**Problem Statement: Weather & Air Quality Intelligence Assistant**

**Objective:**  
Design and implement an AI-powered assistant that provides actionable insights on **weather trends** (temperature, humidity, etc.) and **air quality levels** (AQI, pollution risks, etc.) for Indian cities using historical or live CSV data.

**Project Description:**

Environmental conditions like weather and air quality significantly affect public health, transportation, agriculture, and urban life. However, interpreting raw data can be difficult for common users. Your goal is to develop a **GenAI multi-agent assistant** that leverages:

* **CrewAI** (Agent-Oriented Architecture)
* **Local LLMs via Ollama (LLaMA3 or Mistral)**
* **CSV-based datasets for weather and AQI data**
* **Custom tools to load and filter data**
* **Natural Language interface with Gradio**

The system should intelligently process natural language questions like:

* *“Is the air quality in Mumbai safe today?”*
* *“How humid is it in Delhi?”*
* *“Compare the AQI in Pune and Bangalore.”*

Each query should be processed through the right agents (Weather Analyst or AQI Analyst), and the response must include analysis based on actual data loaded from CSV files.

**Key Features /Requirements:**

1. **Agent Specialization**
   * *Weather Agent:* Handles temperature, humidity, and pattern recognition.
   * *AQI Agent:* Analyzes air quality index, pollution sources, and health risks.
2. **Tool Integration**
   * Tools load data from weather\_data.csv and aqi\_data.csv.
3. **Query Analysis Workflow**
   * Automatically route queries to appropriate agents based on content (weather vs AQI).
   * Extract and normalize city names and keywords from the query.
4. **Sequential Multi-Agent Process**
   * Queries are passed to both agents one after another in a defined sequence (sequential CrewAI process).
5. **Natural Language UI**
   * Interactive Gradio interface to ask queries and display Markdown-based results.

**Expected Output (Example)**

**Query:** *"What's the AQI level in Delhi?"*  
**Output:**

🏙️ **City**: Delhi  
🌫️ **AQI**: 312  
🧪 **Main Pollutant**: PM2.5  
🚨 **Health Risk**: Unhealthy – Avoid outdoor activity