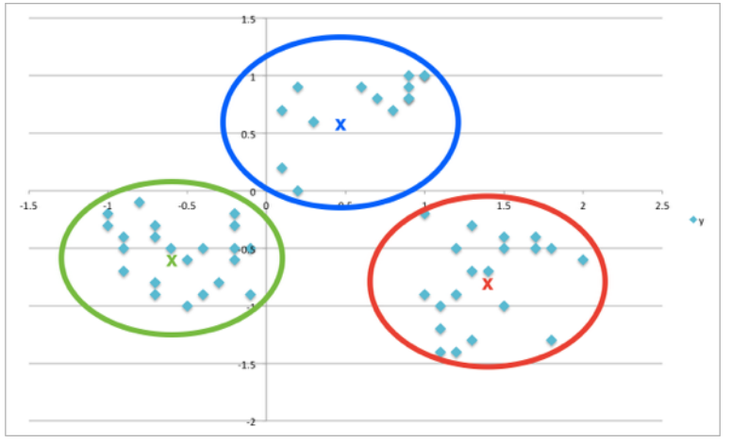
GENERAL ASSEMBLY

DATA SCIENCE

DATA FROM API'S AND WEB SCRAPING

LAST TIME:



I. CLUSTER ANALYSIS

II. K-MEANS CLUSTERING

III. CLUSTER VALIDATION

EXERCISE:

IV. K-MEANS CLUSTERING IN PYTHON

QUESTIONS?

WHAT WAS THE MOST INTERESTING THING YOU LEARNT?

WHAT WAS THE HARDEST TO GRASP?

I. DATA FORMATS
II. APIS

EXERCISES:
III. EXTENDED HANDS-ON LAB

JSON, CSV, ETC...

JSON (JavaScript Object Notation) is:

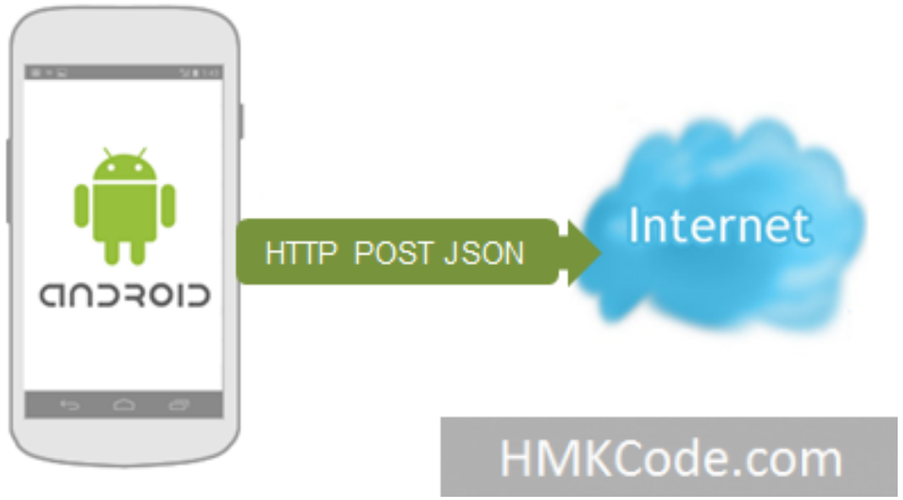
a lightweight data-interchange format

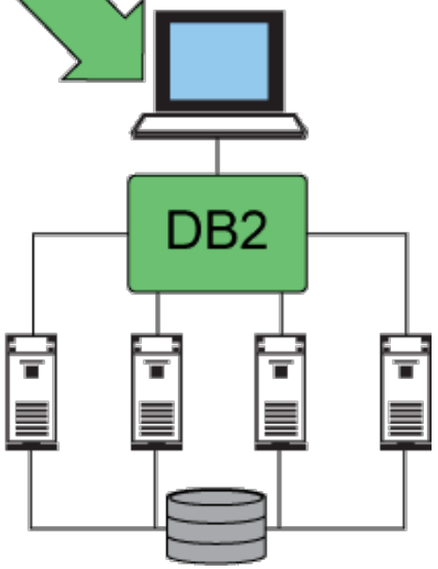
a string

JSON can be passed

between applications

easy for machines to parse and generate





JSON are passed through applications

as strings

and converted into native objects per language.

