Finite State Machines (FSM)

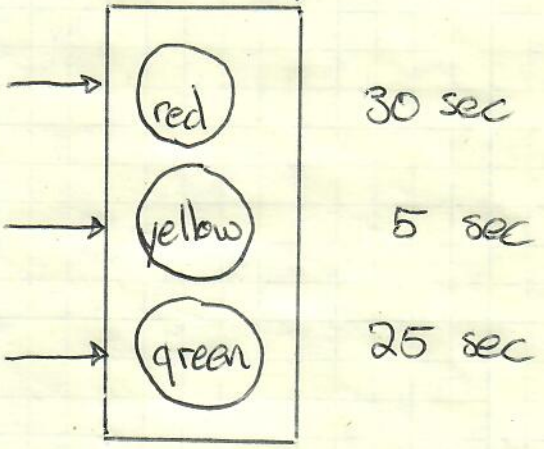
hardware which actualizes a state diagram

describes a process

specific steps = states = ○ } Together yields
Move btw steps = transitions = ↗ } State Diagram

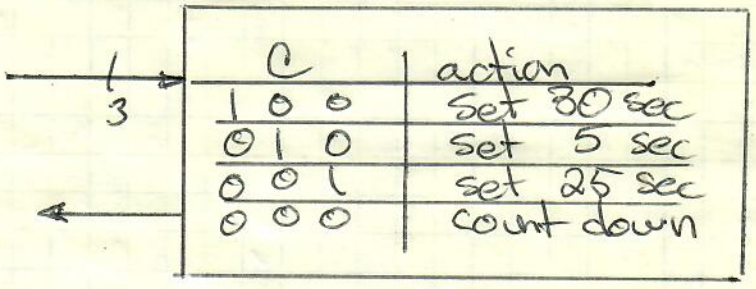
Build a state diagram for traffic light controller

