

Student Names:H.Kübra Eryılmaz/ Y. Ceren Dardağan

Student IDs:2014400186/2014400063

Group ID:4

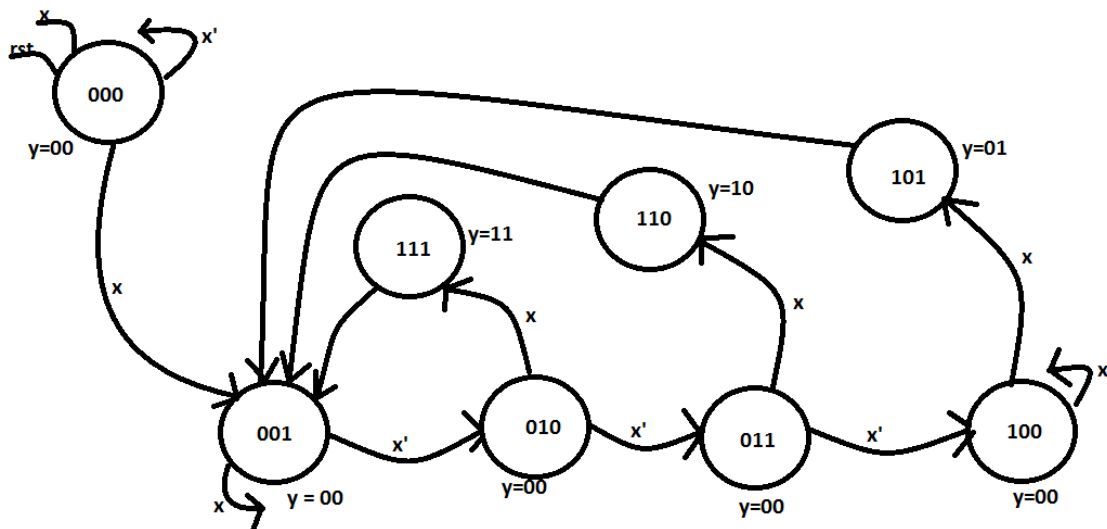
Session:2

## CMPE 240 Experiment 3 Preliminary Work

*(For illustrations you can use any drawing tool that you want including Microsoft Word Shapes. Please do not use scanned images of hand drawn state machines and architecture diagrams.)*

*(For tables please use insert table feature of Microsoft Word)*

**Step 1: Capture the FSM: Create and draw the finite state machine that describes the desired behavior of the controller.**



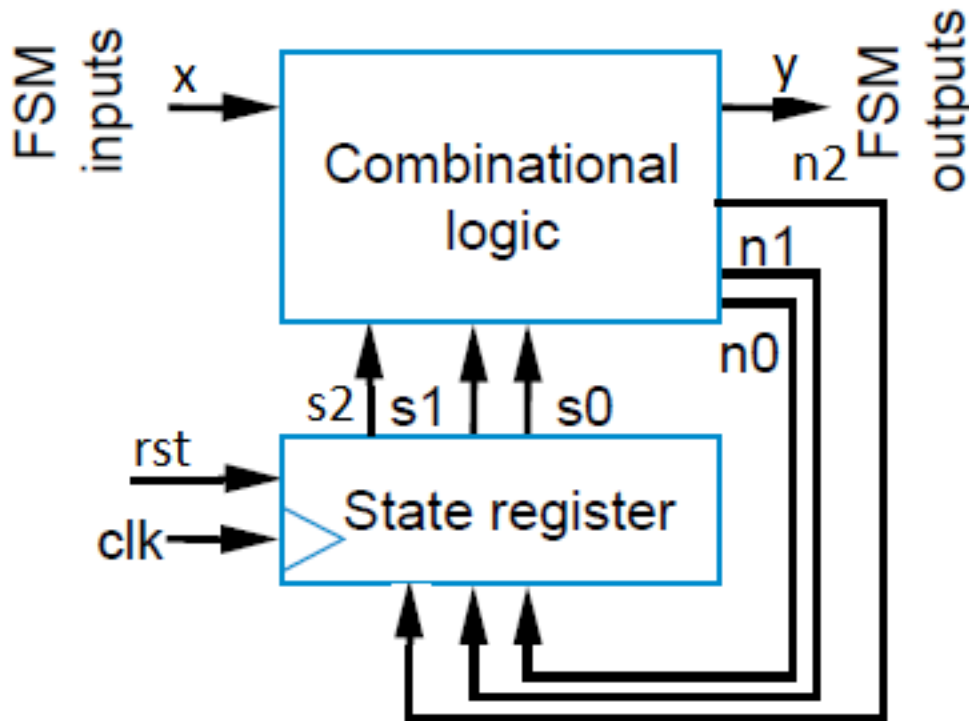
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*Step 2: Create the architecture: Create and draw standard architecture by a using stateregister of the appropriate width and combinational logic with inputs being the state register bits and the finite state machine inputs and outputs being the next state bits and the finite state machine engine.*



*Step 3: Encode the states: Assign a unique binary number to each state. Each binary number representing a state is known as an encoding. Any encoding will do as long as each state has a unique encoding. (The content of the following table is an example. Rename the states according to the ones you specified in the first section. Also use any encoding you want.)*

STATE NAME	ENCODING
S(0)	000
S(1)	001
S(2)	010
S(3)	011
S(4)	100

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S(5)	101
S(6)	110
S(7)	111

*Step 4: Create the state table: Create a truth table for the combinational logic such that the logic will generate the correct FSM outputs and next state signals. Ordering the inputs with state bits first makes this truth table describe the state behavior, so the table is a state table. (Update the table according to the number of state variables that you have used. The values on the example table are wrong.)*

CURRENT STATE	EXTERNAL INPUTS	NEXT STATE	OUTPUT
000	0	000	00
000	1	001	00
001	0	010	00
001	1	001	00
010	0	011	00
010	1	111	00
011	0	100	00
011	1	110	00
100	0	100	00
100	1	101	00
101	0	001	01
101	1	001	01
110	0	001	10
110	1	001	10
111	0	001	11
111	1	001	11



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