WEATHER APP

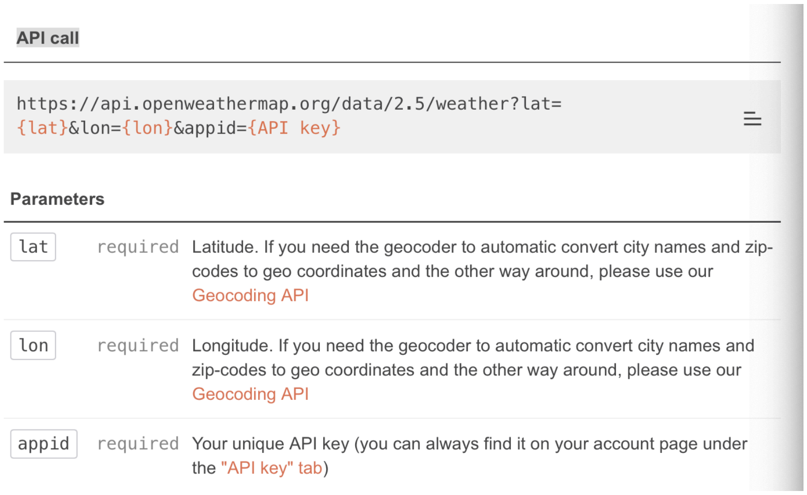
In this project you are going to design a weather application, where users can see the weather forecast of any location.

You will be going to use these links to obtain weather-data in the JSON format:

1. Current Weather Data

This API can be used to access weather data for any location on Earth. You just need to provide longitude and latitude to the link.

https://api.openweathermap.org/data/2.5/weather?lat={lat}&lon={lon}&appid={API key}



API call

```
https://api.openweathermap.org/data/2.5/weather?lat=
{lat}&lon={lon}&appid={API key}
```

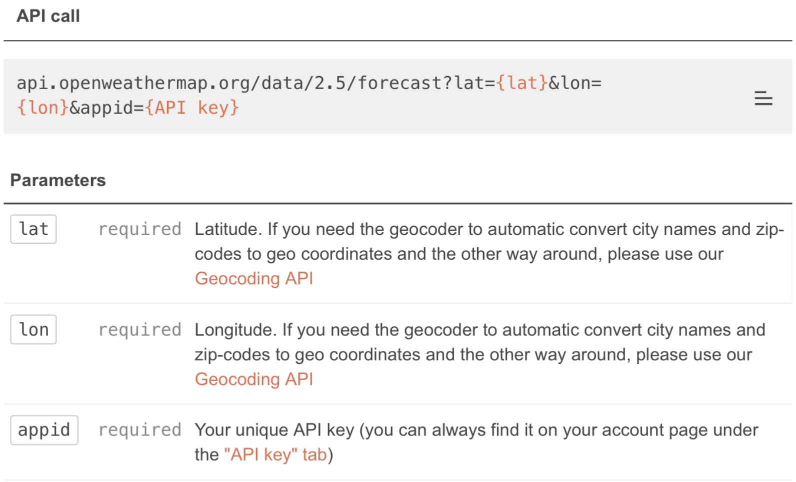
Parameters

`lat`	required	Latitude. If you need the geocoder to automatic convert city names and zip-codes to geo coordinates and the other way around, please use our Geocoding API
`lon`	required	Longitude. If you need the geocoder to automatic convert city names and zip-codes to geo coordinates and the other way around, please use our Geocoding API
`appid`	required	Your unique API key (you can always find it on your account page under the "API key" tab)

2. 5-day Forecast

This API provides the weather forecast for a location for 5 days with a 3hr interval.

https://api.openweathermap.org/data/2.5/forecast?lat={lat}&lon={lon}&appid={API key}



API call

```
api.openweathermap.org/data/2.5/forecast?lat={lat}&lon=
{lon}&appid={API key}
```

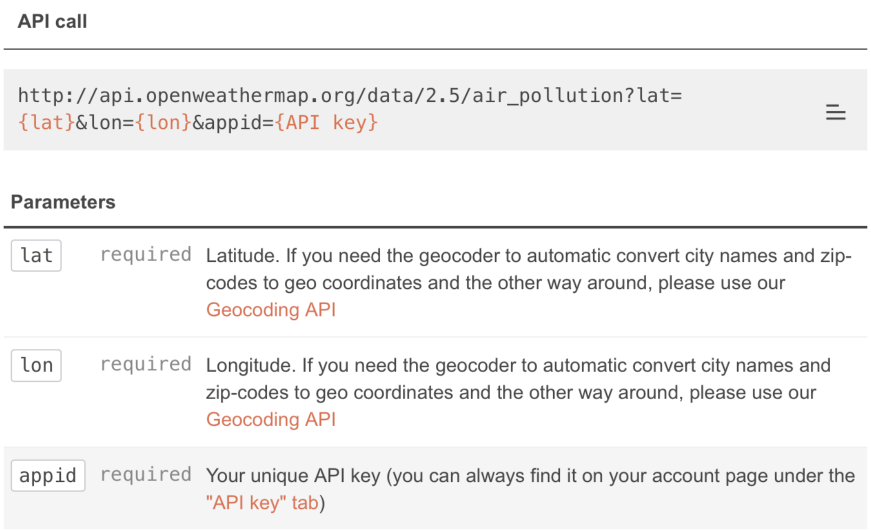
Parameters

`lat`	required	Latitude. If you need the geocoder to automatic convert city names and zip-codes to geo coordinates and the other way around, please use our Geocoding API
`lon`	required	Longitude. If you need the geocoder to automatic convert city names and zip-codes to geo coordinates and the other way around, please use our Geocoding API
`appid`	required	Your unique API key (you can always find it on your account page under the "API key" tab)

