TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Computer Science Institute of Theoretical Computer Science, Chair of Automata Theory
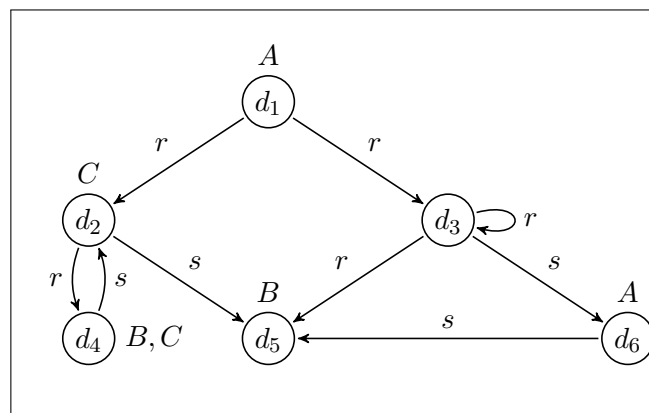
Logic-Based Ontology Engineering

Summer Semester 2018

Exercise Sheet 3

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Exercise 3.1 We consider the following model given as the graph:

Draw the tree-unravelling up to a path length of 5 from the element d_1.

Exercise 3.2 We want to use Protégé and some tools for visualisation. Start Protégé, load the Pizza ontology and let HermiT classify it. We consider the tools

- OntoGraf, which is included in the standard Protégé installation;

- VOWL, which can be installed according to the instructions found on the web page of this lecture.

Both can be activated from the menu "Window" → "Tabs".
    For both of the tools, do the following:

(a) View the classes *DomainThing*, *Country* and *Food*.
    What kind of information do the differently drawn (solid vs. dashed) and differently coloured edges indicate? (In OntoGraf, expand classes by double-clicking them.)

(b) Describe how the visual elements of the tools correspond to OWL constructs.

(c) How are individuals and disjointness axioms indicated?

Exercise 3.3 This exercise puts the techniques for knowledge elicitation and formalization to practice and will be carried out in the class. As you will be both domain experts and ontology engineers, all of you need to know a bit about the domain of *sushi*. The exercise for you at home is to brush up your knowledge on sushi (dishes, ingredients, forms, ways of preparation, etc).

In the class room, you should be able address the following tasks (in groups of at least two students):

(a) Some competency questions are:

- Does every sushi contain vinegar as ingredient?

- What are the parts of sushi dishes?

- What are the kinds of sushi not from Japan?

Think of more competency questions.

(b) Collect important terms from the sushi domain.

(c) What is an (initial) class hierarchy of the sushi domain?

(d) Which classes are disjoint?

(e) Which properties are needed to formulate definitions? What are their domains and ranges?

(f) What are complex class expressions that can define the classes from the concept hierarchy?

(g) Which property should be used for the partonomy of the sushi domain? Are there more than one? (Can one be defined in terms of others?)

(h) Are there individuals that can serve as nominals in complex classes?

(i) How can you formalize the competency questions from (a)?