RDFS: RDF Schema Definition

G. Falquet
2014

Classification

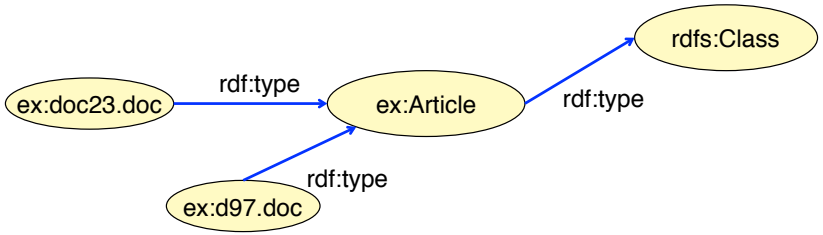
One way to make the world more understandable is to classify its objects, i.e. to put them into classes (the apples, the pears, the cars, the human beings, the thougts, ...)

- RDF objects (resources) can be classified by associating them with classes.
- An RDF class is a resource of type rdfs:Class
- A resource O is an instance of a class C if it has type C, i.e. if there is a triple (O rdf:type C)

Example

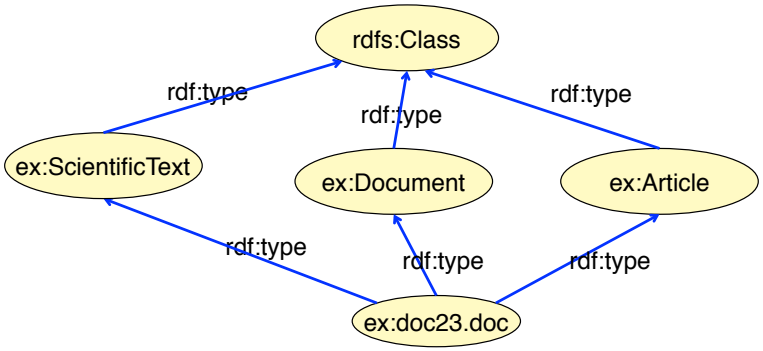
Represent *ex:doc23.doc and ex:d97.doc are articles*

1. define a class Article
2. assign type Article to ex:doc23.doc and ex:d97.doc



Multi-classification

an object may be an instance of several classes



Structuring the classes : subClassOf

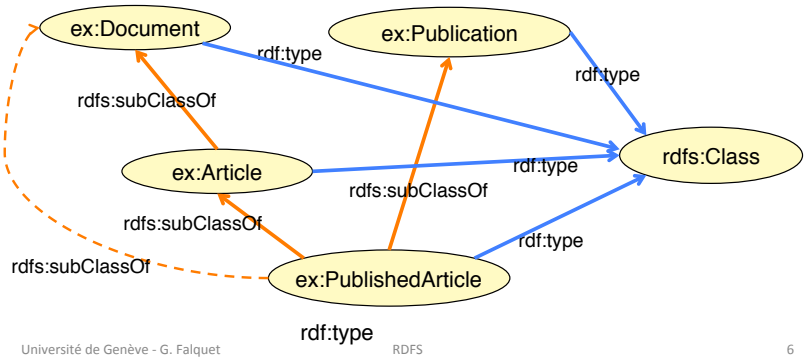
- To better understand the world, organize the classes in a generic/ specific hierarchy
- A class C is a subclass of D if every instance of C is also an instance of D

Rem.

1. the sublcass relation is transitive
2. if A is a subclass of B and B is a subclass of A then A and B are equivalent

Example

every published article is an article and a publication, and an article is a document



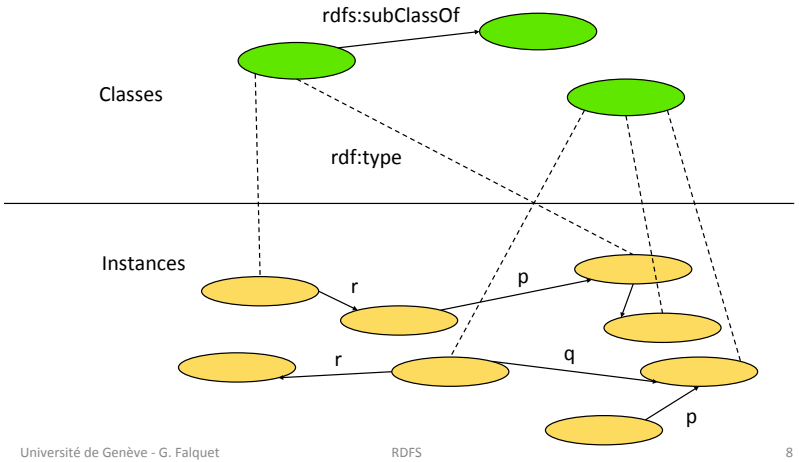
Inferences

RDFS has predefined entailment rules:

from	infer
P rdfs:domain C . x P y .	x rdf:type C
P rdfs:range D . x P y .	y rdf:type D
P rdfs:subPropertyOf Q . Q rdfs:subPropertyOf R .	P rdfs:subPropertyOf R .
P rdfs:subPropertyOf Q. x P y .	x Q y .
C rdf:type rdfs:Class. D rdf:type rdfs:Class. E rdf:type rdfs:Class. C rdfs:subClassOf D . D rdfs:subClassOf E .	C rdfs:subClassOf E .
C rdfs:subClassOf D. x rdf:type C.	x rdf:type D .

