─────────────── MODULE *Consensus* ───────────────
EXTENDS *Integers*, *FiniteSets*, *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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$Init \triangleq chosen = \{\}$

$Next \triangleq$
$\quad \wedge chosen = \{\}$
$\quad \wedge \exists\, v \in Value : chosen' = \{v\}$

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

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$Inv \triangleq$
$\quad \wedge chosen \subseteq Value$
$\quad \wedge IsFiniteSet(chosen)$
$\quad \wedge Cardinality(chosen) \leq 1$

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

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