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```
{ "empinfo" :
    {
          "employees" : [
          {
            "name" : "Scott Philip",
            "salary" : £44k,
            "age" : 27,

          },

          {
            "name" : "Tim Henn",
            "salary" : £40k,
            "age" : 27,
          },

          {
           “name” : “Long Yong”,
           “salary” : £40k,
           “age” : 28,

          }
                    ]
    }
}
```

PYTHON OBJECT ——> JSON STRING

```
import json
py_object = [ { 'a':'A', 'b':(2, 4), 'c':3.0 } ]
json_string = json.dumps(py_object)
print ‘JSON:’, json_string
```

```
JSON: [{"a": "A", "c": 3.0, "b": [2, 4]}]
```

JSON STRING ——> PYTHON OBJECT

```
decoded = json.loads(json_string)
```

PYTHON JSON LIBRARY

https://docs.python.org/2/library/json.html

CSV (Comma Separated Values):

```
name,game,points
John,basketball,3
Mary,volleyball,5
James,ping pong,2
…
```

CSV (Comma Separated Values):

- easy to read and write
- structured like a table
- very common
- can export to/from MS Excel

PYTHON CSV LIBRARY

https://docs.python.org/2/library/csv.html

OTHER DATA FORMATS

txt

tsv

xml

dat

images

binary

etc…

APIs

APIs (Application Programming Interface) allow people to interact with the structures of an application

- get
- put
- delete
- update
- …

Best practices for APIs are to use RESTful principles.

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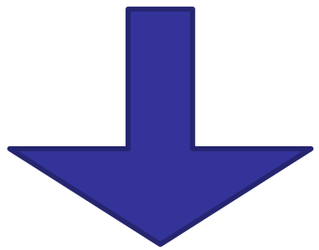


Representational State Transfer (REST)

RESTFUL EXAMPLE

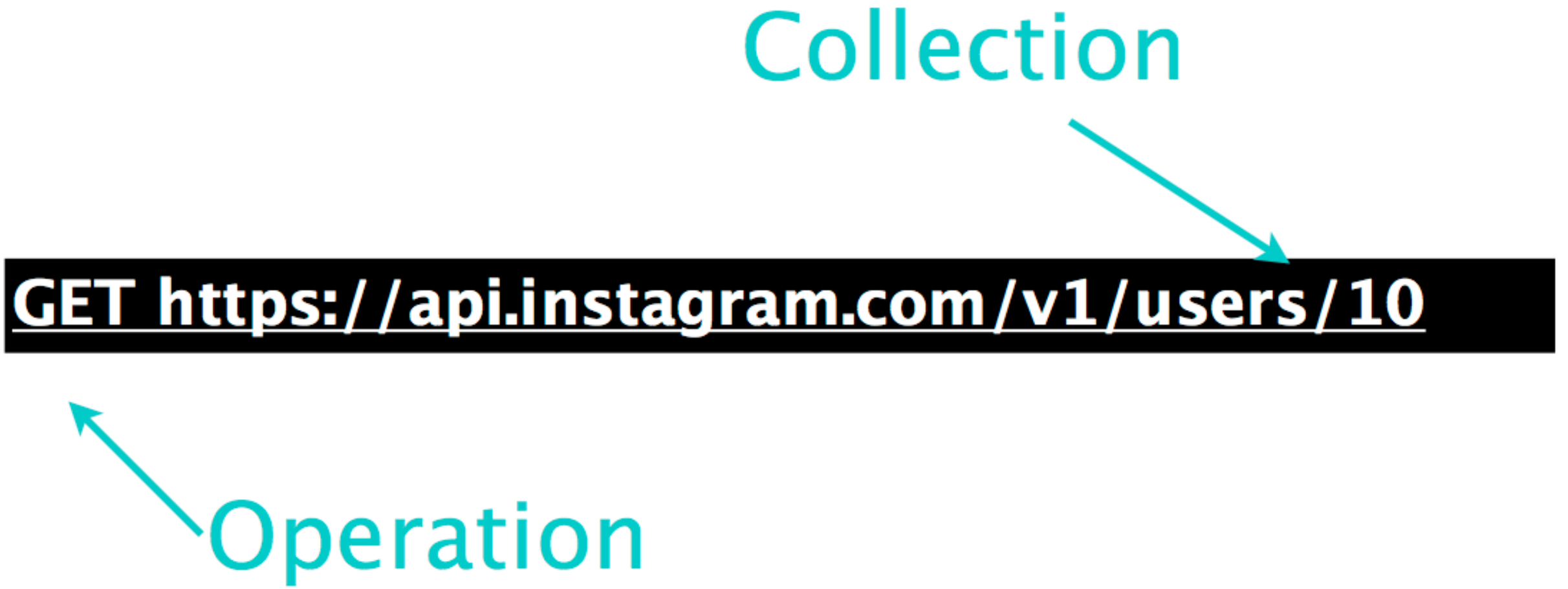
RESTful API HTTP methods

Resource	GET	PUT	POST	DELETE
Collection URI, such as `http://example.com/resources/`	**List** the URIs and perhaps other details of the collection's members.	**Replace** the entire collection with another collection.	**Create** a new entry in the collection. The new entry's URI is assigned automatically and is usually returned by the operation.[9]	**Delete** the entire collection.
Element URI, such as `http://example.com/resources/item17`	**Retrieve** a representation of the addressed member of the collection, expressed in an appropriate Internet media type.	**Replace** the addressed member of the collection, or if it does not exist, **create** it.	Not generally used. Treat the addressed member as a collection in its own right and **create** a new entry in it.[9]	**Delete** the addressed member of the collection.

http://en.wikipedia.org/wiki/Representational_state_transfer

- The Base URL
- An interactive media type (usually JSON)
- Operations (GET, PUT, POST, DELETE)
- Driven by http requests

REST API EXAMPLE



REST API EXAMPLE

