IT 314
Software Engineering

Real Time Collaborative Editor

Functional/Non-Functional Requirement

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Functional Requirements

1. **Authentication (Login/Logout)**
   - The system must allow users to log in securely with valid credentials (username and password).
   - The sy0stem must log users out securely, ending their session and invalidating their authentication token.

2. **Reset User Password**
   - The system must allow users to request a password reset via email or other means.
   - The system must send users instructions to reset their password securely.

3. **Update Profile**
   - The system must allow users to update their personal profile information (e.g., name, email, role).
   - Users must be able to view their activity history and preferences in their profile.

4. **View Profile**
   - The system must allow users to view their profile information, including personal details, activity history, and preferences.

5. **Create and Manage Projects**
   - The system must allow users to create new projects by specifying a name and description.
   - The system must allow users to rename projects, with the updated name reflected in all associated views.
   - The system must save the created project and allow users to view and track its progress.
   - The system must allow users to delete a project along with all associated documents, either permanently or by moving it to a trash/recycle bin.

6. **Create and Organize Folders/Documents**
   - The system must allow users to create folders with custom names and display them in a hierarchical structure.
   - The system must allow users to create documents by specifying a title and content.
   - Users must be able to organize documents into folders or categories.
   - The system must allow users to rename documents, with the updated name reflected in all views.

- The system must allow users to delete documents, either permanently or by moving them to a trash/recycle bin.

7. **See Available Projects/Files**
   - The system must allow users to view all projects they have access to.
   - The system must allow users to view all files within a selected project.

8. **View Document**
   - The system must allow users to view a document in a read-only mode without making changes.

9. **Add Collaborators**
   - The system must allow project owners to add collaborators by email or username.
   - The system must allow the owner to assign permissions (view or edit) for each collaborator.

10. **Real-Time Collaboration**
    - The system must reflect changes made by one collaborator in real-time for all collaborators.
    - The system must automatically manage conflicts when multiple collaborators edit the same content simultaneously.

11. **See All Live Users**
    - The system must display a list of all users currently viewing or editing a document.

12. **Document History**
    - The system must provide a history log of all changes made to a document, including the timestamp and user responsible.

13. **Download Document**
    - The system must allow users to download documents in various formats (e.g., PDF, DOCX).

Non-Functional requirements

1. Performance

- The system must support real-time collaboration, with document changes reflecting across all users within 1 second.
- The system must handle up to 1000 concurrent users editing and viewing documents simultaneously without significant performance degradation.

2. Scalability

- The system must be scalable to accommodate a growing number of users, projects, and documents without compromising performance.

3. Availability

- The system must ensure 99.9% uptime, ensuring high availability for users to access their projects and collaborate at any time.

4. Security

- User data, including credentials and documents, must be encrypted both in transit (using SSL/TLS) and at rest.

5. Data Integrity

- The system must guarantee the correct saving of document changes, with version history maintained for every document to allow users to revert to previous versions.
- The system must prevent data loss during collaboration, ensuring that conflicts between concurrent edits are resolved automatically.

6. Usability

- The system must have an intuitive and user-friendly interface, enabling users to easily perform tasks like creating projects, editing documents, and managing collaborators.