MODULE *sync_composition*

Initially
$Light1 =$ Red
$Light2 =$ Green Counter $= 20$

Light i
0 : *while*(*True*){
1 : *if*(*counter* $\triangleq$ 0){
2 : *flip color of Light i*
3 : *Set Counter to* 20
4 : }
5 : *else*{
6 : *decrement counter*
7 : }

Check if light 1 *has color green and light* 2 *has color green can ever occur in the synchronous composition of these systems*

In your model assume that if there is a slog(*stutter*), *both lights stutter together*
(*By default, such a transition is assumed in TLA* +)

EXTENDS *Integers*
VARIABLES $l1$, $l2$, *counter*

$TypeOK \triangleq$
$\land\ l1 \in \{\text{“red”}, \text{“green”}\}$
$\land\ l2 \in \{\text{“red”}, \text{“green”}\}$
$\land\ counter \in 0 \,..\, 20$

$Init \triangleq$
$\land\ l1 = \text{“red”}$
$\land\ l2 = \text{“green”}$
$\land\ counter = 20$

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