**Chatbot Documentation: Financial Data Chatbot**

**Overview:** This financial data chatbot is designed to answer common queries related to financial metrics of companies (Microsoft, Tesla, and Apple) for the years 2022, 2023, and 2024. The chatbot responds to predefined queries such as total revenue, net income, cash flow, total assets, and revenue change, based on a dataset containing financial information for these companies. The chatbot is implemented using Flask and can be accessed via a web interface.

**How It Works:**

1. **User Input:**
   * The user is prompted to provide three pieces of information:
     + **Company**: The company for which they want financial data (Microsoft, Tesla, Apple).
     + **Year**: The year for which they need the financial data (2022, 2023, 2024).
     + **Query**: The specific financial query they wish to ask (e.g., "total revenue", "net income", "revenue change").
2. **Query Processing:**
   * The user’s query is processed in the Flask backend. The chatbot uses string matching to identify the type of query (revenue, net income, assets, etc.) and fetches the corresponding data from the preloaded financial dataset.
3. **Response:**
   * Once the query is identified, the chatbot retrieves the relevant data from the dataset and returns it to the user in a readable format. If the query is not recognized, the chatbot responds with an error message indicating that the query is not understood.

**Predefined Queries:** The chatbot can respond to the following queries:

* **"Total revenue"**: Returns the total revenue for a specified company and year.
* **"Net income"**: Returns the net income for a specified company and year.
* **"Cash flow"**: Returns the cash flow from operating activities for a specified company and year.
* **"Total assets"**: Returns the total assets for a specified company and year.
* **"Revenue change"**: Returns the year-over-year change in total revenue for a specified company.

**Limitations:**

* **Limited Query Handling**: The chatbot can only respond to predefined queries. It does not handle complex or open-ended questions.
* **Dataset Availability**: The chatbot relies on a static dataset. If the data for a particular company or year is missing, the chatbot will return an error or a "data not found" response.
* **Query Ambiguity**: The chatbot might not fully understand or respond accurately to queries that are not explicitly predefined (e.g., "How has revenue changed recently?" instead of "Revenue change").

**Conclusion:** This chatbot provides a simple, interactive way to access financial data and perform basic analysis, focusing on key metrics like revenue, net income, and cash flow. It serves as an introductory tool for financial data analysis, demonstrating how AI can assist in making data accessible and easily interpretable.