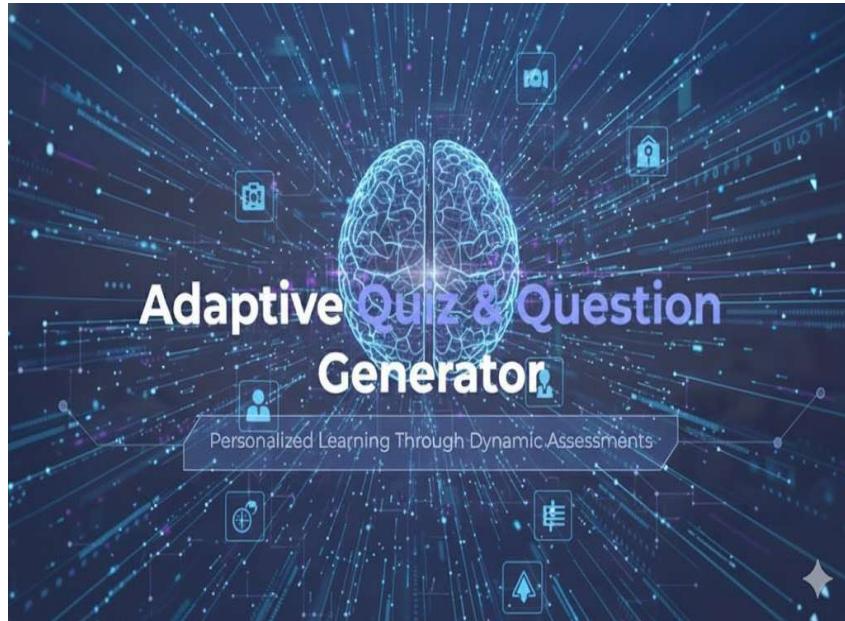


Adaptive Quiz & Question Generator

1. Project Title: Adaptive Quiz & Question Generator



2. Project Statement:

Learning is not one-size-fits-all. Students and self-learners often struggle to find quizzes that align with their current understanding or preferred learning style. Existing quiz tools offer static, generic questions that do not adapt to individual performance or difficulty preferences. This open-source project addresses the need for **personalized, adaptive assessments** by generating dynamic quizzes from any educational content (e.g., Wikipedia articles, open textbooks, course material). The system allows users to select difficulty levels and question types (MCQ, fill-in-the-blank, short answer) and adapts future questions based on performance history. It also aims to support multiple languages and knowledge domains.

3. Outcomes:

- Upload or fetch content from educational sources.
- Dynamically generate diverse question types using NLP.
- Personalized quizzes based on performance history.
- Difficulty-level filtering and adaptive scoring system.
- Admin interface to curate and manage content/question rules.
- Option for multilingual question generation.
- REST API & web interface for testing and public access.
- Dockized deployment ready for cloud hosting.

4. Modules to be Implemented:

Module 1: User & Profile Management

- User registration, login (email/password + OAuth)
- Profile: subjects of interest, difficulty level, performance history

Module 2: Content Ingestion & Parsing

- Uploading or fetching learning material (PDF, URLs, or pasted text)
- NLP-based cleaning and segmentation of text into knowledge chunks

Module 3: Question Generator Engine

- Transformer-based or rule-based generation of:
 - MCQs
 - Fill-in-the-blank
 - True/False
 - Short answers
- Support for Bloom's taxonomy-based difficulty levels

Module 4: Adaptive Learning Engine

- Track performance and update the user's difficulty profile
- Recommend question types based on user interaction

Module 5: Web Interface + Quiz UI

- Clean, responsive quiz interface with result summary
- Adaptive questioning logic based on current user state

