Project Overview: Collaborative Task Management System

Project Summary:

The Collaborative Task Management System is a web-based application designed to help teams manage their projects and tasks efficiently. It allows users to create and manage projects, assign tasks to team members, track progress, and collaborate effectively within the team. The system includes features for user management, task tracking, project oversight, notifications, and reporting, making it a comprehensive solution for organizing and monitoring team activities.

Key Objectives:

Task Management:
The system will enable users to create, assign, and monitor tasks within a project. Users can set deadlines, assign priorities, and track the status of each task.

Project Management:
Users can manage multiple projects simultaneously, with the ability to track progress across all tasks within a project. This ensures that projects are on schedule and team members are aligned with their responsibilities.

User Roles and Collaboration:
The application supports different user roles (e.g., Admin, Team Lead, Member) to manage access and responsibilities effectively. Collaboration is enhanced through features like task comments and file attachments, allowing team members to share updates and work
together seamlessly.

Notifications and Alerts:
The system will notify users about new task assignments, upcoming deadlines, and any updates on tasks they are involved in. This ensures that team members are always informed and can act promptly.

Reporting and Performance Tracking:
Users can generate reports on task completion, project progress, and individual performance. These reports provide insights into the team's productivity and the overall health of the projects.

Technical Details:

Backend: Built using Java Spring Boot, the backend will handle all the core functionalities, such as user authentication, task management, and data storage.
Frontend: The user interface will be developed using Thymeleaf integrated with HTML, CSS, and JavaScript, providing an intuitive and responsive design.
Database: A relational database (MySQL or PostgreSQL) will store user data, tasks, projects, and other related information.

Security: JWT (JSON Web Tokens) will be used to secure the application, ensuring that only authenticated users can access certain features based on their roles.

1. User Management Module

- **Task 1.1: User Registration and Login**
  - Implement user registration with fields like name, email, and password.
  - Develop the login functionality, ensuring users can authenticate securely.
  - Implement password hashing for security.

- **Task 1.2: Role-Based Access Control (RBAC)**
  - Define and implement user roles (Admin, Team Lead, Member).
  - Implement role-based access control, ensuring only authorized users can access certain features.

- **Task 1.3: Team Creation and Management**
  - Allow Admin users to create and manage teams.
  - Implement functionality to assign users to teams.

- **Task 1.4: User Profile Management**
  - Develop a user profile page where users can view and edit their information.
  - Implement profile picture upload functionality.

2. Notifications Module

- **Task 2.1: Task Assignment Notifications**
  - Implement notifications for users when they are assigned a task.
  - Ensure notifications are sent via email or displayed on the user dashboard.
- **Task 2.2: Deadline Reminders**
  - Implement reminder notifications for upcoming task deadlines.
- **Task 2.3: Collaboration Notifications**
  - Notify users when a comment is made on a task they are involved in.

3. Task Management Module

- **Task 3.1: Task Creation and Assignment**
  - Implement the functionality to create tasks within a project.
  - Allow tasks to be assigned to team members with a due date and priority level.
- **Task 3.2: Task Status Tracking**
  - Develop features to update and track task statuses (e.g., To Do, In Progress, Completed).

    - Display task status visually (e.g., using progress bars or status labels).

- **Task 3.3: Task Collaboration**
    - Implement commenting on tasks for team collaboration.
    - Allow file attachments and document sharing within tasks.

4. Project Management Module

- **Task 4.1: Project Creation and Management**
    - Implement the ability to create multiple projects.
    - Allow users to view and manage tasks under each project.
- **Task 4.2: Project Progress Tracking**
    - Develop features to track the overall progress of a project based on task completion.
    - Display project progress visually (e.g., using Gantt charts or progress bars).

5. Reporting Module

- **Task 5.1: Task and Project Reports**
    - Implement the ability to generate reports on task status, deadlines, and project progress.
    - Provide options to export reports as PDFs or CSVs.
- **Task 5.2: Performance Tracking**
    - Implement features to track individual user performance based on task completion and contribution to projects.

Collaboration Tasks

1. Integration of Modules

- Collaborate to ensure seamless integration between the User Management, Task Management, and Project Management modules.
- Define API endpoints and data models to facilitate communication between the modules.

2. Testing

- Both teams should conduct unit testing on their respective modules.
- Collaborate to perform integration testing to ensure all modules work together as expected.

3. Deployment

- Work together to set up a CI/CD pipeline for automatic deployment.
- Deploy the application on a shared server or cloud platform and perform final testing.