Library Management System with ASP.NET Core

Team Members

1. Ahmed Atef Abd Elgawad
2. Ahmed Essam Ahmed
3. Omar Hany
4. Osama Aymen
5. Ahmed Salama

Project Overview

- **Project Title**: Library Management System with ASP.NET Core
- **Objective**: To create a library management system for tracking books, checkouts, returns, and penalties for late returns. The system includes a search feature for available books and member management functionalities.

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1. Technologies Used

- **Backend**: ASP.NET Core with C#
- **Frontend**: HTML, CSS, JavaScript
- **Database**: SQL Server
- **Frameworks**: ASP.NET Core MVC, Entity Framework Core
- **User Authentication**: ASP.NET Identity
- **Hosting Platform**: Monster ASP.NET
- **Version Control**: GitHub

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2. Features

- **Book Management**:
    - List available books with details (author, genre, availability)
    - Search and filter books by title, author, or genre
- **User Authentication**:
    - Librarian and member authentication
- **Book Checkouts and Returns**:
    - Librarians can manage checkouts and returns
    - Automatic penalty calculation for late returns
- **Member Management**:
    - Register members, view borrowing history, and contact details
- **Member Portal**:
    - Members can view borrowed books, due dates, and penalties
- **Penalty Calculation**:
    - Automatic calculation based on overdue days

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3. Project Timeline

Week 1: Initial Setup and Database Design

- **Deliverables**:
    - Set up ASP.NET Core project environment with Entity Framework and SQL Server
    - Design and implement the database schema for books, members, checkouts, returns, and penalties
    - Create a basic book listing page for librarians
    - Implement user authentication for librarians and members

Week 2: Checkout, Returns, and Penalty Calculation

- **Deliverables**:
    - Book checkout functionality with due date tracking
    - Book return system with penalty calculation for overdue returns
    - Functional and tested checkout and return system

Week 3: Member Management and Book Search

- **Deliverables**:
    - Member management system for registration and borrowing history
    - Search and filtering features for available books
    - Member portal to view borrowed books, due dates, and penalties
    - Testing of member and search features

Week 4: Final Testing, UI Enhancements, and Deployment

- **Deliverables**:
    - User interface improvements for a better experience
    - Full system testing of all functionalities
    - Deployment of the system to a hosting platform
    - Complete project documentation, including a setup guide and user manual

