

Knowledge Graphs

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 lendened 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/>

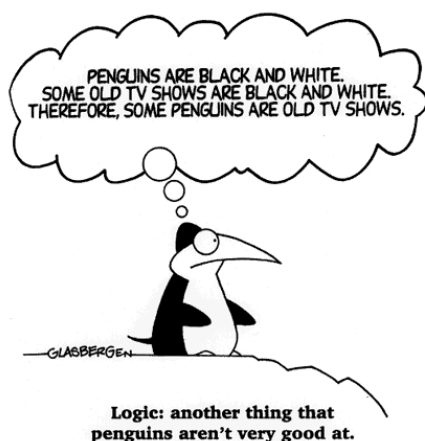
3.2. Modeling in RDFS

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 .
```