18 – Finite State Machines

Thursday, November 8, 2018 10:03 AM

A finite-state machine (FSM) is an abstract machine that can be in exactly one of a finite number of states at any given time.

The FSM can change from state to another in response to some input. This change is called a transition.

The machine is defined by a list of its states, its initial state and the conditions for each transition.

This information can be represented by a state transition diagram (graph) with nodes as states and directional branches as transitions.

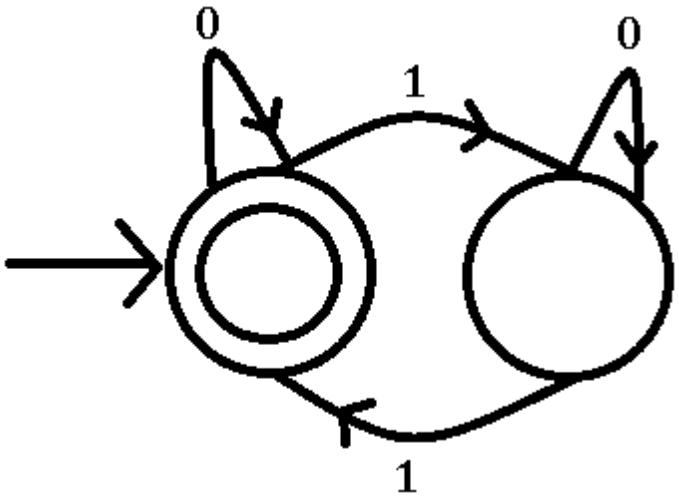
Double outlined circles (nodes) represent accepting states. Single outlined circles (nodes) represent rejecting states.

N.B. the S in S_1 stands for state in these diagrams.

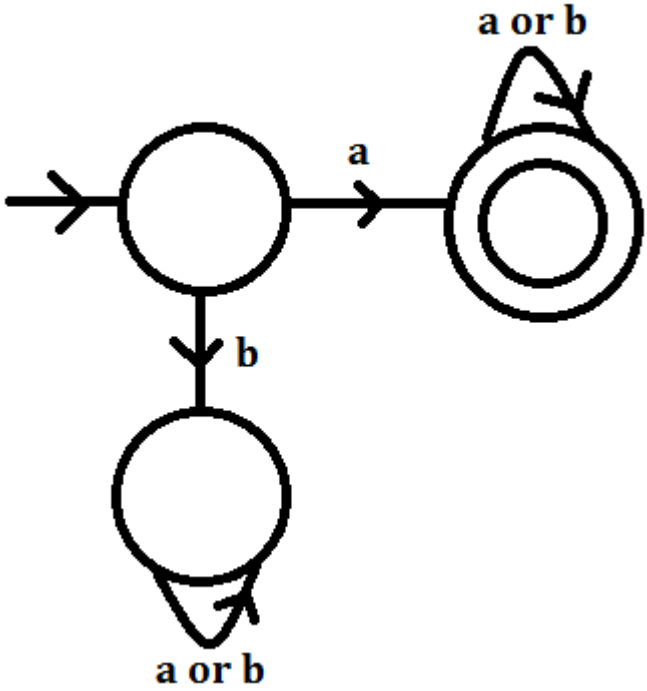
Mealy machines are FSMs with output. In their diagrams, they use the syntax: 'a|b' as labels for each transition to signify that, with an input character of 'a', the output character will be 'b'.

A state transition table is seen below in

Bond Book questions page 403:

1. A) Accept B) Reject C) Reject D) Accept E) Reject F) Accept
2. A) Accept B) Reject C) Accept D) Reject E) Reject F) Reject G) Reject
3. 

4.



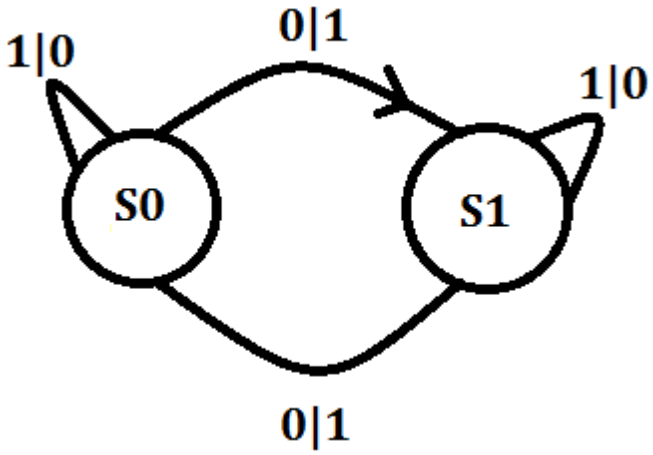
5. A) Accept B) Accept C) Accept D) Reject E) Accept F) Accept G) Reject
6.

Current State	S_0	S_0	S_1	S_1
Input Symbol	a	b	a	b
Next State	S_1	S_0	S_1	S_0

7.

Current State	S_0	S_0	S_1	S_1	S_2	S_2	S_3	S_3
Input Symbol	0	1	0	1	0	1	0	1
Next State	S_1	S_3	S_2	S_1	S_2	S_3	S_2	S_3

8. 000100
9. A) 00000000 B) S_0
10.



11. A)=0 B)=1 C)=1 D)=0c1