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1  #Weather Forecast
2  import tkinter, requests
3  from tkinter import BOTH, IntVar
4  from PIL import ImageTk, Image
5  from io import BytesIO
6
7  #Define window
8  root = tkinter.Tk()
9  root.title('Weather Forecast')
10 root.iconbitmap('weather.ico')
11 root.geometry('400x400')
12 root.resizable(0,0)
13
14 #Define fonts and colors
15 sky_color = "#76c3ef"
16 grass_color = "#aad207"
17 output_color = "#dcf0fb"
18 input_color = "#ecf2ae"
19 large_font = ('SimSun', 14)
20 small_font = ('Simsun', 10)
21
22 #Define functions
23 def search():
24     """Use open ewather api to look up current weather conditions given a city/ city,
25     country"""
26     global response
27
28     #Get API response
29     #URL and my api key...USE YOUR OWN API KEY!
30     url = 'https://api.openweathermap.org/data/2.5/weather'
31     api_key = '6da92ea5e09090fa9c8a08e08eb30284' #USE YOUR OWN API KEY
32
33     #Search by the appropriate query, either city name or zip
34     if search_method.get() == 1:
35         querystring = {"q":city_entry.get(), 'appid':api_key, 'units':'imperial'}
36     elif search_method.get() == 2:
37         querystring = {"zip":city_entry.get(), 'appid':api_key, 'units':'imperial'}
38
39     #Call API
40     response = requests.request("GET", url, params=querystring)
41     response = response.json()
42
43     #Example response return
44     '''{'coord': {'lon': -71.06, 'lat': 42.36}, 'weather': [{'id': 500, 'main': 'Rain',
45     'description': 'light rain', 'icon': '10d'}], 'base': 'stations',
46     'main': {'temp': 298.88, 'feels_like': 302.56, 'temp_min': 298.15, 'temp_max':
47     299.82, 'pressure': 1010, 'humidity': 85}, 'visibility': 10000,
48     'wind': {'speed': 2.24, 'deg': 151, 'gust': 4.47}, 'rain': {'1h': 0.25}, 'clouds':
49     {'all': 82}, 'dt': 1596407271, 'sys': {'type': 3, 'id': 2005683,
50     'country': 'US', 'sunrise': 1596361095, 'sunset': 1596412955}, 'timezone': -14400,
51     'id': 4930956, 'name': 'Boston', 'cod': 200}'''
52
53     get_weather()
54     get_icon()
55
56 def get_weather():
57     """Grab information from API response and update our weather labels."""
58     #Gather the data to be used from the API response
59     city_name = response['name']
60     city_lat = str(response['coord']['lat'])
61     city_lon = str(response['coord']['lon'])
62
63     main_weather = response['weather'][0]['main']
64     description = response['weather'][0]['description']
65
66     temp = str(response['main']['temp'])

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63     feels_like = str(response['main']['feels_like'])
64     temp_min = str(response['main']['temp_min'])
65     temp_max = str(response['main']['temp_max'])
66     humidity = str(response['main']['humidity'])
67
68     #Update output lables
69     city_info_label.config(text=city_name + "(" + city_lat + ", " + city_lon + ")",
70     font=large_font, bg=output_color)
71     weather_label.config(text="Weather: " + main_weather + ", " + description,
72     font=small_font, bg=output_color)
73     temp_label.config(text='Temperature: ' + temp + " F", font=small_font,
74     bg=output_color)
75     feels_label.config(text="Feels Like: " + feels_like + " F", font=small_font,
76     bg=output_color)
77     temp_min_label.config(text="Min Temperature: " + temp_min + " F", font=small_font,
78     bg=output_color)
79     temp_max_label.config(text="Max Temperature: " + temp_max + " F", font=small_font,
80     bg=output_color)
81     humidity_label.config(text="Humidity: " + humidity, font=small_font, bg=output_color)
82
83 def get_icon():
84     """Get the appropriate weather icon from API response"""
85     global img
86
87     #Get the icon id from API response.
88     icon_id = response['weather'][0]['icon']
89
90     #Get the icon from the correct webiste
91     url = 'http://openweathermap.org/img/wn/{icon}.png'.format(icon=icon_id)
92
93     #Make a request at the url to download the icon; stream=True automatically dl
94     icon_response = requests.get(url, stream=True)
95
96     #Turn into a form tkinter/python can use
97     img_data = icon_response.content
98     img = ImageTk.PhotoImage(Image.open(BytesIO(img_data)))
99
100     #Update label
101     photo_label.config(image=img)
102
103 #Define layout
104 #Create frames
105 sky_frame = tkinter.Frame(root, bg=sky_color, height=250)
106 grass_frame = tkinter.Frame(root, bg=grass_color)
107 sky_frame.pack(fill=BOTH, expand=True)
108 grass_frame.pack(fill=BOTH, expand=True)
109
110 output_frame = tkinter.LabelFrame(sky_frame, bg=output_color, width=325, height=225)
111 input_frame = tkinter.LabelFrame(grass_frame, bg=input_color, width=325)
112 output_frame.pack(pady=30)
113 output_frame.pack_propagate(0)
114 input_frame.pack(pady=15)
115
116 #Output frame layout
117 city_info_label = tkinter.Label(output_frame, bg=output_color)
118 weather_label = tkinter.Label(output_frame, bg=output_color)
119 temp_label = tkinter.Label(output_frame, bg=output_color)
120 feels_label = tkinter.Label(output_frame, bg=output_color)
121 temp_min_label = tkinter.Label(output_frame, bg=output_color)
122 temp_max_label = tkinter.Label(output_frame, bg=output_color)
123 humidity_label = tkinter.Label(output_frame, bg=output_color)
124 photo_label = tkinter.Label(output_frame, bg=output_color)
125
126 city_info_label.pack(pady=8)
127 weather_label.pack()

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124 temp_label.pack()
125 feels_label.pack()
126 temp_min_label.pack()
127 temp_max_label.pack()
128 humidity_label.pack()
129 photo_label.pack(pady=8)
130
131 #Input frame layout
132 #Create input frame buttonson and entry
133 city_entry = tkinter.Entry(input_frame, width=20, font=large_font)
134 submit_button = tkinter.Button(input_frame, text='Submit', font=large_font,
bg=input_color, command=search)
135
136 search_method = IntVar()
137 search_method.set(1)
138 search_city = tkinter.Radiobutton(input_frame, text='Search by city name',
variable=search_method, value=1, font=small_font, bg=input_color)
139 search_zip = tkinter.Radiobutton(input_frame, text="Search by zipcode",
variable=search_method, value=2, font=small_font, bg=input_color)
140
141 city_entry.grid(row=0, column=0, padx=10, pady=(10,0))
142 submit_button.grid(row=0, column=1, padx=10, pady=(10,0))
143 search_city.grid(row=1, column=0, pady=2)
144 search_zip.grid(row=1, column=1, padx=5, pady=2)
145
146 #Run root window's main loop
147 root.mainloop()

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