

EXTENDS *Integers*

VARIABLES *small, big*

$TypeOK \triangleq \wedge small \in 0 \dots 3$
 $\wedge big \in 0 \dots 5$

$Init \triangleq \wedge small = 0$
 $\wedge big = 0$

$FillSmall \triangleq \wedge small' = 3$
 $\wedge big' = big$

$FillBig \triangleq \wedge small' = small$
 $\wedge big' = 5$

$EmptySmall \triangleq \wedge small' = 0$
 $\wedge big' = big$

$EmptyBig \triangleq \wedge small' = small$
 $\wedge big' = 0$

$SmallToBig \triangleq$ IF $big + small \leq 5$
 THEN $\wedge big' = big + small$
 $\wedge small' = 0$
 ELSE $\wedge big' = 5$
 $\wedge small' = small - (5 - big)$

$BigToSmall \triangleq$ IF $big + small \leq 3$
 THEN $\wedge small' = big + small$
 $\wedge big' = 0$
 ELSE $\wedge small' = 3$
 $\wedge big' = big - (3 - small)$

$Next \triangleq \vee FillSmall$
 $\vee FillBig$
 $\vee EmptySmall$
 $\vee EmptyBig$
 $\vee SmallToBig$
 $\vee BigToSmall$

$WillDie \triangleq \wedge big \neq 4$ TLC should find a counter-example to this

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