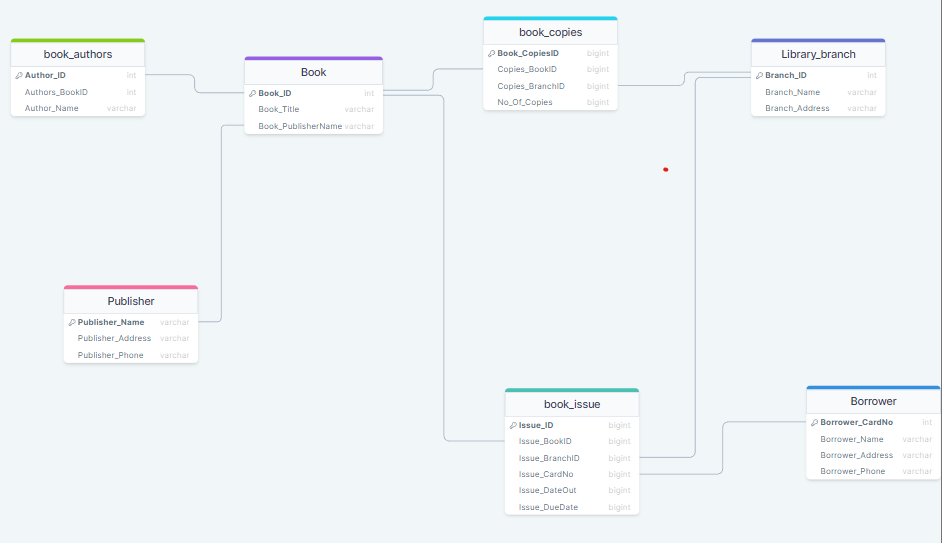
**Library Management Database**

**ER Diagram**



**Source code**

CREATE DATABASE LibraryManagement;

use LibraryManagement;

create table Publisher

(

Publisher\_Name VARCHAR(50) NOT NULL,

Publisher\_Address VARCHAR(100) NOT NULL,

Publisher\_Phone VARCHAR(20) NOT NULL,

primary key(Publisher\_Name)

);

CREATE TABLE Book (

Book\_ID INT NOT NULL auto\_increment,

Book\_Title VARCHAR(100) NOT NULL,

Book\_PublisherName VARCHAR(100) NOT NULL,

primary key(Book\_ID),

foreign key(Book\_PublisherName) references Publisher(Publisher\_Name) ON UPDATE CASCADE ON DELETE CASCADE

);

create table Library\_branch

(

Branch\_ID INT NOT NULL auto\_increment,

Branch\_Name VARCHAR(100) NOT NULL,

Branch\_Address VARCHAR(200) NOT NULL,

PRIMARY KEY(Branch\_ID)

);

create table Borrower

(

Borrower\_CardNo INT NOT NULL ,

Borrower\_Name VARCHAR(100) NOT NULL,

Borrower\_Address VARCHAR(200) NOT NULL,

Borrower\_Phone VARCHAR(50) NOT NULL,

primary key(borrower\_CardNo)

)auto\_increment=100;

create table book\_issue

(

Issue\_ID int auto\_increment,

Issue\_BookID int not null,

Issue\_BranchID int not null,

Issue\_CardNo int not null,

Issue\_DateOut varchar(50) not null,

Issue\_DueDate varchar(50) not null,

primary key(Issue\_ID),

foreign key(Issue\_BookID) references Book(Book\_ID) ON UPDATE CASCADE ON DELETE CASCADE,

foreign key(Issue\_BranchID) references library\_branch(Branch\_ID) ON UPDATE CASCADE ON DELETE CASCADE,

foreign key(Issue\_CardNo) references Borrower(Borrower\_CardNo) ON UPDATE CASCADE ON DELETE CASCADE

);

create table book\_copies

(

Book\_CopiesID INT PRIMARY KEY NOT NULL auto\_increment,

Copies\_BookID INT NOT NULL,

Copies\_BranchID INT NOT NULL ,

No\_Of\_Copies INT NOT NULL,

foreign key(Copies\_BookID) references Book(Book\_ID) ON UPDATE CASCADE ON DELETE CASCADE,

foreign key(Copies\_BranchID) references Library\_branch(Branch\_ID) ON UPDATE CASCADE ON DELETE CASCADE

);

create table book\_authors

(

Author\_ID INT NOT NULL auto\_increment,

Authors\_BookID INT NOT NULL ,

Author\_Name VARCHAR(50) NOT NULL,

PRIMARY KEY(Author\_ID),

foreign key(Authors\_BookID) references Book(Book\_ID) on update cascade on delete cascade

