Tecnologías para la Web Semántica
Trabajo Práctico Nº6
OWL

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Ejercicio 1

Analice el código OWL de la ontología *An African Wildlife Ontology* (A Semantic Web Primer, Antoniou, 2002).

a. Identifique los componentes con su respectivo vocabulario (rdf, rdfs ,owl)

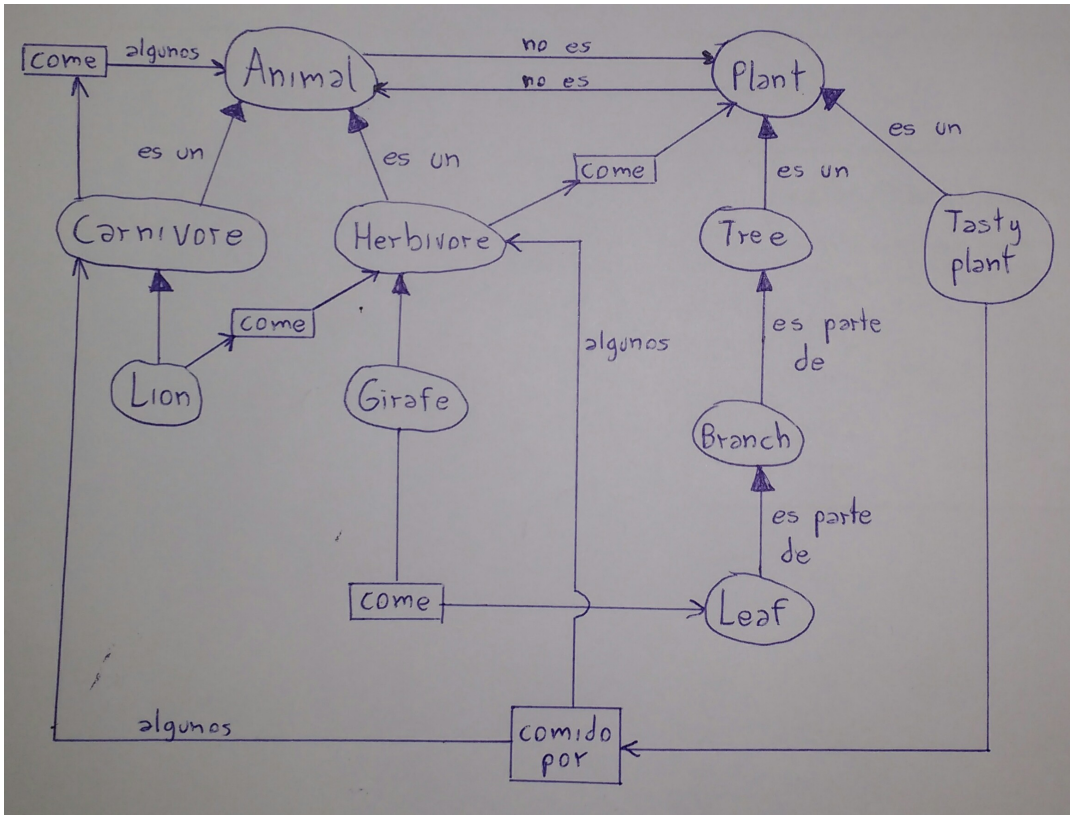
- Clases y jerarquía.
  - Nivel 1: Animal, Plant.
  - Nivel 2: Carnivore, Herbivore, Tree, Tasty plant.
  - Nivel 3: Lion, Girafe, Branch.
  - Nivel 4: Leaf.
- Relaciones.

  eats, eaten-by.
- Propiedades.

  TransitiveProperty, ObjectProperty.
- Restricciones.

  allValuesFrom, someValuesFrom.

b. Realice el modelo correspondiente.




```
1  <rdf:RDF
2      xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntaxns#"
3      xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
4      xmlns:owl ="http://www.w3.org/2002/07/owl#"
5      xmlns="http://www.mydomain.org/african">
6
7      <owl:Ontology rdf:about="">
8          <owl:VersionInfo>
9              My example version 1.2, 17 October 2002
10         </owl:VersionInfo>
11     </owl:Ontology>
12
13     <owl:Class rdf:ID="animal">
14         <rdfs:comment>Animals form a class</rdfs:comment>
15     </owl:Class>
16
17     <owl:Class rdf:ID="plant">
18         <rdfs:comment>
19             Plants form a class disjoint from animals
20         </rdfs:comment>
21         <owl:disjointWith="#animal"/>
22     </owl:Class>
23
24     <owl:Class rdf:ID="tree">
25         <rdfs:comment>
26             Trees are a type of plants
27         </rdfs:comment>
28         <rdfs:subClassOf rdf:resource="#plant"/>
29     </owl:Class>
30
31     <owl:Class rdf:ID="branch">
32         <rdfs:comment>
33             Branches are parts of trees
34         </rdfs:comment>
35         <rdfs:subClassOf>
36             <owl:Restriction>
```

