

EECS3342 System Specification and Refinement
(Winter 2022)

Q&A - Week 5, 6 Lectures

Thursday, March 3

WT1 35 WT4 70
WT2 60 Ex. 50
WT3 50

Announcements

- + eClass announcement about ProgTest
- + Lecture W7 released
- + Written Test 2  WT3
3

Typo on the Inference Rule Application

Discharging PO of **DLF**: First Attempt

$$\frac{A(c) \quad I(c, v) \quad \vdash \quad G_1(c, v) \vee \dots \vee G_m(c, v)}{\text{DLF}}$$

DLF

$$\frac{d \in \mathbb{N} \quad n \in \mathbb{N} \quad n \leq d \quad \vdash \quad n < d \vee 0 \leq n}{??}$$

* $d > 0$
* $n > 0$
not reasonable to impose on model # cars

$\frac{H1 \vdash G}{H1, H2 \vdash G}$ MON	$\frac{H, P \vdash R \quad H, Q \vdash R}{H, P \vee Q \vdash R}$ OR.L	$\frac{H \vdash P}{H \vdash P \vee Q}$ OR.R1	$\frac{H \vdash Q}{H \vdash P \vee Q}$ OR.R2
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no way not be sufficient

$$\frac{d \in \mathbb{N} \quad n \in \mathbb{N} \quad n \leq d \quad \vdash \quad n < d \vee n > 0}{\text{DLF}}$$

upper bound of n

guard of ML-out
guard of ML-in

$$\frac{d \in \mathbb{N} \quad n \in \mathbb{N} \quad n < d \vee n = d \quad \vdash \quad n < d \vee n > 0}{\text{OR.L}}$$

$$\frac{n < d \vee n = d \quad \vdash \quad n < d \vee n > 0}{\text{OR.L}}$$

$$\frac{n < d \quad \vdash \quad n < d \vee n > 0}{\text{OR.L}}$$

$$\frac{n < d \quad \vdash \quad n < d}{\text{HYP}}$$

$$\frac{n = d \quad \vdash \quad n < d \vee n > 0}{\text{EQ.LR}}$$

$$\frac{n = d \quad \vdash \quad d < d \vee d > 0}{\text{Mon}}$$

$$\frac{n = d \quad \vdash \quad d < d \vee d > 0}{\text{Mon}}$$

$$\frac{H(F), E = F \vdash P(F) \quad H(E), E = F \vdash P(E)}{H(F), E = F \vdash P(F)} \quad \text{EQ.LR}$$

alternatively

$$\frac{n = d \quad \vdash \quad n < n \vee n > 0}{\text{EQ.LR}}$$

$$\frac{n = d \quad \vdash \quad n < n \vee n > 0}{\text{Mon}}$$

OR_R1

$n > 0$

?

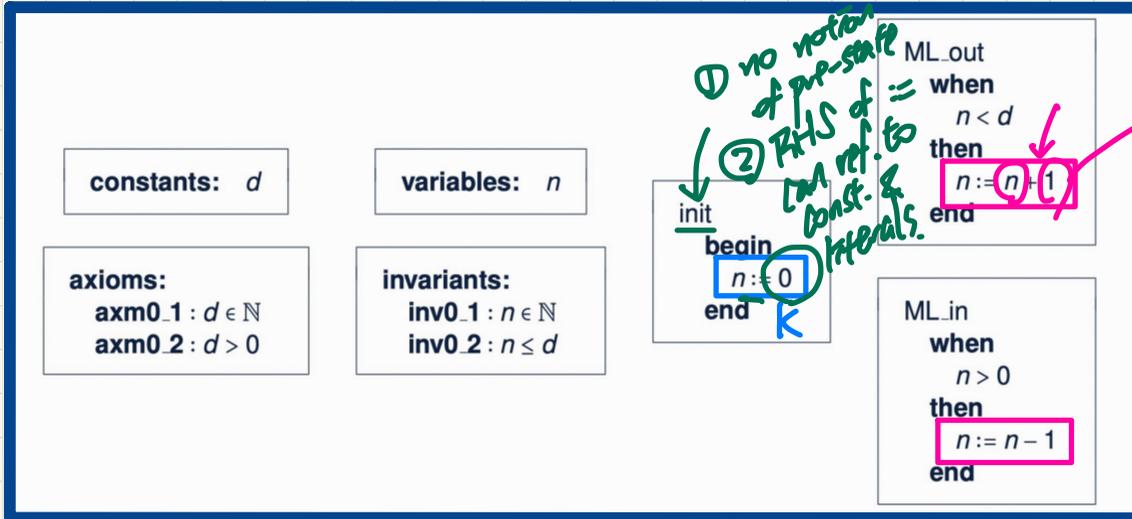
$$\frac{n = d \quad \vdash \quad n < n \vee n > 0}{\text{Mon}}$$

Is there a difference between $K(c)$ and $E(c,v)$?

$F(c, v, w) \rightarrow$ effect of concrete evt.

$K(c)$: effect of init's actions

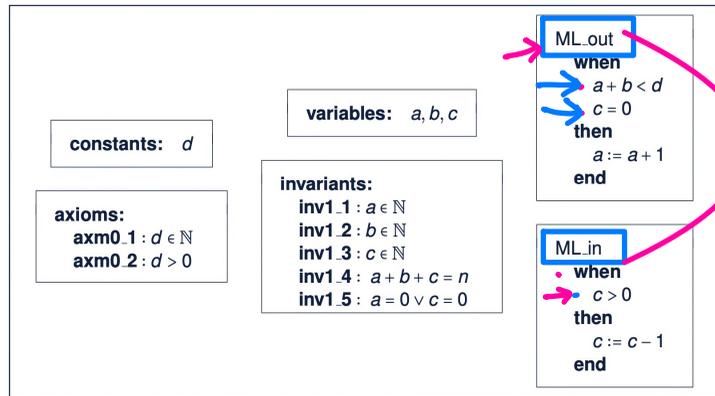
$E(c, v)$: effect of an event's actions



① pre-state vs. post-state

② RHS of $:=$ can ref. to vars, const, literals.

When we talk about the formal components (the list of constants, list of axioms, etc.) we talk about $G(c,v)$ as a single item, but isn't it possible that a single event has multiple guards? In which case, $G(c,v)$ should also be a list?



Can. rel.

guards
 $\langle a + b < d, c = 0 \rangle$
 ↳ proofs
 ↳ $a + b < d \wedge c = 0$

- $G(c, v)$: list of guards of the **abstract event**
 $G(\langle d \rangle, \langle n \rangle)$ of $ML.out \cong \langle n < d \rangle$, $G(c, v)$ of $ML.in \cong \langle n > 0 \rangle$
- $H(c, w)$: list of guards of the **concrete event** ✓
 $H(\langle d \rangle, \langle a, b, c \rangle)$ of $ML.out \cong \langle a + b < d, c = 0 \rangle$, $H(c, w)$ of $ML.in \cong \langle c > 0 \rangle$