-API Scavenger Hunt-

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Task1: Solution.

1) current weather for London, United Kingdom –

Code & output screenshot –

In [12]:

```
import requests

# enter API
api_key = 'dfcfd3203bac0f1e51334953c50081c7'

# Current weather for London
london_weather_url = f"http://api.openweathermap.org/data/2.5/weather?q=London,uk&exclude=minutely,hourly,daily,alerts&appid=
london_weather_response = requests.get(london_weather_url)
london_weather = london_weather_response.json()

# 5-day forecast for Tokyo
tokyo_forecast_url = f"http://api.openweathermap.org/data/2.5/forecast?q=Tokyo,jp&exclude=minutely,hourly,daily,alerts&appid=
tokyo_forecast_response = requests.get(tokyo_forecast_url)
tokyo_forecast = tokyo_forecast_response.json()

# Print the results or process them as needed
print(london_weather)
#print(tokyo_forecast)
```

```
{'coord': {'lon': -0.1257, 'lat': 51.5085}, 'weather': [{'id': 800, 'main': 'Clear', 'description': 'clear sky', 'icon': '01
d'}], 'base': 'stations', 'main': {'temp': 285.57, 'feels_like': 284.8, 'temp_min': 283.96, 'temp_max': 286.63, 'pressure':
982, 'humidity': 74}, 'visibility': 10000, 'wind': {'speed': 3.58, 'deg': 228, 'gust': 6.26}, 'clouds': {'all': 5}, 'dt': 16
99196970, 'sys': {'type': 2, 'id': 2075535, 'country': 'GB', 'sunrise': 1699167617, 'sunset': 1699201670}, 'timezone': 0, 'i
d': 2643743, 'name': 'London', 'cod': 200}
```

2) 5-day forecast for Tokyo, Japan –

Code & output screenshot –

It is not possible to display 5 day data all within a single screenshot. However, I have compiled the entire output into an HTML file titled **task1.html** below. The complete output is also accessible through a Jupyter Notebook file on GitHub. The link to this repository is provided on the first page of this document.

