Introduction to APIs

Tim Book

What is an API?

API stands for **Application Programming Interface**. In the broadest sense of the definition, an API is any pattern of programming that allows a programmer to solve a task. You already know several APIs!

- The **pandas** API
- The **matplotlib** API
- The **Scikit-Learn** API

What is a Web API?

Ok, but this lesson is specifically about **Web APIs**. A web API uses (usually) HTTP to retrieve or manipulate data from the web.

HTTP = **H**yper**T**ext **T**ransfer **P**rotocol

What is HTTP?

HTTP is a set of rules for passing data around the web

HyperText   Transfer   Protocol

As in, HyperText Markup   **Movin' stuff**   **A set of rules**
Language (HTML)   **around**

Sidenote: You have heard of a few "protocols" already:
- IP = Internet Protocol
- FTP = File Transfer Protocol
- SFTP = Secure FTP

HTTP Requests

HTTP commands are in the form of **requests**. There are several types of requests. Since we are data scientists, we'll mostly only need the **GET** request. Sometimes, the **POST** request.

The Example Example

Let's check out this website:

www.example.com

And press **Ctrl-Shift-I** (Cmd-Shift-I for Mac)

The Example Example

Now, let's open up our **command lines** and carry out our first HTTP request!

<p style="text-align:center"><code style="color:red">curl www.example.com</code></p>
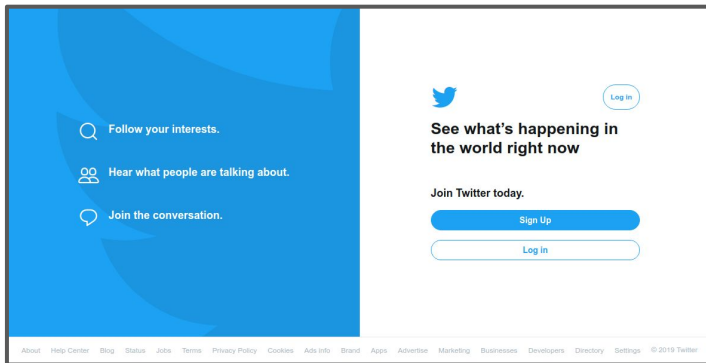
… whoa. Why did we get this?

What we do... literally every time we go to a website.

GET www.twitter.com

```
<!doctype html>
<html>
<head>
    <title>Welcome to Twitter or Whatever!</title>
</head>

<body>
    ...
</body>
</html>
```

Let's try a real Web API

We'll use the PokeAPI: https://pokeapi.co/

And let's run:

    `curl https://pokeapi.co/api/v2/pokemon/bulbasaur`

… and what is this?! Definitely not HTML!

Meet JSON!

This is actually **JSON** - **J**ava**S**cript **O**bject **N**otation. It's a very standard format for data to come in on the web.

If you look carefully, it looks a lot like a Python dictionary, doesn't it?

```
{
  "abilities": [
    {
      "ability": {
        "name": "chlorophyll",
        "url":
"https://pokeapi.co/api/v2/ability/34/"
      },
      "is_hidden": true,
      "slot": 3
    },
    {
      "ability": {
        "name": "overgrow",
        "url":
"https://pokeapi.co/api/v2/ability/65/"
      },
      "is_hidden": false,
      "slot": 1
    }
  ],...
```

Fine, fine, time for Python

Let's go to the notebook!