

Abdelkhalek Magdy Eid

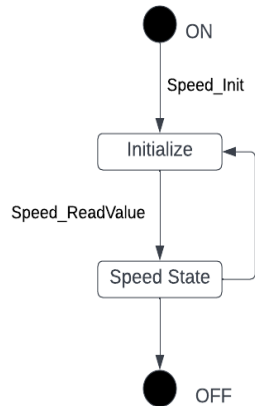
Automotive door control system design

(Dynamic Design)

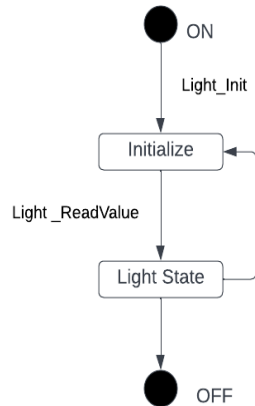
1. ECU 1

- State Machine diagram for each ECU component

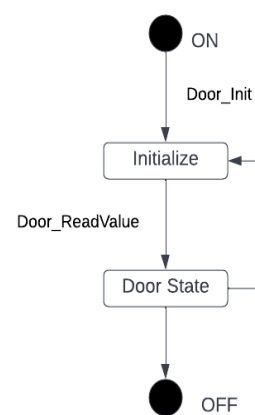
