

Automotive

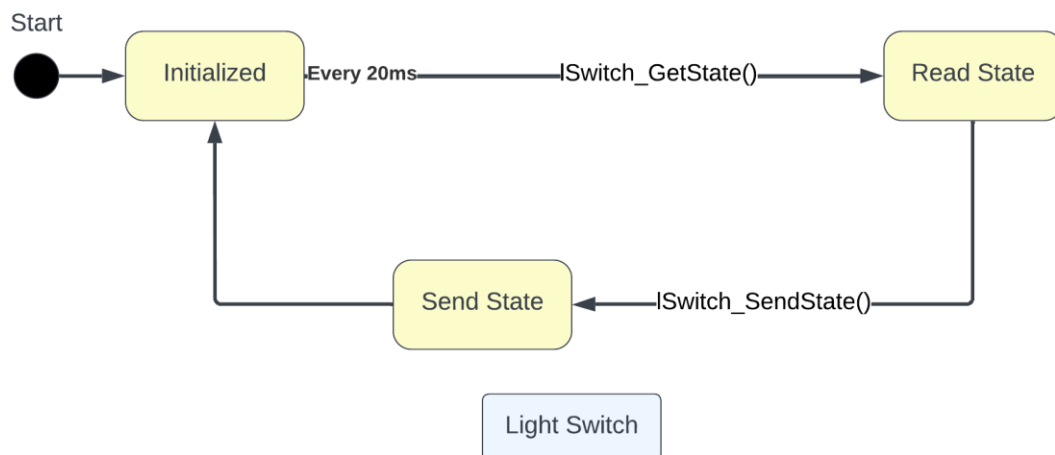
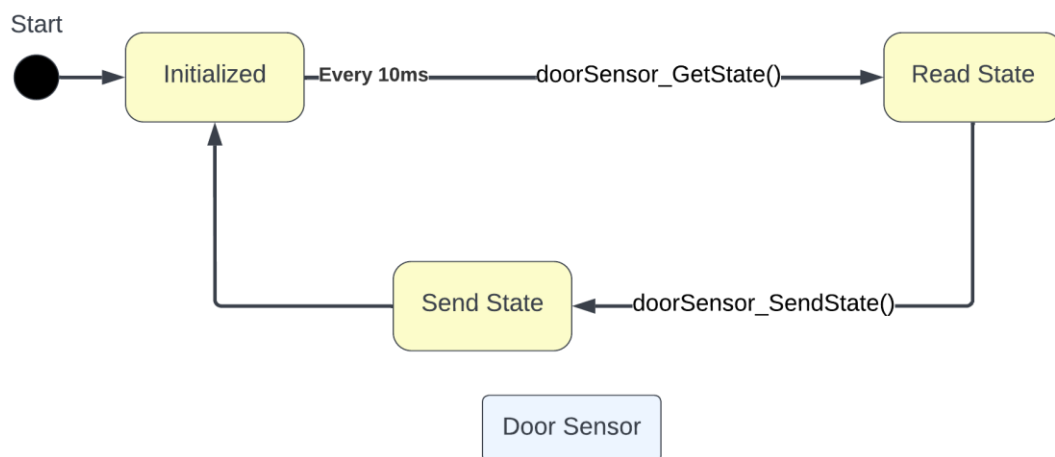
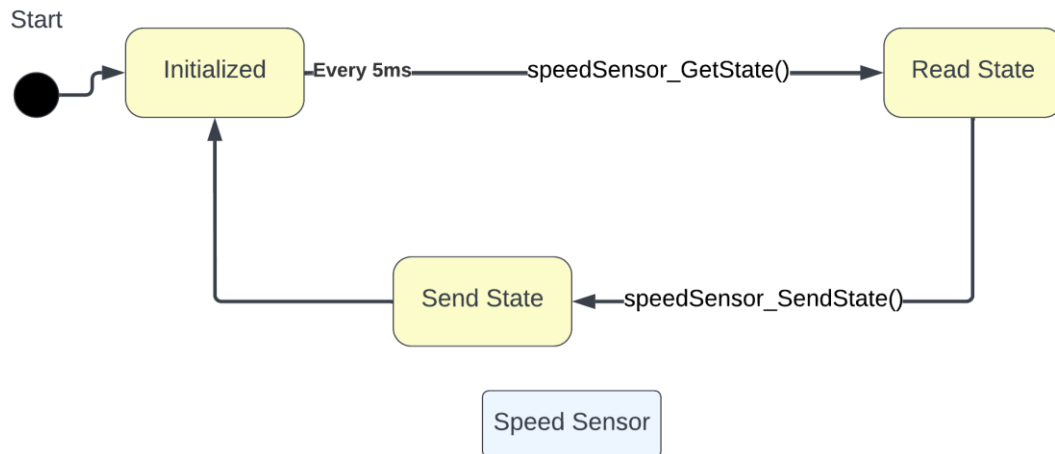
AUTOMOTIVE DOOR CONTROL

