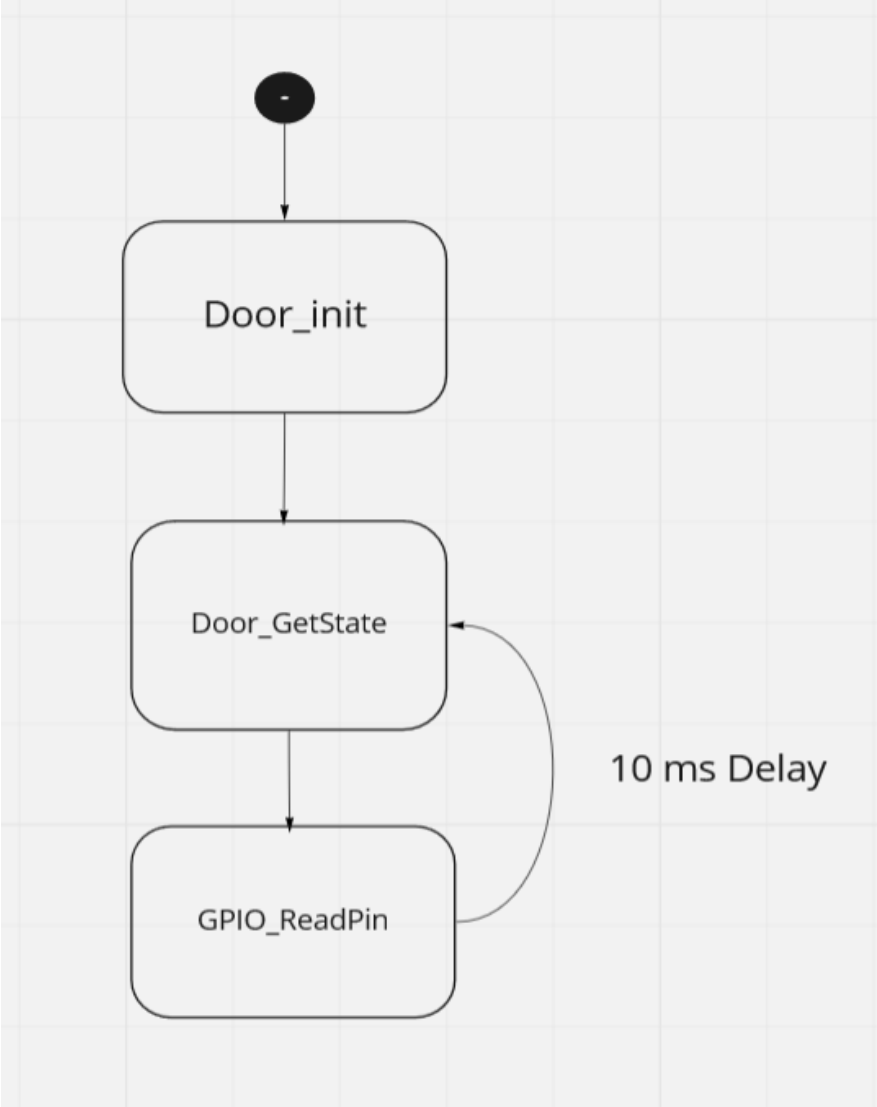
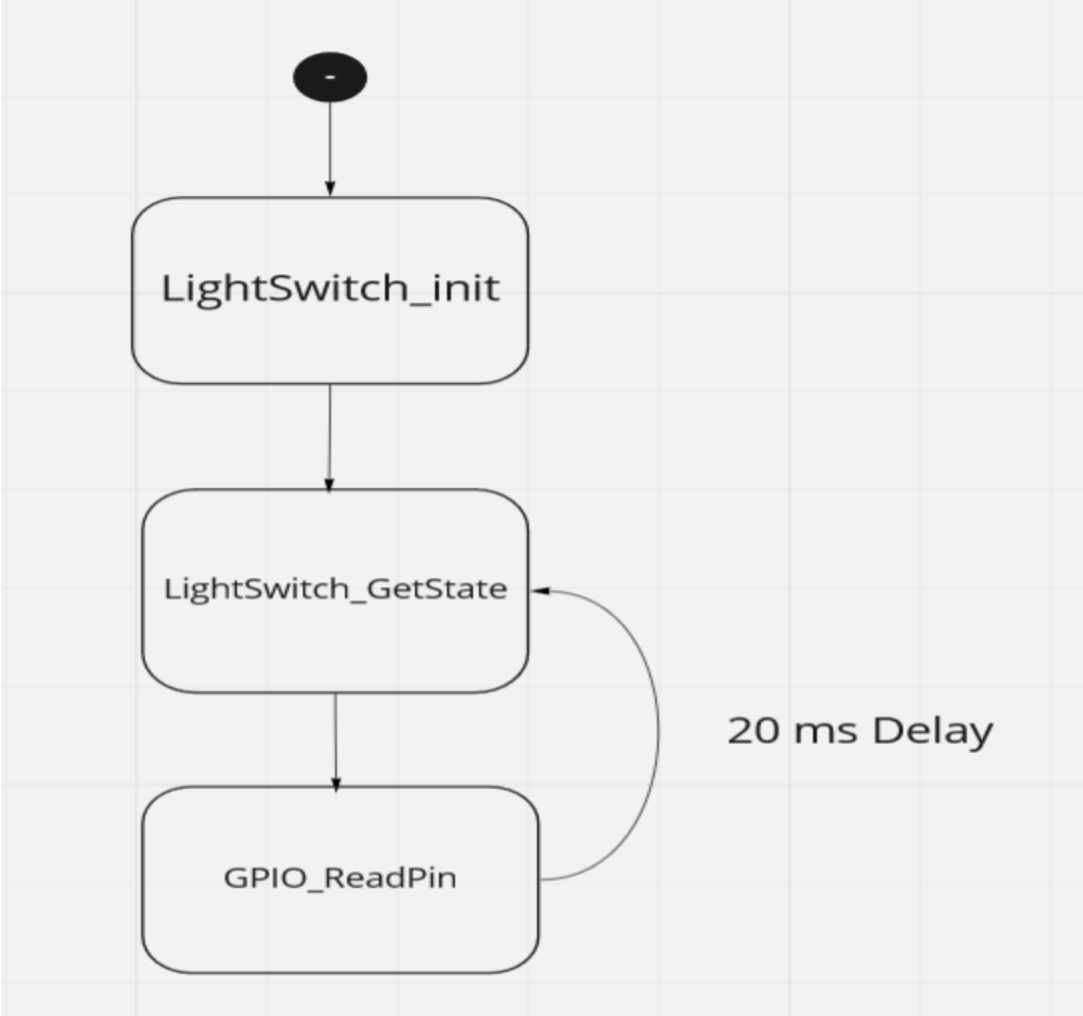