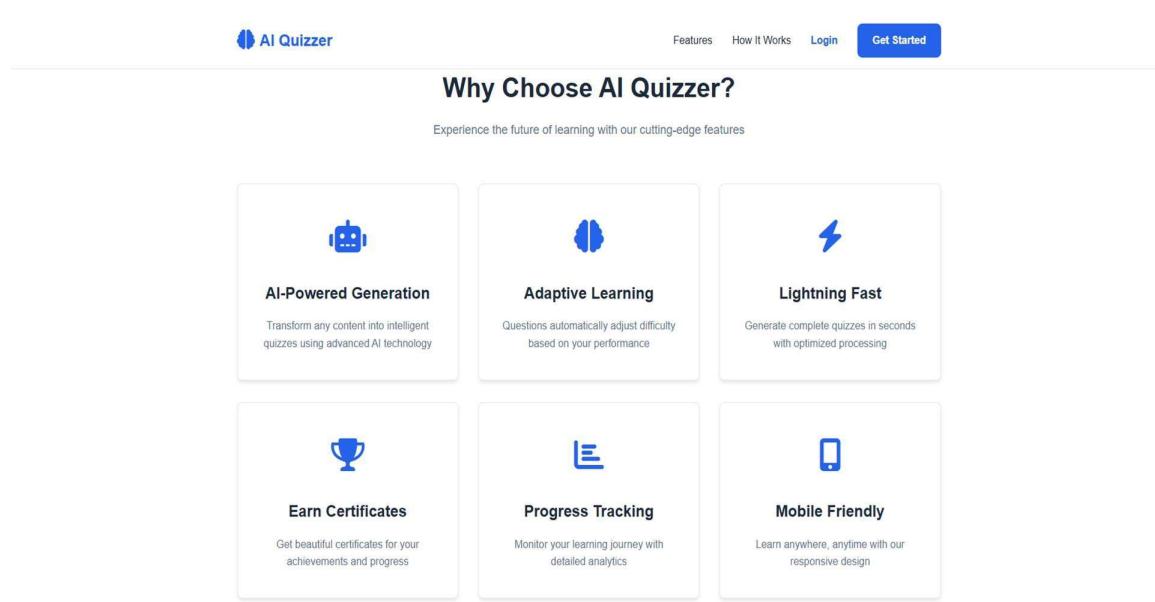
Module 6: Admin Dashboard & Feedback

- Question moderation, user analytics, and flagging inappropriate outputs
- Feedback collection for individual questions

SMART AI QUIZ ADAPTER HOME PAGE:

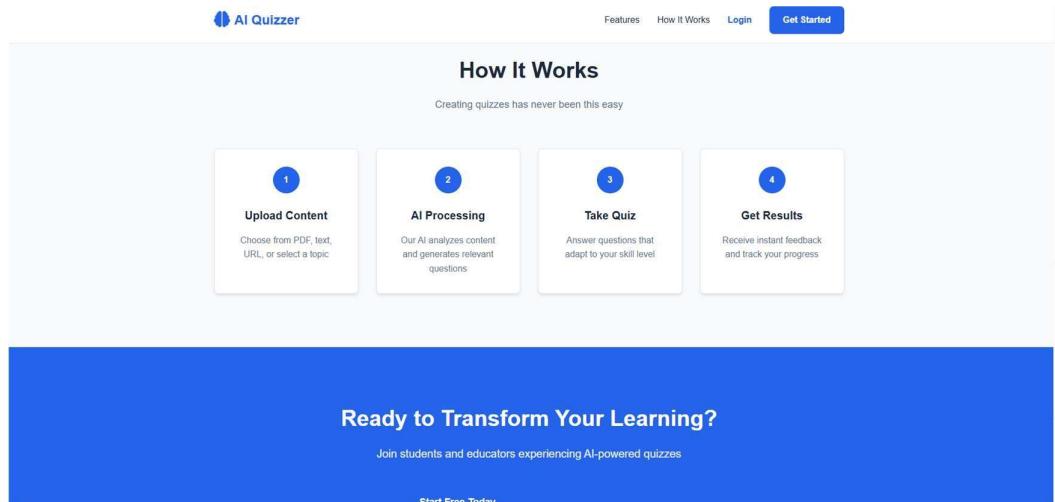


The screenshot shows the homepage of the Smart AI Quiz Adapter. At the top, there's a navigation bar with the "AI Quizzer" logo, "Features", "How It Works", "Login", and a blue "Get Started" button. The main title "Transform Learning with AI-Powered Quizzes" is prominently displayed in large white text on a purple background. Below it, a sub-copy reads: "Create personalized quizzes from any content instantly. Upload PDFs, paste text, or enter URLs. Watch AI work its magic!" Two buttons are present: a blue "Start Creating Quizzes" button and a white "See How It Works" button.



This section is titled "Why Choose AI Quizzer?" and features a sub-copy: "Experience the future of learning with our cutting-edge features". Below this, there are six cards arranged in a 2x3 grid, each representing a feature with an icon and a brief description:

- AI-Powered Generation**: Transform any content into intelligent quizzes using advanced AI technology.
- Adaptive Learning**: Questions automatically adjust difficulty based on your performance.
- Lightning Fast**: Generate complete quizzes in seconds with optimized processing.
- Earn Certificates**: Get beautiful certificates for your achievements and progress.
- Progress Tracking**: Monitor your learning journey with detailed analytics.
- Mobile Friendly**: Learn anywhere, anytime with our responsive design.



