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 paper[1]. 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.

[1] Alcino 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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Subclafer mutability

It can be difficult to implicitly imply which subclafers are mutable. Therefore we need some kind of assumption about default mutability and concrete syntax to express opposite. Should top level clafers be immutable?

All fields are immutable by default

```
PM
  heart -> Heart
CaseHandler
[mutable] current -> Case
```

All fields are mutable by default

```
Person
  name: String
  [immutable name]
Person
  age: int
```