

# Modular AI-Powered Architecture - EduTutor AI

## 1. User Interface (UI)

The frontend where students interact with the system, built using tools like Streamlit.

Milestone: M1

## 2. Backend APIs

Connects the UI with core logic and AI modules. Handles requests, authentication, and business logic.

Milestone: M4

## 3. AI Modules

Central engine housing smart features:

- Content Generator: Uses IBM Watsonx to create learning material.
- Recommendation Engine (M3): Suggests personalized resources.
- Chatbot Assistant (M3): Helps students interact and solve doubts.
- Student Performance Tracker (M4): Tracks learning progress.

## 4. Vector DB

Stores semantic embeddings (e.g., via Pinecone) for personalized content search and recommendations.

## 5. IBM Watsonx

AI/ML services used for NLP, content generation, and prediction.

## 6. Google Classroom Sync

Syncs student data, assignments, and grades with Google Classroom.

## 7. Database & LMS Integration

Stores user accounts, session data, and integrates with LMS platforms.

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### Key Benefits

- Modularity: Independent development and testing
- AI-Centric: Core intelligence is modular
- Interoperability: Easily connects with Watsonx and Google Classroom
- Scalability: New features can be added seamlessly