Project Title:
CollabNote: Collaborative Course Note-Sharing Platform

Project Idea

CollabNote is a web-based platform designed to enhance academic collaboration for university students. It integrates real-time note editing, version control, and a gamified achievement system to address the inefficiencies of traditional group study methods. Unlike generic tools (e.g., Google Docs), CollabNote focuses on academic workflows by supporting Markdown formatting, course-specific note organization, and incentivizing knowledge sharing through redeemable rewards.

Target Users

The primary users are university students within the same institution and discipline, particularly those in collaborative programs like Computer Science. For example, our university's Computer Science(AI, IMIS) department has over 300 students annually who participate in group documentation projects. These users will benefit from:

1. Efficient Collaboration: Reducing redundant communication when merging individual notes.

2. Knowledge Preservation: Archiving notes by course for future student cohorts.

3. Motivation Boost: Earning redeemable points for academic perks (e.g., priority access to study resources).

Secondary users include teaching assistants who can reference crowd-sourced notes to identify common student misunderstandings.

Scope of Work

The platform will implement three core functionalities(might change):

1. Real-Time Collaborative Editing

· Multi-user Sync: Basic Operational Transformation (OT) for live updates

· Conflict Handling: "Last edit wins" for paragraph-level changes

· Styling: Built-in tools for headings, lists, and basic formatting

2. Version Control & Comparison

· Auto-save: Save snapshots at intervals (e.g., every 30 minutes)

· Diff Tool: Highlight changes between versions (like GitHub diff)

· Experimental Edits: "Draft mode" for testing changes without affecting main notes

3. Achievement System:

· Points awarded for contributions (e.g., +10 points per approved note section).

· Redeemable rewards: Customizable note templates, "Top Contributor" badges, or virtual goods (e.g., extra cloud storage).

· Leaderboards to foster healthy competition among peers.

Technical Stack Options:

· Frontend:

· Framework: Vue3 (Options API) / React + TypeScript

· Real-Time: Socket.io / WebSocket / ShareDB

· Editor: CodeMirror / TipTap / Slate.js

· Backend:

· Language: Node.js + Express / Python + FastAPI

· Database:json/ PostgreSQL / MongoDB

Feasibility & Development Plan

Development Timeline (About 8 Weeks):

1. Weeks 1-2: Build a basic note editor with formatting tools and login features.

2. Weeks 3-4: Enable multi-user editing without conflicts (like doc collaboration).

3. Weeks 5-6: Add version history and change tracking (similar to revision history).

3. Weeks 7-8: Launch a testable version with rewards and collect feedback.

Ethical Considerations:

· User data anonymization for public note sharing.

· Anti-cheat mechanisms for the points system (e.g., rate-limiting contributions).