

RDF(S) + SPARQL Exercise

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Exercise outline

1. Use of an RDF(S) editor

1. Install Semantic Works
2. Play with it

2. SPARQL exercise

1. Connect to:
<http://ontologias.dia.fi.upm.es:8080/openrdf-workbench>
2. Download the repository 'exercise'
3. Open it with Semantic Works
4. Query the repository using the web interface

Queries about the model

- Give me all the classes

```
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>  
SELECT ?x WHERE { ?x a rdfs:Class. }
```

Queries about the model

- Give me all the sub-classes of the class 'Establecimiento' (Establishment)

```
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>
SELECT ?x WHERE { ?x rdfs:subClassOf pr:Establecimiento. }
```

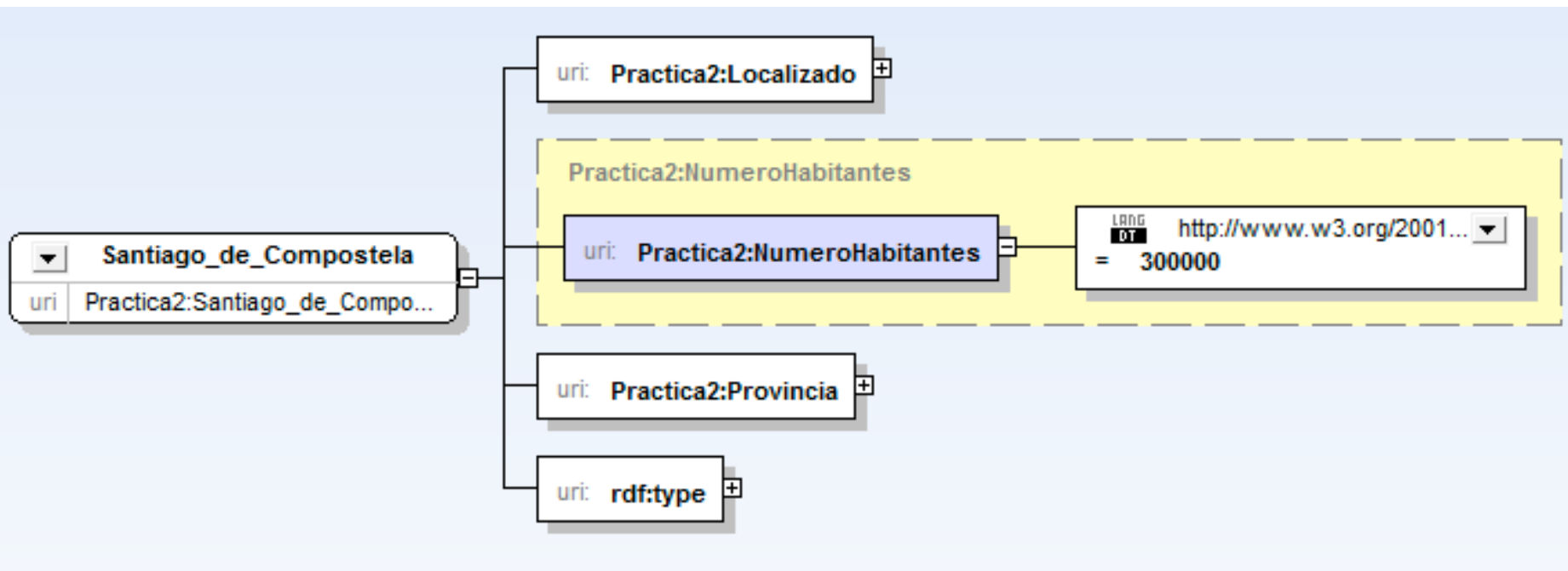
Queries about the model

- Give me all the instances of the class 'Ciudad' (city)

```
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>  
SELECT ?x WHERE { ?x a pr:Ciudad. }
```

