

(from cycle)

$$R^*(s_1, s), v \neq \text{null}, i_1 \leq_1 u \leq_1 v \Rightarrow v \leq u$$

from frame prop  $R \leq$

$$R(s_0, s_1), i_1 \leq_0 v \Rightarrow \underline{i_1 \leq_1 v} \quad R^*(s_1, s), v \neq \text{null}, \underline{i_1 \leq_1 v} \Rightarrow v \leq i_1$$

Cut

$$R(s_0, s_1), R^*(s_1, s), v \neq \text{null}, i_1 \leq_0 v \Rightarrow v \leq i_1$$

$$R(s_0, s_1) \Rightarrow i_1 = n_0(i_0)$$

reflexivity

case of  
 $s_1 = s$

$$R(s_0, s_1), R(s_1, s_2), R^*(s_2, s) \Rightarrow \underbrace{n(i_1)}_{= i_0} = i_0$$

$TC_L$

$$R(s_0, s_1), R^*(s_1, s) \Rightarrow n(i_1) = i_0$$

Trans

$$R(s_0, s_1), R^*(s_1, s),$$

$$v \neq \text{null}, i_0 = v \Rightarrow v \leq i_0$$

$$R(s_0, s_1), R^*(s_1, s), v \neq \text{null}, n_0(i_0) \leq_0 v \Rightarrow v \leq i_0$$

Case

$$R(s_0, s_1), R^*(s_1, s), v \neq \text{null}, i_0 = u \leq_0 v \Rightarrow v \leq u$$