Software Requirement Specification

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1. Introduction

This documentation is about **Notlyfe – One Go Student Application**. It's an system to help students keep their study things like notes and recordings in one place. We're making it with Flutter so it works on phones and the web. We use Supabase to save stuff and Grok AI to make it smart.

2. Vision Document

2.1. Problem Statement:

The problem statement outlines the challenges students face with disorganized study materials and inefficient study tools, which Notlyfe aims to address. The table format ensures clarity and structure.

Figure 1 Summary

Category	**Description**
Problem	- Study materials (notes, PDFs, audio recordings) are scattered across devices and platforms. - Student may find this time-consuming to review these files spread across. - Existing tools (e.g., Google Drive) lack student-specific features like AI assistance or CGPA tracking.
Affects	- Students at high school and university levels, struggling with academic organization and productivity.
Impact	- Wasted time searching for materials and lectures of different devices. - Increased stress and time wastage from disorganization . - Reduced study efficiency and academic performance.
Solution	One system that can: - Organizes files, notes, and tasks in one place using Supabase. - Uses Grok AI for search, transcription, summarization, and tutoring. - Includes tools like a calendar, to-do list, and CGPA calculator built with Flutter.

2.2. Business Opportunities

Notlyfe will helps students and can work with schools or study companies. It's a new way to make studying easy with smart tools and cloud saving.

2.3. Objectives

- Make an app to upload content online and find study files easily.
- Add Grok AI to search, turn audio to text, and teach stuff.
- Put in tools like a calendar and grade checker with Flutter.
- Use Supabase to keep files safe and ready on all devices.

2.4. Scope

The **Notlyfe** scope involves a Flutter app for students to manage files, folders, notes, tasks, and schedules, with AI features (search, transcription, tutor, flashcards) using Supabase and Grok AI, excluding collaboration, third-party integrations, offline mode, and admin tools, targeting completion in 6 months.

2.5. Constraints

Notlyfe will be an app for phones and the web. It helps students save files, use AI, and stay organized. We start with Android, iPhone, and web.

2.9. Stakeholder and User Description

2.9.1. Market Demographics

Notlyfe is for students across globe, ages 16 to 25, from school or college who want help with studies.

2.9.2. User Environment

Students use Notlyfe on phones or web with internet. It works on Android, iPhone, or browsers.

2.9.3. Stakeholder Profiles

2.9.3.1. Supervisor Team

Figure 2 supervisor team

Representatives	**Supervisor, Helper Supervisor**
Description	Watch over the project.
Type	People who know tech.
Responsibility	- Help the team. - Check work.

	- Make sure it's good.
Success Criteria	All intended feature must work.
Involvement	Look at plans and updates.
Comments/Issues	None

2.9.3.2. Development Team

Figure 3 Development Team

Representatives	**Coders**
Description	Build Notlyfe.
Type	Tech people.
Responsibility	- Make the app. - Plan tech stuff. - Add features.
Success Criteria	Everything works fine.
Involvement	Code, write papers, test.
Comments/Issues	None

2.9.3.3. End Users

Figure 4 End User

Representatives	**Students**
Description	People who use Notlyfe.
Type	Outside people.
Responsibility	Use the app.
Involvement	None
Comments/Issues	None

2.9.3.4. Admin

Figure 5 Admin

Representatives	**Admin**
Description	Look after the app.
Type	Inside person.
Responsibility	Check users and fix problems.
Involvement	None
Comments/Issues	None

2.9.4. Stakeholder Summary

Figure 6 Stakeholder Summary

Name	**Description**	**Responsibility**
Development Team	Make Notlyfe with Flutter and AI.	Build app, plan tech.
Supervisor Team	Watch the project.	Help team, check work.
End Users	Students who use it.	Use app for study.
Admin	Keep app running.	Watch users, fix issues.

3. System Requirements Specification

3.1. System Features

Notlyfe has these main things:

- **Files**: Save and sort study stuff like PDFs and audio.
- **AI**: Find stuff, turn audio to text, and help with study.
- **Tools**: Calendar, clock, to-do list, and grade checker.
- **Sync**: Keep everything the same on all devices.

3.2. Functional Requirements

FR 3.2.1 File Upload and Storage

- The system shall let users put PDFs, PPTX, and audio in Supabase Storage.
- The system must keep files in special boxes for each user.

FR 3.2.2. Subject Folder Management

- The system shall let users make folders for subjects in Supabase.
- The system must put files in these folders so they're easy to find.

FR 3.2.3. AI-Powered Search

- The system shall use Grok AI to find stuff when users ask (like "show me math notes").
- The system must look at file names and text inside to find things.

FR 3.2.4. Audio Transcription

- The system shall turn audio files into words with Grok AI.
- The system must save these words in Supabase in tabe.

FR 3.2.5. Audio Summarization

- The system shall make short versions of audio words with Grok AI.

FR 3.2.6. AI Tutor Assistance

- The system shall use Grok AI to explain things from files when users ask.
- The system must give answers that help with study.

FR 3.2.7. Flashcard Generation

- The system shall make study cards from files with Grok AI.
- The system must let users keep and look at these cards.

FR 3.2.8. To-Do List Management

- The system shall have a list for tasks in Supabase.
- The system must let users add, change, or finish tasks afterward.

FR 3.2.9. Calendar Integration

- The system shall show a calendar with flutter_calendar for tasks.
- The system must show all reminders in calender in Supabase.

FR 3.2.10. CGPA Calculator

- The system shall let users put in grades to find their CGPA.

FR 3.2.11. Note-Taking Feature

- The system shall let users write notes and save them in Supabase.
- The system must let users make notes bold or italic.

FR 3.2.12. Real-Time Synchronization

- The system shall keep files and stuff the same on all devices with Supabase.
- The system must update everything in 5 seconds.

