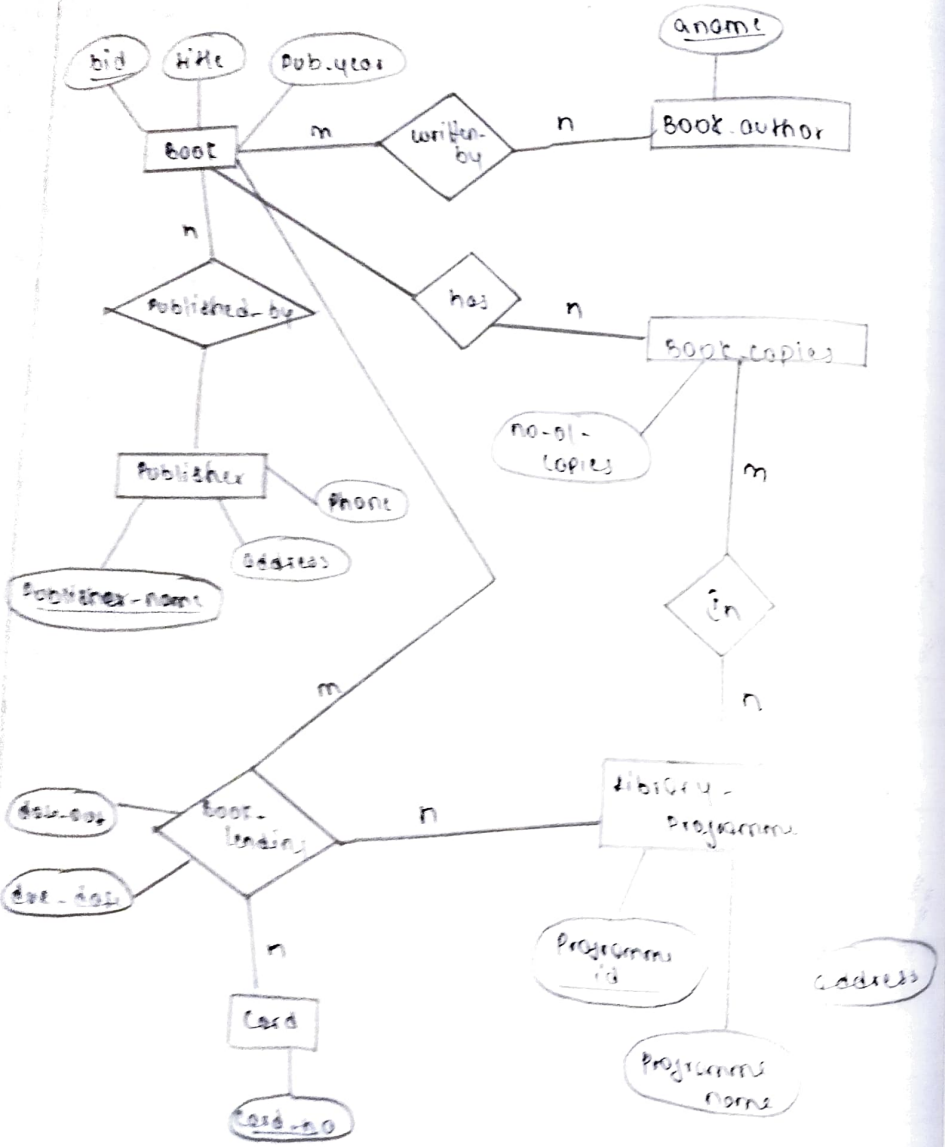
Entity - Relationship Diagram



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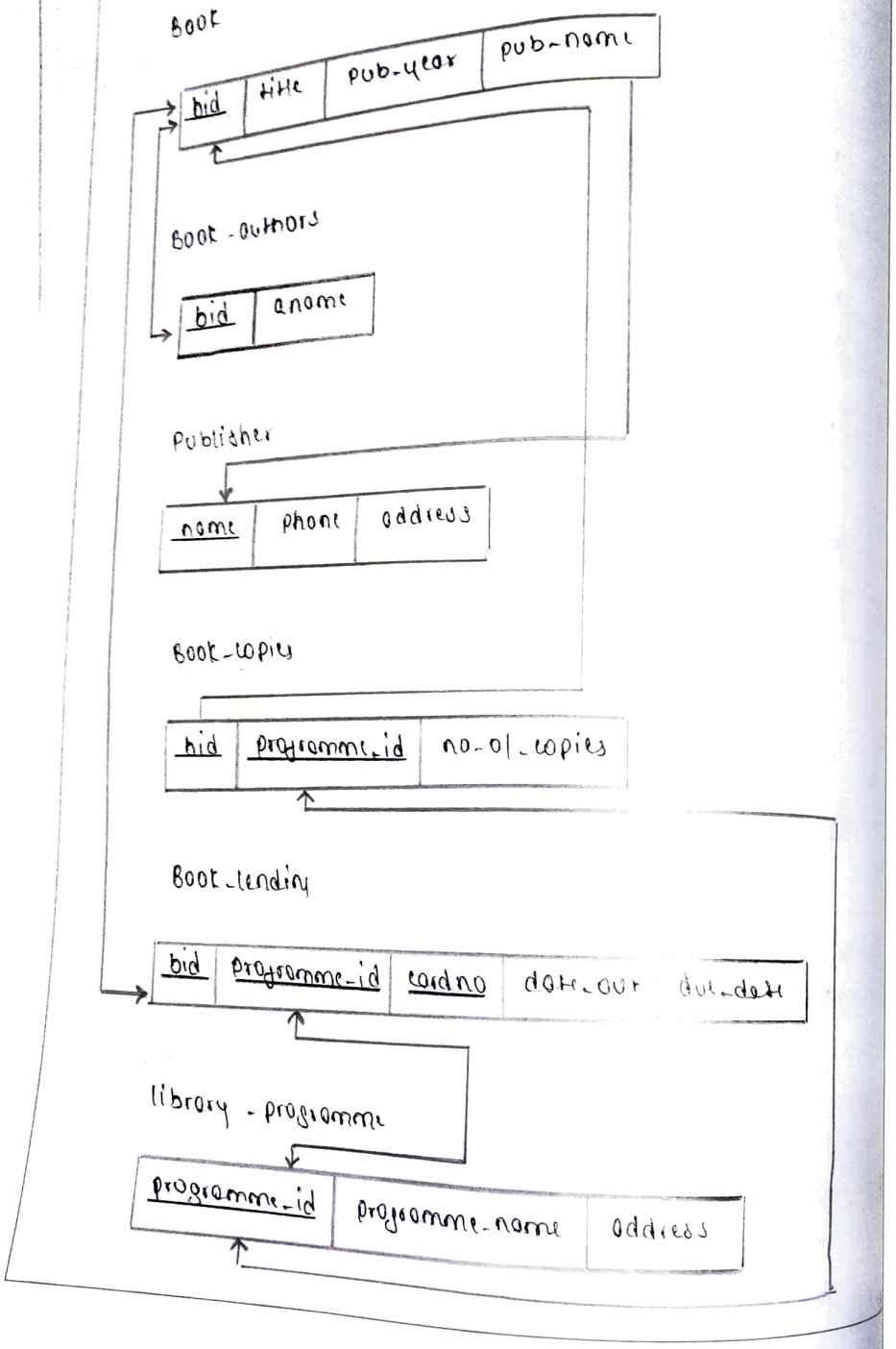
Consider the Schema for library database:

Book (bid, 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)

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
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 publisher. 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.

Schema Diagram



Database Creation

```
create database library-136
use library-136
```

Table Creation

```
create table book (bid int, title varchar(10), pname
varchar(20), pyear year, primary key (bid));

create table book-author (bid int, aname varchar(20)
primary key (bid), foreign key (bid) references
book (bid) on delete cascade);

create table publisher (name varchar(20), address
varchar(20), phone int, primary key (name));
    alter table book add foreign key (pname)
references publisher (name);

create table book-lending (bid int, branchid
int, cardno int, date-out date, due-date date,
primary key (bid, branchid, cardno), foreign key
(bid) references book (bid) on delete cascade);

create table book-copies (bid int, branchid int,
no-of-copies int, primary key (bid, branchid),
foreign key (bid) references book (bid) on delete
cascade);
```

select * from publisher;

name	address	phone
cambridge	delhi	98765
dreamworks	chennai	87654
fox	goa	76543
pearson	bangalore	65432
tata	mumbai	54321

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create table library_branch (branchid int, branch_name varchar(20), address varchar(20), primary key (branchid));

alter table book_lending add foreign key (branchid) references library_branch (branchid);

alter table book_copies add foreign key (branchid) references library_branch (branchid);

insertion of values to tables:

```
insert into publisher values ('cambridge',
                              'delhi', 98765);
insert into publisher values ('dreamworks',
                              'chennai', 87654);
insert into publisher values ('fox', 'goa',
                              76543);
insert into publisher values ('pearson',
                              'bangalore', '65432');
insert into publisher values ('tata','mumbai',
                              54321);
```

Select * from book;

bid	title	pname	pyear
11	maths	pearson	1998
22	chemistry	tata	1998
33	dbms	dreamworks	1998
44	dsa	fox	1998
55	adp	cambridge	1998

Select * from book-author;

bid	aname
11	uma
22	krish
33	ram
44	anu
55	retha

Select * from library-branch;

branch-id	branch-name	l-address
1	CMRIT	bangalore
2	RV	banjalore
3	PES	mumbai
4	CU	delhi
5	CMC	goa

