

Library Management System

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Overview

The database is for a library's catalog of books, noting which ones are available and information about the book, such as:

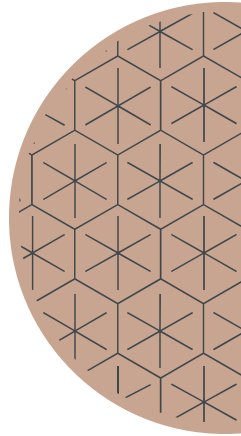
- Author
- Publisher
- Number of copies available
- Title
- ISSN
- Genre
- Section in the library
- Borrowed date and return date

This database is available to the librarians, assistant librarians, and library members.

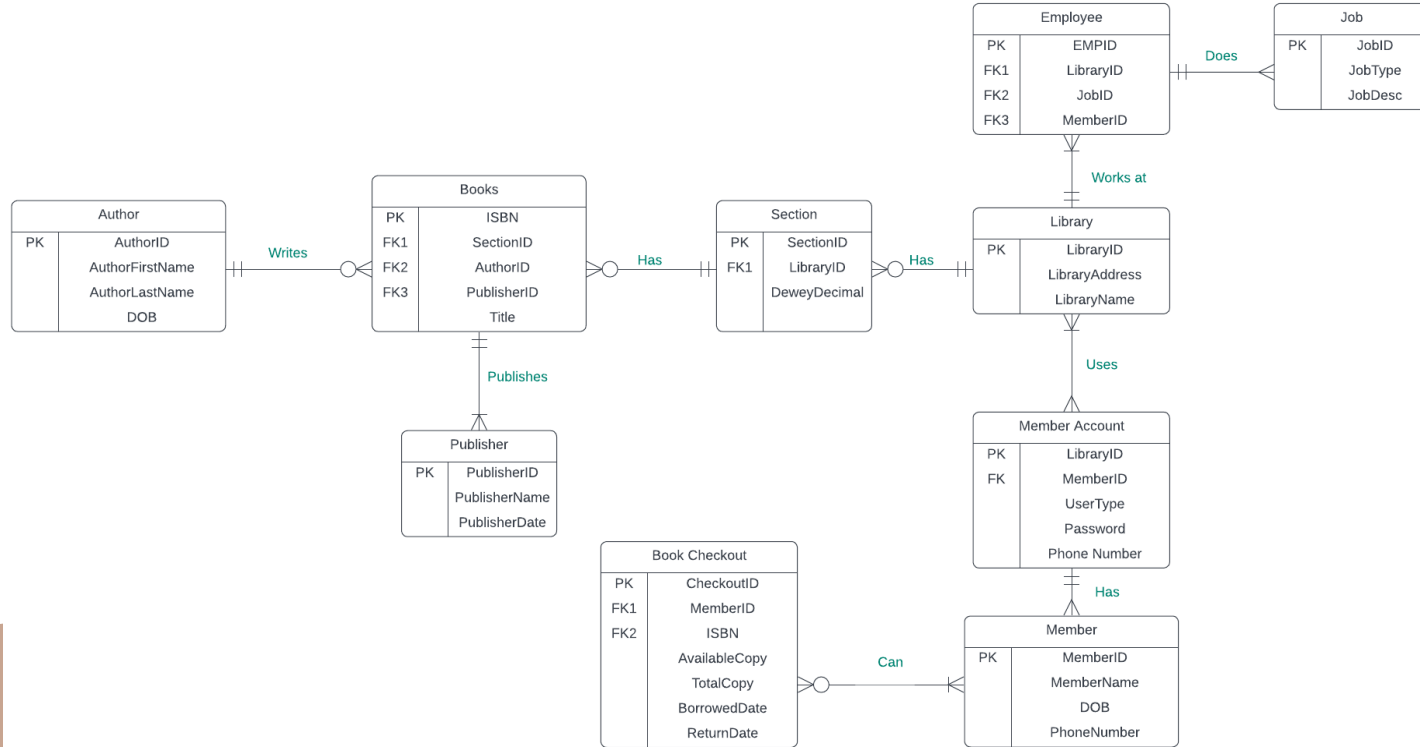
- Each has their own ID number (an EMPID and a MemberID, respectively).
- Members have an account with their date of birth, username, and password.
- Workers at the library have a libraryID, JobID, and JobType.

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
<u>MemberID</u>	Number	Not Null	PK
<u>MemberName</u>	VarChar(20)	Not Null	Attribute
<u>DOB</u>	Date	Not Null	Attribute
<u>PhoneNumber</u>	Number	Not Null	Attribute

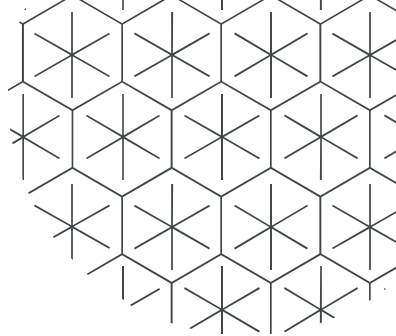
Table Name: Book Checkout			
Description: Stores information about the book checkout			
Fields	Data Type	Null / Not Null	Rules
<u>CheckoutID</u>	Num	Not Null	PK
<u>MemberID</u>	Num	Not Null	FK1
<u>ISBN</u>	Num	Not Null	Attribute
<u>AvailableCopy</u>	Num	Not Null	Attribute
<u>TotalCopy</u>	Num	Not Null	Attribute
<u>BorrowedDate</u>	Date	Not Null	Attribute
<u>ReturnDate</u>	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



```
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

```
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

```
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




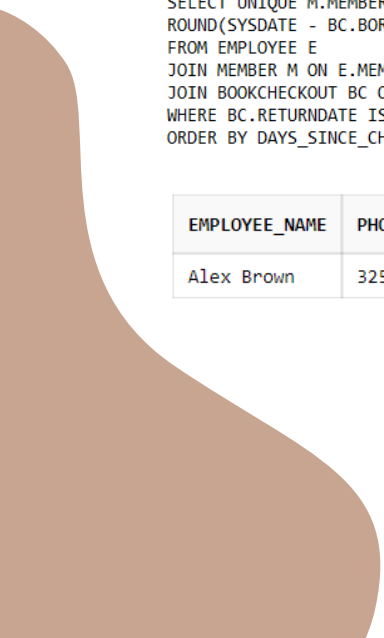
Queries

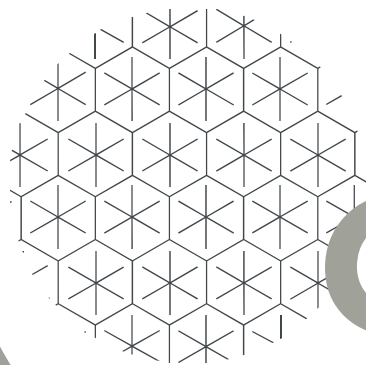


Selects the name and phone number of each employee who has not returned a book along with how long ago the book was checked out

```
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

