MODULE *BlockDagTest*

Tests for *BlockDag* operators using small concrete *DAGs*.

EXTENDS *FiniteSets*, *Sequences*, *Integers*, *TLC*

$N \triangleq \{1, 2\}$
$R \triangleq 1 \,..\, 3$
$Leader(r) \triangleq$ CASE
  $r = 1 \to 1$
$\Box$ $r = 2 \to 2$
$\Box$ $r = 3 \to 1$

INSTANCE *BlockDag* WITH $N \leftarrow N$, $R \leftarrow R$, $Leader \leftarrow Leader$

$v11 \triangleq \langle 1, 1\rangle$ leader
$v21 \triangleq \langle 2, 1\rangle$
$v12 \triangleq \langle 1, 2\rangle$
$v22 \triangleq \langle 2, 2\rangle$ leader
$v13 \triangleq \langle 1, 3\rangle$ leader
$v23 \triangleq \langle 2, 3\rangle$

ASSUME $TestNodeRound \triangleq Node(v12) = 1 \land Round(v12) = 2$

ASSUME $TestLeaderVertice \triangleq$
  $\land$ $LeaderVertex(1) = v11$
  $\land$ $LeaderVertex(2) = v22$
  $\land$ $LeaderVertex(3) = v13$

ASSUME $TestOrderSetPermutation \triangleq$
  LET $SeqToSet(seq) \triangleq \{seq[i] : i \in$ DOMAIN $seq\}$
      $IsPermutation(seq, s) \triangleq SeqToSet(seq) = s \land Len(seq) = Cardinality(s)$
  IN $IsPermutation(OrderSet(\{v11, v21\}), \{v11, v21\})$

$dag1 \triangleq$
  $\langle\{Genesis, v11, v21, v12, v22, v13, v23\},$
   $\{\langle v11, Genesis\rangle, \langle v21, Genesis\rangle,$
     $\langle v12, v21\rangle, \langle v22, v11\rangle, \langle v13, v22\rangle,$
     $\langle v13, v21\rangle, \langle v13, v12\rangle, \langle v23, v22\rangle\}\rangle$

ASSUME $TestPreviousLeader1 \triangleq PreviousLeader(dag1, 3) = v22$
ASSUME $TestPreviousLeader2 \triangleq PreviousLeader(dag1, 2) = v11$
ASSUME $TestPreviousLeaderBase \triangleq PreviousLeader(dag1, 1) = \langle\rangle$

ASSUME $TestLinearize \triangleq Linearize(dag1, v13) =$
  $\langle\langle 1, 1\rangle, \langle 2, 2\rangle\rangle \circ OrderSet(\{\langle 2, 1\rangle, \langle 1, 2\rangle\}) \circ \langle\langle 1, 3\rangle\rangle$