Solutions - Quiz 4

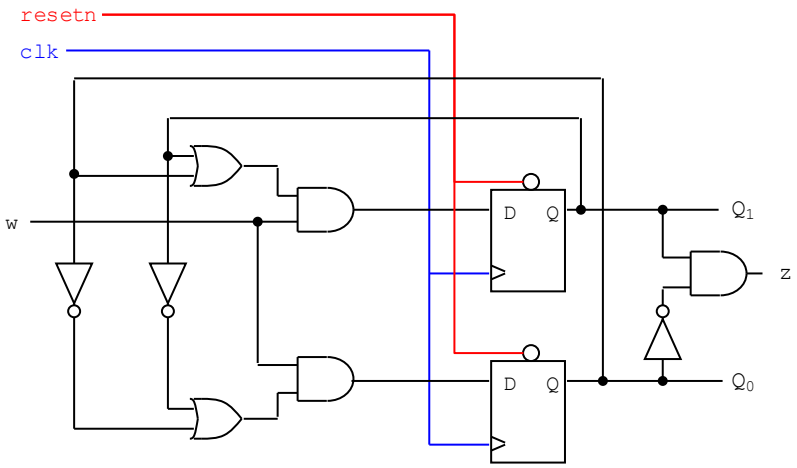
(November 27th @ 5:30 pm)

PROBLEM 1 (35 PTS)

- Provide the Excitation equations (including the Boolean equation for z) and the Excitation Table of the following FSM:

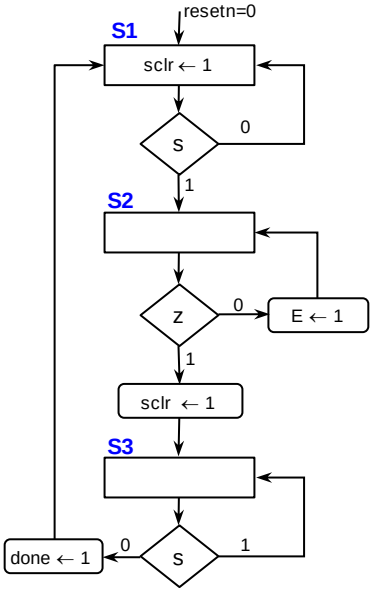
$$Q_1(t+1) \leftarrow (Q_1(t) + Q_0(t))w$$
$$Q_0(t+1) \leftarrow \overline{Q_1(t)Q_0(t)}w$$
$$z = Q_1(t)\overline{Q_0(t)}$$

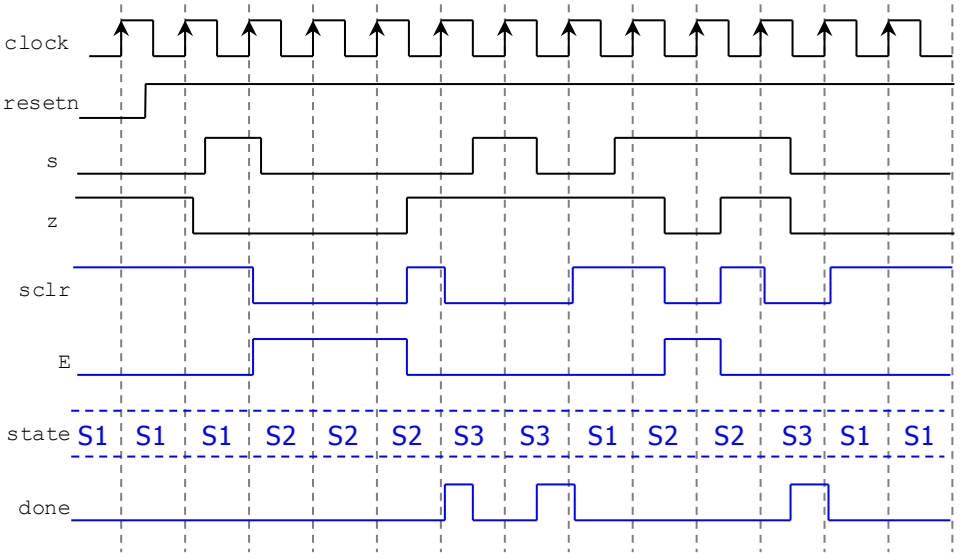
PRESENT STATE			NEXTSTATE		
w	Q_1	Q_0 (t)	Q_1	Q_0 (t+1)	z
0	0	0	0	0	0
0	0	1	0	0	0
0	1	0	0	0	1
0	1	1	0	0	0
1	0	0	0	1	0
1	0	1	1	1	0
1	1	0	1	1	1
1	1	1	1	0	0



PROBLEM 2 (35 PTS)

- Complete the timing diagram of the following FSM (represented in ASM form):





PROBLEM 3 (30 PTS)

- Sequence detector: Draw the state diagram (any representation) of an FSM with input x and output z. The detector asserts $z = 1$ when the sequence 0110 is detected. Right after the sequence is detected, the circuit looks for a new sequence.