SECJ3483 (Web Technology) ASSIGNMENT 2

This assignment focuses on the implementation phase of the full-stack web application project. Based on the proposal developed in Assignment 1, students will work in the same groups to develop a functional web application using Vue.js for the frontend, PHP Slim for the backend, and MySQL for the database. This assignment emphasizes practical application of the web technologies covered throughout the course.

This assignment addresses the following Course Learning Outcomes:

- CLO2: Develop a functional and optimized full-stack web application individually using related web technologies
- CLO3: Collaborate within a team to build a full-stack web application using modern web technologies
- CLO4: Demonstrate teamwork, ethical considerations, and professional responsibility in web development projects

Project Requirements

1. Frontend Development (Vue.js) - 35%

- Implement a responsive user interface using Vue.js as per the proposal design
- Create reusable Vue components with proper props, events, and emits
- Implement client-side form validation
- Utilize Vue Router for single-page application navigation
- Implement state management for the application
- Connect to backend API using Axios or Fetch API
- Incorporate proper error handling and loading states

2. Backend Development (PHP Slim) - 35%

- Create a RESTful API using PHP Slim framework
- Implement proper route handling for all CRUD operations
- Connect to MySQL database using PDO
- Implement JWT authentication for secure user access
- Implement proper error handling and status codes

- Create middleware for route protection and validation
- Implement CORS support for cross-origin requests

3. Database Implementation (MySQL) - 15%

- Create a normalized database schema as per the proposal design
- Implement appropriate constraints and indexes
- Set up relationships between tables (foreign keys)
- Ensure data integrity and security
- Optimize database queries for performance

4. Security Implementation - 15%

- Implement secure authentication and authorization
- Protect against common web vulnerabilities:
    - SQL injection
    - Cross-site scripting (XSS)
    - Cross-site request forgery (CSRF)
    - Input validation
- Implement password hashing and secure storage
- Apply principle of least privilege for API access

Specific Technical Requirements

Your implementation must include:

1. **User Authentication**
    - Registration, login, and logout functionality
    - Password reset capability
    - Role-based access control
2. **Data Management**
    - At least 4 related database entities
    - Complete CRUD operations for each entity
    - File upload capability (optional)
3. **Frontend Features**
    - Responsive design (mobile, tablet, desktop)
    - Interactive UI components with proper feedback
    - Form validation with error messages
    - Loading states and error handling
4. **Backend Features**
    - Well-structured API with appropriate HTTP methods

    - Middleware for authentication and validation
    - Proper error handling and logging
    - Pagination for large data sets
5. **Deployment**
    - Deploy the application to a hosting service
    - Configure the server environment
    - Ensure the application is accessible online

Project Milestones

- **Week 10**: Progress presentation (frontend using Vue.js) - 10%
- **Week 14**: Final code submission - 70%
- **Week 15**: Final presentation and demo - 20%

Submission Requirements

1. **Source Code**:
    - Submit the complete source code via GitHub repository
    - Include a README file with setup instructions
    - Organize the code with clear folder structure
2. **Documentation**:
    - Implementation report (5-8 pages)
    - API documentation
    - Database schema documentation
    - User manual
3. **Presentation and Demo**:
    - 15-minute presentation and live demonstration
    - Q&A session with instructors

Important Notes

- The implementation must follow the design specified in your approved proposal
- Any significant deviations from the proposal must be discussed with and approved by the instructor
- The application must demonstrate integration of technologies taught in the course
- Each team member must contribute to both frontend and backend components
- Include comments in your code for better readability and understanding