

WEATHER API APP

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1.Abstract - Weather API App is the application of science and technology to predict the state of the atmosphere for a given location. Ancient weather API methods usually relied on observed patterns of events, also termed pattern recognition. For example, it might be observed that if the sunset was particularly red, the following day often brought fair weather. However, not all of these predictions prove reliable. Here this system will predict weather based on parameters such as temperature, humidity and wind. User will enter current temperature; humidity and wind, System will take this parameter and will predict weather (rainfall in inches) from previous data in database (dataset). The role of the admin is to add previous weather data in database, so that system will calculate weather (estimated rainfall in inches) based on these data. Weather API system takes parameters such as temperature, humidity, and wind and will API weather based on previous record therefore this prediction will prove reliable. This system can be used in Air Traffic, Marine, Agriculture, Forestry, Military, and Navy etc.

2.INTRODUCTION

- The API (Application Programming Interface) app will tell us the current weather of a particular city all over the world along with temperature details along with other details.
- This app will provides you with wealth of meteorological data such as Minimum Temperature, Maximum Temperature, Pressure, Humidity, Sunrise, Sunset.
- The best APIs have dozens of weather measures, near-real-time current conditions reporting, and decades of worldwide historical weather reports.
- Firstly, we have to use a weather API for fetching the data from the Open Weather Map website by generating an API key, and then we need to create a configuration file to store the key. And finally using that configuration file in the python script.

Need of Weather API App

- To plane journeys ahead.
- To plan meeting/commute timings.
- To decide what to wear.
- To know when rain comes or stops.
- To receive alerts/ warnings during cyclones, sandstorms, typhoons, etc.
- A person travelling in bus/train/flight/,may need to check the weather in his destination city.

3.REQUIREMENT ANALYSIS

Software Requirements:

Operating system: Windows 10.

Programming language: Python.

Tool: Pycharm and Tkinter platform.

Hardware Requirements:

Processor : Intel(R) Core (TM)i5-8250U CPU

CPU clock :1.60GHz

Main Memory :8.00 GB

Secondary Storage:120GB

4.STEPS TO GENERATE AN API KEY:

- Login in the Open Weather Map.
- Go to the API section. Then in the Current Weather Data section click on the API doc.
- Now in the API Call section, we have the link of api.openweathermap.org/data/2.5/weather?q={city name}&appid={API key}.

- Click on the API key on the link it will direct to the page from where you can get the key.
- Finally, you'll need to confirm that the key is activated and can be used to pull the data.

5.FLOW CHAT:

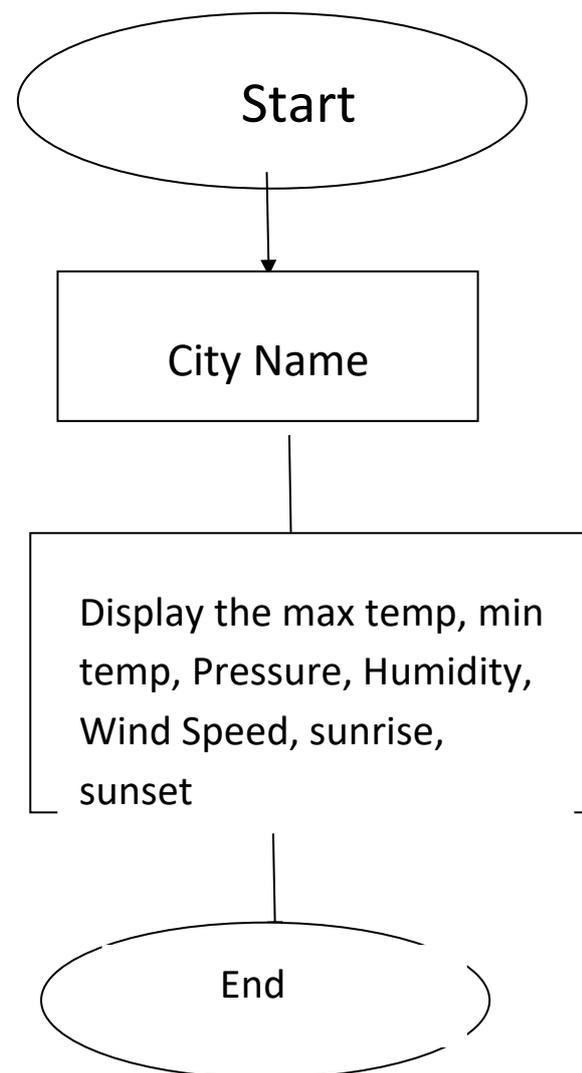


Fig: Flow chart of Weather API App

5.SOURCE CODE :

```
import tkinter as tk

import requests

import time

def getWeather(canvas):

    city = textField.get()

    api =

"https://api.openweathermap.org/data/2.5/weather?

q=" + city +

"&appid=f1ba83eae04d84a3cd59ea7ad9f34b6b"

    json_data = requests.get(api).json()

    condition = json_data['weather'][0]['main']

    temp = int(json_data['main']['temp'] - 273.15)

    min_temp = int(json_data['main']['temp_min'] -

273.15)

    max_temp = int(json_data['main']['temp_max'] -

273.15)

    pressure = json_data['main']['pressure']

    humidity = json_data['main']['humidity']

    wind = json_data['wind']['speed']

    sunrise = time.strftime("%I:%M:%S",

time.gmtime(json_data['sys']['sunrise'] - 19080))

    sunset = time.strftime("%I:%M:%S",

time.gmtime(json_data['sys']['sunset'] - 19080))

    final_info = condition + "\n" + str(temp) + "°C"

    final_data = "\n" + "Min Temp: " +

str(min_temp) + "°C" + "\n" + "Max Temp: " + str(

max_temp) + "°C" + "\n" + "Pressure: " +

str(pressure) + "\n" + "Humidity: " + str(

humidity) + "\n" + "Wind Speed: " + str(wind)

+ "\n" + "Sunrise: " + sunrise + "\n" + "Sunset: " +

sunset

    label1.config(text=final_info)

    label2.config(text=final_data)

    canvas = tk.Tk()

    canvas.geometry("600x500")

    canvas.title("Weather App")

    f = ("poppins", 15, "bold")

    t = ("poppins", 35, "bold")

    textField = tk.Entry(canvas, justify='center',

width=20, font=t)

    textField.pack(pady=20)

    textField.focus()

    textField.bind('<Return>', getWeather)

    label1 = tk.Label(canvas, font=t)

    label1.pack()

    label2 = tk.Label(canvas, font=f)

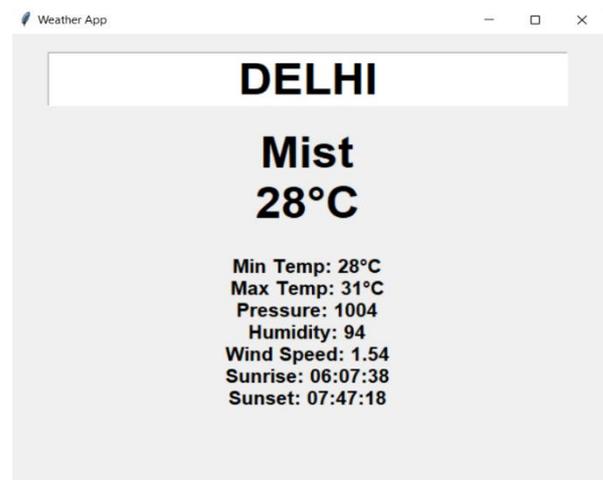
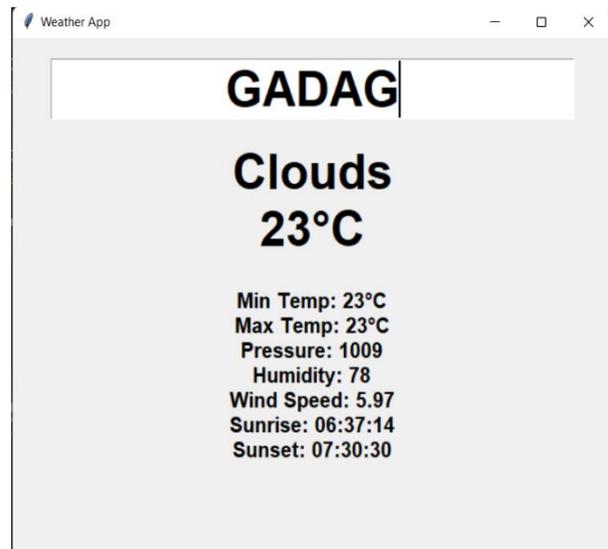
    label2.pack()

    canvas.mainloop()
```

6. ABOUT THE PROGRAMM :

- “import” is the tkinter, request, and time module which helps us later part in our program.
- We used “API” to link of the weather data.
- Used “canvas” for the output window.in this window we will able see the Min Temperature, Max Temperature, Wind Speed, Humidity, Pressure, Sunrise, Sunset.
- We used “json_data” from “API” to detect the weather condition all over the world.
- In the “canvas” size and title has been declared and font size and font of output is also declared.
- In “final info” we will able to see the Min Temperature, Max Temperature, Wind Speed, Humidity, Pressure, Sunrise, Sunset.
- “text field” used to enter the city name in canvas and font size, font style, width is declared.

7. RESULT:



8.CONCLUSIONS

Weather plays a major role in our daily life, and without the meteorologist and forecaster we would have difficulty planning our daily activities. As we can see, the weather is not a simple subject like we may have been thinking. The study of weather phenomenon requires the use of science, math, and different types of equipment and technology and data. Even with all these equipment, data, and observation tools, the weather continues to be a topic to study because it is constantly changing. Meteorologist and forecasters predict the weather and its possible changes, but in reality, weather is still unpredictable.

9.REFERENCES

- [1] Think Python by Allen B. Downey. 2nd edition.
- [2] Text Book: Automate The Boring Stuff with Python by AI Sweigart.
- [3] Link: <https://www.tutorialspoint.com/find-current-weather-of-any-city-using-openweathermap-api-in-python>