

EXTENDS *Naturals*

VARIABLES *rfidScan*, *medicineList*, *medicineCount*, *available*, *purchaseList*, *purchaseCount*, *bill*, *payment*, *logTr*

TypeOK \triangleq

- \wedge *rfidScan* $\in \{\text{"done"}, \text{"notDone"}\}$
- \wedge *medicineList* $\in \{\text{"received"}, \text{"notReceived"}\}$
- \wedge *medicineCount* $\in (0 \dots 20)$
- \wedge *available* $\in \{\text{"yes"}, \text{"no"}, \text{"undetermined"}\}$
- \wedge *purchaseList* $\in \{\text{"finalized"}, \text{"notFinalized"}\}$
- \wedge *purchaseCount* $\in (0 \dots 20)$
- \wedge *bill* $\in \{\text{"required"}, \text{"notRequired"}, \text{"prepared"}, \text{"undetermined"}\}$
- \wedge *payment* $\in \{\text{"done"}, \text{"notDone"}\}$
- \wedge *logTransaction* $\in \{\text{"done"}, \text{"notDone"}\}$

Init \triangleq

- \wedge *rfidScan* = "notDone"
- \wedge *medicineList* = "notReceived"
- \wedge *medicineCount* = 0
- \wedge *available* = "undetermined"
- \wedge *purchaseList* = "notFinalized"
- \wedge *purchaseCount* = 0
- \wedge *bill* = "undetermined"
- \wedge *payment* = "notDone"
- \wedge *logTransaction* = "notDone"

Var $\triangleq \langle \textit{rfidScan}, \textit{medicineList}, \textit{medicineCount}, \textit{available}, \textit{purchaseList}, \textit{purchaseCount}, \textit{bill}, \textit{payment}, \textit{logTr} \rangle$

GetList \triangleq

- \vee \wedge *rfidScan* = "notDone"
- \wedge *rfidScan'* = "done"
- \wedge UNCHANGED $\langle \textit{medicineList}, \textit{medicineCount} \rangle$
- \vee \wedge *rfidScan* = "done"
- \wedge *medicineList* = "notReceived"
- \wedge *medicineList'* = "received"
- \wedge *medicineCount'* $\in (0 \dots 20)$
- \wedge UNCHANGED $\langle \textit{rfidScan} \rangle$
- \vee \wedge *rfidScan* = "done"
- \wedge *medicineList* = "received"
- \wedge UNCHANGED $\langle \textit{rfidScan}, \textit{medicineList} \rangle$

MedicineAvailability \triangleq

- \vee \wedge *medicineList* = "received"
- \wedge *available* = "undetermined"
- \wedge *medicineCount* = 0
- \wedge *purchaseList'* = "finalized"

$\wedge \text{UNCHANGED } \langle \text{available}, \text{medicineCount}, \text{purchaseCount} \rangle$
 $\vee \wedge \text{medicineList} = \text{"received"}$
 $\wedge \text{available} = \text{"undetermined"}$
 $\wedge \text{medicineCount} \in (1 \dots 20)$
 $\wedge \text{available}' \in \{\text{"yes"}, \text{"no"}\}$
 $\wedge \text{UNCHANGED } \langle \text{medicineCount}, \text{purchaseList}, \text{purchaseCount} \rangle$
 $\vee \wedge \text{medicineList} = \text{"received"}$
 $\wedge \text{available} = \text{"yes"}$
 $\wedge \text{medicineCount}' = \text{medicineCount} - 1$
 $\wedge \text{purchaseCount}' = \text{purchaseCount} + 1$
 $\wedge \text{available}' = \text{"undetermined"}$
 $\wedge \text{UNCHANGED } \langle \text{purchaseList} \rangle$
 $\vee \wedge \text{medicineList} = \text{"received"}$
 $\wedge \text{available} = \text{"no"}$
 $\wedge \text{medicineCount}' = \text{medicineCount} - 1$
 $\wedge \text{available}' = \text{"undetermined"}$
 $\wedge \text{UNCHANGED } \langle \text{purchaseList}, \text{purchaseCount} \rangle$
 $\vee \wedge \text{medicineList} = \text{"notReceived"}$
 $\wedge \text{UNCHANGED } \langle \text{available}, \text{purchaseList}, \text{purchaseCount} \rangle$

BillCheckout \triangleq

$\vee \wedge \text{purchaseList} = \text{"notFinalized"}$
 $\wedge \text{UNCHANGED } \langle \text{bill}, \text{payment}, \text{logTransaction} \rangle$
 $\vee \wedge \text{purchaseList} = \text{"finalized"}$
 $\wedge \text{bill} = \text{"undetermined"}$
 $\wedge \text{purchaseCount} = 0$
 $\wedge \text{bill}' = \text{"notRequired"}$
 $\wedge \text{UNCHANGED } \langle \text{payment}, \text{logTransaction} \rangle$
 $\vee \wedge \text{purchaseList} = \text{"finalized"}$
 $\wedge \text{bill} = \text{"undetermined"}$
 $\wedge \text{purchaseCount} \in (1 \dots 20)$
 $\wedge \text{bill}' = \text{"required"}$
 $\wedge \text{UNCHANGED } \langle \text{payment}, \text{logTransaction} \rangle$
 $\vee \wedge \text{purchaseList} = \text{"finalized"}$
 $\wedge \text{bill} = \text{"notRequired"}$
 $\wedge \text{payment}' = \text{"done"}$
 $\wedge \text{logTransaction}' = \text{"done"}$
 $\wedge \text{UNCHANGED } \langle \text{bill} \rangle$
 $\vee \wedge \text{purchaseList} = \text{"finalized"}$
 $\wedge \text{bill} = \text{"required"}$
 $\wedge \text{bill}' = \text{"prepared"}$
 $\wedge \text{UNCHANGED } \langle \text{payment}, \text{logTransaction} \rangle$
 $\vee \wedge \text{purchaseList} = \text{"finalized"}$
 $\wedge \text{bill} = \text{"prepared"}$
 $\wedge \text{payment} = \text{"notDone"}$

$$\begin{aligned}
& \wedge \textit{payment}' = \text{"done"} \\
& \wedge \textit{logTransaction}' = \text{"done"} \\
& \wedge \text{UNCHANGED } \langle \textit{bill} \rangle \\
\vee & \wedge \textit{purchaseList} = \text{"finalized"} \\
& \wedge \textit{bill} = \text{"prepared"} \\
& \wedge \textit{payment} = \text{"done"} \\
& \wedge \text{UNCHANGED } \langle \textit{bill}, \textit{payment}, \textit{logTransaction} \rangle
\end{aligned}$$

$$\begin{aligned}
\textit{Next} & \triangleq \\
& \wedge \textit{GetList} \\
& \wedge \textit{MedicineAvailability} \\
& \wedge \textit{BillCheckout} \\
& \wedge \textit{TypeOK}
\end{aligned}$$

$$\textit{Spec} \triangleq \textit{Init} \wedge \Box[\textit{Next}]_{\textit{Var}}$$

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\ * Modification History
\ * Last modified Mon Nov 08 18:40:38 IST 2021 by ubuntu
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