3.3. Non-Functional Requirements

NFR 3.3.1. User-Friendly Interface

- The system must be easy to use with a simple Flutter screen.

NFR 3.3.2. Data Security

- The system shall lock up data in Supabase so no one steals it.

NFR 3.3.3. Performance

- The system must work fast and answer in 2 seconds.

NFR 3.3.4. Privacy

- The system shall keep user info safe with Supabase login.

NFR 3.3.5. Compatibility

- The system must work on Android, iPhone, and web like Chrome.

NFR 3.3.6. Scalability

- The system shall handle 5,000 users at once with no slow-down.

NFR 3.3.7. Reliability

- The system must work 99% of the time without breaking.

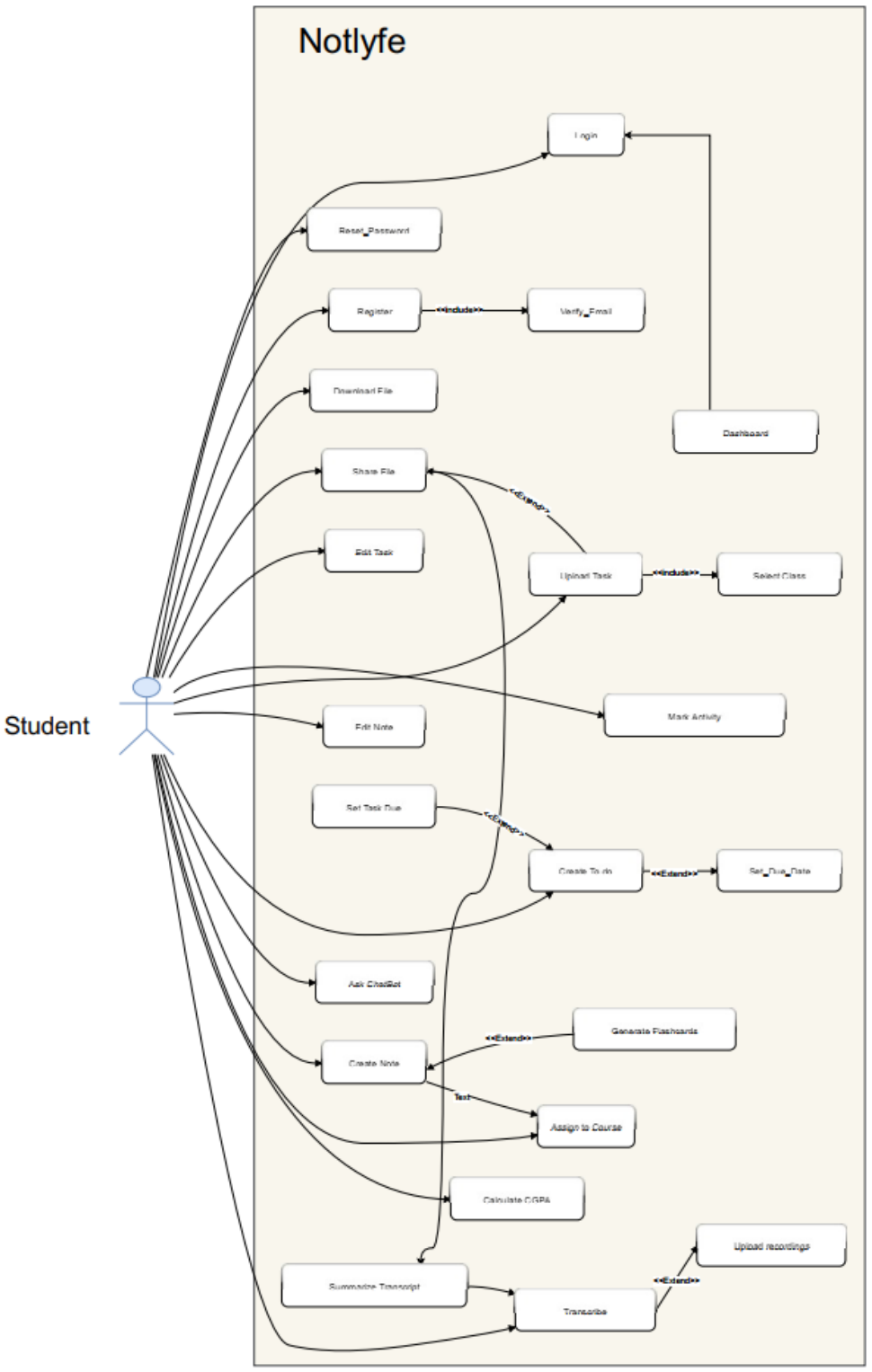
NFR 3.3.8. Availability

- The system shall be ready to use all day, every day.

4.Use case

Use cases represent the potential are where the developing software will be utilized. Mention below diagram illustrate the potential use of the software.

4.1 Use case Model



4.2 Use case specification

Use Case Table 1: File Upload and Storage

Field	Details
Designation	FR-01
Name	File Upload and Storage
Type	Primary
Source	M. Bilal (domain expert for educational systems)
Person responsible	Muhammad Abu Huraira
Description	The system allows users to upload and store files (e.g., PDFs, PPTX, audio) in the cloud.
Trigger event	User selects a file to upload.
Actors	Student, Notlyfe System, Supabase Storage
Pre-conditions	User is logged in and has internet access.
Post-conditions	File is uploaded and stored in Supabase Storage.
Result	User have saved the file and can access from any device.
Main scenario	1. User selects a file to upload. 2. System uploads the file to Supabase Storage. 3. System saves file metadata in the database.
Alternative scenarios	4a. If upload fails due to network issues, system retries or notifies the user.
Exception scenarios	Trigger: File exceeds size limit. Action: System notifies the user to upload a smaller file.
Frequency of Use	High