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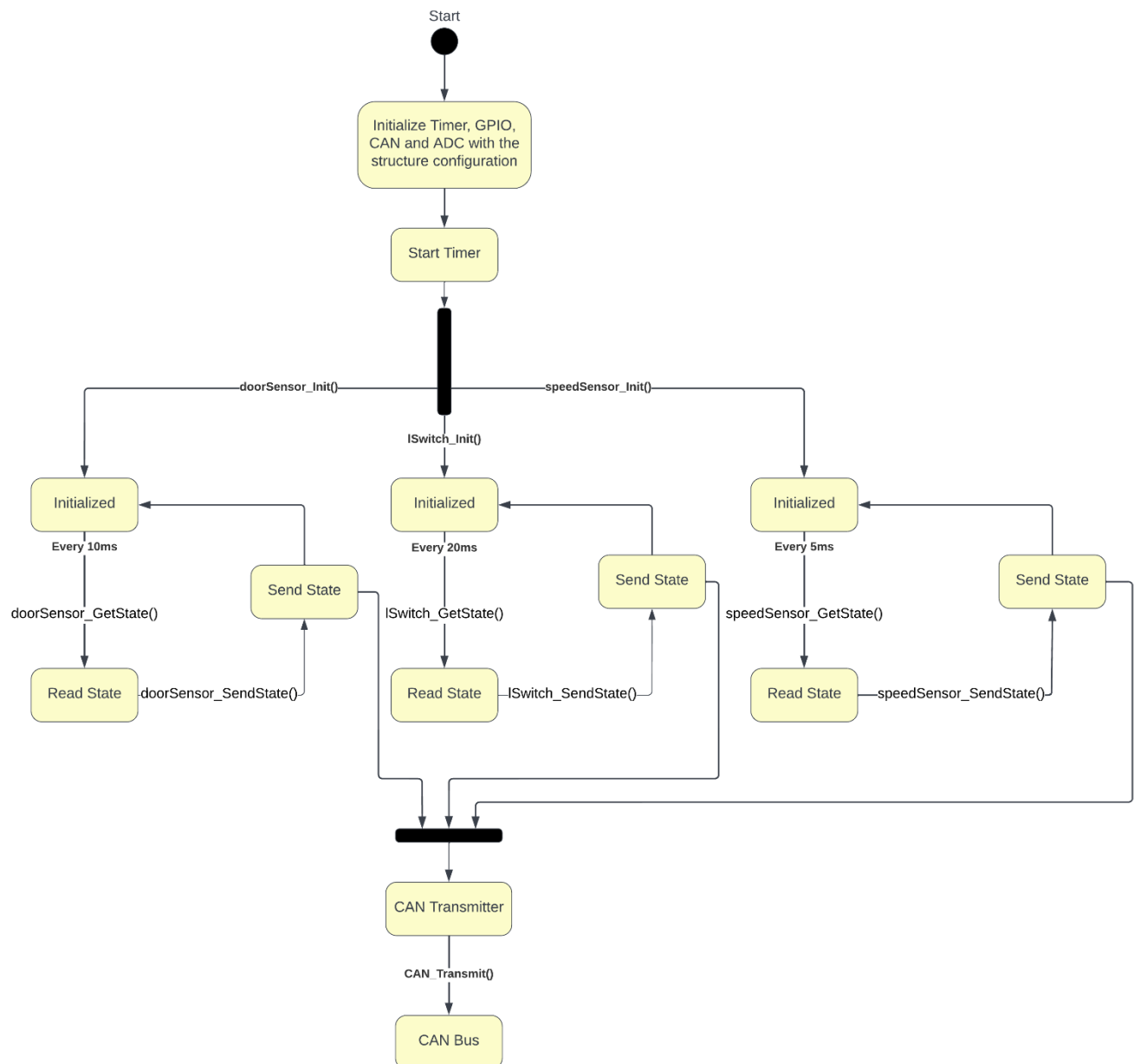
IBRAHIM YASSER

