

Example_JSON

October 7, 2024

1 Semi-structured data - Working with JSON

```
[6]: obj = """
{"name": "Wes",
 "places_lived": ["United States", "Spain", "Germany"],
 "pet": null,
 "siblings": [{"name": "Scott", "age": 30, "pets": ["Zeus", "Zuko"]},
               {"name": "Katie", "age": 38,
                "pets": ["Sixes", "Stache", "Cisco"]}]}
"""
```

```
[7]: import json #We need this library to work with JSON
result = json.loads(obj) # parse JSON string and convert to a Python Dictionary
result
```

```
[7]: {'name': 'Wes',
      'places_lived': ['United States', 'Spain', 'Germany'],
      'pet': None,
      'siblings': [{'name': 'Scott', 'age': 30, 'pets': ['Zeus', 'Zuko']},
                    {'name': 'Katie', 'age': 38, 'pets': ['Sixes', 'Stache', 'Cisco']}]}
```

```
[8]: asjson = json.dumps(result) #convert Python object to JSON
asjson
```

```
[8]: '{"name": "Wes", "places_lived": ["United States", "Spain", "Germany"], "pet":
null, "siblings": [{"name": "Scott", "age": 30, "pets": ["Zeus", "Zuko"]},
{"name": "Katie", "age": 38, "pets": ["Sixes", "Stache", "Cisco"]}]}'
```

```
[9]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
[5]: siblings = pd.DataFrame(result['siblings'], columns=['name', 'age'])
siblings
```

```
[5]:      name  age
0  Scott   30
1  Katie   38
```

1.0.1 EXAMPLE 2

```
[6]: !cat example1.json #executing a linux command to read the content of the
      ↪example1.json file
```

```
# cat stands for concatenate. Displays the contents of one or more files
↪without opening for editing.
```

```
[{"a": 1, "b": 2, "c": 3},
 {"a": 4, "b": 5, "c": 6},
 {"a": 7, "b": 8, "c": 9}]
```

```
[8]: data = pd.read_json('example1.json') #read json data directly into a pandas
      ↪dataframe
data
```

```
[8]:    a  b  c
0    1  2  3
1    4  5  6
2    7  8  9
```

1.0.2 EXAMPLE 3

```
[9]: with open('forecast.json') as f:
      forecast_raw = json.load(f)
```

```
[10]: forecast_raw
```

```
[10]: {'@context': ['https://geojson.org/geojson-ld/geojson-context.jsonld',
                    {'@version': '1.1',
                     'wx': 'https://api.weather.gov/ontology#',
                     'geo': 'http://www.opengis.net/ont/geosparql#',
                     'unit': 'http://codes.wmo.int/common/unit/',
                     '@vocab': 'https://api.weather.gov/ontology#'}],
        'type': 'Feature',
        'geometry': {'type': 'Polygon',
                     'coordinates': [[[[-76.1678676, 43.0565917],
                                         [-76.1719706, 43.0351424],
                                         [-76.1426357, 43.0321429],
                                         [-76.1385265, 43.053591999999995],
                                         [-76.1678676, 43.0565917]]]]},
        'properties': {'updated': '2022-10-05T13:41:55+00:00',
                        'units': 'us',
```

```

'forecastGenerator': 'BaselineForecastGenerator',
'generatedAt': '2022-10-05T16:47:45+00:00',
'updateTime': '2022-10-05T13:41:55+00:00',
'validTimes': '2022-10-05T07:00:00+00:00/P8DT6H',
'elevation': {'unitCode': 'wmoUnit:m', 'value': 121.92},
'periods': [{ 'number': 1,
  'name': 'This Afternoon',
  'startTime': '2022-10-05T12:00:00-04:00',
  'endTime': '2022-10-05T18:00:00-04:00',
  'isDaytime': True,
  'temperature': 69,
  'temperatureUnit': 'F',
  'temperatureTrend': None,
  'windSpeed': '6 mph',
  'windDirection': 'NW',
  'icon': 'https://api.weather.gov/icons/land/day/few?size=medium',
  'shortForecast': 'Sunny',
  'detailedForecast': 'Sunny, with a high near 69. Northwest wind around 6
mph.' },
  { 'number': 2,
    'name': 'Tonight',
    'startTime': '2022-10-05T18:00:00-04:00',
    'endTime': '2022-10-06T06:00:00-04:00',
    'isDaytime': False,
    'temperature': 48,
    'temperatureUnit': 'F',
    'temperatureTrend': None,
    'windSpeed': '1 to 5 mph',
    'windDirection': 'SW',
    'icon': 'https://api.weather.gov/icons/land/night/sct?size=medium',
    'shortForecast': 'Partly Cloudy',
    'detailedForecast': 'Partly cloudy, with a low around 48. Southwest wind 1
to 5 mph.' },
  { 'number': 3,
    'name': 'Thursday',
    'startTime': '2022-10-06T06:00:00-04:00',
    'endTime': '2022-10-06T18:00:00-04:00',
    'isDaytime': True,
    'temperature': 73,
    'temperatureUnit': 'F',
    'temperatureTrend': None,
    'windSpeed': '3 mph',
    'windDirection': 'SW',
    'icon': 'https://api.weather.gov/icons/land/day/bkn?size=medium',
    'shortForecast': 'Partly Sunny',
    'detailedForecast': 'Partly sunny, with a high near 73. Southwest wind
around 3 mph.' },

