# Setup Guide for Sentiment-Aware Chatbot

## Introduction

This setup guide provides step-by-step instructions to configure and run a sentiment-aware chatbot built with LangChain, Google Generative AI, and Hugging Face Transformers. The chatbot detects user sentiment, adapts its tone accordingly, and maintains conversation context using memory. The project is implemented in a single Python script (`main.py`).

## Prerequisites

Before setting up the project, ensure the following requirements are met:

- **Python 3.8 or higher**: Ensure Python is installed on your system.
- **pip**: Python package manager for installing dependencies.
- A **Google API Key** for accessing the `gemini-1.5-flash` model via Google Generative AI.
- A compatible operating system (Windows, macOS, or Linux).

## Installation Steps

Follow these steps to set up the project environment:

### Step 1: Save the Code

Save the provided code in a file named `main.py` in your working directory. Ensure the script includes the sentiment-aware chatbot implementation using LangChain, Google Generative AI, and Hugging Face Transformers.

### Step 2: Create a Virtual Environment

It is recommended to use a virtual environment to manage dependencies:

```
python -m venv venv
source venv/bin/activate  % On Windows: venv\Scripts\activate
```

### Step 3: Install Required Packages

Install the necessary Python packages using `pip`:

```
pip install python-dotenv transformers langchain langchain-google-genai torch
```

The required packages are:

- `python-dotenv`: For loading environment variables from a `.env` file.
- `transformers`: For the sentiment analysis model (`cardiffnlp/twitter-roberta-base-sentime`
- `langchain`: For memory management and prompt templates.
- `langchain-google-genai`: For integrating Google Generative AI (`gemini-1.5-flash` model).
- `torch`: Required by the Transformers library for model inference.

### Step 4: Configure Google API Key

1. Obtain a Google API Key for Google Generative AI from Google Maker Suite.
2. Create a `.env` file in the same directory as `main.py`.
3. Add the following line to the `.env` file:

```
GOOGLE_API_KEY=your_api_key_here
```

Replace `your`$_a pi_k ey_h$`erewithyouractualAPIkey`.

### Step 5: Verify Installation

To verify that the packages are installed correctly, run the following command in Python:

```
python -c "import dotenv, transformers, langchain, langchain_google_genai, torch; pri
```

If no errors are displayed, the environment is set up correctly.

## Running the Application

To run the chatbot:

1. Ensure the virtual environment is activated:

```
source venv/bin/activate  % On Windows: venv\Scripts\activate
```

2. Run the script:

```
python main.py
```

3. Interact with the chatbot:
    - Enter a message (e.g., "I'm so excited!" or "I'm having a terrible day").
    - The bot will respond with a tone adapted to the detected sentiment.
    - View the conversation history after each response.
    - Type `exit` to quit the chatbot.

# Troubleshooting

- **ModuleNotFoundError**: Ensure all required packages are installed in the active virtual environment.
- **API Key Error**: Verify that the $\texttt{GOOGLE}_{A}PI_{K}EY is correctly set in the \texttt{.env} file.$ **Python version** $Confirm Python 3.8 or higher is used by running \texttt{python -version}.$
- **Transformers model download issues**: Ensure a stable internet connection, as the sentiment analysis model is downloaded on first use.

For additional help, refer to the official documentation for LangChain, Transformers, and Google Cloud APIs.