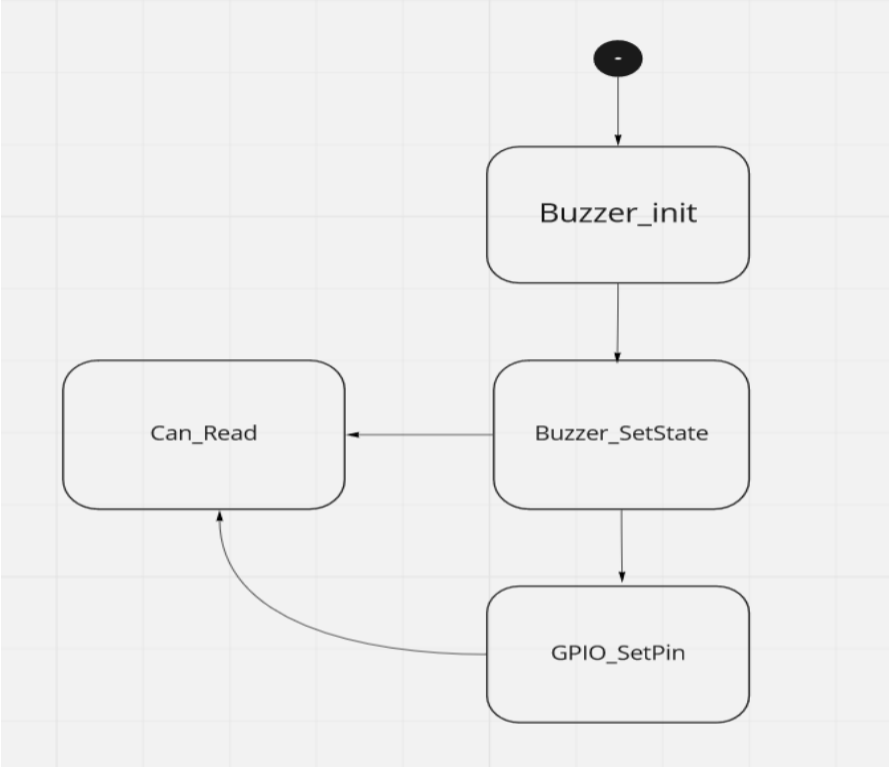
Components State Machine
1-Door Sensor State machine



