



Semantic Web Technologies: Assignment 1

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The assignment:

FOAF:

1. Create your own FOAF file. You can use a generator tool such as [FOAF-a-Matic](#) to generate a skeleton.
2. Make sure to give yourself an own unique identifier (URI)
3. Add some custom triples (not auto-generated) to that FOAF-file.
4. Link to some of your friends' FOAF files, e.g. other people in the course, by using [foaf:knows](#) and [rdfs:seeAlso](#). You can also use [my foaf-file](#) as an example.

SPARQL

1. Go to the SPARQL interface of DBLP at <http://dblp.l3s.de/d2r/snorql/>. Try to formulate the query of slide 27 of [Lecture 1](#) ... **or the alternative query on DBPedia sent on the LVA-Forum (TISS)**
2. Come up with two own interesting SPARQL queries on DBLP data (Optional)

FOAF

For those who only sent a file and didn't publish it online (X %):

- All of you should have a Web space at

<http://web.student.tuwien.ac.at/~MATRIKELNUMMER>

Please use it!

FOAF

- Check whether your foaf-file **validates** (using <http://www.w3.org/RDF/Validator/> or **raper** (see slides Lecture 1)
e.g. Check that all namespaces are declared, also the default namespace:

```
@prefix foaf: <http://xmlns.com/foaf/0.1/>  
@prefix : <http://www.ex.org/myfoaf.rdf#>  
:me a foaf:Person
```

FOAF

- Some (admittedly annoying) encoding issues:

```
<foaf:workInfoHomepage rdf:resource="Information & Knowledge Management "/>
```

- 2 problems here:
 - s/&/&/
 - note that foaf:workInfoHomepage expects a **Document** as range, i.e. the URL of a document.

```
[...] xmlns:dc="http://purl.org/dc/elements/1.1/">
```

- XML error ... **can only happen if you manually edited the RDF/XML...** (2 cases)
I'd strongly discourage that: use Turtle and convert with tools like rapper!

FOAF

- Convention: If you refer to someone with foaf:knows and you know the identifier, use it, e.g.

```
@prefix foaf: <http://xmlns.com/foaf/0.1/>
```

```
@prefix : <http://www.ex.org/myfoaf.rdf#>
```

```
:me foaf:knows [ rdfs:seeAlso <http://polleres.net/foaf.rdf> ] .
```

better:

```
@prefix foaf: <http://xmlns.com/foaf/0.1/>
```

```
:me foaf:knows <http://polleres.net/foaf.rdf#me> .
```

Or alternatively, if you're interested in "Sports", you could use the DBpedia or wikipedia:

- <http://de.wikipedia.org/wiki/Sport>
- <http://dbpedia.org/page/Sport>

FOAF

- Convention: When defining a URI, DON'T invent a non-dereferenceable URI, e.g.

<http://maxmustermann1980.net/foaf.rdf#me>

is only a good URI if YOU own the domain and publish your FOAF file there

→ Follow the Linked Data principles!

FOAF

- Convention: Check the ontologies, e.g. look up:
 - <http://xmlns.com/foaf/0.1/knows>
- e.g. Do you really know Dan Brickley?



Property: foaf:knows

knows - A person known by this person (indicating some level of **reciprocated** interaction between the parties).

Status: stable

Domain: having this property implies being a [Person](#)

Range: every value of this property is a [Person](#)

The [knows](#) property relates a [Person](#) to another [Person](#) that he or she knows.

We take a broad view of 'knows', but do require some form of reciprocated interaction (ie. stalkers need not apply). Since social attitudes and conventions on this topic vary greatly between communities, countries and cultures, it is not appropriate for FOAF to be overly-specific here.

If someone [knows](#) a person, it would be usual for the relation to be reciprocated. However this doesn't mean that there is any obligation for either party to publish FOAF describing this relationship. A [knows](#) relationship does not imply friendship, endorsement, or that a face-to-face meeting has taken place: phone, fax, email, and smoke signals are all perfectly acceptable ways of communicating with people you know.

FOAF

- Similarly:

<http://xmlns.com/foaf/0.1/workplaceHomepage>

– *workplace homepage* - A workplace homepage of some person; the homepage of an organization they work for.

...instead of your homepage at your work place.

Queries...

