TECHNISCHE UNIVERSITÄT DRESDEN

Faculty of Computer Science Institute of Theoretical Computer Science, Chair of Automata Theory

Nonmonotonic Reasoning

Winter Semester 2017/18

Exercise Sheet 4

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Exercise 4.1 Reconsider the example from lecture slide 69. Explain why the defaults had to be turned into semi-normal defaults instead of putting the additional condition in the prerequisite of the defaults.

Exercise 4.2 Give an example which demonstrates that expanding a set of normal defaults by adding normal defaults may increase the number of extensions.

Exercise 4.3 Show that every process Π of a normal default theory T is included in a closed process Π' of default theory T.

Hint. For infinite processes use the weaving technique from the proof of Theorem 3.21.

Exercise 4.4 A class $\mathcal{C}$ is called *representationally complete* iff the following property is satisfied: For every default theory T there is a default theory T' in $\mathcal{C}$ such that T and T' have the same extensions. Show that the class of normal default theories in not representationally complete.

Hint. Consider T with two extensions E and F such that $E \cup F$ is consistent.