

Meeting agenda

- 1 New developments in translation to Alloy
- 2 Design choices for semantics
 - Meaning of current structural constraints
 - Default fields: mutable vs immutable
- 3 Design choices for concrete syntax

Translation to Alloy

We reconsidered translation to Alloy. Issues using Amir's library:

- Need for global state.
- Issues with identity.
- Not compatible with current compiler Alloy output.

New solution

New solution is based on Bounded Model Checking with Alloy paper¹. Instead of global state we introduce local state concept:

- 1 Define discrete Time ordered using util / ordering module.
- 2 Since Time set is finite we add a loop relation from last Time instance to any other one.
- 3 Each mutable field relation gets additional Time column.
- 4 Define behavioral constraints using LTL. LTL encoding over Time is presented in the paper.
- 5 Traces are modeled according to the ordering of Time atoms. A snapshot in a trace is assembly of immutable values and projection of mutable values at specific Time instance.

¹Alcino Cunha. "Bounded Model Checking of Temporal Formulas with Alloy". In: *CoRR* abs/1207.2746 (2012).

Meaning of current structural constraints

Restrict the first state.

Restrict globally.

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