Science of Computational Logic

Steffen Hölldobler, Tobias Philipp

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Problem 9.1

Consider the program

$$P = \{\neg p \leftarrow\ \sim p\}$$

- Compute $P|_\emptyset, P|_{\{p\}}, P|_{\{\neg p\}}$

- Present all answer sets of P.

Problem 9.2

Consider the program

$$P = \{p \leftarrow\sim q, p \leftarrow\sim \neg p, q \leftarrow p \wedge \sim q, p \leftarrow, q \leftarrow\}$$

- Compute all answer sets of P.

- What happens if we delete $q \leftarrow$ from P?

Problem 9.3

Proof that answer set programming is non-monotonic.

Problem 9.4

Write a answer set program that corresponds to the following specification:

X can fly, if X is a bird, nothing abnormal is the case, and we can safely assume that X can fly. One abnormal situation is that X is a penguin.

Problem 9.5

Proof that the program presented in slide 46 has an answer set if and only if the graph G has a Hamiltonian cycle.

Problem 9.6

Write a an answer set program P such that all its answer sets correspond to a solution of a Sudoku puzzle.