

.NET MVC Programmer Task: Test Knowledge of Entity Framework, Code-First Approach, and Migrations

Objective:

Develop a small web-based application for managing a simple library system. This application should demonstrate knowledge of .NET MVC, Entity Framework Code-First approach, and migrations.

Task Overview

Create a **Library Management System** with the following functionality:

1. Manage Books

- Create, Read, Update, and Delete (CRUD) operations for books.
- A book should have the following properties:
 - Book ID (Primary Key)
 - Title
 - Author
 - Genre
 - Published Year
 - Availability Status (Available/Borrowed)

2. Manage Members

- CRUD operations for library members.
- A member should have the following properties:
 - Member ID (Primary Key)
 - Name
 - Email
 - Membership Start Date

3. Book Borrowing

- Implement functionality to allow a member to borrow a book.
- Ensure the book's **Availability Status** is updated when borrowed.

4. Database Implementation

- Use the Entity Framework Code-First approach to create the database.
 - Use migrations to create and update the database schema.
-

Instructions

1. Environment:

- Use .NET Framework or .NET Core with MVC.
- Use a SQL Server database.

2. Application Requirements:

- Need to run the API using the postman
- Validation should be implemented for inputs (e.g., required fields, valid email format).
- Error handling must be implemented where necessary (e.g., when a book is already borrowed).

3. Project Structure:

- Implement **repositories** or **services** for business logic separation.
- Use Dependency Injection (DI) for services if applicable.

4. Deliverables:

- Full project source code.
- Instructions to run the project locally (e.g., any prerequisites, connection string settings).
- SQL script (if needed) to initialize test data.

Evaluation Criteria

1. Code Quality:

- Clean, readable, and maintainable code.

2. Use of Entity Framework Code-First Approach:

- Proper use of migrations and conventions.

3. Functionality:

- Application meets the stated requirements.

4. Validation and Error Handling:

- User input is validated appropriately, and errors are handled gracefully.

5. Project Structure:

- Proper use of MVC pattern and separation of concerns.

6. Documentation:

- Clear instructions to set up and run the project.

Timeframe

The task should take **a maximum of 3 days** to complete.

Good luck!