**Chatbot Documentation**

**Overview:**

This chatbot is designed to provide specific information related to financial data, particularly focusing on company revenues and net income growth over fiscal years. It operates by recognizing predefined queries and responding with the relevant information.

**Features:**

1. **Revenue and Net Income Growth Calculation:**

* The chatbot computes the revenue growth percentage and net income growth percentage for each company based on historical financial data.
* It uses `pandas` to load data, calculate growth using percentage change (`pct\_change`), and display the results in a tabular format.

1. **Predefined Queries:**

* The chatbot recognizes a set of predefined queries and provides answers based on hardcoded responses. Examples include:
* Asking about the total revenue for specific companies in particular years.
* Asking how net income has changed over a specified year.
* Simple conversational queries like "Hi" or "How are you?".

1. **Growth Metrics Table:**

* The chatbot displays a growth metrics table with columns such as Company, Fiscal Year, Revenue Growth (%), and Net Income Growth (%).
* This table is dynamically generated using the data from a CSV file.

1. **Simple Interactivity:**

* The chatbot takes user input and compares it with predefined queries.
* Based on the query, it returns relevant information or a default response for unsupported queries.

**Code Breakdown:**

1. **Libraries:**

* “pandas”: Used for data manipulation and calculation of growth percentages.
* “matplotlib.pyplot”: Imported for potential future use in visualizations, though not actively used in the current implementation.

1. **Data Handling:**

* The data is loaded from a CSV file (`EGDAR.csv`) containing company financial information such as `Total Revenue` and `Net Income`.
* The chatbot calculates the revenue and net income growth based on year-over-year changes for each company.

1. **Growth Calculation:**

* ‘Revenue Growth (%)’ and ‘Net Income Growth (%)’ are computed using ‘pct\_change()’ from ‘pandas’ and displayed in the growth table.

1. **Function ‘simple\_chatbot’:**

* Takes user input and compares it with predefined queries.
* Returns a hardcoded response based on the matched query or a default message if no match is found.

1. **Interactive Input:**

* The chatbot prompts the user to enter a query (`input("Enter your query: ")`), processes it, and provides a response accordingly.

**Example Usage:**

* User enters the query: "What is the total revenue for Microsoft in year 2023?"
* The chatbot responds: "The total revenue of Microsoft in year 2023 is 211,915 million dollars."

**Limitations:**

* The chatbot currently only supports predefined queries, limiting its flexibility to answer questions outside of the predefined set.
* It does not have the capability to process natural language queries dynamically or update the data in real-time.

**Future Improvements:**

* Enhance the chatbot to handle more dynamic and varied queries.
* Integrate a natural language processing (NLP) model to understand more complex or vague queries.
* Add data fetching and updating features to provide up-to-date information without hardcoding responses.