Assignment: Smart AI Research Assistant

Objective:

Build a lightweight **AI-powered assistant** that can:

1. **Answer questions** using uploaded documents (via RAG).
2. **Act autonomously** using tools based on the user's intent (Agentic AI).

Task Overview:

Step 1: Retrieval-Augmented Generation (RAG)

Implement a document-aware assistant that can:

- Accept documents (PDF or TXT — e.g., sustainability reports, research papers).
- Chunk the documents and store them in a **vector database** (e.g., FAISS, Pinecone, ChromaDB).
- On a user query, retrieve the most relevant chunks and pass them as context to a **Large Language Model (LLM)** (e.g., OpenAI, Claude, Hugging Face).
- Generate an accurate and grounded answer using this context.
- Also, The tool should allow users to create multiple projects, each with its own set of PDFs.

Example:

User: "What are the key environmental goals in the 2023 ESG report?"

Assistant: [retrieves relevant section] → [generates summarized response]

Step 2: Agentic AI — Tool-Using Assistant

Make your assistant autonomous and capable of decision-making using a set of tools.

Define the following tools:

- summarize(content): Summarizes a section or full document.
- extract_kpis(content): Extracts KPIs or numeric metrics from the content.
- generate_report(topic, context): Creates a brief report based on retrieved info.
- search_web(query): Fetches recent web results using an API

Add Agentic Behavior:

- The assistant should:

- Parse user intent.
- Decide which tools (if any) to use.
- Fetch relevant content using RAG when needed.
- Chain tool calls together when required.

Example Scenarios:

- *"Summarize the ESG risks in the uploaded report."* → Use RAG + summarize()
- *"Compare carbon emissions between 2022 and 2023 reports."* → Use RAG + extract_kpis()

Deliverables:

1. GitHub repo with:
    - Clean, modular code
    - README.md with setup instructions and feature explanations
    - Optional: Demo video or screenshots
2. Clearly document:
    - How the RAG pipeline works
    - What tools are implemented
    - How agent behavior is handled
3. A simple GUI interface to demonstrate the tool.

A meeting will be scheduled where the above shall be demonstrated.