The "How It Works" section starts with the heading "How It Works" and the sub-copy: "Creating quizzes has never been this easy". It then outlines a four-step process:

- Upload Content**: Choose from PDF, text, URL, or select a topic.
- AI Processing**: Our AI analyzes content and generates relevant questions.
- Take Quiz**: Answer questions that adapt to your skill level.
- Get Results**: Receive instant feedback and track your progress.

At the bottom of the page is a large blue call-to-action button with the text "Ready to Transform Your Learning?" and the sub-copy: "Join students and educators experiencing AI-powered quizzes". A small "Start Free Today" link is at the very bottom.

5. Week-wise Module Implementation Plan

Milestone 1: Weeks 1–3 — User & Profile System + Content Upload

Goals:

- Secure login & registration (JWT, OAuth)
- User profile with preferred difficulty, subject, and question type
- Content upload module (text, PDF, or URL)

Tools: HTML, CSS, JavaScript, Node.js (Express), SQLite, Google OAuth 2.0, pdf-parse, Gemini API

Deliverables:

- Functional login/signup
- Profile editor UI
- Sample input text loaded & parsed into chunks

REGISTER ,LOGIN & WELCOME MAIL:

The screenshot shows a registration form for 'AI Quizzer'. At the top, it says 'Join Our Learning Community!' and 'Start your personalized learning journey today'. A progress bar indicates '1 Basic Info' and '2 Interests Complete'. The form contains fields for 'Full Name', 'Email Address', 'Create Password', and 'Confirm Password'. Below the form is a link 'Already have an account? Sign in here'. To the right, a sidebar titled 'Why Join Us?' lists four benefits: Personalized Learning (AI adapts to your unique learning style), Earn Achievements (Get certificates and badges for progress), Track Progress (Monitor your improvement over time), and Join Community (Learn with students worldwide).

The screenshot shows the continuation of the registration process. The progress bar now shows '2 Interests Complete'. The section title is 'What are you interested in learning?'. It asks to select favorite subjects (choose at least 2). There are eight options arranged in a grid: Mathematics, Computer Science, Physics, Chemistry, Biology, History, Programming, and Machine Learning. At the bottom are 'Previous' and 'Next' buttons, and a link 'Already have an account? Sign in here'.

localhost:5000/register.html

AI Quizzer
Join Our Learning Community!
Start your personalized learning journey today