```

```

    {'number': 4,
      'name': 'Thursday Night',
      'startTime': '2022-10-06T18:00:00-04:00',
      'endTime': '2022-10-07T06:00:00-04:00',
      'isDaytime': False,
      'temperature': 49,
      'temperatureUnit': 'F',
      'temperatureTrend': None,
      'windSpeed': '2 to 6 mph',
      'windDirection': 'SW',
      'icon': 'https://api.weather.gov/icons/land/night/rain_showers,30/rain_showers,40?size=medium',
      'shortForecast': 'Chance Rain Showers',
      'detailedForecast': 'A chance of rain showers after 8pm. Mostly cloudy, with a low around 49. Southwest wind 2 to 6 mph. Chance of precipitation is 40%. New rainfall amounts less than a tenth of an inch possible.'},
    {'number': 5,
      'name': 'Friday',
      'startTime': '2022-10-07T06:00:00-04:00',
      'endTime': '2022-10-07T18:00:00-04:00',
      'isDaytime': True,
      'temperature': 52,
      'temperatureUnit': 'F',
      'temperatureTrend': None,
      'windSpeed': '7 to 10 mph',
      'windDirection': 'NW',
      'icon': 'https://api.weather.gov/icons/land/day/rain_showers,50?size=medium',
      'shortForecast': 'Chance Rain Showers',
      'detailedForecast': 'A chance of rain showers. Mostly cloudy, with a high near 52. Northwest wind 7 to 10 mph. Chance of precipitation is 50%.'},
    {'number': 6,
      'name': 'Friday Night',
      'startTime': '2022-10-07T18:00:00-04:00',
      'endTime': '2022-10-08T06:00:00-04:00',
      'isDaytime': False,
      'temperature': 39,
      'temperatureUnit': 'F',
      'temperatureTrend': None,
      'windSpeed': '3 to 9 mph',
      'windDirection': 'NW',
      'icon': 'https://api.weather.gov/icons/land/night/rain_showers,50/rain_showers,40?size=medium',
      'shortForecast': 'Chance Rain Showers',
      'detailedForecast': 'A chance of rain showers before 2am. Mostly cloudy, with a low around 39. Chance of precipitation is 50%.'},
    {'number': 7,

```

```

'name': 'Saturday',
'startTime': '2022-10-08T06:00:00-04:00',
'endTime': '2022-10-08T18:00:00-04:00',
'isDaytime': True,
'temperature': 53,
'temperatureUnit': 'F',
'temperatureTrend': None,
'windSpeed': '3 to 9 mph',
'windDirection': 'W',
'icon': 'https://api.weather.gov/icons/land/day/sct?size=medium',
'shortForecast': 'Mostly Sunny',
'detailedForecast': 'Mostly sunny, with a high near 53.'},
{'number': 8,
'name': 'Saturday Night',
'startTime': '2022-10-08T18:00:00-04:00',
'endTime': '2022-10-09T06:00:00-04:00',
'isDaytime': False,
'temperature': 42,
'temperatureUnit': 'F',
'temperatureTrend': None,
'windSpeed': '8 mph',
'windDirection': 'W',
'icon': 'https://api.weather.gov/icons/land/night/sct?size=medium',
'shortForecast': 'Partly Cloudy',
'detailedForecast': 'Partly cloudy, with a low around 42.'},
{'number': 9,
'name': 'Sunday',
'startTime': '2022-10-09T06:00:00-04:00',
'endTime': '2022-10-09T18:00:00-04:00',
'isDaytime': True,
'temperature': 59,
'temperatureUnit': 'F',
'temperatureTrend': None,
'windSpeed': '9 mph',
'windDirection': 'W',
'icon': 'https://api.weather.gov/icons/land/day/sct?size=medium',
'shortForecast': 'Mostly Sunny',
'detailedForecast': 'Mostly sunny, with a high near 59.'},
{'number': 10,
'name': 'Sunday Night',
'startTime': '2022-10-09T18:00:00-04:00',
'endTime': '2022-10-10T06:00:00-04:00',
'isDaytime': False,
'temperature': 43,
'temperatureUnit': 'F',
'temperatureTrend': None,
'windSpeed': '7 mph',

