Full Stack Development with MERN - Project Documentation

1. Introduction

Project Title: EduTutorAI - Personalized Learning with Generative AI and LMS Integration Team Members:

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1. Project Overview Purpose:

EduTutorAI aims to simplify the task of quiz creation for educators by using a generative AI backend. The application provides a minimalist interface for educators to generate subject- and grade-specific quizzes within seconds.

Features:

* + AI-generated multiple-choice quizzes
  + Responsive single-page UI
  + Serverless backend using LLM
  + Topic- and grade-specific customization
  + Instant answer key generation

1. Architecture Frontend:
   * Built using React and Next.js
   * Stateless components, form-based input
   * Axios for API calls, Tailwind CSS for styling

Backend:

* + Node.js with Express.js logic embedded in Vercel Serverless Functions
  + Handles routing and request validation

Database:

* + Currently operates without persistent storage
  + Future support for MongoDB

1. Setup Instructions Prerequisites:
   * Node.js (v18+), npm/yarn, MongoDB (optional)

Installation:

git clone

https://github.com/majji2005/-EduTutor-AI-Personalized-Learning-with-Generative-AI-and-LMS-Integ ration-

cd edututorai-clone cd client

npm install cd ../server npm install

Set environment variables in .env: OPENAI\_API\_KEY=your\_api\_key\_here MONGODB\_URI=your\_mongo\_connection\_string (optional)

1. Folder Structure Client:
   * /components - Form and quiz components
   * /pages - Main index page with form
   * /styles - Tailwind and custom CSS

Server:

* + /api/generate - Serverless function for quiz generation
  + /utils - AI integration logic

1. Running the Application Frontend: cd client && npm start

Backend: cd server && npm start (if applicable)

1. API Documentation POST /api/generate Request Body:

{ "topic": "Photosynthesis", "grade": "8th", "numQuestions": 5 } Response:

{ "questions": [{ "question": "...", "options": [...], "answer": "..." }] }

1. Authentication

Current: Not implemented

Planned: JWT, role-based access, session persistence

1. User Interface
   * Clean, responsive interface with form input
   * AI-generated quiz display
2. Testing Manual Testing

Planned Tools: Jest, React Testing Library, Postman

1. Screenshots or Demo

Demo: https://v0-edututuorai-clone.vercel.app/ Screenshots to be inserted

1. Known Issues
   * Occasional AI inconsistency
   * No save/edit functionality
   * No multilingual support
2. Future Enhancements
   * User auth & dashboard
   * Export as PDF/DOCX
   * More question types
   * Translation features
   * Save to DB

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