

LLM-Agentic-Thinking

A multi-level smart assistant built in Python using the Gemini API, designed to demonstrate structured reasoning, tool-based task solving, and basic agentic behavior across increasing complexity.

Project Overview

This project implements a command-line AI assistant in three progressive levels:

- **Level 1:** Gemini-powered assistant with structured, step-by-step explanations.
 - **Level 2:** Adds a calculator tool to handle arithmetic queries.
 - **Level 3:** Agentic assistant capable of using tools (calculator, translator) and reasoning over multi-step tasks.
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Features by Level

Level 1 – Step-by-Step Gemini Assistant

- Uses Gemini Pro to answer factual questions.
- Enforces a numbered, step-by-step explanation.
- Refuses to solve math problems directly.

Example Prompts:

- "What are the colors in a rainbow?"
- "Why is gravity important?"
- "What is $15 + 27$?" → Responds with a suggestion to use a calculator

Level 2 – Gemini + Calculator Tool

- Detects arithmetic intent in user input.
- Extracts expressions like " $45 + 30$ " or "12 times 7".
- Performs math using a custom `calculator_tool.py` script.
- Uses Gemini for non-math queries.

Example Prompts:

- "Add 45 and 30"
- "What is 12 times 7?"
- "Explain how plants perform photosynthesis"

Level 3 – Full Agentic Assistant with Tool Chaining

- Understands and handles multiple tasks in one prompt.
- Dynamically selects tools based on detected intent:
- `calculator_tool.py` for math
- `translation_tool.py` for English → German translation
- Gemini API for factual reasoning
- Maintains a memory of actions performed per query.

Example Prompts:

- "Translate 'Good Morning' to German and then add 20 and 35"
- "What is the capital of Italy and multiply 6 by 4"
- "Translate 'Have a nice day' and tell me why the sky is blue"

Setup Instructions

1. Clone the Repository

```
git clone https://github.com/JoanaPearl-019/LLM.git
```

2. Install Dependencies

```
pip install google-generativeai
```

3. API Key Setup

You need a Gemini API key from [Google AI Studio](https://aistudio.google.com/). Set the API key as an environment variable:

On Windows (Command Prompt):

```
set GEMINI_API_KEY=your-api-key-here
```

On macOS/Linux:

```
export GEMINI_API_KEY=your-api-key-here
```

Running the Assistant

Level 1

```
python level1_chatbot.py
```

Level 2

```
python level2_chatbot.py
```

Level 3

```
python full_agent.py
```

Project Structure

```
LLM-Agentic-Thinking/  
├── calculator_tool.py  
├── full history logs.py  
├── full_agent.py  
├── level1_chatbot.py  
├── level_interactions_logs.txt  
├── level2_chatbot.py  
├── level2_interactions.txt  
├── translator_tool.py  
└── README.md
```

Contact

For questions or contributions, please open an issue or contact the repository maintainer.