



# **CSE316**

## **Microcontrollers and Interfacing**

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### **Final project**

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# 1. FIRST MILESTON

Creating two cars traffic lights working together :  
components:

Timer0A: 1second timer

PortF: pin2 → Green light

pin3 → Yellow light

Pin4 → Red light

PortB: pin2 → Green light

pin3 → Yellow light

Pin4 → Red light

implementation:

create FSM use statue condition

Second	First Traffic Light	Second Traffic Light	Statue
0	Green	Red	Statue0
1	Green	Red	Statue1
2	Green	Red	
3	Green	Red	
4	Green	Red	
5	Yellow	Red	Statue5
6	Yellow	Red	
7	Red	Red	Statue7
8	Red	Green	Statue8
9	Red	Green	
10	Red	Green	
11	Red	Green	
12	Red	Green	
13	Red	Yellow	Statue13
14	Red	Yellow	
15	Red	Red	Statue15
16	Green	Green	Statue16

Implement this Timer0 handler

## 2. SECOND MILESTON

components:

PortC: First pedestrian

Pin4→input (interrupt)

Pin5→Green light

Pin6→Red light

PortD: second pedestrian

Pin2→input(interrupt)

Pin3→Green light

Pin6→Red light

Timer1:for First pedestrian

Timer2: for second pedestrian

## 3. BONUS PART

### 3.1 Handling first case:

When two pedestrians pushed the button together in two different traffics

- Both pedestrian lights turn into green and both traffic lights turn into red for two seconds.
- After 2 seconds both pedestrian lights turn into red and the traffic lights return to their previous states.

Use two timers each one for each pedestrian to maintain this part

### 3.2 Handling Second case:

When the same button was being pressed more than one time during the same period of pedestrian crossing.

- The pedestrian lights ignore any new button pressings and continue its 2 second time.

Implementation:

Use if condition to check green value for register of pedestrian and return if true

### 3.3 Handling Third case:

Delaying the request of the pedestrian to cross if the button was pressed after 1 second from the end of the Period of pedestrian crossing.

- The pedestrian lights delay any new button pressings until 1 second has passed from the last

Use flag disable it in the end of Timer ISR and enable it after one second in Timer0 interrupt