3. Air Pollution API

This API provides Air Quality Index and information about polluting gasses such as Carbon monoxide (CO), Nitrogen monoxide (NO), Nitrogen dioxide (NO2), Ozone (O3), Sulphur dioxide (SO2), Ammonia (NH3), and particulates (PM2.5 and PM10).

http://api.openweathermap.org/data/2.5/air_pollution?lat={lat}&lon={lon}&appid={API key}



API call

```
http://api.openweathermap.org/data/2.5/air_pollution?lat=
{lat}&lon={lon}&appid={API key}
```

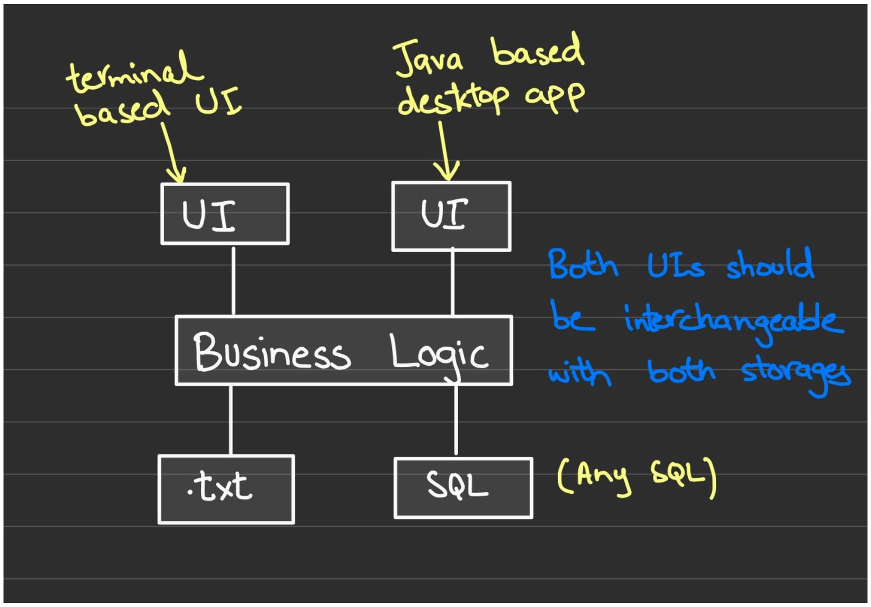
Parameters

`lat`	required	Latitude. If you need the geocoder to automatic convert city names and zip-codes to geo coordinates and the other way around, please use our Geocoding API
`lon`	required	Longitude. If you need the geocoder to automatic convert city names and zip-codes to geo coordinates and the other way around, please use our Geocoding API
`appid`	required	Your unique API key (you can always find it on your account page under the "API key" tab)

References: https://openweathermap.org/api

To use these APIs you have to create an account on openweathermap.org. You will be provided with an API key which you will have to enter every time while accessing the above links.

Project Structure:



You will have to implement **2 UI and 2 storage methods**, in such a way that each UI and storage is independent of each other.

UI:

Terminal based UI is just another word for console application while another one is a JAVA desktop application. Both of them should be operational for all use cases!

Storage:

You can use any SQL to store data. You also have to implement a ".txt" based storage mechanism.

Use Cases:

You are required to implement the following use-cases:

1. Add multiple locations to check weather with longitude and latitude.
2. Add multiple locations to check weather with city/country name.
3. Show current weather conditions.
4. Show basic information like "Feels like, minimum and maximum temperature" etc
5. Show sunrise and sunset time.
6. Show weather forecast for 5 days.
7. Add timestamp for weather records
8. Implement Cache Management: (In order to reduce the number of API calls and improve application performance, you can use a database as a cache to store frequently accessed weather data. This can help minimize the load on the OpenWeatherMap API and improve response times for users. For example, if weather data for Lahore is requested, make an API call to get the data, store it in DB and then show the result. If on the same day, the weather for same location is accessed, instead of making a call to API, fetch the data from DB.)
9. Generate Notification for poor weather conditions.
10. Show Air Pollution data.
11. Generate Notification for poor air quality.
12. Show data about polluting gasses.

Note:

Please remember to utilize GitHub for your weather project. GitHub's version control system will help you track changes, collaborate effectively, and manage your project with ease. Regular commits and meaningful commit messages are key to keeping your work organized and transparent. Feel free to reach out if you encounter any issues or need assistance.

Happy Coding 😄!!!