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37                  <owl:onProperty rdf:resource="#is-part-of"/>
38                  <owl:allValuesFrom rdf:resource="#tree"/>
39              </owl:Restriction>
40          </rdfs:subClassOf>
41      </owl:Class>
42
43      <owl:Class rdf:ID="leaf">
44          <rdfs:comment>
45              Leaves are parts of branches
46          </rdfs:comment>
47          <rdfs:subClassOf>
48              <owl:Restriction>
49                  <owl:onProperty rdf:resource="#is-part-of"/>
50                  <owl:allValuesFrom rdf:resource="#branch"/>
51              </owl:Restriction>
52          </rdfs:subClassOf>
53      </owl:Class>
54
55      <owl:Class rdf:ID="herbivore">
56          Web Ontology Language: OWL 19
57          <rdfs:comment>
58              Herbivores are exactly those animals that eat only plants, or parts of
                    plants
59          </rdfs:comment>
60          <owl:intersectionOf rdf:parsetype="Collection">
61              <owl:Class rdf:about="#animal"/>
62              <owl:Restriction>
63                  <owl:onProperty rdf:resource="#eats"/>
64                  <owl:allValuesFrom>
65                      <owl:unionOf rdf:parsetype="Collection">
66                          <owl:Class rdf:about="#plant"/>
67                          <owl:Restriction>
68                              <owl:onProperty rdf:resource="#is-part-of"/>
69                              <owl:allValuesFrom rdf:resource="#plant"/>
70                          </owl:Restriction>
71                      </owl:unionOf>
72                  </owl:allValuesFrom>
73              </owl:Restriction>
74          </owl:intersectionOf>
75      </owl:Class>
76
77      <owl:Class rdf:ID="carnivore">
78          <rdfs:comment>
79              Carnivores are exactly those animals that eat also animals
80          </rdfs:comment>
81          <owl:intersectionOf rdf:parsetype="Collection">
82              <owl:Class rdf:about="#animal"/>
83              <owl:Restriction>
84                  <owl:onProperty rdf:resource="#eats"/>
85                  <owl:someValuesFrom rdf:resource="#animal"/>
86              </owl:Restriction>
87          </owl:intersectionOf>
88      </owl:Class>
89
90      <owl:Class rdf:ID="giraffe">
91          <rdfs:comment>
92              Giraffes are herbivores, and they eat only leaves
93          </rdfs:comment>
94          <rdfs:subClassOf rdf:type="#herbivore"/>
95          <rdfs:subClassOf>
96              <owl:Restriction>
97                  <owl:onProperty rdf:resource="#eats"/>
98                  <owl:allValuesFrom rdf:resource="#leaf"/>
```

