Formal Models SS 2016: Assignment 3

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Exercise 9

Given an automation A with state $S = \{A,B,C,D\}$, alphabet $\Sigma = \{a,b\}$, initial states $I = \{A,D\}$, final state $F = \{C\}$, and transitions $T = \{(A,a,A),(A,b,A),(A,b,B),(A,b,C),(B,b,B),(B,b,A),(C,a,A),(C,b,D),(D,a,B),(D,b,B),(D,a,C)\}$. Draw the oracle automaton Oracle(A). Is $Oracle(A)$ complete? Is it deterministic?

Exercise 10

Given FA A from Exercise 9, draw the *optimized* oracle-automaton $Oracle(A)$. Is $Oracle(A)$ complete? Is it deterministic? Justify your answer.

Exercise 11

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

Draw the I/O-automaton for FA A.

Exercise 12

Draw an I/O-automaton modelling the digital circuit shown on the right. Use $\Sigma := \Theta := \{0,1\}$ as input- and output-alphabet.