

Proof of Step 2.3

2.3. ASSUME: $j \in \{0, 1\}$

PROVE: $InCS(j)' \vee (pc'[j] = \text{“e2”}) \Rightarrow x'[j]$

Remember that Inv , $i \in \{0, 1\}$, and $e2(i)$ hold by the step 2 assumption.

2.3.1. CASE: $j \neq i$

PROOF: The third conjunct of Inv and the 2.3 assumption imply $InCS(j) \vee (pc[j] = \text{“e2”}) \Rightarrow x[j]$; and $e2(i)$ and the case assumption imply that $InCS(j)$, $pc[j]$, and $x[j]$ are unchanged.

2.3.2. CASE: $j = i$

2.3.2.1. $pc[i] = \text{“e2”}$

PROOF: By $e2(i)$, since $pc[i] = \text{“e2”}$ is the enabling condition of action $e2(i)$.

2.3.2.2. $x[i]$

PROOF: By 2.3.2.1, the third conjunct of Inv , and $i \in \{0, 1\}$.

2.3.2.3. $x'[i]$

PROOF: By 2.3.2.2 and $e2(i)$, which implies $x[i]$ is unchanged.

2.3.2.4. Q.E.D.

PROOF: 2.3.2.3 and the 2.3.2 case assumption imply $x'[j]$ (which implies $P \Rightarrow x'[j]$ for any P).

2.3.3. Q.E.D.

PROOF: By 2.3.1 and 2.3.2.