Software Engineering Internship – Assignment

Project Overview: This Business Requirements Document outlines the development of a simple Library Management System. The purpose of this application is to allow users to manage books in a library, including functionalities to create, read, update, and delete book records. The application will consist of a backend API developed in C# .NET with an SQLite database and a frontend built with React and TypeScript.

Timeline: Candidates are expected to complete the assignment within one calendar week from the date of receipt.

Project Scope: The project scope is limited to the following functionalities:

- Book CRUD Operations: Users can perform the following operations on book records:
  - Create a new book record.
  - View a list of existing book records.
  - Update an existing book record.
  - Delete a book record.

- User Authentication (Optional): While not required, the assignment can include user authentication and registration if time allows. This is considered a "nice-to-have" feature but is not mandatory for completing the assignment.

Explanation of Library Management System Functionality

The Library Management System is a simple application that allows users to manage books in a library. Users can perform the following actions within the application:

- Create Book Record: Users can add new book records by specifying a title, author, and description for the book. The book record is then added to the list of books.

- View Book Records: Users can view a list of all existing book records. Each record displays its title, author, and description.

- Update Book Record: Users can edit and update existing book records. This includes modifying the title, author, and description.

- Delete Book Record: Users can delete book records that are no longer relevant or necessary.

The application provides a simple and user-friendly interface for managing books, and its CRUD operations ensure that users can effectively create, view, update, and delete book records. While user authentication and registration are optional, they can enhance the application's functionality and user experience if time permits.

This Library Management System will serve as a valuable tool for users to organize and manage the books in their library.

Assignment Requirements

Backend (C# .NET):

1. Develop RESTful API endpoints for book CRUD operations (Create, Read, Update, Delete).
2. Utilize C# and .NET technologies for backend development.
3. Integrate an SQLite database with Entity Framework to store and manage book data.
4. Implement proper error handling and validation for API requests.
5. Ensure that the API is well-documented for other developers to understand its usage.

Frontend (React with TypeScript):

1. Create a user-friendly and responsive web interface for managing book records.
2. Utilize React with TypeScript for frontend development.
3. Implement all CRUD operations (Create, Read, Update, Delete) in the frontend application.
4. Use best practices for component structure, state management, and routing.
5. Implement proper input validation and error handling on the frontend.
6. Style the application for an aesthetically pleasing user experience.

General Requirements:

1. Ensure that the backend and frontend components are well-integrated, allowing seamless communication between them.
2. Use version control (e.g., Git) for tracking code changes.
3. Provide clear and concise instructions on how to run the application locally.
4. Make sure the application is runnable and deployable without errors.
5. Demonstrate your ability to work independently and deliver a complete, functional solution.

Assessment Criteria:

Your assignment will be assessed based on the following criteria:
1. Code quality, structure, and organization.
2. Implementation of CRUD operations on both the backend and frontend.
3. Proper use of C# .NET, React, TypeScript, and related technologies.
4. Integration of the SQLite database with Entity Framework.
5. Error handling and validation on both the backend and frontend.
6. User interface design and responsiveness.
7. Documentation and comments in the code.
8. Clear and detailed instructions for running the application.

Report:

In addition to the source code, a comprehensive report (PDF) is required as part of your submission. The report should summarize the development process, detailing the backend and frontend implementations, challenges faced, and any additional features included. It should also reflect on key insights gained during the project.

Submission:

Submit the assignment via a Git repository (e.g., GitHub) and provide access for review. Ensure the repository contains:

- The complete source code and any necessary setup instructions.
- The report (PDF) covering all relevant sections of the project.

Once you are done, email the repository link and relevant details to **people@expernetic.com**. For any questions, contact Amadli Maneesha **(amadli@expernetic.com)** or email **people@expernetic.com.**

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Final Note for the Assignment:

Dear Candidate,

We would like to reiterate the importance of completing this assignment independently, with your own efforts and code. During the evaluation process, the following criteria will be considered:

- Original Work: It is crucial that the assignment reflects your own knowledge, skills, and coding abilities. Using AI tools or copying code from external sources, such as GitHub, is strictly prohibited.

- Independent Effort: You are expected to complete the assignment without assistance from others. Collaboration with external individuals or seeking help from others to complete the assignment is not allowed.

- Code Explanation: During the interview, you will be asked to explain and discuss the code you have written for the assignment. You should be prepared to provide a comprehensive explanation of your code, its structure, and the design choices you made. Failure to explain your own code during the interview may result in rejection from the interview process.

This assignment is an opportunity for you to showcase your technical skills and your ability to develop a working solution independently. We value integrity, originality, and the ability to understand and explain your own work. Your commitment to these principles is essential to progressing through the interview process.

Best of luck with your assignment, and we look forward to reviewing your work and discussing it during the interview.

Sincerely,

Expernetic LLC.