Tour Planner Implementation using LangGraph and Groq's LLM

1. Overview

The **Tour Planner** system is designed to automate travel planning using **LangGraph** and **Groq's LLM**. The workflow involves generating a structured itinerary based on user input, executing tasks related to the tour plan, and synthesizing the results into a final itinerary.

2. System Architecture

2.1 Components

1. **Planner Agent**: Breaks down the user input into a list of tasks.
2. **Worker Agent**: Processes each task individually and provides results.
3. **Synthesizer Agent**: Combines the processed tasks into a structured final itinerary.
4. **LangGraph Workflow**: Manages the execution flow between the agents.

3. Implementation Details

3.1 Task Definitions

The tour planning system uses a structured schema for handling tasks. It includes task names, descriptions, and a system to track completed tasks.

3.2 Planner Function

This function generates a plan based on user input, ensuring that all necessary travel-related tasks are identified and structured.

3.3 Worker Function

Each task is assigned to a worker agent, which processes and completes it based on predefined logic.

3.4 Synthesizer Function

This function consolidates the completed tasks into a well-organized final travel itinerary.

4. Workflow Execution

4.1 LangGraph Integration

The LangGraph workflow orchestrates the interactions between different agents, ensuring smooth task execution and data flow.

4.2 Running the Workflow

Once initiated, the workflow processes user input, assigns tasks, executes them, and generates a structured final plan for the tour.

5. Expected Output

Input:
A user-provided request detailing the desired tour, including destinations, duration, and any specific preferences.
Output:
A structured itinerary outlining daily activities, travel details, and key highlights of the trip.

6. Conclusion

This Tour Planner efficiently automates the trip-planning process using **LangGraph** and **Groq's LLM**. By breaking down tasks, processing them individually, and synthesizing a structured itinerary, the system enhances efficiency and accuracy in tour planning.

7. Next Steps

- Enhance **multi-user support** for collaborative trip planning.
- Integrate **real-time API calls** for flight/hotel booking.
- Expand to **customized tour packages** based on traveler preferences.