Thought Process:

This System is designed to automate the extraction, storage, retrieval, and analysis of stock-related announcements from the BSE.

The system follows a structured workflow:

1. **Scraping BSE Announcements**: A web scraper fetches stock updates from the BSE corporate filings API.

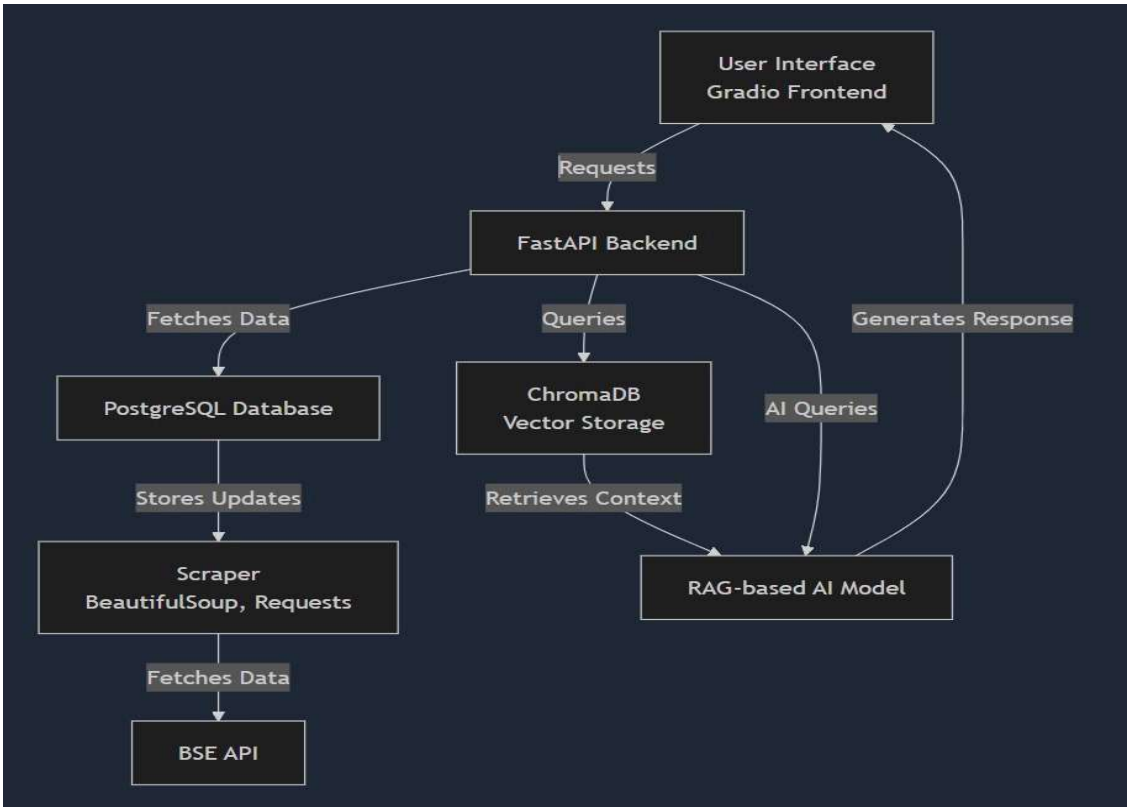
2. **Database Storage**: The extracted data is stored in a PostgreSQL database, maintaining structured records.

3. **API Service**: A FastAPI backend provides structured access to stock updates.

4. **AI-Powered Retrieval (RAG-based Chat)**: A Retrieval-Augmented Generation (RAG) system powered by **LangChain + ChromaDB** allows intelligent querying.

5. **User Interface**: A Gradio-based frontend enables users to search and analyze updates interactively.

Architecture:



Complexities & Shortcomings:

1. **Scalability Concerns:**
    - The scraper currently fetches data at a fixed interval, which may not scale well with thousands of stocks.
    - API requests might get throttled by BSE servers.
2. **Data Consistency Issues:**
    - Ensuring deduplication of updates across different runs.
    - Handling variations in announcement formats and missing metadata.
3. **Latency in AI Responses:**
    - Using RAG for real-time queries may introduce response delays.
    - ChromaDB indexing needs optimization for large-scale retrieval.