

EduTrack v2 / Firm Requirements Document

ENSE 400 – FALL 2024 FIRST SEMESTER CAPSTONE PROJECT
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1. Project Overview

Project Name: EduTrack v2

Date Submitted: December 6, 2024

EduTrack is an innovative cloud-based web application designed to enhance the academic performance and well-being of college students. This platform combines powerful task management, real-time synchronization, and future-forward features to address the challenges of academic life. With a mix of online and offline functionalities, EduTrack provides students with uninterrupted planning capabilities, ensuring they stay on top of their goals.

Vision Statement:

“To empower students with a personalized and reliable planning tool that integrates seamlessly with cloud technology, offering uninterrupted access to academic planning resources.”

2. Business Case

2.1 Executive Summary

EduTrack leverages modern cloud and client-side technologies to provide a centralized academic planning solution. It supports students in managing their schedules both online and offline, with automatic synchronization to ensure seamless transitions between devices. Future features, including gamified tools and advanced transcribers, further expand the value EduTrack offers.

2.2 Problem Statement

Key Issues:

- **Time Management Deficiency:** 87% of students report difficulties organizing tasks effectively.
- **Interruptions in Connectivity:** Students face disruptions in planning due to inconsistent access to the internet.
- **Lack of Effective Study Tools:** Current planners fail to incorporate productivity-enhancing features like gamification or multimedia processing.

2.3 Proposed Solution

EduTrack resolves these challenges by:

1. **Cloud-Based Architecture:** A central web server hosted on the cloud ensures data accessibility and security.
2. **Offline Client Functionality:** Offline planning tools on user devices that sync with the cloud using AJAX or similar technologies.
3. **Future Tools:**
 - a. Multimedia processing: PDF and image transcribers.
 - b. Study enhancers: Flashcard practicing and gamified study tools.

2.4 Cost-Benefit Analysis

Aspect	Estimated Cost	Estimated Benefit
Cloud Hosting (Yearly)	\$0 (University Hosting)	Improved reliability and accessibility
Offline Sync Development	\$0 (Internal Tools)	Uninterrupted user experience and planning
Future Tool Integration	Minimal Incremental	Broader adoption due to study-enhancing features

3. Project Charter

3.1 Project Objectives

EduTrack's primary objectives are:

1. To offer a hybrid offline-online solution with seamless cloud synchronization.
2. To enhance usability with both current tools (transcribers, reminders) and advanced future features.
3. To provide a platform for personalized academic goal setting and tracking.

3.2 Milestones

Milestone	Target Date
Finalizing Requirements	December 6, 2024
Implementing Offline Sync	January 25, 2025
Launching Beta (with Offline Sync)	February 25, 2025
Adding Future Tools (Flashcards)	April 10, 2025
Final Deployment	May 20, 2025

4. Software Requirements Specification (SRS)

4.1 Functional Requirements

1. **Cloud-Based Server:**
 - A scalable web server hosted on the cloud to handle requests and store user data securely.
2. **Offline Functionality:**
 - Client-side offline storage for tasks and schedules, using technologies like IndexedDB and LocalStorage.
 - AJAX or equivalent technologies for real-time synchronization with the cloud server.
3. **Current Tools:**
 - **Transcriber:** Convert recorded notes into text.
 - **Reminders:** Notifications for upcoming deadlines.
4. **Future Tools:**
 - **PDF and Image Transcriber:** Extract text from images and PDFs to convert them into tasks or notes.
 - **Flashcards Practicing:** Interactive study tool for spaced repetition.
 - **Gamified Study Assistant:** Simple, game-like features to make learning engaging.

4.2 Non-Functional Requirements

- **Reliability:** Cloud-hosted system ensuring 99.9% uptime.
- **Performance:** Tasks sync to the cloud server within 2 seconds of user input.
- **Scalability:** Supports both individual and institutional use cases.
- **Security:** End-to-end encryption for data in transit and at rest.

