This module specifies the reconciliation logic for the *mastership* controller in µ*ONOS Config*.

─────────────────────── MODULE *Mastership* ───────────────────────

INSTANCE *Naturals*

INSTANCE *FiniteSets*

INSTANCE *Sequences*

INSTANCE *TLC*

───

An empty constant
CONSTANT *Nil*

The set of possible master nodes
CONSTANT *Node*

───

Variables defined by other modules.
VARIABLES
  conns

A record of target masterships
VARIABLE *mastership*

───

This section models *mastership* for the configuration service.

Mastership is used primarily to track the lifecycle of individual configuration targets and react to state changes on the southbound. Each target is assigned a master from the *Node* set, and masters can be unset when the target disconnects.

$ReconcileMastership(n) \triangleq$
  $\land \lor \land conns[n].connected$
      $\land mastership.master = Nil$
      $\land mastership' = [$
          $master \mapsto n,$
          $term \quad \mapsto mastership.term + 1,$
          $conn \quad \mapsto conns[n].id]$
    $\lor \land \lor \neg conns[n].connected$
        $\lor conns[n].id \neq mastership.conn$
      $\land mastership.master = n$
      $\land mastership' = [mastership \text{ EXCEPT } !.master = Nil]$
  $\land \text{ UNCHANGED } \langle conns \rangle$

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$TypeOK \triangleq$
    $\wedge\ mastership.term \in Nat$
    $\wedge\ mastership.master \neq Nil \Rightarrow mastership.master \in Node$
    $\wedge\ mastership.conn \in Nat$

LOCAL $State \triangleq [$
    $mastership \mapsto mastership,$
    $conns \qquad \mapsto conns]$

LOCAL $Transitions \triangleq$
    IF $mastership' \neq mastership$ THEN $[mastership \mapsto mastership']$ ELSE $\langle\rangle$

$Test \triangleq$ INSTANCE $Test$ WITH
    $File \leftarrow$ "Mastership.test.log"