ECE 281 Homework 3 – Due T21 @ 1700

NAME: _____

For all assignments in this course, unless otherwise noted on the assignment, you may work with anyone. We expect all graded work, to include code, lab notebooks, and written reports, to be in your own work. Copying another person's work, with or without documentation, will result in NO academic credit. Furthermore, copying without attribution is dishonorable and will be dealt with as an honor code violation.

DOCUMENTATION:

Finite State Machine Design

Design a sequential circuit which implements a simplistic traffic light turns green when a car is present (and stays green while cars are present) and then cycles to red (through yellow) when a car is not present. The outputs should be three separate signal and not change until the state changes. Specify the behavior of all implemented states. (To match the solution, have the states in the FSM be in the order Red-Green-Yellow, even though they can really be in any order)

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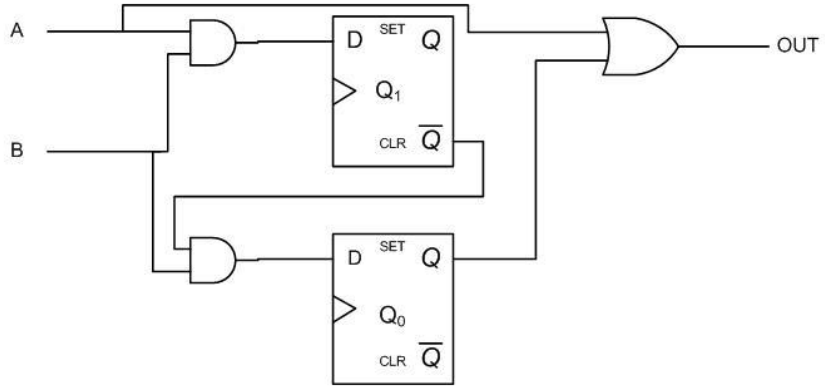
Finite State Machine Analysis

Answer the following questions (1-4) about the sequential circuit below.



1. How many states, inputs and outputs are implemented in the circuit above?

   States:_____ Inputs:_____ Outputs:_____

2. What are the next state and output equations implemented by the circuit above?

$Q_1^* =$ _____ $OUT =$ _____

$Q_0^* =$ _____

3. From your equations above, derive the next state/output table.

Current State	Inputs	Next State	
Q_1Q_0	AB	$Q_1^*Q_0^*$	OUT
00	00		
00	01		
00	10		
00	11		
01	00		
01	01		
01	10		
01	11		
10	00		
10	01		
10	10		
10	11		
11	00		
11	01		
11	10		
11	11		

4. Draw the associated state diagram.