Introduction to Digital Logic

- Circuits

Doug Shook

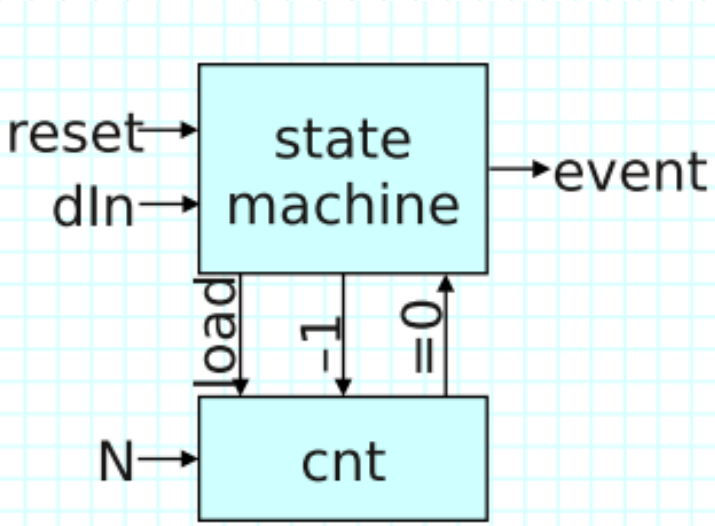
Transitions

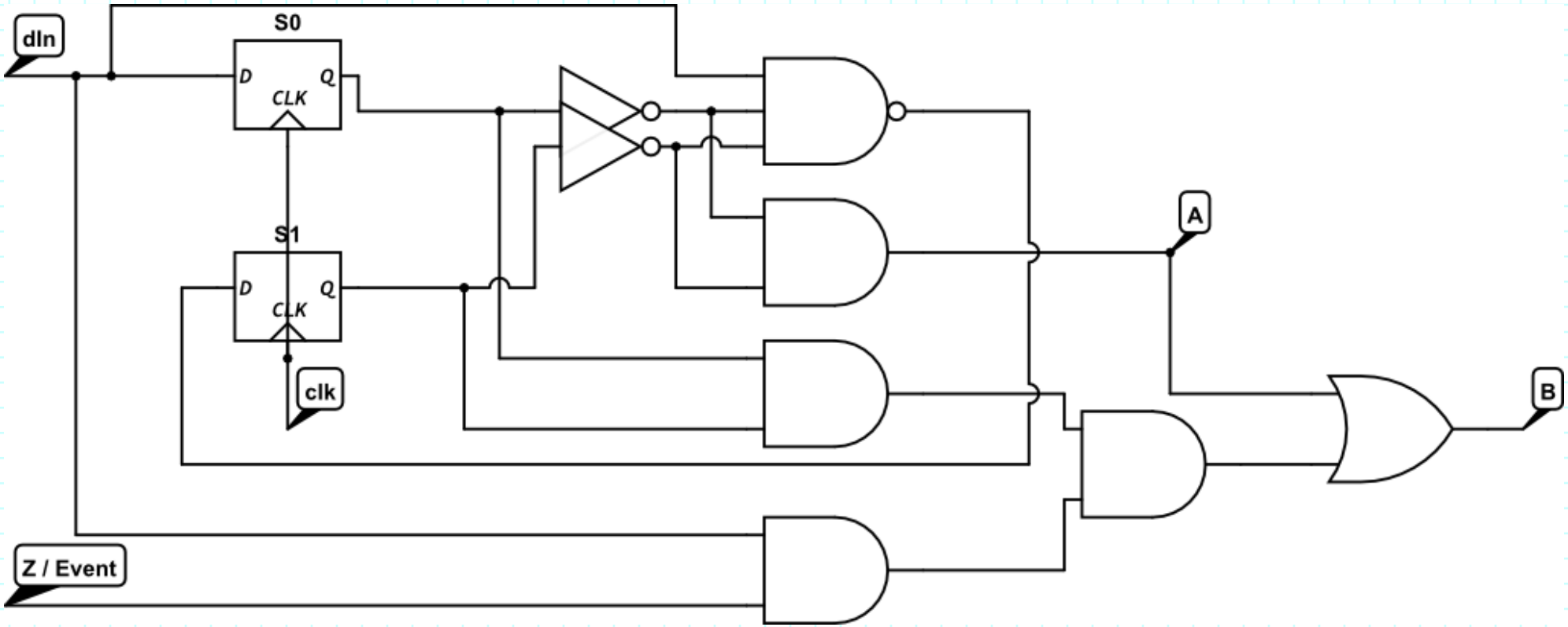
Input		Current State		Output		Next State	
dIn	cnt = 0	s0	s1	a	b	s0	s1
0	x	0	0	1	1	0	1
1	x	0	0	1	1	1	0
0	x	1	0	0	0	0	1
0	x	0	1	0	0	0	1
1	x	0	1	0	0	1	1
1	x	1	1	0	0	1	1
0	0	1	1	0	1	0	1
0	1	1	1	0	0	0	1