);

insert into Publisher (Publisher\_Name,Publisher\_Address,Publisher\_Phone)

values

('DAW Books','375 Hudson Street, New York, NY 10014','212-366-2000'),

('Viking','375 Hudson Street, New York, NY 10014','212-366-2000'),

('Signet Books','375 Hudson Street, New York, NY 10014','212-366-2000'),

('Chilton Books','Not Available','Not Available'),

('George Allen & Unwin','83 Alexander Ln, Crows Nest NSW 2065, Australia','+61-2-8425-0100'),

('Alfred A. Knopf','The Knopf Doubleday Group Domestic Rights, 1745 Broadway, New York, NY 10019','212-940-7390'),

('Bloomsbury','Bloomsbury Publishing Inc., 1385 Broadway, 5th Floor, New York, NY 10018','212-419-5300'),

('Shinchosa','Oga Bldg. 8, 2-5-4 Sarugaku-cho, Chiyoda-ku, Tokyo 101-0064 Japan','+81-3-5577-6507'),

('Harper and Row','HarperCollins Publishers, 195 Broadway, New York, NY 10007','212-207-7000'),

('Pan Books','175 Fifth Avenue, New York, NY 10010','646-307-5745'),

('Chalto & Windus','375 Hudson Street, New York, NY 10014','212-366-2000'),

('Harcourt Brace Jovanovich','3 Park Ave, New York, NY 10016','212-420-5800'),

('W.W. Norton',' W. W. Norton & Company, Inc., 500 Fifth Avenue, New York, New York 10110','212-354-5500'),

('Scholastic','557 Broadway, New York, NY 10012','800-724-6527'),

('Bantam','375 Hudson Street, New York, NY 10014','212-366-2000'),

('Picador USA','175 Fifth Avenue, New York, NY 10010','646-307-5745');

insert into Book (Book\_Title,Book\_PublisherName)

values

('The Name of the Wind', 'DAW Books'),

('It', 'Viking'),

('The Green Mile', 'Signet Books'),

('Dune', 'Chilton Books'),

('The Hobbit', 'George Allen & Unwin'),

('Eragon', 'Alfred A. Knopf'),

('A Wise Mans Fear', 'DAW Books'),

('Harry Potter and the Philosophers Stone', 'Bloomsbury'),

('Hard Boiled Wonderland and The End of the World', 'Shinchosa'),

('The Giving Tree', 'Harper and Row'),

('The Hitchhikers Guide to the Galaxy', 'Pan Books'),

('Brave New World', 'Chalto & Windus'),

('The Princess Bride', 'Harcourt Brace Jovanovich'),

('Fight Club', 'W.W. Norton'),

('Holes', 'Scholastic'),

('Harry Potter and the Chamber of Secrets', 'Bloomsbury'),

('Harry Potter and the Prisoner of Azkaban', 'Bloomsbury'),

('The Fellowship of the Ring', 'George Allen & Unwin'),

('A Game of Thrones', 'Bantam'),

('The Lost Tribe', 'Picador USA');

insert into Library\_branch (Branch\_Name,Branch\_Address)

values

('Sharpstown','32 Corner Road, New York, NY 10012'),

('Central','491 3rd Street, New York, NY 10014'),

('Saline','40 State Street, Saline, MI 48176'),

('Ann Arbor','101 South University, Ann Arbor, MI 48104');

insert into Borrower(Borrower\_CardNo,Borrower\_Name,Borrower\_Address,Borrower\_Phone)

values

(101,'Joe Smith','1321 4th Street, New York, NY 10014','212-312-1234'),

(102,'Jane Smith','1321 4th Street, New York, NY 10014','212-931-4124'),

(103,'Tom Li','981 Main Street, Ann Arbor, MI 48104','734-902-7455'),

(104,'Angela Thompson','2212 Green Avenue, Ann Arbor, MI 48104','313-591-2122'),

(105,'Harry Emnace','121 Park Drive, Ann Arbor, MI 48104','412-512-5522'),

(106,'Tom Haverford','23 75th Street, New York, NY 10014','212-631-3418'),

(107,'Haley Jackson','231 52nd Avenue New York, NY 10014','212-419-9935'),

(108,'Michael Horford','653 Glen Avenue, Ann Arbor, MI 48104','734-998-1513');

insert into book\_issue(Issue\_BookID,Issue\_BranchID,Issue\_CardNo,Issue\_DateOut,Issue\_DueDate)

