WE6.2

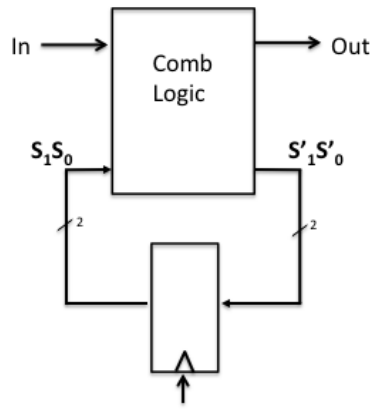
Bookmark this page

FSM

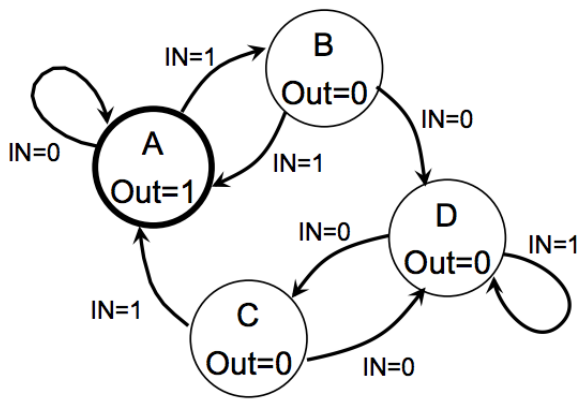
6/6 points (ungraded)

OpenFSM.org, an organization dedicated to public disclosure of the transition diagrams of all commercially interesting FSMs, has hired you as an (unpaid) consultant. They've asked you to help reverse-engineer the BSM, an FSM embedded in the hot-selling consumer product, BlingSox.

You've been given the schematic diagram for the BSM, as shown below, and immediately recognize the S1S0 diagram as an FSM having two state bits held in a single register.



Through a series of tedious experiments, you deduce the state transition diagram for the BSM as shown below.



You have verified that the BSM has four states, that it is a Moore machine (the output is a function only of the current state), and have determined the value of the output for each of the four states. You have also determined that the current state is encoded as two state variables S1S0 stored in the two-bit register shown in the circuit diagram above, and that A is the initial state.

Further reverse engineering on your part yields the partially-completed truth table for the BSM's combinational logic shown below. Unfortunately, you left five blank entries in the table. At the time you made the table, their values seemed too obvious to bother writing down; a week later, however, they didn't seem quite so obvious.

(A) Fill in the missing five entries in the table below.

S1	S0	IN	S1'	S0'	OUT
0	0	0	0	0	1
0	0	1	0	1	1 ✔
0	1	0	1	0	0
0	1	1	0	0 ✔	0
1	0	0	1	1	0
1	0	1	1	0 ✔	0 ✔
1	1	0	1	0	0
1	1	1	0	0 ✔	0

After you show your progress to your OpenFSM buddies, they ask if you can tell from that diagram whether it might be possible to find a 3-state machine that is equivalent to the 4-state BSM.

(B) Is an equivalent state reduction is possible from the state transition diagram given above? If so, mark tw