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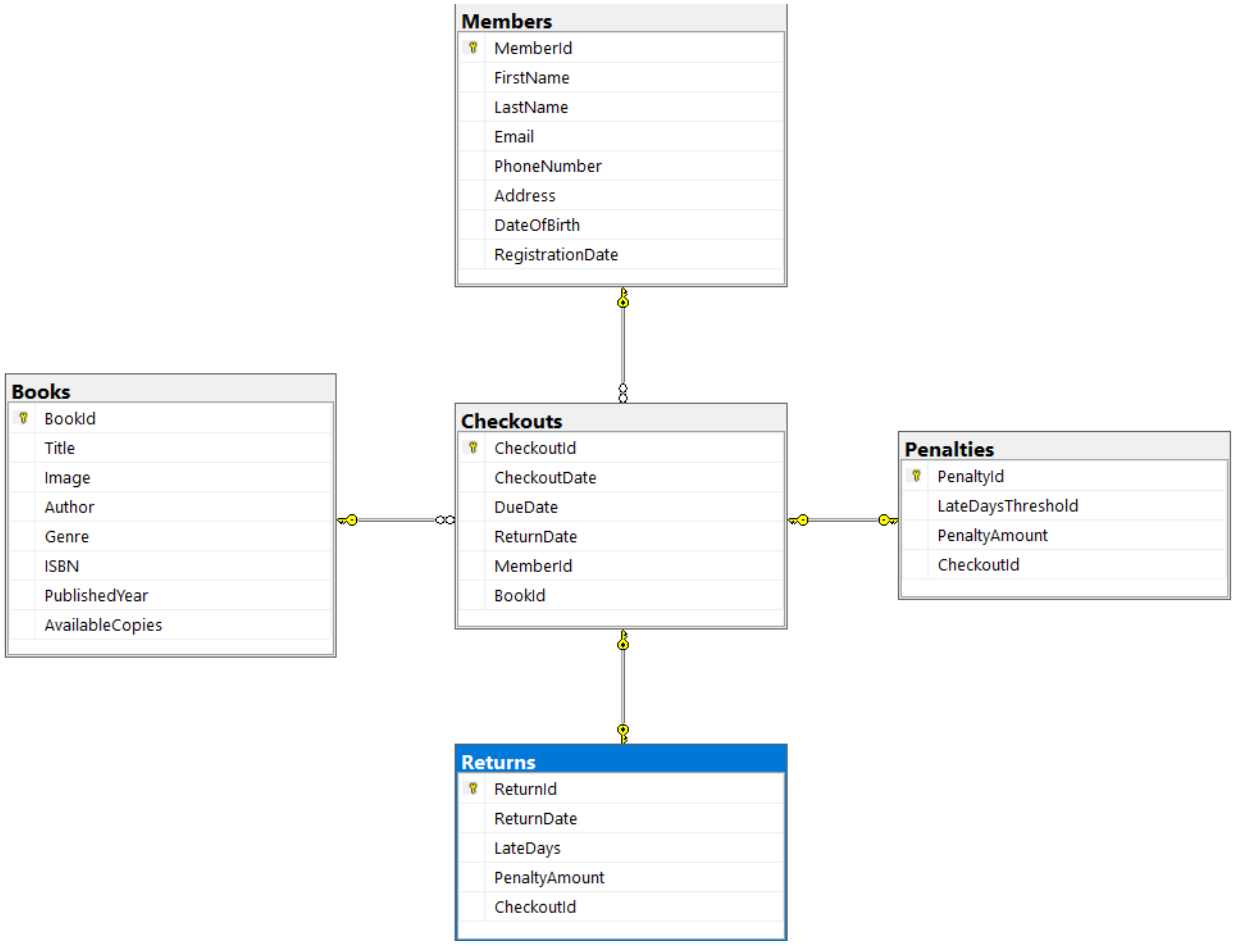
4. Database Schema



The database schema is designed to support the following entities:

- **Books**:
    - BookID (Primary Key)
    - Title
    - Image
    - Author
    - Genre
    - ISBN
    - PublishedYear
    - Availability Status

- **Members**:
    - MemberID (Primary Key)
    - First Name
    - Last Name
    - Email
    - Phone Number
    - Address
    - DateOfBirth
    - Registration Date
- **Checkouts**:
    - CheckoutID (Primary Key)
    - BookID (Foreign Key)
    - MemberID (Foreign Key)
    - Checkout Date
    - Due Date
    - Return Date
- **Returns**:
    - ReturnID (Primary Key)
    - CheckoutID (Foreign Key)
    - Return Date
    - Late Days
    - Penalty Amount
- **Penalties**:
    - PenaltyID (Primary Key)
    - CheckoutID (Foreign Key)
    - Late Days threshold
    - Penalty Amount

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5. Setup Guide

Prerequisites:

- Install Visual Studio 2022 or later
- Install SQL Server or set up Azure SQL Database
- Install .NET SDK 8.0 or later
- Install Git

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6. User Manual

For Librarians:

1. **Login**: Use your credentials to log in to the system.
2. **Manage Books**: View available books, check out books for members, and handle returns.
3. **Penalty Management**: Penalties for overdue books will be calculated automatically.
4. **Member Management**: Register new members and manage existing member information.

For Members:

1. **Login**: Use your member credentials to log in to the member portal.
2. **View Borrowed Books**: See a list of your currently borrowed books, due dates, and penalties (if any).
3. **Search Books**: Use the search feature to find available books in the library.

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7. Testing

- Test the following functionalities under various scenarios:
    - Book checkout and return process
    - Penalty calculation for overdue books
    - Member registration and management
    - Book search and filtering
- Perform UI and responsive testing for cross-browser compatibility.

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8. Deployment

- Deploy the system to a hosting platform such as Azure, AWS, or a local IIS server.
- Configure the database connection and environment variables for the production environment.
- Test the live deployment to ensure it matches the functionality of the development environment.

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9. Conclusion

This Library Management System provides an efficient way for librarians to manage books, members, and penalties. With user-friendly interfaces for both librarians and members, the system simplifies library operations and improves the overall experience

Project Link

Thanks,