

Exercise 10 (deadline: December 17th, 4pm)

Exercise 14.2 (part 1)

Express in LTL the following properties: if F occurs at least twice, then F occurs infinitely often.

Exercise 14.5 (part 3)

Show that the formulas $\Box(A \rightarrow \bigcirc A)$ and $\neg A \mathbf{U} \Box A$ are not equivalent by giving a path that satisfies one of them but does not satisfy the other one.

Exercise (not in the reading material)

Let the formula x symbolically represent the set of initial states and the formula $x \leftrightarrow \neg x'$ the transition relation of a transition system \mathbb{S} over the set of two boolean variables $\{x, y\}$.

- ▶ Draw the state transition graph of \mathbb{S} .
- ▶ Which of the following formulas are true along all paths in \mathbb{S} ?
 1. $\Box(x \leftrightarrow \bigcirc \neg x)$;
 2. $\Box(x \leftrightarrow \bigcirc \bigcirc \neg x)$;
 3. $\Box(y \leftrightarrow \bigcirc y)$.