

# High-Level Proof of Inductive Invariance

$$Inv \wedge Next \Rightarrow Inv'$$

1. ASSUME:  $Inv \wedge (i \in \{0, 1\}) \wedge e1(i)$

PROVE:  $Inv'$

2. ASSUME:  $Inv \wedge (i \in \{0, 1\}) \wedge e2(i)$

PROVE:  $Inv'$

3. ASSUME:  $Inv \wedge (i \in \{0, 1\}) \wedge CS(i)$

PROVE:  $Inv'$

4. ASSUME:  $Inv \wedge (i \in \{0, 1\}) \wedge Rest(i)$

PROVE:  $Inv'$

5. Q.E.D.

PROOF: By 1–4 and the assumption that  $Next$  equals

$$\exists i \in \{0, 1\} : e1(i) \vee e2(i) \vee CS(i) \vee Rest(i)$$

[Click here if you don't understand why steps 1–4 imply the conclusion.](#)

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