─────────── MODULE *WriteThroughCache* ───────────

EXTENDS *Naturals*, *Sequences*, *MemoryInterface*
VARIABLES *wmem*, *ctl*, *buf*, *cache*, *memQ*
CONSTANT *QLen*
ASSUME $(QLen \in Nat) \wedge (QLen > 0)$
$M \triangleq$ INSTANCE *InternalMemory* WITH $mem \leftarrow wmem$

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$Init \triangleq$
    $\wedge M ! IIint$
    $\wedge cache = [p \in Proc \mapsto [a \in Adr \mapsto NoVal]]$
    $\wedge memQ = \langle \rangle$

$TypeInvariant \triangleq$
    $\wedge wmem \in [Adr \rightarrow Val]$
    $\wedge ctl \in [Proc \rightarrow \{ \text{“rdy”}, \text{“busy”}, \text{“waiting”}, \text{“done”} \}]$
    $\wedge buf \in [Proc \rightarrow MReq \vee Val \vee \{NoVal\}]$
    $\wedge cache \in [Proc \rightarrow [Adr \rightarrow Val \vee NoVal]]$
    $\wedge memQ \in Seq(Proc \times MReq)$