Use Case Table 2: Subject Folder Management

Field	Details
Designation	FR-02
Name	Subject Folder Management
Type	Primary
Source	Muhammad Abu Huraira (domain expert for educational systems)
Person responsible	Muhammad Abu Huraira
Description	The system allows users to create and manage subject folders for organizing files.
Trigger event	User creates a new folder or organizes files.
Actors	Student, Notlyfe System, Supabase Database
Pre-conditions	User is logged in.
Post-conditions	Folders are created or updated in the Supabase database.
Result	User can organize files into subject folders.
Main scenario	1. User creates a new folder or selects an existing one 2. System saves folder information in the database. 3. User moves files into the folder.
Alternative scenarios	4a. If folder name already exists, system prompts for a new name.
Exception scenarios	Trigger: Database error during folder creation. Action: System retries or notifies the user.
Frequency of Use	Medium

Use Case Table 3: AI-Powered Search

Field	Details
Designation	FR-03
Name	AI-Powered Search
Type	Primary
Source	Muhammad Abu Huraira (domain expert for educational systems)
Person responsible	Muhammad Abu Huraira
Description	The system provides AI-powered search to find files and notes using textual prompts.
Trigger event	User enters a search query.
Actors	Student, Notlyfe System, Grok AI
Pre-conditions	User is logged in and has files or notes stored.
Post-conditions	Search results are displayed.
Result	User finds relevant files or notes quickly.
Main scenario	1. User enters a search query. 2. System sends query to Grok AI. 3. Grok AI processes file the folder type and search the file. 4. System displays the results.
Alternative scenarios	4a. If no results are found, system suggests refining the query.
Exception scenarios	Trigger: AI service is unavailable. Or no internet Action: System falls back to keyword search.
Frequency of Use	High

Use Case Table 4: Audio Transcription

Field	Details
Designation	FR-04
Name	Audio Transcription
Type	Primary
Source	Muhammad Abu Huraira (domain expert for educational systems)
Person responsible	Muhammad Abu Huraira
Description	The system transcribes uploaded audio files into text using Grok AI.
Trigger event	User uploads an audio file for transcription.
Actors	Student, Notlyfe System, Grok AI, Supabase Storage
Pre-conditions	User is logged in and has an audio file.
Post-conditions	Transcription is generated and stored in Supabase.
Result	User can read the transcription of the audio.
Main scenario	1. User uploads an audio file. 2. System sends the file to Grok AI for transcription. 3. Grok AI returns the transcription. 4. System stores the transcription in the database.
Alternative scenarios	4a. If transcription fails, system notifies the user.
Exception scenarios	Trigger: Audio file is corrupted. Action: System rejects the file and asks for a valid one.
Frequency of Use	Medium

Use Case Table 5: Audio Summarization

Field	Details
Designation	FR-05
Name	Audio Summarization
Type	Secondary
Source	Muhammad Abu Huraira (domain expert for educational systems)
Person responsible	Muhammad Abu Huraira
Description	The system generates summaries of transcribed audio using Grok AI.
Trigger event	User requests summarization after transcription.
Actors	Student, Notlyfe System, Grok AI
Pre-conditions	Transcription is available in the system.
Post-conditions	Summary is generated and stored in Supabase.
Result	User gets a concise summary of the audio content.
Main scenario	1. User selects a transcription to summarize. 2. System sends the transcription to Grok AI. 3. Grok AI generates a summary. 4. System stores the summary.
Alternative scenarios	4a. If summarization is not needed, user can skip.
Exception scenarios	Trigger: Summarization service is down. Action: System notifies the user to try later.
Frequency of Use	Low to Medium

Use Case Table 6: AI Tutor Assistance

Field	Details
Designation	FR-06
Name	AI Tutor Assistance
Type	Primary
Source	Shayan Zawar (domain expert for educational systems)
Person responsible	Shayan Zawar
Description	The system provides AI-powered tutoring to explain concepts from study materials.
Trigger event	User asks a question or requests help with a topic.
Actors	Student, Notlyfe System, Grok AI
Pre-conditions	User is logged in and has study materials uploaded.
Post-conditions	AI provides answers or explanations to the user.
Result	User gains a better understanding of the material.
Main scenario	1. User asks a question. 2. System sends the question to Grok AI. 3. Grok AI generates an answer. 4. System displays the answer.
Alternative scenarios	4a. If the question is unclear, AI asks for clarification.
Exception scenarios	Trigger: AI cannot answer the question. Action: System suggests rephrasing or checking notes.
Frequency of Use	Medium

Use Case Table 7: Flashcard Generation

Field	Details
Designation	FR-07
Name	Flashcard Generation
Type	Secondary
Source	Shayan Zawar (domain expert for educational systems)
Person responsible	Shayan Zawar
Description	The system generates flashcards from notes or transcripts using Grok AI.
Trigger event	User requests flashcards from a note or transcript.
Actors	Student, Notlyfe System, Grok AI
Pre-conditions	Notes or transcripts are available in the system.
Post-conditions	Flashcards are created and stored in Supabase.
Result	User can review key points using flashcards.
Main scenario	1. User selects a note or transcript. 2. System sends it to Grok AI. 3. Grok AI generates flashcards. 4. System saves the flashcards.
Alternative scenarios	4a. If content is too short, system notifies the user.
Exception scenarios	Trigger: AI fails to generate flashcards. Action: System asks the user to try again later.
Frequency of Use	Low to Medium

