─────────────── MODULE *TicTacToe* ───────────────

EXTENDS *Sequences*

CONSTANT *nil*
CONSTANT *A*, *B*

VARIABLE *turn*

VARIABLES *row1*, *row2*, *row3*
VARIABLES *col1*, *col2*, *col3*
VARIABLES *rows*, *cols*, *diags*

$RowInvariant \triangleq$
$\quad \wedge \forall\, row \in rows : row \in Seq(\{0,\ nil\}) \vee row \in Seq(\{1,\ nil\})$

$ColInvariant \triangleq$
$\quad \wedge \forall\, col \in cols : col \in Seq(\{0,\ nil\}) \vee col \in Seq(\{1,\ nil\})$

$DiagInvariant \triangleq$
$\quad \wedge \forall\, diag \in diags : diag \in Seq(\{0,\ nil\}) \vee diag \in Seq(\{1,\ nil\})$

$TicTacToeInvariant \triangleq$
$\quad \wedge RowInvariant$
$\quad \wedge ColInvariant$
$\quad \wedge DiagInvariant$

$TicTacToeInit \triangleq$
$\quad \wedge turn = A$

$Aplay \triangleq$
$\quad \wedge turn = A$

$Bplay \triangleq$
$\quad \wedge turn = B$

$TicTacToeNext \triangleq$
$\quad \vee Aplay$
$\quad \vee Bplay$