task1.html

In [13]:

```
import requests

# enter API
api_key = 'dfcfd3203bac0f1e51334953c50081c7'

# Current weather for London
london_weather_url = f"http://api.openweathermap.org/data/2.5/weather?q=London,uk&exclude=minutely,hourly,daily,alerts&appid=
london_weather_response = requests.get(london_weather_url)
london_weather = london_weather_response.json()

# 5-day forecast for Tokyo
tokyo_forecast_url = f"http://api.openweathermap.org/data/2.5/forecast?q=Tokyo,jp&exclude=minutely,hourly,daily,alerts&appid=
tokyo_forecast_response = requests.get(tokyo_forecast_url)
tokyo_forecast = tokyo_forecast_response.json()

# Print the results
#print(london_weather)
print(tokyo_forecast)
```


```
{'cod': '200', 'message': 0, 'cnt': 40, 'list': [{'dt': 1699207200, 'main': {'temp': 292.09, 'feels_like': 292.26, 'temp_
min': 292.09, 'temp_max': 292.94, 'pressure': 1024, 'sea_level': 1024, 'grnd_level': 1019, 'humidity': 85, 'temp_kf': -0.
85}, 'weather': [{'id': 500, 'main': 'Rain', 'description': 'light rain', 'icon': '10n'}], 'clouds': {'all': 56}, 'wind':
{'speed': 2.33, 'deg': 174, 'gust': 5.29}, 'visibility': 10000, 'pop': 0.39, 'rain': {'3h': 0.15}, 'sys': {'pod': 'n'},
'dt_txt': '2023-11-05 18:00:00'}, {'dt': 1699218000, 'main': {'temp': 292.63, 'feels_like': 292.75, 'temp_min': 292.63,
'temp_max': 293.11, 'pressure': 1023, 'sea_level': 1023, 'grnd_level': 1018, 'humidity': 81, 'temp_kf': -0.48}, 'weathe
r': [{'id': 500, 'main': 'Rain', 'description': 'light rain', 'icon': '10n'}], 'clouds': {'all': 40}, 'wind': {'speed':
4.51, 'deg': 191, 'gust': 8.64}, 'visibility': 10000, 'pop': 0.3, 'rain': {'3h': 0.19}, 'sys': {'pod': 'n'}, 'dt_txt': '2
023-11-05 21:00:00'}, {'dt': 1699228800, 'main': {'temp': 295.74, 'feels_like': 295.7, 'temp_min': 295.74, 'temp_max': 29
5.74, 'pressure': 1022, 'sea_level': 1022, 'grnd_level': 1017, 'humidity': 63, 'temp_kf': 0}, 'weather': [{'id': 802, 'ma
in': 'Clouds', 'description': 'scattered clouds', 'icon': '03d'}], 'clouds': {'all': 29}, 'wind': {'speed': 7.28, 'deg':
191, 'gust': 10.58}, 'visibility': 10000, 'pop': 0.18, 'sys': {'pod': 'd'}, 'dt_txt': '2023-11-06 00:00:00'}, {'dt': 1699
239600, 'main': {'temp': 297.23, 'feels_like': 297.16, 'temp_min': 297.23, 'temp_max': 297.23, 'pressure': 1020, 'sea_lev
el': 1020, 'grnd_level': 1015, 'humidity': 56, 'temp_kf': 0}, 'weather': [{'id': 803, 'main': 'Clouds', 'description': 'b
roken clouds', 'icon': '04d'}], 'clouds': {'all': 83}, 'wind': {'speed': 9.27, 'deg': 189, 'gust': 12.8}, 'visibility': 1
0000, 'pop': 0, 'sys': {'pod': 'd'}, 'dt_txt': '2023-11-06 03:00:00'}, {'dt': 1699250400, 'main': {'temp': 296.83, 'feels
_like': 296.9, 'temp_min': 296.83, 'temp_max': 296.83, 'pressure': 1018, 'sea_level': 1018, 'grnd_level': 1013, 'humidit
y': 63, 'temp_kf': 0}, 'weather': [{'id': 804, 'main': 'Clouds', 'description': 'overcast clouds', 'icon': '04d'}], 'clou
ds': {'all': 91}, 'wind': {'speed': 9.53, 'deg': 189, 'gust': 13.86}, 'visibility': 10000, 'pop': 0.03, 'sys': {'pod':
```


In [ ]:

***Reflection of task 1:

After completing the tasks, reflect on the following:

Ease of Use: How easy was it to sign up for the API key and make the API calls?

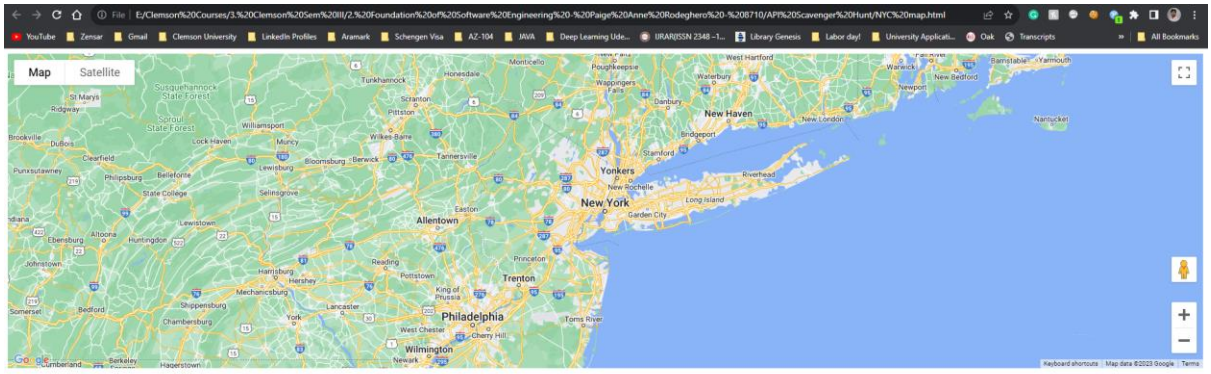
Capabilities: What kind of data can you get from the API, and how detailed is it?

Potential Applications: What are some real-world applications for this weather data?

