Let \( n \) be a natural variable. The problem to reduce \( n \) modulo 2 can be solved as follows:

\[
\begin{align*}
  n' &= \text{mod } n \ 2 \\
  &\Leftarrow \text{ if } n < 2 \text{ then } \text{ok} \text{ else } n := n - 2. \\
  n' &= \text{mod } n \ 2
\end{align*}
\]

Using the recursive time measure, find and prove an upper time bound. Make it as small as you can.

After trying the question, scroll down to the solution.
\[
\begin{align*}
t' \leq t + n/2 & \iff \text{if } n < 2 \text{ then ok else } n := n - 2. \ t := t + 1. \ t' \leq t + n/2 \text{ fi} \\
\text{Proof, by cases.} \\
& \begin{align*}
n < 2 \land \text{ok} \\
\implies & n < 2 \land n' = n \land t' = t \\
\implies & n \geq 2 \land (n := n - 2. \ t := t + 1. \ t' \leq t + n/2) \\
\implies & n \geq 2 \land t' \leq t + 1 + (n - 2)/2 \\
\implies & t' \leq t + n/2
\end{align*}
\end{align*}
\]