Model Checking
Homework 8

Deadline: 27th Mai 4:00pm
Send solution to: modelchecking@iaik.tugraz.at

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.

[3 Points] If x=0, we wait for a visit of an accepting state in $\mathbf{F}_1$, and if x=1 we wait for an accepting state $\boldsymbol{F}_2$. *We ignore accepting states that don't appear in this order.*

Question: Might we miss accepting paths in the product automaton $\mathcal{B}$? Explain your answer.

[7 Points] The algorithm uses a variable $\boldsymbol{x} \in \{\mathbf{0}, \mathbf{1}, \mathbf{2}\}$ 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 $\boldsymbol{x} \in \{\mathbf{0}, \mathbf{1}\}$. 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.