# Foundations of Semantic Web Technologies

## Tutorial 7

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**Exercise 7.1.** Apply the structural transformation (with polarity optimization) to the ontology with the following axioms:

$$\forall r.\neg B \sqsubseteq A \sqcap \exists r.C,$$
$$B \sqcup \exists r.C \sqsubseteq \neg D.$$

**Exercise 7.2.** Apply the hypertableau algorithm to check if the axiom $A \sqsubseteq B$ is logically entailed by the TBox $\{\neg C \sqsubseteq B, A \sqcap C \sqsubseteq \bot\}$.

**Exercise 7.3.** For each of the following logics, decide if the logic has the finite model property or not. In the positive case, provide an argument why the logic has this property, in the negative case, provide a satisfiable concept $C$ and a TBox $\mathcal{T}$ such that $C$ and $\mathcal{T}$ have only infinite models.

(a) $\mathcal{ALCI}$

(b) $\mathcal{ALCF}$

(c) $\mathcal{ALCIF}$