

Ideation Phase

❖ Brainstorm & Idea Prioritization Template

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Template

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

🕒 10 minutes to prepare

🕒 1 hour to collaborate

👤 2-8 people recommended

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

A Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

C Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) →

Define your problem statement

How might we create a personalized learning experience that adapts to each student's needs and keeps them motivated to reach their goals?

🕒 5 minutes

Key rules of brainstorming

To run an smooth and productive session

Stay in topic.

Encourage wild ideas.

Defer judgment.

Listen to others.

Go for volume.

If possible, be visual.

Step-2: Brainstorm, Idea Listing and Grouping

2

Brainstorm
Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

TIP

You can't select a sticky note and hit the pencil switch to select it, so to also drawing!

3

Group ideas
Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

🕒 20 minutes

TIP

Add coloration to your sticky notes to make it easier to find, discuss, organize, and categorize the content. Show as themes with your mind.

Step-3: Idea Prioritization

4

Prioritize
Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

🕒 20 minutes

TIP

Type your paragraph...

Importance
If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

Feasibility
Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)

Quadrant 1 – Avoid or Reevaluate (Low Impact, Low Feasibility)
Low value / hard to build usually not worth it
• Voice-based doubt solving for now (if target audience doesn't request it soon)

Quadrant 2 – Quick Wins (High Impact, High Feasibility)
Build those first! High value, easy to implement.
• Weekly performance reports (Naga Senu)
• Learning streak tracker (Surya Simhani)
• Gamified learning paths (Surya Simhani)
• Google/Moodle login (Sai Ready AI)
• Minimal dashboard with color-coded feedback (Surya Simhani)

Quadrant 3 – Transformational (High Impact, Low Feasibility)
Important but harder to implement. Long term vision products.
• AI-based adaptive quizzes (Sai Ready AI)
• AI-driven tutor (Sai Ready AI)
• Voice-based doubt solving (Sai Ready AI)

Quadrant 4 – Low Hanging Fruit (Low Impact, High Feasibility)
Easy to build, but consider if they're valuable.
• Simple badge system (Surya Simhani)
• Sketch screens in React (Surya Simhani)
• Static parent dashboard (Naga Senu)

❖ Empathize & Discover





Empathy Map :



❖ Define the Problem Statements

Problem Statement :

PERSONA	I AM	I'M TRYING TO	BUT	BECAUSE	WHICH MAKES ME FEEL
1. Student (High School/College Aspirant)	A high school student preparing for NEET/JEE; curious and prefers interactive learning.	Prepare for exams using personalized mock tests and improvement feedback.	Most platforms are outdated, generic, or lack personalization.	They don't adapt to my performance or learning style.	Anxious and unsure if I'm improving or exam-ready.
2. College Student (UPSC/IAS/GATE Aspirant)	A college student juggling studies and exam prep; needs structured learning.	Build a consistent routine and get feedback from each quiz.	Most tools are not adaptive or designed for exam-specific improvement.	Static platforms don't analyze past performance or suggest progress paths.	Overwhelmed and stuck in repetitive preparation cycles.
3. Parent	A parent concerned about their child's progress and exam readiness.	Help their child stay motivated and understand their performance.	Lack of visibility and actionable insights on student progress.	No dedicated parent dashboard or easy-to-read reports.	Helpless and disconnected from my child's academic journey.
4. Teacher	A teacher aiming to use AI tools to enhance teaching and track student growth.	Assign quizzes and get quick insights into student weaknesses.	Existing tools are time-consuming and not built for teachers' workflows.	Lack of automation, analytics, and integration features.	Frustrated and burned out from managing tools manually.
5. School Administrator	A school admin responsible for ed-tech adoption and improving student outcomes.	Find scalable tools that personalize learning and track school-wide performance.	Tools are expensive, hard to scale, and don't cater to multi-user environments.	Built more for individuals than institutions with analytical needs.	Uncertain about choosing tools that benefit both staff and students.

