Open Information Systems
Exercises for Lecture 02 - RDF

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Exercise 1

Describe, in your own words, what has been described or stated in this RDF document. Try to draw the RDF graph using the notation we have covered in the lecture: ellipses for resources, labeled arrows for properties, and rectangles for values. You can leave the ellipses for blank nodes empty. You may use TURTLE's notation for language and datatype tags inside the rectangles.

```
<?xml version="1.0"?>
<rdf:RDF
    xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
    xmlns:geography="http://www.example.org/geography#"
    xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#" >

  <rdf:Description rdf:about="http://www.example.org/geography#Brussels">
    <geography:capitalOf rdf:resource="http://www.example.org/geography#Belgium"/>
    <geography:name xml:lang="fr">Bruxelles</geography:name>
    <geography:name xml:lang="nl">Brussel</geography:name>
    <geography:name xml:lang="en">Brussels</geography:name>
    <rdf:type rdf:resource="http://www.example.org/geography#City"/>
  </rdf:Description>

  <rdf:Description rdf:about="http://www.example.org/geography#Belgium">
    <rdf:type rdf:resource="http://www.example.org/geography#Country"/>
  </rdf:Description>

</rdf:RDF>
```

Exercise 2

Translate the RDF/XML document from the previous exercise into TURTLE[1]. You can use an RDF validator[2] to check your syntax and even your result with that of an automatic translation. When using a translation service, bear in mind that your solutions might looks different in terms of syntax, yet be equivalent.

[1] `https://www.w3.org/TR/turtle/`
[2] E.g., `http://rdfvalidator.mybluemix.net/`

Exercise 3

The following exercises are based on [1]. You may assume `http://www.example.org/ex#` as the base URI for the exercise. First, try and draw the following RDF statements:

- Romeo thought that Juliet was dead.

  Try two versions:

  - One in which Juliet is of the type "Deceased Person"
  - One in which Juliet has the property "is dead" set to "true" (tip: typed literals)

- The dwarf Gimli noticed that somebody had been eating from his plate.

  - That somebody is a Person.
  - Gimli owns his place.

  Now try to encode these statements into RDF (or RDF/XML if you are up for a challenge).

Exercise 4

Extend the TURTLE file you have created in the first exercise with:

- The population of Belgium; choose an appropriate predicate and datatype;
- The population of Brussels; choose an appropriate predicate and datatype;
- The introduction of another country and capital.

References

[1] Pascal Hitzler, Markus Krötzsch, and Sebastian Rudolph. *Foundations of Semantic Web Technologies.* Chapman Hall/CRC, 1st edition, 2009.