DMV2 Interacting with Web APIs

October 26, 2023

[1]:
```
import requests
import pandas as pd
import json
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')

API_key = '2cac9177ae64d8f6733f9e5a51d63919'

countries = ['Jamaica', 'Indonesia', 'United States',  "Turkey", 'Saudi Arabia',␣
 ↪, "Egypt", 'China']

country_name_list = []
maxtemp = []
mintemp = []
humidity = []
windspeed = []

for country_names in countries:

    url = f'http://api.openweathermap.org/data/2.5/weather?
 ↪q={country_names}&APPID={API_key}&units=metric'

    r = requests.get(url)

    data = r.json()

    formatted_json = json.dumps(data, sort_keys = True, indent = 4)

    print(data)
    country_name_list.append(data['name'])
    maxtemp.append(data['main']['temp_max'])
    mintemp.append(data['main']['temp_min'])
    humidity.append(data['main']['humidity'])
    windspeed.append(data['wind']['speed'])
```

```
df = pd.DataFrame()
df['Names'] = country_name_list
df['Max_Temp'] = maxtemp
df['Min_Temp'] = mintemp
df['Humidity'] = humidity
df['WindSpeed'] = windspeed

df.head()
```

```
C:\Users\hp\anaconda3\lib\site-packages\scipy\__init__.py:146: UserWarning: A
NumPy version >=1.16.5 and <1.23.0 is required for this version of SciPy
(detected version 1.25.2
  warnings.warn(f"A NumPy version >={np_minversion} and <{np_maxversion}"
```


```
{'coord': {'lon': -82.1703, 'lat': 22.9792}, 'weather': [{'id': 801, 'main':
'Clouds', 'description': 'few clouds', 'icon': '02d'}], 'base': 'stations',
'main': {'temp': 26.28, 'feels_like': 26.28, 'temp_min': 26.28, 'temp_max':
26.28, 'pressure': 1016, 'humidity': 59, 'sea_level': 1016, 'grnd_level': 1001},
'visibility': 10000, 'wind': {'speed': 7.44, 'deg': 67, 'gust': 9.66}, 'clouds':
{'all': 11}, 'dt': 1698332177, 'sys': {'type': 2, 'id': 47732, 'country': 'CU',
'sunrise': 1698319815, 'sunset': 1698360890}, 'timezone': -14400, 'id': 3556406,
'name': 'Jamaica', 'cod': 200}
{'coord': {'lon': 120, 'lat': -5}, 'weather': [{'id': 802, 'main': 'Clouds',
'description': 'scattered clouds', 'icon': '03n'}], 'base': 'stations', 'main':
{'temp': 22.41, 'feels_like': 21.99, 'temp_min': 22.41, 'temp_max': 22.41,
'pressure': 1014, 'humidity': 49, 'sea_level': 1014, 'grnd_level': 967},
'visibility': 10000, 'wind': {'speed': 1.57, 'deg': 199, 'gust': 1.51},
'clouds': {'all': 35}, 'dt': 1698332177, 'sys': {'type': 1, 'id': 9325,
'country': 'ID', 'sunrise': 1698269769, 'sunset': 1698313900}, 'timezone':
28800, 'id': 1643084, 'name': 'Indonesia', 'cod': 200}
{'coord': {'lon': -98.5, 'lat': 39.76}, 'weather': [{'id': 804, 'main':
'Clouds', 'description': 'overcast clouds', 'icon': '04d'}], 'base': 'stations',
