Semantic Days 2011 Tutorial
Semantic Web Technologies
Lecture 3: The SPARQL Query Language

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University of Oslo

SPARQL

- SPARQL Protocol And RDF Query Language

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People called “Martin Giese”

```
PREFIX foaf:  <http://xmlns.com/foaf/0.1/>
SELECT ?mg WHERE {
    ?mg foaf:name "Martin Giese" .
}
```

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```
PREFIX foaf:  <http://xmlns.com/foaf/0.1/>
SELECT ?mg WHERE {
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}
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Answer:

?mg
<http://dblp.l3s.de/d2r/resource/authors/Martin_Giese>

Simple Examples (cont.)

Publications by people called “Martin Giese”

```
PREFIX foaf:  <http://xmlns.com/foaf/0.1/>
PREFIX dc:  <http://purl.org/dc/elements/1.1/>
SELECT ?pub WHERE {
    ?mg foaf:name "Martin Giese" .
    ?pub dc:creator ?mg .
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Simple Examples (cont.)

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Answer:

?pub
<http://dblp.l3s.de/d2r/resource/publications/conf/cade/Giese01>
<http://dblp.l3s.de/d2r/resource/publications/conf/cade/BeckertGHKRSS07>
<http://dblp.l3s.de/d2r/resource/publications/conf/fase/AhrendtBBGHHMMS02>
<http://dblp.l3s.de/d2r/resource/publications/conf/jelia/AhrendtBBGHHMS00>
<http://dblp.l3s.de/d2r/resource/publications/conf/lpar/Giese06>
...

Simple Examples (cont.)

Titles of publications by people called “Martin Giese”

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SELECT ?title WHERE {
    ?mg foaf:name "Martin Giese" .
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SELECT ?title WHERE {
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```

Answer:

?title
"Incremental Closure of Free Variable Tableaux."^^xsd:string
"The KeY system 1.0 (Deduction Component)."^^xsd:string
"The KeY System: Integrating Object-Oriented Design and Formal Methods."^^xsd:string
"The KeY Approach: Integrating Object Oriented Design and Formal Verification."^^xsd:string
"Saturation Up to Redundancy for Tableau and Sequent Calculi."^^xsd:string
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Simple Examples (cont.)

Names of people who have published with “Martin Giese”

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SELECT ?name WHERE {
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"Martin Giese"
"Reiner Hähnle"
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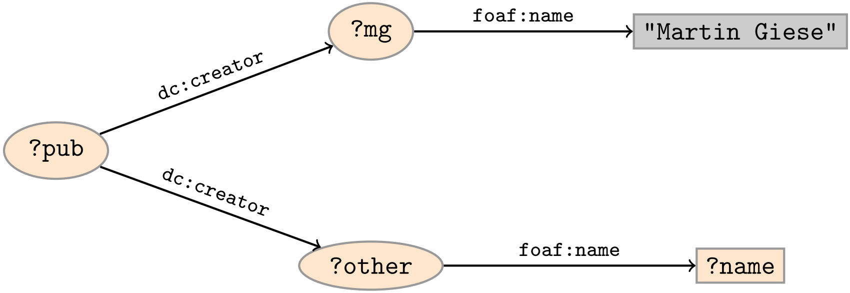
Graph Patterns

The previous SPARQL query as a graph:



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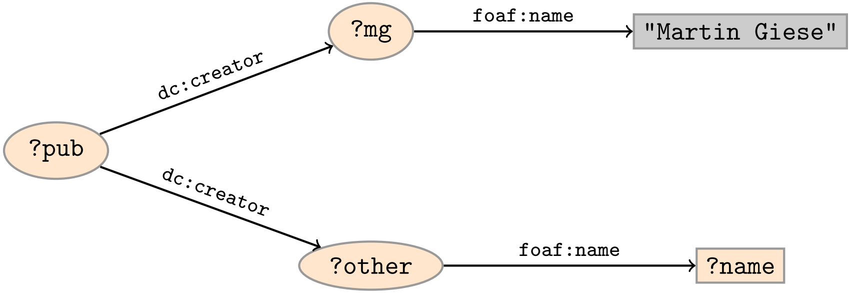
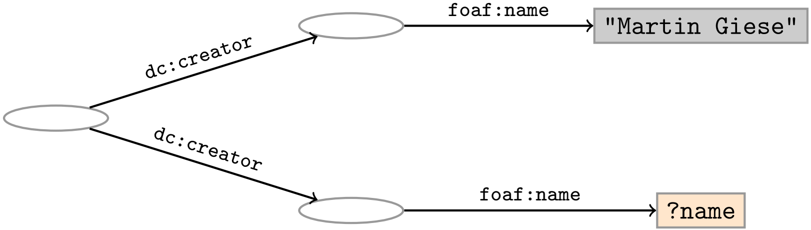


Assign values to variables to make this a sub-graph of the RDF graph!

Graph with blank nodes

Variables not SELECTed can equivalently be blank:



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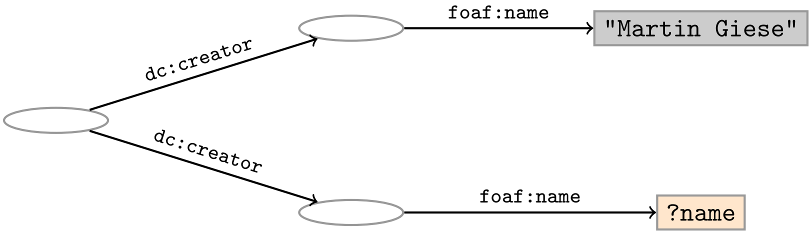

Assign values to variables and blank nodes to make this a sub-graph of the RDF graph!

SPARQL Query with blank nodes

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The same with blank node syntax

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SELECT DISTINCT ?name WHERE {
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- Match of one pattern leaves rest of variables unbound

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DESCRIBE Answer available information about matching resources

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All of this will be in SPARQL 1.1...

`http://www.w3.org/TR/sparql-features/`

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- Server responds with XML file encoding result set, see

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  - RDF APIs like Jena can send queries to endpoints

Exercise: SPARQL

- Write SPARQL queries.
- Run queries on SPARQL endpoint at `http://sws.ifi.uio.no/d2rq/snorql/`.
- Browse dataset using web browser `http://sws.ifi.uio.no/d2rq/`.
- Many queries, choose according to your skills.

Go to `http://sws.ifi.uio.no/semdays2011/` for more information.