Formal Models SS 2015: Assignment 4

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Exercise 13

Given an automation $A$ with state $S = \{A, B, C, D\}$, alphabet $\Sigma = \{a, b\}$, initial states $I = \{A, C\}$, final state $F = \{B, D\}$, and transitions $T = \{(A,a,B), (A,a,C), (B,a,B), (C,a,C), (C,b,D), (D,a,D), (D,a,B), (A,a,A)\}$.

Draw the I/O automaton, which describes exactly the language complementary to the language described by $A$.

Exercise 14


a) Draw the LTS for $A$ and $B$.

b) Interpret $A$ and $B$ as finite automata $A_{FA}$ and $B_{FA}$, assuming that the initial state is the only final state. Is $L(A_{FA}) = L(B_{FA})$?

c) Does the behaviour of $A$ and $B$ differ from the perspective of a user when buying a drink?

Exercise 15


Exercise 16

Draw the LTS for PA system $P = b.(b.R + a.Q)$, $Q = c.a.Q + b.R$, $R = b.P + b.c.R$. Show that action $Q \xrightarrow{b} R$ can be executed by subsequently applying the semantical rules of PA.