Let $a$ and $b$ be binary interactive variables. Define
\[
\text{loop} \equiv \text{if } b \text{ then } \text{loop else ok fi}
\]
Add a time variable according to any reasonable measure, and then express
\[
b := \bot \ || \ \text{loop}
\]
as an equivalent program but without using $\ || $.

§

The left process owns $b$, and the right process has no variables (except $t$); Variable $a$ could belong to either process; let's give it to the right process. Let assignment take time $1$. Then the left process is
\[
\neg b(t+1) \land t' = t+1
\]
Add recursive time to $\text{loop}$, and assume (as will be the case) $\neg b(t+1)$ . Then the right process is
\[
\text{loop} = \text{if } b \ t \text{ then } (t := t+1. \ \text{loop}) \text{ else ok fi}
\]
\[
= \text{if } b \ t \text{ then } t := t+1. \ \text{if } b \ t \text{ then } t := t+1. \ \text{loop else ok fi else ok fi} \quad \text{Substitution Law}
\]
\[
= \text{if } b \ t \text{ then if } b(t+1) \text{ then } t := t+2. \ \text{loop else t := t+1 fi else ok fi}
\]
\[
= \text{if } b \ t \text{ then if } \bot \text{ then } t := t+2. \ \text{loop else t := t+1 fi else ok fi}
\]
\[
= \text{if } b \ t \text{ then t := t+1 else ok fi}
\]
The left process takes time $1$ and the right process takes time $0$ or $1$, so the maximum is $1$, and the independent composition is
\[
b := \bot
\]