Characteristic	High School Student	College Student	Parent	Teacher	School Administrator
 Description	Interactive learner	Structured learner	Concerned supporter	Efficiency seeker	Scalable solution seeker
 Needs	Personalized feedback	Consistent routine	Performance visibility	Quick insights	Scalable tools
 Pain Points	Lack of personalization	Static platforms	Lack of visibility	Time-consuming tools	Expensive tools
 Frustrations	Unsure of improvement	Repetitive cycles	Disconnected	Manual management	Uncertain choice

Performance Testing

❖ Model Performance Test

Test Scenarios & Results

Test Case ID	Scenario (What to test)	Test Steps (How to test)	Expected Result	Actual Result	Pass/Fail
FT-01	Text Input Validation (e.g., topic, job title)	Enter valid and invalid text in input fields	Valid inputs accepted, errors for invalid inputs	Valid inputs accepted, error messages shown for invalid	Pass
FT-02	Number Input Validation (e.g., word count, size)	Enter numbers within and outside the valid range	Accepts valid values, shows error for out-of-range	Valid range accepted, error shown for invalid numbers	Pass
FT-03	Content Generation (e.g., blog, resume)	Provide complete inputs and click "Generate"	Correct content is generated based on input	Relevant and accurate content was generated	Pass
FT-04	API Connection Check	Check if API key is correct and model responds	API responds successfully	API response received successfully	Pass
PT-01	Response Time Test	Use a timer to check content generation time	Should be under 3 seconds	Content generated in 2.3 seconds	Pass
PT-02	API Speed Test	Send multiple API calls at the same time	API should not slow down	All requests responded within normal time	Pass

PT-03	File Upload Load Test (e.g., PDFs)	Upload multiple PDFs and check processing	Should work smoothly without crashing		
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Project Design Phase

❖ Problem – Solution Fit

Date	27 June 2025
Team ID	LTVIP2025TMID29535
Project Name	EduTutor-AI_personalized-learning-with-generative-ai-and-lms-integration
Maximum Marks	2 Marks

Problem – Solution Fit :

Problem-Solution fit canvas 2.0

Purpose / Vision

Define CS, fit into

1. CUSTOMER SEGMENT(S) **CS**

Primary Customers:

- Working parents of children aged 6–18.
- School students preparing for competitive exams (e.g., UPSC, IAS, NEET, JEE).
- Teachers needing automated assessment tools.
- Educational institutions (schools, coaching centers) seeking scalable digital solutions.

6. CUSTOMER **CC**

Constraints:

- Limited spending power (especially in tier-2/3 cities).
- Inconsistent internet access.
- Device availability (shared smartphones/laptops at home).
- Language barriers in regional areas.
- Lack of tech literacy among some teachers/parents.

5. AVAILABLE SOLUTIONS **AS**

Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital note-taking

- 1. Traditional textbooks and offline tutors.
- 2. Free quiz apps and YouTube videos.
- 3. Google Classroom or Moodle (static, not AI-driven).
- 4. Coaching center.

Focus on J&P, tap into BE, understand

2. JOBS-TO-BE-DONE / PROBLEMS **J&P**

Jobs/Problems (J&P):

- Students need to practice and get assessed regularly.
- Parents want to track child progress without micromanaging.
- Teachers want to save time on quiz creation and grading.
- Institutions need adaptive learning platforms that improve outcomes.

Related Concepts (RC):

- Academic confidence and stress reduction.
- Personalized feedback and performance tracking.

Behavioral Economics (BE):

- Loss aversion: parents fear falling behind in academics.
- Anchoring: compare AI quizzes with traditional

9. PROBLEM ROOT CAUSE **RC**

- Traditional education systems lack personalized feedback loops.
- Teachers are overburdened with manual tasks.
- Parents can't track progress without constant involvement.
- The pandemic increased

7. BEHAVIOUR **BE**

Direct Behaviours:

- Search for educational tools on Google/YouTube.
- Ask teachers/friends for recommendations.
- Download free learning apps.

Indirect Behaviours:

- Engage in education WhatsApp groups or Telegram channels.
- Attend free webinars or school info sessions.

Identify strong TR & EM

3. TRIGGERS **TR**

- Student failing to perform well in school/exams.
- Discovery of the platform via peer recommendation or school integration.
- Advertisement/social media posts about AI-generated learning.
- Teacher workshops introducing modern teaching tools.

4. EMOTIONS: BEFORE / AFTER **EM**

Before:

- Parents: stressed, helpless, confused.
- Students: overwhelmed, demotivated.
- Teachers: burdened, limited time.

After:

- Parents: confident, reassured.
- Students: motivated, engaged, in control.
- Teachers: efficient, supported, productive.