Queries about the instances

- Give me the population ('NumeroHabitantes') of Santiago de Compostela



Queries about the instances

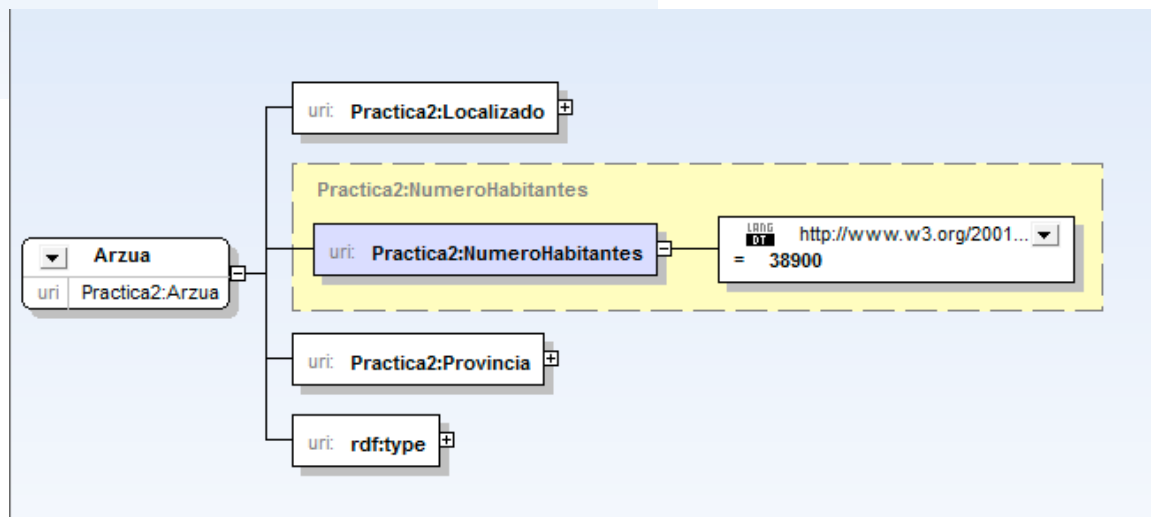
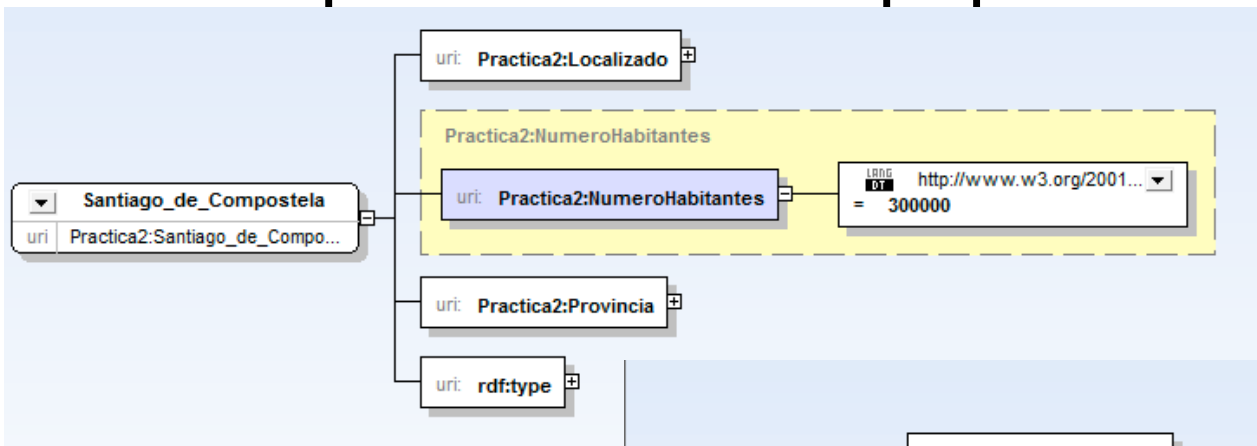
- Give me the population of Santiago de Compostela

```
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>
```

```
SELECT ?x WHERE { pr:Santiago_de_Compostela pr:NumeroHabitantes ?x. }
```

Queries about the instances

- Give me the population of Santiago de Compostela and the population of Arzua



Queries about the instances

- Give me the population of Santiago de Compostela and the population of Arzua

```
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>
```

```
SELECT ?x WHERE {  
    {pr:Santiago_de_Compostela pr:NumeroHabitantes ?x.}  
    UNION  
    {pr:Arzua pr:NumeroHabitantes ?x.}  
}
```


