Linux AI Help Chat using Groq API

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Subject: Ethical Hacking
Assignment: Linux AI Help Chat using Groq API
Repository: https://github.com/Aksa-006/EH_sem5_2025_Notes.git
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➢ Objective

To create a simple Python-based AI assistant that helps beginners understand Linux commands in plain English, making command-line learning more accessible and self-driven for those entering the cybersecurity field.

➢ Tools & Technologies

- Python (for scripting)
- Groq API (`llama-3.3-70b-versatile` model)
- Command Line Interface (CLI)
- GitHub (version control)

➢ Working Mechanism

1. User Input
   The program runs in a CLI, continuously prompting the user to enter Linux commands using Python's input() function.

2. API Interaction
   The command is sent to Groq's API via a POST request. The payload includes the model and a request to explain the command in beginner-friendly English.

3. AI Response
   The model, acting as a Linux tutor, returns a clear, multi-sentence explanation with syntax, usage, and tips—avoiding technical jargon.

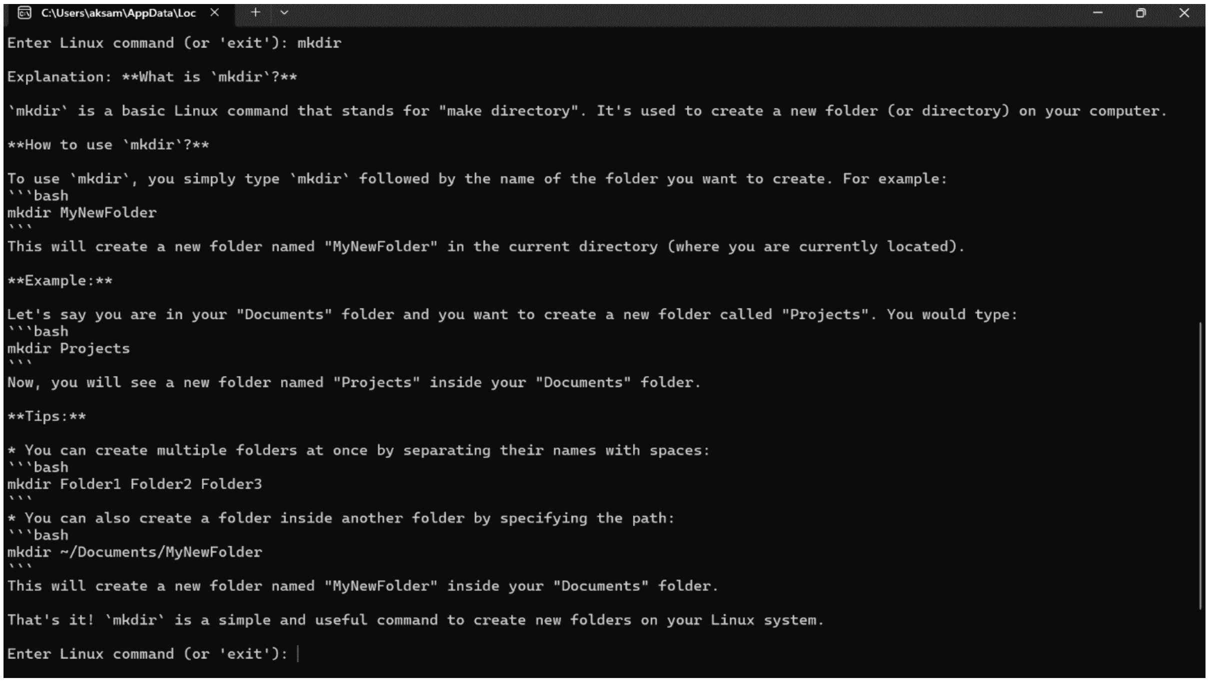
4. Display Output
   The explanation is parsed from the JSON response and displayed in the terminal.

5. Loop Until Exit
   The loop continues until the user types "exit", enabling continuous command exploration.

➢ Python Code

```
import requests

GROQ_API_KEY = "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"

def explain(cmd):

    r = requests.post("https://api.groq.com/openai/v1/chat/completions",

        headers={"Authorization": f"Bearer {GROQ_API_KEY}", "Content-Type": "application/json"},

        json={"model": "llama-3.3-70b-versatile", "messages": [{"role": "user", "content": f"Explain the Linux command '{cmd}' in simple English for beginners."}]})

    return r.json().get("choices", [{}])[0].get("message", {}).get("content", "Invalid response.")

while True:

    cmd = input("Enter Linux command (or 'exit'): ")

    if cmd.lower() == "exit": break

    print("\nExplanation:", explain(cmd), "\n")
```

➢ OUTPUT



~~~
Enter Linux command (or 'exit'): mkdir

Explanation: **What is `mkdir`?**

`mkdir` is a basic Linux command that stands for "make directory". It's used to create a new folder (or directory) on your computer.

**How to use `mkdir`?**

To use `mkdir`, you simply type `mkdir` followed by the name of the folder you want to create. For example:
```bash
mkdir MyNewFolder
~~~
This will create a new folder named "MyNewFolder" in the current directory (where you are currently located).

Example:

Let's say you are in your "Documents" folder and you want to create a new folder called "Projects". You would type:
```bash
mkdir Projects
```
Now, you will see a new folder named "Projects" inside your "Documents" folder.

Tips:

* You can create multiple folders at once by separating their names with spaces:
```bash
mkdir Folder1 Folder2 Folder3
```
* You can also create a folder inside another folder by specifying the path:
```bash
mkdir ~/Documents/MyNewFolder
```
This will create a new folder named "MyNewFolder" inside your "Documents" folder.

That's it! `mkdir` is a simple and useful command to create new folders on your Linux system.

Enter Linux command (or 'exit'):
```

➢ Summary of Features

- Accepts user input via terminal
- Sends query to Groq API
- Receives and formats response
- Displays simple explanation
- Runs in a continuous loop

➢ AI’s Role in Cybersecurity Education

AI is revolutionizing cybersecurity education by breaking down technical barriers. This assistant offers:

- Personalized, real-time command explanations
- Improved confidence and understanding for beginners
- Active learning and independent problem-solving
- Accessibility with minimal setup
- Integration potential with cybersecurity tools and platforms

➢ Conclusion

This project illustrates how a simple Python chatbot can demystify Linux commands and empower new learners. With the help of Groq’s advanced language model, it provides educational value in a compact, accessible format. Such AI-driven tools can democratize learning and make cybersecurity more inclusive and engaging for future professionals.
```