values

('1','1',101,'1/1/18','2/2/18'),

('2','1',101,'1/1/18','2/2/18'),

('3','1',101,'1/1/18','2/2/18'),

('4','1',101,'1/1/18','2/2/18'),

('5','1',102,'1/3/18','2/3/18'),

('6','1',102,'1/3/18','2/3/18'),

('7','1',102,'1/3/18','2/3/18'),

('8','1',102,'1/3/18','2/3/18'),

('9','1',102,'1/3/18','2/3/18'),

('11','1',102,'1/3/18','2/3/18'),

('12','2',105,'12/12/17','1/12/18'),

('10','2',105,'12/12/17','1/12/17'),

('20','2',105,'2/3/18','3/3/18'),

('18','2',105,'1/5/18','2/5/18'),

('19','2',105,'1/5/18','2/5/18'),

('19','2',101,'1/3/18','2/3/18'),

('11','2',106,'1/7/18','2/7/18'),

('1','2',106,'1/7/18','2/7/18'),

('2','2',101,'1/7/18','2/7/18'),

('3','2',101,'1/7/18','2/7/18'),

('5','2',105,'12/12/17','1/12/18'),

('4','3',103,'1/9/18','2/9/18'),

('7','3',102,'1/3/18','2/3/18'),

('17','3',102,'1/3/18','2/3/18'),

('16','3',104,'1/3/18','2/3/18'),

('15','3',104,'1/3/18','2/3/18'),

('15','3',107,'1/3/18','2/3/18'),

('14','3',104,'1/3/18','2/3/18'),

('13','3',107,'1/3/18','2/3/18'),

('13','3',102,'1/3/18','2/3/18'),

('19','3',102,'12/12/17','1/12/18'),

('20','4',103,'1/3/18','2/3/18'),

('1','4',102,'1/12/18','2/12/18'),

('3','4',107,'1/3/18','2/3/18'),

('18','4',107,'1/3/18','2/3/18'),

('12','4',102,'1/4/18','2/4/18'),

('11','4',103,'1/15/18','2/15/18'),

('9','4',103,'1/15/18','2/15/18'),

('7','4',107,'1/1/18','2/2/18'),

('4','4',103,'1/1/18','2/2/18'),

('1','4',103,'2/2/17','3/2/18'),

('20','4',103,'1/3/18','2/3/18'),

('1','4',102,'1/12/18','2/12/18'),

('3','4',107,'1/13/18','2/13/18'),

('18','4',107,'1/13/18','2/13/18'),

('12','4',102,'1/14/18','2/14/18'),

('11','4',103,'1/15/18','2/15/18'),

('9','4',103,'1/15/18','2/15/18'),

('7','4',107,'1/19/18','2/19/18'),

('4','4',103,'1/19/18','2/19/18'),

('1','4',103,'1/22/18','2/22/18');

insert into book\_copies(Copies\_BookID,Copies\_BranchID,No\_Of\_Copies)

values

('1','1','5'),

('2','1','5'),

('3','1','5'),

('4','1','5'),

('5','1','5'),

('6','1','5'),

('7','1','5'),

('8','1','5'),

('9','1','5'),

('10','1','5'),

('11','1','5'),

('12','1','5'),

('13','1','5'),

('14','1','5'),

('15','1','5'),

('16','1','5'),

('17','1','5'),

('18','1','5'),

('19','1','5'),

('20','1','5'),

('1','2','5'),

('2','2','5'),

('3','2','5'),

('4','2','5'),

('5','2','5'),

('6','2','5'),

('7','2','5'),

('8','2','5'),

('9','2','5'),

('10','2','5'),

('11','2','5'),

('12','2','5'),

('13','2','5'),

('14','2','5'),

('15','2','5'),

('16','2','5'),

('17','2','5'),

('18','2','5'),

('19','2','5'),

('20','2','5'),

('1','3','5'),

('2','3','5'),

('3','3','5'),

('4','3','5'),

('5','3','5'),

('6','3','5'),

('7','3','5'),

('8','3','5'),

('9','3','5'),

('10','3','5'),

('11','3','5'),

('12','3','5'),

('13','3','5'),

('14','3','5'),

('15','3','5'),

('16','3','5'),

('17','3','5'),

('18','3','5'),

('19','3','5'),

('20','3','5'),

('1','4','5'),

('2','4','5'),

('3','4','5'),

('4','4','5'),

('5','4','5'),

('6','4','5'),

('7','4','5'),

('8','4','5'),

('9','4','5'),

('10','4','5'),

('11','4','5'),

('12','4','5'),

('13','4','5'),

('14','4','5'),

('15','4','5'),

('16','4','5'),

('17','4','5'),

('18','4','5'),

('19','4','5'),

('20','4','5');

insert into book\_authors(Authors\_BookID,Author\_Name)

