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Semantic Web Technologies

Exercise 3: RDFS

3.1. Modeling in RDFS

You are asked to develop an RDF Schema for a library information system. In this system, libraries want to store information about their books, as well as who has lended them. The following information should be expressed:

> A library owns books.
> Libraries have a name, an address, and a phone number.
> Books have a title, one or more authors, and an ISBN number.
> Persons have a name, an address, a phone number, and an e-mail address.
> Books can be borrowed by a person.

Try to reuse existing schemas you find on the web, e.g., FOAF und Dublin Core:

http://xmlns.com/foaf/spec/20100809.rdf

http://xmlns.com/foaf/spec/

http://dublincore.org/2010/10/11/dcterms.rdf

http://dublincore.org/documents/dcmi-terms/

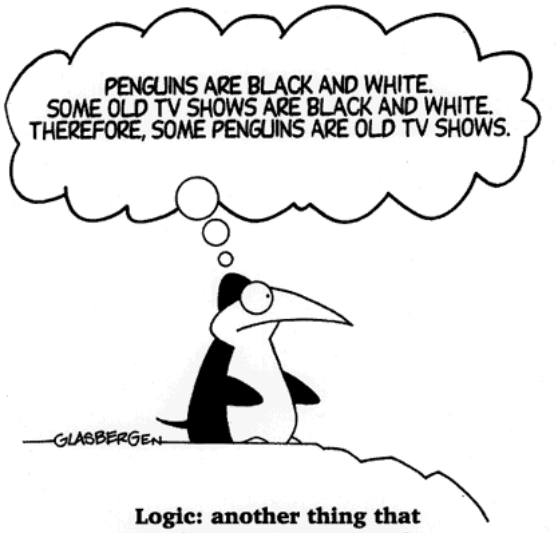
3.2. Modeling in RDFS

Create an RDF Schema describing family relationships. It should use class and relation hierarchies.

Instantiate your schema by an example in Turtle.

3.3. Reasoning I

Explain why the penguin is wrong:



3.4. Reasoning II

You are given the following schema:

```
:Person a rdfs:Class .
:Student a rdfs:Class .
:Student rdfs:subClassOf :Person .
:University a rdfs:Class .
:enrolledAt a rdf:Property .
:memberOf a rdf:Property .
:memberOf rdfs:domain :Person .
:memberOf rdfs:range :University .
:enrolledAt rdfs:subPropertyOf :memberOf .
:enrolledAt rdfs:domain :Student .
```

Furthermore, you are given the statement:

```
:Jana :enrolledAt :Uni_Mannheim .
```

Show how a reasoner would conclude the following statement:

```
:Jana a :Person .
```