**Design Choices & Tool Selection Reason**

This project is an astrology prediction app built using FastAPI, LangGraph, Swiss Ephemeris, and supporting libraries. Below are the reasons for selecting each tool:

1. LangGraph

Provides a customizable workflow engine for chaining steps like chart calculation, horoscope search, and LLM summarization.

Offers fine-grained control over the state between nodes.

Makes the app flexible to extend (e.g., adding more astrological calculations or data sources later).

2. Swiss Ephemeris (swisseph)

Industry-standard, highly precise library for astronomical and astrological calculations.

Used to calculate Moon sign and Ascendant (Lagna) with the Lahiri Ayanamsa (Vedic astrology standard).

Ensures accuracy compared to simple formula-based methods.

3. Time & Date Handling (datetime)

Birth time is critical for calculating Ascendant and Moon.

Local times are converted to UTC with offsets before calculating Julian day numbers.

This ensures the planetary positions are aligned with Vedic astrology principles.

4. Geopy (Latitude & Longitude)

End users provide a city name instead of raw coordinates.

geopy with Nominatim geocoding translates city names into latitude & longitude, which are required for calculating the Ascendant.

5. Horoscope Fetching (Serper API + requests)

To enrich predictions, the app fetches real-time horoscope data for both Ascendant and Moon signs.

requests are used for simple and reliable API calls.

6. LLM Summarization (Groq API)

Raw horoscopes are stitched together using an LLM, which generates a personalized, coherent prediction for the user.

Chosen for its ability to blend multiple sources into natural and user-friendly text.

In summary, each library was chosen for accuracy (swisseph, datetime), user-friendliness (geopy, FastAPI), and flexibility (LangGraph, Groq) — together creating a reliable and extensible Vedic astrology prediction system.