Use Case Table 8: To-Do List Management

Field	Details
Designation	FR-08
Name	To-Do List Management
Type	Primary
Source	Shayan Zawar (domain expert for educational systems)
Person responsible	Shayan Zawar
Description	The system allows users to create, edit, and manage their to-do lists.
Trigger event	User adds, edits, or completes a task.
Actors	Student, Notlyfe System, Supabase Database
Pre-conditions	User is logged in.
Post-conditions	Task list is updated in the Supabase database.
Result	User can track their tasks effectively.
Main scenario	1. User adds a new task. 2. System saves the task in the database. 3. User can edit or mark tasks as complete.
Alternative scenarios	4a. If task is overdue, system highlights it.
Exception scenarios	Trigger: Database error during task save. Action: System retries or notifies the user.
Frequency of Use	High

Use Case Table 9: Calendar Integration

Field	Details
Designation	FR-09
Name	Calendar Integration
Type	Secondary
Source	Shayan Zawar (domain expert for educational systems)
Person responsible	Shayan Zawar
Description	The system integrates a calendar for scheduling tasks and events using Flutter packages.
Trigger event	User views or adds events to the calendar.
Actors	Student, Notlyfe System, Flutter Calendar Package
Pre-conditions	User is logged in.
Post-conditions	Calendar events are saved and displayed in the UI.
Result	User can manage their schedule effectively.
Main scenario	1. User opens the calendar. 2. User adds a new event or views existing ones. 3. System syncs events with the database.
Alternative scenarios	4a. If events conflict, system warns the user.
Exception scenarios	Trigger: Calendar sync fails. Action: System retries or shows an error.
Frequency of Use	Medium

Use Case Table 10: CGPA Calculator

Field	Details
Designation	FR-10
Name	CGPA Calculator
Type	Secondary
Source	Shayan Zawar (domain expert for educational systems)
Person responsible	Shayan Zawar
Description	The system calculates the user's CGPA based on input grades.
Trigger event	User enters grades and requests CGPA calculation.
Actors	Student, Notlyfe System
Pre-conditions	User is logged in.
Post-conditions	CGPA is calculated and displayed in the Flutter UI.
Result	User knows their current CGPA.
Main scenario	1. User enters grades for each course. 2. System calculates CGPA using a predefined formula. 3. System displays the result.
Alternative scenarios	4a. If grades are incomplete, system prompts for missing data.
Exception scenarios	Trigger: Calculation error due to invalid input. Action: System asks for correct grades.
Frequency of Use	Low

Use Case Table 11: Note-Taking Feature

Field	Details
Designation	FR-11
Name	Note-Taking Feature
Type	Primary
Source	M. Bilal (domain expert for educational systems)
Person responsible	M. Bilal
Description	The system allows users to create, edit, and organize notes.
Trigger event	User creates or edits a note.
Actors	Student, Notlyfe System, Supabase Database
Pre-conditions	User is logged in.
Post-conditions	Notes are saved and organized in Supabase.
Result	User can access their notes from any device.
Main scenario	1. User creates a new note. 2. User writes and formats the note. 3. System saves the note in the database.
Alternative scenarios	4a. If note is empty, system prompts to add content.

Exception scenarios	Trigger: Save fails due to network issue. Action: System retries or saves locally.
Frequency of Use	High

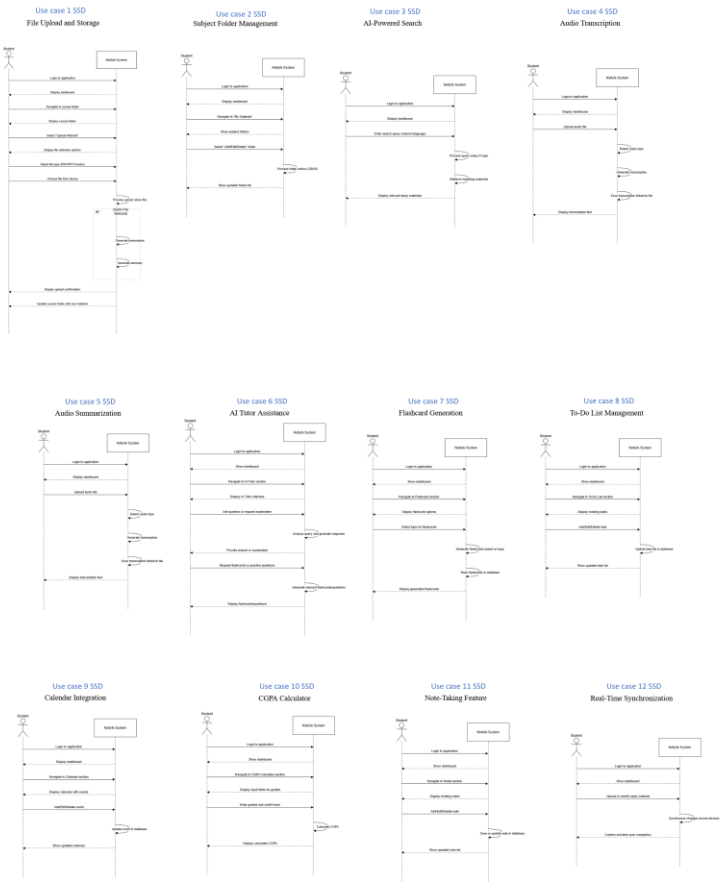
Use Case Table 12: Real-Time Synchronization

Field	Details
Designation	FR-12
Name	Real-Time Synchronization
Type	Primary
Source	M. Bilal (domain expert for educational systems)
Person responsible	M. Bilal
Description	The system synchronizes data (files, notes, tasks) across devices in real-time using Supabase.
Trigger event	Data is updated on one device.
Actors	Student, Notlyfe System, Supabase Database
Pre-conditions	User is logged in and has internet access.
Post-conditions	Data is consistent across all devices.
Result	User can switch devices without losing data.
Main scenario	1. User updates data on one device. 2. System syncs the update to Supabase. 3. Other devices receive the update.
Alternative scenarios	4a. If sync is delayed, system queues updates.
Exception scenarios	Trigger: Sync conflict occurs. Action: System resolves conflict or notifies user.
Frequency of Use	High

