Using REST APIs to GET data

This exercise takes you through using web based interfaces to retrieve data reliably.

Glossary

REST (Representational State Transfer)

REST is an architecture that defines how to create scalable web services. Significantly, the architecture recommends the use of stateless transfers (the provider doesn't have to remember what went before) and uses HTTP Verbs to control operation types.

Note: This is a very complex way of describing what is essentially a web API, not a non-web based API.

API (Application Programming Interface)

An API is a promise by one system to consistently provide information to another in a consistent way. It is one system's interface with another. It is not the internal and hidden bit, but the public interface with which other software and services can integrate.

Pamela Fox sums it up best:

http://blog.pamelafox.org/2009/04/what-is-api.html

HTTP Verbs (including GET)

The HTTP verbs outline the operation to perform and include:

GET: Get some stuff from a specific location on the web as defined

PUT: Put some stuff to a specific location

POST: Here is some stuff, I don't care where you put it

DELETE: Delete the stuff at this specific location

HEAD: Tell me what is at a specific location

Note: A **CRUD** (Create Retrieve Update Delete) API must support all of these verbs while a REST API may not.

Fetching data using a REST API

Point your browser to the following location:

https://opencorporates.com/companies/gb/01026167

It can be challenging to recognise when you are using an API, but look out for common patterns and documentation that reinforces the support for using this pattern. The OpenCorporates API specifies how to access and query the data.

To access OpenCorporates' data you need to specify the URIs using the following pattern:

```
https://opencorporates.com/companies/{location}/{company_id}[.json]
```

You can append the .json in square brackets which will fetch you back structured data. What it will actually do is redirect you to the API subdomain of the OpenCorporates web site. Either way you are using their API.

To query the data you can use the search interface. Note that this changes with each API version therefore the version must also be specified in the URL pattern.

- Companies with a registered address at the Empire State Building:
  https://api.opencorporates.com/v0.4/companies/search?registered_address=10%20EAST%2039TH%20NEW%20YORK
- Companies with 'condominium' in their name in the US and Canada:
  https://api.opencorporates.com/v0.4/companies/search?q=condominium&country_code=us|ca
- Officers who were born over 105 years ago, but are still active:https://api.opencorporates.com/v0.4/officers/search?date_of_birth=:1910-04-21&inactive=false&your_api_token (requires API token)

Note that you can also use content negotiation with OpenCorporates to ask for data in different formats using custom web requests.

Transport API

Transport API provides a very powerful interface for obtaining all UK transport information via its API. You will be required to register to get an application key, but this is a quick process.

The developer documentation gives clear guidance on how to make data requests.

https://developer.transportapi.com/documentation/train-information

The following example request gets all departures from Waterloo at a certain point in the future.

http://transportapi.com/v3/uk/train/station/WAT/2015-08-01/20:00/timetable.json

Can you spot how to change this request to work for other stations and more relevant times?

UK Trade Tariff API

If you make your API intuitive enough then it should be easy to work out how it can work without documentation.

What is the following request for?

https://www.gov.uk/trade-tariff/headings/9504.json?country=&day=9&month=7&year=2015