1. Speed Sensor



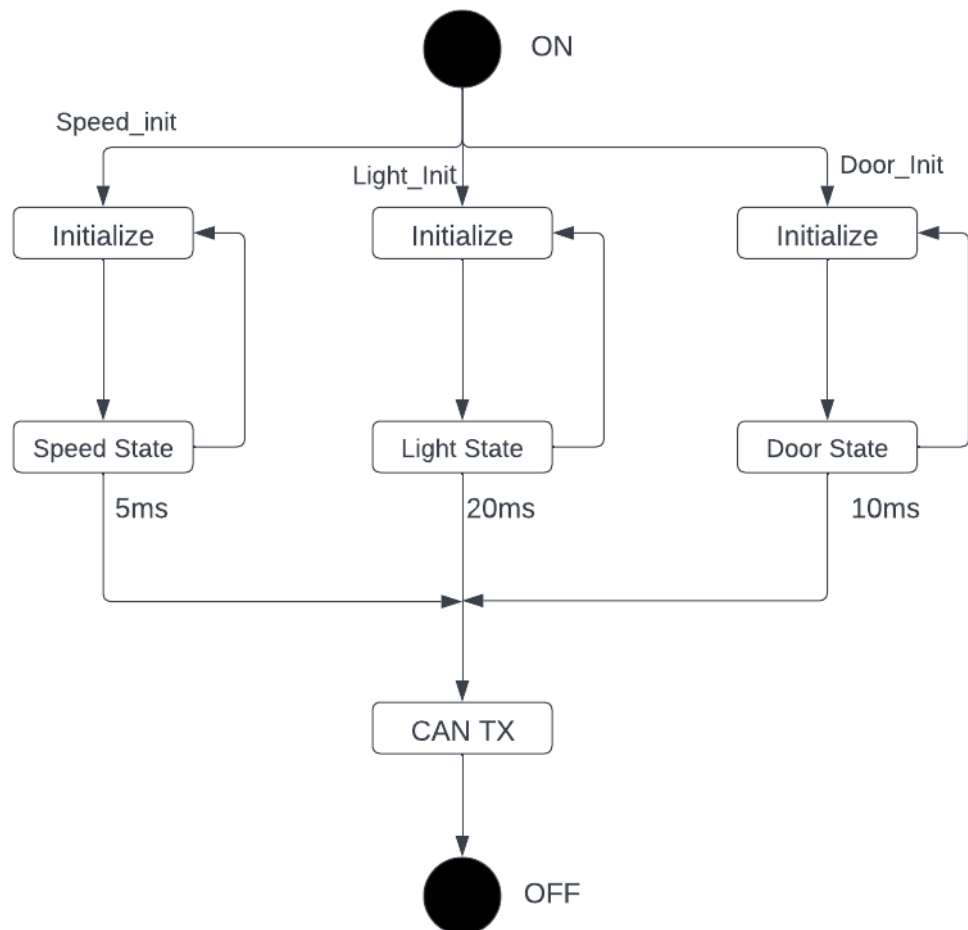
2. Light Switch



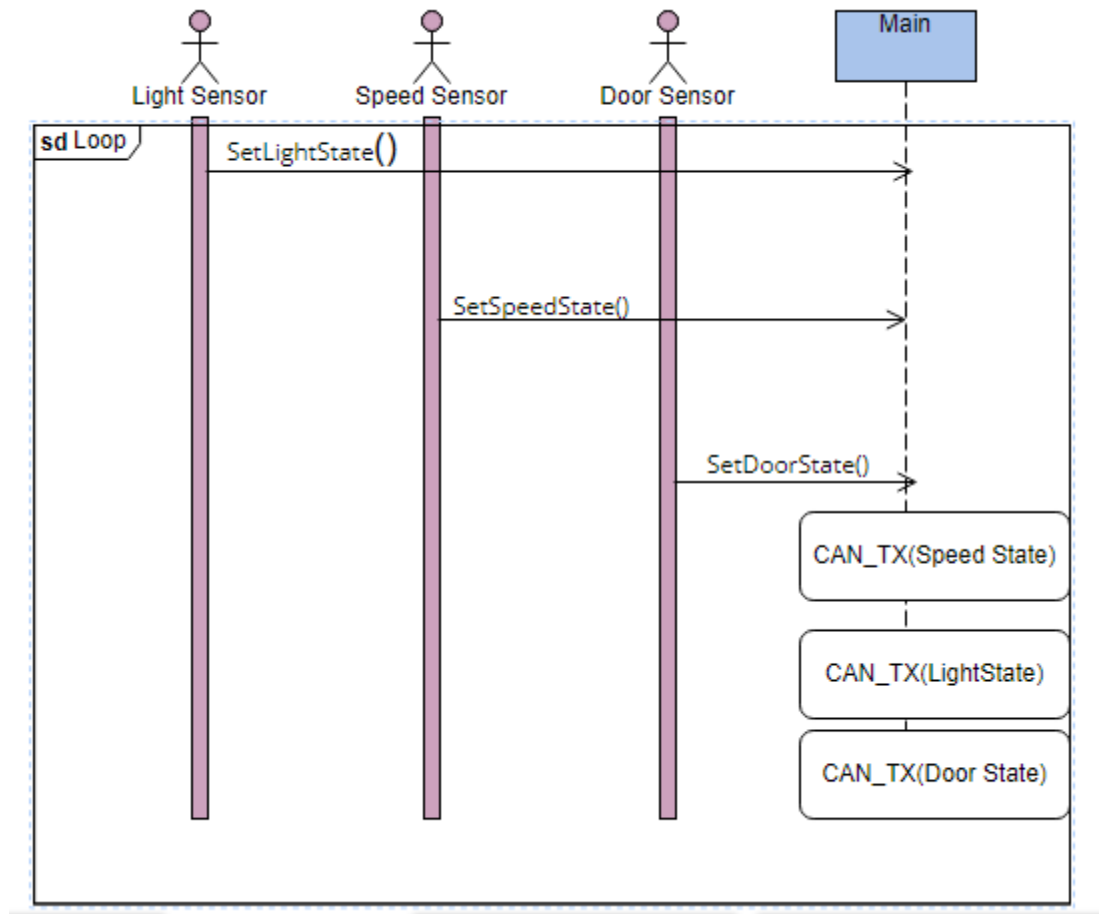
3. Door Sensor



- State Machine diagram for the ECU operation



- Sequence diagram for the ECU



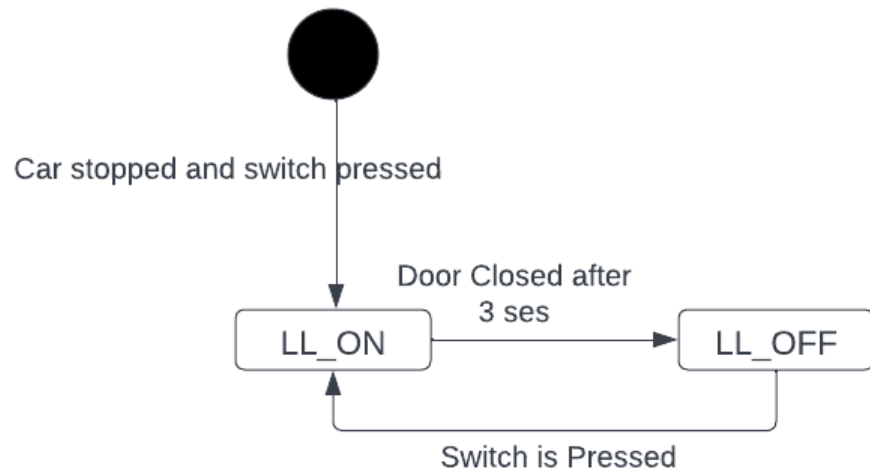