- DBLP endpoint is up again, but apparently still shaky. ☹️

DBLP Query

- One solution to the query:

Names of people who have published in TPLP or have co-authored with any of the authors of <http://dblp.l3s.de/d2r/resource/publications/journals/tplp/Berners-LeeCKSH08>

```
SELECT ?name WHERE {
  { ?D swrc:journal <http://dblp.l3s.de/d2r/resource/journals/tplp>.
    ?D dc:creator ?T.
    ?T foaf:name ?name
  }
  UNION
  { <http://dblp.l3s.de/d2r/resource/publication/journals/tplp/Berners-LeeCKSH08>
    dc:creator ?Author.
    ?D dc:creator ?Author.
    ?D dc:creator ?Coauthor.
    ?Coauthor foaf:name ?name
  }
}
```

DBLP Query

- This one doesn't work:
 - Uses non-existing property `dblp:hasArticle`
 - Only selects authors of Berners-LeeCKSH08, but not their co-authors.

```
SELECT ?X
WHERE
{
  {
    <http://dblp.l3s.de/d2r/resource/publications/journals/tp/p/> dblp:hasArticle ?W. ?W dc:creator ?X . }
  UNION
  { <http://dblp.l3s.de/d2r/resource/publications/journals/tp/p/Berners-LeeCKSH08> dc:creator ?Y;
    dc:creator ?X. FILTER (?X != ?Y)
  }
}
```

DBpedia Query

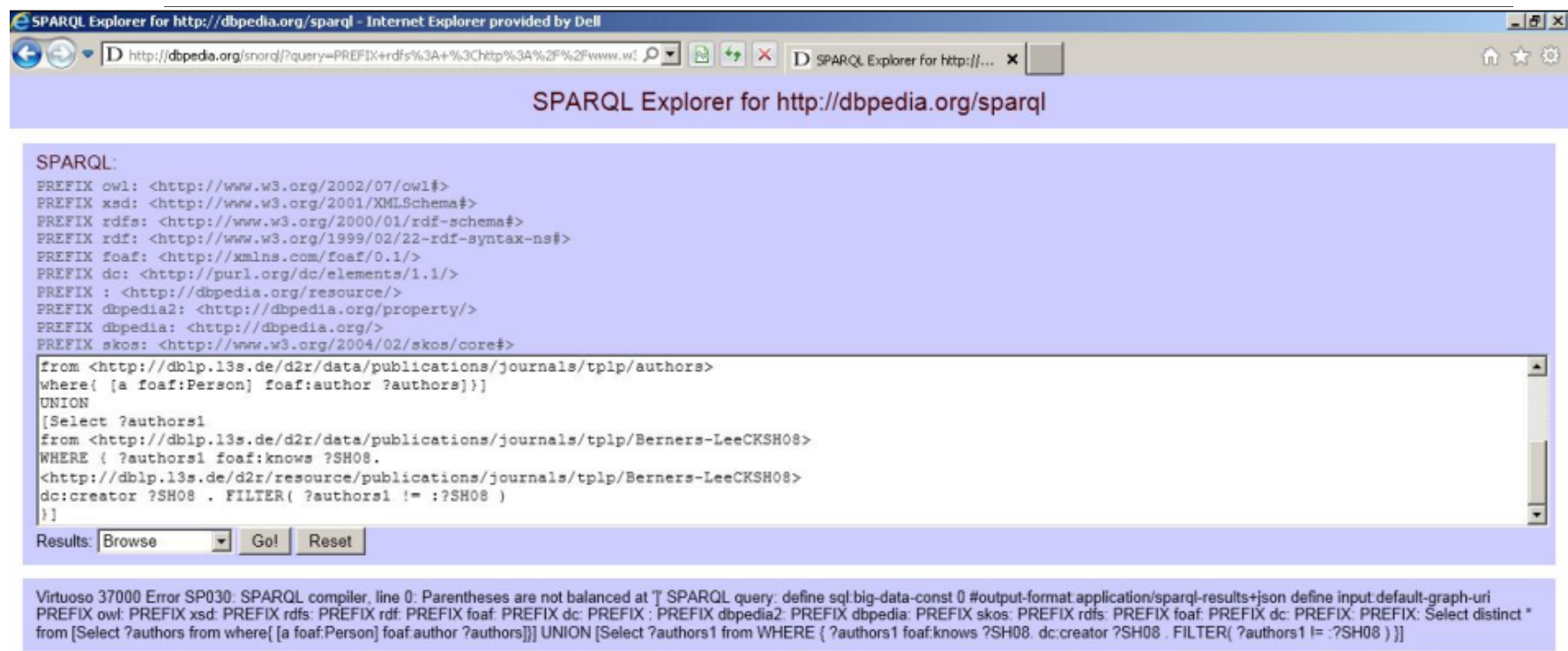
- One solution to the alternative query (sent via the forum):

A bit too much (feature usage appreciated! ;-):

```
SELECT DISTINCT ?name ?city
WHERE {
  {?name dbpedia-owl:birthPlace ?c;
   dbpedia-owl:deathPlace ?city
  }
  UNION
  {
    ?name dbpedia-owl:deathPlace ?c;
    dbpedia-owl:birthPlace ?city
  }
  FILTER regex(?c, "vienna", "i" )
}
```

Re-Check the syntax, please!