ECU-1

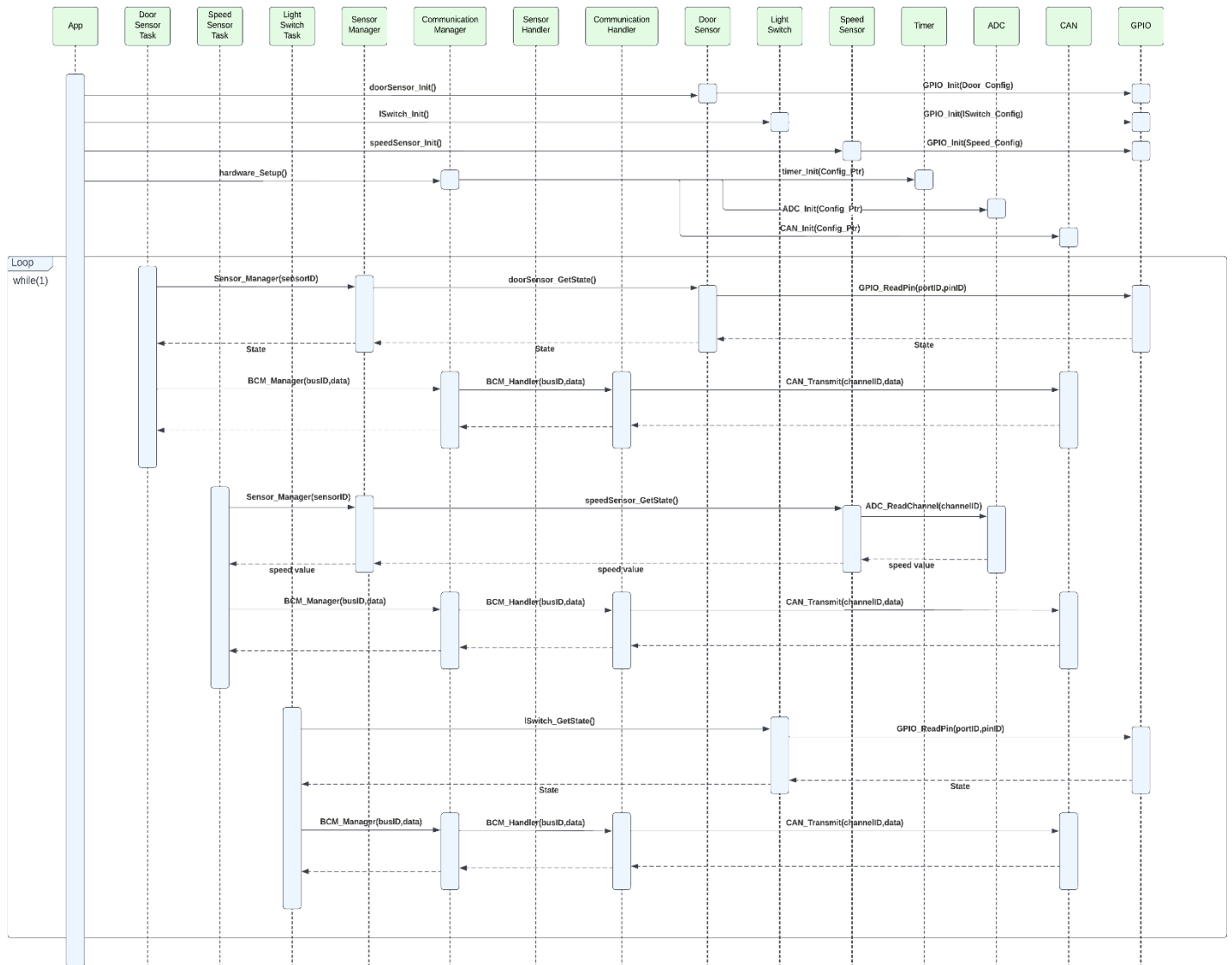
1- State Machine diagram for each component



