

Semantic Web Systems

Practical Lab

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Linked Data? Visualising Relations with Relfinder

<http://factforge.net/relfinder>

Linked Data? Visualising Relations with Relfinder

<http://factforge.net/relfinder>

What is the relationship between Harry Potter and JK Rowling?

You can look up the URIs of “Harry Potter” and “JK Rowling” on DBpedia.

Typing something like “JK Rowling DBpedia” in a search engine will usually lead you to the DBpedia page of something, like:

http://dbpedia.org/page/J._K._Rowling

However remember that the URL of that page is NOT the URI of the concept you are looking for. In DBpedia, URIs are in this format:

http://dbpedia.org/resource/J._K._Rowling

Linked Data? Visualising Relations with Relfinder

Try finding relations between these entities:

Harry Potter ← ? → JK Rowling

Albus Dumbledore ← ? → Draco Malfoy

Albert Einstein ← ? → United States

Albert Einstein ← ? → Physics

Cat ← ? → Dog

...

Cat ← *Fred?* → JK Rowling

Triplestores with SPARQL Endpoint

- Virtuoso (Open-Source Edition) - *the one used by DBpedia*
- Fuseki (Apache Jena)
- ... and many more

DBpedia Endpoints

<http://dbpedia.org/sparql> (*preferred one, when it's working*)

<http://dbpedia-live.openlinksw.com/sparql/>

<http://factforge.net/sparql>

<http://dbpedia.org/snorql/>

SPARQL

How can we answer those questions in SPARQL?

- (1) What is the relation between Albert Einstein and Physics?
- (2) ...

SPARQL

Answer to (1)

```
SELECT ?relation
WHERE {
  <http://dbpedia.org/resource/Albert_Einstein> ?relation
  <http://dbpedia.org/resource/Physics> .
}
```


SPARQL

Answer to (1)

```
SELECT ?relation
WHERE {
  <http://dbpedia.org/resource/Albert_Einstein> ?relation
  <http://dbpedia.org/resource/Physics> .
} LIMIT 1000
```

SPARQL

How can we answer those questions in SPARQL?

- (1) ~~What is the relation between Albert Einstein and Physics?~~
- (2) Find other persons that have the same nationality(ies) as Albert Einstein.
 - *for added difficulty, answer this question **only** using SPARQL (e.g. do not look up Einstein's nationality(ies) on a search engine)*
- (3) Find other persons that have the same nationality(ies) as Albert Einstein AND the same relationship(s) with physics
- (4) Look up “SPARQL Construct query”
<https://www.w3.org/TR/rdf-sparql-query/#construct>
and create a SPARQL construct query to extract a dataset of the same persons as (3), along with their nationalities

SPARQL

Answer to (3)

```
SELECT DISTINCT ?person
```

```
WHERE {
```

```
<http://dbpedia.org/resource/Albert_Einstein> ?relation <http://dbpedia.org/resource/Physics> .
```

```
?person ?relation <http://dbpedia.org/resource/Physics> .
```

```
<http://dbpedia.org/resource/Albert_Einstein>
```

```
<http://dbpedia.org/ontology/citizenship> ?nationality .
```

```
?person <http://dbpedia.org/ontology/citizenship> ?nationality .
```

```
} LIMIT 1000
```

SPARQL

Answer to (3) - *if using FactForge*

```
SELECT DISTINCT ?person
```

```
WHERE {
```

```
<http://dbpedia.org/resource/Albert_Einstein> ?relation <http://dbpedia.org/resource/Physics> .
```

```
?person ?relation <http://dbpedia.org/resource/Physics> .
```

```
<http://dbpedia.org/resource/Albert_Einstein>
```

```
<http://rdf.freebase.com/ns/people.person.nationality> ?nationality .
```

```
?person <http://rdf.freebase.com/ns/people.person.nationality> ?nationality .
```

```
} LIMIT 1000
```

SPARQL

Answer to (4)

```
CONSTRUCT {  
  ?person <http://dbpedia.org/ontology/citizenship> ?nationality .  
}
```

```
WHERE {  
  <http://dbpedia.org/resource/Albert_Einstein> ?relation <http://dbpedia.  
org/resource/Physics> .
```

```
?person ?relation <http://dbpedia.org/resource/Physics> .
```

```
<http://dbpedia.org/resource/Albert_Einstein>  
<http://dbpedia.org/ontology/citizenship> ?nationality .
```

```
?person <http://dbpedia.org/ontology/citizenship> ?nationality .  
} LIMIT 1000
```

