DataCite Metadata

Excel → XML Script

– Python script: `dataCiteExcelToXML.py`

1. Takes all data from the Excel workbook and creates a single CSV

2. Finds all distinct JHED-Request# identifiers in the CSV

3. For each distinct identifier, the scripts loops through each row in the CSV

4. In rows where it finds that identifier, the associated element/data is mapped into XML

5. After it loops through all rows, it creates an XML document for that identifier

6. Repeats for each distinct identifier

7. Done!

Let’s take a look

- Lines 32-44 ; Creates the CSV
- Lines 48-54 ; Finds all unique JHED-Request numbers
- Lines 60-533 ; Maps data to XML elements & attributes based on identifier (repeatable loop)
- Lines 533-542; Creates XML document (repeatable loop)

What does "dataCiteExcelToXML.py" do?

Capabilities

1	Transfers all data exactly as entered from Excel workbook to new XML document(s)	✓
2	Matches Excel fields to corresponding XML element/attribute in the DataCite Schema 4.2	✓
3	Formats schema & namespace declarations in resource element	✓
4	Removes extra spaces at the end of data strings	✓

Limitations

1	Does not confirm data in Excel adheres to data types or schema standards	✗
2	Does not automatically validate the XML files	✗

Tips: Filling-out Excel workbook

- **Each row equals one second-level element**
  Examples: Name, Contributor, Subject, Date, Funder, etc. **The exception to this rule is GeoLocation (see slide 6-8) and the row from MasterList**

- **Each row with data, no matter what, must have an JHED-Request#**
  If there is no request number, the information in that row will not be added to any XML document

GeoLoc mapping

- ➔ All information from ***same row*** OR with the ***same geoLocationPolygon identifier*** is considered part of ***one*** geoLocation
- ➔ For polygon points #2, 3, 4, etc. after the initial point, only fill out Polygon information in those rows
- ➔ If you want multiple geoLocations, use multiple rows

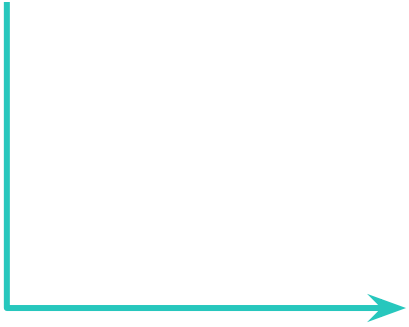
Example one: 1 geoLocation

	A	B	C	D	F	G	H	I	J	K	L	M	N
	JHED - Request#	geoLocationPoint	pointLongitude	pointLatitude	westBound	eastBound	southBound	northBound	geoLocationPlace	geoLocationP	polygonPoint	polyPoint	polyPoin
	request-1	31.233, -67.302	-67.302	31.233	-71.032	-68.211	41.09	42.893	Atlantic Ocean	polygon1	41.991, -71.032	-71.032	41.991
	request-1									polygon1	42.893, -69.622	-69.622	42.893
	request-1									polygon1	41.991, -68.211	-68.211	41.991
	request-1									polygon1	41.090, -69.622	-69.622	41.09
	request-1									polygon1	41.991, -71.032	-71.032	41.991

Example two: 3 geoLocations

8	request-1									polygon2	0.210307, 51.485	0.210307	51.4859
9	request-1									polygon2	0.211056, 51.485	0.211056	51.4859
10	request-1									polygon2	0.211517, 51.48	0.211517	51.4859
11	request-1									polygon2	0.212561, 51.485	0.212561	51.4858
12	request-1									polygon2	0.210307, 51.485	0.210307	51.4859
13	request-1	60.62458,-1.31100	-1.31100	60.62458					Scotland				
14	request-1								Democratic Republic of the Congo				

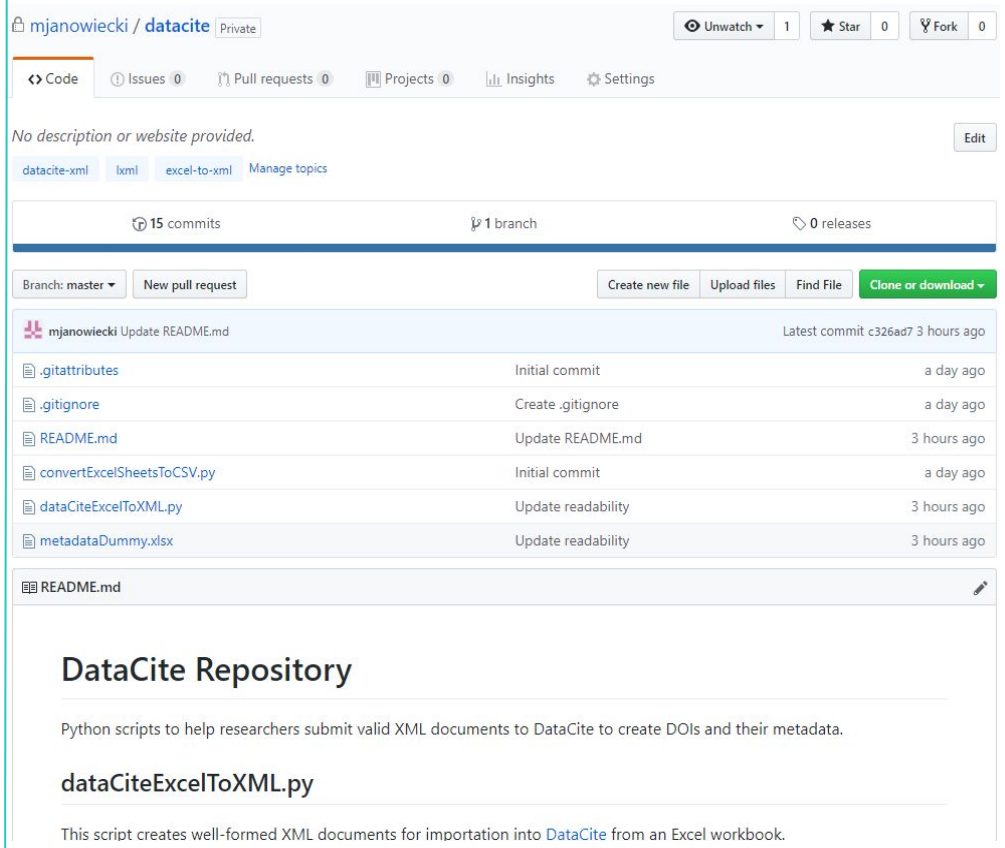
GeoLocation from Example 1



```
<geoLocation>
    <geoLocationPlace>Atlantic Ocean</geoLocationPlace>
  - <geoLocationPoint>
        <pointLongitude>-67.302</pointLongitude>
        <pointLatitude>31.233</pointLatitude>
    </geoLocationPoint>
  - <geoLocationBox>
        <westBoundLongitude>-71.032</westBoundLongitude>
        <eastBoundLongitude>-68.211</eastBoundLongitude>
        <southBoundLatitude>41.09</southBoundLatitude>
        <northBoundLatitude>42.893</northBoundLatitude>
    </geoLocationBox>
  - <geoLocationPolygon>
      - <polygonPoint>
            <pointLongitude>-71.032</pointLongitude>
            <pointLatitude>41.991</pointLatitude>
        </polygonPoint>
      - <polygonPoint>
            <pointLongitude>-69.622</pointLongitude>
            <pointLatitude>42.893</pointLatitude>
        </polygonPoint>
      - <polygonPoint>
            <pointLongitude>-68.211</pointLongitude>
            <pointLatitude>41.991</pointLatitude>
        </polygonPoint>
      - <polygonPoint>
            <pointLongitude>-69.622</pointLongitude>
            <pointLatitude>41.09</pointLatitude>
        </polygonPoint>
      - <polygonPoint>
            <pointLongitude>-71.032</pointLongitude>
            <pointLatitude>41.991</pointLatitude>
        </polygonPoint>
    </geoLocationPolygon>
</geoLocation>
```

GitHub

- This script and associated information currently lives in [my GitHub]
  - To run, download the folder to your computer
  - We can also make a shared Github to keep this info if desired



Overview: Running Python scripts

Complete setup on your work computer (I can help/provide further instructions if we pick this)

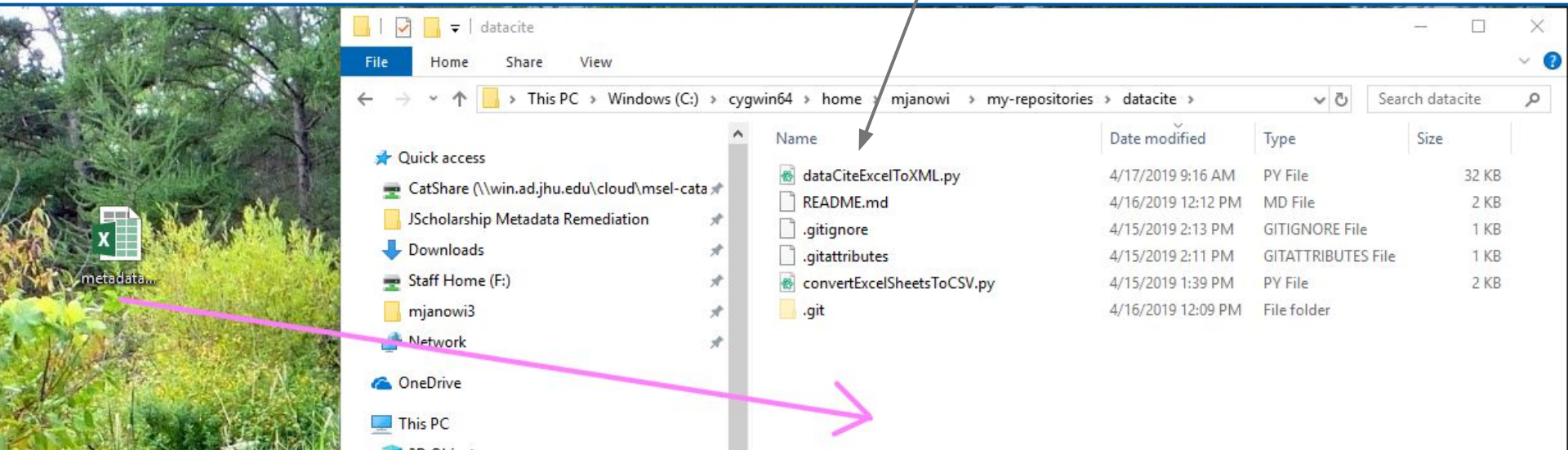
- ➔ **Open up script in an text editor (i.e. Atom, Notepad++)**
  This is optional, but can help us see the code if needed.
- ➔ **Move the filled-out Excel file into the folder where `dataCiteExcelToXML.py` lives**
  This makes sure the script can successfully find the workbook
- ➔ **Open up your terminal**
  This is how we will run the code
- ➔ **Run dataCiteExcelToXML.py in your terminal**
  This converts our spreadsheet into a single CSV document and then into one or multiple XML documents.
- ➔ **Conversion done! You are ready to validate and upload to DataCite**

Step 1:

Put everything in the same place

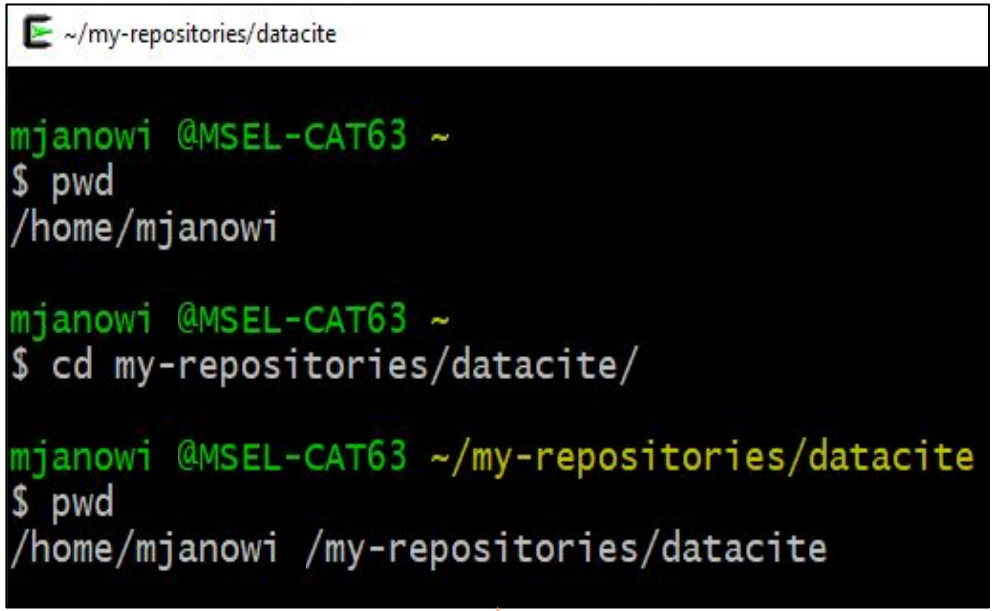
Where does your Python script live?

