Model Checking (SS 2024) Homework 6

Deadline: May 13, 2024, 9:00 am
Submit your solution through TeachCenter

Task 1. [60 points] Intersection of Büchi automata.
Consider the algorithm to construct the intersection of two Büchi automata that we discussed in the lecture and that is discussed in the book at page 89.

The algorithm uses a variable $x \in \{0,1,2\}$ to create 3 copies of the state space to track if accepting states of both automata are visited infinitely often.

Your Task: Change the algorithm such that $x \in \{0,1\}$. In particular, think how you need to define the **transition relation** and the **set of accepting states** of the product automaton, if you now only have two copies of the state space available.

Task 2. [40 points] Infinite Counterexamples for LTL properties.
Show that if a certain LTL property φ can only be falsified by infinite counterexamples, then it also has a counterexample that is lasso shaped.