2- State Machine Diagram for the ECU operation



3- Sequence diagram



4- CPU load

We have 3 tasks in the system. Assume that each task will be execute in maximum 1ms

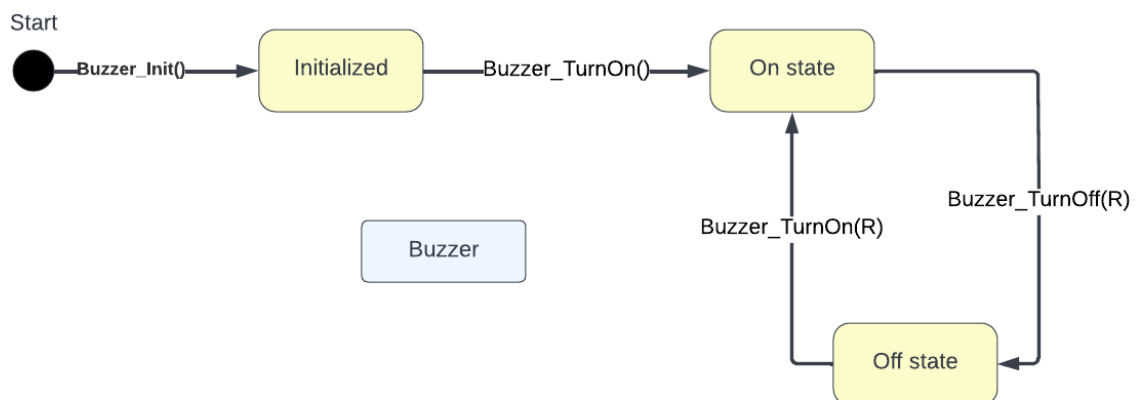
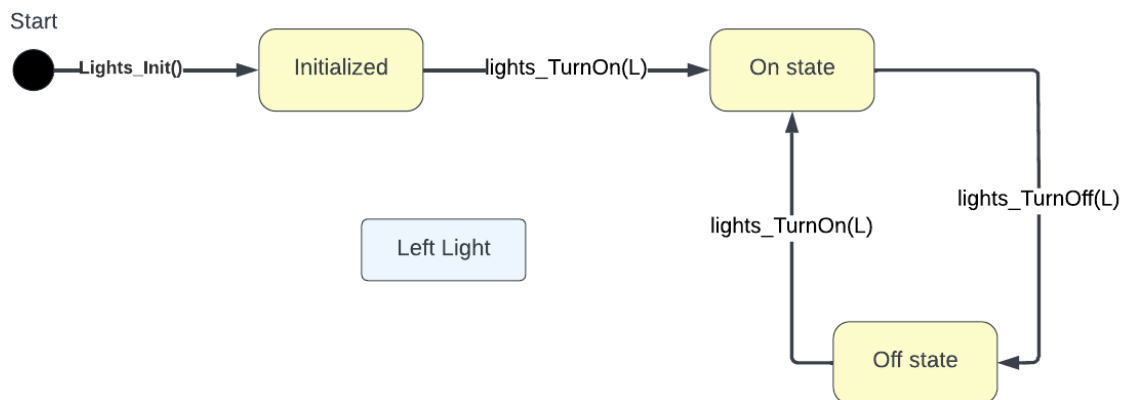
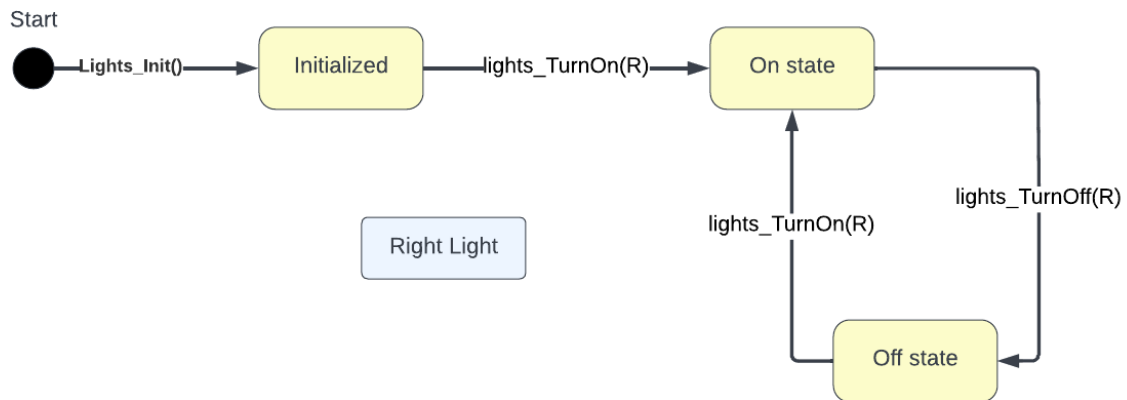
T1 {P:20, E:1}, T1 {P:10, E:1}, T1 {P:5, E:1}

