1. INTRODUCTION/DESCRIPTION

Description:

In our mini-world, we've got a Library Management System (LMS) making your library experience smooth. Students, professors, and researchers can easily borrow, return, and reserve books with user-friendly tools. Depending on who you are, there are rules like how many books you can borrow and for how long. If you keep a book too long, you'll get a small fine. Librarians take care of the behind-the-scenes stuff, making sure the catalog is up-to-date, your info stays private, and everything runs smoothly. So, whether you're studying or teaching, our LMS is there to make sure you can get the resources you need hassle-free. The library is a hub of knowledge, housing a diverse collection of books, journals, multimedia resources, and more. It caters to a broad audience, including students, faculty, and researchers.

Entities:

1. Books: Physical and digital resources with unique identifiers, authors, prices, location and availability status.

2. Members: Library patrons, with unique IDs, personal information, and borrowing history.

3. Employees:Staff members responsible for managing the library, with unique IDs, and personal information.

4. Authors: Creators of literary works, with unique IDs, contributing to the library's collection.

5. Publishers: Entities responsible for producing and distributing books and other materials containing unique IDs, and personal information.

6. Admin: Administrative personnel overseeing system management and configurations.

7. Transactions - Records the borrowing and returning of books, containing the borrow date, return date, and employee ID responsible for transactions. Additionally, it is weak, depending on the member's entity.

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Interactions:

1. **Borrowing and Returning:**
   - Members can borrow books, with a limit on the number of books they can have at any given time.
   - Members return books within a specified timeframe.
   - Librarians handle the check-in and check-out processes.

2. **Catalog Management:**
   - Librarians update and maintain the catalog, adding new books, updating information, and marking items as available or checked out.

3. **Fines and Overdue Management:**
   - Members incur fines for overdue books.
   - Librarians manage fine collection and maintain records.

4. **Hiring Employees for the library:**
   - The admin is responsible for adding the employees in the library along with the details, who in turn is responsible for handling the members of the library and the respective transactions involved.

Business Rules:

1. **Borrowing Limits:**
   - Members can borrow a maximum of 'X' books simultaneously.

2. **Loan Period:**
   - The standard loan period for books is 'Y' days. A fine of 'A' amount is charged for each day a book is overdue.

3. **Member Information:**
   - Member credentials, and transaction details including borrowing history, and can only be accessed by authorized personnel.

4. **Book details:**
   - Includes the book ID which is a combination of the author ID and the publisher code, the location of the books, its current status, and price. The employee has the details of the status of the book based on the activities.

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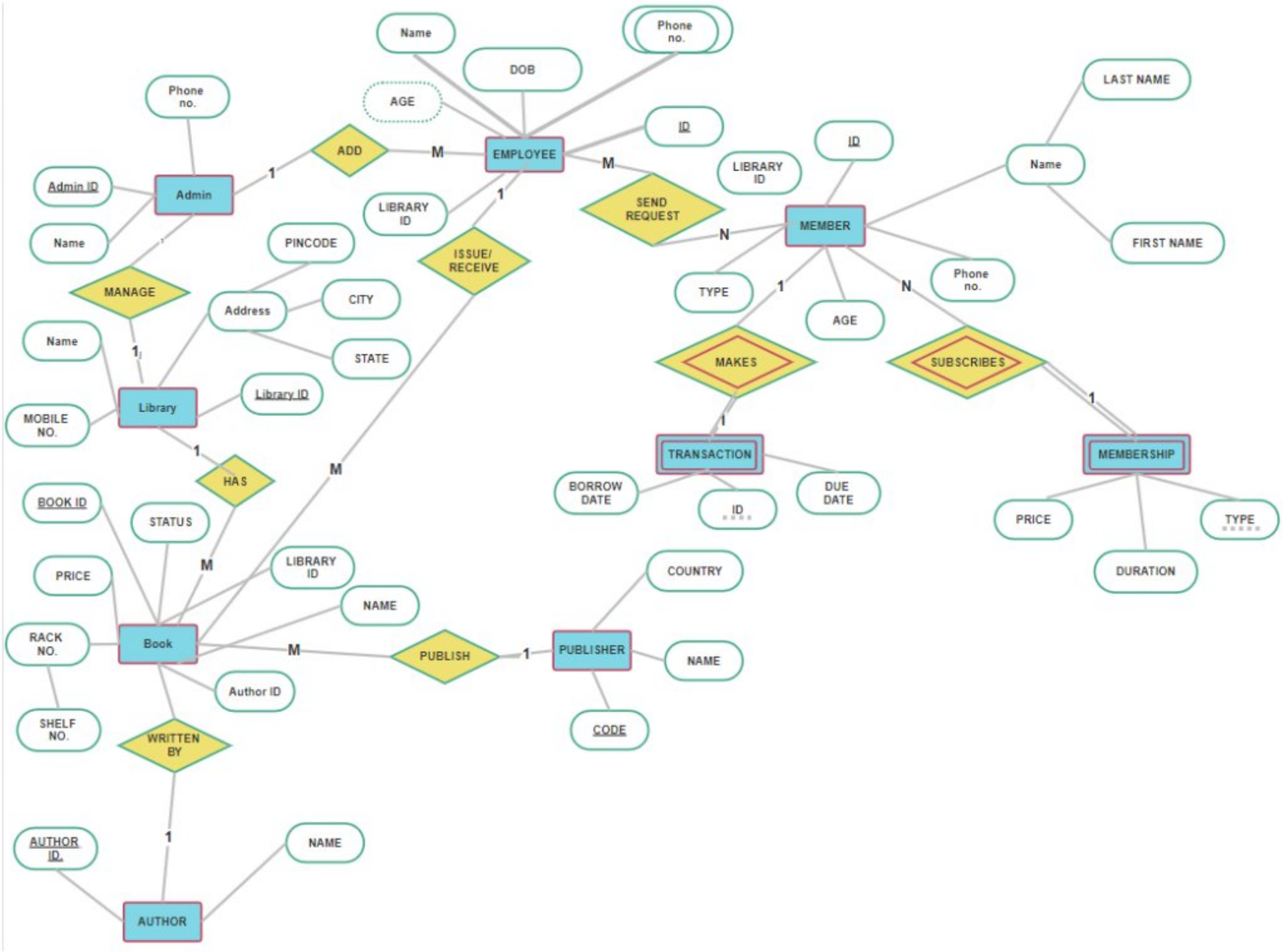
2. ER Model