S0 = dIn
S1 = (dIn s0' s1')'
Event = Z

a = (s0' s1')
b = (s0' s1') + (s0 s1 dIn' Z')

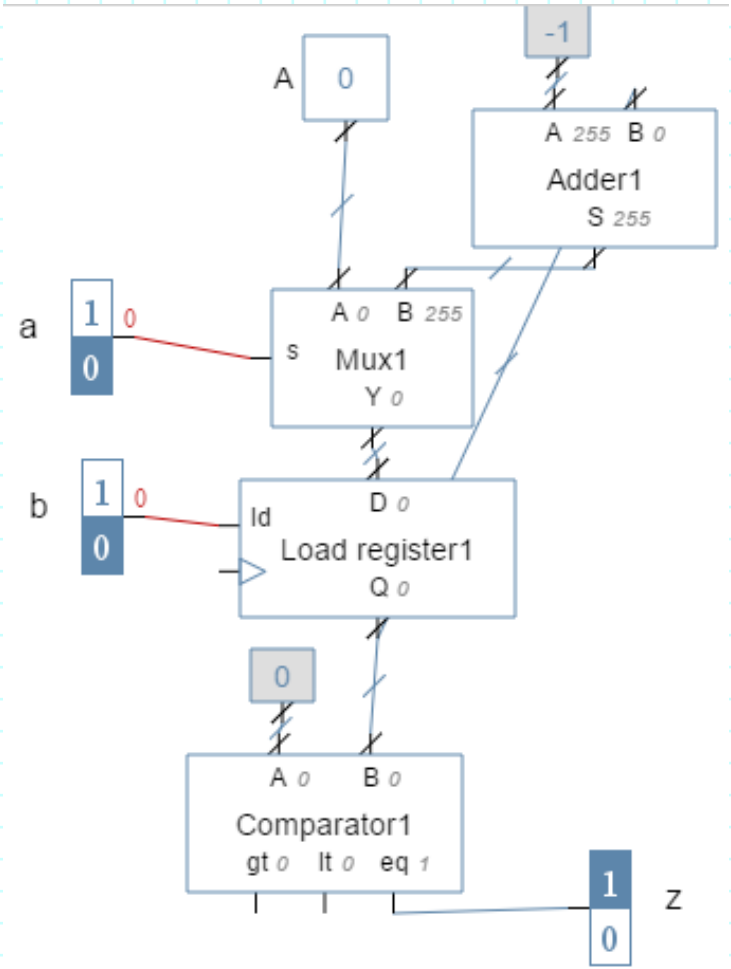
Circuit


reset
dIn
state machine
event
load
-1
=0
N
cnt


dIn
S0
D
Q
CLK
S1
D
Q
CLK
clk
A
B
Z / Event

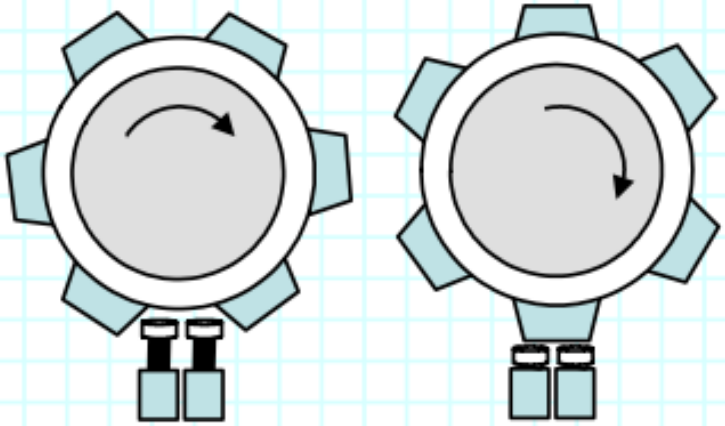
Review Questions

