

Lecture 9: Model-Based Testing

Exercises:

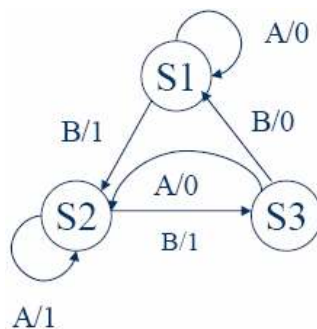
1. A synchronizing sequence (SS) for an FSM state s is an input sequence which takes the machine to final state s regardless of the output sequence or the initial state.

(1) Proof that not every FSM state has an SS.

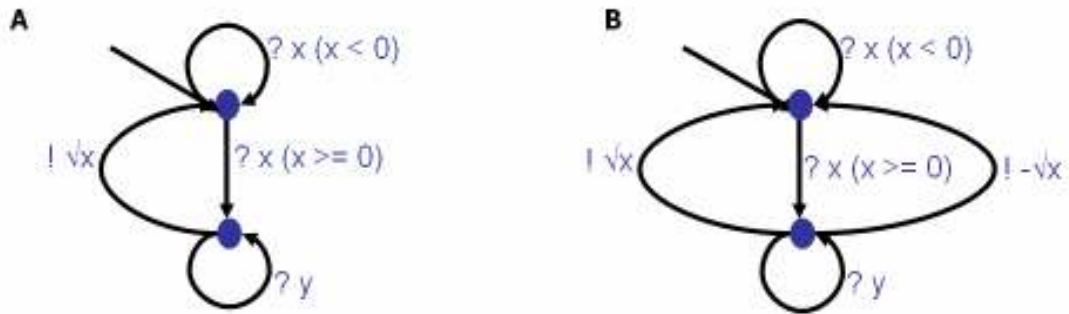
(2) Can you suggest some method (or algorithm) to find out synchronizing sequences for a given FSM, say, the following one?

current state	x = 0	x = 1
A	B, 1	C, 0
B	A, 0	D, 1
C	B, 0	A, 0
D	C, 1	A, 1

2. A homing sequence for an FSM is an input sequence such that after it is entered, by observing the output, we know what the final state of the machine is in. Can you suggest some method (or algorithm) to find out a homing sequence for a given FSM, say, the following one?



3. In the following figure, why “A **io**co B” holds whereas “B **io**co A” does not hold? Suppose B is a specification and A is its implementation. What do you learn from the fact that a partial implementation A is also correct w.r.t. to the **io**co conformance relation?



4. Please walk with the following example (pp. 114 of the slides) with the on-line testing algorithm to see how model-based on-line testing of real-time systems works.