Hyperperiod = 20ms

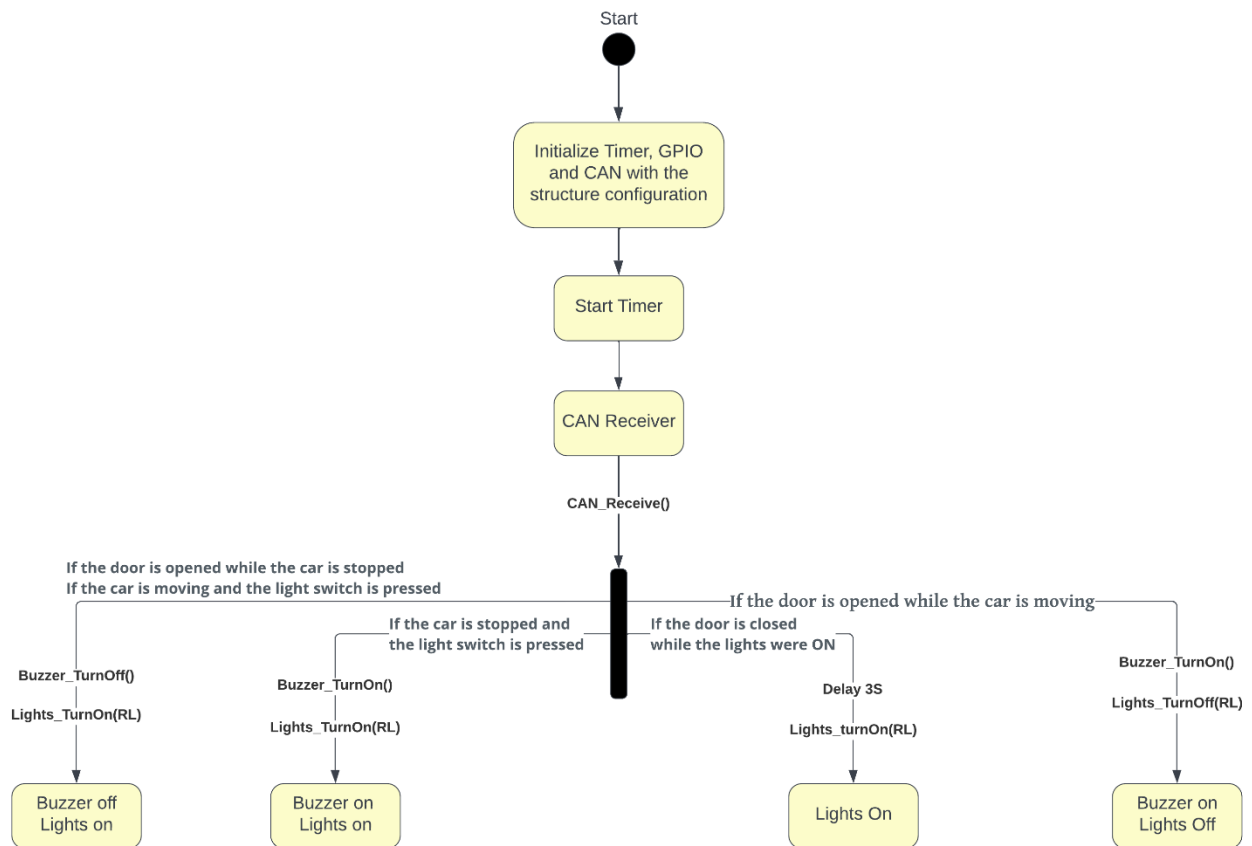
CPU Load = $((1*1) + (1*2) + (1*4))/20 * 100\% = 35\%$