Task2: Solution –

1) map centered on New York City, USA -

```html
<!DOCTYPE html>
<html>
<head>
  <title>Simple Map</title>
  <script src="https://maps.googleapis.com/maps/api/js?key=AIzaSyCMbcQ8k_tazwdjDdhLHOdGK8nZSNY0C9Y&callback=initMap" async defer></script>
  <script>
    var map;
    function initMap() {
      map = new google.maps.Map(document.getElementById('map'), {
        center: {lat: 40.7128, lng: -74.0060},
        zoom: 8
      });
    }
  </script>
</head>
<body>
  <div id="map" style="height: 500px; width: 100%;"></div>
</body>
</html>
```



2) shortest route by car between San Francisco, USA, and Los Angeles, USA –

jupyter task2 Last Checkpoint: 4 minutes ago (autosaved)

Logout

File Edit View Insert Cell Kernel Widgets Help Trusted Python 3 (ipykernel)

Run Code

In [1]:

```python
import requests
import json

# actual API key
api_key = 'AIzaSyCMbcQ8k_tazwdjDdhLHOdGK8nZSNY0C9Y'
directions_url = "https://maps.googleapis.com/maps/api/directions/json?"

# Define the origin and destination
origin = "San Francisco, USA"
destination = "Los Angeles, USA"

# Define the parameters for the request
params = {
    'origin': origin,
    'destination': destination,
    'mode': 'driving',
    'key': api_key
}

# Make the get request
response = requests.get(directions_url, params=params)

# Load the response into a JSON object
directions = response.json()

# Print the directions or process them as needed
print(json.dumps(directions, indent=2))
```

OUTPUT – However, I have compiled the entire output into an HTML file titled **task2.html** below. The complete output is also accessible through a Jupyter Notebook file on GitHub. The link to this repository is provided on the first page of this document.