1 - 2 - 3
Basic Info Interests Complete

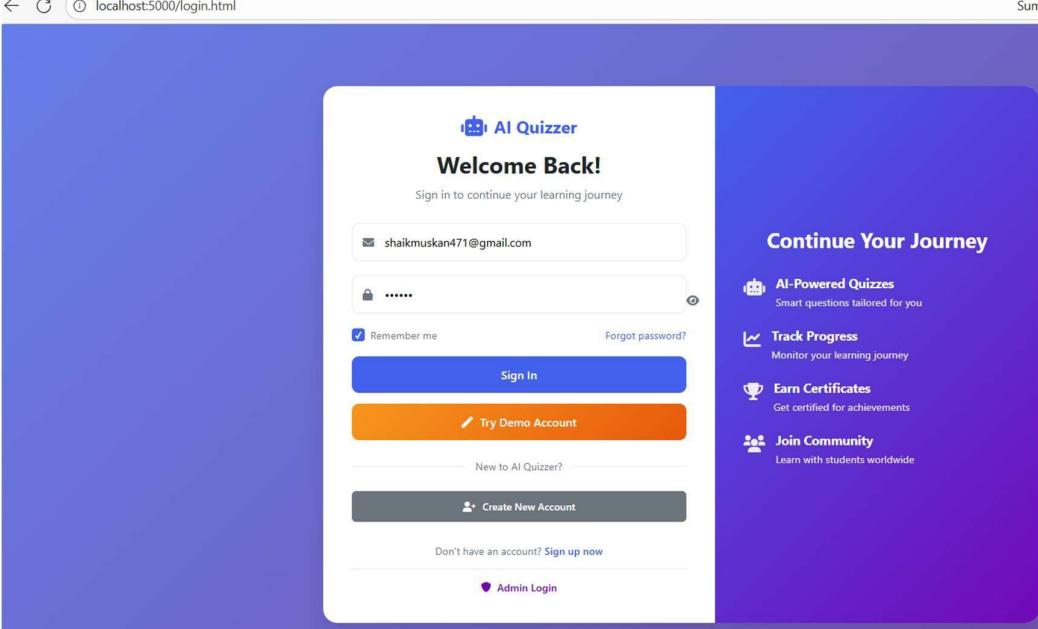
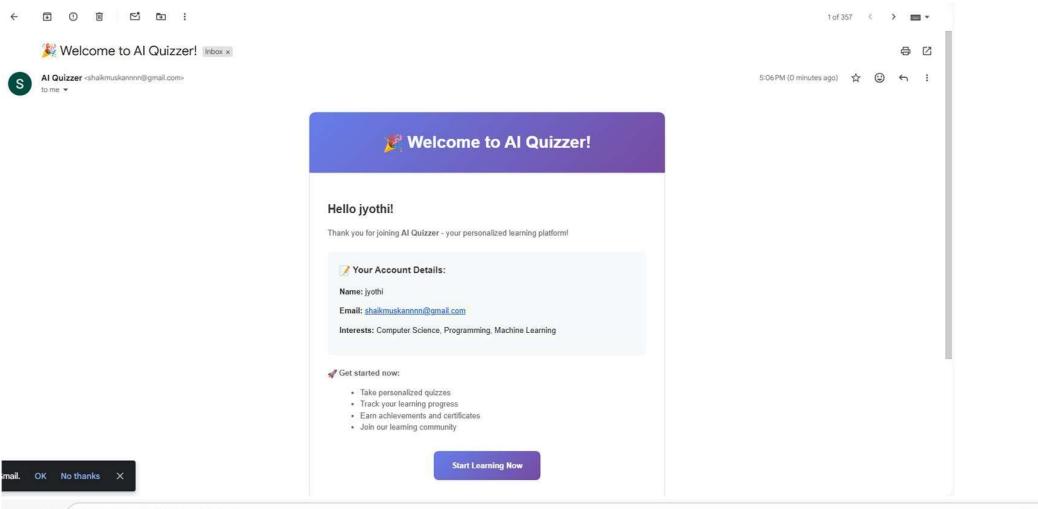
Almost Done!
Review your information and create your account

Name: Jyothi
Email: mikkilinenijyothiswaroopini@gmail.com
