MODULE *HSClock*

EXTENDS *Integers*

CONSTANT N

ASSUME $(N \in Nat) \land (N > 1)$

$a \oplus b \triangleq (a + b)\%2$

```
**************************************************************************
--algorithm HSClock{
  variable ca = [i ∈ 0 .. (N − 1) ↦ 0] ;

  process ( Proc0 = 0 )
    { t: while ( TRUE )
          { await ca[0] = ca[N − 1] ;
            ca[0] := ca[0] ⊕ 1
          }
    }

  process ( Proc ∈ 1 .. (N − 1) )
    { t: while ( TRUE )
          { await ca[self] ≠ ca[self − 1] ;
            ca[self] := ca[self] ⊕  1
          }
    }
}
**************************************************************************
```

BEGIN TRANSLATION

Label t of process *Proc*0 at line 11 col 10 changed to *t_*

VARIABLE *ca*

$vars \triangleq \langle ca \rangle$

$ProcSet \triangleq \{0\} \cup (1 \,..\, (N-1))$

$Init \triangleq$ Global variables
$\land\ ca = [i \in 0 \,..\, (N-1) \mapsto 0]$

$Proc0 \triangleq \land\ ca[0] = ca[N-1]$
$\land\ ca' = [ca \text{ EXCEPT } ![0] = ca[0] \oplus 1]$

$Proc(self) \triangleq \land\ ca[self] \neq ca[self-1]$
$\land\ ca' = [ca \text{ EXCEPT } ![self] = ca[self] \oplus 1]$

$Next \triangleq Proc0$
$\lor\ (\exists\, self \in 1 \,..\, (N-1) : Proc(self))$

$Spec \triangleq Init \land \Box[Next]_{vars}$

END TRANSLATION

$cBar \triangleq \text{IF } \exists\, i \in 1 \,..\, (N-1) : ca[i] \neq ca[i-1]$

$$\begin{array}{l}
\quad \text{THEN CHOOSE } i \in 1 \,..\, (N-1) : ca[i] \neq ca[i-1] \\
\quad \text{ELSE } 0 \\
CS \triangleq \text{INSTANCE } ClockSpec \text{ WITH } c \leftarrow cBar
\end{array}$$

* Modification History
* Last modified Sat *Jun* 07 09:20:00 *CST* 2014 by *yaojingguo*
* Created Sat *Jun* 07 08:43:34 *CST* 2014 by *yaojingguo*