



IMPORTING DATA IN PYTHON II

Introduction to APIs and JSONs



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'}
```

Loading JSONs in Python

```
In [1]: import json
```

```
In [2]: with open('snakes.json', 'r') as json_file:  
...:     json_data = json.load(json_file)
```

```
In [3]: type(json_data)
```

```
Out[3]: dict
```



Exploring JSONs in Python

```
In [4]: 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
```



IMPORTING DATA IN PYTHON II

Let's practice!



IMPORTING DATA IN PYTHON II

APIs and interacting with the world wide web



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





APIs are everywhere



UBER Developers



Instagram
API



Connecting to an API in Python

```
In [1]: import requests

In [2]: url = 'http://www.omdbapi.com/?t=hackers'

In [3]: r = requests.get(url)

In [4]: json_data = r.json()

In [5]: 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/?
```

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 URL `www.omdbapi.com/?t=hackers` in the address bar. The page displays a JSON response from the OMDb 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",
  "Response": "True"
}
```

On the right side of the JSON viewer, there are two tabs: "Raw" and "Parsed". The "Parsed" tab is currently selected.



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Let's practice!