

# Introduction to APIs and JSONs

INTERMEDIATE IMPORTING DATA IN PYTHON



**Hugo Bowne-Anderson**  
Data Scientist at DataCamp

# APIs

- Application Programming Interface
- Protocols and routines
  - Building and interacting with software applications

## OMDb API

The Open Movie Database

# APIs

- Application Programming Interface
- Protocols and routines
  - Building and interacting with software applications

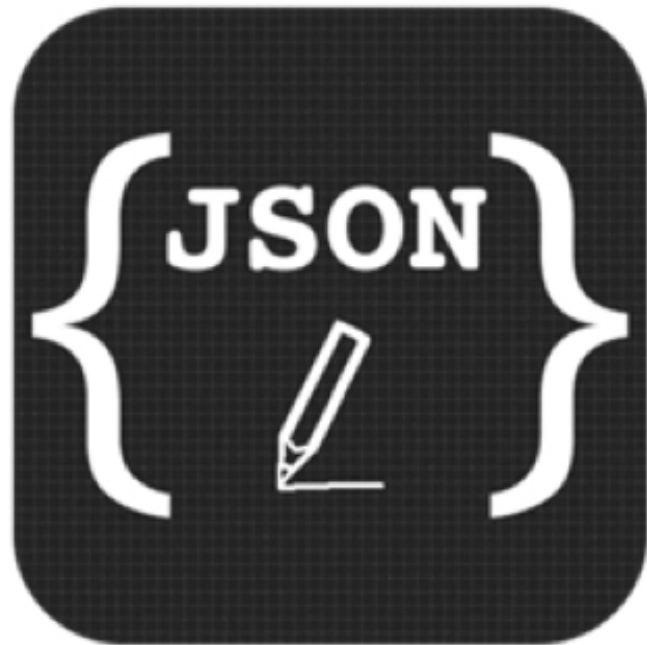
OMDb API

The Open Movie Database



# JSONs

- JavaScript Object Notation
- Real-time server-to-browser communication
- Douglas Crockford
- Human readable



# JSONs

```
{'Actors': 'Samuel L. Jackson, Julianna Margulies, Nathan  
Phillips, Rachel Blanchard',  
  'Awards': '3 wins & 7 nominations.',  
  'Country': 'Germany, USA, Canada',  
  'Director': 'David R. Ellis',  
  'Genre': 'Action, Adventure, Crime',  
  'Language': 'English',  
  'Rated': 'R',  
  'Released': '18 Aug 2006',  
  'Runtime': '105 min',  
  'Title': 'Snakes on a Plane',  
  'Type': 'movie',  
  'Writer': 'John Heffernan (screenplay), Sebastian Gutierrez  
(screenplay), David Dalessandro (story), John Heffernan (story)',  
  'Year': '2006',  
  'imdbID': 'tt0417148',  
  'imdbRating': '5.6',  
  'imdbVotes': '114,668'}
```

# JSONs

```
{'Actors': 'Samuel L. Jackson, Julianna Margulies, Nathan  
Phillips, Rachel Blanchard',  
  'Awards': '3 wins & 7 nominations.',  
  'Country': 'Germany, USA, Canada',  
  'Director': 'David R. Ellis',  
  'Genre': 'Action, Adventure, Crime',  
  'Language': 'English',  
  'Rated': 'R',  
  'Released': '18 Aug 2006',  
  'Runtime': '105 min',  
  'Title': 'Snakes on a Plane',  
  'Type': 'movie',  
  'Writer': 'John Heffernan (screenplay), Sebastian Gutierrez  
(screenplay), David Dalessandro (story), John Heffernan (story)',  
  'Year': '2006',  
  'imdbID': 'tt0417148',  
  'imdbRating': '5.6',  
  'imdbVotes': '114,668'}
```

# JSONs

```
{'Actors': 'Samuel L. Jackson, Julianna Margulies, Nathan  
Phillips, Rachel Blanchard',  
  'Awards': '3 wins & 7 nominations.',  
  'Country': 'Germany, USA, Canada',  
  'Director': 'David R. Ellis',  
  'Genre': 'Action, Adventure, Crime',  
  'Language': 'English',  
  'Rated': 'R',  
  'Released': '18 Aug 2006',  
  'Runtime': '105 min',  
  'Title': 'Snakes on a Plane',  
  'Type': 'movie',  
  'Writer': 'John Heffernan (screenplay), Sebastian Gutierrez  
(screenplay), David Dalessandro (story), John Heffernan (story)',  
  'Year': '2006',  
  'imdbID': 'tt0417148',  
  'imdbRating': '5.6',  
  'imdbVotes': '114,668'}
```

