MODULE *Euclid*

EXTENDS *Integers*, *GCD*, *TLC*

CONSTANTS M, N

ASSUME $\land M \in Nat \setminus \{0\}$
$\land N \in Nat \setminus \{0\}$

****

--fair algorithm *Euclid***{**
variables $x = M$, $y = N$ **;**
{ while ($x \neq y$ **) { if (** $x < y$ **) {** $y := y - x$ **}**
else { $x := x - y$ **}**
} ;
}
}

****

BEGIN TRANSLATION

VARIABLES x, y, pc

$vars \triangleq \langle x, y, pc \rangle$

$Init \triangleq$ Global variables
$\land x = M$
$\land y = N$
$\land pc =$ "Lbl_1"

$Lbl\_1 \triangleq \land pc =$ "Lbl_1"
$\land$ IF $x \neq y$
THEN $\land$ IF $x < y$
THEN $\land y' = y - x$
$\land x' = x$
ELSE $\land x' = x - y$
$\land y' = y$
$\land pc' =$ "Lbl_1"
ELSE $\land pc' =$ "Done"
$\land$ UNCHANGED $\langle x, y \rangle$

$Next \triangleq Lbl\_1$
$\lor$ Disjunct to prevent deadlock on termination
$(pc =$ "Done" $\land$ UNCHANGED $vars)$

$Spec \triangleq \land Init \land \Box[Next]_{vars}$
$\land \mathrm{WF}_{vars}(Next)$

$Termination \triangleq \Diamond(pc =$ "Done")

END TRANSLATION

$PartialCorrectness \triangleq (pc =$ "Done") $\Rightarrow (x = y) \land (x = GCD(M, N))$

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To find the latest value of *bar* , see http::/frob/bar .

gnat: A tiny insect.

gnu: A short word.

The following picture explains everything:

```
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| Processor |------->| Memory |
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```

The first comment paragraph.

The second comment paragraph.

Some LaTeX-formated text

gnat: A tiny insect.

gnu: A short word.

* Modification History
* Last modified *Fri Mar* 23 14:36:08 *CST* 2018 by *zfwang*
* Created Sat *Mar* 17 21:43:00 *CST* 2018 by *zfwang*