'main': {'temp': 17.45, 'feels_like': 17.44, 'temp_min': 17.45, 'temp_max':
17.45, 'pressure': 1009, 'humidity': 84, 'sea_level': 1009, 'grnd_level': 947},
'visibility': 10000, 'wind': {'speed': 3.62, 'deg': 197, 'gust': 5.08},
'clouds': {'all': 97}, 'dt': 1698332178, 'sys': {'type': 2, 'id': 2025914,
'country': 'US', 'sunrise': 1698324937, 'sunset': 1698363605}, 'timezone':
-18000, 'id': 6252001, 'name': 'United States of America', 'cod': 200}
{'coord': {'lon': 34.9115, 'lat': 39.059}, 'weather': [{'id': 804, 'main':
'Clouds', 'description': 'overcast clouds', 'icon': '04n'}], 'base': 'stations',
'main': {'temp': 21.4, 'feels_like': 20.35, 'temp_min': 21.4, 'temp_max': 21.4,
'pressure': 1013, 'humidity': 29, 'sea_level': 1013, 'grnd_level': 883},
'visibility': 10000, 'wind': {'speed': 3.07, 'deg': 225, 'gust': 4.72},
'clouds': {'all': 100}, 'dt': 1698332178, 'sys': {'type': 1, 'id': 6964,
'country': 'TR', 'sunrise': 1698292834, 'sunset': 1698331675}, 'timezone':
10800, 'id': 298795, 'name': 'Turkey', 'cod': 200}
{'coord': {'lon': 45, 'lat': 25}, 'weather': [{'id': 802, 'main': 'Clouds',
```

```
'description': 'scattered clouds', 'icon': '03n'}], 'base': 'stations', 'main':
{'temp': 26.8, 'feels_like': 26.33, 'temp_min': 26.8, 'temp_max': 26.8,
'pressure': 1015, 'humidity': 31, 'sea_level': 1015, 'grnd_level': 928},
'visibility': 10000, 'wind': {'speed': 4.14, 'deg': 82, 'gust': 4.21}, 'clouds':
{'all': 30}, 'dt': 1698332179, 'sys': {'country': 'SA', 'sunrise': 1698289407,
'sunset': 1698330260}, 'timezone': 10800, 'id': 102358, 'name': 'Saudi Arabia',
'cod': 200}
{'coord': {'lon': -75.5299, 'lat': 40.6801}, 'weather': [{'id': 800, 'main':
'Clear', 'description': 'clear sky', 'icon': '01d'}], 'base': 'stations',
'main': {'temp': 18.53, 'feels_like': 18.19, 'temp_min': 16.9, 'temp_max':
22.89, 'pressure': 1018, 'humidity': 67}, 'visibility': 10000, 'wind': {'speed':
2.06, 'deg': 210}, 'clouds': {'all': 0}, 'dt': 1698332179, 'sys': {'type': 2,
'id': 2041448, 'country': 'US', 'sunrise': 1698319500, 'sunset': 1698358017},
'timezone': -14400, 'id': 5188351, 'name': 'Egypt', 'cod': 200}
{'coord': {'lon': -99.2333, 'lat': 25.7}, 'weather': [{'id': 804, 'main':
'Clouds', 'description': 'overcast clouds', 'icon': '04d'}], 'base': 'stations',
'main': {'temp': 26.8, 'feels_like': 28.82, 'temp_min': 26.8, 'temp_max': 26.8,
'pressure': 1013, 'humidity': 74, 'sea_level': 1013, 'grnd_level': 997},
'visibility': 10000, 'wind': {'speed': 5.9, 'deg': 143, 'gust': 7.1}, 'clouds':
{'all': 97}, 'dt': 1698332180, 'sys': {'country': 'MX', 'sunrise': 1698324081,
'sunset': 1698364814}, 'timezone': -21600, 'id': 3530839, 'name': 'China',
'cod': 200}
```