10. YOUR SOLUTION **SL**

EduTutor AI is an AI-powered personalized learning platform that:

- Dynamically generates quizzes based on student progress.
- Gives immediate feedback and adaptive difficulty.
- Tracks results over time with visual dashboards.
- Integrates with Google Classroom or Moodle.
- Offers gamified learning for higher engagement.
- Supports multiple languages and works well on low-bandwidth devices.

8. CHANNELS of BEHAVIOUR **CH**

8.1 ONLINE CHANNELS:

- Search engines (Google, Bing)
- YouTube educational videos
- App Store/Play Store
- School or teacher-recommended websites
- Social media (Facebook, Instagram, LinkedIn for teachers)

8.2 OFFLINE CHANNELS:

- School announcements or notices
- PTA meetings
- Word-of-mouth via neighbours or friends
- Coaching ~~center~~ referrals

Extract online & offline CH of BE

1.

Project Planning Phase

❖ Product Backlog, Sprint Schedule, and Estimation

Use the below template to create product backlog and sprint schedule

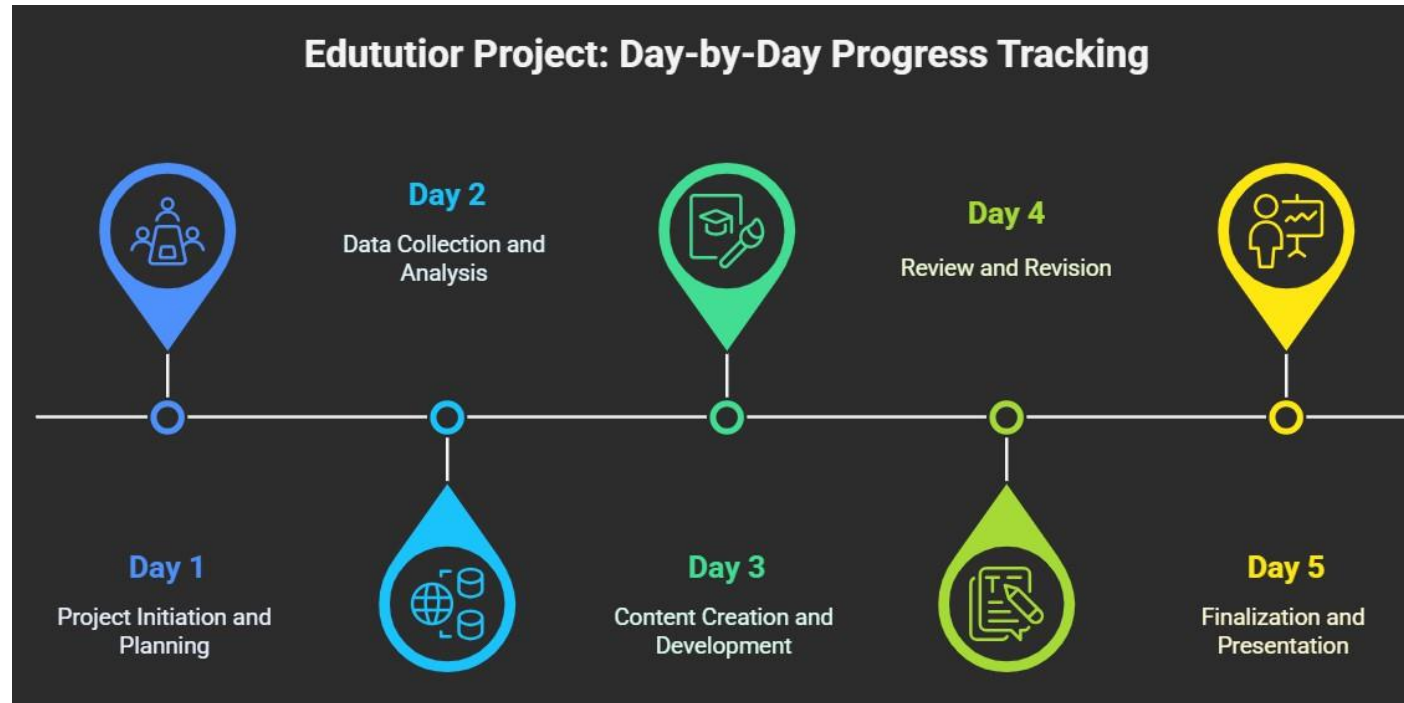
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	User Registration & Login	USN-1	As a user, I can register using email, password, and confirm password.	2	High	Sai Reddy
Sprint-1	User Registration & Login	USN-2	As a user, I receive a confirmation email after registering.	1	High	Sai Reddy ; Srikanth Naga Sehu
Sprint-1	User Registration & Login	USN-3	As a user, I can log in using email and password.	1	High	Sai Reddy
Sprint-1	Moodle Integration (LMS Connect)	USN-4	As a teacher, I can sync topics from Moodle to generate quizzes.	3	Medium	Srikanth Naga Sehu
Sprint-1	Quiz Generator (AI Backend)	USN-5	As a student, I get quizzes auto-generated based on my selected topic.	3	High	Sai Reddy ; Srikanth Naga Sehu
Sprint-2	Quiz Engine	USN-6	As a student, I can attempt multiple-choice quizzes with a timer.	3	High	Sai Reddy,
Sprint-2	Results Dashboard	USN-7	As a student, I can view my quiz scores, wrong answers, and explanations.	3	High	Sai Reddy,
Sprint-2	Adaptive Learning	USN-8	As a system, I can adjust quiz difficulty based on student performance.	5	Medium	Sai Reddy, Srikanth Naga Sehu

