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State transition diagram

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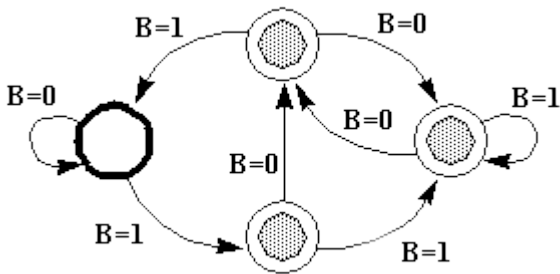
Calculator

Lab due Oct 31, 2016 21:59 -02 Past due

State transition diagram

0.0/2.0 points (graded)

Shown below is a state transition diagram for an FSM, F , with a single binary input B . The FSM has a single output, a light which is on for the three states marked by a gray dot. The starting state is marked by the heavy circle.



1. Is there a *synchronizing sequence* of inputs which will return this FSM from an unknown state to its starting state?

Synchronizing sequence:

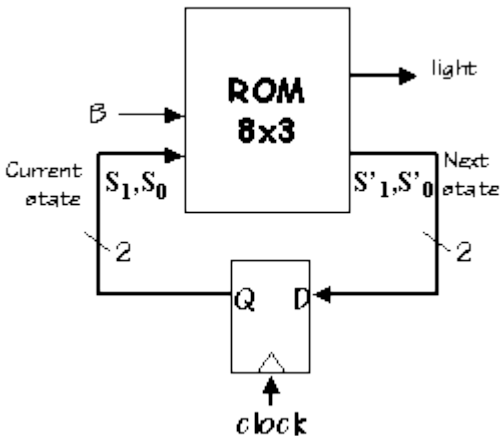
- ☐ 00010 is such a sequence
- ☐ 01010 is such a sequence
- ☐ 00000 is such a sequence
- ☒ 11101 is such a sequence
- ☐ No such sequence exists

2. Does this FSM have a pair of equivalent states that may be merged to yield a 3-state FSM?

Equivalent states:

- ☐ Yes; the two middle states (upper and lower) are equivalent.
- ☒ Yes; the lower and rightmost states are equivalent.
- ☐ Yes; the leftmost and rightmost states are equivalent.
- ☐ No two states are equivalent; this FSM cannot be reduced.

3. The following circuit is used to implement the above 4-state FSM:



It is known that the starting state of the 4-state FSM corresponds to $S_1S_0 = 00$, and the **light** outp

when the light is to be on. What is the value of the **light** output when all three inputs to the ROM are zero?

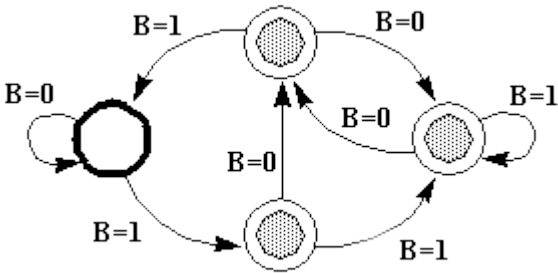
Value of **light** output:

☒ 0 (light off) ✓

☐ 1 (light on)

☐ Cannot tell from information given

4. Fill in the unspecified rows of the following truth table so that it implements the state transition diagram (repeated below). Remember the starting state is 00.



S_1	S_0	B	S'_1	S'_0	light
0	0	0	<div></div>	<div></div>	<div></div>
			Answer: 0	Answer: 0	Answer: 0
0	0	1	<div></div>	<div></div>	<div></div>
			Answer: 1	Answer: 0	Answer: 0
0	1	0	1	1	1
0	1	1	0	0	1
1	0	0	<div></div>	<div></div>	<div></div>
			Answer: 0	Answer: 1	Answer: 1
1	0	1	<div></div>	<div></div>	<div></div>
			Answer: 1	Answer: 1	Answer: 1
1	1	0	<div></div>	<div></div>	<div></div>
			Answer: 0	Answer: 1	Answer: 1
1	1	1	<div></div>	<div></div>	<div></div>
			Answer: 1	Answer: 1	Answer: 1

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Answers are displayed within the problem

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✓ Truth table error for lab 3.2 FSM?

Calculator

5/5/24, 8:39 AM

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	The truth table seems to have a couple of errors, or I'm just misunderstanding something. With just the given information, there is a...	
?	Doubt in truth table of question 4 Can someone please give me a hint on why the light is off in the 2nd row of the truth table? (0,0,1)	2
✓	Answer to Q3	3

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