Library Management System

Sydney Lieske

Overview

The database is for a library's catalog of books, noting which ones are available and information about the book, such as:
- Author
- Publisher
- Number of copies available
- Title
- ISSN
- Genre
- Section in the library
- Borrowed date and return date

This database is available to the librarians, assistant librarians, and library members.
- Each has their own ID number (an EMPID and a MemberID, respectively).
- Members have an account with their date of birth, username, and password.
- Workers at the library have a libraryID, JobID, and JobType.

Business Rules

1. Each author can write 1 or more books.

2. Each member can have many checkouts.

3. One librarian can work at 1 book register.

4. Each book can have many copies.

5. Each book can be published by 1 publisher.

6. Each section is located at a library.

7. Many employees can work at a library.

8. Each library can employ many employees.

9. Each employee has 1 job.

10. Each library uses member accounts.
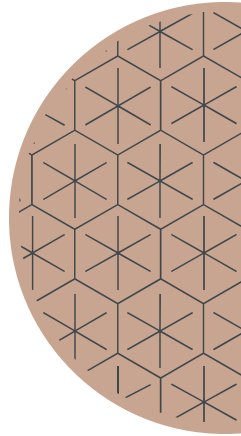
ER Diagram & Explanation
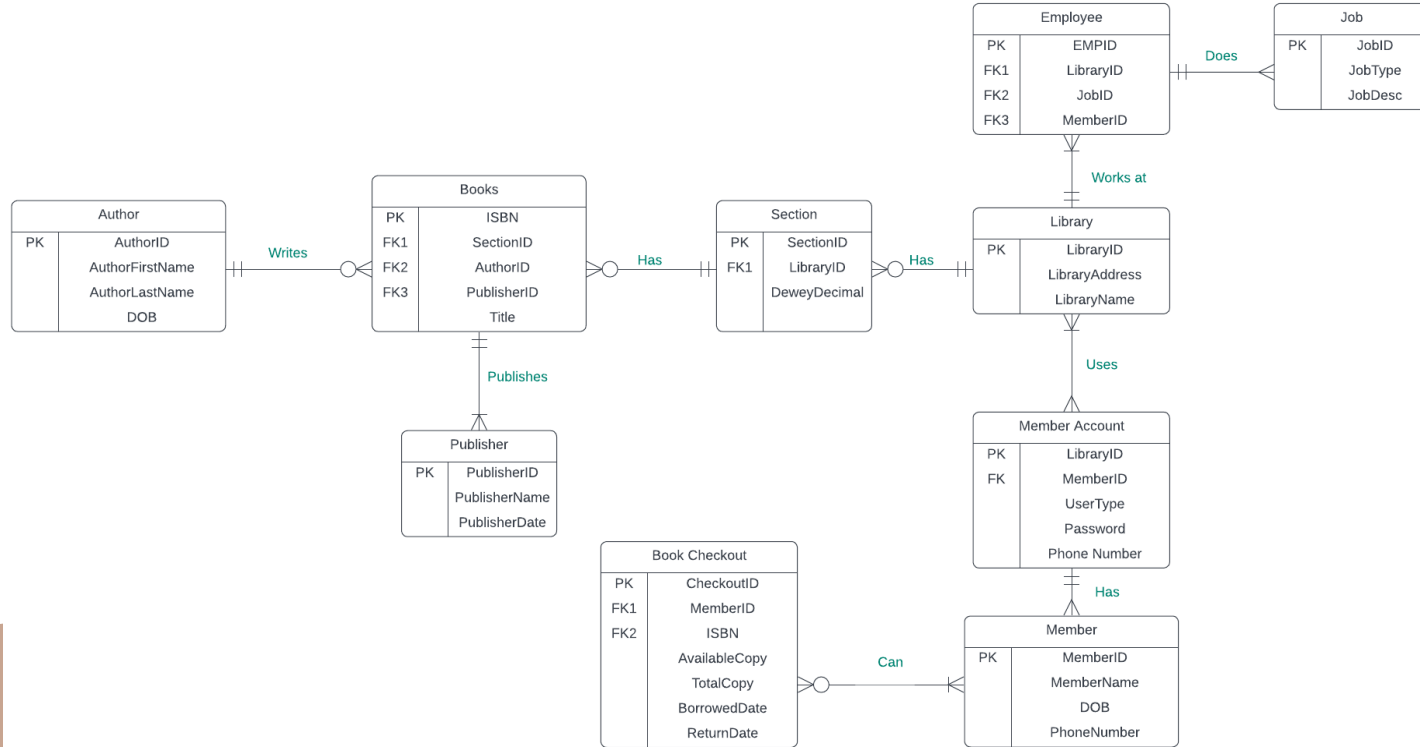
Data Dictionary