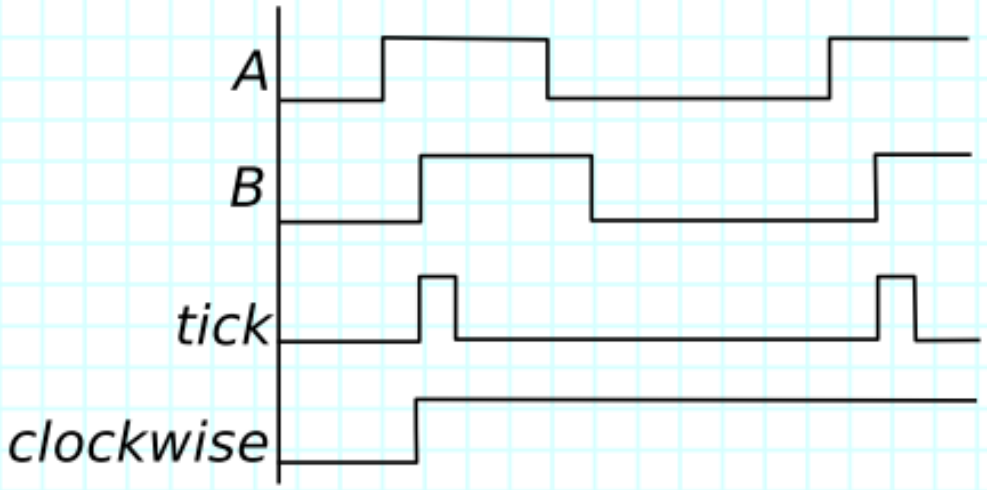
- Explain how the pulse counter circuit would need to change for the paired pulse counter and the continuous pulse counter.



Review Questions

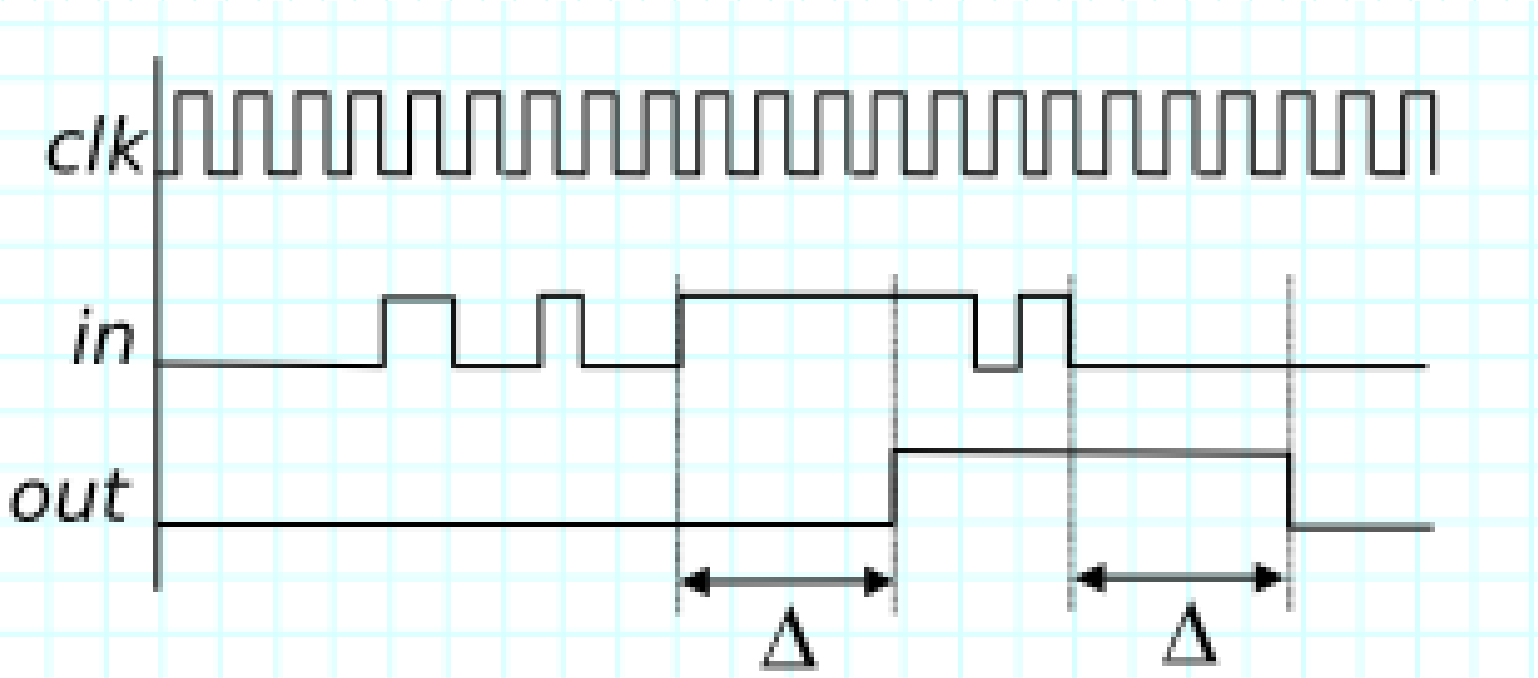
- Determine the transitions and sketch the circuit for the knob HLSM.





