MODULE *KnightsKnaves*

https://*www.reddit.com*/r/scala/comments/6*kpqqw*/*knights_and_knaves*/

CONSTANT *Native*
CONSTANTS *Knight*, *Knave*

ASSUME $KnightOrKnave \triangleq Knight \cup Knave = Native \wedge Knight \cap Knave = \{\}$

$Lying(p) \triangleq p \in Knave$
$Truthful(p) \triangleq p \in Knight$

$p :> statement \triangleq Truthful(p) \equiv statement$ *p* says

Problem 1

CONSTANTS *A*, *B*, *C*
ASSUME $ABC\_Natives \triangleq \{A, B, C\} \subseteq Native$

ASSUME $B\_Says \triangleq B :> (A :> (A \in Knave))$
ASSUME $C\_Says \triangleq C :> Lying(B)$

THEOREM $C \in Knight$
PROOF BY *KnightOrKnave*, *ABC_Natives*, *B_Says*, *C_Says* DEF :> , *Lying*, *Truthful*