Ex:no:8   **APPLICATION DESIGN AND DEVELOPMENT**

Ex:no:8   **LIBRARY INFORMATION SYSTEM**

AIM

  To design a schema for Library Information and solve the following queries using the schema.

SCHEMA DESCRIPTION

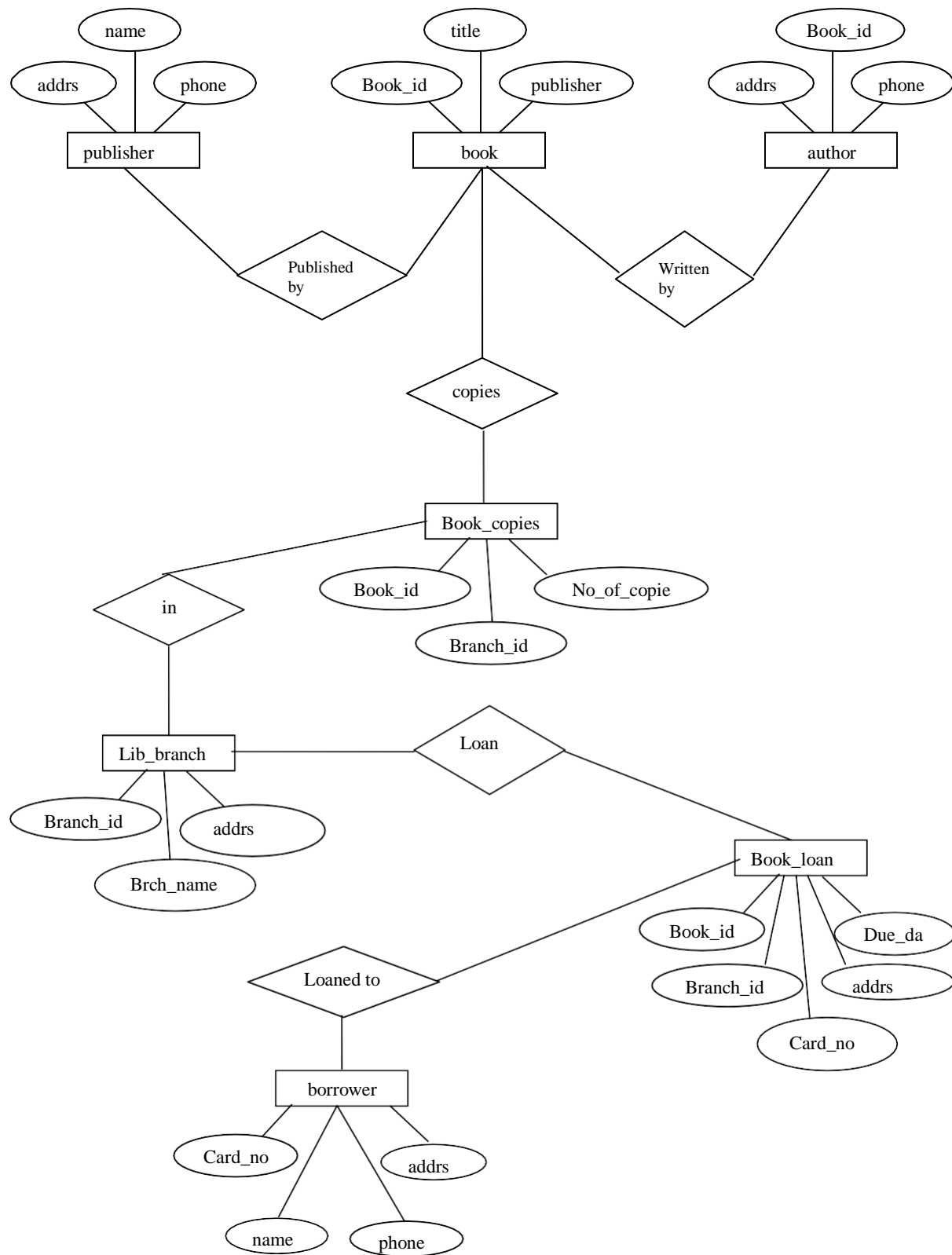Book (Book_id, Title, Publisher)

Publisher (Name, Addrs, Phone)

Book_copies (Book_id, Branch_id, No_of_copies)

Book_loan (Book_id, Branch_id, Card_no,Date_out, Due_date)

Lib_branch (Branch_id, Branch_name, Addrs)

Borrower (Card_no, Name, Addrs, Phone)

E-R diagram for Library Information System

CREATING TABLES

SQL> create table books
```
(
book_id varchar(5),
title varchar(15),
publisher varchar(20),
primary key (book_id)
);
```

Table created.