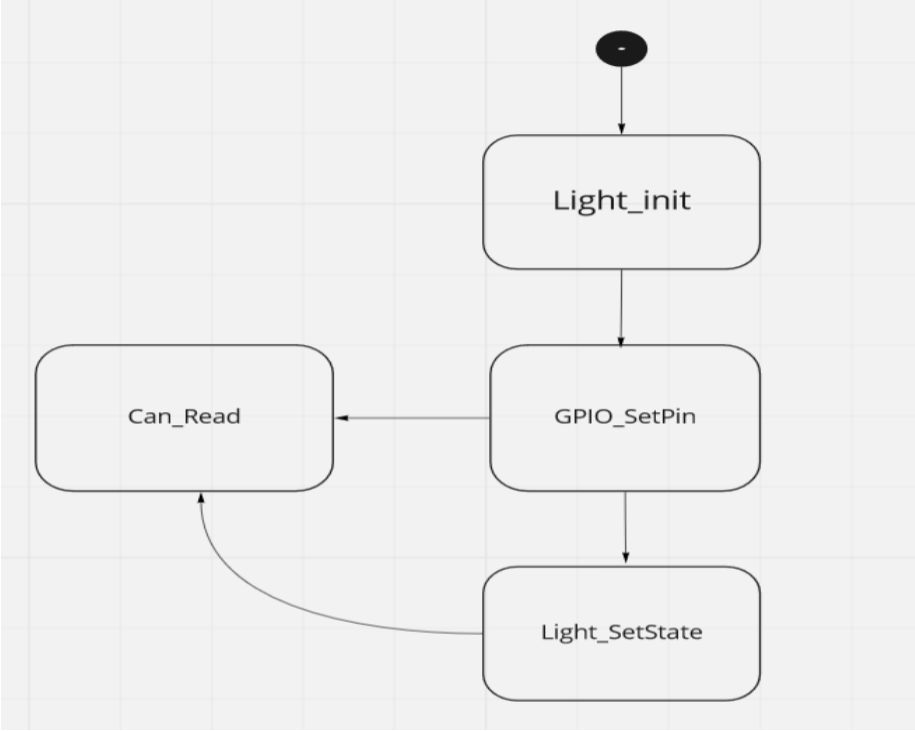
2-Light switch State Machine



3-Buzzer State machine

