

SI206 Discussion 9

API & JSON

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 : <https://jsoneditoronline.org/#left=local.vigeci&right=local.sinece>

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

The screenshot displays the JSON Editor Online interface. The top bar includes the title "JSON Editor Online" and navigation buttons: "New", "Open", "Save", "Settings", and "Help". The main area is split into two panels. The left panel shows a JSON string being edited, with line numbers on the left margin. The right panel shows a hierarchical tree view of the JSON data, with expandable nodes and a search bar at the top.

JSON String (Left Panel):

```
1 [{"response_code":0,"results":[{"category":  
  "Science & Nature","type":"boolean"  
  ,"difficulty":"medium","question"  
  :  
    "Hippopotomonstrosesquippedaliophobia  
    is the irrational fear of long words."  
  ,"correct_answer":"True"  
  ,"incorrect_answers":["False"]}]  
  ,{"category":"Science & Nature","type"  
  :  
    "boolean","difficulty":"hard"  
  ,"question":"Scientists can grow teeth  
  from urine.","correct_answer":"True"  
  ,"incorrect_answers":["False"]}]}]
```

JSON Tree View (Right Panel):

- object ▶ results ▶ 1 ▶
 - object {2}
 - response_code : 0
 - results [2]
 - 0 {6}
 - category : Science & Nature
 - type : boolean
 - difficulty : medium
 - question : Hippopotomonstrosesquippedaliophobia is the irrational fear of long words.
 - correct_answer : True
 - incorrect_answers [1]

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?

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)

<http://datatopics.worldbank.org/world-development-indicators/themes/people.html>

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.