

Summary:

The setting of my topic takes place in a pool, and how the rules of logic apply to pool systems and lifeguarding scenarios. The topic domain revolves around lifeguarding logic and safety protocols, which specifically includes defining rules around lifeguarding scenarios and pool safety. The scope of the topic involves using propositional logic to model lifeguarding scenarios and the steps lifeguards take when performing their duties. The scope includes defining: propositions, rules, constraints, and implications of scenarios. For the sake of this essay, we will simplify the topic into four propositions.

Ex. The issue of safety in and around pool areas can be complicated for lifeguards, which is why a set of rules is vital for ensuring the safety of patrons. The problem will be scaled down to one simple pool, with four main rules/propositions in place to demonstrate the rules of a pool.

Propositions:

- We'll say P is true if the pool is open
- Q will be true if lifeguards are currently on duty
- S will be true if swimming is allowed
- E will be true if emergency assistance is required

Constraints:

Rule 1: Swimming is only allowed if the pool is open and lifeguards are on duty

- $P \wedge Q \rightarrow R$

Rule 2:: If emergency assistance is required, lifeguards must be on duty, and the pool is shut down (swimming no longer allowed)

- $(E \rightarrow Q) \rightarrow \neg S$

Rule 3: If the pool is closed, swimming is not allowed

- $\neg P \rightarrow \neg S$

Limitations:

In terms of limitations, there are more complex situations involved in emergency scenarios, and the protocol related to those. For instance, depending on the scale of the emergency in real life, the entire pool may be shut down, one section may be shut down, or it may not be shut down at all. For the sake of our situation, we will assume

that each emergency is severe and calls for a full pool shutdown. Additionally, there are protocols where multiple lifeguards may be required to rescue a single person (or multiple people) at once, and would need another lifeguard to cover the area they were guarding. In fact, I could also go into detail about the different steps taken in emergencies, but it would be too complex for one essay.