MODULE *appex2_3*

EXTENDS *Naturals*, *TLC*, *Integers*
CONSTANTS $x$, $min$, $max$
VARIABLES $y$, $z$, $pc$
$D \triangleq min \,..\, max$
ASSUME $x \in D \land x \neq 1 \land x \neq 0$

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$diviseurs(n) \triangleq \{\ m \in 1 \,..\, n :\ n\%m = 0\}$

$start \triangleq pc = \text{“START”} \land y' = 2 \land pc' = \text{“g”} \land \text{UNCHANGED } \langle z \rangle$

$case1 \triangleq$
$\land\ pc = \text{“g”} \land\ y \geq x$
$\land\ z' = \text{TRUE}$
$\land\ pc' = \text{“HALT”}$
$\land\ PrintT(y)$
$\land\ \text{UNCHANGED } \langle y \rangle$

$case2 \triangleq$
$\land\ pc = \text{“g”} \land\ y < x$
$\land\ pc' = \text{“h”}$
$\land\ \text{UNCHANGED } \langle z, y \rangle$

$case21 \triangleq$
$\land\ pc = \text{“h”} \land (x\%y = 0)$
$\land\ pc' = \text{“HALT”}$
$\land\ z' = \text{FALSE}$
$\land\ PrintT(y)$
$\land\ \text{UNCHANGED } \langle y \rangle$

$case22 \triangleq$
$\land\ pc = \text{“h”} \land (x\%y \neq 0)$
$\land\ pc' = \text{“g”}$
$\land\ y' = y + 1$
$\land\ \text{UNCHANGED } \langle z \rangle$

$eprint \triangleq$
$\land\ pc = \text{“HALT”}$
$\land\ PrintT(z)$
$\land\ PrintT(x)$
$\land\ \text{UNCHANGED } \langle y, z, pc \rangle$

$Next \triangleq start \lor case1 \lor case2 \lor case21 \lor case22 \lor \text{UNCHANGED } \langle y, z, pc \rangle \lor eprint$

$Init \triangleq y = 0 \land z = \text{TRUE} \land pc = \text{“START”}$

$Q1 \triangleq pc \neq$ "HALT" c prned la valeur *HALT*
$Q2 \triangleq pc =$ "HALT" $\Rightarrow (z \equiv (diviseurs(x) = \{1,\ x\} \wedge x \neq 1))$

$Q \triangleq Q2$