```
import pandas as pd
import ipywidgets as widgets
from IPython.display import display

# Load the CSV file
df = pd.read_csv("C:\\Users\\user\\Desktop\\k10\\
financial_data.csv")

# Define available metrics
available_metrics = [
    'Total Revenue', 'Net Income', 'Total Assets', 'Total
Liabilities',
    'Cash Flow Operating Activities', 'Revenue Growth (%)', 'Net
Income Growth (%)',
    'ROE (%)', 'ROA (%)', 'Net Income Variance'
]

# Create widgets
metric_dropdown = widgets.Dropdown(
    options=available_metrics,
    description='Metric:',
)

company_dropdown = widgets.Dropdown(
    options=['Apple', 'Microsoft', 'Tesla'],
    description='Company:',
)

year_text = widgets.Text(
    description='Year:',
    placeholder='e.g., 2023'
)

output = widgets.Output()

def on_button_click(b):
    with output:
        metric = metric_dropdown.value
        company = company_dropdown.value
        year = year_text.value

        if not year.isdigit() or len(year) != 4:
            print("Invalid year. Please enter a valid year in the
format YYYY.")
            return

        result = df[(df['Company'] == company) & (df['Year'] ==
int(year))]

        if not result.empty:
            metric_value = result[metric].values[0]
            print(f"The {metric} for {company} in {year} is
{metric_value:,.2f}.")
        else:
```

```
            print(f"No data found for {company} in {year}.")

button = widgets.Button(description="Get Data")
button.on_click(on_button_click)

display(metric_dropdown, company_dropdown, year_text, button,
output)
```


```
{"model_id":"83a170804b344da8bfadfdb0398a45c1","version_major":2,"ve
rsion_minor":0}

{"model_id":"2926a44ddb2a4d5b808c4f8b0f3ae0c8","version_major":2,"ve
rsion_minor":0}

{"model_id":"c611d0b9ef8d40f183ca36d77697adc1","version_major":2,"ve
rsion_minor":0}

{"model_id":"1b6cb1a5ac4d4c7b85cd66194e148699","version_major":2,"ve
rsion_minor":0}

{"model_id":"b0455650e6e74a16a9e2c7b31c7211fa","version_major":2,"ve
rsion_minor":0}
```


Chatbot Documentation

Introduction

This document provides a summary of the chatbot developed for retrieving financial metrics from a CSV file. The chatbot is designed to answer queries related to various financial metrics, allowing users to get specific data based on their input.

Installation and Setup

To set up the environment for the chatbot, follow these installation steps:

1. **Install Pandas:** Pandas is used for data manipulation and analysis. Install it using the following command:

```
!pip install pandas
```

2. **Install ipywidgets:** `ipywidgets` is used to create interactive widgets in Jupyter Notebook, enhancing the user interface of the chatbot. Install it using:

```
!pip install ipywidgets
```

   After installation, enable widgets for Jupyter by running:

```
!jupyter nbextension enable --py widgetsnbextension
```

How It Works

1. **Starting the Chatbot:** When the chatbot is initiated, it prompts the user to select a financial metric from a predefined list.
2. **Selecting Financial Metrics:** The user is required to choose a metric from the following options:
   - Total Revenue
   - Net Income
   - Total Assets
   - Total Liabilities
   - Cash Flow Operating Activities
   - Revenue Growth (%)
   - Net Income Growth (%)
   - ROE (%)
   - ROA (%)
   - Net Income Variance
3. **Providing Company and Year Information:** After selecting a metric, the user is asked to specify the company name and the year for which they want the data.
4. **Retrieving and Displaying Data:** The chatbot retrieves the requested data from the CSV file and displays it based on the user's query.

Example Interaction

Here is an example of how the chatbot functions:

- **User Input:** "What is the total revenue for Apple in 2023?"
  - **Response:** "The Total Revenue for Apple in 2023 is 245,122,000,000."
- **User Input:** "What is the Net Income for Microsoft in 2024?"
  - **Response:** "The Net Income for Microsoft in 2024 is 120,000,000,000."

Predefined Queries

The chatbot supports the following queries:

- **Total Revenue:** Total income generated by the company.
- **Net Income:** Profit after all expenses.
- **Total Assets:** Total value of assets owned by the company.
- **Total Liabilities:** Total amount of debts owed by the company.
- **Cash Flow Operating Activities:** Cash generated from the company's operations.
- **Revenue Growth (%):** Percentage increase in revenue.
- **Net Income Growth (%):** Percentage increase in net income.
- **ROE (%):** Return on Equity, measure of profitability relative to shareholder equity.
- **ROA (%):** Return on Assets, measure of profitability relative to total assets.
- **Net Income Variance:** Difference between actual and expected net income.

Limitations

- The chatbot only supports the predefined metrics listed above.

- It does not handle complex input errors beyond basic validation (e.g., invalid metric names).
- The chatbot assumes the CSV file is formatted correctly and contains all necessary data.

Conclusion

This documentation provides a comprehensive overview of the chatbot's setup, functionality, and limitations. The chatbot offers a simple yet effective way to retrieve and view financial metrics using an interactive interface created with `ipywidgets`.