Semantic Web – Tutorial #6

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1: RDFS

Question 1.1

Coffee is a popular worldwide beverage made of roasted cocoa beans which are seeds from plants of the Coffea species. The roasting scale of cocoa beans goes from 1 to 10: level 1 being the least roasted, and 10 being the most roasted possible. There are many different kind of cocoa beans, some popular ones are: Arabica, Brazilian and Colombian. Coffee can be served black or with milk which can be steamed or not. Roasting level of the cocoa beans as well as the ratio of water to milk is relevant to the flavour of the coffee. Coffee can be prepared from many different techniques, for instance it can be filtered, french pressed, or high pressured (aka espresso).

Write a RDFS vocabulary for the coffee domain above.

Question 1.2

Translate your turtle RDF into RDF/XML.
Using the RDFS you specified in the previous step, write an RDF file that encodes the following information from a coffee shop. Your RDF document must use and comply with the RDFS you specified in the previous step.

> *A coffee shop serves the following coffees: (1) Brazilian Espresso, espresso made of Brazilian coffee beans (roasting level of 8); (2) Special Arabica, french pressed coffee made of Arabica beans (roasting level of 6); and (3) Colombian Latte, made of Colombian cocoa beans (roasting level of 9) served with non-steamed milk (ratio water to milk of 1:3).*

2: RDFs

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Consider the given RDF/XML document containing information about a student.

Task: Specify an RDFS vocabulary for the given RDF.

3: OWL Ontology

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Task: Write an OWL ontology that models the domain described below.

> *Both beer and wine are popular beverages. A beverage has a product name, an expiration date, and is sold at at least one store. A wine may be from a distinct vineyard—for instance, the wine Riesling Auslese "Theo" Gülser Bienengarten is from the vineyard Toni Müller. A beer has a type, such as "Lager" or "Ale". For example, the beer Barre Bräu is of type Pils. Note that a beverage cannot be beer and wine at the same time.*

4: Correcting Syntax Errors

Correct the mistakes in the syntax in order to make it an OWL valid representation.

```
<?xml version="1.0"?>

<!DOCTYPE rdf:RDF [
    <!ENTITY owl "http://www.w3.org/2002/07/owl#" >
    <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
    <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
    <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
]>
<rdf:RDF xmlns="http://www.example.org/ontologies/pizzeria/pizzeria.owl#"
     xml:base="http://www.example.org/"
     xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
     xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
     xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
     xmlns:owl="http://www.w3.org/2002/07/owl#">

<owl:Ontology rdf:about="">
<owl:versionInfo>v.1.0</owl:versionInfo>
<owl:imports rdf:resource="foaf"/>
</owl:Ontology>
<owl:Class rdf:about="#Calzone">
 <owl:label>Calzone@en</owl:label>
</owl:Class>
<owl:DatatypeProperty rdf:ID="invented In">
<rdfs:type rdf:resource="owl:TransitiveProperty" />
<rdfs:domain rdf:resource="http://www.w3.org/2002/07/owl#Thing" />
<rdfs:range rdf:resource="#Region" />
<rdfs:subClassOf>
<owl:Restriction>
 <owl:onProperty rdf:resource="#madeFromGrape" />
<owl:minCardinality
rdf:datatype="&xsd;nonNegativeInteger">1</owl:minCardinality>
</owl:Restriction>
 </rdfs:subClassOf>
</owl:DatatypeProperty>
 <rdf:RDF>
```