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PROJECT TITLE
LIBRARY MANAGEMENT SYSTEM

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Problem Domain:

The library management system aims to efficiently manage the borrowing and availability of books within the library, ensuring smooth operations for both staff and users.

Requirements:

The major requirements of library management system are:

1.1 System:

The features related to the system are:

- The system should provide functionalities for adding, updating, and managing library resources such as books, authors, subjects, floors, and shelves.
- It should allow staff to issue and return books, generate penalties for overdue books, and handle book extensions

1.2 Users:

The system shall be able to incorporate the following users:

- Staff member
- Teachers
- Students

1.3 Books:

- Functionality to add new books to the library inventory.
- Ability to associate books with authors and subjects.

1.4 Issue books:

Capability to issue books to users and track issue dates, return dates, and extensions.

1.5 Penalties:

Functionality to generate penalties for overdue books and manage penalty records.

1.6 Debarment:

Ability to flag users as debarred if they accumulate a certain level of penalty.

1.7 Library Infrastructure:

Features for managing library infrastructure such as floors and shelves.

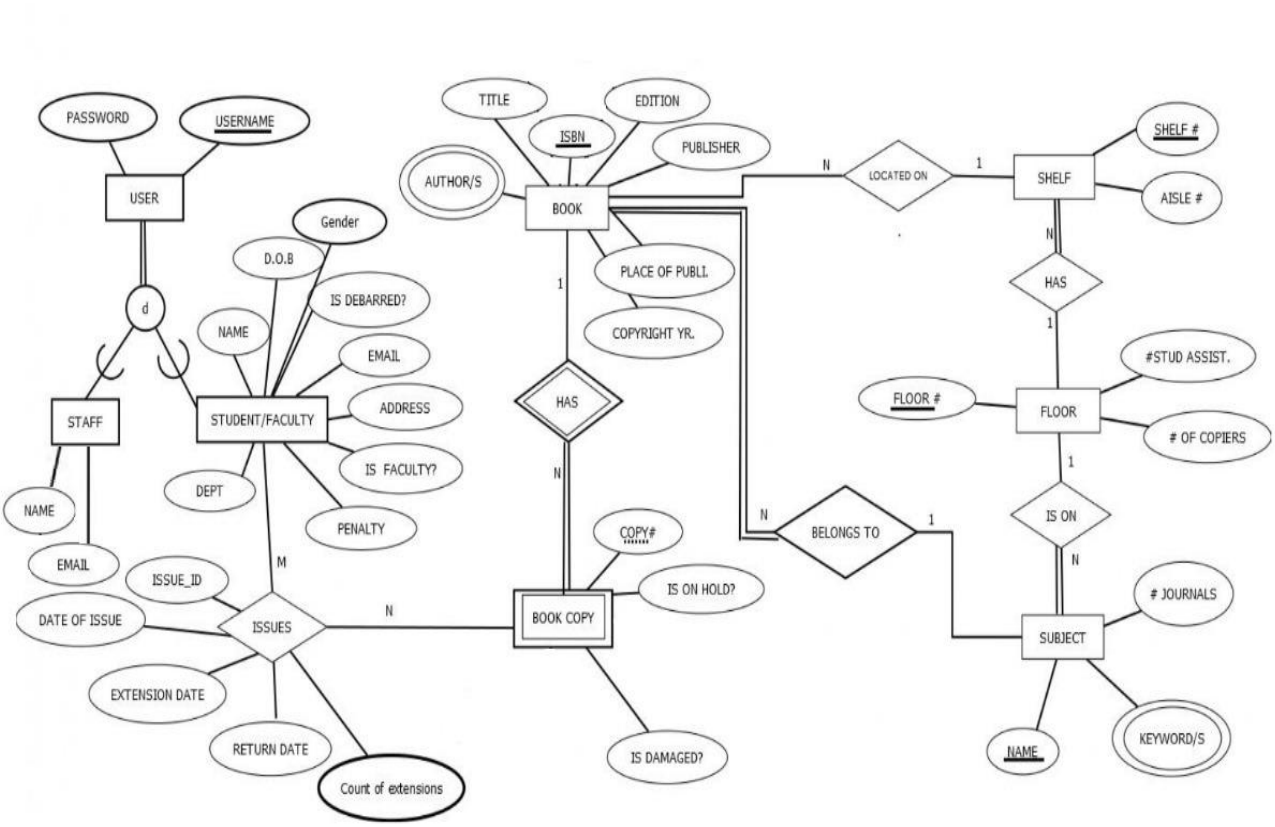
1.8 Extension:

Option to extend the return date for books..

Constraints:

- The system should ensure data integrity and enforce foreign key constraints.
- Performance optimization strategies should be implemented to handle large volumes of data efficiently

Conceptual Model of the Database:



Potential Challenges and Strategies:

- **Data Security:** Implement robust authentication and authorization mechanisms to protect sensitive data.
- **Performance Optimization:** Optimizing database queries and indexing to ensure efficient data retrieval.
- **Concurrency Control:** Employ concurrency control mechanisms to prevent data inconsistencies in a multi-user environment.
- **Error Handling:** Implementing error handling mechanisms to gracefully handle exceptions and ensure data consistency.

Project Implementation:

The project will involve developing and deploying the library management system according to the specified requirements and design considerations

The implementation of the database system will involve:

- Creating the database schema based on the proposed design.
- Implementing SQL scripts to create tables, constraints, triggers, and audit functionality.
- Thoroughly testing the system to ensure its functionality, reliability, and security.
- Presenting the completed project to showcase its features and functionality to stakeholders.