

Answer

Theorem $\Diamond\Box((x[1-i] \wedge (pc[i] = \text{“e2”})) \Rightarrow \text{WF}_{vars}(Proc(i)))$

1. $x[1-i] \wedge (pc[i] = \text{“e2”}) \Rightarrow \neg\text{ENABLED } \langle Proc(i) \rangle_{vars}$

PROOF: Process i cannot take a non-stuttering step when $x[1-i]$ and $pc[i] = \text{“e2”}$ are true.

2. $\Diamond\Box(x[1-i] \wedge (pc[i] = \text{“e2”})) \Rightarrow \Diamond\Box(\neg\text{ENABLED } \langle Proc(i) \rangle_{vars})$

PROOF: By step 1, since $F \Rightarrow G$ true for all behaviors implies $\Diamond\Box F \Rightarrow \Diamond\Box G$ true for all behaviors.

3. $\Diamond\Box(\neg\text{ENABLED } \langle Proc(i) \rangle_{vars}) \Rightarrow \Box\Diamond(\neg\text{ENABLED } \langle Proc(i) \rangle_{vars})$

PROOF: $\Diamond\Box F \Rightarrow \Box\Diamond F$ is a tautology.

4. $\Box\Diamond(\neg\text{ENABLED } \langle Proc(i) \rangle_{vars}) \Rightarrow \text{WF}_{vars}(Proc(i))$

PROOF: By definition of WF.

5. Q.E.D.

PROOF: By steps 2–4.