

## Exercise Sheet 1

### Data Representation and Modeling

#### Exercise 1 (Modeling in RDF)

10 points

"The children of Homer are Meggy, Lisa and Bart. Represent this statement in RDF by using

- a) an open list, and
- b) a closed list.

You are free to use any of the syntax proposals for RDF, e.g. Turtle, N3 or RDF/XML

#### Exercise 2 (Modeling in RDF)

15 points

Consider the following statements:

- Romeo thinks that Julia is dead.
- John believes that Mary wants to marry him.
- The dwarf notices that someone has eaten from his plate.

How would you encode this information in RDF? It is sufficient to give a graphical representation only.

#### Exercise 3 (Modeling in different data models)

60 points

Given is the following description in natural language:

"The elementary school of Freiburg has three employees: the two teachers Mr. Maier and Mrs. Schmidt, and the schoolmaster Mrs. Koster. In addition to their administrative duties, Mrs. Koster also does some teaching. In particular, Mr. Maier is assigned to the First-graders, while Mrs. Schmidt and Mrs. Koster together teach the second-, third-, and fourth-graders. Mr. Maier has specialized in sports and therefore is assigned to physical education for all four grades of school. Each grade has a class representative and at least one pupil. Actually, Marie is a fourth-grader. Her favourite subjects in school are physical education, painting, and mathematics."

Your goal is to model this description in the following data models:

- a) Relational
- b) XML/semistructured
- c) RDF

Please consider that modeling certain aspects might be difficult or even impossible in a specific data model. Give reasons for your modeling decision and explain the problems you have encountered.