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# LAB 7

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## TRAFFIC LIGHT CONTROLLER

In this lab we were asked to code traffic light controller for 5 lanes, 3 of which are highways and 2 are small side lanes.

For implementation I assumed 1 clock cycle as 5 seconds. I declared to variables of type integer for implementation, count and actSignal. count keeps track of number of clock cycle for which green light is on and actSignal stores value of signal which is currently green or yellow.

When rst = 1, the value of count is set to 1 and value of actSignal as 2 (as given in the question). In the output as L2 should be green and rest all should be red then the output corresponding to this is r = "11011" y = "00000" and g = "00100". Then for each clock cycle I increment count by 1, but when count = 12 or count = 13 and actSignal = 0 or 2 or 3 ( when count = 12 the green light is on for 60 seconds for the actSignal Lane, thus the color should be changed to yellow for that lane and when the count = 13 the yellow light is active for 5 seconds now this light should be changed to red and next lane should be green). So if count = 12 then change

the signal color from yellow to green and set the count = 13.

Elseif count = 13 then we need determine the next lane which will be green and set the current actSignals yellow signal to red. On the value of actSignal , tr1,tr4 the next actSignal is determined.

If :

actSignal = 0 and tr1 = 1 → next actSignal = 1

actSignal = 0 and tr1 = 0 → next actSignal = 2

actSignal = 2 → next actSignal = 3

actSignal = 3 and tr4 = 1 → next actSignal = 4

actSignal = 3 and tr4 = 0 → next actSignal = 0

by determining actSignal for next state for current actSignal = 0 or 2 or 3 now set red light of this new actSignal to 0 and green light to be 1 and set count = 1.

Now elseif count = 6 or 7 and actSignal = 1 or 4 (here count = 6 will say that the green light for lane 1 or 4 is already active for 30 seconds and count = 7 when the yellow light is already active for 5 seconds and need to be changed to red), if count = 6 the change the color from green to yellow for actSignal lane. Else change the color for the current actSignal for yellow to red and determine next lane:

If :

actSignal = 1 ➡ next actSignal = 2

actSignal= 4 ➡ next actSignal = 0

now change the color for actSignal from red to green.

# THANK YOU