

Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	01 JULY 2025
Team ID	LTVIP2025TMID38204
Project Name	Edututor AI: PERSONALIZED LEARNING WITH GENERATIVE AI And LMS INTEGRATION
Maximum Marks	4 Marks



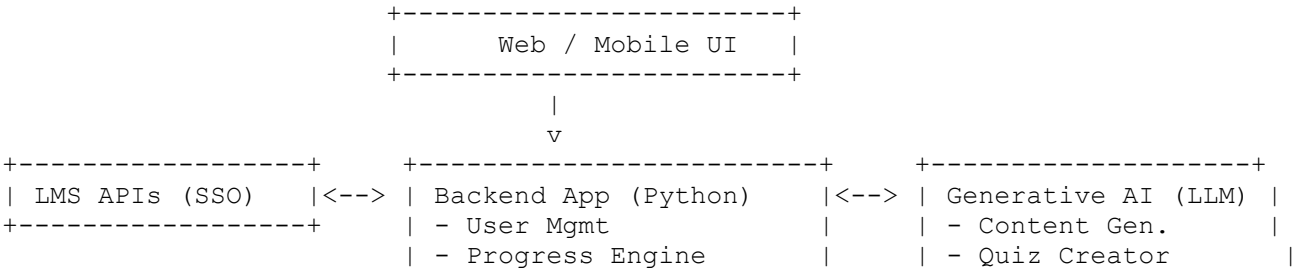
Technical Architecture Overview – Edututor AI

Edututor AI is a scalable, cloud-based learning platform that integrates **Generative AI, Personalized Learning, and LMS Connectivity** using modular architecture. It supports **web/mobile UI, AI-based recommendation engines, LMS APIs, and secure authentication layers**.



System Architecture Diagram (Conceptual Description)

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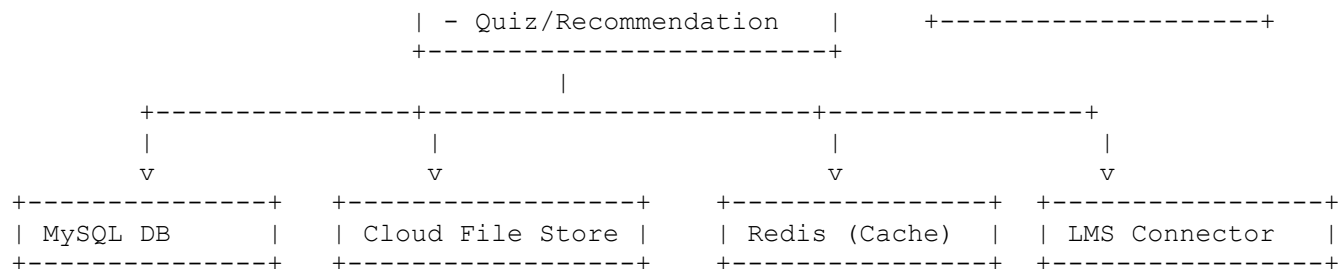


Table-1: Components & Technologies – Edututor AI

S.No	Component	Description	Technology
1	User Interface	Web and mobile app for student, admin, and support interaction	HTML, CSS, React.js, Flutter (Mobile)
2	Application Logic-1	Handles registration, login, dashboard, profile, quiz logic	Python (FastAPI / Django)
3	Application Logic-2	AI-based content generation and recommendation engine	OpenAI GPT / LLaMA / HuggingFace Transformers
4	Application Logic-3	Chat-based tutoring and quiz feedback (optional)	OpenAI Assistant / LLM Chat Layer
5	Database	Stores user profiles, quiz data, learning history	MySQL / PostgreSQL
6	Cloud Database	Cloud-hosted user data and results	IBM Cloudant / AWS RDS
7	File Storage	Stores user uploads (notes, images), AI-generated content	IBM Cloud Object Storage / AWS S3
8	External API-1	LMS API for content sync	Moodle API / Canvas API
9	External API-2	Google OAuth API for user registration/login	Google Identity API
10	Machine Learning Model	Generative model for personalized content and assessments	LLM (GPT / LLaMA) fine-tuned models






S.No	Component	Description	Technology
11	Infrastructure	Hosted on cloud with container orchestration	Kubernetes / Docker / Cloud Foundry

Table-2: Application Characteristics – Edututor AI

S.No	Characteristics	Description	Technology / Methodology
1	Open-Source Frameworks	FastAPI/Django (Python), React.js, Node.js	Python, React
2	Security Implementations	OAuth 2.0, JWT Tokens, HTTPS, IAM, OWASP Top 10 protections	SHA-256, HTTPS, Role-based Auth
3	Scalable Architecture	Modular 3-tier architecture with microservices for AI, LMS, UI, DB	Microservices, Docker, Kubernetes
4	Availability	High availability using cloud load balancers and failover clusters	AWS ELB, IBM Load Balancer, HAProxy
5	Performance	Caching for frequent queries, CDNs for static content, async processing	Redis, CloudFront/CDN, Celery

Summary

The **Edututor AI architecture** is built for:

-  **Scalability** with microservices
-  **AI-enhanced personalization**
-  **Secure LMS integration**
-  **Web and mobile accessibility**
-  **Cloud-first deployment model**