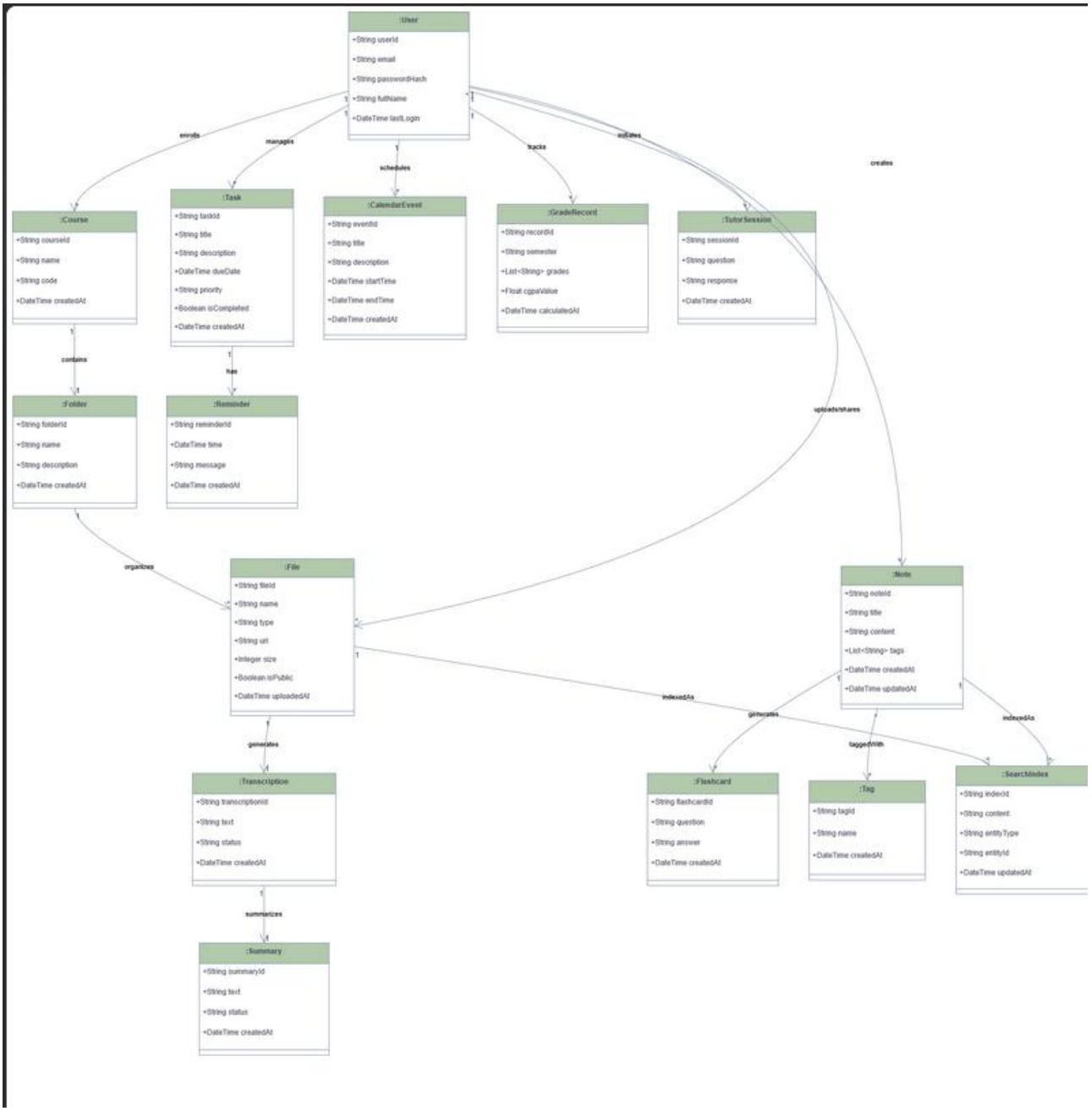
5.Diagrams

5.1 System Sequence Diagram

Model by:
Muhammad Bilal 22F-3845
Huraira Muzammil 22F-3853
Shayan Zawar 22F-3410



