

Übung zur Lehrveranstaltung

Grundlagen Semantic Web

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<http://semantic-web-grundlagen.de>

Übung 1: RDF, RDF Schema

Aufgabe 1.1 Consider the following RDF document:

```
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:iswww="http://sw.edu/#"
>

<rdf:Description rdf:about="http://sw.edu/#germany">
  <rdf:type rdf:resource="http://sw.edu/#country" />
</rdf:Description>

<rdf:Description rdf:about="http://sw.edu/#capital_of">
  <rdf:type
    rdf:resource="http://www.w3.org/1999/02/22-rdf-syntax-ns#Property"/
  >
  <rdfs:domain rdf:resource="http://sw.edu/#city" />
  <rdfs:range rdf:resource="http://sw.edu/#country" />
</rdf:Description>

<rdf:Description rdf:about="http://sw.edu/#country">
  <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Class" />
  <rdfs:label xml:lang="de">Land</rdfs:label>
</rdf:Description>

<rdf:Description rdf:about="http://sw.edu/#berlin">
  <rdfs:label xml:lang="en">Berlin</rdfs:label>
  <rdf:type rdf:resource="http://sw.edu/#city" />
  <iswww:capital_of rdf:resource="http://sw.edu/#germany" />
</rdf:Description>
```

```

<rdf:Description rdf:about="http://sw.edu/#city">
  <rdf:type rdf:resource="http://www.w3.org/2000/01/rdf-schema#Class" />
  <rdfs:label xml:lang="de">Stadt</rdfs:label>
</rdf:Description>

</rdf:RDF>

```

- Describe in natural language the content of this document.
- Draw the graph representation of the above document.

Aufgabe 1.2 Write down the following statement in Turtle syntax using a closed list: “The children of Homer are Meggy, Lisa and Bart.”

Aufgabe 1.3 Translate the following culinary-allergic example ontology into RDF/XML syntax:

```

ex:vegetableThaiCurry    ex:thaiDishBasedOn    ex:coconutMilk .
ex:sebastian              rdf:type              ex:AllergicToNuts .
ex:sebastian              ex:eats              ex:vegetableThaiCurry .

ex:AllergicToNuts        rdfs:subClassOf      ex:Pitiabile .
ex:thaiDishBasedOn      rdfs:domain          ex:Thai .
ex:thaiDishBasedOn      rdfs:range           ex:Nutty .
ex:thaiDishBasedOn      rdfs:subPropertyOf  ex:hasIngredient .
ex:hasIngredient         rdf:type             rdfs:ContainerMembershipProperty .

```

Aufgabe 1.4 Represent the following sentences graphically by means of reified triples:

- Romeo thought that Juliet was dead.
- John believes that Mary wants to marry him.
- The dwarf noticed that somebody had been eating from his plate.

Aufgabe 1.5 Decide whether the following propositions can be satisfactorily modeled in RDFS and, if so, give the corresponding RDF(S) specification.

- Every pizza is a meal.
- Pizzas always have at least two toppings.
- Every pizza from the class `PizzaMargarita` has a `Tomato` topping.
- Everything having a topping is a pizza.
- No pizza from the class `PizzaMargarita` has a topping from the class `Meat`.
- “Having a topping” is a containedness relation.