Deduction Systems

Tutorial 4

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Exercise 4.1. Given the program P_i, determine the stable models of P_i by applying the *Gelfond-Lifschitz-Reduct*.

$$P_1 = \{a \leftarrow b, not\ c, d;$$
$$c \leftarrow not\ b, a;$$
$$b \leftarrow not\ c, not\ d;$$
$$a \leftarrow\}$$

$$P_2 = \{a \leftarrow b, not\ c;$$
$$b \leftarrow c, not\ a;$$
$$c \leftarrow a, not\ b;$$
$$b \leftarrow\}$$

$$P_3 = \{a \leftarrow not\ b, c;$$
$$c \leftarrow not\ a, b\}$$

Exercise 4.2. Apply the CDNL Algorithm to the program P to trace the stable model $\{b, c, d, e\}$. Highlight the steps of the nogood propagation, unfounded set checking and (if needed) conflict analysis.

$$P = \{ \quad a \leftarrow not\ b; \quad c \leftarrow a; \quad d \leftarrow b, c; \quad e \leftarrow b, not\ a; $$
$$b \leftarrow not\ a; \quad c \leftarrow b, d; \quad d \leftarrow e; \quad e \leftarrow c, d \quad \}$$