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A specification of a 'concurrency game' requiring concurrent and symmetrical cooperation -
https://cedric.cnam.fr/fichiers/RC474.pdf
EXTENDS Integers
 number of total meeting after which chameneoses fade
Constant N
Assume N \in Nat
VARIABLE chameneoses, meetingPlace, numMeetings
vars \triangleq \langle chameneoses, meetingPlace, numMeetings \rangle
Color \triangleq \{\text{"blue"}, \text{"red"}, \text{"yellow"}, \text{"faded"}\}
Faded \triangleq CHOOSE \ c : c \notin Color
ChameneosID \triangleq 1..4
MeetingPlaceEmpty \stackrel{\Delta}{=} CHOOSE \ e : e \notin ChameneosID
RECURSIVE Sum(\_, \_)
Sum(f, S) \stackrel{\triangle}{=} IF S = \{\} \text{ THEN } 0
                               ELSE LET x \stackrel{\triangle}{=} CHOOSE x \in S: TRUE
                                       IN f[x] + Sum(f, S \setminus \{x\})
TypeOK \stackrel{\triangle}{=} \land chameneoses \in [ChameneosID \rightarrow (Color \cup \{Faded\}) \times (0 ... N)]
                \land meetingPlace \in ChameneosID \cup \{MeetingPlaceEmpty\}
Complement(c1, c2) \stackrel{\Delta}{=} \text{ if } c1 = c2
                                ELSE CHOOSE cid \in Color \setminus \{c1, c2\}: True
Meet(cid) \stackrel{\Delta}{=} \text{IF } meetingPlace = MeetingPlaceEmpty}
                  Then if numMeetings < N
                                  chameneos enters meeting empty meeting place
                           THEN \land meetingPlace' = cid
                                    \land UNCHANGED \langle chameneoses, numMeetings \rangle
                                     chameneos takes on faded color
                           \texttt{ELSE} \quad \land \ chameneoses' = [chameneoses \ \ \texttt{EXCEPT} \ ! [cid] = \langle Faded, \ @[2] \rangle]
                                    \land UNCHANGED \langle meetingPlace, numMeetings \rangle
                            meeting place is not empty - two chameneoses mutate
                   ELSE \land meetingPlace \neq cid
                           \land meetingPlace' = MeetingPlaceEmpty
                           \wedge chameneoses' =
                                 LET newColor \triangleq Complement(chameneoses[cid][1],
                                                                             chameneoses[meetingPlace][1])
                                      [chameneoses EXCEPT ![cid] = \langle newColor, @[2] + 1 \rangle,
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- Module Chameneos -

 $![meetingPlace] = \langle newColor, @[2] + 1 \rangle]$