The class and instance levels

It is generally a good idea to have two separate levels

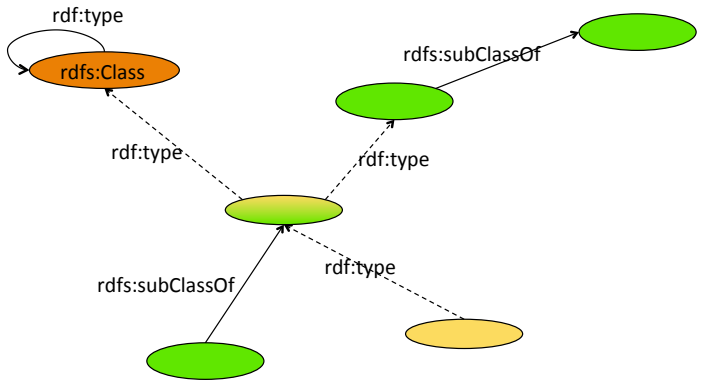


A Modeling Question

Deciding if X should be a class or an instance is a matter of modeling

ex:Food rdf:type rdfs:Class
ex:pizza rdf:type ex:Food
ex:kebab rdf:type ex:Food
or
ex:Food rdf:type rdfs:Class
ex:pizza rdfs:subClassOf ex:Food
ex:kebab rdfs:subClassOf ex:Food

RDF allows any combination



Predefined classes

rdfs:Resource

rdfs:Class

rdf:Property

rdfs:Literal *the set of literal values, eg. textual strings.*

rdf:Statement

rdfs:Container , rdf:Bag , rdf:Seq , rdf:Alt

Structuring properties

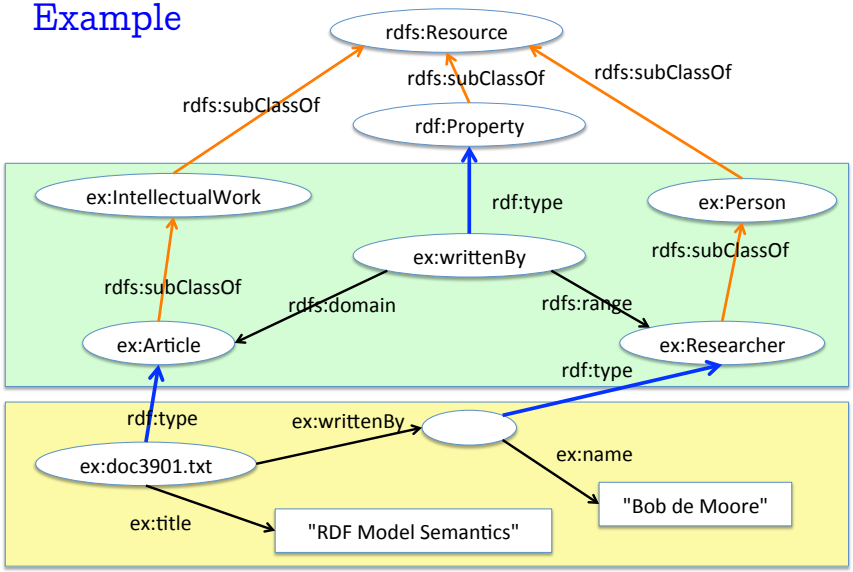
- Specify the domain and range of a property
  - ex:teaches rdfs:domain ex:professor
  - ex:teaches rdfs:range ex:course
- Specify subproperties
  - ex:motherOf rdfs:subPropertyOf ex:parentOf

Predefined properties

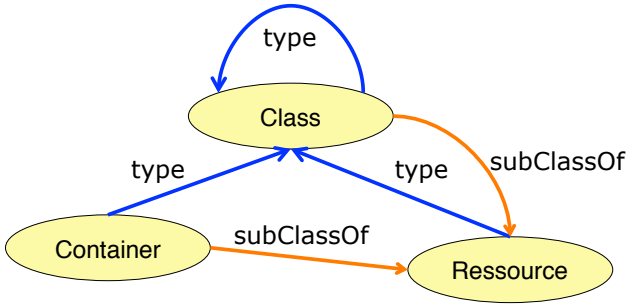
rdfs:isDefinedBy
rdf:subject
rdf:predicate
rdf:object
rdf:type (instance of)
rdfs:member
rdfs:subClassOf

rdf:value
rdfs:comment
rdfs:label
rdfs:domain
rdfs:range
rdfs:seeAlso

Example



The top level



more ...