Interests: Computer Science, Programming, Machine Learning

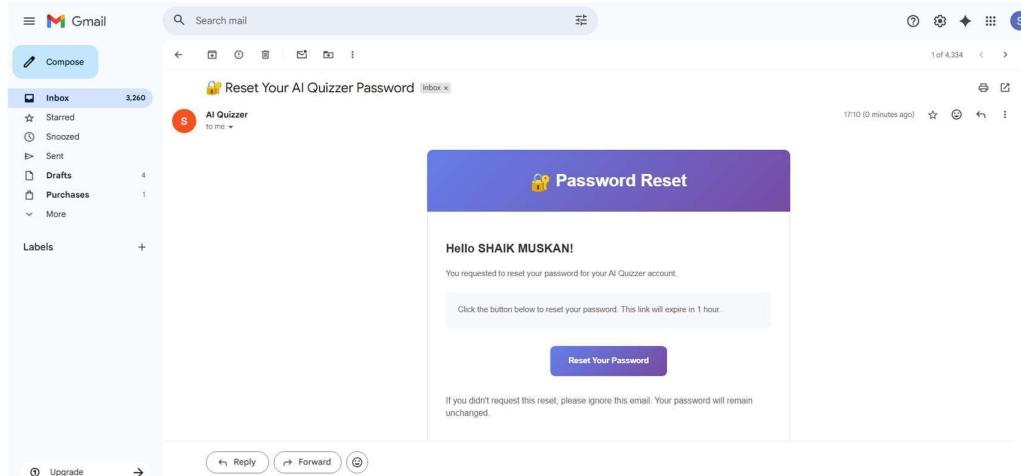
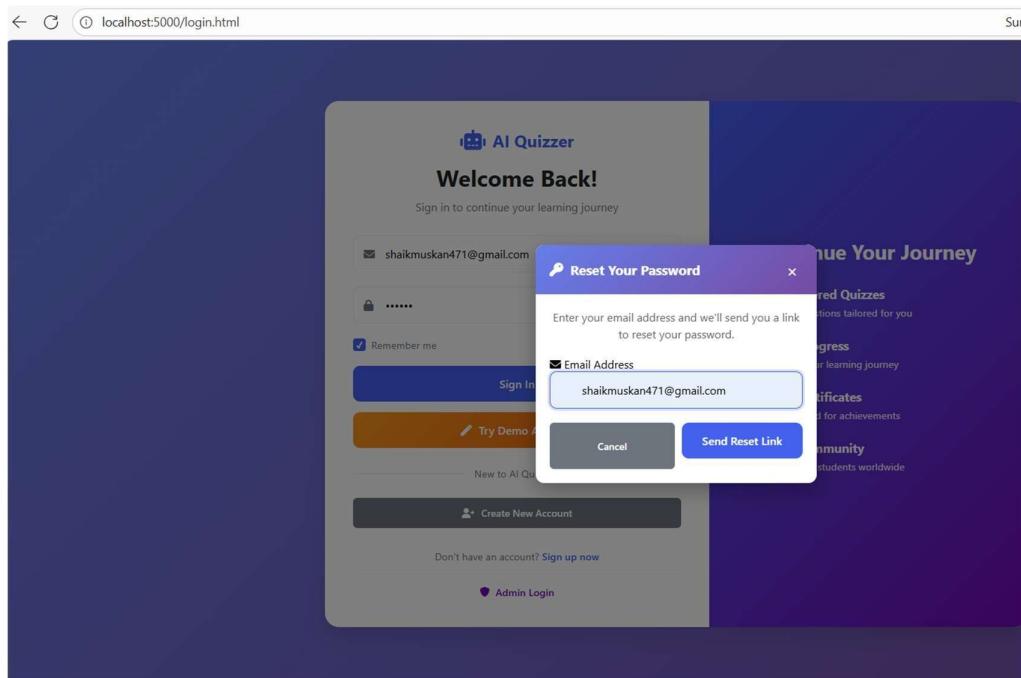
I agree to the [Terms of Service](#) and [Privacy Policy](#)

