

## 7. RDFS Inferences

The purpose of this lab is to improve your understanding of the semantics of RDFS.

### RDFS Interpretations

1. Represent the rules `rdfs5` and `rdfs9` at [http://www.w3.org/TR/rdf11-mt/#rdfs\\_patterns](http://www.w3.org/TR/rdf11-mt/#rdfs_patterns) using first-order logic (FOL).
2. Recall the tourism ontology in Lab V and the facts “Museion is a modern art museum” and “The curator of Museion is Pavarotti”. Derive five new RDFS-inferred facts for each of the facts. In the derivations, mention which RDFS inference rules at [http://www.w3.org/TR/rdf11-mt/#rdfs\\_patterns](http://www.w3.org/TR/rdf11-mt/#rdfs_patterns) you are using.

### RDFS-aware SPARQL Queries

In this task, you are asked to provide SPARQL queries incorporating the RDFS semantics of the following natural-language queries:<sup>1</sup>

1. Give all subclasses of the class `Person`.
2. Give all superclasses of the class `Actor`.
3. Give all subproperties and superproperties of the property `writer`.
4. Is it true that `In_The_Park` co-participated with `Charlie_Chaplin`?

Observe the following query “All classes of Chaplin”:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX dbr: <http://dbpedia.org/resource/>
```

```
SELECT ?supclass WHERE {
  dbr:Charlie_Chaplin rdf:type ?typeOfChaplin .
  ?typeOfChaplin rdfs:subClassOf* ?supclass }
```

Is the query correct, that is, the query will return all classes of Chaplin per the RDFS semantics? If not, please give an explanation and a fix to the query to return all classes of Chaplin correctly and completely?

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<sup>1</sup>You might use the vocabulary from DBpedia and test your queries over DBpedia.