OpenWeatherMap API

Idea: A Python application that grabs weather data from OpenWeatherMap API and stores key values in a SQL database.

Output formats include JSON for app display, and optional XML for legacy system exports.

1. Authentication Requirements

- Use of API keys with account-based limits
- Store API keys securely in encrypted config files
- Outgoing requests contain authorization headers

2. Transport Security

- All data must be transmitted over HTTPS to prevent MITM attacks
- Reject any connection that tries HTTP

3. Rate Limiting and Abuse Prevention

- Implement local request pause to avoid API limits
- Log abnormal spikes in API access

4. Input Validation and Sanitization

- Validate all incoming JSON fields before processing
- Use pydantic for strict parsing

5. Output Handling

- Encode characters when converting to XML
- Do not log full responses if they contain a location/IP

6. Error Handling and Resilience

- Handle timeouts, malformed responses, and server errors

7. Data Storage and Privacy

- Do not store full responses unless necessary
- Anonymize user-specific query before storing