CS226 PART - I REPORT

Traffic Lights for a two-way road

Potnuru Veda Vikas (1601CS31)

Sathvikesh Damala (1601CS40)

ABSTRACT

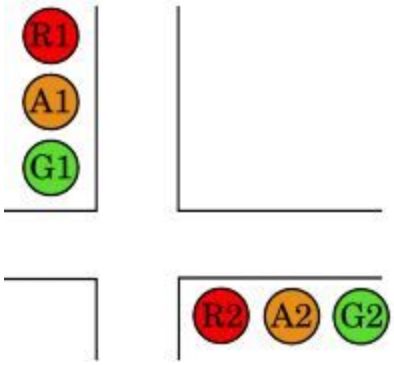
This project is a logisim simulation which gives out traffic lights red, orange and green for a two-way road. The simulation works for two cases, one being for a quiet road and other a busy road.

HOW DOES THIS WORK

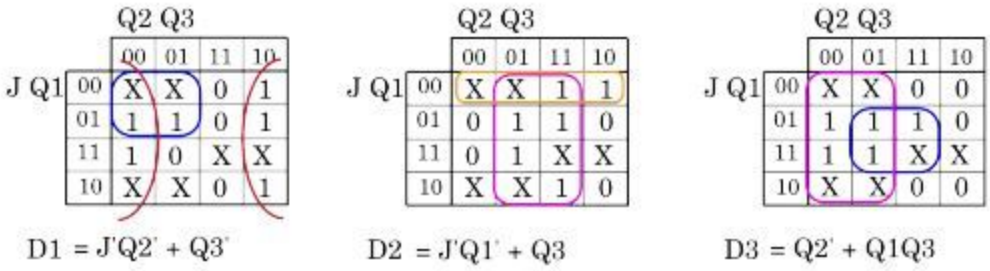
There are six lights to operate. The Red, Amber, and Green lights in the North-South direction will be designated as R1, A1 and G1. Similarly, the lights in the East-West direction will be called R2, A2, and G2. When the digital signals are in the Logic-1 state they turn their respective lights on, otherwise the lights are off. A digital clock signal will be supplied and at each clock pulse the lights should change according the schedule given above. The design of the circuit that produces the clock pulses at appropriate times will not be considered here. There are two types of road crossing: quiet crossings that use a simple sequence and busy crossings require a longer (delayed green) sequence. Some junctions may use the busy sequence during the day and the quiet sequence at night. One digital input signal called J (for junction type) will indicate whether the road crossing is considered quiet. J=0 denotes a busy junction and J=1 a quiet one. Thus, we have a one-input, six-output synchronous system to design.

STATES AND THEIR SEQUENCING

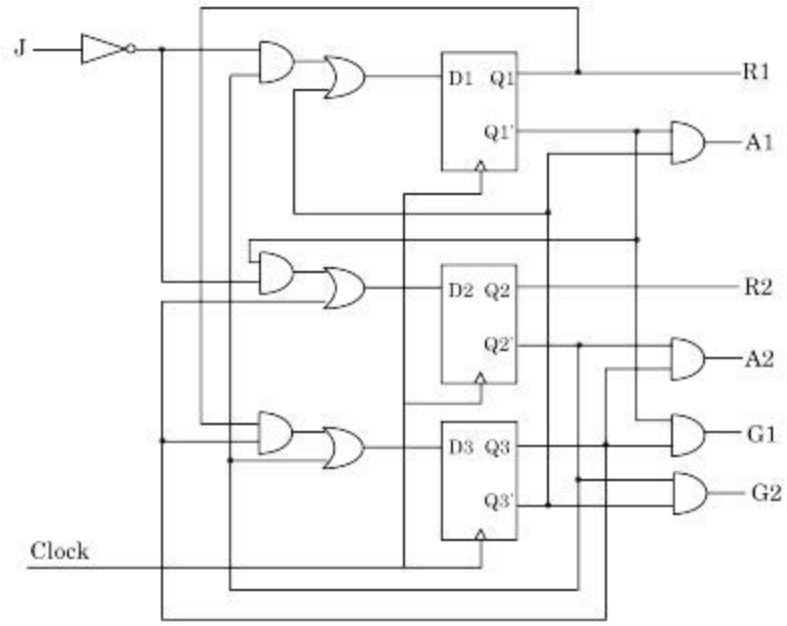
There are six states as we can observe each for one light.



J	State(t)	Q1	Q2	Q3	State(t+1)	D1	D2	D3
0	7	0	0	0	X	X	X	X
0	8	0	0	1	X	X	X	X
0	1	1	0	0	2	1	0	1
0	2	1	0	1	3	1	1	1
0	3	1	1	1	4	0	1	1
0	4	0	1	1	5	0	1	0
0	5	0	1	0	6	1	1	0
0	6	1	1	0	0	1	0	0
1	7	0	0	0	X	X	X	X
1	8	0	0	1	X	X	X	X
1	1	1	0	0	2	1	0	1
1	2	1	0	1	4	0	1	1
1	3	1	1	1	X	X	X	X
1	4	0	1	1	5	0	1	0
1	5	0	1	0	1	1	0	0
1	6	1	1	0	X	X	X	X



THE CIRCUITRY



CONCLUSION

The project is a simulation of the above specified traffic model. The output shows up for two different cases as mentioned above for a quiet road and a busy one. This model is actually a European Style Traffic Model. The logisim file has been attached herewith.