INTRO TO DATA SCIENCE
LECTURE 3: APIS & JSON

I. APIS AND JSON

JSON (JavaScript Object Notation) is a borrowed JavaScript form turned into a string that can be passed between applications.

JSON are passed through applications as **strings**, and converted into native objects per language.

```
>>> someFile = open('/Users/epodojil/GA_Data_Science/a.json').read()
>>> print json.dumps(someFile)
"{\n    \"glossary\": {\n        \"title\": \"example glossary\",\n        \"GlossDiv\": {\n            \"title\": \"S\",\n        \"
\"SGML\",\n        \"SortAs\": \"SGML\",\n        \"GlossTerm\": \"Standard Generalized Markup Language\",\n        \"Acr
ef\": {\n        \"para\": \"A meta-markup language, used to create markup languages such as DocBook.\",\n
\"GlossSee\": \"markup\"\n        }\n        }\n        }\n        }\n}"
>>> print someFile
{
    "glossary": {
        "title": "example glossary",
    "GlossDiv": {
            "title": "S",
        "GlossList": {
                "GlossEntry": {
                    "ID": "SGML",
            "SortAs": "SGML",
            "GlossTerm": "Standard Generalized Markup Language",
            "Acronym": "SGML",
            "Abbrev": "ISO 8879:1986",
            "GlossDef": {
                    "para": "A meta-markup language, used to create markup languages such as DocBook.",
            "GlossSeeAlso": ["GML", "XML"]
                },
            "GlossSee": "markup"
                }
            }
        }
    }
}
>>> print json.loads(someFile)
{u'glossary': {u'GlossDiv': {u'GlossList': {u'GlossEntry': {u'GlossDef': {u'GlossSeeAlso': [u'GML', u'XML'], u'para': u'A meta-
': u'markup', u'Acronym': u'SGML', u'GlossTerm': u'Standard Generalized Markup Language', u'Abbrev': u'ISO 8879:1986', u'SortAs
```

```
>>> someFile = open('/Users/epodojil/GA_Data_Science/a.json').read()
>>> print json.dumps(someFile)
"{\n    \"glossary\": {\n        \"title\": \"example glossary\",\n    \"GlossDiv\": {\n            \"title\": \"S\",\n    \"
\"SGML\",\n        \"SortAs\": \"SGML\",\n            \"GlossTerm\": \"Standard Generalized Markup Language\",\n        \"Acr
ef\": {\n                    \"para\": \"A meta-markup language, used to create markup languages such as DocBook.\",\n
\"GlossSee\": \"markup\"\n                }\n            }\n        }\n    }\n}"
>>> print someFile
{
    "glossary": {
        "title": "example glossary",
    "GlossDiv": {
            "title": "S",
      "GlossList": {
                "GlossEntry": {
                    "ID": "SGML",
          "SortAs": "SGML",
          "GlossTerm": "Standard Generalized Markup Language",
          "Acronym": "SGML",
          "Abbrev": "ISO 8879:1986",
          "GlossDef": {
                        "para": "A meta-markup language, used to create markup languages such as DocBook.",
            "GlossSeeAlso": ["GML", "XML"]
                    },
          "GlossSee": "markup"
                }
            }
        }
    }
}
>>> print json.loads(someFile)
{u'glossary': {u'GlossDiv': {u'GlossList': {u'GlossEntry': {u'GlossDef': {u'GlossSeeAlso': [u'GML', u'XML'], u'para': u'A meta-
': u'markup', u'Acronym': u'SGML', u'GlossTerm': u'Standard Generalized Markup Language', u'Abbrev': u'ISO 8879:1986', u'SortAs
```

String

Object

```
>>> someFile = open('/Users/epodojil/GA_Data_Science/a.json').read()
>>> print json.dumps(someFile)
"{\n    \"glossary\": {\n        \"title\": \"example glossary\",\n        \"GlossDiv\": {\n            \"title\": \"S\",\n    \"
\"SGML\",\n            \"SortAs\": \"SGML\",\n            \"GlossTerm\": \"Standard Generalized Markup Language\",\n        \"Acr
ef\": {\n                    \"para\": \"A meta-markup language, used to create markup languages such as DocBook.\",\n
\"GlossSee\": \"markup\"\n                }\n            }\n        }\n    }\n}"
>>> print someFile
{
    "glossary": {
        "title": "example glossary",
        "GlossDiv": {
            "title": "S",
        "GlossList": {
                "GlossEntry": {
                    "ID": "SGML",
            "SortAs": "SGML",
            "GlossTerm": "Standard Generalized Markup Language",
            "Acronym": "SGML",
            "Abbrev": "ISO 8879:1986",
            "GlossDef": {
                    "para": "A meta-markup language, used to create markup languages such as DocBook.",
            "GlossSeeAlso": ["GML", "XML"]
                },
            "GlossSee": "markup"
                }
            }
        }
    }
}
>>> print json.loads(someFile)
{u'glossary': {u'GlossDiv': {u'GlossList': {u'GlossEntry': {u'GlossDef': {u'GlossSeeAlso': [u'GML', u'XML'], u'para': u'A meta-
': u'markup', u'Acronym': u'SGML', u'GlossTerm': u'Standard Generalized Markup Language', u'Abbrev': u'ISO 8879:1986', u'SortAs
```

String

Object

Python Dict

APIs (Application Programming Interface) allow people to interact with the structures of an application to get, put, delete, or update data.

APIs (Application Programming Interface) allow people to interact with the structures of an application to get, put, delete, or update data.

Best practices for APIs are to use RESTful principles.

RESTful APIs include:

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

RESTful APIs include:

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

Collection

GET https://api.instagram.com/v1/users/10

Operation

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

Querystring

RESTful APIs can always be accessed using cURL requests: hence why hypertext access is a requirement!

Most have language libraries to make it easier to access through the language of your choice.

http://www.pythonapi.com/