

GDL description of simple Nim Game:

1. $initial \leftrightarrow turn(1) \wedge \neg turn(2) \wedge remaining(12)$
2. $wins(r) \leftrightarrow remaining(0) \wedge turn(-r)$
3. $turn(r) \rightarrow \bigcirc \neg turn(r) \wedge \bigcirc turn(-r)$
4. $turn(r) \rightarrow legal(-r, noop)$
5. $terminal \leftrightarrow remaining(0)$
6. Available picking

$$\bigwedge_{r \in 1..2} \bigwedge_{i \in 1..3} legal(r, pick(i)) \leftrightarrow (turn(r) \wedge remaining(m) \wedge m \geq i)$$

7. Picking

$$\bigwedge_{i \in 1..3} \bigcirc remaining(m - i) \leftrightarrow (remaining(m) \wedge does(r, pick(i)))$$