
MODULE *DieHarder*

EXTENDS *Integers*

$Min(m, n) \triangleq$ IF $m < n$ THEN m ELSE n

CONSTANTS *Goal, Jugs, Capacity*
$$\begin{aligned} \text{ASSUME } & \wedge Goal \in Nat \\ & \wedge Capacity \in [Jugs \mapsto Nat \setminus \{0\}] \end{aligned}$$

```

*****
--algorithm DieHarder{
  variables injug = [j ∈ Jugs ↦ 0];
  { while ( TRUE )
    { either with ( j ∈ Jugs )   fill jug j
      { injug[j] := Capacity[j] }
    or   with ( j ∈ Jugs )   empty jug j
      { injug[j] := 0 }
    or   with ( j ∈ Jugs, k ∈ Jugs \ {j} )   pour from jug j to jug k
      { with ( poured =
          Min(injug[j] + injug[k], Capacity[k]) - injug[k] )
        { injug[j] := injug[j] - poured ||
          injug[k] := injug[k] + poured ;
        }
      }
    }
  }
}
*****
*****

```

BEGIN TRANSLATION

VARIABLE *injug*
$$vars \triangleq \langle injug \rangle$$
$$Init \triangleq \text{Global variables} \wedge injug = [j \in Jugs \mapsto 0]$$
[illegible]

$$Spec \triangleq Init \wedge \Box[Next]_{vars}$$

END TRANSLATION

* Modification History
* Last modified *Wed Jun 04 15:00:43 CST 2014* by *yaojingguo*
* Created *Wed Jun 04 14:07:37 CST 2014* by *yaojingguo*