

## **CITIZEN** name, sex, age: VALUE spouse: CITIZEN -- Husband or wife children, parents: SET [CITIZEN] -- Close relatives, if any single: BOOLEAN -- Is this citizen single? ? $Result \leftrightarrow spouse = \emptyset$ marry\* -- Celebrate the wedding. → sweetheart: CITIZEN? sweetheart $\neq \emptyset$ and can\_marry (sweetheart) ! spouse = sweetheart can\_marry: BOOLEAN -- No legal hindrance? → other: CITIZEN ? other $\neq \emptyset$ ! Result → (single and other.single and other ∉ children and other ∉ parents and sex ≠ other.sex) divorce-- Admit mistake. $? \neg single$ ! single and (old spouse).single Invariant single or spouse.spouse = @; parents.count = 2; $\forall \ c \in children \bullet (\exists \ p \in c.parents \bullet p = @)$

## NOBLEPERSON + Inherits: CITIZEN assets: NUMERIC -- The bare necessities of life butler: CITIZEN -- Irons the morning paper spouse<sup>++</sup>: NOBLEPERSON -- Lord or Lady marry<sup>+</sup> -- Celebrate with style. → fiancee: NOBLEPERSON ! butler ≠ ∅; assets ≤ assets + fiancee.assets - \$50,000