Description Logics

Exercise Sheet 5

Dr. Anni-Yasmin Turhan / Dipl.-Math. Felix Distel
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Exercise 1

Extend the proof of Lemma 4.1 (local correctness) to the $\sqcap$-rule and the $\forall$-rule.

Exercise 2

Use the tableau algorithm from the lecture to decide whether the following subsumption holds:

$$\neg\forall r.A \sqcap \forall r.C \sqsubseteq_{\mathcal{T}} \forall r.E$$

where $\mathcal{T} = \{C \equiv (\exists r.\neg B) \sqcap \neg A, \quad D \equiv \exists r.B, \quad E \equiv \neg(\exists r.A) \sqcap \exists r.D\}$.

Exercise 3

Prove by induction Lemma 4.5 from the lecture.

Exercise 4

Prove Lemma 4.6 from the lecture.