values

('1','Patrick Rothfuss'),

('2','Stephen King'),

('3','Stephen King'),

('4','Frank Herbert'),

('5','J.R.R. Tolkien'),

('6','Christopher Paolini'),

('6','Patrick Rothfuss'),

('8','J.K. Rowling'),

('9','Haruki Murakami'),

('10','Shel Silverstein'),

('11','Douglas Adams'),

('12','Aldous Huxley'),

('13','William Goldman'),

('14','Chuck Palahniuk'),

('15','Louis Sachar'),

('16','J.K. Rowling'),

('17','J.K. Rowling'),

('18','J.R.R. Tolkien'),

('19','George R.R. Martin'),

('20','Mark Lee');

select \* from Book;

select \* from book\_authors;

select \* from book\_copies;

select \* from book\_issue;

select\* from Borrower;

select \* from Library\_branch;

select\* from Publisher;

#1- How many copies of the book titled "The Lost Tribe" are owned by the library branch whose name is "Sharpstown"? \*/

select copies.Copies\_BranchID as BranchID , Branch.Branch\_Name as BranchName,

copies.No\_Of\_Copies as NoofCopies

from book\_copies as copies

inner join Book on copies.Copies\_BookID=Book.Book\_ID

inner join Library\_branch as Branch on copies.Copies\_BranchID= Branch.Branch\_ID

WHERE Book.Book\_Title = 'The Lost Tribe' AND Branch.Branch\_Name = 'Sharpstown' ;

#2- How many copies of the book titled "The Lost Tribe" are owned by each library branch?

select copies.Copies\_BranchID as BranchID, Branch.Branch\_Name as BranchName ,

copies.No\_Of\_Copies as NoofCopies

from book\_copies as copies

inner join Book on copies.Copies\_BookID = Book.Book\_ID

inner join Library\_branch as Branch on copies.Copies\_BranchID = Branch.Branch\_ID

where Book.Book\_Title = 'The Lost Tribe' and Branch.Branch\_ID

#3- Retrieve the names of all borrowers who do not have any books checked out.

select Borrower\_Name from Borrower

where not exists

( select \* from book\_issue

where Issue\_CardNo = Borrower\_CardNo)

#4- For each book that is loaned out from the "Sharpstown" branch and whose DueDate is today, retrieve the book title, the borrower's name, and the borrower's address.

select Branch.Branch\_Name as 'Branch Name',

Book.Book\_Title as 'Book Title', Borrower.Borrower\_Name as 'Borrower Name',

Borrower.Borrower\_Address as 'Borrower Address',

issue.Issue\_DateOut as 'Date out' , issue.Issue\_DueDate as 'Due Date'

from book\_issue as issue

inner join book on issue.Issue\_BookID= Book.Book\_ID

inner join borrower on Borrower.Borrower\_CardNo = issue.Issue\_CardNo

inner join Library\_branch as Branch on Branch.Branch\_ID = issue.Issue\_BranchID

where Branch.Branch\_Name='Sharpstown' and issue.Issue\_DueDate = '2/2/18';

select \* from book\_issue;

#5- For each library branch, retrieve the branch name and the total number of books loaned out from that branch

select Branch.Branch\_Name as 'Branch Name' ,

count(issue.Issue\_BranchID) as 'Total issues'

from book\_issue as issue

inner join Library\_branch as Branch on Branch.Branch\_ID = issue.Issue\_BranchID

group by Branch\_Name

#6- Retrieve the names, addresses, and number of books checked out for all borrowers who have more than five books checked out.

select Bor.Borrower\_Name as 'Name',

Bor.Borrower\_Address as 'Address',

count(issue.Issue\_BookID) as 'No of Books'

from book\_issue as issue

inner join Borrower as Bor on Bor.Borrower\_CardNo = issue.Issue\_cardNo

group by Bor.Borrower\_Name, Bor.Borrower\_Address

having count(Bor.Borrower\_Name)>= 5

#7- For each book authored by "Stephen King", retrieve the title and the number of copies owned by the library branch whose name is "Central".

select author.Author\_Name as 'Author Name' ,

book.Book\_Title as ' Book Title',

count(copies.Copies\_BookID) as 'No of copies',

branch.Branch\_Name as 'Branch Name'

from Book as book

inner join book\_authors as author on author.Author\_ID = book.Book\_ID

inner join book\_copies as copies on copies.Book\_CopiesID = book.Book\_ID

inner join Library\_branch as branch on branch.Branch\_ID = copies.Copies\_BranchID

where branch.Branch\_Name = 'Central' and author.Author\_Name = 'Stephen King'

select author.Author\_Name as 'Name'

from book\_authors as author

group by Author\_Name

select branch.Branch\_Name as 'Name'

from Library\_branch as branch