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-2	Deployment	USN-9	As a developer, I want to deploy the app using Flask and ensure the frontend connects to the backend.	5	High	Sai Reddy, Srikanth Naga Sehu
Sprint-2	UI Design & Communication	USN-10	As a student, I see a clean, responsive dashboard with subjects, progress bar, and quiz history.	3	Medium	Surya Simhani (Communication & UI Presentation)

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed	Sprint Release Date
Sprint-1	10	6 Days	10 June 2025	15 June 2025	10	15 June 2025
Sprint-2	19	6 Days	18 June 2025	23 June 2025	19	23 June 2025

Burndown Chart:



Project Design Phase

❖ Solution Architecture

Date	15 February 2025
Team ID	LTVIP2025TMID29535
Project Name	EduTutor-AI_personalized-learning-with-generative-ai-and-lms-integration
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

Solution Architecture Diagram:

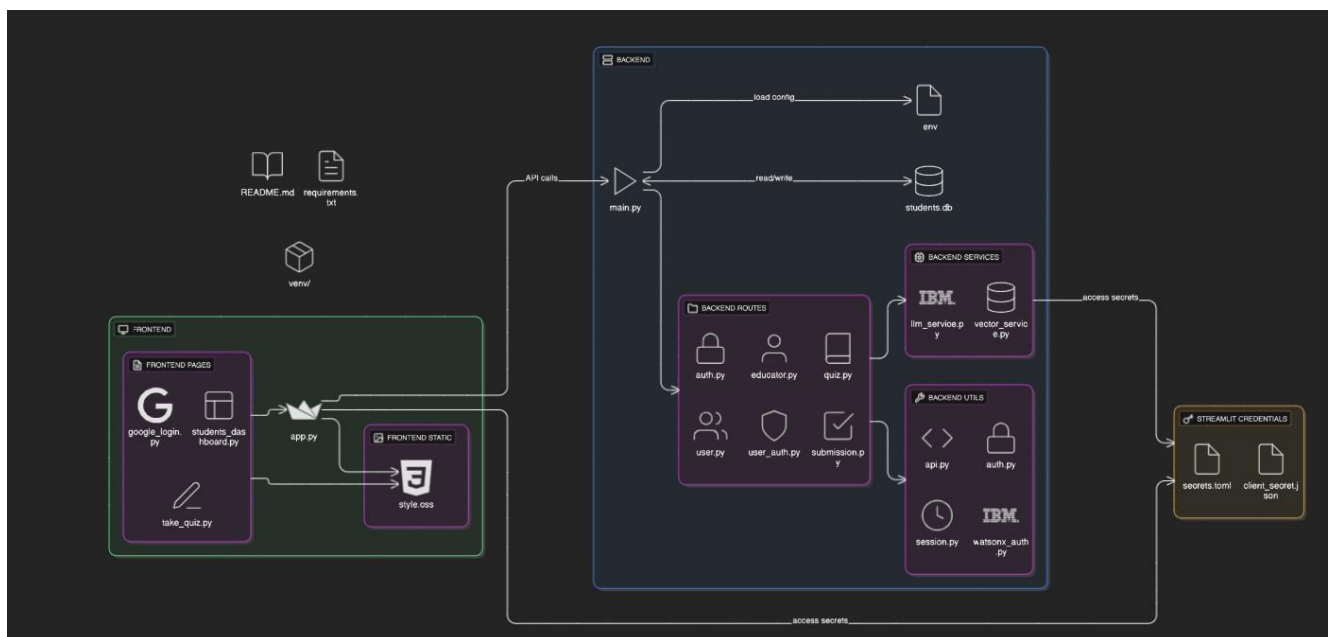
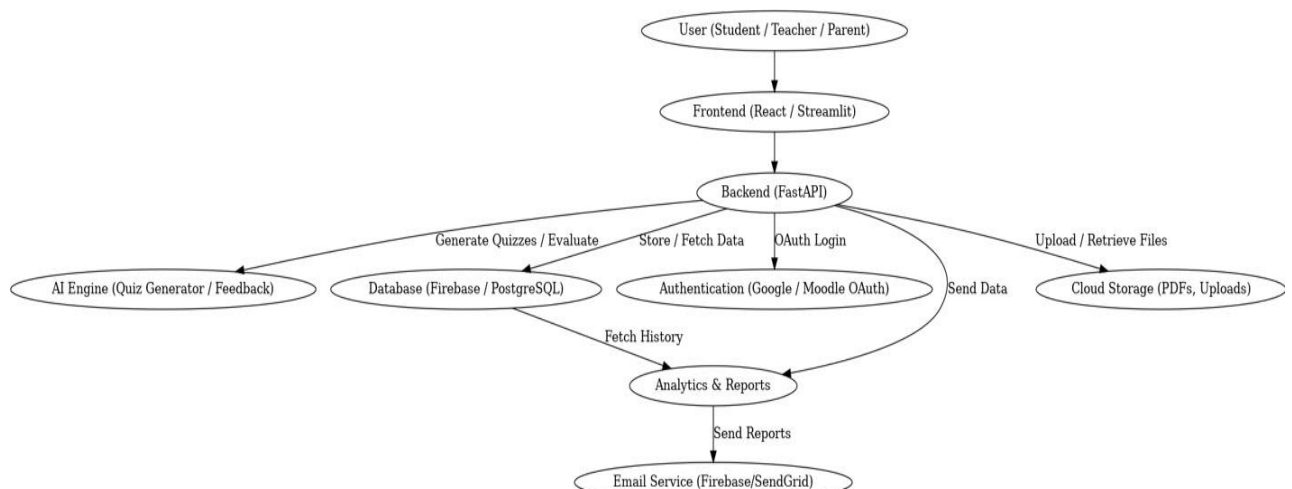


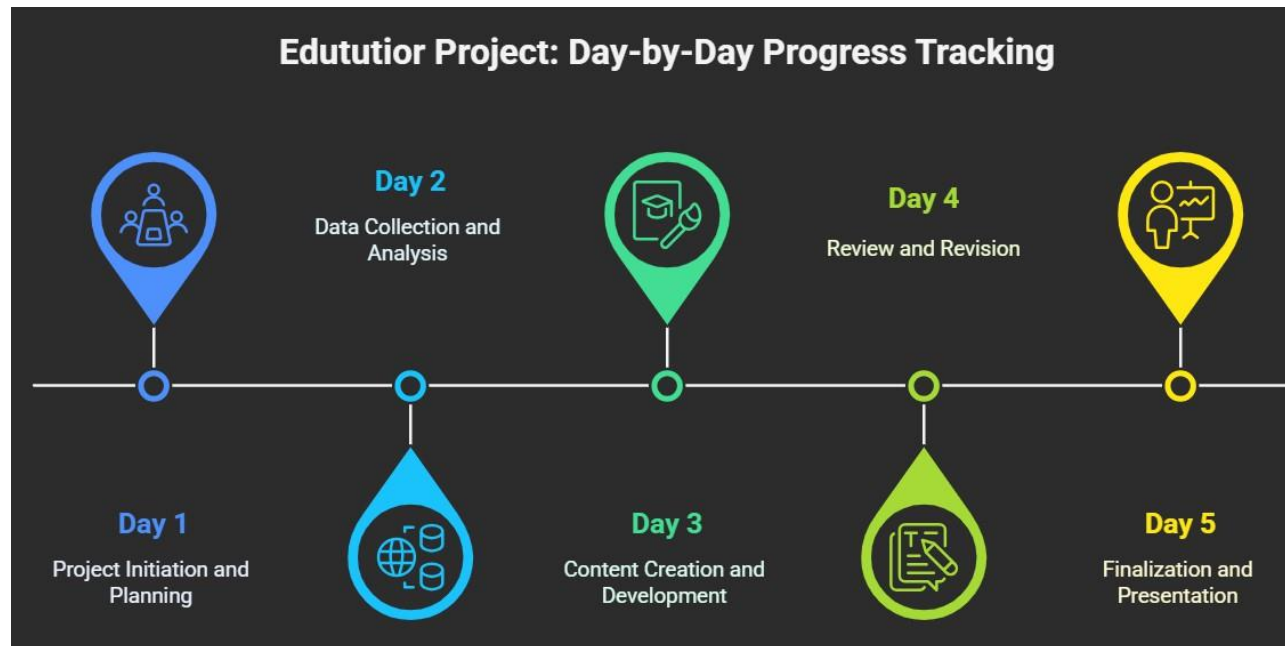
Figure 1: Architecture and data flow of the EduTutor AI



