### **AI Chatbot for Financial Analysis: Documentation**

#### **Summary**

This AI chatbot is designed to respond to predefined financial queries for specific companies. It leverages financial data from an Excel file to provide accurate and relevant information based on user inputs. The chatbot is implemented in Python and can handle basic financial inquiries, demonstrating a simple yet functional approach to chatbot development.

#### **Predefined Queries and Responses**

The chatbot can respond to the following predefined financial queries:

1. **What is the total revenue?**
   * Responds with the total revenue for the specified company.
   * Example: "The total revenue for Microsoft is $211915 million."
2. **How has net income changed over the last year?**
   * Responds with the change in net income for the specified company over the last year.
   * Example: "The net income for Microsoft has decreased by $377 million over the last year."
3. **What are the total assets?**
   * Responds with the total assets for the specified company.
   * Example: "The total assets for Microsoft are $1111595 million."
4. **What are the total liabilities?**
   * Responds with the total liabilities for the specified company.
   * Example: "The total liabilities for Microsoft are $595842 million."
5. **What is the EPS (Earnings Per Share)?**
   * Responds with the Earnings Per Share (EPS) for the specified company.
   * Example: "The EPS (Earnings Per Share) for Microsoft is $9.68."

#### **Chatbot Logic**

The chatbot operates based on a simple if-else structure that matches user queries to predefined responses. It extracts and processes financial data from the provided Excel file to generate accurate answers.

#### **Implementation Steps**

1. **Preparation**
   * Load and review the financial data from the Excel file.
   * Set up the Python environment with necessary libraries (pandas for data handling).
2. **Chatbot Design and Data Preparation**
   * Define predefined queries and prepare canned responses using the analyzed financial data.
   * Implement functions to fetch data for each query from the Excel file.
3. **Basic Chatbot Development**
   * Write a Python script that uses if-else statements to match user input to the predefined queries and generate responses.
   * Optionally, set up a simple Flask app for web-based interaction (not included in this prototype).
4. **Demonstration and Testing**
   * Test the chatbot with predefined queries to ensure it responds correctly.
   * Prepare documentation summarizing the chatbot's functionality and limitations.

#### **Limitations**

* **Predefined Queries**: The chatbot can only respond to the predefined queries. It cannot handle custom or more complex queries.
* **Data Dependency**: The chatbot's responses are entirely based on the provided financial data. Any inaccuracies or missing data in the Excel file will affect the chatbot's responses.
* **Simplistic Logic**: The chatbot uses basic if-else logic, which may not be scalable for more complex or numerous queries.
* **Company-specific Responses**: The chatbot currently focuses on one company at a time. For multiple companies, additional handling and logic are required.