```
\functions {
    /*tick is constant*/
    R tick;
    \external R Floor(R); /* using mathematica floor function does not work */
}

\programVariables {
    /* variables in use */
    R y; R x; R old; R new; R valve;
}

/*
invariant:
y >=1 & y <=12
*/

\problem {
    /*requirement from our model*/
    tick > 2  ->
    \[
            /*initialization*/
            x := tick; y := 1; valve := 1;
            /*hook: new:= * */
            ((?(x = tick ); new := *; x:= 0);
            /* Firstly tried hook postcondition:
            (? (y + 2* valve + (tick -2) * new >= 1 & y + 2* valve + (tick -2) * new <= 12 & y
            + 2* valve >= 1 & y + 2* valve  <= 12); */
            /*real hook postcondition*/
            (?(y + 2 * valve + tick * new >= 1 & y + 2 * valve + tick * new <= 12 & (new = 1 |
            new = -2));

            ((?(new != valve); {x' = 1, y' = valve & x <= 2}); if (x=2) then valve := new; {x' =
             1, y' = valve & x <= tick} fi)

            ++ (?(!(new != valve)); {x' = 1, y' = valve & x <= tick})

            ))*@invariant(y >=1 & y <=12 & (valve = -2 | valve = 1) & (x = tick -> (y + 2*
            valve >= 1 & y + 2* valve  <= 12)))
    \] /*safety condition*/(y >= 1 & y <= 12)
}
```