CS99S
Laboratory 5 Solution

October 29, 2001

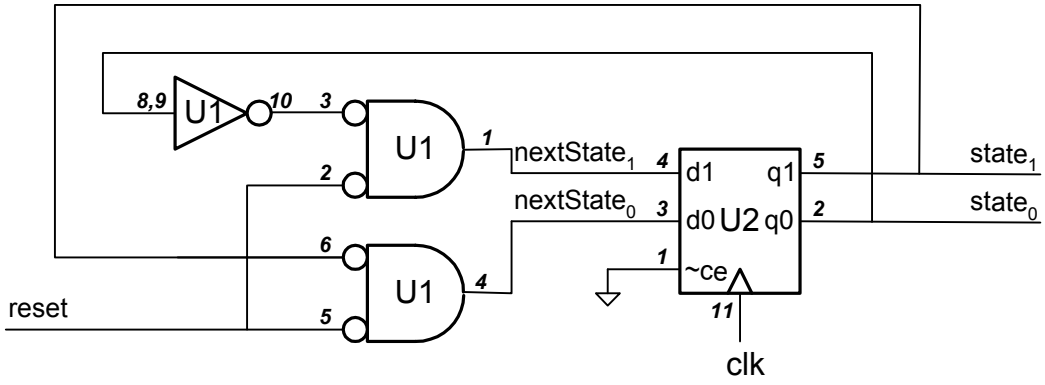
Prep Question 1: Write down the truth table, logic function, and logic diagram to compute the most significant bit of the next state function, $nextState_1$. Make sure your schematic is labeled and don't use the same gate that was used to compute $nextState_0$ above (you can use unused gates on chip U1 though).

reset	$state_1$	$state_0$	$nextState_1$
0	0	0	0
0	0	1	1
0	1	1	1
0	1	0	0
1	*	*	0

$nextState_1 = \sim reset \wedge state_0$

(The schematic is included with Prep Question 2 below).

Prep Question 2: Draw a schematic diagram for the entire quadrature counter circuit. This should include the combinational logic for both next state bits and both flip flops. You should have this all in a single diagram so you can wire from it.



U1 74AC02 +14 -7
U2 74AC377 +20 -10

The Lab

For the lab you should wire up your quadrature counter from the schematic you drew for prep question 2. Once your counter is wired, hook the clock to your debounced pushbutton and step your counter through its states to verify its operation.