[← Previous](#) [Create Account](#) [Next →](#)

Already have an account? [Sign in here](#)



RESET PASSWORD:



DASHBOARD:

A screenshot of the AI Quizzzer dashboard. At the top, it says "Welcome back, SHAIK MUSKAN! 🙌". Below that is a section titled "Ready to continue your learning journey?". It features four cards: "18 Total Quizzes", "46% Average Score", "16m Total Time", and "23 Certificates". Under "Quick Actions", there are four buttons: "Generate Quiz", "Quiz History", "View Progress", and "My Certificates". The "Recent Quizzes" section shows a card for "Machine learning" with a score of 100%, taken on Nov 12, 2025, with 10/10 correct and hard difficulty. There are also links to "View All" and "View All Quizzes".

Milestone 2: Weeks 4–5 — Core Quiz Generator Engine

Goals:

Deliverables:

- Working question generator for uploaded material
- At least 3 question types with correct/incorrect distractors
- Auto-label questions by difficulty (based on content complexity)

The screenshot shows the '1. Upload Your Content' step of the AI Quiz Generator. The interface is titled 'AI Quiz Generator' with a sub-instruction 'Create personalized quizzes from any content'. It features four main options: 'Upload PDF' (selected), 'Paste Text', 'Website URL', and 'Select Topic'. Below these is a large dashed box labeled 'Upload PDF File' with instructions to 'Drag & drop your PDF file here or click to browse'. A 'Choose PDF File' button is at the bottom.

The screenshot shows the 'Configure Quiz' step of the AI Quiz Generator. The interface is titled 'AI Quiz Generator' with a sub-instruction 'Create personalized quizzes from any content'. It is divided into several sections: 'Quiz Settings' (Title: 'Under an engaging quiz title.', Number of Questions slider from 1 to 50, Time Limit: '45 seconds per question', Passing Score: '70'), 'Question Types' (checkboxes for 'Multiple Choice', 'True/False', 'Fill in Blanks', 'Short Answer', 'Matching', and 'Dressing'), 'AI Settings' (Starting Difficulty: 'Medium', AI Model: 'Genie Pro (Recommended)', Creative Level slider from 'Archetypal' to 'Original'), 'AI Features' (checkboxes for 'Maintain context awareness', 'Include real-world examples', and 'Generate question variations'), and 'Advanced Settings' (Language: 'English', Bloom's Taxonomy Level: 'Mixed Levels (Recommended)').

localhost:5000/quiz-generator.html

Back to Dashboard Save Template

AI Quiz Generator

Create personalized quizzes from any content

3. Generate & Preview

Review settings and create your quiz.

