

18.302 Beschreibungslogiken
Wintersemester 2007 / 2008
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To be read until 5.11.2007

Nardi, Daniele & Ronald J. Brachman (2003). An introduction to description logics. In F. Baader, D. Calvanese, D.L. McGuinness, D. Nardi & P. Patel-Schneider (eds.) *The Description Logic Handbook. Theory, Implementation and Application* (pp. 1–40). Cambridge UP: Cambridge, NY.

To be kept in mind while reading the paper:

1) Which reasons might have influenced the decision to use specific dialects of descriptions logics for specifying the *semantics* in the Semantic Web?

More specific questions:

2) How are description logics related to predicate logic and network based representation formalisms?

3) How can knowledge representation formalisms / systems be distinguished from other kinds of information systems? Why can logics be seen as paradigmatic knowledge representation formalisms?

4) Which results from the investigations on description logics can be transferred to the general area of knowledge representation and reasoning?

5) Explain how queries of the type *does concept C subsume concept D with respect to TBox T* can be mapped to equivalent queries of the type *does concept C' subsume concept D' without any TBox*. Give an example for this mapping by selecting a TBox and two concepts.

6) Explain the reasoning services *instance check*, *realization* and *retrieval*. Why is the implementation of *instance check* simpler than that of the other two services? What is the specific challenge of implementing *realization*?

7) How does an ABox in standard description logic approaches look like? What cannot be expressed and which extensions of the language for ABoxes can be useful?

8) Which type of information to be used by semantic-web agents corresponds to TBox content and which type corresponds to ABox content?

Reading 1.5 – 1.7 is optional. But please read the conclusion 1.8.