Assignment's Topic
Crossroad Traffic Light

By Group 8

Members list

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- **<u>Technique</u>**:

- Signal Phasing: If one is red -> other is green and vice versa. And there is 1 second that both light are red
- Order:

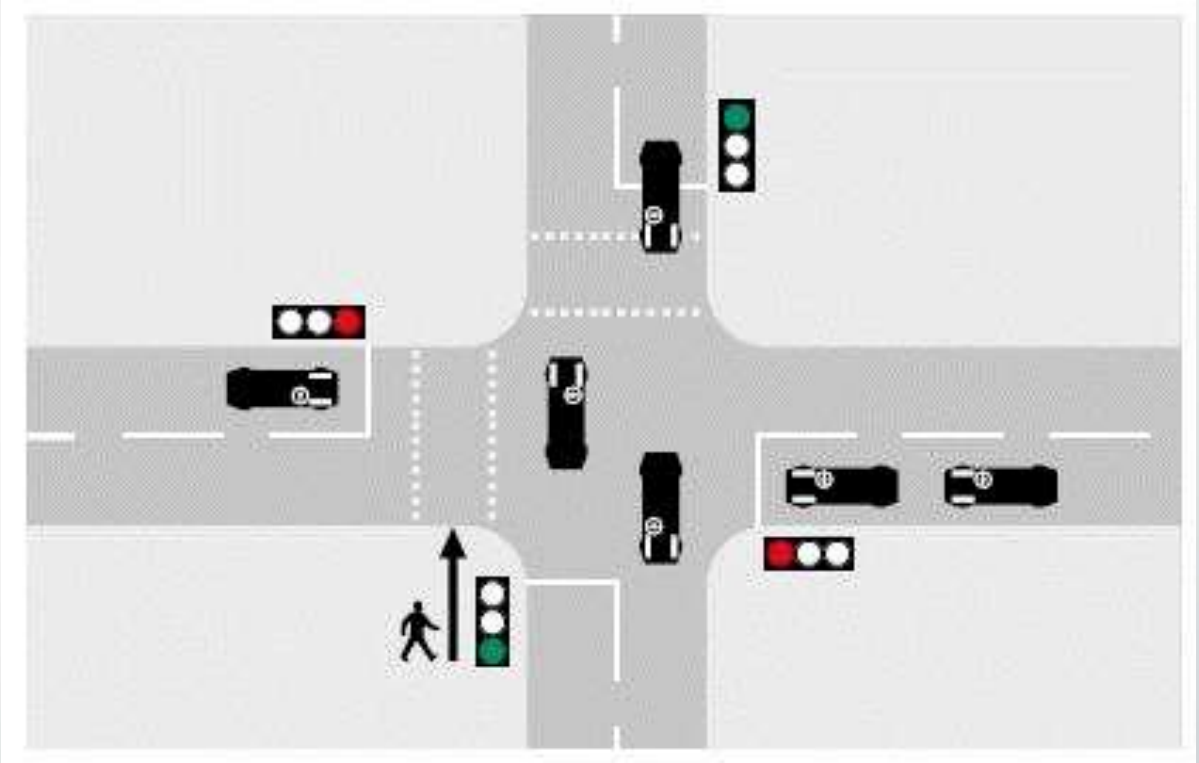
Red -6s-> Green -3s-> Yellow -2s-> Red

- Mechanism to increase and decrease the time of each light

- **<u>Application:</u>**

- reduce traffic congestion
- Control traffic without police
- Ensure safety for traffic participants

- In other cases when the traffic density is low, only the yellow light is on and blinks once every 5 seconds



Basic Knowledge

- Equipment:

+ Arty z7-20

+ Experimental board

- Input:

+ 2 switches: 1 decides the traffic light's mode; 1 decides to increase or decrease the time of the light

+ 3 buttons: each button will increase (or decrease) the time the light stays on when pressed

