NAME referring the PUBLISHER table

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

DESC BOOK;
```

Create Table BOOK_AUTHORS with Primary Key as BOOK_ID and AUTHOR_NAME and Foreign Key BOOK_ID referring the BOOK table

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

```
PRIMARY KEY(BOOK_ID, AUTHOR_NAME));

DESC BOOK_AUTHORS;
```

Create Table LIBRARY_PROGRAMME with Primary Key as PROGRAMME_ID

```
CREATE TABLE LIBRARY_PROGRAMME
(PROGRAMME_ID INTEGER PRIMARY KEY,
PROGRAMME_NAME VARCHAR(50),
ADDRESS VARCHAR(50));

DESC LIBRARY_PROGRAMME;
```

Create Table as BOOK_COPIES with Primary Key as BOOK_ID and PROGRAMME_ID and Foreign Key BOOK_ID and PROGRAMME_ID referring the BOOK and LIBRARY_PROGRAMME tables respectively

```
CREATE TABLE BOOK_COPIES
(NO_OF_COPIES INTEGER,
BOOK_ID INTEGER,
PROGRAMME_ID INTEGER,
FOREIGN KEY (BOOK_ID) REFERENCES BOOK(BOOK_ID) ON DELETE CASCADE,
FOREIGN KEY(PROGRAMME_ID) REFERENCES
LIBRARY_PROGRAMME(PROGRAMME_ID) ON DELETE CASCADE,
PRIMARY KEY (BOOK_ID,PROGRAMME_ID));

DESC BOOK_COPIES;
```

Create Table CARD with Primary Key as CARD_NO

```
CREATE TABLE CARD
(CARD_NO INTEGER PRIMARY KEY);

DESC CARD;
```

Create Table BOOK_LENDING With Primary Key as BOOK_ID, PROGRAMME_ID and CARD_NO and Foreign key as BOOK_ID, PROGRAMME_ID and CARD_NO referring the BOOK, LIBRARY_PROGRAMME and CARD tables respectively

```
CREATE TABLE BOOK_LENDING
(BOOK_ID INTEGER,
PROGRAMME_ID INTEGER,
CARD_NO INTEGER,
DATE_OUT DATE,
DUE_DATE DATE,
FOREIGN KEY (BOOK_ID) REFERENCES BOOK(BOOK_ID) ON DELETE CASCADE,
FOREIGN KEY (PROGRAMME_ID) REFERENCES
LIBRARY_PROGRAMME(PROGRAMME_ID) ON DELETE CASCADE,
FOREIGN KEY (CARD_NO) REFERENCES CARD(CARD_NO) ON DELETE
CASCADE,
PRIMARY KEY (BOOK_ID,PROGRAMME_ID,CARD_NO));

DESC BOOKLENDING;

YYYY-MM-DD  ->  DD-MON-YY
'2017-01-01','       ‘01-JAN-2017’, 31-JAN-2017’
2017-01-31'
INSERT INTO BOOK_LENDING VALUES(1, 100, 501, '01-JAN-2017','31-JAN-2017');
INSERT INTO BOOK_LENDING VALUES(3, 104, 501, '01-JAN-2017','31-JAN-2017');

INSERT INTO BOOK_LENDING VALUES(2, 103, 501, '2017-02-21','2017-04-21');
```

```
INSERT INTO BOOK_LENDING VALUES(3, 104, 501, '01-JAN-2017','31-JAN-2017');

INSERT INTO BOOK_LENDING VALUES(4, 101, 501, '2017-03-11','2017-06-11');
INSERT INTO BOOK_LENDING VALUES(1, 101, 504, '2017-04-09','2017-07-08');
```

Inserting records into PUBLISHER table

```
INSERT INTO PUBLISHER VALUES('SAPNA',912121212,'BANGALORE');
INSERT INTO PUBLISHER VALUES('PENGUIN',921212121,'NEW YORK');
INSERT INTO PUBLISHER VALUES('PEARSON',913131313,'HYDERABAD');
INSERT INTO PUBLISHER VALUES('OZONE',931313131,'CHENNAI');
INSERT INTO PUBLISHER VALUES('PLANETZ',914141414,'BANGALORE');

SELECT * FROM PUBLISHER;
```

Inserting records into BOOK table

NOTE: Because Publisher_Name here is a foreign key referring to PUBLISHER table you should insert such Publisher_Name which are in PUBLISHER table.

```
INSERT INTO BOOK VALUES(1,'BASICS OF EXCEL','JAN-2017','SAPNA');
INSERT INTO BOOK VALUES(2,'PROGRAMMING MINDSET','JUN-2018','PLANETZ');
```

```
INSERT INTO BOOK VALUES(3,'BASICS OF SQL','SEP-2016','PEARSON');
INSERT INTO BOOK VALUES(4,'DBMS FOR BEGINNERS','SEP-2015','PLANETZ');
INSERT INTO BOOK VALUES(5,'WEB SERVICES','MAY-2017','OZONE');

SELECT * FROM BOOK;
```

Inserting records into BOOK_AUTHORS table

Note : Because Book_id here is a foreign key referring to Book_id in the BOOK table you should insert such Book_ids which are in BOOK table.