- Please DON'T only do a paper run... this is NOT valid SPARQL syntax:



The screenshot shows a web browser window titled "SPARQL Explorer for http://dbpedia.org/sparql". The address bar contains a URL with a SPARQL query. The query is as follows:

```
SPARQL:
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX dc: <http://purl.org/dc/elements/1.1/>
PREFIX : <http://dbpedia.org/resource/>
PREFIX dbpedia2: <http://dbpedia.org/property/>
PREFIX dbpedia: <http://dbpedia.org/>
PREFIX skos: <http://www.w3.org/2004/02/skos/core#>

from <http://dblp.13s.de/d2r/data/publications/journals/tp1p/authors>
where{ [a foaf:Person] foaf:author ?authors}}
UNION
[Select ?authors1
from <http://dblp.13s.de/d2r/data/publications/journals/tp1p/Berners-LeeCKSH08>
WHERE { ?authors1 foaf:knows ?SH08 .
<http://dblp.13s.de/d2r/resource/publications/journals/tp1p/Berners-LeeCKSH08>
dc:creator ?SH08 . FILTER( ?authors1 != :?SH08 )
}]

Results:   
```

Below the query, an error message is displayed:

Virtuoso 37000 Error SP030: SPARQL compiler, line 0: Parentheses are not balanced at] SPARQL query: define sql:big-data-const 0 #output-format:application/sparql-results+json define input:default-graph-uri PREFIX owl: PREFIX xsd: PREFIX rdfs: PREFIX rdf: PREFIX foaf: PREFIX dc: PREFIX : PREFIX dbpedia2: PREFIX dbpedia: PREFIX skos: PREFIX rdfs: PREFIX foaf: PREFIX dc: PREFIX: PREFIX: Select distinct * from [Select ?authors from where{ [a foaf:Person] foaf:author ?authors}}] UNION [Select ?authors1 from WHERE { ?authors1 foaf:knows ?SH08 . dc:creator ?SH08 . FILTER(?authors1 != :?SH08) }

Attention! Bugs might occur ... ☹️

- Some SPARQL endpoints are buggy...
 - E.g. ASK queries on DBLP/D2R seem to always return TRUE:

Snorql: Exploring <http://dblp.l3s.de/d2r/sparql>

SPARQL:

```
PREFIX d2r: <http://sites.wiwiss.fu-berlin.de/suhl/bizer/d2r-server/config.rdf#>
PREFIX swrc: <http://swrc.ontoware.org/ontology#>
PREFIX dcterms: <http://purl.org/dc/terms/>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX dc: <http://purl.org/dc/elements/1.1/>
PREFIX map: <file:///home/diederich/d2r-server-0.3.2/dblp-mapping.n3#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>

PREFIX foaf: <http://xmlns.com/foaf/0.1/>
ASK WHERE
{
<http://polleres.net/foaf.rdf#me> a <foaf:spaceShip>. }
```

Results:

SPARQL results:
TRUE

Browse:

- [Classes](#)
- [Properties](#)

Powered by [D2R Server](#)



Additional Queries

- Some nice queries about places in Austria
 - Take care for the namespaces:

```
PREFIX dbont: <http://dbpedia.org/ontology/>
```

```
PREFIX res0: <http://dbpedia.org/resource/>
```

```
SELECT ?X  
WHERE {  
  ?X dbont:country res0:Austria  
}
```

Works! 😊

Assignment 2:

- Is your FOAF-file lean?
 - If not, which triples can you remove to make it lean?
 - If yes, which triples could you add to make it non-lean?
- Which additional triples are entailed by your FOAF file under **RDF** entailment? (Give 5 triples as example).
- Which additional triples are entailed by your FOAF file under **RDFS** entailment? (Give 5 triples as example).
- Which additional triples are entailed by your FOAF file under **D**-entailment using the datatype map that includes *rdf:XMLLiteral*, *xsd:integer*, *xsd:decimal*, and *xsd:string*? (Give 5 triples as example, or argue why no further triples are entailed under this entailment regime).