Docker CLI Commands

Building the Docker Image

```
docker build -t langgraph-agent-app .
```

Explanation:

- docker build: This command is used to create a Docker image from a Dockerfile.
- -t langgraph-agent-app: The -t flag is used to tag the image with a name (langgraph-agent-app). This is how you reference the image later. The tag (latest) is optional if not provided, but you can use it as a convention (i.e., langgraph-agent-app:latest).
- .: The period (.) refers to the current directory. It tells Docker to look for the Dockerfile in the current directory to build the image.

Running the Docker Container with Environment Variables

```
docker run -d -p 8000:8000 -p 8501:8501 -e GROQ_API_KEY=your_groq_api_key -e TAVILY_API_KEY=your_tavily_api_key --name langgraph-agent-container langgraph-agent-app
```

Explanation:

- docker run: This command is used to create and start a new container from a Docker image.
- -d: The detached mode flag (-d) means that the container will run in the background, allowing you to continue using your terminal.
- -p 8000:8000: The -p flag maps the container's port (8000, where FastAPI is running) to the same port on your local machine. This makes the FastAPI application accessible at http://localhost:8000.
- -p 8501:8501: Similarly, this maps port 8501 (where Streamlit is running) to your local machine's port 8501, making the Streamlit UI accessible at http://localhost:8501.
- -e GROQ_API_KEY=your_groq_api_key: This -e flag sets an environment variable inside the container. You are passing the GROQ_API_KEY to the container to access the Groq API.
- -e TAVILY_API_KEY=your_tavily_api_key: This sets the TAVILY_API_KEY environment variable, needed for the Tavily API.

- --name langgraph-agent-container: This flag assigns a custom name (langgraph-agent-container) to the container. This helps you easily reference the container later (e.g., for stopping, restarting).
- langgraph-agent-app: This is the image from which the container will be created (the image you just built).

Pushing the Docker Image to Docker Hub

Before you push your image to Docker Hub, you need to log in first.

docker login

docker tag langgraph-agent-app your_dockerhub_username/langgraph-agent-app:latest

Explanation:

- docker tag: This command is used to tag an image with a new name. In this case, you're tagging the langgraph-agent-app image with a tag that corresponds to your Docker Hub repository.

docker push your_dockerhub_username/langgraph-agent-app:latest

Explanation:

- docker push: This command is used to upload your Docker image to Docker Hub.
- your_dockerhub_username/langgraph-agent-app:latest: This is the name of the image you want to push, with your Docker Hub username as part of the tag.

Pulling the Image from Docker Hub

If you want to download your image back from Docker Hub to a different machine or environment, you can use the following command:

docker pull your_dockerhub_username/langgraph-agent-app:latest

Explanation:

- docker pull: This command downloads the image from Docker Hub to your local machine.
- your_dockerhub_username/langgraph-agent-app:latest: This is the name of the image that you want to pull, including the latest tag.

Running the Pulled Image

```
docker run -d -p 8000:8000 -p 8501:8501 -e GROQ_API_KEY=your_groq_api_key -e TAVILY_API_KEY=your_tavily_api_key --name langgraph-agent-container your_dockerhub_username/langgraph-agent-app:latest
```