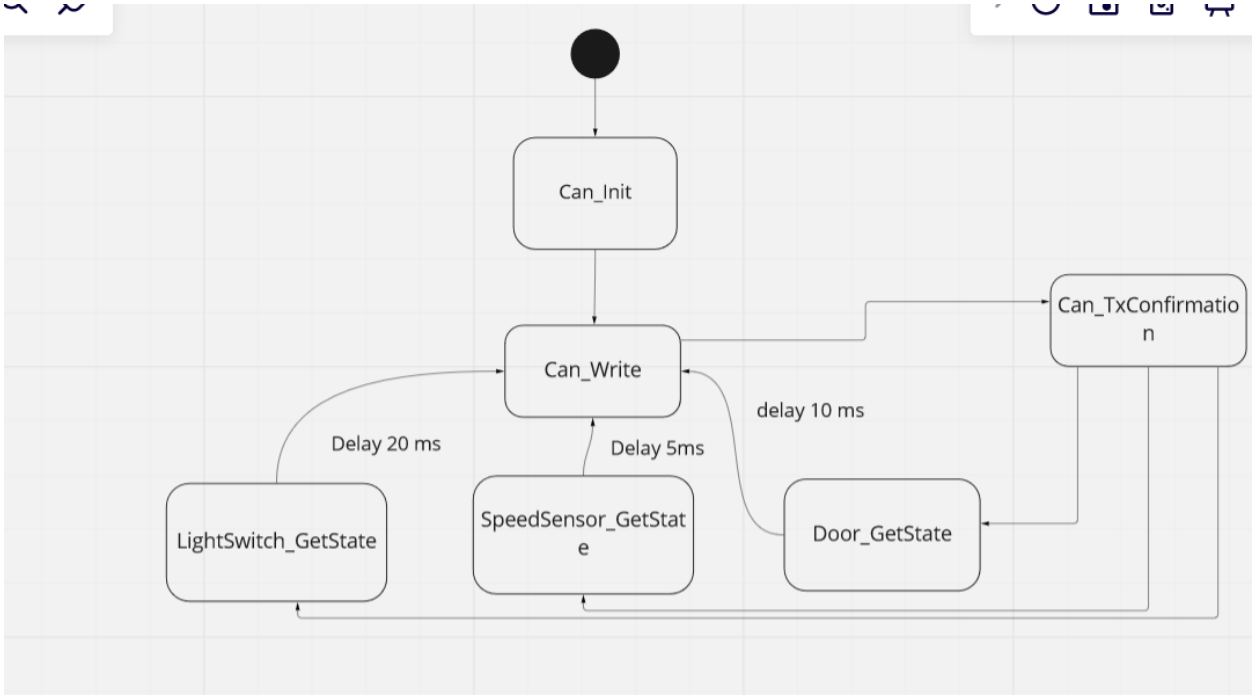


4-Light State machine

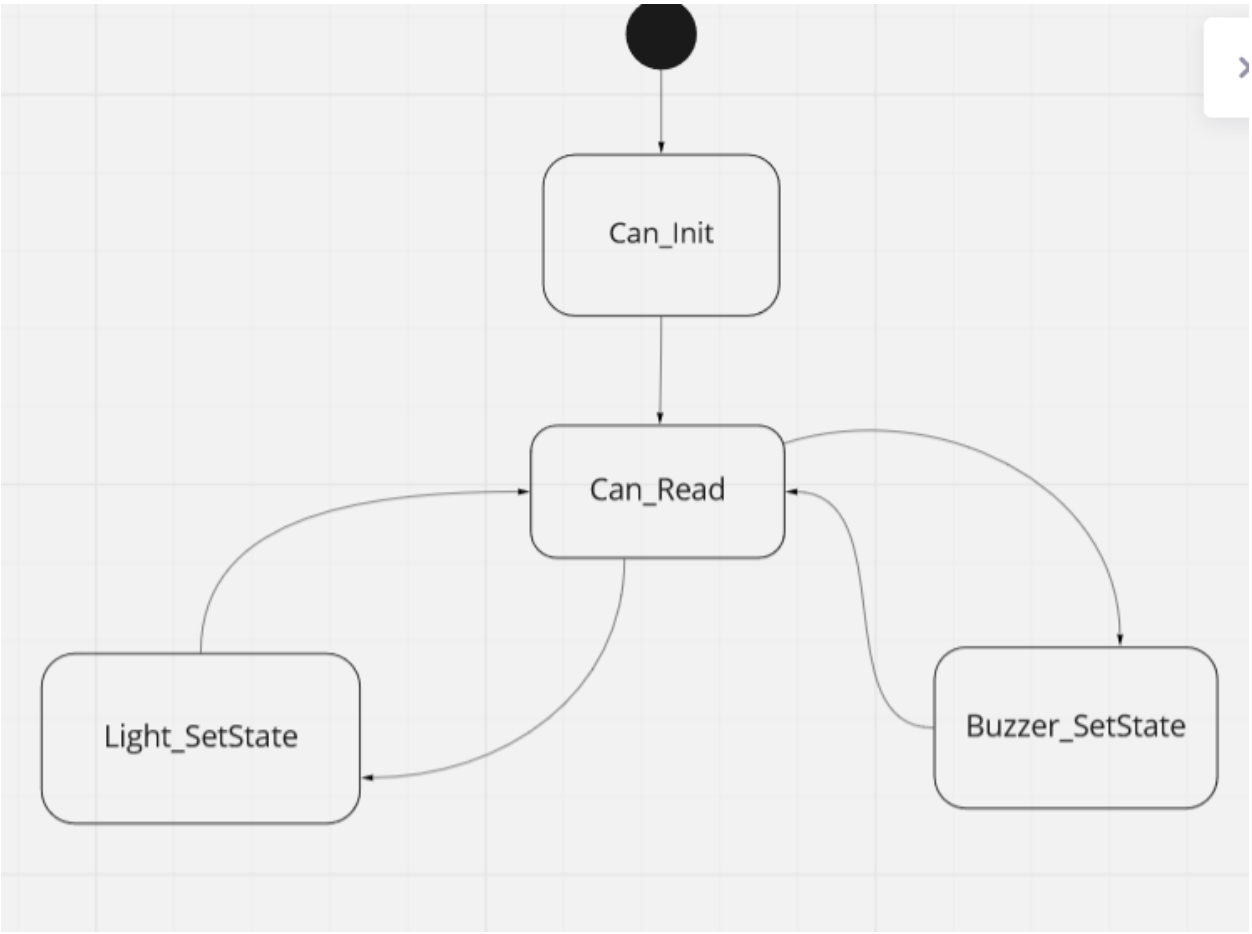