5. Functional Flow

5.1 System Architecture

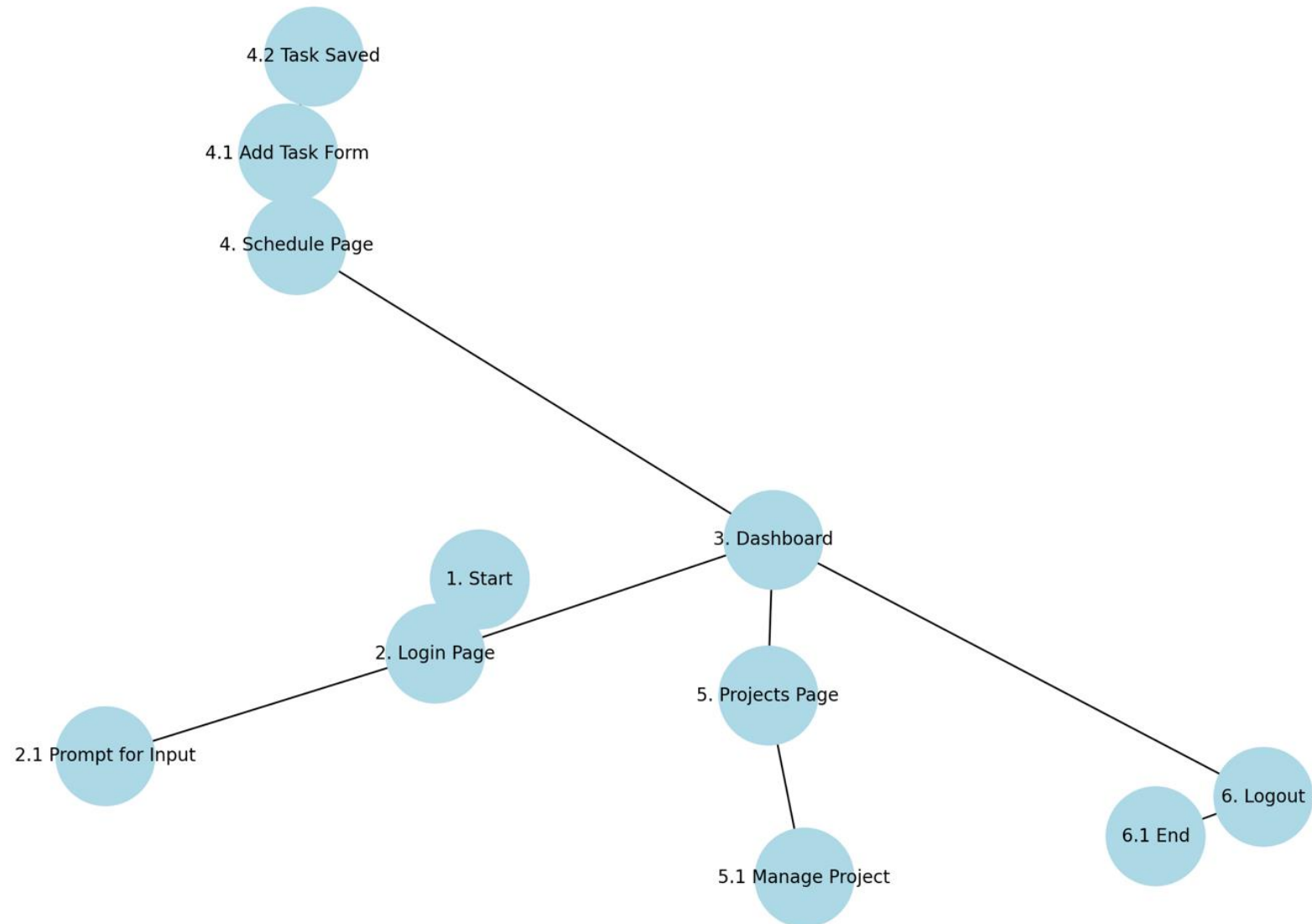
- **Cloud Server:**

- Stores user data and processes updates from multiple clients.
- Ensures real-time availability for users logged into different devices.
- **Client Applications:**
- Stores data offline, synchronizing changes with the cloud during internet connectivity.
- AJAX facilitates seamless updates to the server.

5.2 High-Level Flow

1. **Login Process:**
 - User logs in → Data synced from the cloud → Tasks displayed in the dashboard.
 - If offline: Local data is loaded, with sync queued for reconnection.
2. **Task Management:**
 - Tasks created or edited offline are stored locally → Sync initiated upon reconnection.
3. **Advanced Tools Integration:**
 - Current: Transcriber converts notes into actionable tasks.
 - Future: PDF/Image processing tools and gamified learning support enhance usability.

