Human Reasoning and the Weak Completion Semantics II
Technische Universität Dresden
Exercise 9

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Problem 1

Given the program, $\mathcal{P}$:

$$\{relax \leftarrow tea \wedge \neg ab_t, ab_t \leftarrow \bot\}$$

and the empty integrity constraint.
Please answer the following questions by constructing appropriate networks:

1. Provide a finite automaton generating all possible and non-complementary explanations. Do state how the output function encodes the explanations.
2. Why are we interested in non-complementary explanations?
3. What are *sceptical* conclusions?
4. Provide a McCulloch-Pitts network for the finite automaton.
5. Consider the observation, $\mathcal{O} = \{relax\}$. Extend the previous network (you can omit the recurring network details where the stable state is generated) such that the new network generates *sceptical* conclusions for $\mathcal{O}$. Highlight all the active units in the input and output layers of the last network.
6. Under what conditions will the various input units of the last network be activated?
7. Why is each unit that you have highlighted in the output layer of the last network, active?
8. Imagine there are multiple explanations for $\mathcal{O}$. How or why would the corresponding multiple least models persist in the input layer of the last network?