

Human Reasoning and the Weak Completion Semantics II

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Exercise 8

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Problem 1

Given the program, \mathcal{P} :

$$\begin{aligned} &\{happy \leftarrow tea \wedge \neg ab_t, ab_t \leftarrow \perp, \\ &happy \leftarrow coffee \wedge \neg ab_c, ab_c \leftarrow \perp, \\ &cookies \leftarrow \neg cake, \\ &milk \leftarrow cookies, \\ &tea \leftarrow \top\}, \end{aligned}$$

and the integrity constraint, $\{U \leftarrow tea \wedge coffee\}$.

Please answer the following questions by constructing appropriate networks:

1. Determine or detect whether \mathcal{P} has reached a stable state.
2. Check whether the integrity constraint is satisfied.
3. Check if a given observation, $\mathcal{O} = \{\neg cake\}$, can be explained by the least model of $wc(\mathcal{P})$.
4. Provide an externally activated clamp unit to extend the network, such that \mathcal{O} can be (minimally) explained.
5. Does the above lead to any stable coalition? Give reasons for your response.