Meeting II: Proof Techniques

Announcements

HW1, HW2 due Sat

Questions

- Exceptions on HW2
  - Try, Catch, Finally
- Induction on HW2
- Small & Big Step Semantics for Let
  (HW2) (HW1)

- What is terminal?
  - throw is a terminal?
We can do a lot with structural induction over syntax.

For all $a \in A_{exp}$,

$\sigma + a \rightarrow^* n$

if and only if

$\langle a, \sigma \rangle \cup n$

Try this!
Have \( \langle x+1, 0 \rangle \downarrow 5 \)

Also have \( \langle x+1, 0 \rangle \downarrow 88 \ ? ? ? \)

No in our \( \downarrow \)

something we would like to prove about our

\( \langle a, 0 \rangle \downarrow \eta \)
Prove that IMP is deterministic.

1) If \(\langle a, o \rangle \sqcup \downarrow n\) and \(\langle a, o \rangle \downarrow \downarrow n\),
   then \(n = n'\).

2) If \(\langle b, o \rangle \sqcup \sqcup t\) and \(\langle b, o \rangle \downarrow \downarrow t'\),
   then \(t = t'\).

3) For all \(c \in \text{com}, \sigma, \sigma', \sigma'' \in \text{States} \),
   if \(\langle c, \sigma \rangle \downarrow \sigma'\)
   and \(\langle c, \sigma \rangle \downarrow \sigma''\),
   then \(\sigma' = \sigma''\).
case c = while b do c