task2.html


```
            "duration": {
              "text": "3 mins",
              "value": 153
            },
            "end_location": {
              "lat": 37.7692346,
              "lng": -122.4178853
            },
            "html_instructions": "Head <b>south</b> on <b>S Van Ness Ave</b> toward <b>12th St</b>",
            "polyline": {
              "points": "e|peFt_ejVLCd@Gj@KdBe@z@W1B_@r@I@?dAUPEPGNGLCdBa@TEt@Qd@KNCLCXILEDCROJIJIFC@?B?B?B?B?D@p@DD?@?
@?NBF@@?RB@?D?J@@@D?n@BZB"
            },
            "start_location": {
              "lat": 37.7749134,
              "lng": -122.4193088
            },
            "travel_mode": "DRIVING"
          },
          {
```

```
                "duration": {
                  "text": "1 min",
                  "value": 34
                },
                "end_location": {
                  "lat": 37.7696292,
                  "lng": -122.4170769
                },
                "html_instructions": "Slight <b>right</b> onto the <b>US-101 S</b> ramp to <b>I-80 E</b>/<wbr/><b>Oakland</b>/<wbr/><b>San Jose</b>",
                "maneuver": "ramp-right",
                "polyline": {
                  "points": "uxoeFxvdjVLLNJBBDDHLDF@DBD@H@D?D@B?F?B@@?DAD?DAH?DAFAFADEFCHCDEDCBEDGDEBC@CBE?C@I?I?G?GAEAECCACAIGGGEGACAACICGCGAI?AAEAI?I?K?K@MBYDa@Dc@Fw@F}@?C?CIS"
                },
                "start_location": {
                  "lat": 37.7692346,
                  "lng": -122.4178853
                },
                "travel_mode": "DRIVING"
```

```
                },
                "end_location": {
                  "lat": 37.769057,
                  "lng": -122.4092529
                },
                "html_instructions": "Continue onto <b>US-101 S</b>/<wbr/><b>Central Fwy</b>",
                "polyline": {
                  "points": "e{oeFvqdjVB_@Be@B]?K?I@S@o@@q@@_@?g@@eB@y@@g@?}@@{@@s@?Y?[@m@?GByB@O?c@@]?[@a@Bc@Bq@JyBFq@Fu@Fk@BY@KToB"
                },
                "start_location": {
                  "lat": 37.7696292,
                  "lng": -122.4170769
                },
                "duration": {
                  "text": "8 mins",
                  "value": 490
                },
                "end_location": {
                  "lat": 37.8251891,
                  "lng": -122.3047588
                },
                "html_instructions": "Take the exit on the <b>left</b> onto <b>I-80 E</b> toward <b>Bay Brg</b>/<wbr/><b>Oakland</b>",
                "maneuver": "ramp-left",
```

```
                  "text": "1 min",
                  "value": 57
                },
                "end_location": {
                  "lat": 37.8263412,
                  "lng": -122.2890091
                },
                "html_instructions": "Take exit <b>8B</b> for <b>I-580 E</b> toward <b>Oakland</b>/<wbr/><b>US-24</b>",
                "maneuver": "ramp-right",
                "polyline": {
                  "points": "mvzeFvsniV@{@Gm@[_C?AIy@CSCUE]Ec@E]Ea@CYAGC]E]Ea@E_@CWGg@E[CYGa@UsBGi@Ea@?AE[COCOE[AG?EE[G_@CWCSKq@E]CWCIEc@G[I}@M}@Km@Ic@G]I]GSCGI_@I[KYK_@IYCKM_@I[EMGSEWEUEUCSCOCOCSAUCUAOAW?YAOAg@@a@Bu@Dm@Fi@Hg@F]F[FWFUFUPi@HSPe@HWFOFOBMFODQBKH]H[Le@He@Hk@D]BUHs@BaA@e@"
                },
                "duration": {
                  "text": "41 mins",
                  "value": 2487
                },
                "end_location": {
                  "lat": 37.7417513,
                  "lng": -121.573913
                },
                "html_instructions": "Continue onto <b>I-580 E</b>",
                "polyline": {
```

```
                  "lng": -122.2890091
                },
                "travel_mode": "DRIVING"
              },
              {
                "distance": {
                  "text": "16.9 mi",
                  "value": 27220
                },
                "duration": {
                  "text": "15 mins",
                  "value": 874
                },
                "end_location": {
                  "lat": 37.5909837,
                  "lng": -121.3339934
                },
                "html_instructions": "Keep <b>right</b> at the fork to stay on <b>I-580 E</b>, follow signs for <b>Interstate 580</b>/<wbr/><b>Interstate 5 S</b>/<wbr/><b>Fresno</b>/<wbr/><b>Los Angeles</b>",
                "maneuver": "fork-right"
```

```
},
{
  "distance": {
    "text": "280 mi",
    "value": 450627
  },
  "duration": {
    "text": "4 hours 8 mins",
    "value": 14865
  },
  "end_location": {
    "lat": 34.3653479,
    "lng": -118.5566321
  },
  "html_instructions": "Continue onto <b>I-5 S</b>",
  "polyline": {
```

```
    "lng": -118.5556726
  },
  "html_instructions": "Take exit <b>166</b> for <b>Calgrove Blvd</b>",
  "maneuver": "ramp-right",
  "polyline": {
    "points": "m~vpE|qrrUf@H@AFCNGZO@?b@QlAa@LEB?PE~@UdAWDA\\CB?PALAH?f@AX?F?N?PALALCLEp@UZM"
  },
  "start_location": {
    "lat": 34.3653479,
    "lng": -118.5566321
  },
  "travel_mode": "DRIVING"
```

```
    "lat": 34.3602771,
    "lng": -118.5560666
  },
  "html_instructions": "Turn <b>right</b> onto <b>Calgrove Blvd</b>",
  "maneuver": "turn-right",
  "polyline": {
    "points": "{hvpE|krrU`@X\\RLFJDTHB@VFXF\\DX@XA\\CJA`@G"
  },
  "start_location": {
    "lat": 34.361903,
    "lng": -118.5556726
```

```
  },
  "duration": {
    "text": "1 min",
    "value": 63
  },
  "end_location": {
    "lat": 34.32358840000001,
    "lng": -118.5029981
  },
  "html_instructions": "Continue onto <b>San Fernando Rd</b>",
  "polyline": {
    "points": "krppEvvhrUTKPIRIDAFCb@OTIZKfA]p@Uz@Y\\Kp@U`A[XIpAc@DAnGsBdCy@nBo@tAe@bA]\\IFCLCF?JAP?L@j@B~AJN
@JB\\DXD`@EZERCNCBAPERIPKDAJEHGFEFGFIHK"
  },
```

```
  "travel_mode": "DRIVING"
},
{
  "distance": {
    "text": "0.9 mi",
    "value": 1450
  },
  "duration": {
    "text": "2 mins",
    "value": 92
  },
  "end_location": {
    "lat": 34.3153247,
    "lng": -118.4912417
  },
  "html_instructions": "Continue straight to stay on <b>San Fernando Rd</b>",
  "maneuver": "straight",
```

```
    "value": 1426
  },
  "duration": {
    "text": "1 min",
    "value": 71
  },
  "end_location": {
    "lat": 34.078576,
    "lng": -118.228452
  },
  "html_instructions": "Take the <b>CA-110 S</b> exit toward <b>Los Angeles</b>",
  "maneuver": "ramp-right",
```

```
    "text": "1 min",
    "value": 59
  },
  "end_location": {
    "lat": 34.0695669,
    "lng": -118.2363335
  },
  "html_instructions": "Merge onto <b>CA-110</b>",
  "maneuver": "merge",
  "polyline": {
```

```
      "lat": 34.0667057,
      "lng": -118.2375889
    },
    "html_instructions": "Take exit <b>24C</b> on the <b>left</b> for <b>Hill St</b> toward <b>Civic Ctr</b>",
    "maneuver": "ramp-left",
    "polyline": {
      "points": "ye}nE``tpUTE@?JFXLRJd@NJDNFNFF@XJXJB@`@N@?RH`A\\`@NRH@?VJFBD@XLHDNFl@THBJF@?DC"
    },
```

```
    },
    "duration": {
      "text": "3 mins",
      "value": 178
    },
    "end_location": {
      "lat": 34.0564992,
      "lng": -118.2445046
    },
    "html_instructions": "Continue onto <b>N Hill St</b>",
```

```
      "text": "1 min",
      "value": 77
    },
    "end_location": {
      "lat": 34.0549067,
      "lng": -118.2426508
    },
    "html_instructions": "Turn <b>left</b> onto <b>W Temple St</b>",
    "maneuver": "turn-left",
    "polyline": {
      "points": "ctznEbsupUNQz@gA@AJM~@kAV[NQb@i@r@{@PQPU"
```