Queries about the instances

- Give me all the towns and its population (if they have the property population defined)

```
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
SELECT ?x ?y WHERE { $place a pr:Localidad;
                        rdfs:label ?x.
                        OPTIONAL {$place pr:NumeroHabitantes ?y.}
}
```

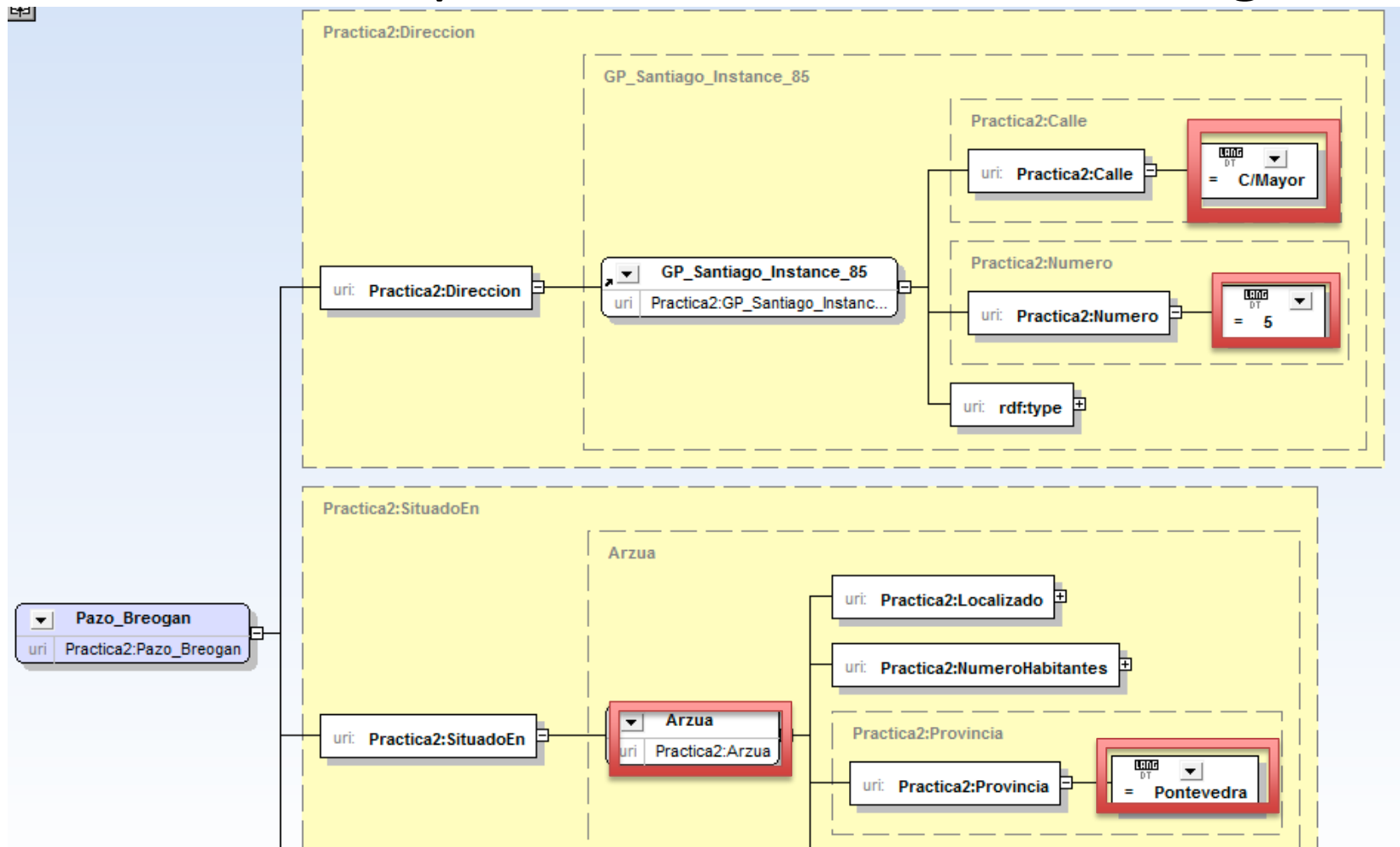
Queries about the instances

- Give me the label of all the places that have more than 200.000 inhabitant

```
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
SELECT ?x ?y WHERE { $place pr:NumeroHabitantes ?y;
                      rdfs:label ?x.
                      FILTER(?y > 200000) }
```

