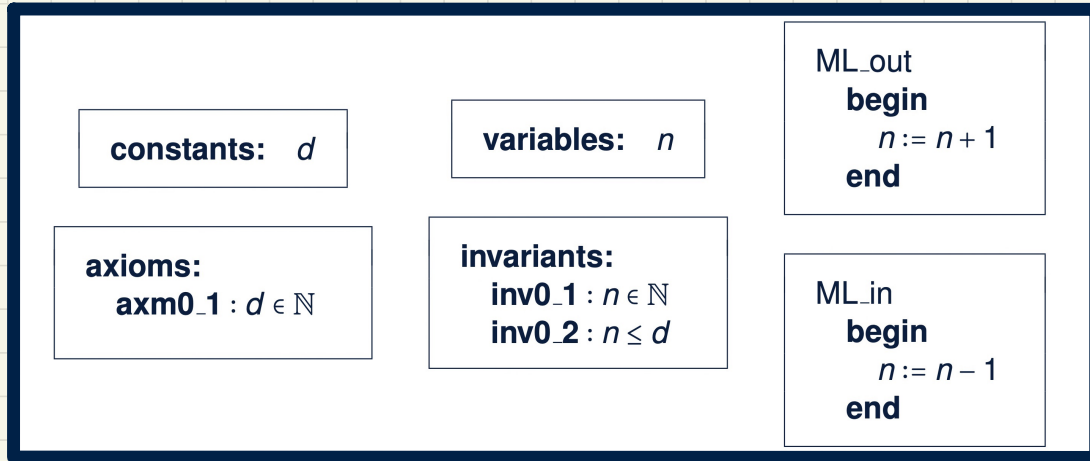


PO/VC Rule of **Invariant** Preservation: Sequents



$A(c)$
 $I(c, \mathbf{v})$
 $G(c, \mathbf{v})$
 $\vdash$
 $I_i(c, \mathbf{E}(c, \mathbf{v}))$

Q. How many PO/VC rules for model m0?

PO/VC Rule of Invariant Preservation: Sequents

constants: d

variables: n

axioms:

$\text{axm0_1} : d \in \mathbb{N}$

invariants:

$\text{inv0_1} : n \in \mathbb{N}$

$\text{inv0_2} : n \leq d$

ML_out

begin

$n := n + 1$

end

ML_in

begin

$n := n - 1$

end

$A(c)$

$I(c, \mathbf{v})$

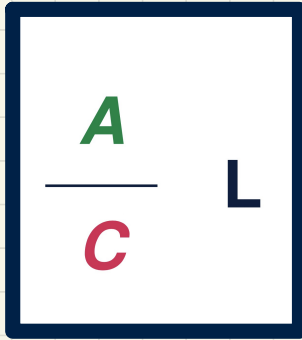
$G(c, \mathbf{v})$

$\vdash$

$I_i(c, E(c, \mathbf{v}))$

Inference Rule: Syntax and Semantics

Syntax



Semantics

Q. What does it mean when **A** is empty/absent?

Examples

Proof of Sequent: Steps and Structure

Outstanding **Sequent** to Prove

$$d \in \mathbb{N}$$
$$n \in \mathbb{N}$$
$$n \leq d$$
$$\vdash$$
$$n + 1 \in \mathbb{N}$$

ML_out/inv0_1/INV

Known **Inference Rules**

$$H1 \vdash G$$

MON

$$H1, H2 \vdash G$$

P2

$$n \in \mathbb{N} \vdash n + 1 \in \mathbb{N}$$

Understanding Inference Rule: OR_L

$$\frac{H, P \vdash R \quad H, Q \vdash R}{H, P \vee Q \vdash R} \text{ OR_L}$$