Methods Used:

Using publicly accessible open APIs, the solution was created as a lightweight trip-planning assistant. The application retrieves the current weather forecast, geocodes a user-entered location into latitude and longitude, and optionally retrieves neighboring tourist attractions. The workflow was broken down into three main functions:

1. get_weather() - to retrieve temperature and rain-probability information.
2. get_tourist_places() - to search the Overpass API for neighboring attractions
3. geocode_place() - to translate place names into coordinates.

The above functions are combined into a human-readable response function called plan_trip(), to accept input from the user and process based on that.

Important Choices Made:

1. The Nominatim OpenStreetMap API is free and publicly available, it was used for geocoding.
2. I chose the Open-Meteo weather API because it offers precise, low-latency, no-auth forecasts and the Overpass API to retrieve POIs related to tourism within a predetermined radius.
3. To improve modularity, readability, and debugging ease, each task was kept as a separate function.
4. Efficient feedback mechanisms for fallbacks were put in place when APIs returned incomplete or missing data.
5. For testing simplicity and clarity, the code was written to run interactively in a console.

Problems Faced:

1. Initially, Nominatim requests were blocked due to API throttling; therefore, a custom User-Agent header was needed.
2. Sometimes it returned inconsistent or empty datasets, necessitating deduplication and filtering.
3. Conditional handling was necessary when dealing with locations that did not yield any geocoding results. There was frequent failure to extract location, for which the weather agent pipeline had to be updated.
4. Due to the inconsistent nature of the various API response formats, careful parsing was required.
5. There are times when network calls cause latency, necessitating defensive coding.

Result:

Using Gradio, The deployment was done easily

MULTI-AGENT TOURISM SYSTEM

Where would you like to visit?

Bangalore

Would you like to know the current weather?

● Yes   ○ No

Would you like to know the places to visit?

● Yes   ○ No

Plan Trip

Results

In Bangalore it's currently 23.8°C with a chance of 30% to rain. And these are the places you can go:
Chickpet Cross
Lalbagh Glasshouse
Canara Union, Prakash Courts
Mahatma Gandhi Statue
Jamsetji Tata Statue