Before running the script, be sure to place the filled-out Excel workbook in the folder where `dataCiteExcelToXML.py` lives!



Step 2: Navigate to the folder on your terminal where the script is located

- Open your terminal
- `pwd`
  - Means “print working directory”
  - Gives your current folder location
- `cd`
  - Means “change directory”
  - It allows you to move to another folder within your current directory
  - Asking to move two folders down in the “mjanowi3” folder: mjanowi3-->my-repositories--> datacite
  - Result? When we enter `pwd` again, we are in the right folder!



Step 3: Run the script!

After navigating to the folder with the script, type:

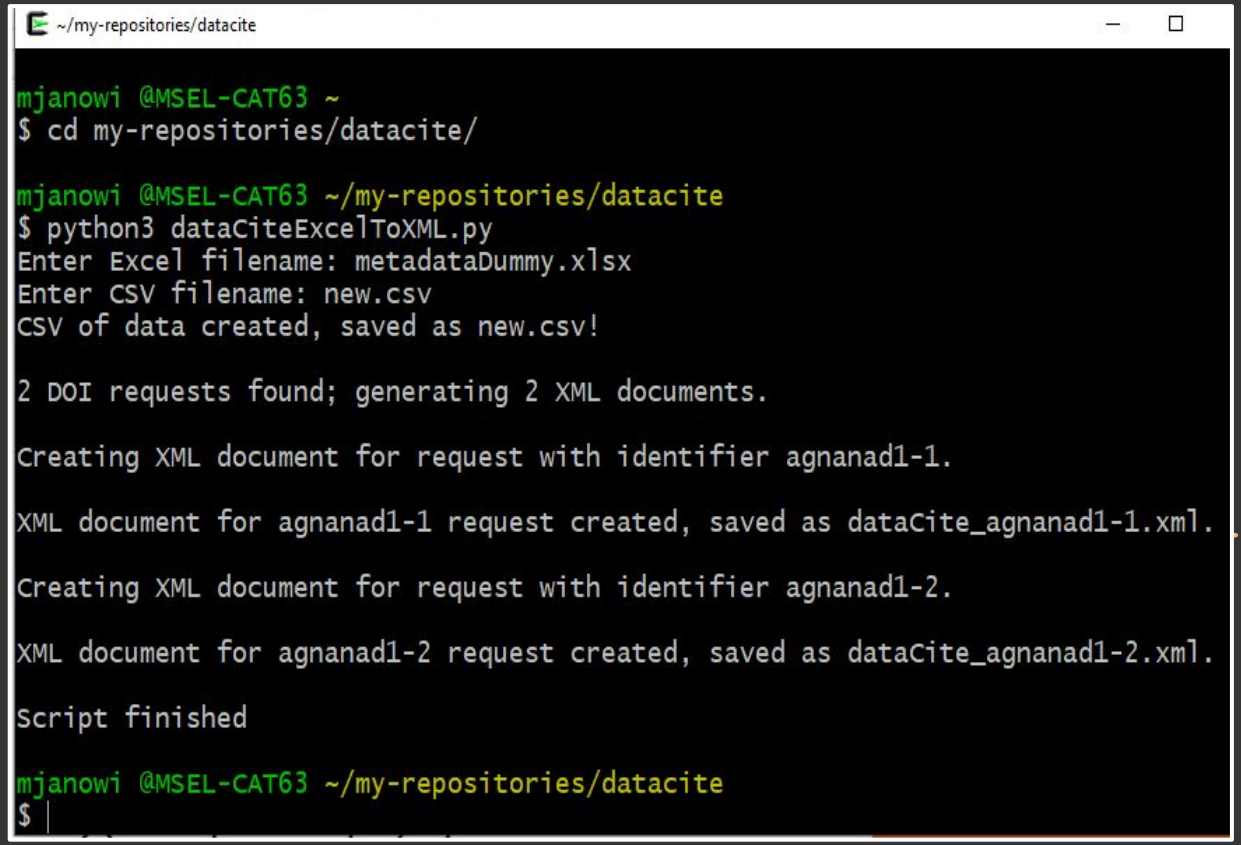
`python3 dataCiteExcelToXML.py`

and press enter!

