MODULE *SimpleStore_QuickRd*

The model represents the model of a simple storage system extends the simple store and performs reads in a 0-phase fashion.

EXTENDS *simplestore* extends the linearizable simple store

$SS1\_TypeInvariant \triangleq SS\_TypeInvariant$

$SS1\_Init \triangleq SS\_Init$

STORE operations:

$SS1\_HdlRead \triangleq$ handle one read requests

Get the store value (value of last committed write)

$\land\ last\_read\_val' = store$

$\land$ UNCHANGED $\langle pending\_rd \rangle$

$SS1\_RunStore \triangleq$

$\lor\ \land\ SS1\_HdlRead$

$\land$ UNCHANGED $\langle pending\_wrresp, pending\_wrreq, failed\_wr, store \rangle$

$\lor\ \land\ SS\_CommitWrite$

$\land$ UNCHANGED $\langle pending\_rd, last\_read\_val \rangle$

$SS1\_Client \triangleq$ only write requests

$\lor \exists\, v \in Val : SS\_CliWrite(v)$

Full specification.

$SS1\_Next \triangleq$

$\lor\ SS1\_Client$ a client submits a request (query or update)

$\lor\ SS1\_RunStore$ the store deals w/ the updates

$\lor\ SS\_ChannelActions$ the incoming channel for the store drops some requests

$ss1vars \triangleq ssvars$

$SS1\_Spec \triangleq SS1\_Init \land \Box[SS1\_Next]_{ss1vars}$

Invariants

$SS1\_AllInvariants \triangleq$

$\land\ SS1\_TypeInvariant$

Theorem

THEOREM $SS1\_Spec \Rightarrow \Box SS1\_AllInvariants$