SQL> desc books;

Name	Null?	Type
BOOK_ID	NOT NULL	VARCHAR2(5)
TITLE		VARCHAR2(15)
PUBLISHER		VARCHAR2(20)

SQL> create table publisher
```
(
name  varchar(20),
addrs  varchar(25),
phone number(10)
);
```

Table created.

SQL> desc publisher;

Name	Null?	Type
NAME		VARCHAR2(20)
ADDRS		VARCHAR2(25)
PHONE		NUMBER(10)

SQL> create table lib_branch
```
(
branch_id varchar(5),
branch_name varchar(20),
addrs varchar(25),
primary key (branch_id)
);
```

3

Table created.

SQL> desc lib_branch;

Name	Null?	Type
BRANCH_ID	NOT NULL	VARCHAR2(5)
BRANCH_NAME		VARCHAR2(20)
ADDRS		VARCHAR2(25)

SQL> create table book_author
```
(
book_id varchar(5),
author  varchar(15),
addrs varchar(25),
foreign key (book_id) references books(book_id)
);
```

Table created.

SQL> desc book_author;

Name	Null?	Type
BOOK_ID		VARCHAR2(5)
AUTHOR		VARCHAR2(15)
ADDRS		VARCHAR2(25)

SQL> create table borrower
```
(
card_no varchar(5),
name varchar(15),
addrs varchar(25),
phone number(10),
primary key (card_no)
);
```

Table created.

SQL> desc borrower;

Name	Null?	Type
CARD_NO	NOT NULL	VARCHAR2(5)
NAME		VARCHAR2(15)
ADDRS		VARCHAR2(25)
PHONE		NUMBER(10)

SQL> create table book_copies
```
       (
       book_id varchar(5),
       branch_id varchar(5),
       no_of_copies number(3),
       primary key (book_id,branch_id),
       foreign key (book_id) references books(book_id),
       foreign key (branch_id) references lib_branch(branch_id)
       );
```

Table created.

SQL> desc book_copies;

Name	Null?	Type
BOOK_ID	NOT NULL	VARCHAR2(5)
BRANCH_ID	NOT NULL	VARCHAR2(5)
NO_OF_COPIES		NUMBER(3)

SQL> create table book_loan
```
(
book_id varchar(5),
branch_id varchar(5),
card_no varchar(5),
date_out date,
due_date date,
foreign key (book_id) references books(book_id),
foreign key (branch_id) references lib_branch(branch_id),
foreign key (card_no) references borrower(card_no)
);
```

Table created.

SQL> desc book_loan;

Name	Null?	Type
BOOK_ID		VARCHAR2(5)
BRANCH_ID		VARCHAR2(5)
CARD_NO		VARCHAR2(5)
DATE_OUT		DATE
DUE_DATE		DATE

INSERTING VALUES INTO TABLES

//inserting values into table books

SQL> insert into books values('a501', 'cn', 'tata mac');
1 row created.

SQL> insert into books values('x555', 'dbms', 'tata mac');
1 row created.

SQL> insert into books values('c002', 'se', 'wrinklesons');
1 row created.

//displaying the values from table book

SQL> select * from books;

BOOK_ID	TITLE	PUBLISHER
a501	cn	tata mac
x555	dbms	tata mac
c002	se	wrinklesons

//inserting values in the table publisher

SQL> insert into publisher values('tata mac','delhi',75820);
1 row created.

SQL> insert into publisher values('wrinklesons','kolkatta',44685);
1 row created.

//displaying the values in the table publisher

SQL> select * from publisher;

NAME	ADDRS	PHONE
tata mac	delhi	75820
wrinklesons	kolkatta	44685

//inserting the values in the table lib_branch

SQL> insert into lib_branch values('m101','senthil books','muthialpet');
1 row created.

SQL> insert into lib_branch values('l455','vinayaga book house','lawspet');
1 row created.

SQL> insert into lib_branch values('m100','pondy books','mg road');
1 row created

//displaying the values in the table lib_branch

SQL> select * from lib_branch;

BRANCH	BRANCH_NAME	ADDRS
m101	senthil books	muthialpet
l455	vinayaga book house	lawspet
m100	pondy books	mg road

//inserting values in the table book_author

SQL> insert into book_author values('a501','silverscrtz','banglore');
1 row created.

SQL> insert into book_author values('c002','balaji','pondy');
1 row created.

SQL> insert into book_author values('x555','suresh','lawspet');
1 row created.

