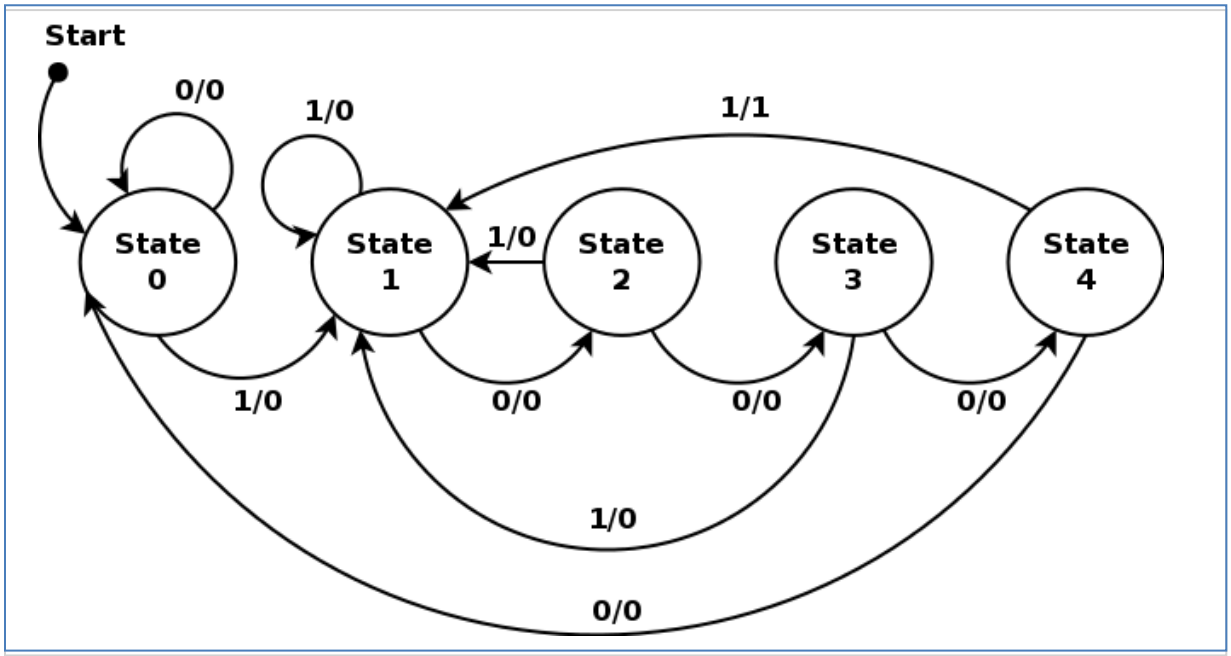
CS270 Homework Assignment 3 (HW3)

Homework and programming assignments are to be done individually.

Instructions: Design a Logisim circuit that implements the state machine shown below:



Here are a few notes that may help you:

- What is the sequence of bits that is detected by this state machine?
- State should be stored in D-latches, how many do you need?
- The truth table is combinational logic similar to what you have already done.
- You must use a D-latch the output, since it's on a transition.
- Optimization is allowed and encouraged, the fewer gates the better!
- Why are there only 10 rows in the truth table instead of $2^4 = 16$?

Current State	*Input*	*Output*	*Next State*
000	*0*	*0*	*000*
000	*1*	*0*	*001*
001	*0*		
001	*1*		
010	*0*		
010	*1*		
011	*0*		
011	*1*		
100	*0*		
100	*1*		

Create a Logisim circuit called HW3.circ and turn it in to the RamCT dropbox. Also, create HW3.pdf, with an image of the circuit exported from Logisim, and the following questions & answers, and turn it in to the same dropbox:

1. How did you represent the current state? A binary number, a line per state, or something else?

2. How did you label the lines that represent the current state?

3. How did you label the input?

4. How did you label the clock?

5. How did you label the reset line?

6. How did you label the output?