

Grundlagen Semantic Web  
Seminar für Computerlinguistik, Universität Heidelberg

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<http://semantic-web-grundlagen.de>  
Übung 1: RDF, RDF Schema

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**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:Pitiable .
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.