



Foundations of Artificial Intelligence, SS 2016

Assignment 9 - Solution

Exercise 1: [Model an Indoor Soccer-Team Ontology in RDF] (4 Points)

For this exercise you should model a national team of your choice for a hypothetical indoor soccer Euro 2016 championship. Your task is to (partially) annotate the semantic information about the team in RDF syntax, to represent a team with

- a coach,
- a manager,
- medical stuff (doctor and physiotherapist)
- and 6 players (1 goalkeeper and 5 outfield players).

Annotate the persons with names of your choice and model relations between them (e.g. the coach trains the players). Check the syntax with an online RDF validator (e.g. <https://www.w3.org/RDF/Validator/rdfval>).

Sample Solution:

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:dc="http://www.german-national-team.de#">

  <rdf:Description rdf:about="http://www.JogiLoew.de">
    <dc:position>Coach</dc:position>
    <dc:sbrelated>Coach of the National Team</dc:sbrelated>
  </rdf:Description>

  <rdf:Description rdf:about="http://www.TimMeyer.de">
    <dc:position>Doctor</dc:position>
    <dc:sbrelated>Doctor of the National Team</dc:sbrelated>
  </rdf:Description>

  <rdf:Description rdf:about="http://www.HeikeHuppert.de">
    <dc:position>Physiotherapist</dc:position>
    <dc:sbrelated>Physiotherapist of the National Team</dc:sbrelated>
  </rdf:Description>

  <rdf:Description rdf:about="http://www.german-national-
team.de/teamplayers">
    <dc:trainedby>Coach</dc:trainedby>
  </rdf:Description>
  <rdf:Description rdf:about="http://www.german-national-team.de/coach">
    <dc:trains>Team Players</dc:trains>
  </rdf:Description>

  <rdf:Description rdf:about="http://www.german-national-team.de/physio">
```

```

    <dc:supervisedby>Doctor</dc:supervisedby>
  </rdf:Description>

  <rdf:Description rdf:about="http://www.german-national-team.de">

    <dc:Coach>Jogi Löw</dc:Coach>
    <dc:Manager>Oliver Bierhoff</dc:Manager>
    <dc:Doctor>Tim Meyer</dc:Doctor>
    <dc:Physiotherapist>Heike Huppert</dc:Physiotherapist>
    <dc:TeamPlayers>
      <rdf:Bag>
        <rdf:li>Manuel Neuer</rdf:li>
        <rdf:li>Jerome Boateng</rdf:li>
        <rdf:li>Sami Khedira</rdf:li>
        <rdf:li>Toni Kroos</rdf:li>
        <rdf:li>Mesut Özil</rdf:li>
        <rdf:li>Thomas Müller</rdf:li>
      </rdf:Bag>
    </dc:TeamPlayers>
  </rdf:Description>