Table Name: Member

Description: Stores information about the member

Fields	Data Type	Null / Not Null	Rules
MemberID	Number	Not Null	PK
MemberName	VarChar(20)	Not Null	Attribute
DOB	Date	Not Null	Attribute
PhoneNumber	Number	Not Null	Attribute

Table Name: Book Checkout

Description: Stores information about the book checkout

Fields	Data Type	Null / Not Null	Rules
CheckoutID	Num	Not Null	PK
MemberID	Num	Not Null	FK1
ISBN	Num	Not Null	Attribute
AvailableCopy	Num	Not Null	Attribute
TotalCopy	Num	Not Null	Attribute
BorrowedDate	Date	Not Null	Attribute
ReturnDate	Date		Attribute

Creating Tables

```
create table BOOKCHECKOUT (
CheckoutID            number not null,
MemberID              number not null,
ISBN                  number not null,
AvailableCopy         number not null,
TotalCopy             number not null,
BorrowedDate          date not null,
ReturnDate            date,
PRIMARY KEY (CHECKOUTID),
FOREIGN KEY (MEMBERID) REFERENCES MEMBER(MEMBERID)
);
```

CHECKOUTID	MEMBERID	ISBN	AVAILABLECOPY	TOTALCOPY	BORROWEDDATE	RETURNDATE
901	101	9780147512734	4	10	15-APR-22	01-MAY-22
902	102	9783942869133	2	8	04-APR-22	20-APR-22
903	103	9780090440764	1	10	10-FEB-22	24-APR-22
904	104	9789211746402	6	10	21-MAR-22	-
905	105	9784829465750	3	6	14-JAN-22	-
906	106	9784829465750	2	6	14-JAN-22	-

Insert & Update
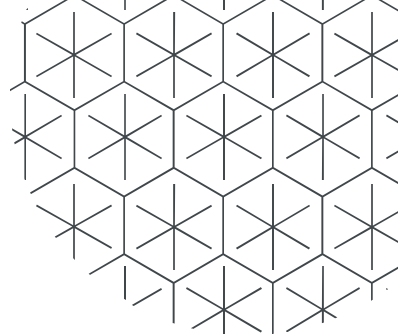
```sql
INSERT INTO Member
VALUES('101','Travis Red',TO_DATE('12/Dec/1993'),'7854135891');

INSERT INTO Member
VALUES('102','John Hare',TO_DATE('14/Feb/2000'),'9824782478');
```

MEMBERID	MEMBERNAME	DOB	PHONENUMBER
101	Travis Red	12-DEC-93	7854135891
102	John Hare	14-FEB-00	9824782478

```sql
UPDATE Member
SET MemberName = 'Travis Rau'
WHERE MemberID = '101';

UPDATE Member
SET DOB ='17/Mar/2001'
WHERE PhoneNumber ='7854135891';
```

MEMBERID	MEMBERNAME	DOB	PHONENUMBER
101	Travis Rau	17-MAR-01	7854135891
102	John Hare	14-FEB-00	9824782478

Queries

Selects the name of a book along with the name of the author who wrote it

```sql
SELECT CONCAT(CONCAT(AUTHORFIRSTNAME, ' '), AUTHORLASTNAME) AS AUTHOR_NAME, TITLE AS BOOK_TITLE
FROM AUTHOR
JOIN BOOKS USING (AUTHORID)
ORDER BY BOOK_TITLE ASC;
```

