Financial Analysis Chatbot Documentation

How It Works

This chatbot is a Python script that provides financial data for Apple, Microsoft, and Tesla. It operates in a logical sequence to provide financial information. The entire process is managed within a main function (financial_chatbot).

1. **Data Management:** The script relies on the **pandas** library to hold the pre-analyzed financial data for Apple, Microsoft, and Tesla in a DataFrame.
2. **Initialization:** When the chatbot starts, it greets the user and prompts them to select one of the three companies. This selection is stored in a variable that is used for all subsequent queries.
3. **Interaction Loop:** The chatbot then enters a continuous while True loop, allowing a user to ask multiple questions without restarting the script.
4. **Query Handling:** Inside the loop, the program waits for user input via the input() function. To handle variations in typing, the user's query is **normalized**: it's converted to all lowercase, leading/trailing whitespace is removed, and punctuation like question marks is stripped out.
5. **Logic and Data Retrieval:** The normalized query is then compared against a series of hard-coded questions using an if/elif/else block. If a match is found, a dedicated helper function (get_latest_value) is called. This function filters the main DataFrame to find the correct data point for the selected company and the requested metric.
6. **Output:** The retrieved value is formatted into a user-friendly sentence (e.g., adding dollar signs or percentage symbols) and printed as the final response. The loop then repeats, ready for the next question.

Predefined Queries

The chatbot can answer the following five questions:

1. What is the most recent total revenue?
2. What is the most recent net income?
3. What is the Debt-to-Asset ratio?
4. What is the Return on Assets?

5. How did net income change last year?

Limitations

This is a simple prototype with several limitations:

- It can only answer the five specific questions listed above.
- The financial data is static and is not updated in real-time.
- It cannot understand synonyms or different phrasings of the questions.