Queries about the instances

- Give me the postal data of Pazo de Breogan



Queries about the instances

- Give me the postal data of Pazo de Breogan

```
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
SELECT ?street ?number ?town ?province
WHERE { pr:Pazo_Breogan pr:SituadoEn $place;
        pr:Direccion $address.
        $place rdfs:label ?town;
        pr:Provincia ?province.
        $address pr:Calle ?street;
        pr:Numero ?number.
}
```

With/without Inferencing

- Give me the subclasses of the class Lugar (Place)
- Give me the instances of the class Localidad (Town)

☐ Include inferred statements

Execute

☒ Include inferred statements

Execute

With/without Inferencing

- Give me the subclasses of the class Lugar (Place)

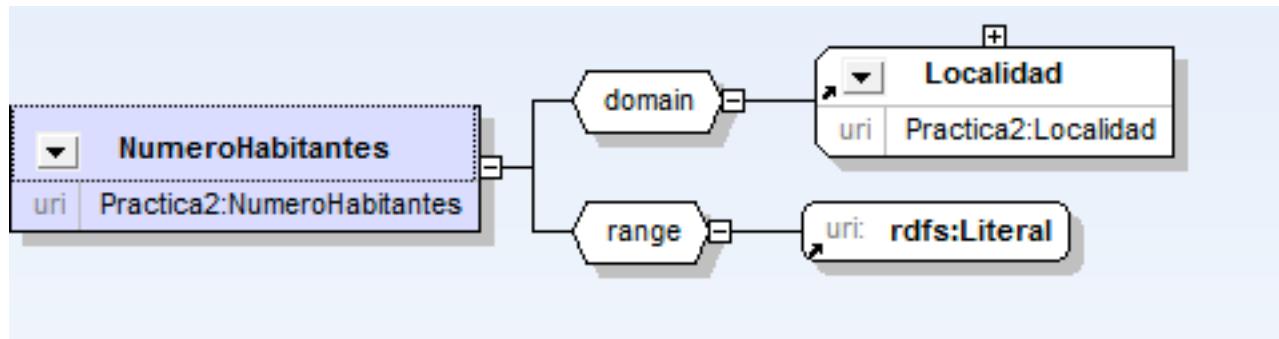
```
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>  
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>  
SELECT ?x WHERE { ?x rdfs:subClassOf pr:Lugar. }
```

- Give me the instances of the class Localidad (Town)

```
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>  
SELECT ?x WHERE { ?x a pr:Localidad. }
```


Other Queries

- Obtain the values of all the variables in a query (SELECT *)
- (eg.) Give me all the towns and its inhabitants



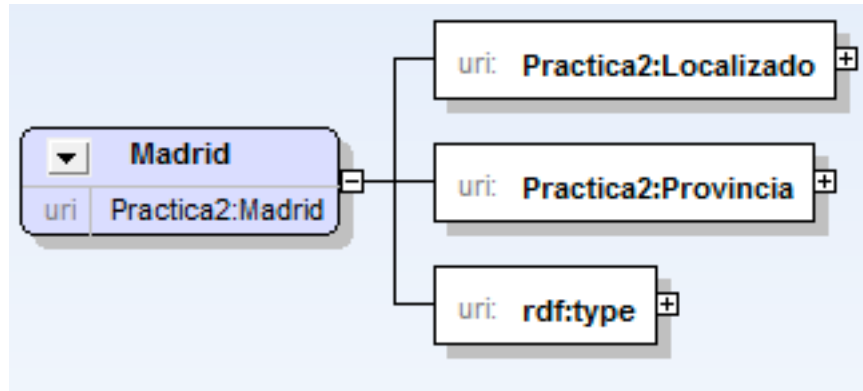
Other Queries

- Obtain the values of all the variables in a query (SELECT *)
- (eg.) Give me all the towns and its inhabitants

```
PREFIX pr: http://GP-onto.fi.upm.es/Practica2#  
SELECT * WHERE { ?x pr:NumeroHabitantes ?y. }
```

