SI206 Discussion 10

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 nested data
  - Debugging

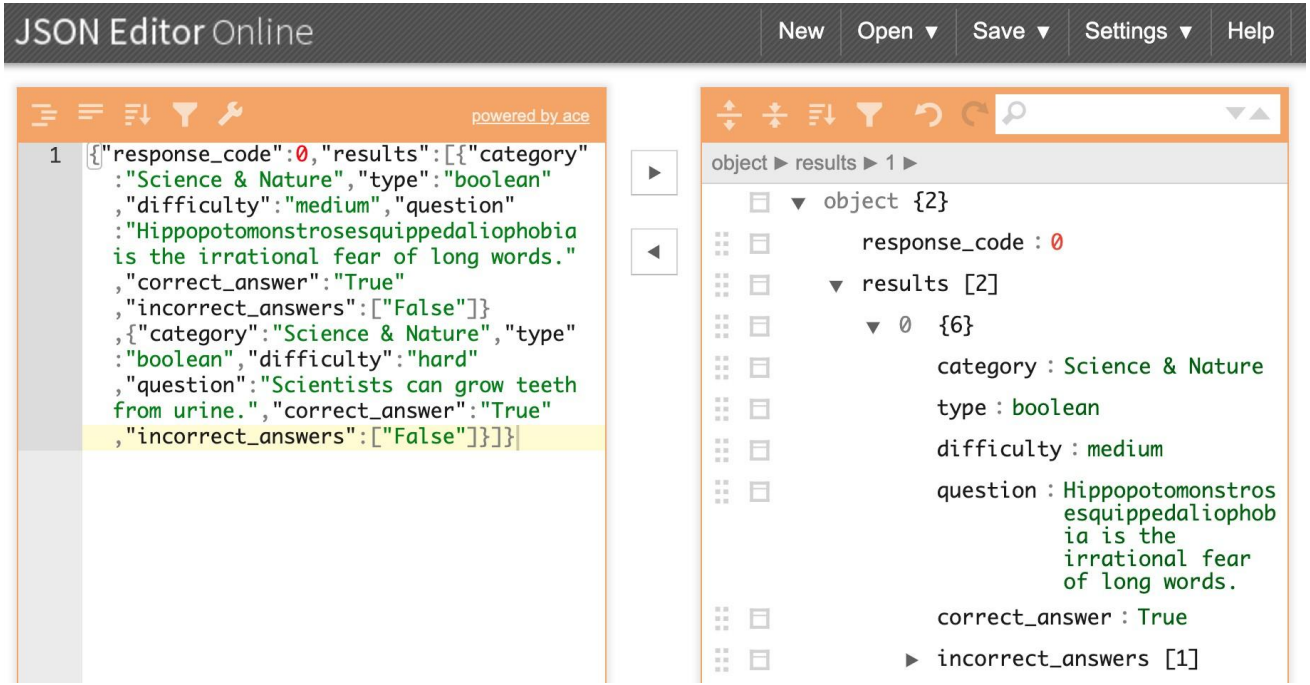
Understand the difference between JSON format and python format

```
url = "https://api.sunrise-sunset.org/json?lat=36.7201600&lng=-4.4203400&date=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.



Today's Task (more detail in starter code)

Use the World Bank API and get population for different countries

Demo:
Write a function get_population(country_code, date) that takes a country code (e.g. USA, BRA) and a date in years (e.g. 2017) that returns the value as an integer.

TASK 1:
Write a function get_data(country_code, first_year, second_year) that takes a country code (e.g. USA, BRA) and two consecutive years (e.g. 2004 and 2005) that returns the data from the API after converting it to a python list.

TASK 2:
Write a function population_growth(country_code, first_year, second_year) that calls get_data(country_code, first_year, second_year) and returns the population growth of the country for the two years in a tuple.

DEMO

Walking through how to solve get_population()

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 = {}
```