Project Documentation

Project Title

Educational AI Assistant

1. Introduction

Project Title: Educational AI Assistant
Team ID: (Optional)
Team Leader: Your Name & Mail ID
Team Members: (Optional list of collaborators)

2. Project Overview

Purpose: This project provides an AI-powered educational assistant that can explain concepts in detail and generate quiz questions on any topic. It uses IBM Granite 3.2 instruct model to provide high-quality educational content.

Features: Concept Explanation (detailed explanations with examples) Quiz Generator (MCQ, True/False, Short Answer with answers) Interactive web interface using Gradio AI-powered responses using Hugging Face Transformers

3. Architecture

Frontend: Gradio (Python-based UI framework) **Backend:** Hugging Face Transformers with IBM Granite 3.2 instruct model **Model:** ibm-granite/granite-3.2-2b-instruct **Frameworks/Libraries:** PyTorch, Transformers, Gradio

4. Setup Instructions

Prerequisites:
- Python 3.9+
- pip / conda
- GPU with CUDA (optional)

Installation Steps:
git clone <your-repo-link> cd Educational-AI-Assistant python -m venv venv source venv/bin/activate # Windows: venv\Scripts\activate pip install torch gradio transformers

5. Folder Structure

Educational-AI-Assistant/ ■-- app.py # Main application file ■-- requirements.txt # Dependencies ■-- README.md # Project description

6. Running the Application

python app.py Access at: http://localhost:7860
If share=True, a public link will be generated automatically.

7. API Documentation

Functions:
- concept_explanation(concept) → Detailed explanation
- quiz_generator(concept) → 5 quiz questions with answers

Endpoints (via Gradio Tabs):
- /Concept Explanation
- /Quiz Generator

8. Authentication

No authentication required (can be added later with Hugging Face API tokens).

9. User Interface

Tab 1: Concept Explanation → Input: Concept | Output: AI-generated explanation **Tab 2: Quiz Generator** → Input: Topic | Output: Quiz with answers

10. Testing

Tools: Manual testing, Gradio live preview, Hugging Face model tests.
Verification: Tested with various concepts like Neural Networks and Photosynthesis.

11. Screenshots/Demo

Add UI screenshots after running locally.

12. Known Issues

Response time may be slower on CPU Long prompts may be truncated

13. Future Enhancements

Add user authentication Store quizzes in a database Support image-based questions Deploy on cloud (AWS/GCP)