```
99              </owl:Restriction>
100         </rdfs:subClassOf>
101     </owl:Class>
102
103     <owl:Class rdf:ID="lion">
104         <rdfs:comment>
105             Lions are animals that eat only herbivores
106         </rdfs:comment>
107         <rdfs:subClassOf rdf:type="#carnivore"/>
108             20 Grigoris Antoniou and Frank van Harmelen
109         <rdfs:subClassOf>
110             <owl:Restriction>
111                 <owl:onProperty rdf:resource="#eats"/>
112                 <owl:allValuesFrom rdf:resource="#herbivore"/>
113             </owl:Restriction>
114         </rdfs:subClassOf>
115     </owl:Class>
116
117     <owl:Class rdf:ID="tasty-plant">
118         <rdfs:comment>
119             Tasty plants are plants that are eaten both by herbivores and carnivores
120         </rdfs:comment>
121         <rdfs:subClassOf rdf:resource="#plant"/>
122         <rdfs:subClassOf>
123             <owl:Restriction>
124                 <owl:onProperty rdf:resource="#eaten-by"/>
125                 <owl:someValuesFrom>
126                     <owl:Class rdf:about="#herbivore"/>
127                 </owl:someValuesFrom>
128             </owl:Restriction>
129         </rdfs:subClassOf>
130         <rdfs:subClassOf>
131             <owl:Restriction>
132                 <owl:onProperty rdf:resource="#eaten-by"/>
133                 <owl:someValuesFrom>
134                     <owl:Class rdf:about="#carnivore"/>
135                 </owl:someValuesFrom>
136             </owl:Restriction>
137         </rdfs:subClassOf>
138     </owl:Class>
139
140     <owl:TransitiveProperty rdf:ID="is-part-of"/>
141     <owl:ObjectProperty rdf:ID="eats">
142         <rdfs:domain rdf:resource="#animal"/>
143     </owl:ObjectProperty>
144     <owl:ObjectProperty rdf:ID="eaten-by">
145         <owl:inverseOf rdf:resource="#eats"/>
146     </owl:ObjectProperty>
147 </rdf:RDF>
```

Ejercicio 2

Analice el código OWL de la ontología:
`http://www.cs.man.ac.uk/~rector/Modules/CS646-2004/Labs/ThursdaySimple_University-01.owl`

a. Identifique los componentes:

- **Clases y jerarquía**

Senior lecturer[OWL](Academic rank[RDFS])
Course[OWL](Teaching unit[RDFS]
Academic staff[RDFS])
Long thin format[OWL](Module format[RDFS])
Short fat format[OWL]
Las dos clases anteriores son disjuntas.
White ethnicity[OWL](Ethnicity Value Type[RDFS])
Modules with exams[OWL] (Equivalente a intersección de module y exam.)
Module[OWL]
Exam[OWL]
Functional roles[OWL]
Module format[OWL](Pattern[RDFS])
female[OWL](Sex Value Type[RDFS]) (Disjunta de male)
black woman professor [OWL] (Equivalente a la intersección de person, professor rank y black ethnicity)
...

- **Relaciones**

  has part (Transitiva para la intersección de module y exam)
  has academic rank
  has sex
  hasSalaryRange
  attends
  isGivenBy
  RV property
  gives

- **Propiedades:**

  TransitiveProperty
  FunctionalProperty
  ObjectProperty

- **Restricciones**

  someValuesFrom

b. Realice el modelo correspondiente.

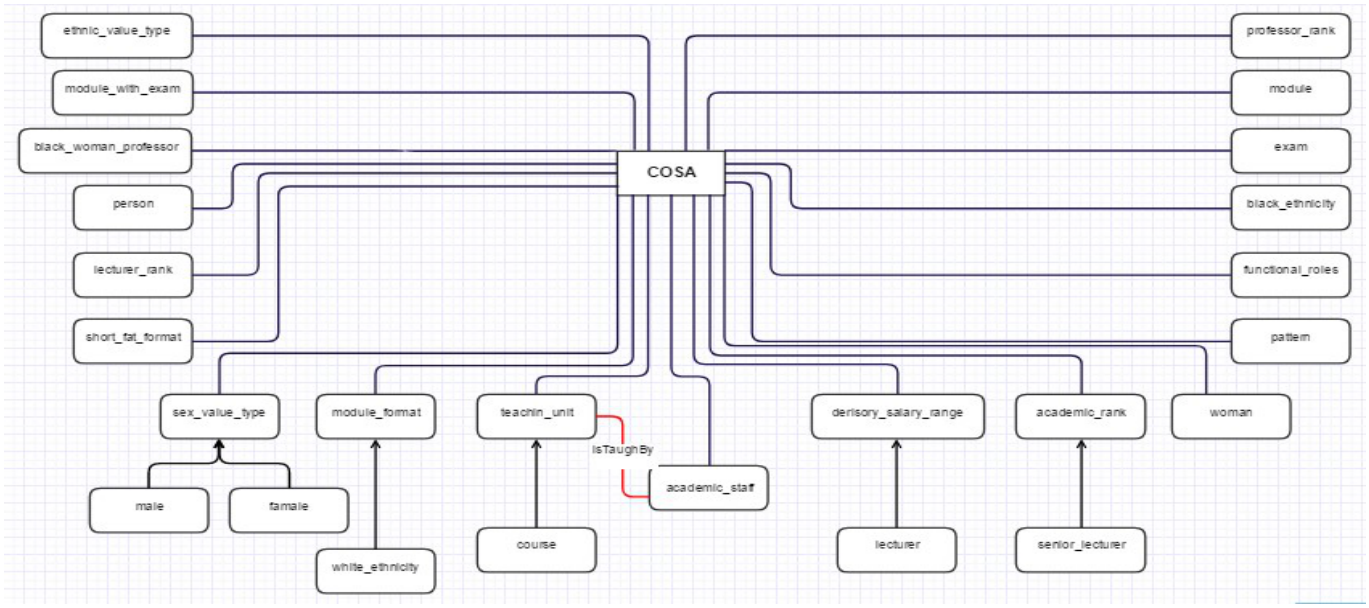

Figura 1: Modelo del ejercicio 2.