[1]:

	Names	Max_Temp	Min_Temp	Humidity	WindSpeed
0	Jamaica	26.28	26.28	59	7.44
1	Indonesia	22.41	22.41	49	1.57
2	United States of America	17.45	17.45	84	3.62
3	Turkey	21.40	21.40	29	3.07
4	Saudi Arabia	26.80	26.80	31	4.14

[2]:
```
df.isna().sum()
```

[2]:
```
Names        0
Max_Temp     0
Min_Temp     0
Humidity     0
WindSpeed    0
dtype: int64
```

[3]:
```
df.duplicated().sum()
```

[3]:
```
0
```

[4]:
```
df.describe()
```

[4]:

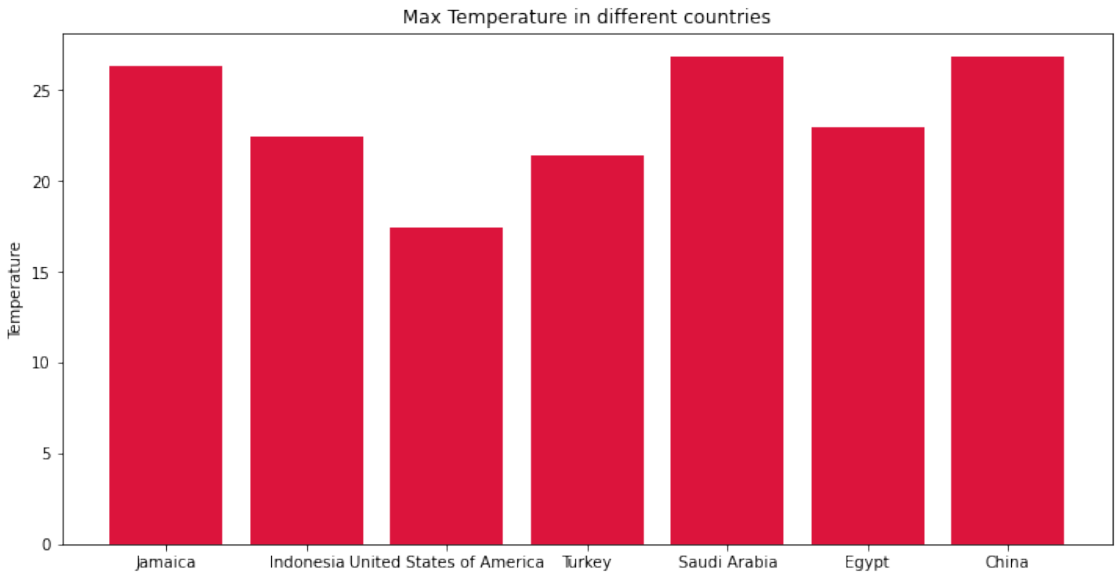
	Max_Temp	Min_Temp	Humidity	WindSpeed
count	7.000000	7.000000	7.000000	7.000000
mean	23.432857	22.577143	56.142857	3.971429

```
std     3.465293   4.268242  20.979582   2.087075
min    17.450000  16.900000  29.000000   1.570000
25%    21.905000  19.425000  40.000000   2.565000
50%    22.890000  22.410000  59.000000   3.620000
75%    26.540000  26.540000  70.500000   5.020000
max    26.800000  26.800000  84.000000   7.440000
```

