**Problem Statement for Software Project**

**Project Title  
Interactive Lecture Note-Sharing Platform for Handwritten PDFs**

**Background  
In academic environments where handwritten lecture notes are prevalent, students struggle to organize, share, and access these notes efficiently, often relying on informal channels like group chats. These methods lead to disorganization, difficulty finding relevant notes, and limited collaboration. For exam preparation, students need a way to bulk-download notes by user, faculty, or module. Existing platforms lack student-specific features like course organization, handwritten note searchability, or engagement mechanisms. A centralized, user-friendly platform is needed to streamline note-sharing, foster collaboration, and support exam preparation, with user profiles to enhance transparency and community.**

**Problem  
Students require a secure, accessible platform to upload, organize, and share handwritten PDF notes, organized by academic year, course, faculty, and module number. The platform should enable searching handwritten notes (via OCR), collaborative feedback, and bulk downloading notes as ZIP files (filtered by user, faculty, module, or combinations) for exam preparation. It should display user profiles with details (joining year, registration number, course, college email ID) and calculate the current academic year based on the joining year. Gamification (points, streaks, leaderboards) and analytics are needed to encourage participation and track usage, with a responsive interface for web and mobile access.**

**Objective  
Develop a lightweight, responsive web application (with optional native mobile support) tailored for students to:**

* **Create and log in to user accounts securely, with profiles displaying joining year, registration number, course, college email ID, and calculated current academic year.**
* **Select academic year to view associated courses and upload/view handwritten PDF notes with metadata (course, faculty name, module number, tags).**
* **Search notes using OCR for handwritten content, with filters for course, faculty, or module.**
* **Download notes as a ZIP file filtered by user, faculty, module, or combinations for exam preparation.**
* **Enable collaboration through comments on notes.**
* **Gamify contributions with points (e.g., 10 per upload), streaks for daily uploads, and a leaderboard for top contributors.**
* **Visualize note usage trends (e.g., downloads by course/module) through charts.**
* **Ensure a clean, responsive, and intuitive interface for web and mobile access.**

**Scope**

* **Target Users: College students aged 18–25 using handwritten notes.**
* **Platform: Web-based application with Bootstrap for mobile responsiveness; optional React Native mobile app.**
* **Core Features:** 
  + **User account creation and secure login, with profiles showing joining year, registration number, course, college email ID, and calculated current academic year (based on joining year and current date, July 27, 2025).**
  + **Year-based course selection to filter notes.**
  + **Upload/view handwritten PDF notes with metadata (course, faculty, module, tags).**
  + **OCR-based search for handwritten PDFs, with filters (year, course, faculty, module).**
  + **ZIP download of notes filtered by user, faculty, module, or combinations.**
  + **Commenting system for collaborative feedback.**
  + **Points system (10 points per upload, +5 for streaks) and leaderboard with visualization.**
  + **Visual reports (e.g., pie charts, bar graphs) for downloads by course, faculty, or module.**
  + **Email notifications for new notes, comments, or leaderboard updates.**
  + **Data persistence using SQLite and Firebase Storage for PDFs.**
* **Optional Features:** 
  + **AI-suggested tags based on OCR text or metadata.**
  + **PDF annotation (highlighting/text notes).**
  + **Badges for milestones (e.g., “Module Master” for 5 uploads in one module).**
  + **Course subscription for automatic notifications.**
  + **Text-to-speech for OCR text (accessibility).**
  + **Dark mode for enhanced UX.**
  + **Smart ZIP naming (e.g., “CS301\_Module2\_Sharma.zip”).**
  + **Progress tracker for exam prep (e.g., “80% of CS301 modules downloaded”).**

**Constraints**

* **Develop within a 3-month timeline.**
* **Use free/open-source technologies (e.g., React, Node.js, SQLite, Firebase, Tesseract.js).**
* **Ensure data privacy/security for user accounts, profiles, and notes.**
* **Maintain a simple interface for students with minimal technical expertise.**
* **Development team has basic to intermediate JavaScript skills (3rd-year level).**
* **OCR accuracy may vary for handwritten notes; manual tags supplement search.**
* **ZIP downloads limited to ~100MB to ensure performance.**

**Stakeholders**

* **Primary Users: College students using handwritten notes.**
* **Secondary Users: Faculty (to view tagged notes) or high school students.**
* **Development Team: Student developers, guided by a faculty advisor.**
* **Faculty Advisor: Provides oversight and evaluates progress.**

**Success Criteria**

* **Application is functional, user-friendly, and bug-free for core features.**
* **At least 80% of test users can upload, search, comment, view profiles, and download ZIPs without assistance.**
* **App organizes and searches notes effectively for a 30-day test period.**
* **User profiles accurately display details and calculate current academic year.**
* **ZIP downloads correctly include filtered notes (user, faculty, module).**
* **Visual reports reflect usage data and are easy to interpret.**
* **Gamification encourages 50% of test users to contribute regularly.**
* **Project is completed on time and meets all requirements.**

**Assumptions**

* **Users have access to a web browser or mobile device with basic internet.**
* **Students are willing to input metadata (e.g., module number, faculty name) and profile details (joining year, registration number).**
* **Handwritten notes are scannable as PDFs with reasonable OCR clarity.**
* **Predefined list of courses, modules, and faculty names is available.**
* **Current date (July 27, 2025) is used to calculate academic year (e.g., joining year 2023 = 3rd year in 2025).**
* **Development team has access to tools (e.g., Node.js, Firebase).**

**Risks**

* **Limited JavaScript experience may cause delays; mitigated by tutorials and libraries.**
* **Poor OCR accuracy for handwritten notes; mitigated by manual tags.**
* **Large ZIP downloads may strain performance; mitigated by size limits.**
* **Manual metadata/profile entry may reduce adoption; mitigated by AI tags and simple forms.**
* **Scope creep from optional features; mitigated by prioritizing core features.**

**Deliverables**

* **Fully functional web application with responsive design.**
* **Source code with documentation (setup, API details).**
* **User manual for students (upload, search, ZIP download, profile viewing).**
* **Test report on functionality, usability, OCR accuracy, and profile accuracy.**
* **Presentation showcasing features, impact, and technical achievements.**