Project Design Phase-II

❖ Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



❖ User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / dashboard	High	Sprint-1
		USN-2	As a user, I will receive a confirmation email once I have registered for the application.	I can receive confirmation email & click confirm	High	Sprint-1
		USN-3	As a user, I can register for the application through Facebook.	I can register & access the dashboard with Facebook Login	Low	Sprint-2
		USN-4	As a user, I can register for the application through Gmail.	I can register & access dashboard using my Gmail account	Medium	Sprint-1
	Login	USN-5	As a user, I can log into the application by entering email & password.	I can securely log in and reach my dashboard	High	Sprint-1
	Dashboard	–	As a user, I can view my progress, past quiz results, and recommended quizzes.	I can see personalized content after login	High	Sprint-2

❖ Solution Requirements (Functional & Non-functional)

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form
		Registration through Gmail
		Registration through LinkedIn
FR-2	User Confirmation	Confirmation via Email
		Confirmation via OTP
FR-3	Quiz Generation	Generate quiz based on subject/topic
		Generate quiz based on difficulty level
		Use AI to create new questions dynamically
FR-4	Quiz Attempt & Evaluation	Start quiz with timer
		Submit quiz and auto-grade
		View score and correct answers with solutions

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	The system should provide a user-friendly interface with intuitive navigation for students, parents, and educators.
NFR-2	Security	The application must ensure secure login, data encryption, and protection against unauthorized access, following OWASP standards.
NFR-3	Reliability	The system should be consistently available with minimal downtime and ensure data accuracy and backup recovery.
NFR-4	Performance	The system should handle multiple quiz submissions simultaneously with quick response times and low latency.
NFR-5	Availability	The solution must be available 24/7 with cloud infrastructure support, including failover mechanisms.

❖ Technology Stack (Architecture & Stack)