</rdf:RDF>

```

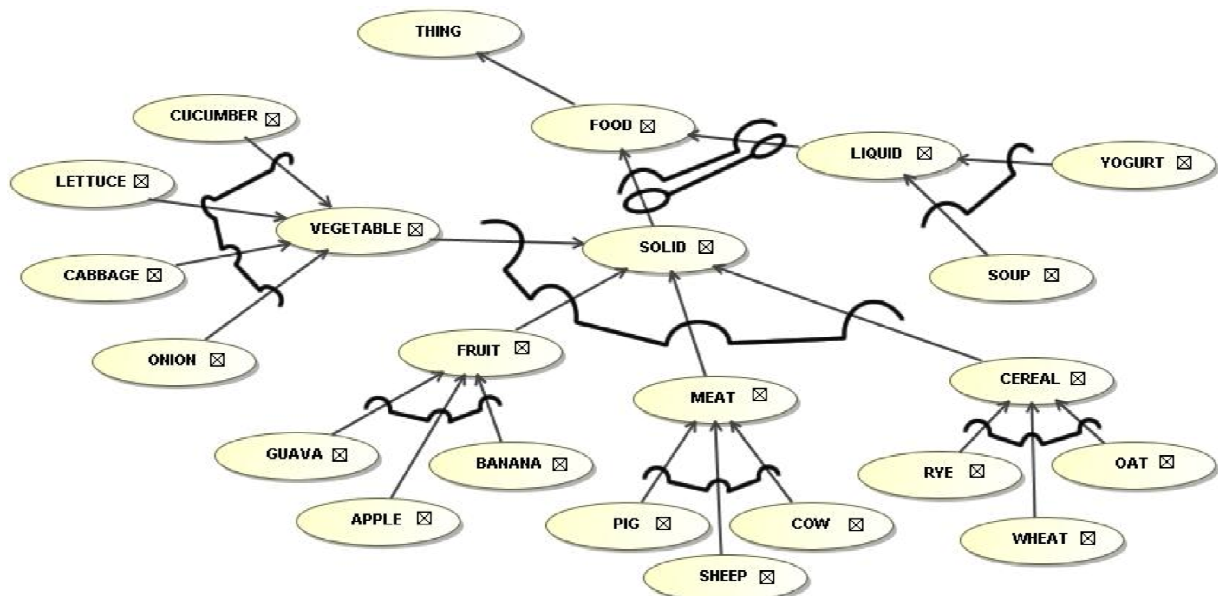
Points:

- 1 point for a syntactically correct semantic net (test with a validator).
- 1 point for a implementation of the given roles and a set of players
- 1 point for concept descriptions of Coach, Manager, Doctor, etc.
- 1 point for at least 1 example relation (like “trains”, “trainedby”, “supervisedby” in the sample solution).

Exercise 2: [Taxonomy] (3 Points)

Build a taxonomy in graphical representation (in analogy to the lecture) for different kinds of food, that contains primitive and disjunctive classes, partitions and overlapping. Mark them as in the lecture.

Sample Solution:



Points:

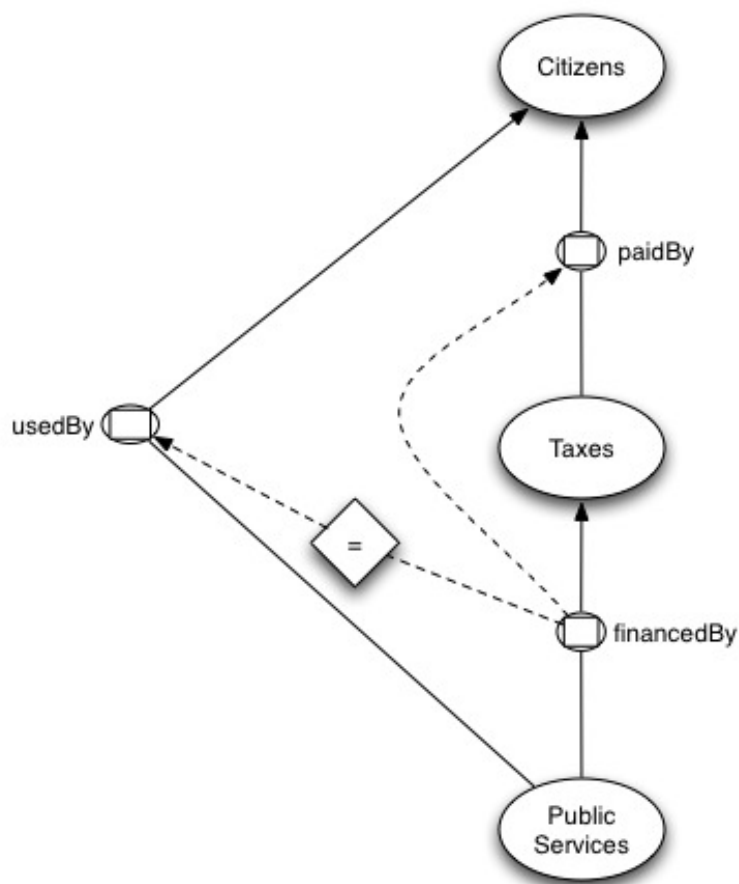
- 1 point for a meaningful taxonomic structure (a much simpler solution than shown above is accepted – the key word is “meaningful”!).
- 0.5 point for disjoining food by primitive classes.
- 0.5 points for the correct use of the graphical “primitive tag”.
- 0.5 point for a graphical “bridging” subsumption relation.
- 0.5 point for a graphical covering relation

Exercise 3: [Roles] (3 Points)

Draw a graphical representation of the following roles:

Public services are financed through taxes that are paid by citizens, who use the public services.

Sample Solution:



Points:

- 1 point for the 3 roles.
- 2 points for the role value map (1 point for the role chains, 1 point for the constraint).