******Reflection of task 2:

Reflect on the following after completing the tasks:

<u>Ease of Use</u>: How straightforward was it to get the API key and use the Google Maps APIs?
<u>Capabilities</u>: What features and data does the Google Maps API provide?
<u>Potential Applications:</u> Consider how the features you used could be applied in real-world scenarios.

Task3: Solution –

Code snippet –

jupyter task3 Last Checkpoint: a minute ago (unsaved changes)

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In [1]:

```python
import requests

# Retrieve information about Brazil
brazil_info_url = "https://restcountries.com/v3.1/name/brazil"
brazil_response = requests.get(brazil_info_url)
brazil_info = brazil_response.json()

# Extracting population, area, and official language
brazil_population = brazil_info[0]['population']
brazil_area = brazil_info[0]['area']
brazil_languages = brazil_info[0]['languages']

print(f"Brazil's Population: {brazil_population}")
print(f"Brazil's Area: {brazil_area} square kilometers")
print("Brazil's Official Languages:")
for language in brazil_languages.values():
    print(language)

# Retrieve a list of all countries in Africa
africa_countries_url = "https://restcountries.com/v3.1/region/africa"
africa_response = requests.get(africa_countries_url)
africa_countries = africa_response.json()

# Print the names of all countries in Africa
print("\nCountries in Africa:")
for country in africa_countries:
    print(country['name']['common'])
```

Output Screenshot –

1) information about Brazil, including its population, area, and official language -

```
Brazil's Population: 212559409
Brazil's Area: 8515767.0 square kilometers
Brazil's Official Languages:
Portuguese
```