3. RELATIONAL MAPPING

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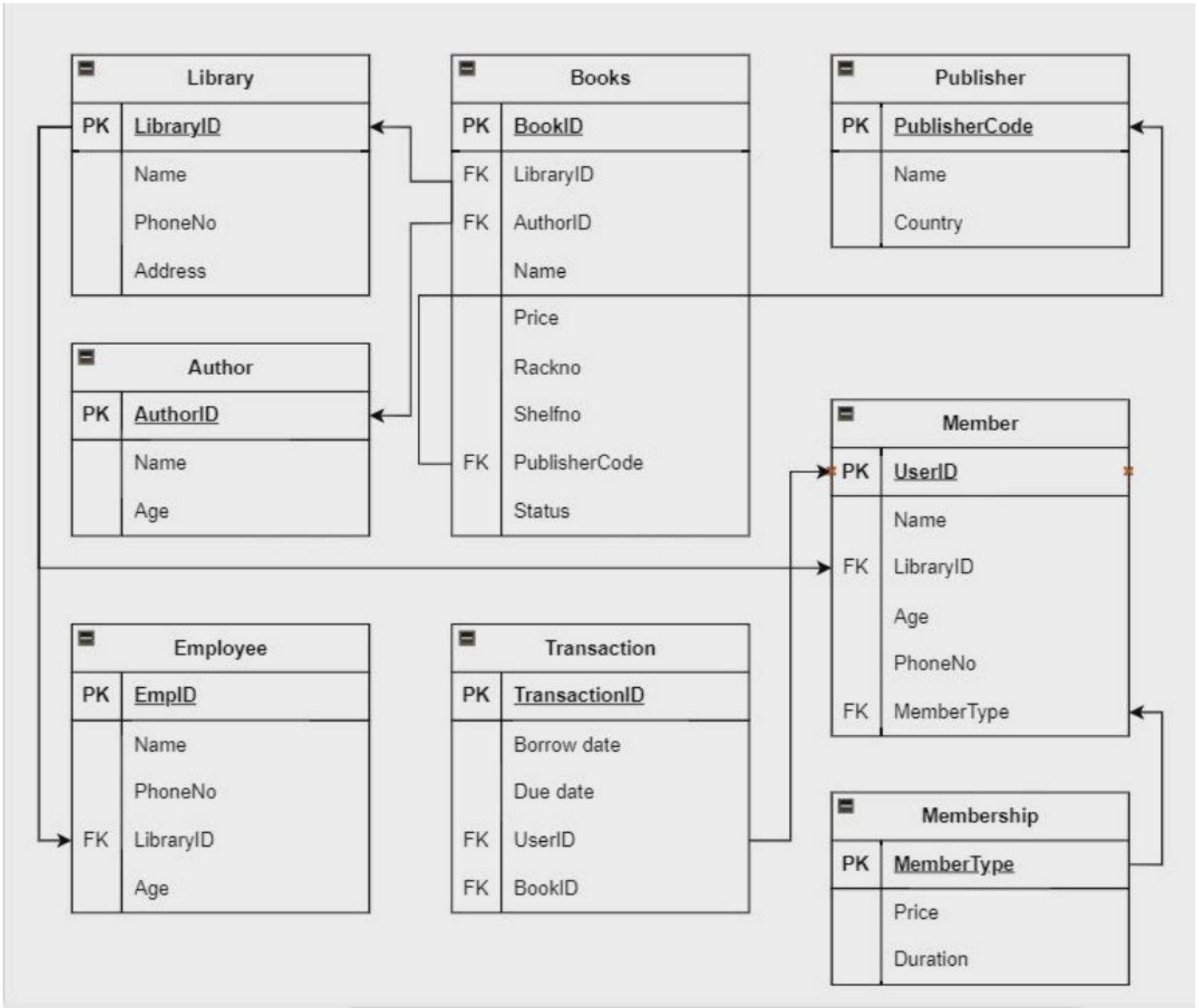

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