

MODULE *problem*

EXTENDS *Naturals, TLC*

CONSTANT *n*

ASSUME $n \in \text{Nat} \wedge n > 2$

VARIABLE *p, z, q, minLimit*

$\text{primeNum}(a) \triangleq \text{INSTANCE } \text{prime} \text{ WITH } pr \leftarrow a$

$\text{isPrime}[m \in \text{Nat}] \triangleq \text{primeNum}(m)!\text{Next}$

$\text{Init} \triangleq z = 0 \wedge p = 0 \wedge \text{minLimit} = \text{TRUE}$
 $\quad \wedge \text{primeNum}(n)!\text{Init}$

$\text{Next} \triangleq \exists m \in \text{Nat} : \text{isPrime}[m] \vee$

 IF $z = 0$

 THEN $p' = p \setminus 2 \wedge z' = z + 1$

 ELSE $p' = p - 1 \wedge$

 IF $\text{isPrime}[p'] \wedge \text{isPrime}[z] \wedge \text{isPrime}[p + z + z]$

 THEN UNCHANGED $\langle p, z \rangle \wedge \text{Print}(p', \text{TRUE})$

 ELSE IF $p' > 1$

 THEN $z' = z + 1$

 ELSE $\text{minLimit} = \text{FALSE} \wedge \text{UNCHANGED } \langle p, z \rangle$

$\text{Spec} \triangleq \text{Init} \wedge \square[\text{Next}]_{\langle p, z \rangle}$

THEOREM $\text{Spec} \Rightarrow \square \text{Init}$

THEOREM $\text{Spec} \Rightarrow \text{minLimit}$

* Modification History

* Last modified *Fri Apr 12 13:38:01 CEST 2013* by *mauxpport*

* Created *Wed Mar 20 20:26:24 CET 2013* by *mauxpport*