MODULE *GCD*

EXTENDS *Integers*

$$Divides(p,\, n) \triangleq \exists\, q \in 1 \,..\, n : n = q * p$$

$$DivisorsOf(n) \triangleq \{p \in 1 \,..\, n : Divides(p,\, n)\}$$

$$SetMax(S) \triangleq \text{CHOOSE } i \in S : \forall\, j \in S : i \geq j$$

$$GCD(m,\, n) \triangleq SetMax(DivisorsOf(m) \cap DivisorsOf(n))$$

$$SetGCD(T) \triangleq SetMax(\{d \in Int : \forall\, t \in T : Divides(d,\, t)\})$$