



Nonmonotonic Reasoning

Winter Semester 2017/18

Exercise Sheet 5

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Exercise 5.1 Poole-type default theories have the form $T = (W, D)$, where all defaults $\delta_i \in D$ have the form

$$\frac{\varphi_i : (\beta \wedge \psi_i)}{\psi_i}$$

i.e., all defaults in D have formula β as a conjunct in the justification and the other conjunct as consequence. Prove or refute the following claim: Poole-type default theories always have extensions.

Exercise 5.2 Devise a default theory with three extensions and compute all brave and all cautious consequences (modulo equivalence) of it.

Exercise 5.3 Express some of the examples from Default logic in the language of Autoepistemic logic.

Exercise 5.4 Give an inductive definition of *degree*.