```

```

    'windDirection': 'SW',
    'icon': 'https://api.weather.gov/icons/land/night/sct?size=medium',
    'shortForecast': 'Partly Cloudy',
    'detailedForecast': 'Partly cloudy, with a low around 43.'},
  {'number': 11,
    'name': 'Columbus Day',
    'startTime': '2022-10-10T06:00:00-04:00',
    'endTime': '2022-10-10T18:00:00-04:00',
    'isDaytime': True,
    'temperature': 62,
    'temperatureUnit': 'F',
    'temperatureTrend': None,
    'windSpeed': '7 mph',
    'windDirection': 'SW',
    'icon': 'https://api.weather.gov/icons/land/day/sct?size=medium',
    'shortForecast': 'Mostly Sunny',
    'detailedForecast': 'Mostly sunny, with a high near 62.'},
  {'number': 12,
    'name': 'Monday Night',
    'startTime': '2022-10-10T18:00:00-04:00',
    'endTime': '2022-10-11T06:00:00-04:00',
    'isDaytime': False,
    'temperature': 44,
    'temperatureUnit': 'F',
    'temperatureTrend': None,
    'windSpeed': '5 mph',
    'windDirection': 'S',
    'icon': 'https://api.weather.gov/icons/land/night/sct?size=medium',
    'shortForecast': 'Partly Cloudy',
    'detailedForecast': 'Partly cloudy, with a low around 44.'},
  {'number': 13,
    'name': 'Tuesday',
    'startTime': '2022-10-11T06:00:00-04:00',
    'endTime': '2022-10-11T18:00:00-04:00',
    'isDaytime': True,
    'temperature': 64,
    'temperatureUnit': 'F',
    'temperatureTrend': None,
    'windSpeed': '7 mph',
    'windDirection': 'S',
    'icon': 'https://api.weather.gov/icons/land/day/sct?size=medium',
    'shortForecast': 'Mostly Sunny',
    'detailedForecast': 'Mostly sunny, with a high near 64.'},
  {'number': 14,
    'name': 'Tuesday Night',
    'startTime': '2022-10-11T18:00:00-04:00',
    'endTime': '2022-10-12T06:00:00-04:00',

```

```

    'isDaytime': False,
    'temperature': 50,
    'temperatureUnit': 'F',
    'temperatureTrend': None,
    'windSpeed': '7 mph',
    'windDirection': 'S',
    'icon': 'https://api.weather.gov/icons/land/night/sct?size=medium',
    'shortForecast': 'Partly Cloudy',
    'detailedForecast': 'Partly cloudy, with a low around 50.'}}}]

```

```

[11]: forecast = pd.DataFrame(forecast_raw['properties']['periods'], columns=['name',
    ↪ 'temperature', 'temperatureUnit', 'windSpeed', 'windDirection', 'shortForecast'])

```

```

[12]: forecast

```

```

[12]:
      name  temperature  temperatureUnit  windSpeed  windDirection \
0  This Afternoon         69              F      6 mph           NW
1      Tonight         48              F    1 to 5 mph           SW
2    Thursday         73              F      3 mph           SW
3 Thursday Night         49              F    2 to 6 mph           SW
4      Friday         52              F    7 to 10 mph           NW
5 Friday Night         39              F    3 to 9 mph           NW
6    Saturday         53              F    3 to 9 mph            W
7 Saturday Night         42              F      8 mph            W
8      Sunday         59              F      9 mph            W
9  Sunday Night         43              F      7 mph           SW
10 Columbus Day         62              F      7 mph           SW
11 Monday Night         44              F      5 mph            S
12    Tuesday         64              F      7 mph            S
13 Tuesday Night         50              F      7 mph            S

      shortForecast
0          Sunny
1    Partly Cloudy
2    Partly Sunny
3  Chance Rain Showers
4  Chance Rain Showers
5  Chance Rain Showers
6    Mostly Sunny
7    Partly Cloudy
8    Mostly Sunny
9    Partly Cloudy
10   Mostly Sunny
11   Partly Cloudy
12   Mostly Sunny
13   Partly Cloudy

```

[]: