Real-Time Collaborative Notes Application – Assignment

Objective

Build a production-quality full-stack web application that allows multiple users to create, edit, and collaborate on notes in real time. The system must support secure authentication, role-based access control, activity tracking, search, and public read-only sharing.

Core Functional Requirements

1. Authentication & Authorization
• User registration and login
• JWT-based authentication
• Role-based access: Admin, Editor, Viewer
• Access restrictions enforced at API level

2. Notes Management
• Create, edit, delete notes
• Ownership and last-modified timestamps
• Manage collaborators with defined permissions

3. Real-Time Collaboration
• Live editing with multiple users
• Real-time sync via WebSockets (Socket.io or similar)
• Basic conflict handling or update awareness

4. Activity Log
• Track user actions (create, update, delete, share)
• Store timestamp, user, and note reference

5. Search
• Search notes by title and content
• Respect user access permissions

6. Shareable Read-Only Links
• Public, view-only links without login
• Editing must remain restricted

Technical & Deployment Requirements

• **Frontend:** React (JS/TS), clean state management, real-time updates
• **Backend:** Node.js (Express / Fastify / NestJS), REST APIs, JWT auth, WebSockets
• **Database:** SQL (PostgreSQL preferred; MySQL/SQLite acceptable)
• **Deployment (Mandatory):**
– Backend deployed on Railway / Render / similar platform
– Frontend deployed on Vercel or Netlify
– Environment variables properly configured
– Application must be accessible via public URLs

Deliverables

• GitHub repository with frontend and backend code
• README covering setup, env variables, API docs, DB schema, and architecture notes
• Deployed application links (frontend + backend)
• (Optional) Demo video (2–5 minutes)

Submission Guidelines

• Assignment must be submitted within **24 hours**
• Focus on code quality, clarity, and architecture
• Avoid unnecessary over-engineering; keep scope aligned to requirements