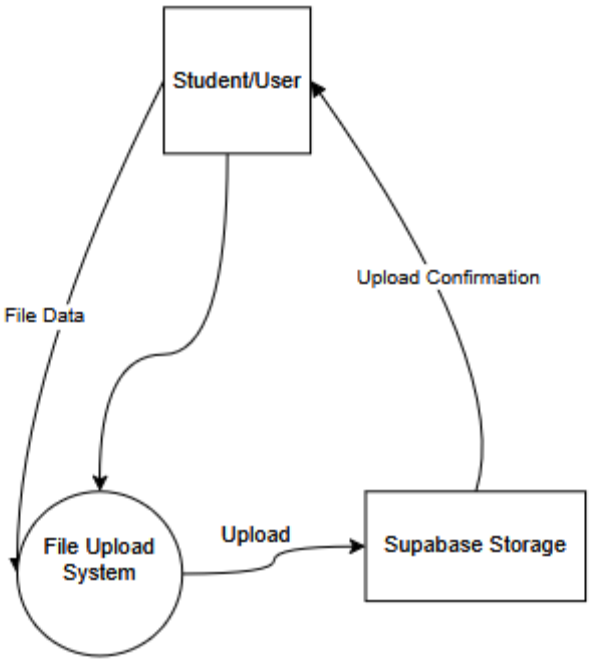
5.2 Domain Diagram



5.3 Class diagram

5.4 Data flow diagram Youndon Notation

Level 0



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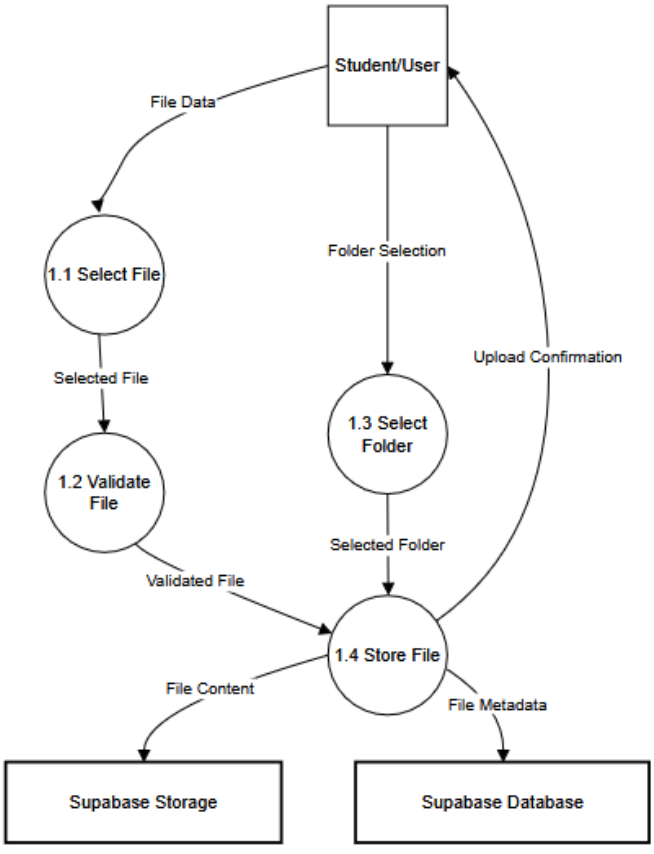