EduTrack Functional Flowchart with Numbered Paths

*Figure 1 EduTrack Functional Flowchart*

Task Management Workflow

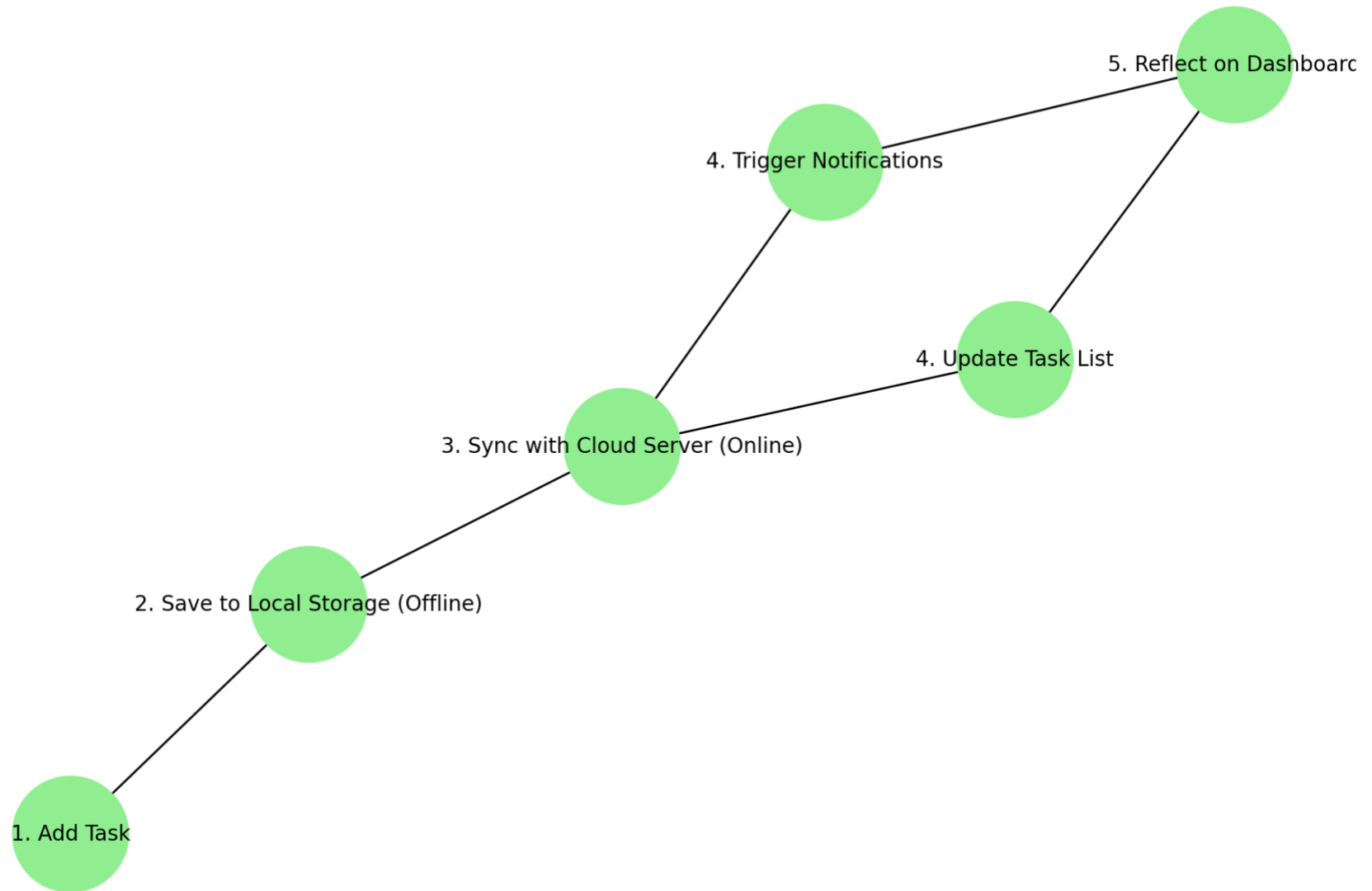


Figure 2 EduTrack Task Management Workflow

6. Risk Assessment

6.1 Key Risks

Risk	Impact	Mitigation Strategy
Cloud Server Downtime	High	Multi-zone server hosting for redundancy
Offline Sync Delays	Medium	Optimize AJAX calls and use progressive sync
Data Breaches	Critical	Encrypt data with modern standards (AES-256)
Delays in Future Feature Development	Medium	Agile backlog prioritization

7. Cost-Benefit Analysis

EduTrack minimizes academic stress and inefficiencies by addressing the challenges of inconsistent internet connectivity and lack of study resources. The incorporation of advanced tools ensures it remains relevant for diverse learning styles.

