ABOUT THE APP - DOCUMENT

Weather Widget using Tkinter Python

Using the OpenWeatherMap API:

OpenWeatherMap API is used to get your real-time data of weather. All you need is an unique API key(APPID) to fetch the data. You need a valid Email-ID and once you sign up you will get access key which can be added with the URL – which allows you to retrieve information. Free Tier comes with certain limitation such as restrictions on number of API calls per day and forecast hours and there are monthly subscription plans available as well. But for this project free tier was used.

You can request for the required data and get the response back in JSON format in form of Dictionary.

{'coord': {'lon': -74.64, 'lat': 39.88}, 'weather': [{'id': 800, 'main': 'Clear', 'description': 'clear sky', 'icon': '01d'}], 'base': 'stations', 'main': {'temp': 84.11, 'feels_like': 90.39, 'temp_min': 82.4, 'temp_max': 86, 'pressure': 1013, 'humidity': 65}, 'visibility': 10000, 'wind': {'speed': 3.36, 'deg': 0}, 'clouds': {'all': 1}, 'dt': 1595338592, 'sys': {'type': 1, 'id': 6267, 'country': 'US', 'sunrise': 1595324866, 'sunset': 1595377311}, 'timezone': -14400, 'id': 4500994, 'name': 'Burlington', 'cod': 200}

To get the information in human readable format, you need to parse the information and present it. You can access the certain information with help of indexing. Certain time information have to be converted from Unix to normal date and time format.

GUI with Tkinter(Tk):

The tkinter package is standard Python Interface to the Tk GUI toolkit. It is an object oriented layer on top of Tcl/Tk. Most of the times, it comes by default while installing python 3. To create a GUI application using Tkinter – all you need to do is

- Import the tkinter Module
- Create the GUI main window

- Add one or more widgets to the GUI
- Enter the main event loop to take action against each event triggered by the user.

Importing Requests:

This module allows to send HTTP request using python. The HTTP request returns a response object with response data. There are different Methods involved when using the request library:

- Delete(url,args) – Sends a DEL request to specified URL
- Get(url,args) – Sends a GET request to specified URL
- POST(url, data, json, args) – Sends a POST request to URL
- PUT(url, data,args) – Sends a PUT request to URL

Syntax – requests.Methodname(params)

Importing Pillow:

Python Imaging Library (PIL) in newer versions – Pillow is a free and open source package to support for opening, manipulating and storing different image file formats.

Version – 1.0

- It took around three days to work on this application – reason being I haven't had worked on Tkinter Module before. First day was was spent learning about the module and planning the structure of the application. This version:
- Takes the input from user – Input can be City Name, Zipcode all over the world.
- It returns the user with following information – City Name, Current Temperature, Feels Like Temperature Value, Sunrise and Sunset times.
- The weather icon changes according to the temperatures and weather conditions in that region. The icon images are fetched from openweatherapp api as well.
- If the Value Entered in the entry place is Not Valid (Invalid Zip Code, City Name), then no data is fetched from URL and an Error Message is printed.
- I also made the program to an executable file, for those who don't have python installed using pyinstaller.

    Command to make python file executable –

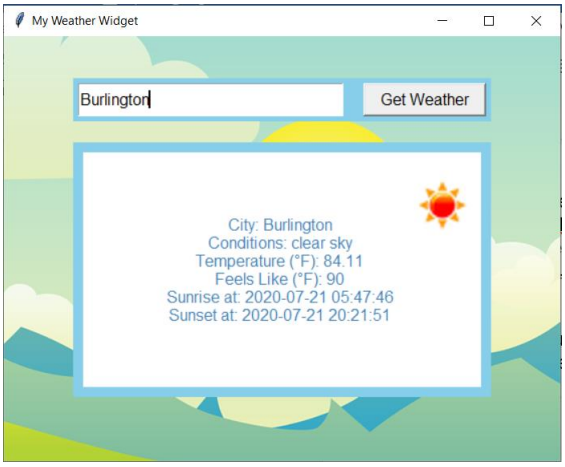
    pyinstaller.exe --onefile --icon=app_icon.ico WeatherApp.py

Challenges:

1. Creating the outline and basic structure of the app. Because I was new, it was tough to understand on how to place your Frame, where exactly to add the Label and changing the font.

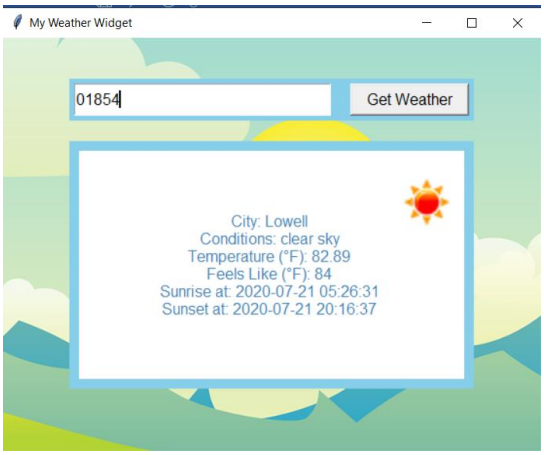
2. Changing the weather icon according to the temperature and weather conditions. Didn't know there was an option to fetch the icon data too from the api and was trying to incorporate my own images.

Output:



Burlington

Mumbai, IND



Zipcode – 01854(Lowell, MA)

Reference Links:

1. https://openweathermap.org/current
2. https://www.tutorialspoint.com/python/python_gui_programming.htm
3. https://www.youtube.com/watch?v=9N6a-VLBa2I

Version 2.0

- Implement Memory Caching – Weather information won't change every minute. Hence, I think we can incorporate some Memory Caching which allows you to get your information locally if you are looking for the same location again and again and not fetch the data from API.
- Strong Validation of Input String
- Use more advanced GUI Package other than tkinter like, PyQT and WxPython