Assignment Report

Library Management System
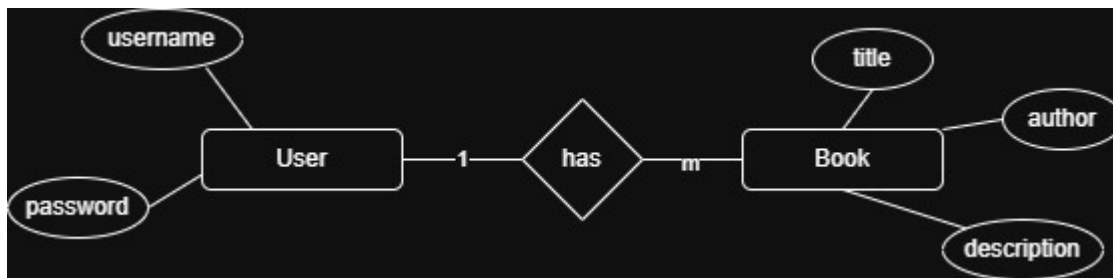
SE/2021/055 - JASHVANTH B.

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Company Name: **Expernetic**

Library Management System

CGPA : 3.45 / 4.00
Flexibility to work onsite : Hybrid
Notice period : Immediately available

ER diagram:

Technologies Used:

- ASP.NET Core Web API
- React.js
- SQL Server
- JWT Authentication
- GitHub
- Visual Studio
- VS Code

1.Project Overview:

This project is a Library Management System developed using ASP.NET Core Web API and React.js. The system allows users to register, login, and manage books securely using JWT authentication. The backend follows layered architecture including Controller, Service, and Repository layers, while the frontend provides a responsive user interface.

2.Backend Implementation:

- ➢ Framework: C# .NET
- ➢ Database: SQLite (using Entity Framework)
- ➢ Features:
  - RESTful API endpoints for book CRUD operations

- Input validation and error handling
- API endpoints:
    - GET /api/books – list all books
    - GET /api/books/{id} – get a single book
    - POST /api/books – create a book
    - PUT /api/books/{id} – update a book
    - DELETE /api/books/{id} – delete a book
  - Challenges: Handling database migrations and ensuring correct entity mappings.

3. Frontend Implementation:

- Framework: React + Typescript
- Component Structure:
    - Book List – displays all books
    - Book Form – create/update book
    - Book Item – single book card
- Features:
    - Responsive and user-friendly interface
    - CRUD operations integrated with the backend API
    - Form validation and error handling
    - Book list displays title, author, and description
- Challenges: Synchronizing state after CRUD operations and handling API errors gracefully.

4. Database Schema

Table: Books

- Columns: Id, Title, Author, Description, CreatedAt

Table: Users

- Columns: Id, Username, PasswordHash, Role, Email

5. Optional Features:

- User authentication and registration.
- Enhanced UI styling for better user experience.

6. Lessons Learned:

- Practical experience with C# .NET and Entity Framework
- Integration of React frontend with a RESTful backend
- Importance of input validation, error handling, and user experience

- Using Git for version control and project organization

7.Conclution

This project demonstrates full stack development using ASP.NET Core and React.js with JWT authentication. Layered architecture ensures clean code structure and maintainability. The application successfully implements secure user authentication and book management features.

Link : jashvanth370/Library-management-system: Internship Assignment