AUTHOR_NAME	BOOK_TITLE
Sam Gibbs	Castle Hangnail
Harrison Oliver	Dracula
Khris Davidson	Frankenstein
Ashley Olvera	How to Not Be Wrong
Emily Howard	Isle of Truth

Queries

Selects the Author name, book name, member name, and the date of all books that have been checked out

```
SELECT CONCAT(CONCAT(A.AuthorFirstName, ' '), A.AuthorLastName) as AUTHOR_NAME,
B.Title as BOOK_TITLE, M.MemberName as MEMBER_NAME,
BC.BorrowedDate as DATE_BORROWED
FROM AUTHOR A
JOIN BOOKS B USING (AuthorID)
JOIN BOOKCHECKOUT BC USING (ISBN)
JOIN MEMBER M USING (MEMBERID)
GROUP BY M.MEMBERNAME, B.TITLE, CONCAT(CONCAT(A.AuthorFirstName, ' '), A.AuthorLastName), BC.BORROWEDDATE
ORDER BY MEMBER_NAME ASC, DATE_BORROWED DESC;
```

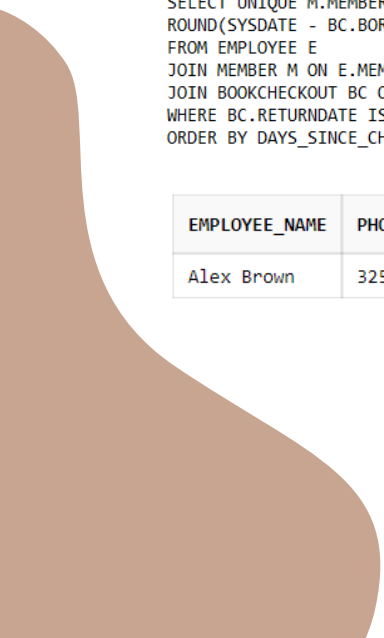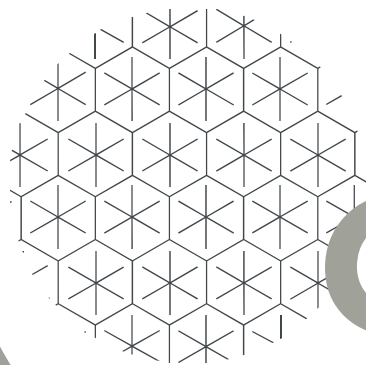| AUTHOR_NAME	BOOK_TITLE	MEMBER_NAME	DATE_BORROWED
Harrison Oliver	Dracula	Alex Brown	14-JAN-22
Harrison Oliver	Dracula	Alfred Johnson	14-JAN-22
Ashley Olvera	How to Not Be Wrong	Derek Green	21-MAR-22
Chris Davidson	Frankenstein	John Hare	04-APR-22
Emily Howard	Of Mice and Men	Sheryl Lee	10-FEB-22
Sam Gibbs	Castle Hangnail	Travis Rau	15-APR-22

Queries

Selects the name and phone number of each employee who has not returned a book along with how long ago the book was checked out

```
SELECT UNIQUE M.MEMBERNAME AS EMPLOYEE_NAME, M.PHONENUMBER AS PHONE_NUMBER,
ROUND(SYSDATE - BC.BORROWEDDATE) AS DAYS_SINCE_CHECKOUT
FROM EMPLOYEE E
JOIN MEMBER M ON E.MEMBERID = M.MEMBERID
JOIN BOOKCHECKOUT BC ON M.MEMBERID = BC.MEMBERID
WHERE BC.RETURNDATE IS NULL
ORDER BY DAYS_SINCE_CHECKOUT DESC, EMPLOYEE_NAME ASC;
```

EMPLOYEE_NAME	PHONE_NUMBER	DAYS_SINCE_CHECKOUT
Alex Brown	3254126696	96

Questions