Quiz Summary

Source: Not selected

Questions: 10 questions

Time Limit: 45s per question

Difficulty: Medium

Passing Score: 70%

Language: English

Estimated Stats

7 min Duration

2 types Variety

75% Coverage

AI Processing Preview

Content Analysis, Concept Mapping, Question Generation, Quality Assurance

Key Topics Identified: 0

Complexity Level: Medium

Content Quality: Good

Generated Questions Preview

Questions will be generated here. AI will create personalized questions based on your content.

Buttons:

- Generate Quiz with AI
- Preview All Questions
- Save Configuration
- Auto-preview after generation (checkbox)
- Save to quiz library (checkbox)

localhost:5000/quiz-generator.html

Summarize Chat

Generating personalized quiz...

AI is analyzing your content and creating tailored questions.

Creating answer options... 70%

Pro Tip
The AI is analyzing key concepts and relationships in your content to create meaningful questions.

Milestone 3: Weeks 6–7 — Adaptive Engine + Quiz Interface

Goals:

- Track user performance & adapt future quizzes
- Quiz UI with live scoring, progress tracking, and question routing

Tools:

HTML, CSS, JavaScript (Quiz UI), Node.js backend, SQLite (performance tracking), Google Gemini API (adaptive logic)

Deliverables:

- Quiz UI linked with the user model
- Adaptation algorithm using accuracy, response time
- Recommendations for next quiz session

The screenshot shows a web-based quiz interface titled "ML - Review". At the top, there are navigation icons and a URL bar showing "localhost:5000/quiz-engine.html". Below the header, a button "Back to Dashboard" and a "Topics: gemini_ai" link are visible. The main content area displays a question: "Which of the following machine learning types involves training models on labeled data to make predictions or classifications?". Four options are listed: A. Unsupervised Learning, B. Reinforcement Learning, C. Supervised Learning, and D. Self-Supervised Learning. The user's answer is marked as "A. Unsupervised Learning", which is highlighted in blue. The correct answer is marked as "C. Supervised Learning", shown in green. Below the question, there is an "Explanation" section containing the text: "Supervised learning uses labeled data to train models for prediction or classification tasks. The labels provide the 'ground truth' for the model to learn from." A red "Incorrect" badge is present above the explanation.

Milestone 4: Week 8 — Admin Panel + Deployment + Documentation

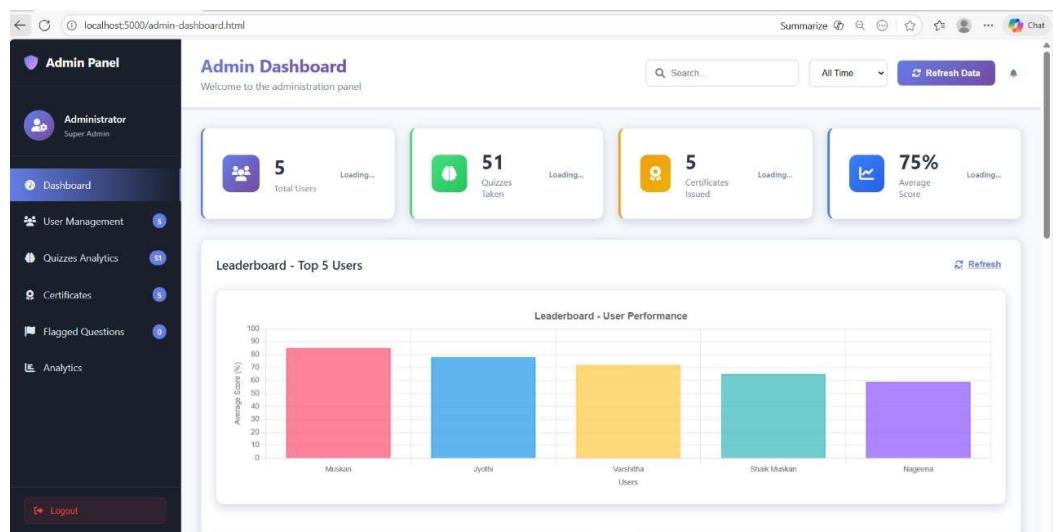
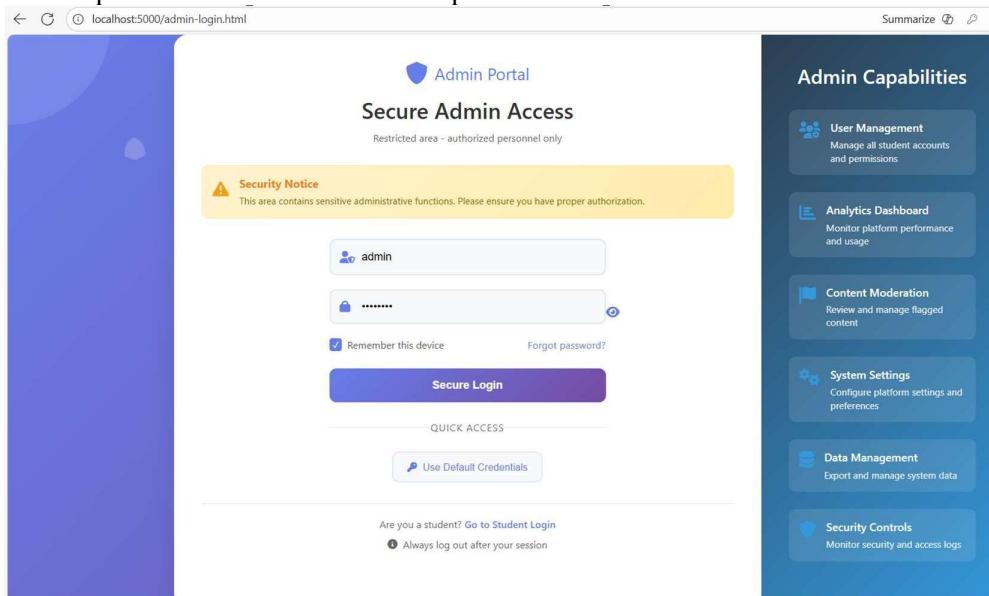
Goals:

- Admin dashboard to view/manage content, review flagged questions
- Collect feedback on questions
- Dockize the project and deploy

Tools: Flask-admin/Dash, Docker, Streamlet Cloud/Hugging Face Spaces

Deliverables:

- Admin dashboard with content moderation
- Deployment on a cloud platform
- Complete documentation & demo presentation

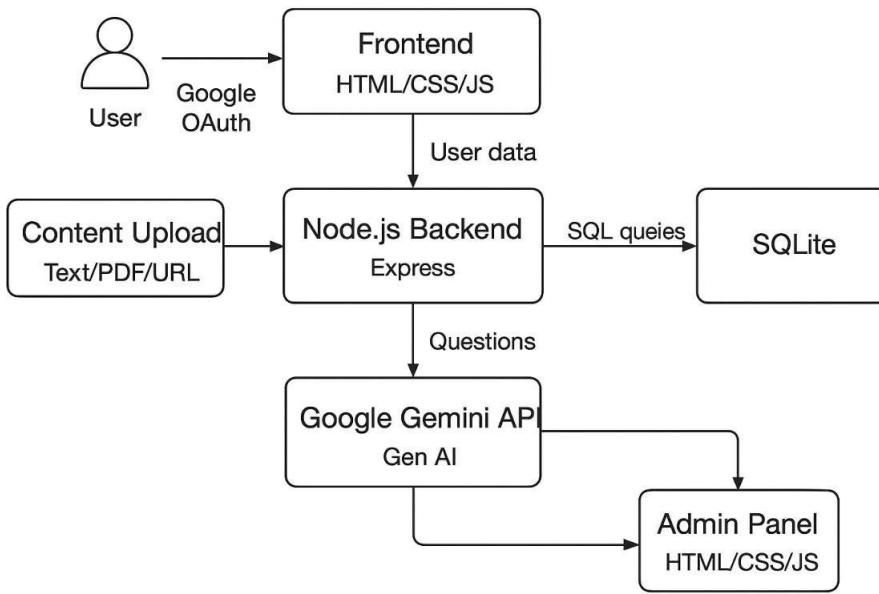


6. Evaluation Criteria

Milestone Success Criteria

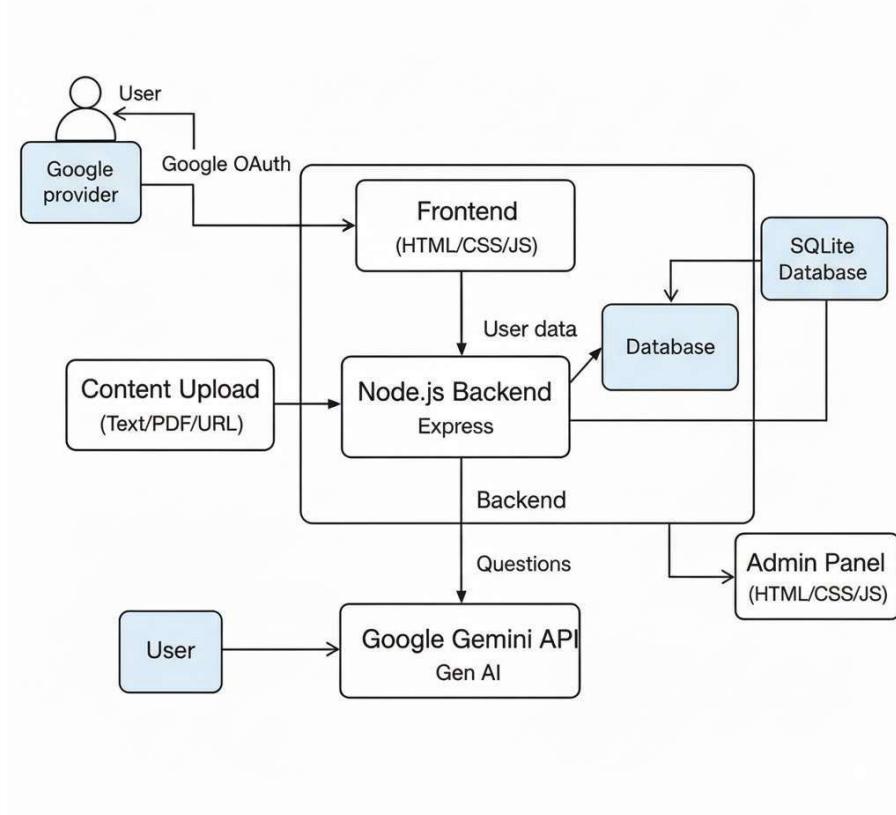
- **Week 3** User registration, profile customization, and content upload functionality
- **Week 5** At least 3 question types generated from uploaded text; difficulty-level tagging.
- **Week 7** Adaptive quiz UI working; performance-based question adjustment working
- **Week 8** Admin panel ready; deployment complete; final documentation delivered.

7. Flow Diagram:

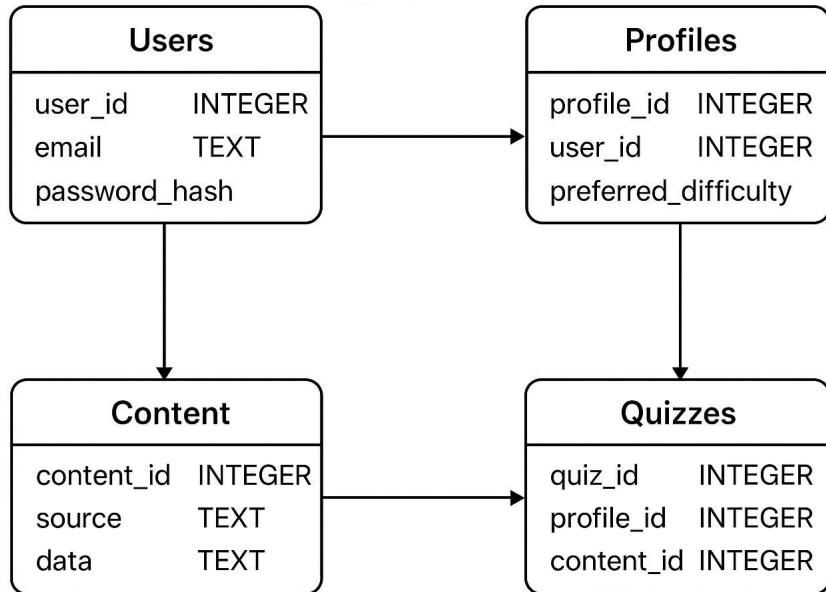


8. Architecture Diagram:

System Architecture



9. Schema Diagram



Conclusion

The *Adaptive Quiz & Question Generator* project aims to transform traditional learning by offering a personalized, dynamic, and intelligent assessment system. By integrating NLP-driven question generation, user-specific difficulty adaptation, multilingual support, and a clean quiz interface, the platform ensures that learners receive quizzes tailored to their abilities and progress. With well-defined modules, week-wise milestones, and a complete deployment plan, this project provides a scalable and innovative solution for modern education. Its open-source nature encourages collaboration, continuous improvement, and widespread accessibility, making it a powerful tool for students, educators, and self-learners alike.