5-CAN state machine

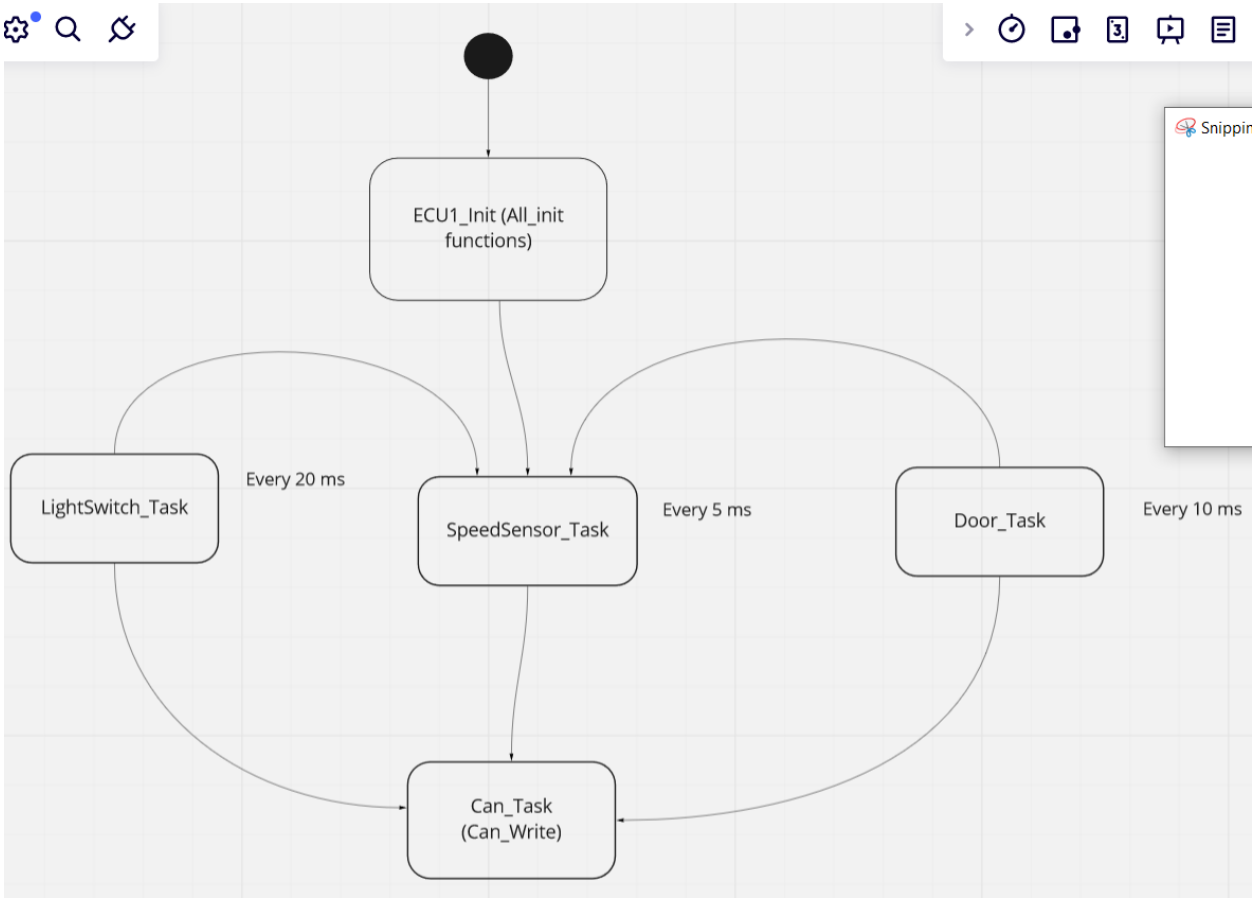
ECU1



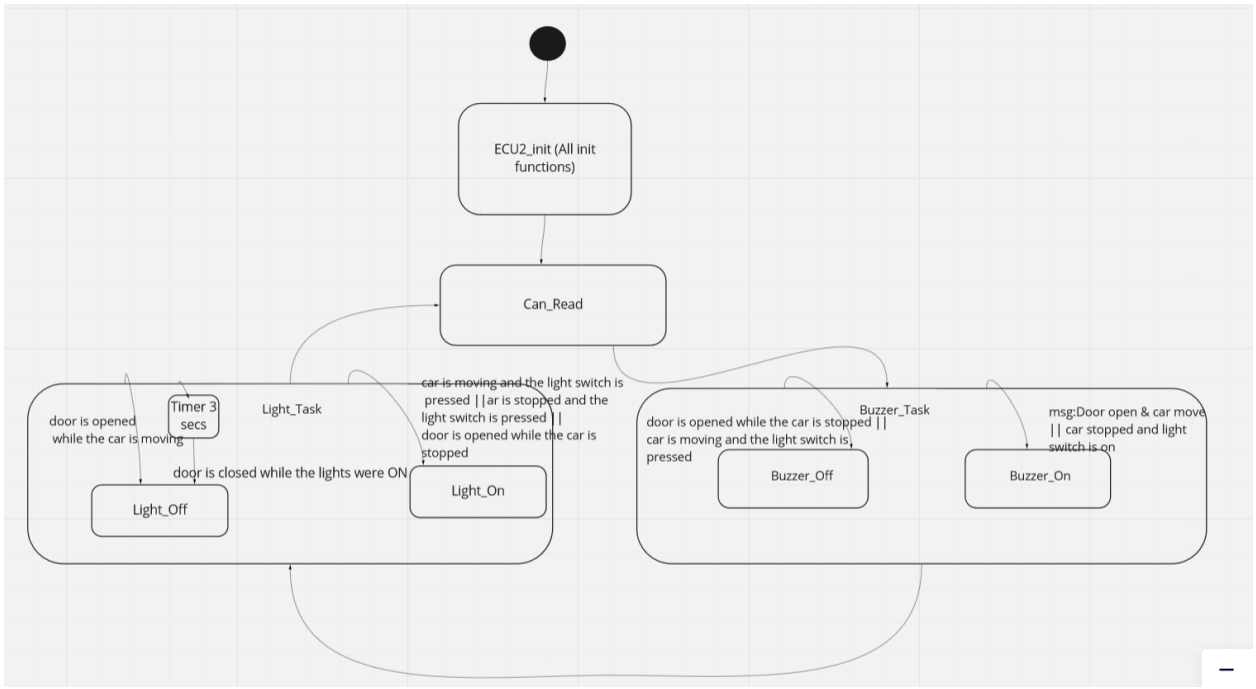
ECU2



