

Programming fundamentals with Python

Pepe García

2020-04-20

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<https://slides.com/pepegar/pfp-19/live>

Plan for today

The Internet

HTTP

JSON

requests library

Web APIs

The Internet

0:46 - 1:35

The Internet

The internet is a VERY BIG computer network. It's like a **graph** of computers ones connected to anothers.

HTTP is the protocol that moves The Internet:

Based on **requests** and **responses**

Clients do requests and **servers** answer with responses

HTTP Requests

HTTP requests and responses are messages interchanged between client and server

HTTP requests may contain a lot of metadata but for us, today, the only field that matters is the URL:

HTTP Clients

Web browsers are basically HTTP clients that allow us to navigate the web with our computer

HTTP Clients

Deconstruct what happens when we browse the web (Developer mode)

start at

<https://en.wikipedia.org/wiki/Echidna>

Web APIs

Web APIs, or just APIs are the most common way for exposing information from a web server

JSON

<http://json.org>

JSON is a data interchange format used to share data between HTTP clients and servers. Some valid JSON values are:

`[1,2,3]` # lists

`1` # numbers

`"potatoes"` # Strings

`{"name":"Pepe","surname":"Garcia"}` # dictionaries

JSON

<http://json.org>

JSON is very similar to how we declare our data in Python but the cool thing about it is that it can be used **from any language**.

For example, a **web API** can be written in Java, and we use it from Python because both **client and server understand JSON**

JSON

Explain JSON

Requests is the most famous HTTP library for Python. It has an HTTP client as well as other useful utilities such as JSON handler, etc.

We can use requests to get an HTTP response as follows:

```
import requests

response = requests.get("url")

data = response.json()
```

Example of how **requests** works.

How do we obtain the JSON from the response?

Use **`http://api.open-notify.org/astros.json`** as an example

Use the Star Wars API to list all planet names from star wars.

`https://swapi.co/`

Use Github's API to list all repositories in your github account:

`https://developer.github.com/v3/repos/#list-user-repositories`

Fuel for crazy ideas

<https://github.com/toddmotto/public-apis>

Exercises

Exercise 1

Create a function that uses the **requests** library to get the lyrics of a song.

You can use the **lyrics.ovh** api as described here:

<https://lyricsovh.docs.apiary.io/#reference/0/lyrics-of-a-song/search?console=1>

Exercise 1

Create a function that returns the current latitude and longitude of the ISS

<http://api.open-notify.org/>

Exercise 3

using the given population API, create a program that:

- gets a list of all available countries
- Gets the first 10 countries
- Gets the country's today & tomorrow population.

<http://api.population.io/#!/countries/listCountries>