MODULE *SplitOrder*

This module implements a *hashmap* using *Shalev* et al.'s split-ordered list structure

EXTENDS *Integers*

CONSTANTS *NULL*, *PossibleKeys*, *PossibleValues*

VARIABLES *map*, *keys*

The *Init* for split-order

$$SOInit \triangleq \begin{array}{l} \land\ keys = \{\} \\ \land\ map = [k \in PossibleKeys \mapsto NULL] \end{array}$$

The *Next* for split order

$$SONext \triangleq \begin{array}{l} \land\ keys' = keys \cup \{\text{“k2”}\} \\ \land\ map' = [map \text{ EXCEPT } ![\text{“k2”}] = 1] \end{array}$$

Split-order spec

$$SOSpec \triangleq SOInit \land \Box[SONext]_{\langle map,\, keys\rangle}$$

INSTANCE *hashmap*

Split-order implements *hashmap*

THEOREM $SOSpec \Rightarrow HashmapSpec$