```
INSERT INTO BOOK_AUTHORS VALUES('SRI DEVI',1);
INSERT INTO BOOK_AUTHORS VALUES('DEEPAK',2);
INSERT INTO BOOK_AUTHORS VALUES('PRAMOD',3);
INSERT INTO BOOK_AUTHORS VALUES('SWATHI',4);
INSERT INTO BOOK_AUTHORS VALUES('PRATHIMA',5);

SELECT * FROM BOOK_AUTHORS;
```

Inserting records into LIBRARY_PROGRAMME table

```
INSERT INTO LIBRARY_PROGRAMME VALUES(100,'HSR
LAYOUT','BANGALORE');
INSERT INTO LIBRARY_PROGRAMME VALUES(101,'KENGERI','BANGALORE');
INSERT INTO LIBRARY_PROGRAMME
VALUES(102,'BANASHANKARI','BANGALORE');
INSERT INTO LIBRARY_PROGRAMME VALUES(103,'SHANKARA
NAGAR','MANGALORE');
INSERT INTO LIBRARY_PROGRAMME VALUES(104,'MANIPAL','UDUPI');
```

SELECT * FROM LIBRARY_PROGRAMME;

Inserting records into BOOK_COPIES table

Note : Book_id is a foreign key referencing BOOK table Book_id and Programme_id is a foreign key referring to LIBRARY_PROGRAMME table you should insert such Book_ids and Programme_id's which are in BOOK table & LIBRARY_PROGRAMME table respectively.

INSERT INTO BOOK_COPIES VALUES(10,1,100);

INSERT INTO BOOK_COPIES VALUES(16,1,101);

INSERT INTO BOOK_COPIES VALUES(20,2,102);

INSERT INTO BOOK_COPIES VALUES(6,2,103);

INSERT INTO BOOK_COPIES VALUES(4,3,104);

INSERT INTO BOOK_COPIES VALUES(7,5,100);

INSERT INTO BOOK_COPIES VALUES(3,4,101);

SELECT * FROM BOOK_COPIES;

Inserting records into CARD table

INSERT INTO CARD VALUES(500);

INSERT INTO CARD VALUES(501);

INSERT INTO CARD VALUES(502);

INSERT INTO CARD VALUES(503);

INSERT INTO CARD VALUES(504);

SELECT * FROM CARD;

Inserting records into BOOK_LENDING table

Note : Book_id is a foreign key referencing BOOK table Book_id and Programme_id is a foreign key referring to LIBRARY_PROGRAMME table you should insert such Book_ids and Programme_id's which are in BOOK table & LIBRARY_PROGRAMME table respectively.

You should insert Card_no which is in CARD Table,

Follow the same date format- DD-MON-YYYY

```
INSERT INTO BOOK_LENDING VALUES(3, 104, 501, '01-JAN-2017','31-JAN-2017');
INSERT INTO BOOK_LENDING VALUES(1, 100, 501, '01-JAN-2017','31-JAN-2017');
INSERT INTO BOOK_LENDING VALUES(4, 101, 501, '11-MAR-2017','11-JUN-2017');
INSERT INTO BOOK_LENDING VALUES(2, 103, 501, '21-FEB-2017','21-APR-2017');
INSERT INTO BOOK_LENDING VALUES(1, 101, 504, '09-APR-2017','08-JUL-2017');

SELECT * FROM BOOK_LENDING;
```

Write SQL queries to

1. **Retrieve details of all books in the library – id, title, name of publisher, authors, number of copies in each Programme, 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_PROGRAMME L
WHERE B.BOOK_ID=A.BOOK_ID
AND B.BOOK_ID=C.BOOK_ID
AND L.PROGRAMME_ID=C.PROGRAMME_ID;
```

---

2. 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 '01-JAN-2017' AND '01-JUN-2017'
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.

```
DELETE FROM BOOK
WHERE BOOK_ID=3;

SELECT * FROM BOOK;

SELECT * FROM BOOK_AUTHORS;
```

---

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

```
CREATE VIEW V_PUBLICATION AS SELECT
PUB_YEAR
FROM BOOK;

SELECT * FROM V_PUBLICATION;
```

---

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

```
CREATE VIEW V_BOOKS AS
SELECT B.BOOK_ID, B.TITLE, C.NO_OF_COPIES
FROM
BOOK B, BOOK_COPIES C, LIBRARY_PROGRAMME L
WHERE B.BOOK_ID=C.BOOK_ID
AND C.PROGRAMME_ID=L.PROGRAMME_ID;

SELECT * FROM V_BOOKS;
```