Review Questions

- Determine the transitions and sketch the circuit for the button debouncer HLSM.

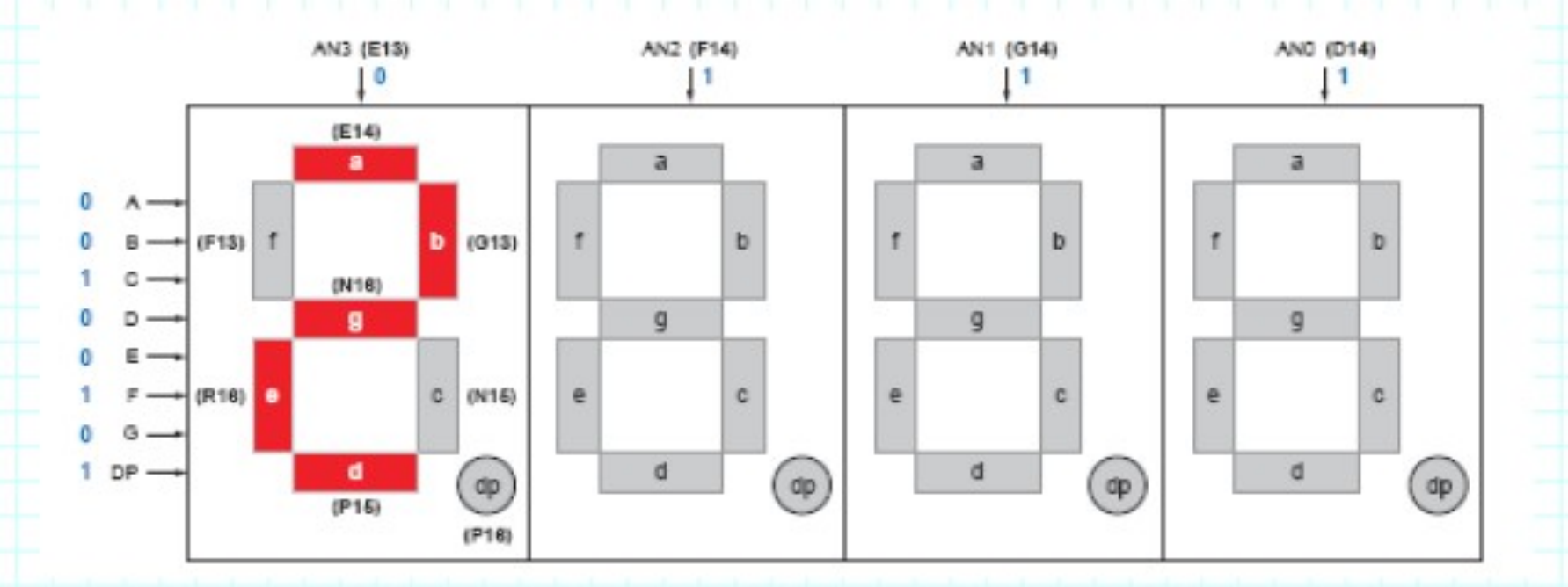


Review Questions

- Sketch the datapath for the consecutive 1 counter.
- Sketch the FSM circuit for the consecutive 1 counter.

Review Questions

- Design a HLSM for a numeric display:



Review Questions

- LCD Display