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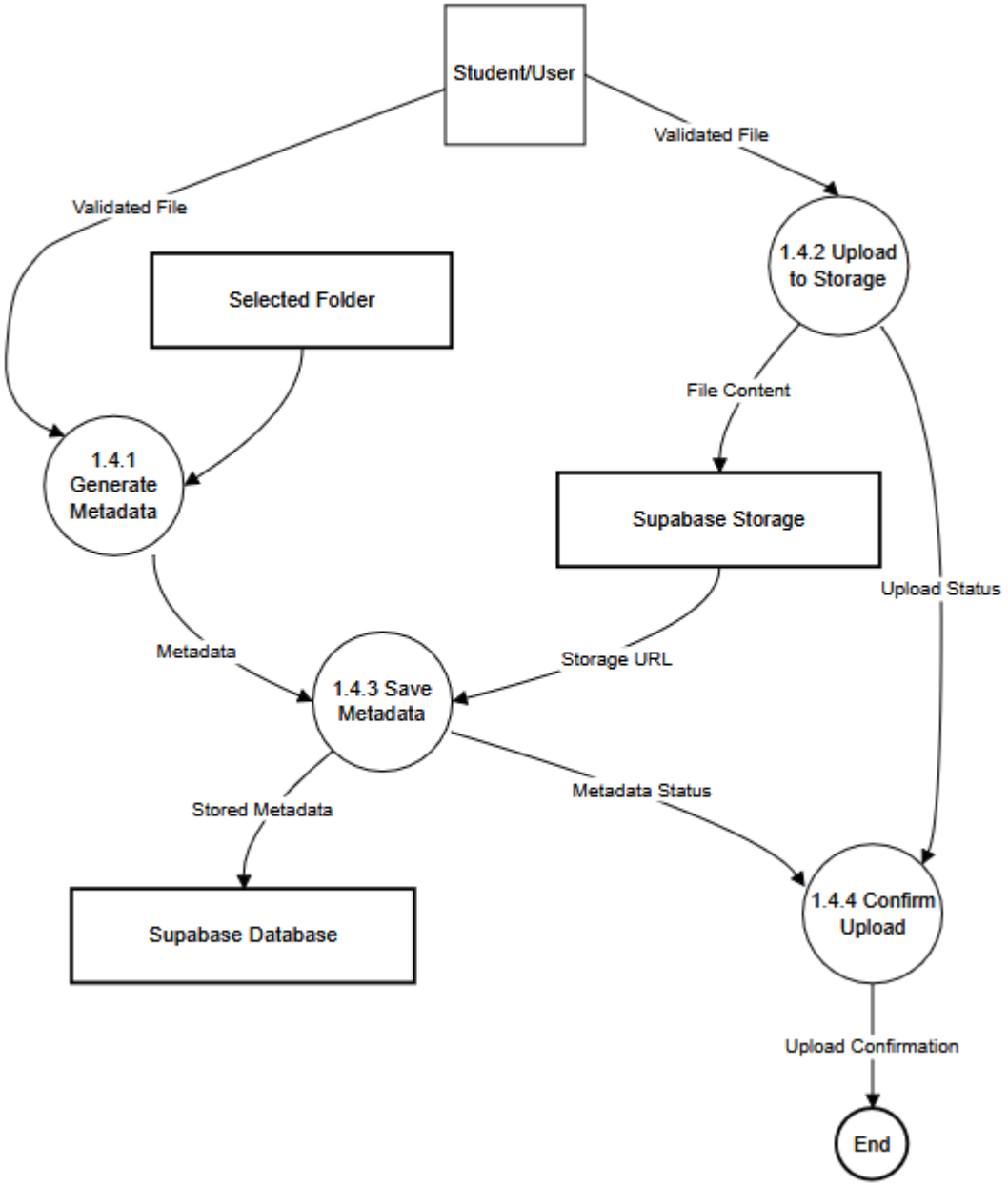
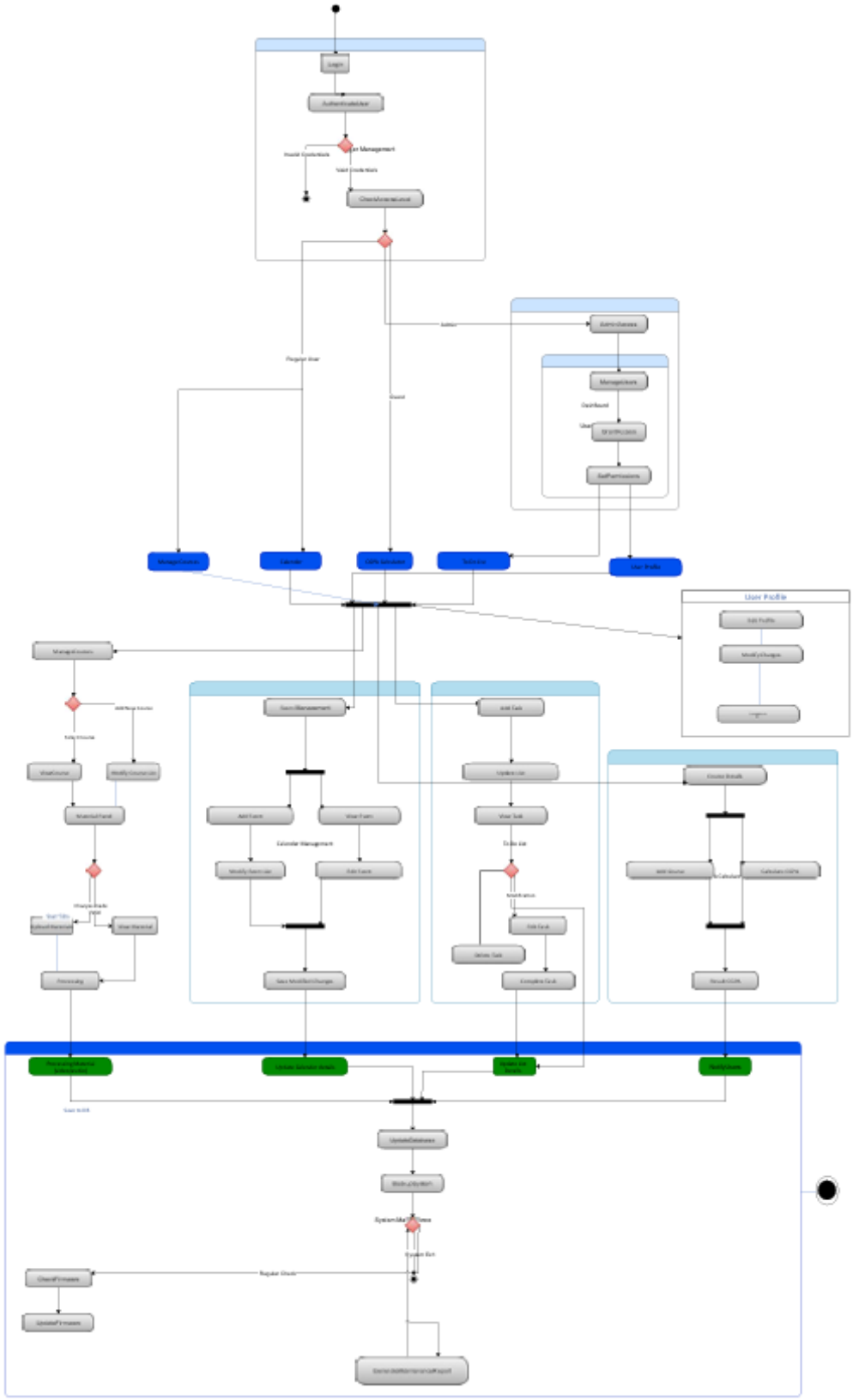
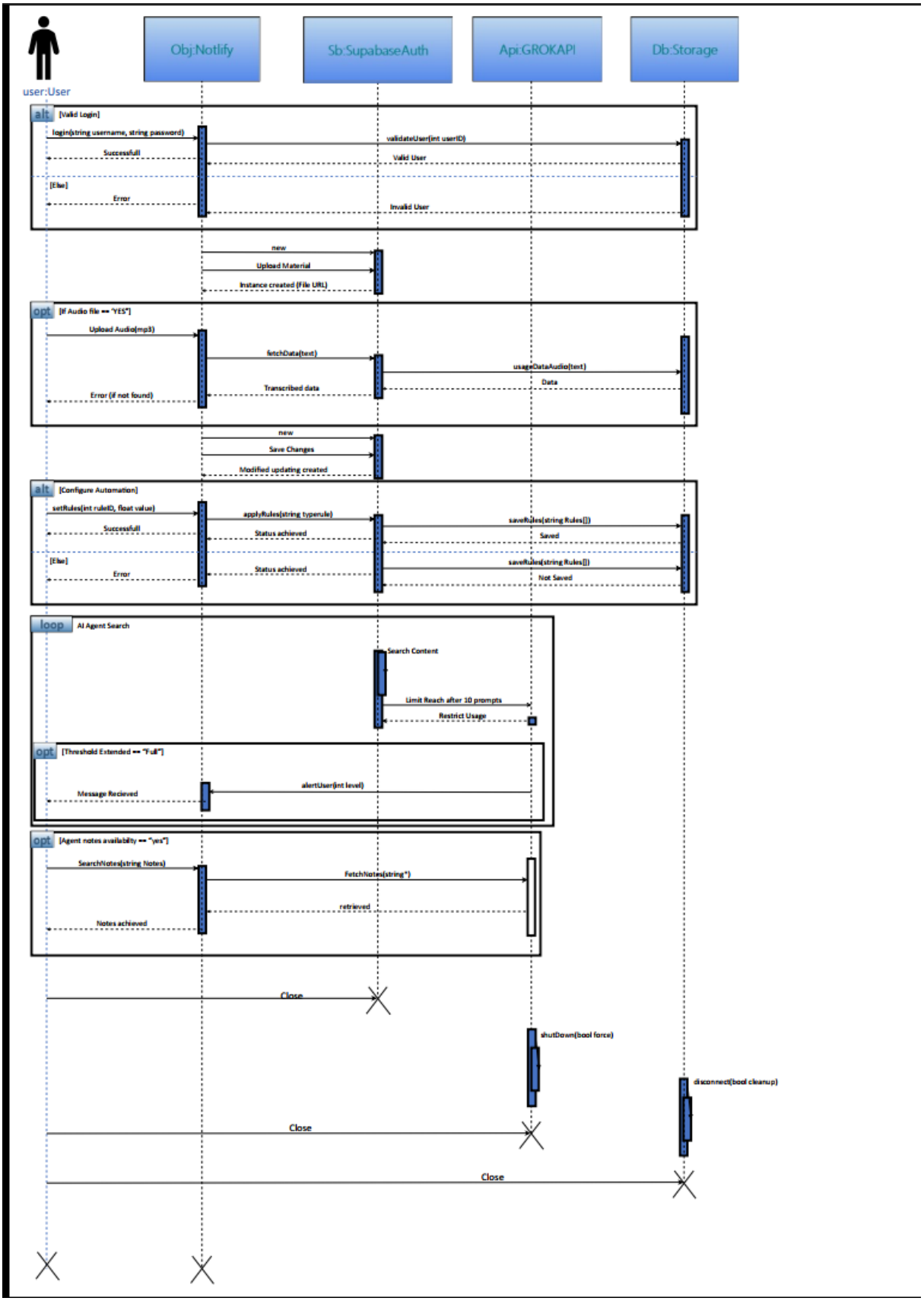

