# API & JSON

SI206 Discussion 9

## Objective

- The purpose of today's section is to get familiar with API and JSON.
  - Create an API request
  - Get familiar with JSON viewer
  - Understand the difference between JSON format and python format
  - Analyze a nested data
  - Debugging

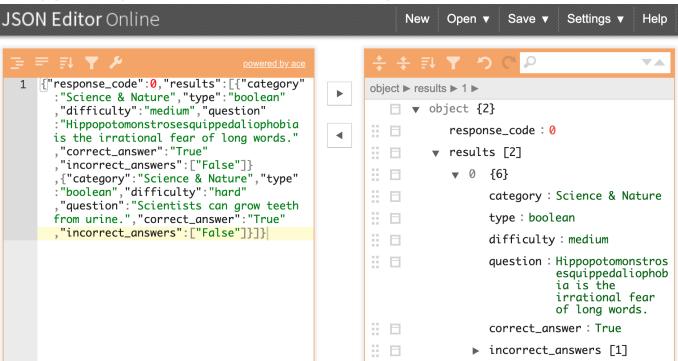
## Understand the difference between JSON format and python format

```
url = "https://api.sunrise-sunset.org/json?data=today"
data1 = requests.get(url)  # receive response
data2 = data1.text  # request -> JSON object
data3 = json.loads(data2)  # JSON -> Python object
data4 = json.dumps(data3)  # Python -> JSON object
```

- data2 and data4 are identical
- You need to paste data2 or data4 to JSON Online Editor

### JSON Editor Online: <a href="https://jsoneditoronline.org/#left=local.vigeci&right=local.sinece">https://jsoneditoronline.org/#left=local.vigeci&right=local.sinece</a>

- Google "JSON editor online"
- Just copy and paste JSON format strings.



## Today's Task (more detail in starter code)

Use the World Bank API and get population for different countries

#### TASK 1:

Write a function get\_data(country\_code, year) that takes a country code (e.g. USA, BRA) and year (e.g. 2004) returns a python list that has population related information searched by country and year.

#### TASK 2:

Write a function population\_year(country\_code, year) that calls get\_data(country\_code, year) and returns the population of the country.

## How to go about TASK 1?

- Read documentation for World Bank API
   https://datahelpdesk.worldbank.org/knowledgebase/articles/898581
- 2. What is the base URL of the World Bank API?
- 3. What is the code for population information? (Scroll to "Featured Indicators" on the page below)

  <a href="http://datatopics.worldbank.org/world-development-indicators/themes/people.html">http://datatopics.worldbank.org/world-development-indicators/themes/people.html</a>
- 4. How should the parameters about population, country, and year be combined with the base URL?

## TASK 1: Create an API request with the request url

Sample code for API request (from lecture material)

```
try:
    # get the data from the url
    params = str(lat) + "&lng=" + str(long) +"&date=today"
    url = "https://api.sunrise-sunset.org/json?lat=" + params
    r = requests.get(url)
    dict = json.loads(r.text)
except:
    print("error when reading from url")
    dict = {}
```

## Bonus! (If you have extra time...)

Write code to print top five highly populated countries among all countries. Sample output:

- 1. China (1,366,990,000)
- 2. India (1,260,160,000)
- 3. United States (318,816,000)
- 4. Indonesia (252,164,800)
- 5. Brazil (203,212,000)

Is your output similar to above? Does your output cover the five countries? If no, consider what kind of parameter do you need to change and try it.