Triple Visualisation

1. Find a small Turtle file, like the one here:
https://en.wikipedia.org/wiki/RDF_Schema
2. Convert it into RDF/XML using this service:
<http://www.easyrdf.org/converter>
3. Open to the w3 validator page:
<https://www.w3.org/RDF/Validator/>
4. Select “Triples and Graph” and click “Parse RDF”
5. Try visualising Example 1 or Example 2 from:
<http://dublincore.org/documents/dcmes-xml/>

Ontology and Schema Visualization

The VOWL system

1. Open to the WebVOWL homepage:
<http://vowl.visualdataweb.org/webvowl/index.html>
2. Open the Linked Open Vocabularies homepage:
<http://lov.okfn.org/dataset/lov>
3. Look for the “Academic Institution Internal Structure Ontology (aiiso)”, find the link to its RDF/XML representation, and visualize it in VOWL
4. Look for other vocabularies and visualize in VOWL

A note on CSV to RDF conversion

Before converting a CSV file into RDF, think about the data model

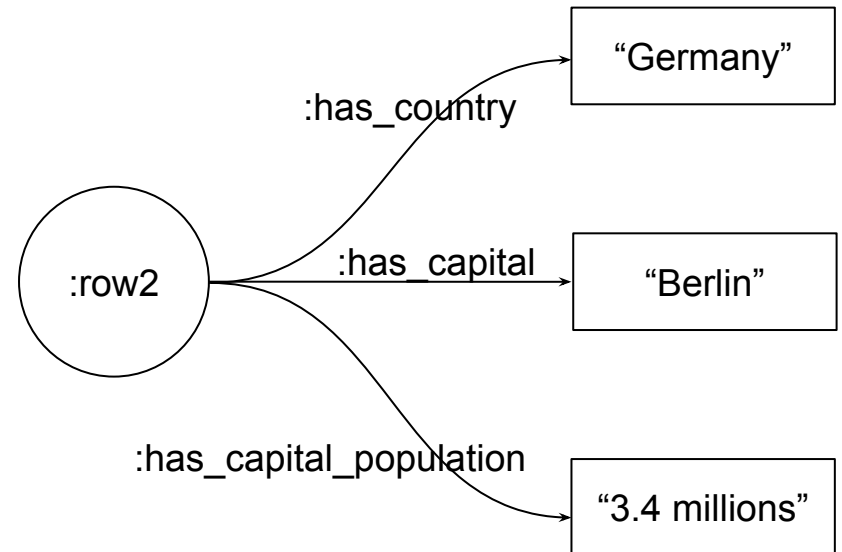
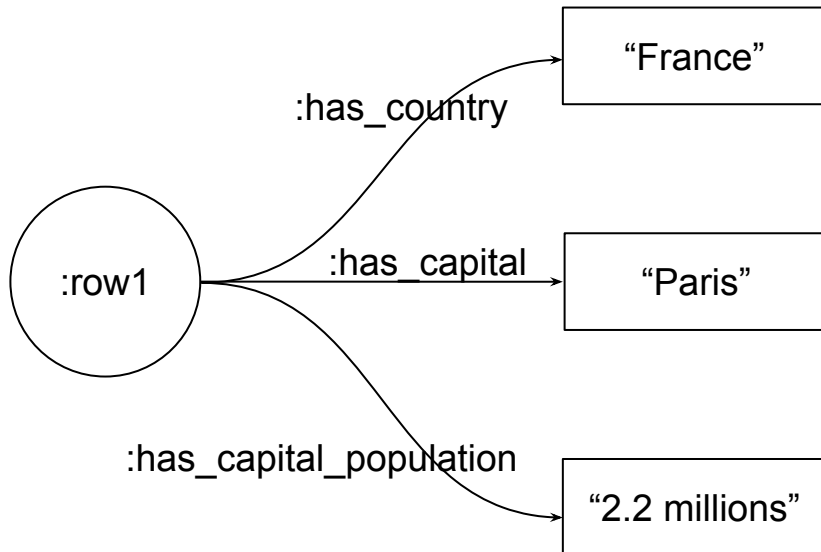
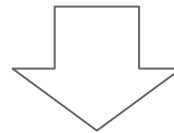
A note on CSV to RDF conversion

By default, most converters will perform a standard conversion, where each row becomes a new URI, and each column becomes a relation between that URI and the content of the corresponding cell...

