Knowledge Representation
Qualitative Reasoning Assignment

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Causal Model (4a)

"Create drawings of the causal model active for this system and the expected state-graph. Think up all the states with their unique value set and the state- transitions. You can use paper & pencil or a computer tool of your preference."

Answer

The causal model can be seen figure 1. The proposed state-graph made by hand can be seen in figure 2.

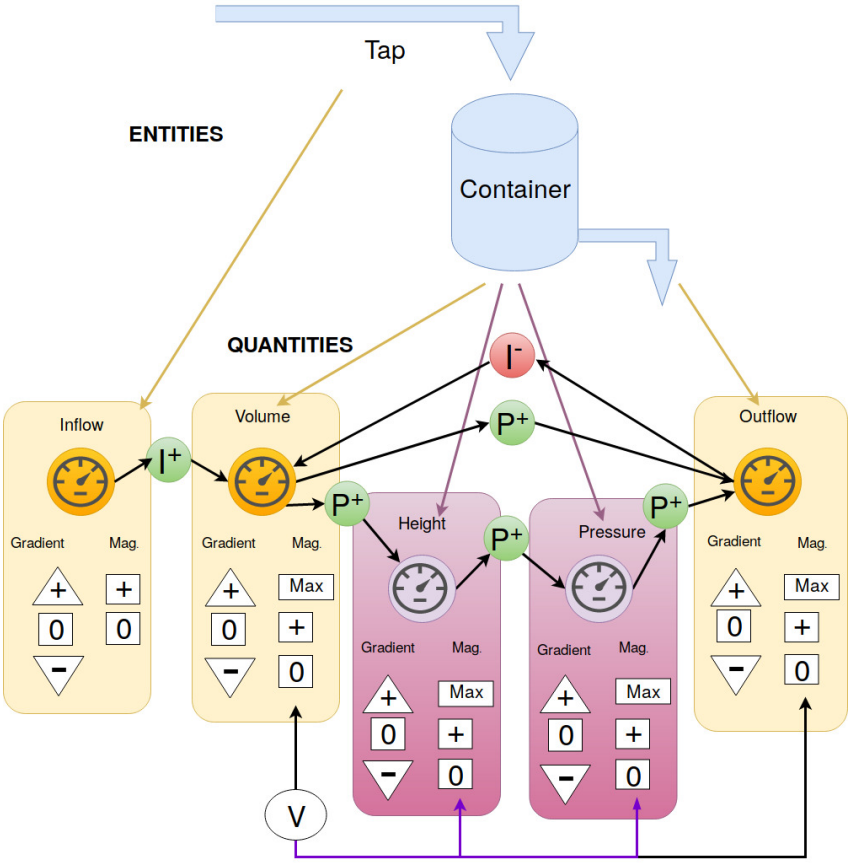

Figure 1: Drawing of Causal Model

Assumptions (3)

When developing the solution to this problem, you may discover that varying solutions can be postulated, depending on assumptions you make about the system. One assumption concerns the inflow which is exogenously defined. How will it behave? You may choose assumptions at your discretion. Describe your choice(s) and its/their impact in the report you submit.

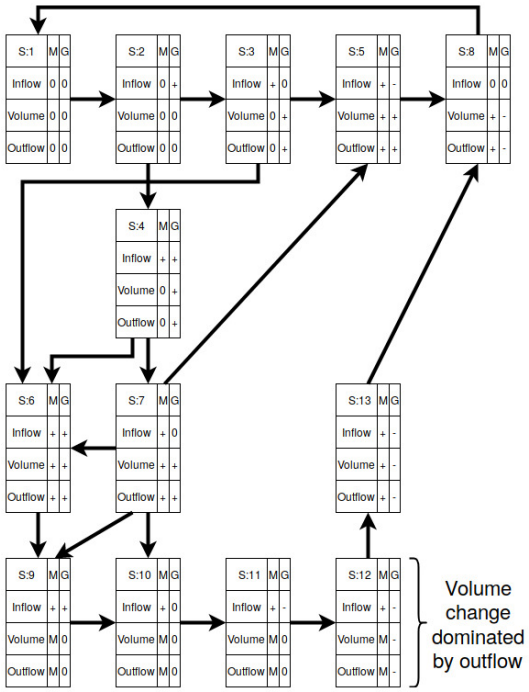

Figure 2: Hand-Made state graph with transitions

Answer

Description of Algorithm (4b)

Develop and implement an algorithm that uses the details discussed above, and creates a state-graph showing all the behavioural states of the container system (as envisioned in a). Important here is your representation of states and state- transitions, and how you deploy the calculi for the different dependency types.

Answer

State Graph (4b)

The state-graph your algorithm generated and a description of the system behaviour and characteristics captured by it

Answer

Trace (4c)

Augment the algorithm such that it generates an insightful trace (a kind of explanation) of results inferred by the algorithm. Distinguish between intra-state (within a state) and inter-state (between states) conclusions.

Intra-state

Select a state and describe how your approach explains the system behaviour represented by that state:

Answer

Inter-state

Select two states (one state being the successor of the other state) and describe how your approach explains the transition of system behaviour represented between these two states:

Answer

Extra Details

The details explaining the workings of the container can be represented more accurately by including column height and bottom pressure. Augment your approach by including the intermediate quantities

Answer

References