8. Implementation Plan

8.1 Project Timeline

Phase	Duration	Deliverables
Planning	2 weeks	Finalized project charter and SRS
Developing and Future Features	6 weeks	Improving DB, Flashcards, transcribers, and gamified tools
Cloud Sync Development	2 weeks	Offline-ready and sync-capable prototype
Testing	4 weeks	Beta testing feedback loop
Deployment	4 weeks	Final user-friendly release

9. Enhanced Visuals and Future Vision

The updated flowchart now incorporates:

1. **Cloud Synchronization:** For seamless updates between client and server.
2. **Offline Accessibility:** Use of local data storage for uninterrupted planning.

Future Vision

- **Flashcard Integration:** A feature to help students revise material effectively through interactive, spaced repetition.
- **Gamified Learning:** Incorporating game-like challenges to incentivize consistent study habits.
- **PDF/Image Transcription:** Extract actionable tasks and notes from multimedia sources.

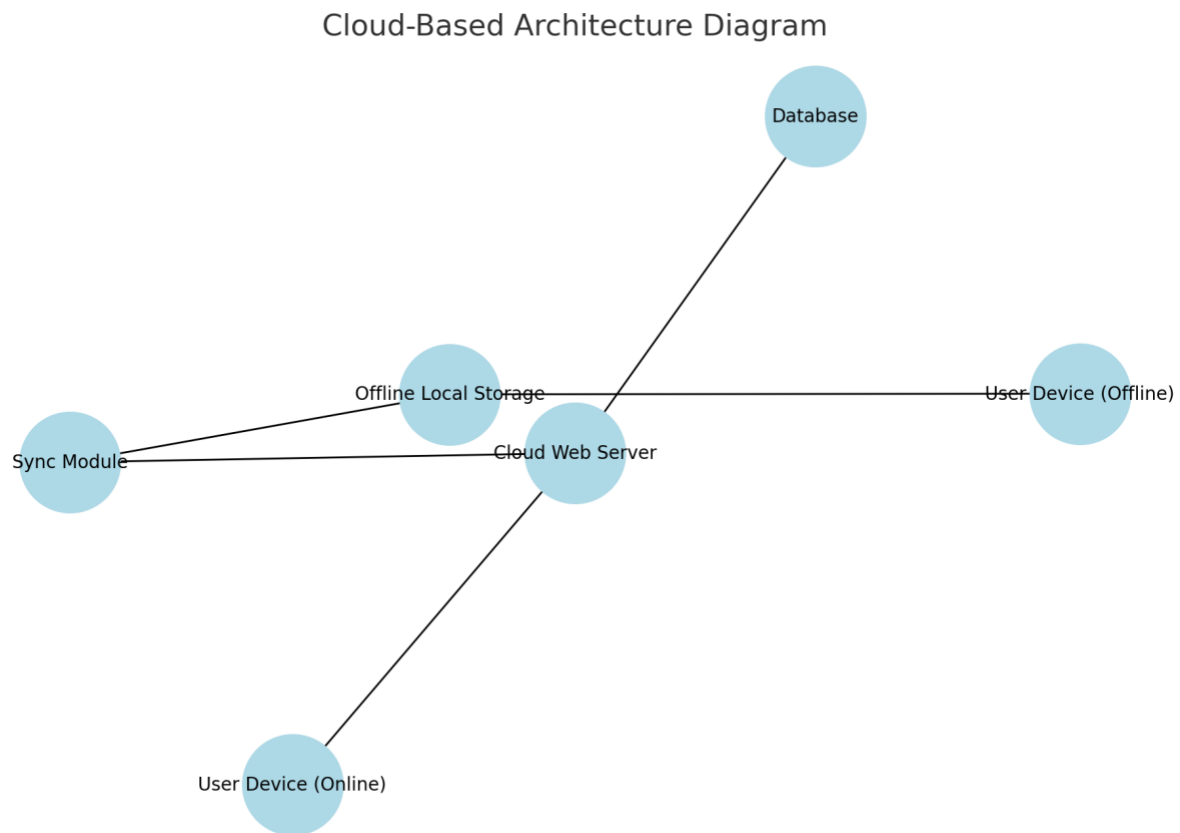


Figure 3 EduTrack Cloud-Based Architecture Diagram

10. Conclusion

EduTrack is a hybrid solution, combining the reliability of cloud servers with the flexibility of offline access. Its current and future toolset ensures it meets both immediate and evolving needs of students. By prioritizing user convenience, security, and innovative features, EduTrack stands out as an essential academic tool for modern learners.