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```
insert into book values (11,'maths','pearson', 1998);
insert into book values (22,'chemistry','tata', 1998);
insert into book values (33,'dbms','dreamworks', 1998);
insert into book values (44,'dsa','fox', 1998);
insert into book values (55,'adp','cambridge', 1998);


insert into book-author values(11,'uma');
insert into book-author values (22,'krish');
insert into book-author values (33,'ram');
insert into book-author values (44,'anu');
insert into book-author values (55,'retha');



insert into library-branch values (1,'CMRIT',
                                   'bangalore');
insert into library-branch values (2,'RV',
                                   'bangalore');
insert into library-branch values (3,'PES',
                                   'mumbai');
insert into library-branch values (4,'CU','delhi');
insert into library-branch values (5,'CMC','goa');
```

select * from book_lending;

bid	branchid	cardno	date_out	due_date
11	1	501	2017-01-01	2017-06-30
22	1	501	2017-04-15	2017-05-26
22	2	544	2017-01-15	2017-06-25
22	5	701	2017-01-02	2017-01-26
33	1	501	2017-03-15	2017-06-26
33	1	599	2017-04-01	2017-05-16
33	5	701	2017-01-25	2017-02-26
44	5	701	2017-02-05	2017-03-21
55	1	501	2017-01-25	2017-06-26
55	4	601	2017-07-04	2017-07-30
55	5	701	2017-01-25	2017-06-26

select * from book_copies;

bid	branchid	no_of_copies
11	1	50
11	2	10
22	2	80
33	5	90
55	3	60

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```
insert into book_lending values (11,1,501,
                '2017-01-01','2017-06-30');
insert into book_lending values (22,1,501,
                '2017-04-15','2017-05-26');
insert into book_lending values (22,2,544,
                '2017-01-15','2017-06-25');
insert into book_lending values (22,5,701,
                '2017-01-02','2017-01-26');
insert into book_lending values (33,1,501,
                '2017-03-15','2017-06-26');
insert into book_lending values (33,1,599,
                '2017-04-01','2017-05-16');
insert into book_lending values (33,5,701,
                '2017-01-25','2017-02-26');
insert into book_lending values (44,5,701,
                '2017-02-05','2017-03-21');
insert into book_lending values (55,1,501,
                '2017-01-25','2017-06-26');
insert into book_lending values (55,4,601,
                '2017-07-04','2017-07-30');
insert into book_lending values (55,5,701,
                '2017-01-25','2017-06-26');


insert into book_copies values (11,1,50);
insert into book_copies values (11,2,10);
insert into book_copies values (22,2,80);
insert into book_copies values (33,5,90);
insert into book_copies values (55,3,60);
```

bid	title	pname	pyear	aname
11	maths	pearson	1998	uma
11	maths	pearson	1998	uma krish
22	chemistry	tata	1998	uma
33	dbms	dreamworks	1998	ram
55	adp	cambridge	1998	reena

branchid	no_of_copies
1	50
2	10
2	80
5	90
3	60

cardno
501
701

CMR

Queries

1. Retrieve details of all books in the library - id, title, name of publisher, authors, number of copies in each programme etc.

```
select b.* aname, branchid, no-of-copies
from books b, book-author a, book-copies c
where b.bid = a.bid and abid = c.bid
```

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

```
Select cardno from book-lending
where date-out between '2017-01-01' and
'2017-06-30'
group by cardno having count(bid)>3;
```

Select * from book;

bid	title	pname	pyear
11	maths	pearson	1998
22	chemistry	tata	1998
33	doms	dreamworks	1998
44	dsa	fox	1998

select * from book_lending;

bid	branchid	cardno	date_out	due_date
11	1	501	2017-01-01	2017-06-30
22	1	501	2017-04-15	2017-05-26
22	2	544	2017-01-02	2017-06-25
22	5	701	2011-01-15	2017-01-26
33	1	501	2017-03-01	2017-06-26
33	1	599	2017-04-25	2017-05-16
33	5	701	2017-01-25	2017-02-26
44	5	701	2017-02-05	2017-03-16

Select * from book_copies;

bid	branchid	no_of_copies
11	1	50
11	2	10
22	2	80
33	5	90

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

Delete from book where bid = 55;

select * from book_year;

pyear
1998

select * from total_books;

bid	sum
11	60
22	80
33	90

select * from books_borrowed;

bid	sum
11	1
22	3
33	3
44	1

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

```
Create view book_year as (select distinct
                          pyear from book);
```

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

```
Create view total_books as (select bid,
Sum (no_of_copies) as sum from book_copies
group by bid);

Create view books_borrowed as (select bid,
count (*) as sum from book_lending
group by bid);
```

Select * from boots-available;

bid	total_books_available
11	59
22	77
33	87

create view books_available as (select t.bid, if null (t.sum - b.sum, t.sum) as total_books_available from total_books t left outer join books_borrowed b on t.bid = b.bid);

Program Outcome

- Create, update, alter and delete query on the database.
- Demonstrate the working of different concepts of DBMS.
- Implement, analyze and evaluate the project developed for the application