Open the World of Data with Web APIs

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Agenda

1. Introductions

2. What is an API? How does it work?

3. Demonstrations
   a. NASA API using Postman
   b. Twitter API using Google Sheets
   c. Nominatim API with OpenRefine to batch geocode

4. Wrap up!
What is an API?

An application programming (or program) interface is a set of protocols used by programmers to create applications for a specific operating system or to interface between the different modules of an application. (Dictionary.com)

Basically, how two programs can communicate with one another.

Web API: essentially a window within an app into another app or service. Ex: Google Map within Uber
How to Use an API

Programming skills are necessary (mostly?):

- Python, PHP

Protocol: SOAP, REST

Format: JSON, XML
Why?

Seamless user experience

Saves time: no need to write code that already exists

Less maintenance: no need to store and update data in your own database
Web APIs Rule the Web!

A few examples…

1. Your phone
2. Gap.com
3. Data.gov
Postman

https://www.getpostman.com/

Handy for:

● Experimentation
● Building and testing an API
● Hack?

Alternative: https://www.hurl.it/
Twitter API

- Public API documentation: https://dev.twitter.com/rest/public
- API Console Tool: https://dev.twitter.com/rest/tools/console
- Limitations:
  - Only last 6-9 days of Tweets
  - 180 queries per 15 minutes
  - Maximum of 3,200 results per query
- Access to full Twitter data primarily available via commercial providers like Gnip (https://gnip.com/)
- This is NOT Open Data
Twitter API Example Using Free Tools

● **TAGS:** [https://tags.hawksey.info/](https://tags.hawksey.info/)
  ○ Get TAGS v6.1
  ○ Open “Copy of TAGS v6.1” in Google Drive
  ○ Menu bar: TAGS > Setup Twitter Access
  ○ Enter search term in cell B9
  ○ Menu bar: TAGS > Run Now!
  ○ Wait for script to run
  ○ Click on “Archive” sheet at bottom

● **Voyant:** [http://voyant-tools.org/](http://voyant-tools.org/)
  ○ Copy and paste Tweets from TAGS into text box
  ○ Click “Reveal”
  ○ Analyze content using a variety of tools
Geocode in OpenRefine with an API

Geocoding: assigning latitude & longitude coordinates to address data.

What is OpenRefine? (another workshop)
http://openrefine.org/

Nominatim API (Open Street Map)
http://wiki.openstreetmap.org/wiki/Nominatim
Wrap up!

Learn to program:

1. https://www.codecademy.com/apis
2. http://www.w3schools.com/
3. Our very own Software Carpentry Workshops! https://data.colorado.edu/events

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