```
GET https://api.instagram.com/v1/users/search/?q=andy
```

Querystring

TWITTER REST API

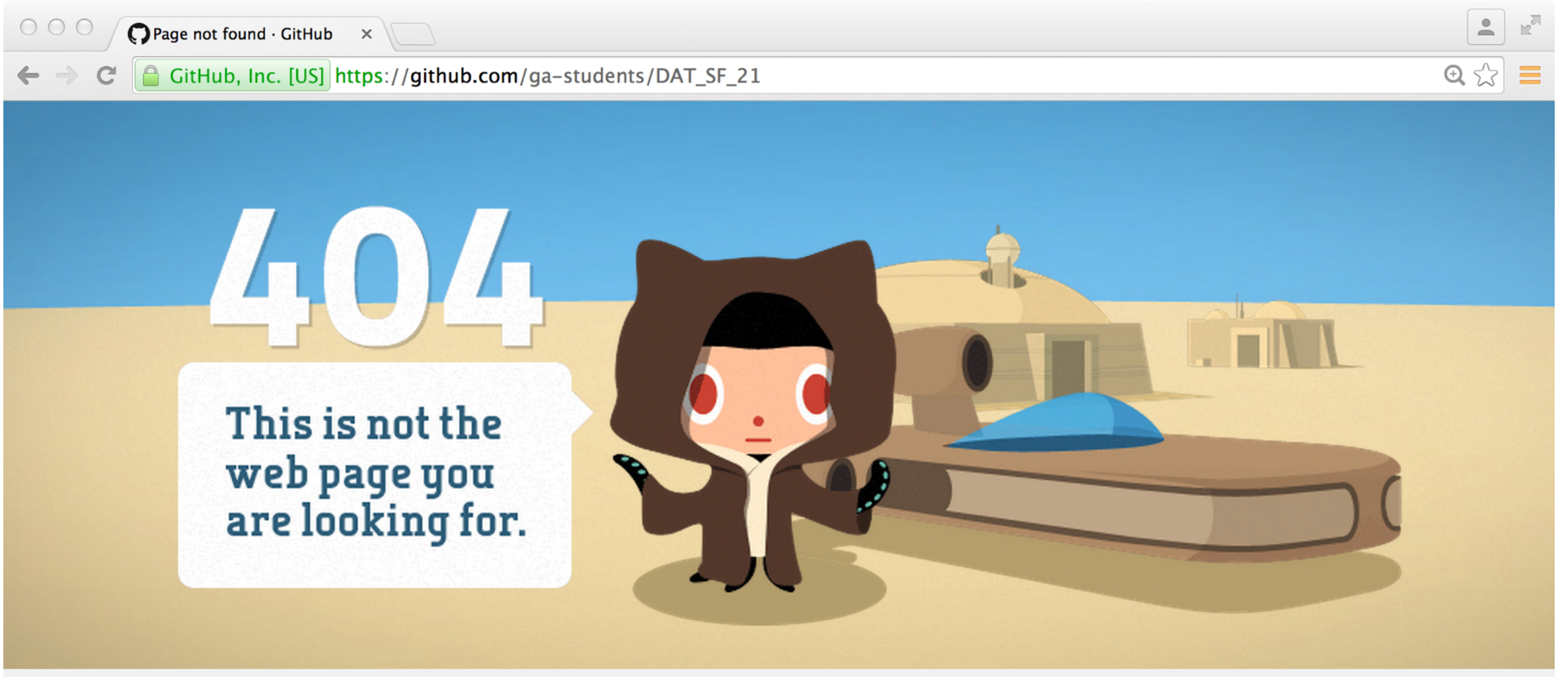
https://dev.twitter.com/rest/public

APIS

Okay, so what if we execute the following, but there is no item 18 in the users collection?

GET https://api.instagram.com/v1/users/18

APIS


Page not found · GitHub
GitHub, Inc. [US] https://github.com/ga-students/DAT_SF_21
404
This is not the web page you are looking for.

LINKEDIN REST API

https://developer.linkedin.com/docs/signin-with-linkedin

LIST OF PYTHON APIS

http://www.pythonapi.com/

PAIR EXERCISE: http://www.pythonapi.com/

1) CHOOSE 1 API: WHAT DATA YOU CAN GET?

2) INSTALL PYTHON MODULE, TRY TO EXTRACT DATA

3) DISCUSS: HOW COULD YOU LEVERAGE THAT API? HOW COULD YOU USE THE DATA?

QUESTIONS?

EX: SCRAPING WITH PYTHON