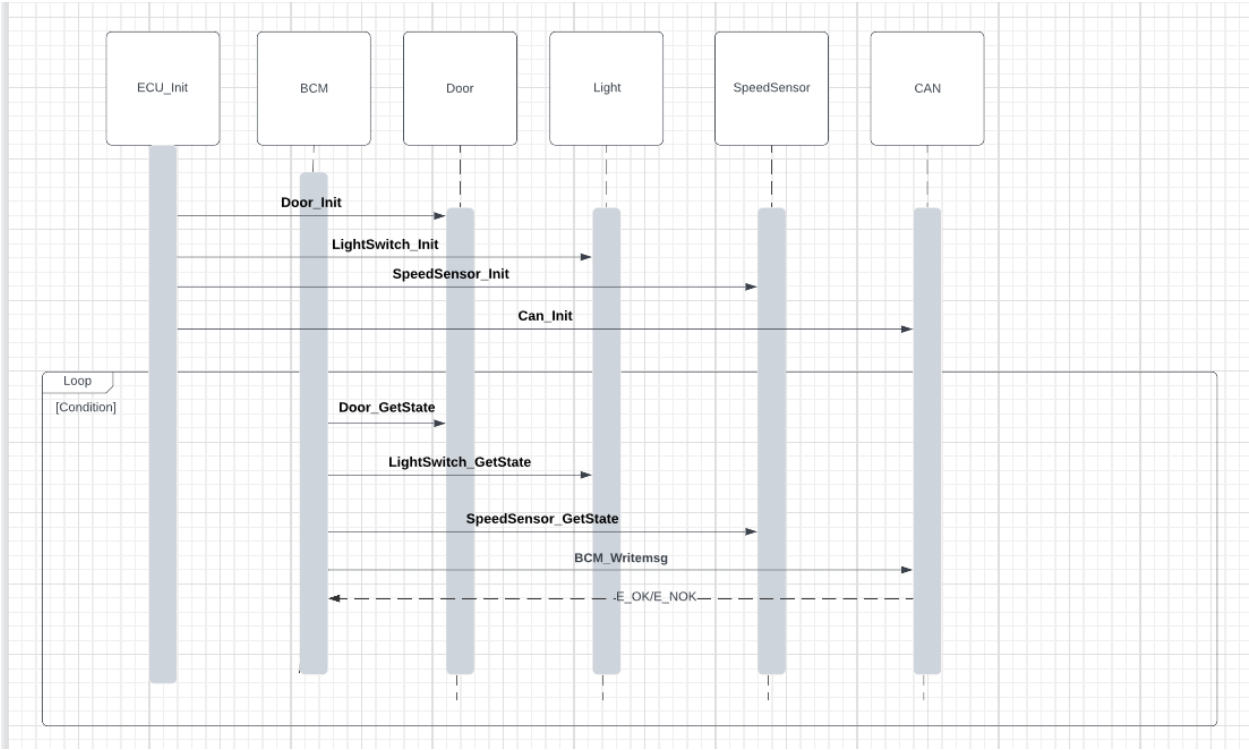
State machine for The operations
ECU1


ECU1_Init (All_init functions)
LightSwitch_Task
Every 20 ms
SpeedSensor_Task
Every 5 ms
Door_Task
Every 10 ms
Can_Task (Can_Write)