Given: Light



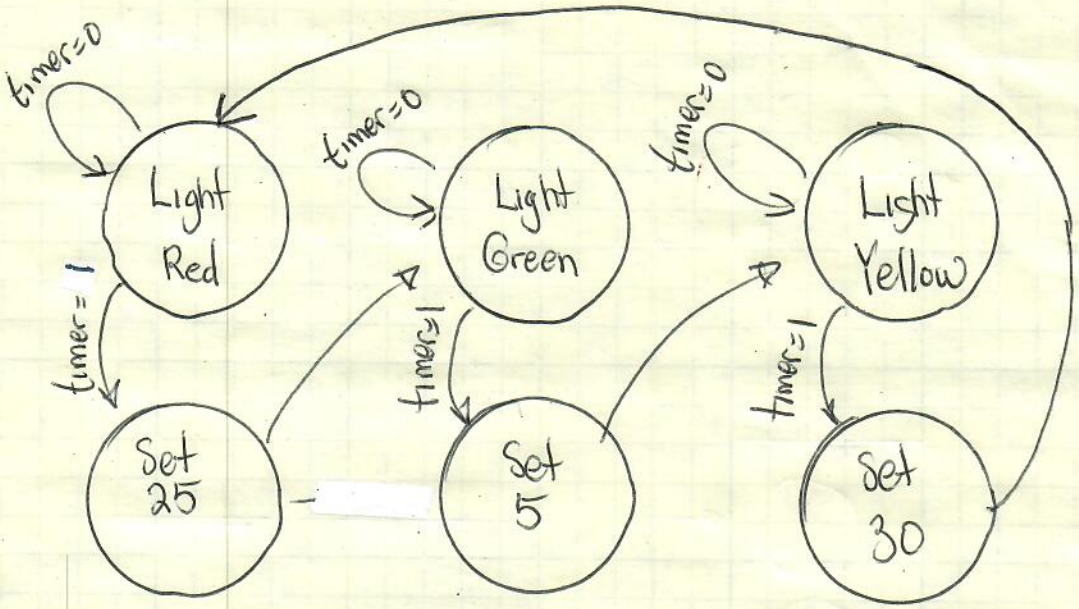
input = 1 illuminates light

Timer

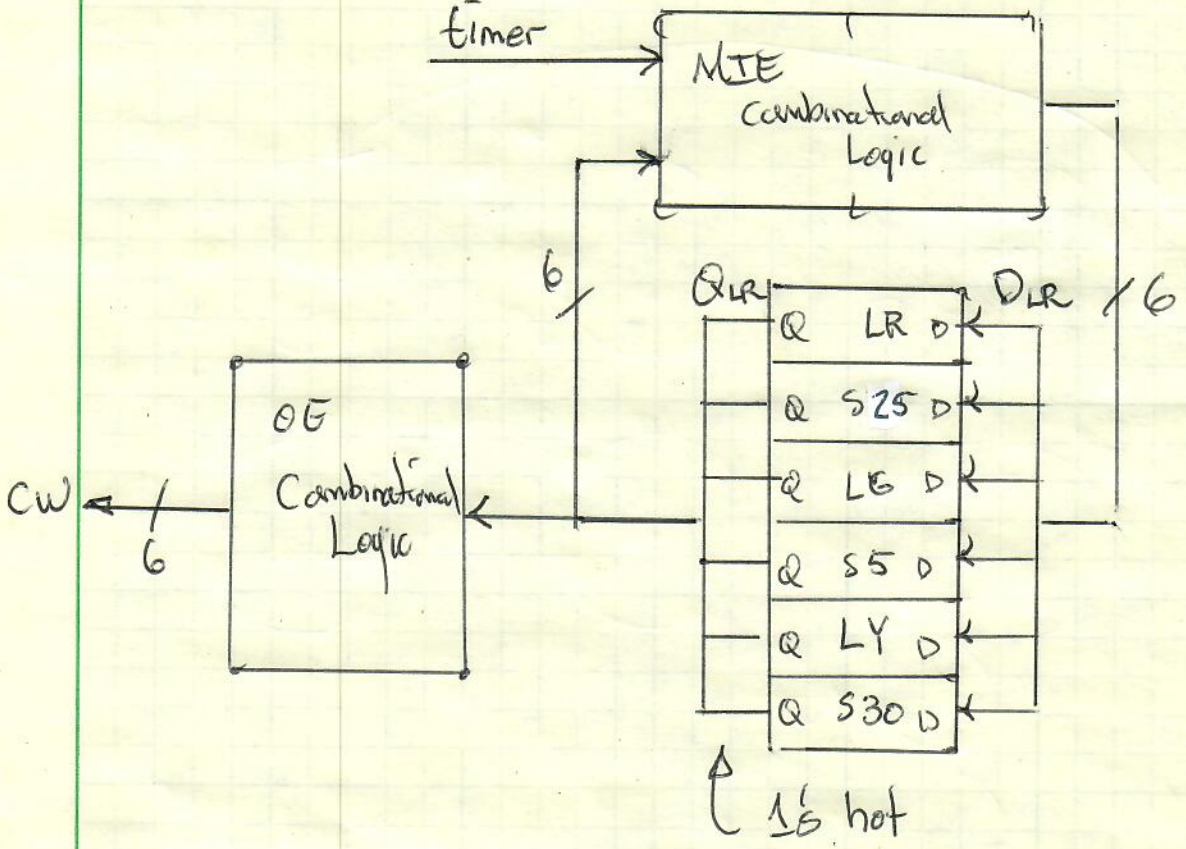


output = 1 & stays 1 when 0 sec reached
= 0 when timer set

State diagram to control hardware



CW	Red	Yellow	Green	Q
LR	1	0	0	000
S25	1	0	0	001
LG	0	0	1	000
S5	0	0	1	010
LY	0	1	0	000
S30	0	1	0	100



$Q_x = 1$ when your in state X.

Q: What input gets you into state LR?

A: 1,0,0,0,0,0 $D_{LR} = 1$ all other $D_x = 0$

Q: What state/input combos send you to LR?

A: State = LR AND timer = 0

OR

State = S30

Q: Write Boolean Expression for

$$D_{LR} = Q_{LR} timer' + Q_{S30}$$