Answer the prompts

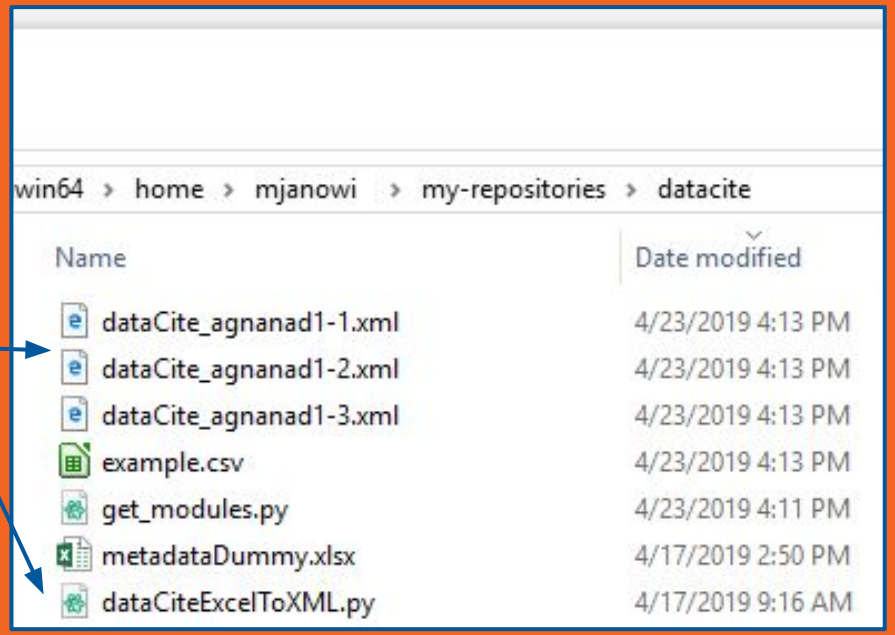
Yay! The script is running.

When you see a new $, your script is finished



Viewing your newly created documents:

- The XML documents generated will be put in the folder where you keep `dataCiteExcelToXML.py`
- To view the XML, open with web browser or with Atom
- Your CSV of all of metadata has also been generated



Troubleshooting and errors

Error messages in the terminal

- **"[Errno 2] No such file or directory"**
  This is mostly happens when you make a typo when entering file names or you are in the wrong folder
- **"[Errno 16] Device or resource busy:"**
  You need to close whatever file it indicates here.

Problems with XML documents

- **I have more XML documents than identifiers**
  This is mostly likely caused by a typo or a blank cell in the JHU-Request# in the Excel file
- **Some elements have unexpected values in them**
  Excel sometimes treats dates and number values as math problems or removes leading values. Trying formating the problem cell as 'Text.'
- **Some of my special characters are now random strings**
  Try opening the XML file in a browser like Chrome, if you are able to read the characters there, it should work when you upload on DataCite.
- **Some of the values from the Excel spreadsheet are missing in the XML**
  For attributes and elements that are required as a combo (like nameIdentifier & nameIdentifierScheme), the script requires both of them in order to add them to the XML. Double check the Excel that all the data is there.

Setup: A Reference Guide

Windows, Part 1:

Install Cygwin (64 bit version) & Atom

Installing Cywgin

- Download and run the installer
- Keep pre-selected defaults and hit next on all windows until you reach the “Select Packages” window
- Select the python36 language to add, along with the following packages, all prefixed by “python36-”. Add any associated “debuginfo” modules..

- appdirs
- asn1crypto
- cffi
- chardet
- cryptography
- Cython
- idna
- lxml
- numpy
- olefile
- packaging
- pathlib2

- pip
- ply
- pyasn1
- pycparser
- pyparsing
- pytz
- requests
- setuptools
- simplejson
- six
- urllib3
- wheel

Installing Cywgin: Part two

Also be sure to select the following packages from Cygwin. These do not have any prefix ahead of them.

- gcc-core
- minw64-i686-gcc-core
- gcc-fortran
- gcc-g++
- make
- make-debuginfo
- wget
- wget-debuginfo

Finish installation!

Setup: A Reference Guide Cont.

Windows, Part 2:

Installing remaining packages through the terminal

- Open Cygwin terminal
- Type “pip3 install dateutil” & hit enter
- Type “pip3 install xlrd” & hit enter
- Type “pip3 install pandas” & hit enter
- Set-up complete. After this, you should be ready to run the script.