A note on CSV to RDF conversion

... which looks something like this:

Country	Capital	Capital Population
France	Paris	2.2 millions
Germany	Berlin	3.4 millions



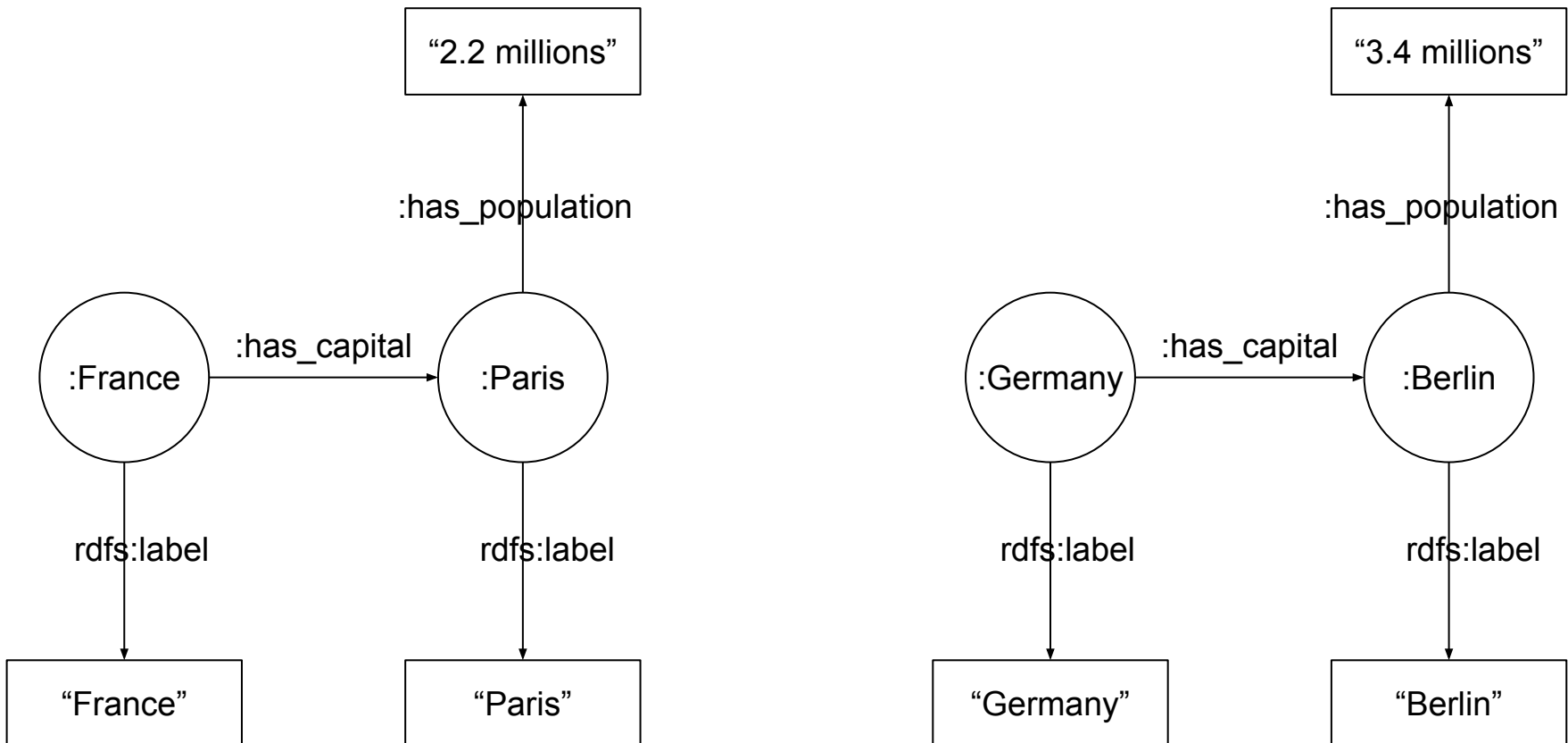
A note on CSV to RDF conversion

But is this really the best data model for your data?

A note on CSV to RDF conversion

Wouldn't this be a better model of the same data?

... although maybe not a perfect one yet



A note on CSV to RDF conversion

In conclusion:

before converting a CSV file into RDF, think about the data model, the default conversion might not be the right choice for you.

Making the right design choices now might make your life easier later on, when you will be asked to query your data.