# Demo 3: Advanced Implementation Features

Code Repo: <https://github.com/YiliZh/quiz680>

## Core AI Models

Using Local LLM instead of OPEN AI to learn the workflow of LLM.

### Core Features

1. Multiple Choice Question Generation
2. True/False Question Generation
3. Essay Question Generation
4. Matching Question Generation
5. Scenario-based Question Generation

### Domain-Specific Features

#### 1. Mathematics Question Generation

* Formula-based questions
* Problem-solving questions
* Proof-based questions

#### 2. Science Question Generation

* Experiment-based questions
* Theory application questions
* Concept understanding questions

#### 3. Language Learning Question Generation

* Grammar questions
* Vocabulary questions
* Reading comprehension questions

A screenshot of a computer program

AI-generated content may be incorrect.

### Technical Features

* Batch Processing
* Error Handling
* Caching System
* API Authentication

### Quality Control Features

* Question Validation
* Answer Verification
* Content Relevance Check
* Format Compliance Check

### Integration Features

* Database Integration
* API Integration
* User Authentication
* Chapter Linking

## Question Generation Implementation

* Hugging Face Transformers (v4.52.4)
* Sentence Transformers (v2.2.2)
* KeyBERT (v0.9.0)
* NLTK (v3.8.1)

### Current Implementation

* Text Analysis
* Uses Sentence Transformers for semantic understanding
* Extracts key concepts using KeyBERT
* Identifies important sentences and relationships

### Question Types

* Multiple Choice
* True/False
* Short Answer

### Answer Generation

* Generates correct answers
* Creates plausible distractors
* Validates answer correctness

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## Review System

**Spaced Repetition Implementation**

* Stage 1: 1 day
* Stage 2: 3 days
* Stage 3: 7 days
* Stage 4: 14 days
* Stage 5: 30 days

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* Database Integration
* API Integration
* User Authentication
* Chapter Linking

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## Screenshots

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