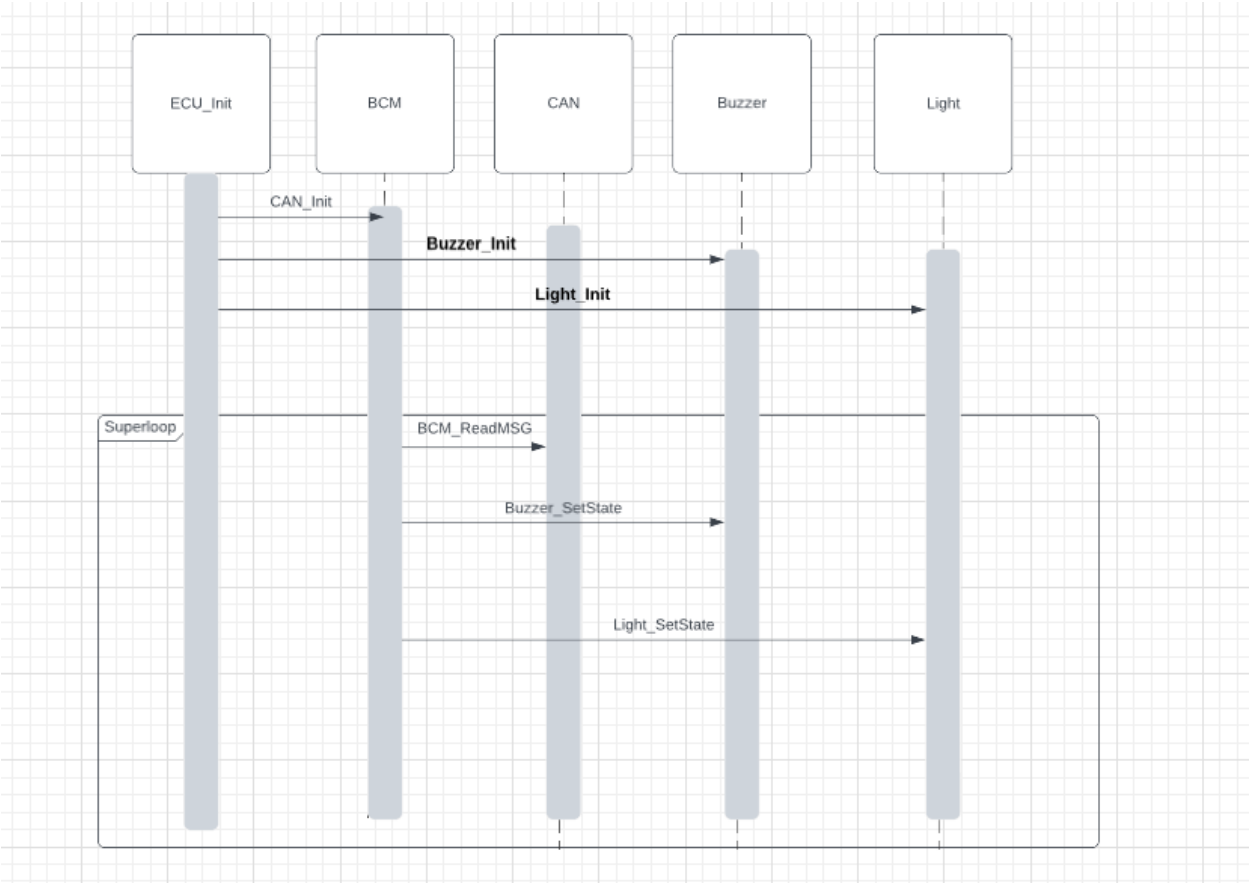
ECU2


ECU2_init (All init functions)
Can_Read
Light_Task
door is opened while the car is moving
Timer 3 secs
door is closed while the lights were ON
Light_Off
car is moving and the light switch is pressed ||ar is stopped and the light switch is pressed || door is opened while the car is stopped
Light_On
Buzzer_Task
door is opened while the car is stopped || car is moving and the light switch is pressed
Buzzer_Off
msg:Door open & car move || car stopped and light switch is on
Buzzer_On

ECU1-Sequence diagram



ECU2-Sequence diagram



CPUload for ECU1
Assuming we have 3 tasks
1-Door TASK >Execution time = 5ms
2-Light sensor TASK >Execution time = 10ms
3-SpeedSENSOR TASK > execution time = 4ms
Assuming hyperperiod is 1000ms
Cpu load = totalexectime /hyperperiod * 100 = 1.9 %

CPULOAD for ECU2
Assuming we have 2 tasks
1-Buzzer TASK>Executiontime = 4
2-Light TASK >Executiontime = 4

Assuming hyperperiod is 1000ms
Cpu load = totalexectime /hyperperiod * 100 = 0.8 %