─────────────── MODULE $Target$ ───────────────

INSTANCE $Naturals$

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An empty constant
CONSTANT Nil

The set of possible master nodes
CONSTANT $Node$

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The target state
VARIABLE $target$

A record of connections between nodes and the target
VARIABLE $conns$

$TypeOK \triangleq$
    $\land target.id \in Nat$
    $\land \forall p \in$ DOMAIN $target.values :$
        $\land target.values[p].index \in Nat$
        $\land target.values[p].value \in$ STRING
    $\land target.running \in$ BOOLEAN
    $\land \forall n \in$ DOMAIN $conns :$
        $\land n \in Node$
        $\land conns[n].id \in Nat$
        $\land conns[n].connected \in$ BOOLEAN

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This section specifies the behavior of configuration targets.

$Start \triangleq$
    $\land \neg target.running$
    $\land target' = [target$ EXCEPT $!.id \quad\quad = target.id + 1,$
                               $!.running =$ TRUE$]$
    $\land$ UNCHANGED $\langle conns \rangle$

$Stop \triangleq$
    $\land target.running$
    $\land target' = [target$ EXCEPT $!.running =$ FALSE$,$
                           $!.values \quad = [p \in \{\} \mapsto [index \mapsto 0, value \mapsto Nil]]]$
    $\land conns' = [n \in Node \mapsto [conns[n]$ EXCEPT $!.connected =$ FALSE$]]$

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This section specifies the behavior of connections to the target.

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$Connect(n) \triangleq$
    $\wedge \neg conns[n].connected$
    $\wedge\ target.running$
    $\wedge\ conns' = [conns \text{ EXCEPT } ![n].id \qquad = conns[n].id + 1,$
    $\qquad\qquad\qquad\qquad\qquad\quad ![n].connected = \text{TRUE}]$
    $\wedge \text{ UNCHANGED } \langle target \rangle$

$Disconnect(n) \triangleq$
    $\wedge\ conns[n].connected$
    $\wedge\ conns' = [conns \text{ EXCEPT } ![n].connected = \text{FALSE}]$
    $\wedge \text{ UNCHANGED } \langle target \rangle$