Formal Models SS 2018: Assignment 4

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Due 19.04.2018

To indicate that you solved an exercise and that you can present it in the exercise group, tick it off in our MOODLE course until **8am on the day of the exercise**. Unmarking and marking exercises at the begin of the exercise class is **not** possible.

Exercise 13

Let $A = coin.(tea.A + coin.coffee.A)$ and $B = coin.tea.B + coin.coin.coffee.B$ be PA systems modelling two versions of a simple beverage vending machine. Justify your answers in the following.

1. Draw the LTS for A and B.
2. Interpret A and B as finite automata A_{FA} and B_{FA}, assuming that the initial state is the only final state. Is $L(A_{FA}) = L(B_{FA})$?
3. Does the behaviour of A and B differ from the perspective of a user when buying a drink?

Exercise 14

Draw the LTS for PA system P, where $P = b.a.Q + b.(c.P + a.P)$, $Q = b.a.P + c.P$.

Exercise 15

Draw the LTS for PA system P, where $P = a.(a.R + c.Q)$, $Q = b.c.Q + a.R$, $R = a.P + a.b.R$.

Exercise 16

Take the PA system P of exercise 15. Show that action $Q \xrightarrow{a} R$ can be executed by subsequently applying the semantical rules of PA.