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Chatbot Documentation

GitHub Repository

Overview

This simple chatbot was developed by **Elton S** as par of the BCG GenAI job simulation at Forage. It aims at assisting with financial inquiries at BCG (Boston Consulting Group) by providing responses to user queries related to financial data.

Getting Star ed

About Me

Elton S

I'm a passionate data professional with a strong interest in programming, machine learning, and artificial intelligence.

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Introduction

The chatbot serves as a user-friendly inter ace for individuals seeking information about various f nancial metrics, such as revenue, income, assets, liabilities, and cash flow.

Feature improvements Over Original Project Requirements

1. Enhanced User Inter ace

- Dynamic Greeting: Personalized greetings based on the time of day improve user engagement.
- Interactive Input: Users can input queries directly, streamlining the interaction.
- Enhanced Formatting and Visual Appeal: The chatbot is formatted in a way that enhances visual appeal and readability

2. Natural Language Processing

- Flexible Query Handling: The chatbot understands a wider range of natural language queries.
- Keyword Recognition: Maps user inquiries to specif c f nancial metrics for intuitive interactions.

3. Enhanced Formatting and Visual Appeal The chatbot's responses are formatted in a way that enhances visual appeal and readability
4. Case-Insensitive Comparisons The chatbot processes user queries in a case-insensitive manner making it flexible and user-friendly.
5. Data Adaptability: The chatbot can be easily adapted to work with different datasets, allowing for flexibility and reusability.

Limitations

1. The chatbot is limited to the data available in the CSV file.
2. The chatbot does not understand complex or ambiguous queries.

Setup

This project can be executed using any integrated development environment (IDE) that suppor s Python and Jupyter Notebook.
Visual Studio Code is recommended.

Basic Requirements:

- Python
- Jupyter Notebook
- pandas

VS Code Setup

1. Install Visual Studio Code
2. Install Python from the Microsoft Store
3. Install the necessary extensions
   - Python
   - Jupyte
4. Install Required Libraries using pip
   - Press `Ctrl+`` (backtick) or `Cmd+`` (backtick) to open the integrated terminal.
   - Install pandas using the following code:

   ```
   python pip install pandas
   ```

   - To check if the package was installed successfully, you can run the following command:

   ```
   python pip show pandas
   ```

   This will display information about the installed pandas package, including its version and location.
5. Add the chatbot folder into the VS Code Explorer (`Ctrl+E`).

Data Extraction & Analysis with Jupyter

This Python code analyzes the financial performance of Microsoft, Tesla, and Apple using data manually extracted from the SEC's EDGAR database. The data is entered into Microsoft Excel and exported as a CSV file The analysis covers a period of three years (2021, 2022 & 2023, subject to data availability).

Executing the Code

1 . Ensure that the **Jupyter Notebook** Extension and the **pandas library** are installed.

2. Open and execute the " **Task 1 - Data Extraction and Analysis.ipynb** " file.

3. Click on the `Run All` button.

What the Code Does

1. Extracts data from the `extracted_data.csv` file.

2. Year-over-Year Growth Rates:

- Calculates the percentage change in key financial metrics (revenue, income, assets, liabilities, cash flow).
- Rounds growth rates to two decimal places.

3. Groups data by company and calculates average growth rates for each metric over the period

4. Exports processed data and summary statistics to CSV f les.

- The **Year-by-Year Growth Rate** data is extracted to `final_data.csv`
- The **Average Growth Rate** data is extracted to `final_summary.csv`

Chatbot

This chatbot is designed to assist you with financial inquiries based on the data provided in the final_data.csv and final_summary.csv.

Executing the Code

1. Ensure you have Jupyter Python libraries like Pandas installed. . Open and execute the " **Task 1 - Data Extraction and Analysis.ipynb** " file.
2. Press `F5` and click on " ***Python File*** *Debug the currently active Python file* " in the dropdown menu to star the chatbot.

Chatbot Syntax

The chatbot can understand queries in a flexible format, such as " `[Metric]` `[Company]` `[Year]` " or any variation of this order.

Mandatory Information:

- Metric: The financial metric you're interested in (revenue, income, assets, liabilities, cash flow).
- Company or Year: At least one of these must be specified.

Example queries:

Display the total income for Tesla across all available years:

```
income tesla
```

Display the total assets for all companies in the year 2022:

```
asset 2022
```

Display the total revenue for Microsoft in the year 2023:

```
revenue microsoft 2023
```