

Semantic Web

Exercise sheet 6

Storage and Querying

Exercise 1 (Repository Architecture) (5 points)

Explain in your own words which are the main architectural solutions for an RDF repository. Provide a brief explanation of the implications they induce (min 0.5 pages, max 1 page).

Exercise 2 (OWLIM) (5 points)

Explain what are the differences between SwiftOWLIM and BigOWLIM (min ½ pages, max 1page).

Exercise 3 (SPARQL) (10 points)

Based on the natural language descriptions given below formulate suitable SPARQL queries over the given RDF triples and write down the results of query executions.

```
@prefix airport: <http://www.airport.net/#> .
@prefix airport-vocab: <http://www.airport.net/vocab#> .
@prefix : <http://www.airport.net/#> .

<airport:flight1> <airport-vocab:flightNumber> "LH6409" .
<airport:flight1> <airport-vocab:flightDetails> :_F1 .
:_F1 <airport-vocab:from> "Innsbruck" .
:_F1 <airport-vocab:to> "Frankfurt" .
:_F1 <airport-vocab:price> 100.00 .
<airport:flight2> <airport-vocab:flightNumber> "LH4572" .
<airport:flight2> <airport-vocab:flightDetails> :_F2 .
:_F2 <airport-vocab:from> "Frankfurt" .
:_F2 <airport-vocab:to> "Brussels" .
:_F2 <airport-vocab:price> 80.00 .
<airport:flight1><airport-vocab:connectedTo><airport:flight2> .
```

Queries to be answered:

1. Return all flight numbers in the graph.
2. Are there any connected flights in the graph (yes or no)?
3. Return the flight number of a flight which precedes the flight 'LH4572'.
4. Return flight durations of all flights in the graph.
5. Return all flight numbers of the flights cheaper than 100.00 EUR.
6. Return all flight numbers and optionally flight numbers of the connected flights.