Weekly Report: Web Application for Projects/ Products Developed by SPL Lab Team

Week 4: Backend Architecture and Database Design Completion Report

Timeline: 29.01.2025 - 01.02.2025

Completed Tasks:

1. **Finalized Database Schema:**

   - Designed and implemented the logical database schema using MySQL.
   - Created tables for users, projects, tasks, comments, and document storage.
   - Established relationships between tables to ensure data integrity and optimized query performance.
   - Implemented indexing and constraints for efficient data retrieval and consistency.

2. **Backend Architecture Implementation:**

   - Developed the backend using **Node.js** with **Express.js** framework.
   - Designed RESTful APIs for user authentication, project management, task tracking, and document handling.
   - Implemented JWT-based authentication for secure user access.
   - Integrated middleware for request validation, error handling, and logging.

3. **Database Connectivity and API Integration:**

   - Established a secure connection between **Node.js** backend and **MySQL** database.
   - Used Sequelize ORM for efficient database queries and migrations.
   - Created API endpoints for CRUD operations on projects, tasks, and users.
   - Successfully tested database transactions and API responses.

4. **Initial Commit and Deployment Setup:**

   - Pushed the initial backend and database implementation to the project repository.
   - Configured environment variables for database credentials and secret keys.
   - Set up a basic backend deployment process for further testing and scalability.

Deliverables:

✔ Logical database schema and MySQL implementation.
✔ Fully functional Node.js backend with Express.js.
✔ Secure API endpoints with authentication and role-based access.
✔ Successfully tested database transactions and API responses.
✔ Initial commits and repository setup completed.