There are \( c \) chameleons, of which \( r \) are red and the remainder are blue. At each tick of the clock, a chameleon is chosen at random, and it changes color. How long will it be before all chameleons have the same color?

(a) The number of chameleons \( c \) is a constant. The variables are \( r \) and \( t \). We need to find a distribution \( P \) of \( r' \) and \( t' \) such that

\[
P = \begin{cases} 
0 < r < c & \text{if } r/c \text{ then } r := r - 1 \text{ else } r := r + 1 \text{ fi. } t := t + 1. \ P \text{ else } \text{ok fi}
\end{cases}
\]

In the end (whether in finite or infinite time) we have \( t' \geq t \land (r' = 0 \lor r' = c) \) which can be written more arithmetically as \( (t' \geq t) \times ((r' = 0) - (r' = 0) \times (r' = c) + (r' = c)) \) but this is not a distribution.

UNFINISHED
This is an example of a stable system.

(b) one of the chameleons of the other color changes color to match the color of the randomly chosen chameleon. How long will it be before all chameleons have the same color?

§ The number of chameleons \( c \) is a constant. The variables are \( r \) and \( t \). We need to find a distribution \( P \) of \( r' \) and \( t' \) such that

\[
P = \begin{cases} 
0 < r < c & \text{if } r/c \text{ then } r := r + 1 \text{ else } r := r - 1 \text{ fi. } t := t + 1. \ P \text{ else } \text{ok fi}
\end{cases}
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