2) list of all countries in Africa-

jupyter task3 Last Checkpoint: 2 minutes ago (autosaved)

Logout

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Run Code

```
Countries in Africa:
Malawi
Cameroon
Nigeria
Western Sahara
Lesotho
Mayotte
Rwanda
Sierra Leone
Benin
Ghana
Central African Republic
Kenya
Egypt
Tunisia
Sudan
Zimbabwe
Togo
British Indian Ocean Territory
Tanzania
Gabon
Burundi
Ethiopia
Madagascar
Republic of the Congo
Gambia
Guinea
Zambia
Eritrea
Burkina Faso
Ivory Coast
Cape Verde
Guinea-Bissau
Mali
South Sudan
Seychelles
Chad
Djibouti
Namibia
Mozambique
Mauritius
Saint Helena, Ascension and Tristan da Cunha
Comoros
Equatorial Guinea
Uganda
Botswana
Libya
Algeria
São Tomé and Príncipe
Angola
Niger
Réunion
Senegal
Morocco
Somalia
DR Congo
Mauritania
South Africa
Liberia
Eswatini
```

In [ ]:

****Reflection of task 3: After completing the tasks, reflect on the following:

Ease of Use: Was the REST Countries API intuitive to use without the need for an API key?

Capabilities: What kind of data can you access about countries, and how might it be useful?

Potential Applications: Consider how you might use the data retrieved in a real-world application.

Task4: Solution –

Source code –

jupyter task4 Last Checkpoint: 2 minutes ago (autosaved)

File Edit View Insert Cell Kernel Widgets Help

In [1]:

```python
import requests

# actual API key
api_key = 'pr_1fa20cf4b1e944c0b31ba3b9e1f79497'

# Function to convert currencies
def convert_currency(amount, from_currency, to_currency, api_key):
    url = f"https://free.currconv.com/api/v7/convert?q={from_currency}_{to_currency}&compact=ultra&apiKey={api_key}"
    response = requests.get(url)
    if response.status_code == 200:
        data = response.json()
        rate = data[f"{from_currency}_{to_currency}"]
        return rate * amount
    else:
        print("Error:", response.status_code, response.text)
        return None

# Convert 100 USD to EUR
usd_to_eur = convert_currency(100, 'USD', 'EUR', api_key)
print(f"100 USD is {usd_to_eur} EUR")

# Convert 1000 JPY to GBP
jpy_to_gbp = convert_currency(1000, 'JPY', 'GBP', api_key)
print(f"1000 JPY is {jpy_to_gbp} GBP")
```

OUTPUT –

jupyter task4 Last Checkpoint: 2 minutes ago (autosaved)

File Edit View Insert Cell Kernel Widgets Help

In [1]:

```python
import requests

# actual API key
api_key = 'pr_1fa20cf4b1e944c0b31ba3b9e1f79497'

# Function to convert currencies
def convert_currency(amount, from_currency, to_currency, api_key):
    url = f"https://free.currconv.com/api/v7/convert?q={from_currency}_{to_currency}&compact=ultra&apiKey={api_key}"
    response = requests.get(url)
    if response.status_code == 200:
        data = response.json()
        rate = data[f"{from_currency}_{to_currency}"]
        return rate * amount
    else:
        print("Error:", response.status_code, response.text)
        return None

# Convert 100 USD to EUR
usd_to_eur = convert_currency(100, 'USD', 'EUR', api_key)
print(f"100 USD is {usd_to_eur} EUR")

# Convert 1000 JPY to GBP
jpy_to_gbp = convert_currency(1000, 'JPY', 'GBP', api_key)
print(f"1000 JPY is {jpy_to_gbp} GBP")
```

```
100 USD is 93.312 EUR
1000 JPY is 5.397 GBP
```

*****Reflection of task 4:

After completing the tasks, reflect on the following points:

Ease of Use: How straightforward was the API documentation? Were the API endpoints well explained? Did you find it easy to integrate the API into your application?

Capabilities: What features does the API offer? Does it meet your needs or the needs of a potential application?

Potential Applications: Consider how this API could be used in real-world applications. For example, could it be integrated into an e-commerce platform for real-time currency conversion?