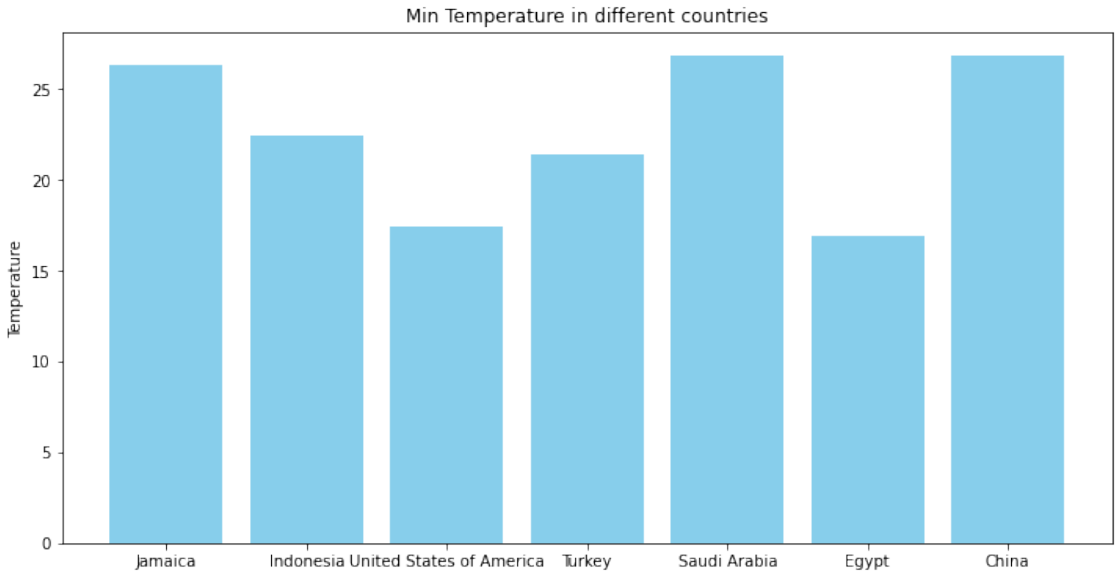
[5]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 7 entries, 0 to 6
Data columns (total 5 columns):
 #   Column     Non-Null Count  Dtype
---  ------     --------------  -----
 0   Names      7 non-null      object
 1   Max_Temp   7 non-null      float64
 2   Min_Temp   7 non-null      float64
 3   Humidity   7 non-null      int64
 4   WindSpeed  7 non-null      float64
dtypes: float64(3), int64(1), object(1)
memory usage: 408.0+ bytes
```

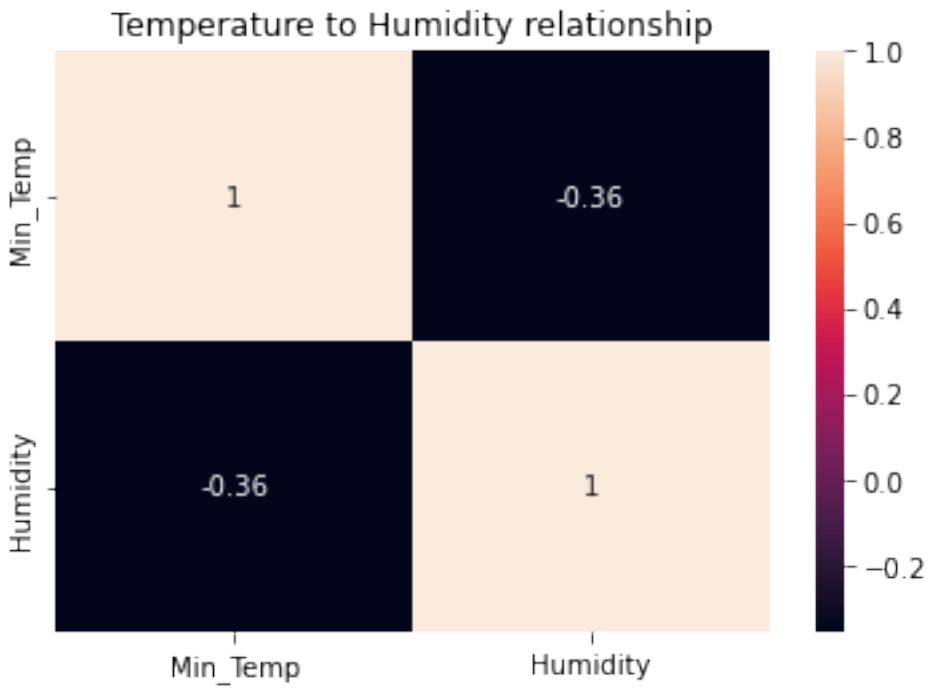
[6]:
```
plt.figure(figsize=(12,6))
plt.bar(df['Names'], df['Max_Temp'], color='crimson')
plt.title("Max Temperature in different countries")
plt.ylabel("Temperature")
plt.show()
```



[7]:
```
plt.figure(figsize=(12,6))
plt.bar(df['Names'], df['Min_Temp'], color='skyblue')
plt.title("Min Temperature in different countries")
plt.ylabel("Temperature")
plt.show()
```



[8]:
```
corre = df[['Min_Temp','Humidity']].corr()
sns.heatmap(corre, annot=True)
plt.title("Temperature to Humidity relationship")
plt.show()
```


Temperature to Humidity relationship
Min_Temp
Humidity
1
-0.36
-0.36
1
Min_Temp
Humidity
1.0
0.8
0.6
0.4
0.2
0.0
−0.2

[ ]: