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―――――――――――――――――― MODULE *Consensus* ――――――――――――――――――

EXTENDS *Sets*, *TLAPS*

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CONSTANT *Value*   the set of values that can be chosen
VARIABLE *chosen*   the set of values that have been chosen

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Init $\triangleq$ *chosen* = {}
Next $\triangleq$
    $\land$ *chosen* = {}
    $\land \exists v \in$ *Value* : *chosen'* = {*v*}

Spec $\triangleq$ *Init* $\land \Box[Next]_{chosen}$

―――

Inv $\triangleq$
    $\land$ *chosen* $\subseteq$ *Value*
    $\land$ *IsFiniteSet*(*chosen*)
    $\land$ *Cardinality*(*chosen*) ≤ 1

―――

THEOREM *Invariance* $\triangleq$ *Spec* $\Rightarrow \Box Inv$
⟨1⟩1. *Init* $\Rightarrow$ *Inv*
    BY *CardinalityZero*, *SMT*
    DEFS *Init*, *Inv*
⟨1⟩2. *Inv* $\land [Next]_{chosen} \Rightarrow Inv'$
    BY *CardinalityOne*, *SMT*
    DEFS *Next*, *Inv*
⟨1⟩3. QED
    BY ⟨1⟩1, ⟨1⟩2, *PTL* DEF *Spec*

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