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

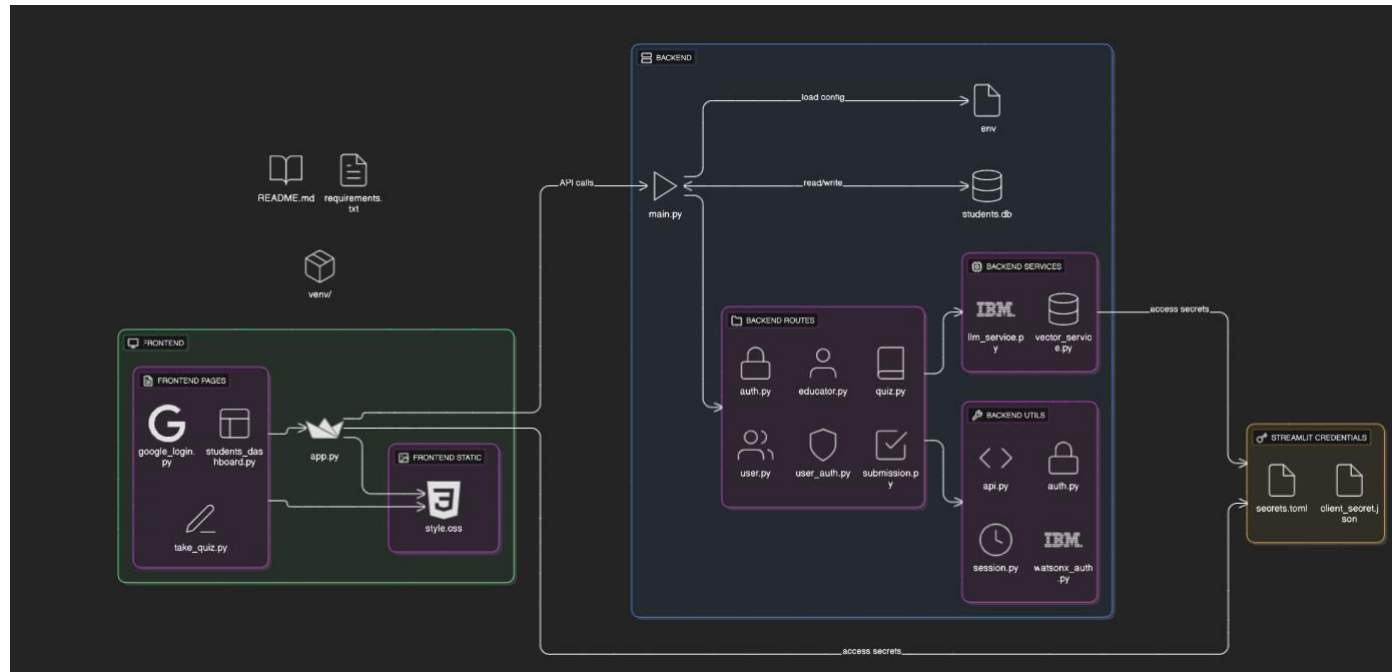


Table-1 : Components & Technologies:

S.No	Component	Description	Technology/Tools Used
1.	User Interface	How users interact with the application — for quiz access and results view	Streamlit (Student/Admin UI), React JS
2.	Application Logic-1	Backend logic for quiz generation, student evaluation	Python (Flask/FastAPI)
3.	Application Logic-2	Voice-to-text conversion for quiz questions (if used)	IBM Watson Speech to Text (STT)
4.	Application Logic-3	Chatbot for user support or quiz guidance	IBM Watson Assistant
5.	Database	Stores student records, quiz questions, scores	MySQL, Firebase Realtime DB, NoSQL
6.	Cloud Database	Cloud-hosted database for scalability	IBM Cloudant, IBM DB2 on Cloud
7.	File Storage	Stores result exports, user-uploaded files, etc.	IBM Cloud Object Storage, Local Filesystem
8.	External API-1	For quiz content enrichment (e.g., weather quiz, if applicable)	IBM Weather API, Open Trivia DB
9.	External API-2	For secure user verification or personalization	Aadhar API, Google OAuth API
10.	Machine Learning Model	AI-based model for adaptive quiz difficulty or score prediction	Scikit-learn, Custom ML Model
11.	Infrastructure	Where the app is hosted and deployed	IBM Cloud Foundry, Kubernetes, Localhost

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology Used
1.	Open-Source Frameworks	Frameworks used for frontend, backend, and ML	Streamlit, React JS, Flask, Scikit-learn, Pandas, NumPy
2.	Security Implementations	User data protection, secure login, and API access	SHA-256 password hashing, OAuth2.0, JWT, IAM Controls, HTTPS, OWASP Guidelines

S.No	Characteristics	Description	Technology Used
3.	Scalable Architecture	Designed using a 3-tier structure with potential for microservices (modularized quiz engine, auth)	3-Tier Architecture, Docker, IBM Cloud Kubernetes, FastAPI/Flask APIs
4.	Availability	Deployed with high availability through cloud services, backups, and horizontal scaling	IBM Cloud Load Balancer, Redundancy on Kubernetes, Auto-Scaling, Cloud Foundry
5.	Performance	Designed for fast quiz access and high concurrency; uses caching and stateless APIs	Redis Cache, CDNs, Optimized DB Queries, Async APIs, Uvicorn (FastAPI)