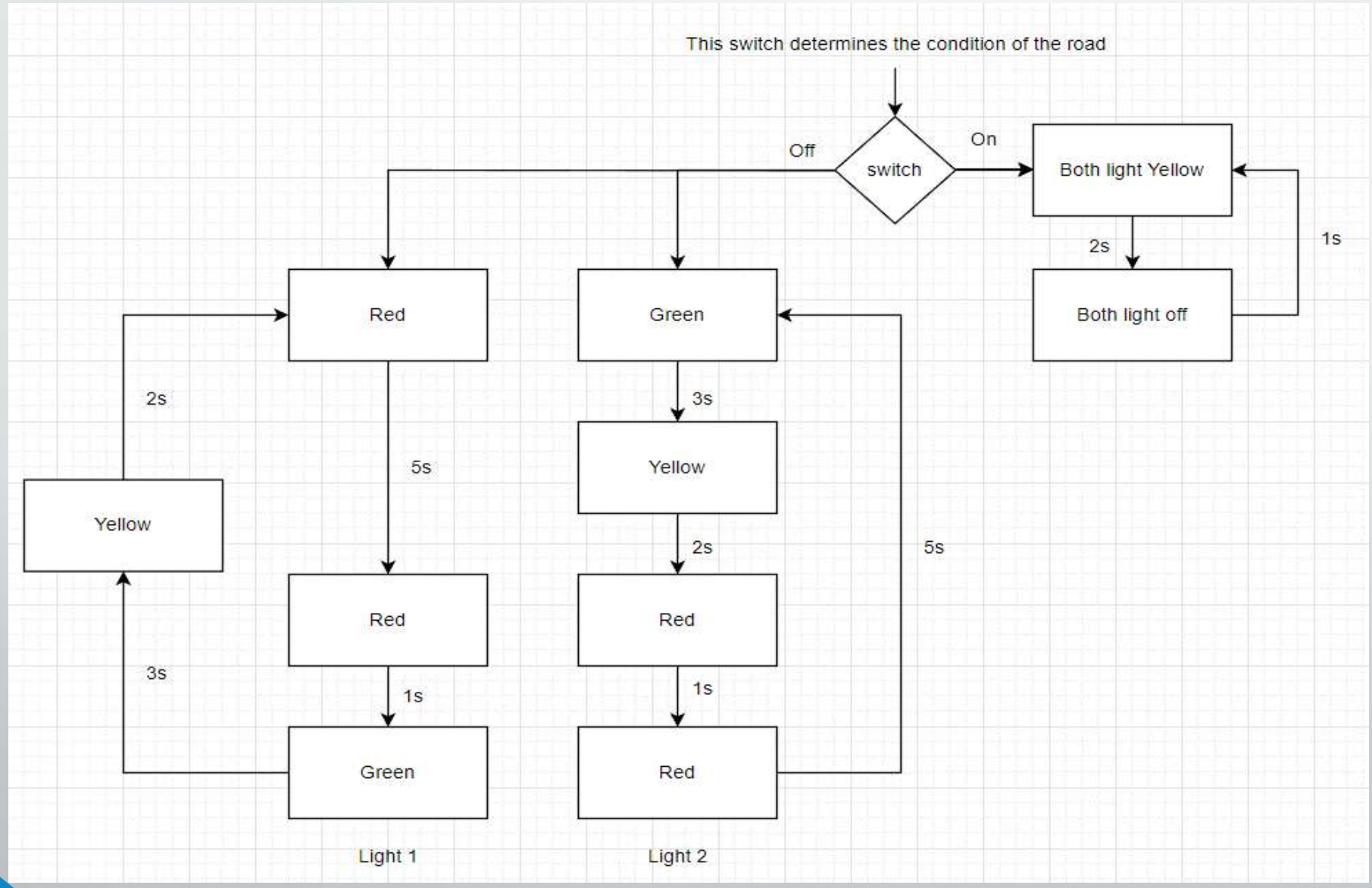
- Output:

+ 4 traffic lights (each has 3 colors including red, yellow and green)

