

Knowledge Graphs

Exercise 4: LOD (Linked Open Data)

4.1. Familiarizing with Linked Data sets

In order to start to familiarize yourself with some linked data sets, you should start by browsing DBpedia, which can be visualized with a browser. You can start for example with the entity Mannheim:

<http://dbpedia.org/page/Mannheim>

By clicking on the links you can access other entities allowing you to navigate through its DBpedia's RDF graph. Find a way through which Mannheim and the Berlin's Olympic Stadium:

[http://dbpedia.org/page/Olympiastadion_\(Berlin\)](http://dbpedia.org/page/Olympiastadion_(Berlin))

are related and draw the RDF graph with the entities and links separating them.

4.2. Setting up Jena / RDFLib

Load the DBpedia ontology which is available at:

http://downloads.dbpedia.org/2016-10/dbpedia_2016-10.nt

and load it with Jena and/or RDFLib.

Information about how to load an ontology in Jena it can be found at:

<https://jena.apache.org/documentation/ontology/>

For RDFLib you find the documentation at:

<https://rdflib.readthedocs.io/en/stable/>

4.3. Inference with Jena / RDFLib

Now add the following statements to a model:

```
@prefix dbr: <http://dbpedia.org/resource/> .
@prefix dbo: <http://dbpedia.org/ontology/> .
dbr:Albert_Speer dbo:birthPlace dbr:Mannheim .
dbr:2012_Summer_Olympics dbo:goldMedalist dbr:Usain_Bolt .
```

Create an OWL reasoner to perform inference on the created facts with the DBpedia ontology model

Java: <https://jena.apache.org/documentation/inference/>

Python: <https://owl-rl.readthedocs.io/en/latest/>

Report the facts inferred by the DBpedia's ontology

4.4. Linked Open Data

Peter published a FOAF File with following triples

```
@prefix : <http://peter.de/> .  
@prefix foaf: <http://xmlns.com/foaf/0.1/> .  
:Peter a foaf:SemanticWebBeginner .
```

But the class `SemanticWebBeginner` is not contained in the FOAF specification.

Against which rule of publishing Linked Open Data has Peter violated?

Propose a solution to resolve the issue.