# Loading JSONs in Python

```
import json
with open('snakes.json', 'r') as json_file:
    json_data = json.load(json_file)
```

```
type(json_data)
```

```
dict
```



# Exploring JSONs in Python

```
for key, value in json_data.items():  
    print(key + ': ', value)
```

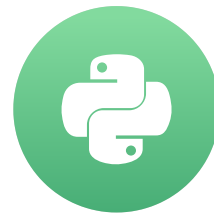
```
Title: Snakes on a Plane  
Country: Germany, USA, Canada  
Response: True  
Language: English  
Awards: 3 wins & 7 nominations.  
Year: 2006  
Actors: Samuel L. Jackson, Julianna Margulies  
Runtime: 105 min  
Genre: Action, Adventure, Crime  
imdbID: tt0417148  
Director: David R. Ellis  
imdbRating: 5.6  
Rated: R  
Released: 18 Aug 2006
```

# Let's practice!

INTERMEDIATE IMPORTING DATA IN PYTHON

# APIs and interacting with the world wide web

INTERMEDIATE IMPORTING DATA IN PYTHON



**Hugo Bowne-Anderson**  
Data Scientist at DataCamp

# Herein, you'll learn

- What APIs are
- Why APIs are important
- In the exercises:
  - Connecting to APIs
  - Pulling data from APIs
  - Parsing data from APIs

# What is an API?

- Set of protocols and routines
- Bunch of code
  - Allows two software programs to communicate with each other

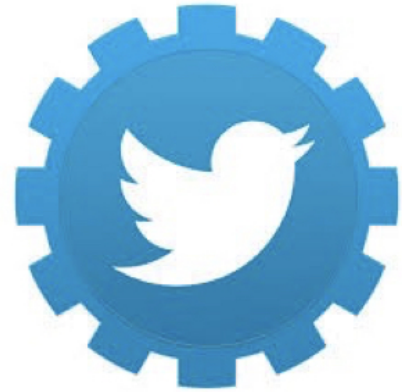


# What is an API?

- Set of protocols and routines
- Bunch of code
  - Allows two software programs to communicate with each other



# APIs are everywhere



# APIs are everywhere



**UBER** Developers



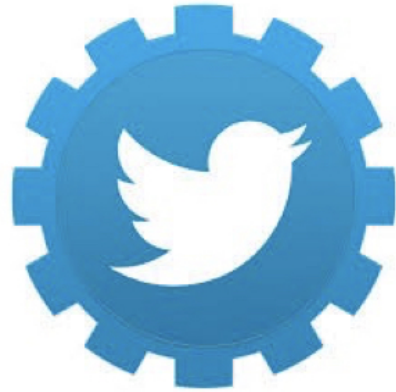
# APIs are everywhere



UBER Developers



# APIs are everywhere



UBER Developers



Instagram  
API

# Connecting to an API in Python

```
import requests
url = 'http://www.omdbapi.com/?t=hackers'
r = requests.get(url)
json_data = r.json()
for key, value in json_data.items():
    print(key + ': ', value)
```

# What was that URL?

- http - making an HTTP request
- www.omdbapi.com - querying the OMDB API
- ?t=hackers
  - Query string
  - Return data for a movie with title (t) 'Hackers'

```
'http://www.omdbapi.com/?t=hackers'
```

# OMDb API

[OMDb API](#)[Usage](#)[Parameters](#)[Examples](#)[Change Log](#)[Donors ▾](#)[Donate](#)[Contact](#)

## Usage

Send all data requests to:

`http://www.omdbapi.com/?`

# OMDb API

[OMDb API](#)[Usage](#)[Parameters](#)[Examples](#)[Change Log](#)[Donors ▾](#)[Donate](#)[Contact](#)

## Usage

Send all data requests to:

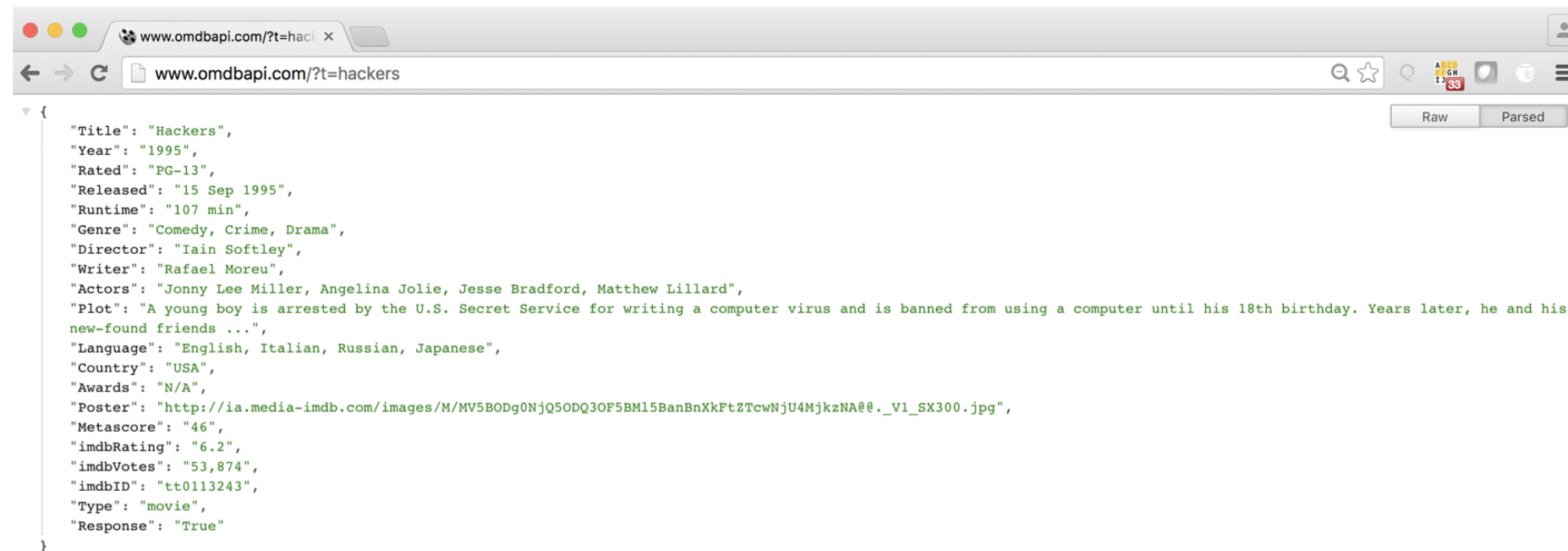
`http://www.omdbapi.com/?`

## Parameters

By ID or Title

Parameter	Required	Valid Options	Default Value	Description
i	Optional*		<empty>	A valid IMDb ID (e.g. tt1285016)
t	Optional*		<empty>	Movie title to search for.
type	No	movie, series, episode	<empty>	Type of result to return.

# It's a regular URL!



The screenshot shows a web browser window with the address bar displaying `www.omdbapi.com/?t=hackers`. The page content is a JSON response from the IMDb API. The JSON object contains the following fields: `Title` ("Hackers"), `Year` ("1995"), `Rated` ("PG-13"), `Released` ("15 Sep 1995"), `Runtime` ("107 min"), `Genre` ("Comedy, Crime, Drama"), `Director` ("Iain Softley"), `Writer` ("Rafael Moreu"), `Actors` ("Jonny Lee Miller, Angelina Jolie, Jesse Bradford, Matthew Lillard"), `Plot` ("A young boy is arrested by the U.S. Secret Service for writing a computer virus and is banned from using a computer until his 18th birthday. Years later, he and his new-found friends ..."), `Language` ("English, Italian, Russian, Japanese"), `Country` ("USA"), `Awards` ("N/A"), `Poster` ("http://ia.media-imdb.com/images/M/MV5BODg0NjQ5ODQ3OF5BMl5BanBnXkFtZTcwNjU4MjkzNA@@.\_V1\_SX300.jpg"), `Metascore` ("46"), `imdbRating` ("6.2"), `imdbVotes` ("53,874"), `imdbID` ("tt0113243"), `Type` ("movie"), and `Response` ("True"). The browser interface includes standard navigation buttons, a search bar, and a user profile icon. Below the JSON response, there are two buttons labeled "Raw" and "Parsed".

```
{
  "Title": "Hackers",
  "Year": "1995",
  "Rated": "PG-13",
  "Released": "15 Sep 1995",
  "Runtime": "107 min",
  "Genre": "Comedy, Crime, Drama",
  "Director": "Iain Softley",
  "Writer": "Rafael Moreu",
  "Actors": "Jonny Lee Miller, Angelina Jolie, Jesse Bradford, Matthew Lillard",
  "Plot": "A young boy is arrested by the U.S. Secret Service for writing a computer virus and is banned from using a computer until his 18th birthday. Years later, he and his new-found friends ...",
  "Language": "English, Italian, Russian, Japanese",
  "Country": "USA",
  "Awards": "N/A",
  "Poster": "http://ia.media-imdb.com/images/M/MV5BODg0NjQ5ODQ3OF5BMl5BanBnXkFtZTcwNjU4MjkzNA@@._V1_SX300.jpg",
  "Metascore": "46",
  "imdbRating": "6.2",
  "imdbVotes": "53,874",
  "imdbID": "tt0113243",
  "Type": "movie",
  "Response": "True"
}
```

# Let's practice!

INTERMEDIATE IMPORTING DATA IN PYTHON