//displaying the values from the table boo_author

SQL> select * from book_author;

BOOK_ ID	AUTHOR	ADDRS
a501	silverscrtz	banglore
c002	balaji	pondy
x555	suresh	lawspet

//inserting the values in the table borrower

SQL> insert into borrower values(101,'kumaran','23,mg st',22332);
1 row created.

SQL> insert into borrower values(155,'ajay','2nd main st',233232);
1 row created.

SQL> insert into borrower values(174,'saravanan','nehru st',252525);

1 row created.

//displaying the values in the table borrower

SQL> select * from borrower;

CARD_	NAME	ADDRS	PHONE
101	kumaran	23,mg st	22332
155	ajay	2nd main st	233232
174	saravanan	nehru st	252525

//inserting values in the table book_copies

SQL> insert into book_copies values('c002','m100',75);
1 row created.

SQL> insert into book_copies values('x555','l455',155);
1 row created.

SQL> insert into book_copies values('a501','m101',122);
1 row created.

//displaying the values in the table book_copies

SQL> select * from book_copies;

BOOK_ ID   BRANCH_ID NO_OF_COPIES
```
---------------------------------------------------------------
c002          m100              75
x555          l455              155
a501          m101              122
```

//inserting the values in the table book_loan

SQL> insert into book_loan values('a501','l455',174,'12-feb-10','17-feb-10');
1 row created.

SQL> insert into book_loan values('x555','m101',155,'13-feb-10','18-feb-10');
1 row created.

SQL> insert into book_loan values('c002','m100',101,'18-feb-10','23-feb-10');
1 row created.

SQL> insert into book_loan values('x555','m100',101,'23-feb-10','28-feb-10');
1 row created.

//displaying the values in the table book_loan

SQL> select * from book_loan;

BOOK_ ID   BRANCH_ID CARD_NO   DATE_OUT   DUE_DATE
```
-------------------------------------------------------------------------------------
a501          l455          174        12-FEB-10    17-FEB-10
x555          m101          155        13-FEB-10    18-FEB-10
c002          m100          101        18-FEB-10    23-FEB-10
x555          m100          101        23-FEB-10    28-FEB-10
```

QUERIES
1. To find out how many copies of the book with given title "cn" are owned by the library branch whose name is "senthil books".
SQL> Select no_of_copies from books, book_copies, lib_branch where(books. book_id
    =book_copies. book_id and book_copies. branch_id=lib_branch. branch_id and
    lib_branch. branch_name = 'senthil books' and books. title='cn');
NO_OF_COPIES
```
-----------------------
      122
```

9

2. How many copies of the book titled "dbms" are owned by each library branch.

SQL> Select lib_branch.branch_name, book_copies.no_of_copies from books, book_copies, lib_branch where (books. book_id = book_copies. book_id and book_copies. branch_id =lib_branch. branch_id and books. title ='dbms');

BRANCH_NAME   NO_OF_COPIES
----
vinayaga book house   155

3. To retrieve the name of all borrowers who have not borrowed any book from any branch.

SQL> Select name from borrower b where not exists (select card_no from book_loan

     where book_loan.card_no=b.card_no);

no rows selected

4. To find out for each book that is loanded out from "Kamaraj nagar" branch whose due date is today.

SQL> select books.title from books,book_loan,lib_branch where due_date='17-feb-10' and book_loan.branch_id=lib_branch.branch_id and book_loan.book_id=books.book_id and lib_branch.branch_name='vinayaga book house';

TITLE

Cn

5. To compute for each library branch retrieve the branch name, the total no of books loaned out from that branch.

SQL> select B.branch_name,count(Bl.branch_id) no_of_books from lib_branch B,book_loan Bl where Bl.branch_id=B.branch_id group by B.branch_name;

BRANCH_NAME   NO_OF_BOOKS
----
pondy books   2
senthil books   1
vinayaga book house   1

6. To retrieve the names, address and no of books borrowed for all borrowers who have more than 1 book in their credit

SQL> select b.name, b.addrs ,a. no_of_books from(select card_no,
   count(book_id) no_of_books from book_loan   group by card_no) a, borrower b where (a. card_no =b. card_no and a. no_of_books >1);

NAME	ADDRS	NO_OF_BOOKS
kumaran	23,mg st	2

7. For each book authored by "balaji", retrieve title, no of copies owned by the library branch whose name is "pondy book".

SQL> select b.title, bc. no_of_copies from books b, book_copies bc, lib_branch lb, book_author ba   here   lb.branch_name='pondy   books'   and   lb.branch_id=bc.branch_id   and a.book_id=bc.book_id and ba.book_id=b.book_id and ba.author='balaji'
  ;

TITLE	NO_OF_COPIES
se	75