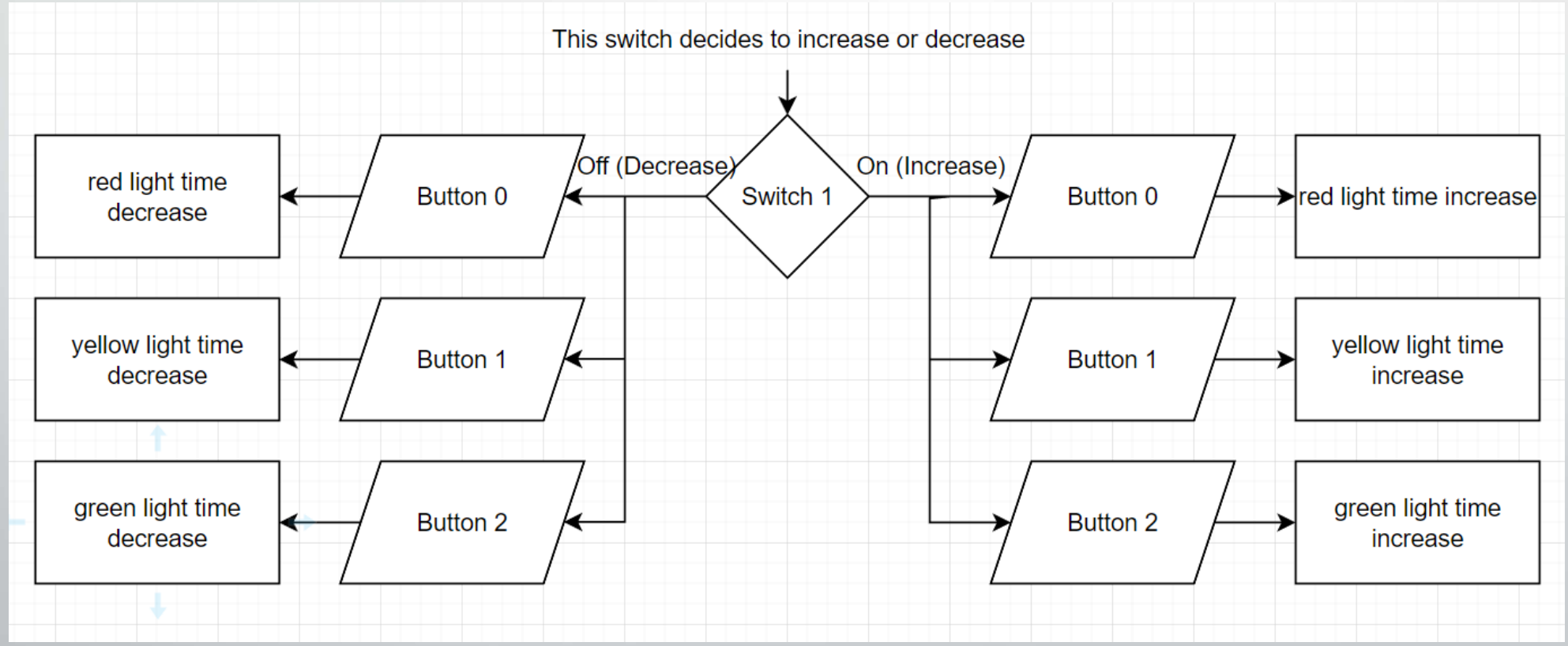
+ 7-segment led display

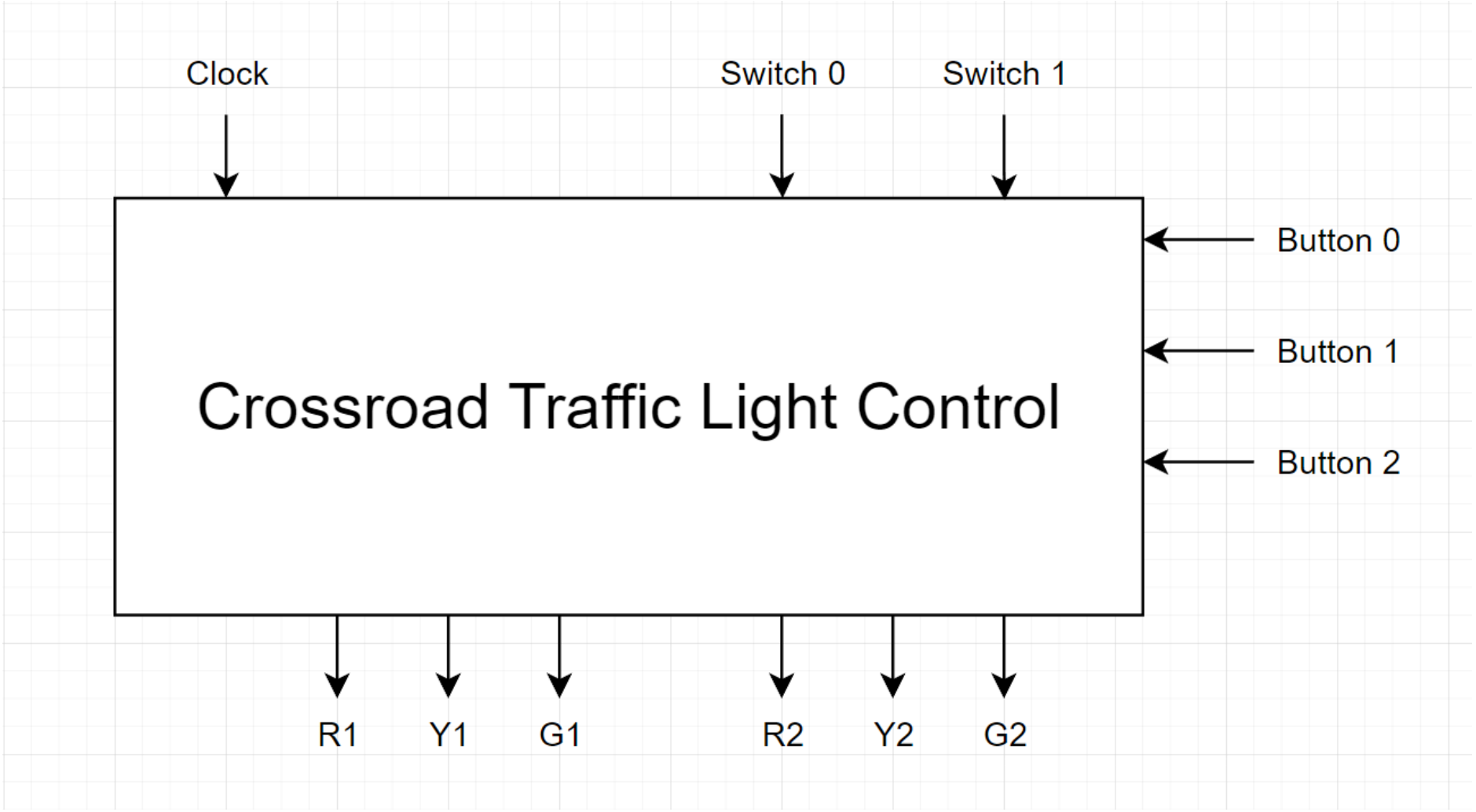
Architectural Design

Mechanism of action



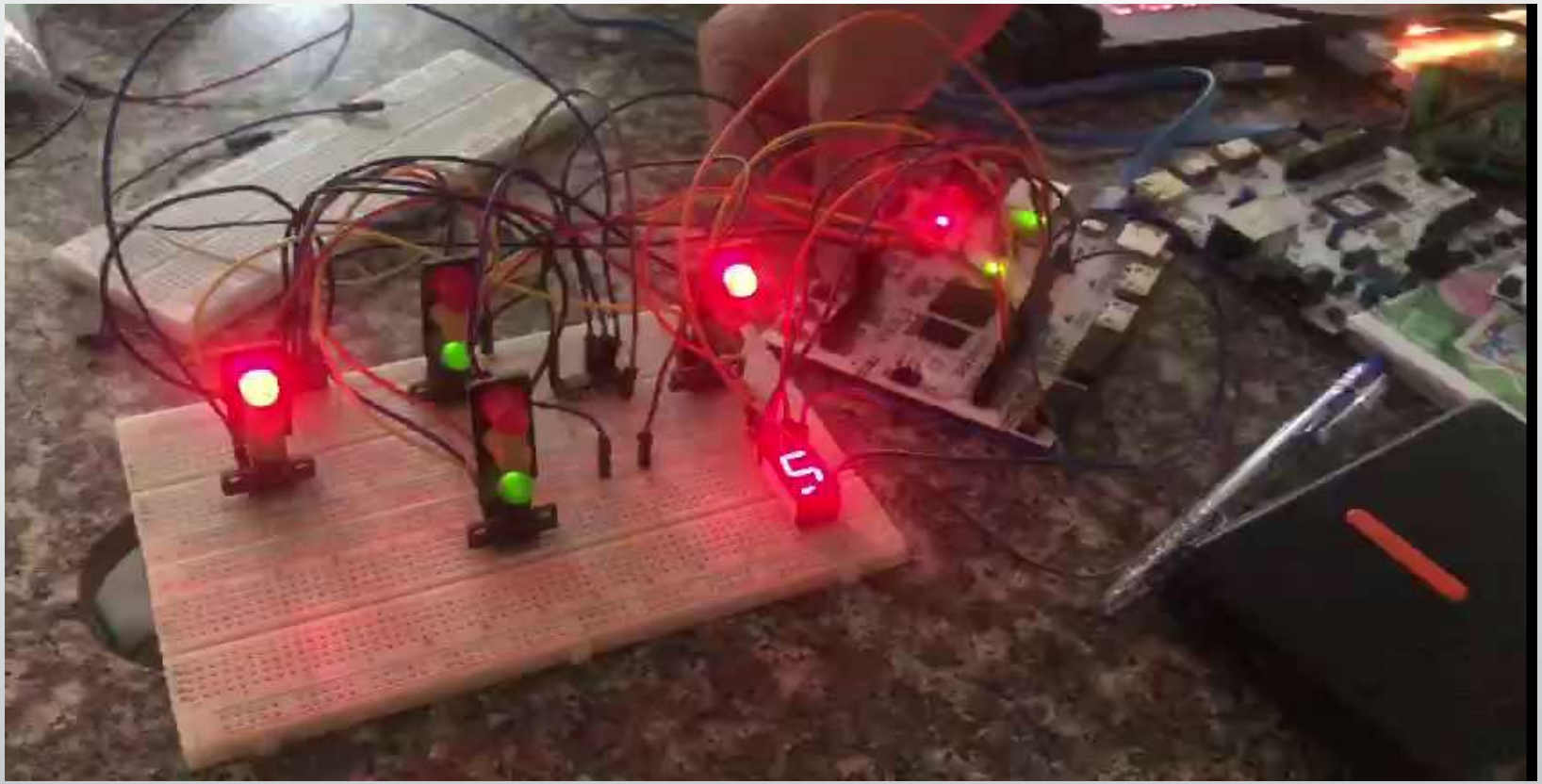
Mechanism of increasing and decreasing time




Clock
Switch 0
Switch 1
Button 0
Button 1
Button 2
Crossroad Traffic Light Control
R1
Y1
G1
R2
Y2
G2

Implementation and Results

https://www.youtube.com/watch?v=8MuWVIdPhXk



Conclusion

- Crossroad traffic light module is an integral part of traffic management systems in modern cities and towns.
- They provide a structured way to manage the flow of traffic and prevent accidents at busy intersections.
- Traffic lights work by using a system of red, yellow, and green lights to create signal when vehicles and pedestrians should stop, proceed with caution, or move freely.