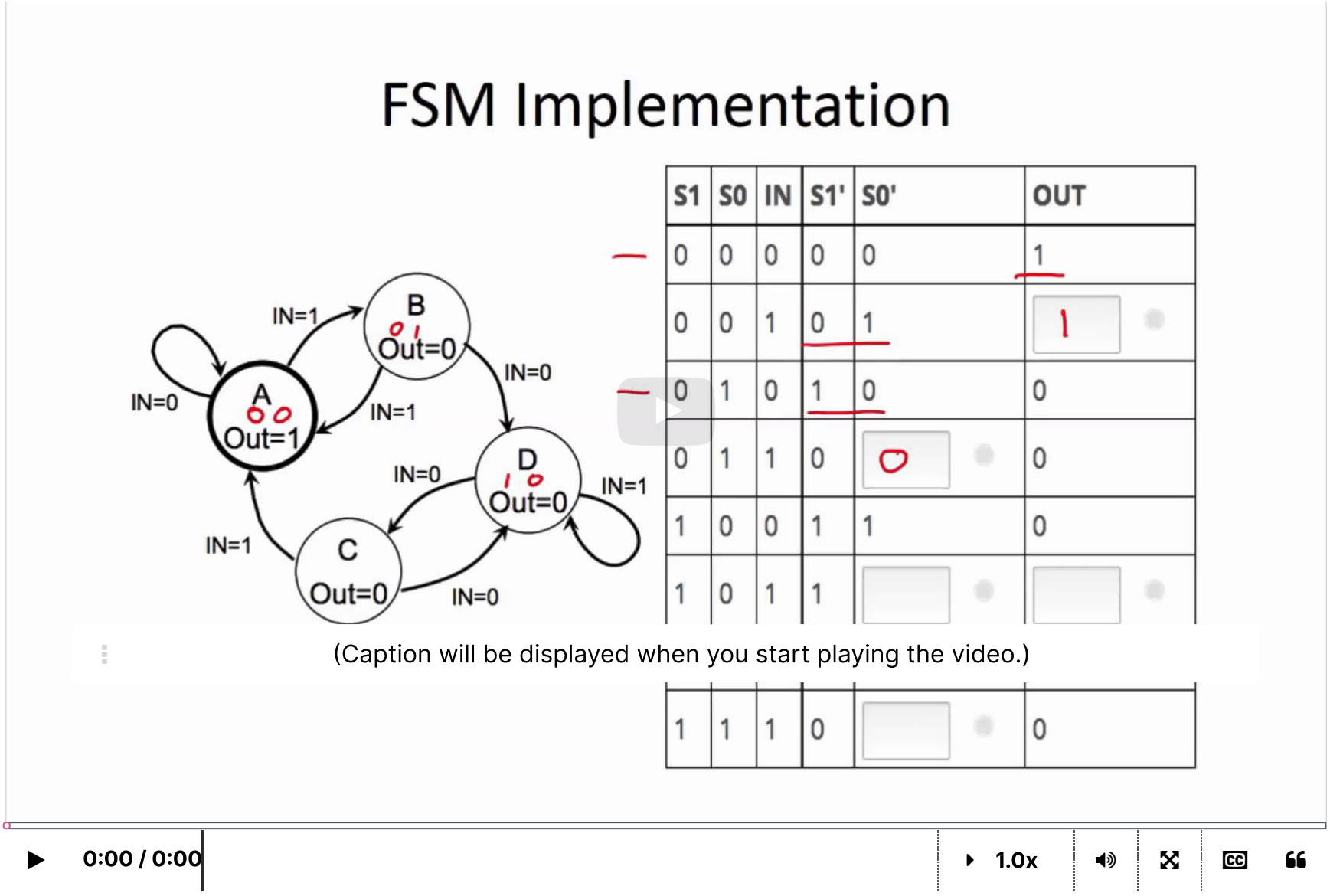
Calculator

equivalent states that may be merged to yield the simpler FSM; otherwise, mark NO.

- [ ] NO
- [ ] A
- [x] B
- [x] C
- [ ] D

Submit

FSM Implementation



(Caption will be displayed when you start playing the video.)

Video
Download video file

Transcripts
Download SubRip (.srt) file
Download Text (.txt) file

Discussion

Topic: 6. Finite State Machines / WE6.2

Hide Discussion

Add a Post

Show all posts by recent activity

- Benefit of merging states ? 2
  Hello , We see from the lecture that we get two states merged as one leaving behind a total of 3 states instead of 4 But for both 3,4 ...
- Shouldn't the answer to the second column be 0?
  On an input of 1, A transitions to B, which has an output of 0

Calculator

On an input of 1, A transitions to B, which has an output of 0.

‹ Previous Next ›

edX

Calculator