Other Queries

- Describe the resource whose label is Madrid



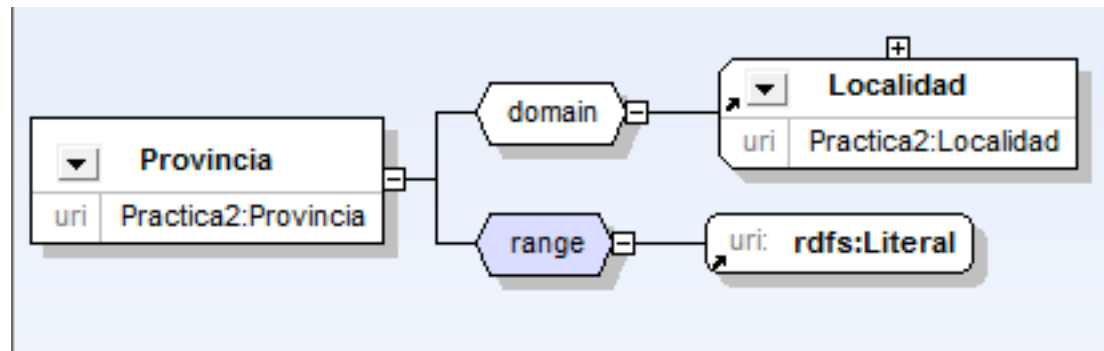
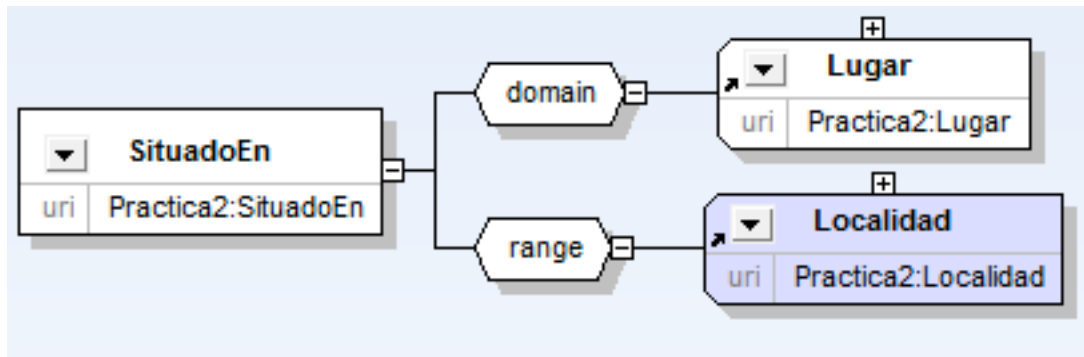
Other Queries

- Describe the resource whose label is Madrid

```
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>  
DESCRIBE ?x WHERE { ?x rdfs:label "Madrid". }
```

Other Queries

- Construct the RDF graph that relates **directly** all the turistic places with their provinces by defining a new property called "estaEn" (is in)



Other Queries

- Construct the RDF graph that relates directly all the turistic places with their provinces by defining a new property called "estaEn" (is in)

```
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>
CONSTRUCT {?x pr:estaEn ?y}
WHERE {
    ?x a pr:LugarTuristico;
        pr:SituadoEn $town.
    $town pr:Provincia ?y.
}
```

Other Queries

- Ask if is there an instance of Pueblo (Town)
- Ask if is there an instance of Ermita (Chapel)

✓Yes

✗No

With/without Inferencing

- Ask if is there an instance of Pueblo (Town)

```
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>  
ASK WHERE {?a a pr:Pueblo}
```

- Ask if is there an instance of Ermita (Chapel)

```
PREFIX pr: <http://GP-onto.fi.upm.es/Practica2#>  
ASK WHERE {?a a pr:Ermita}
```