──────────── MODULE *vacuum* ────────────

EXTENDS *Integers*

VARIABLES *vacuum*, *rooms*
CONSTANT *size*

$TypeOK \triangleq vacuum \in 1 .. size$

$Init \triangleq \land rooms \quad = \langle \text{FALSE}, \text{FALSE} \rangle$
$\qquad\quad \land vacuum = 1$

$Clean \triangleq rooms \neq \langle \text{TRUE}, \text{TRUE} \rangle$

$Left \triangleq$ IF $vacuum = 1$
     THEN $\land$ UNCHANGED $\langle vacuum, rooms \rangle$
     ELSE $\land vacuum' = vacuum - 1$
         $\land rooms' = rooms$

$Right \triangleq$ IF $vacuum = size$
     THEN $\land$ UNCHANGED $\langle vacuum, rooms \rangle$
     ELSE $\land vacuum' = vacuum + 1$
         $\land rooms' = rooms$

$Suck \triangleq \land vacuum' = vacuum$
     $\land rooms' = [rooms$ EXCEPT $![vacuum] = \text{TRUE}]$

$Next \triangleq \lor Left$
     $\lor Right$
     $\lor Suck$

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