

Answer

If Msg equals the empty set, then the formula

$$\exists x \in Msg : ch' = Append(ch, v)$$

equals FALSE . Hence, the *Send* action always equals FALSE, so no *Send* action can occur. Since a *Rcv* cannot occur if no *Send* action has put a message in the channel, no steps are possible. Therefore, the only behavior satisfying the specification is one that stops in its initial state. TLC confirms this by reporting that it finds only a single reachable state.

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