AI-Powered Programming Quiz Application.

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Context & Objectives

Context:

- Many beginners struggle with long programming tutorials and lectures.

- Platforms like LeetCode focus on advanced problems and can be difficult for beginners.

Objectives:
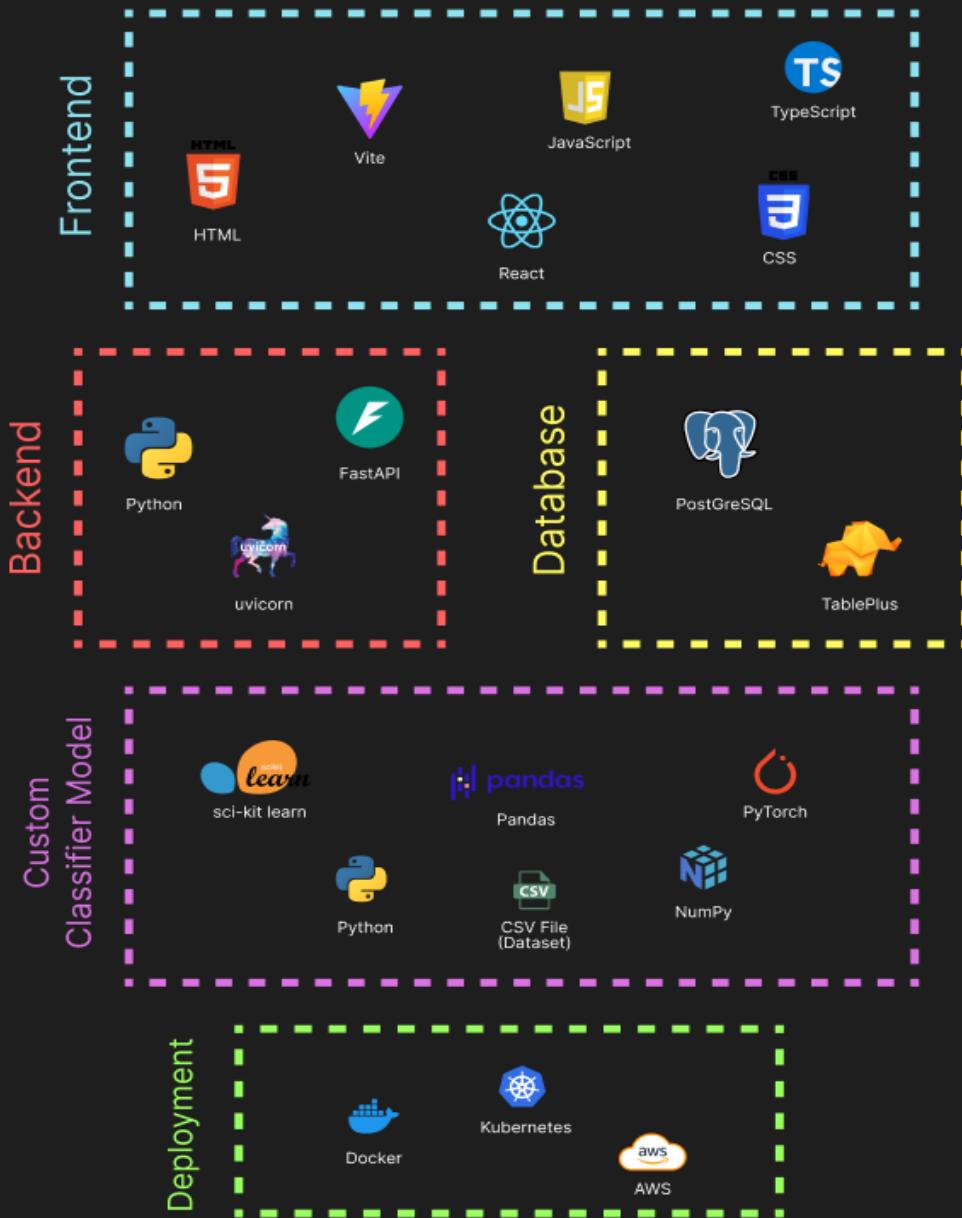
- Create short beginner friendly programming challenges

- Use AI to adapt difficulty and give instant feedback

- Measure success through user progress and completed challenges

Why this is interesting

- I have experienced these difficulties myself and seen them affect other students.
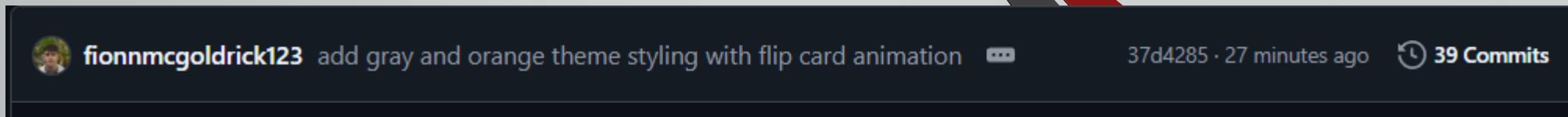
Technologies & System Architecture

- Frontend uses React with TypeScript to build an interactive and reliable user interface. Vite for faster development experience.

- Backend uses Python with FastAPI because it is fast and easy to connect with AI features.

- PostgreSQL is used to store user data and learning progress safely. I had not used it. Supports clear relationships between data such as users lessons and results.

- Python is used for AI logic because it has strong support for machine learning tools.

- Docker is used to make deployment simple and consistent across systems.

Development & Deployment

Current Implemented Features:

- Registering users to PostGreSQL (Set up with TablePlus).

- Logging in validation.

- AI responses from Ollama local models and OpenAI API.

- Quiz Generation and correct / incorrect functionality.

fionnmcgoldrick123 add gray and orange theme styling with flip card animation ⋯   37d4285 · 27 minutes ago   🕐 **39 Commits**

Work Plan