Student/User
Validated File
Validated File
1.4.2 Upload to Storage
Selected Folder
File Content
1.4.1 Generate Metadata
Supabase Storage
Upload Status
Metadata
Storage URL
1.4.3 Save Metadata
Metadata Status
Stored Metadata
1.4.4 Confirm Upload
Supabase Database
Upload Confirmation
End

5.5 Activity Diagram

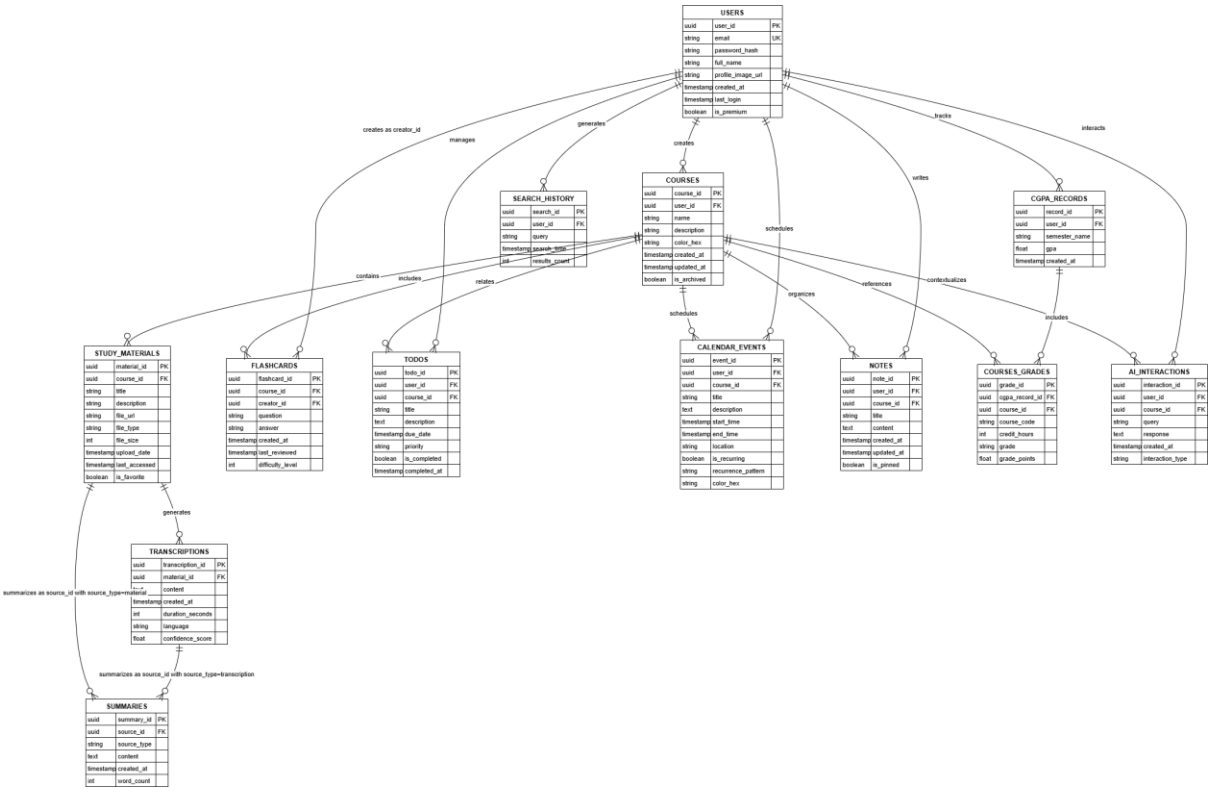


5.6 State Machine diagram

5.7 Sequence diagram



5.8 ER Diagram



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