ECU-2

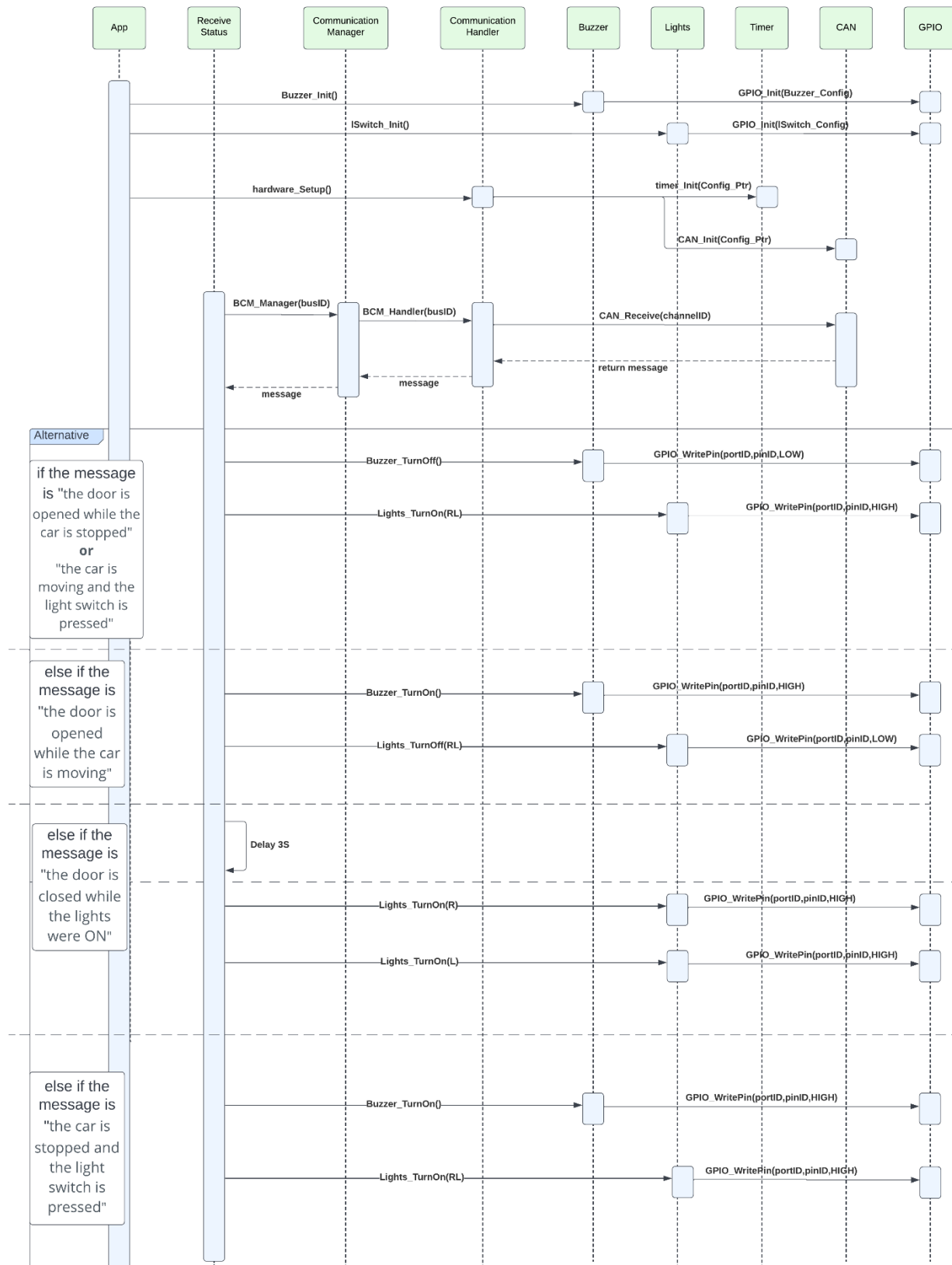
1- State machine diagram for each component



2- State machine diagram for the ECU operation



3- Sequence diagram for the system



4- CPU Load

There is only one task T1 {P: 5ms, E: 2ms}

Assume its execution time is 2 ms

CPU load = $((2 \times 1/5) \times 100\%) = 40\%$