CPU for ECU 1:

$$\text{CPU Load} = (E1+E2+E3)/\text{hyperperiod}=35/80=43\%$$

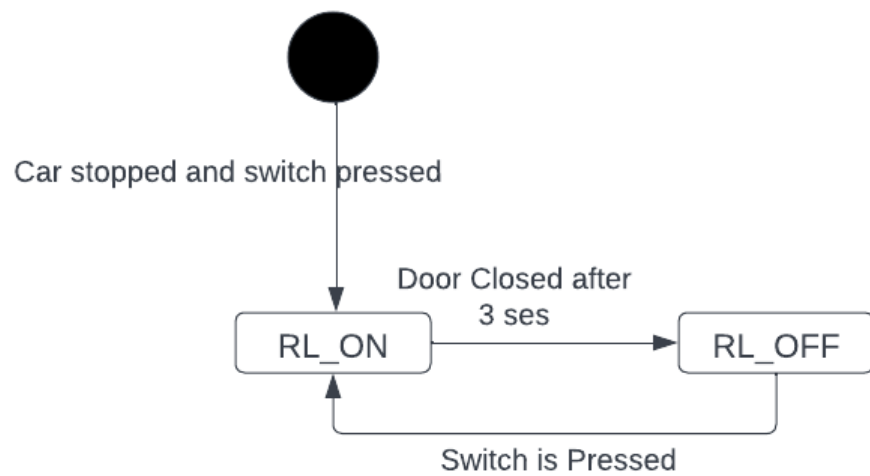
2- ECU 2

- State Machine diagram for each ECU component

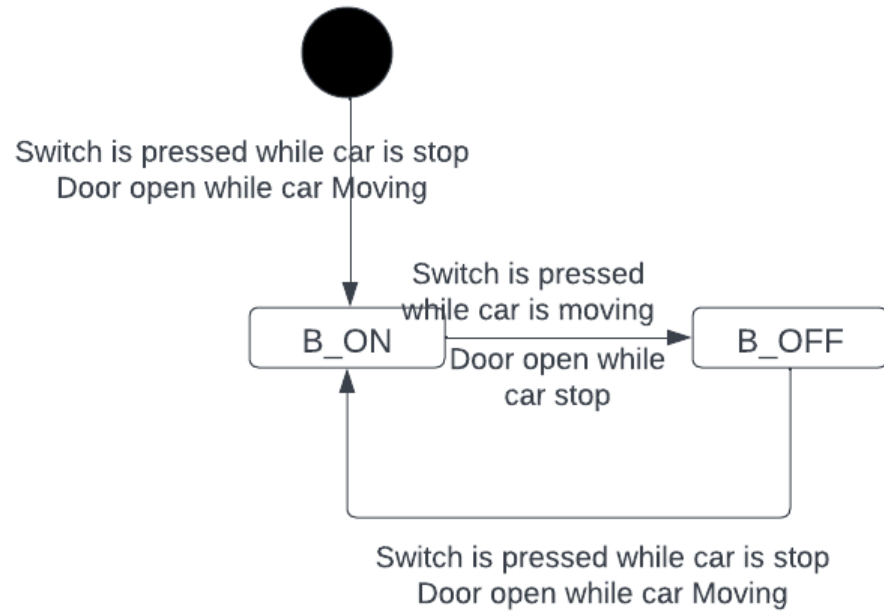
1- Left Light



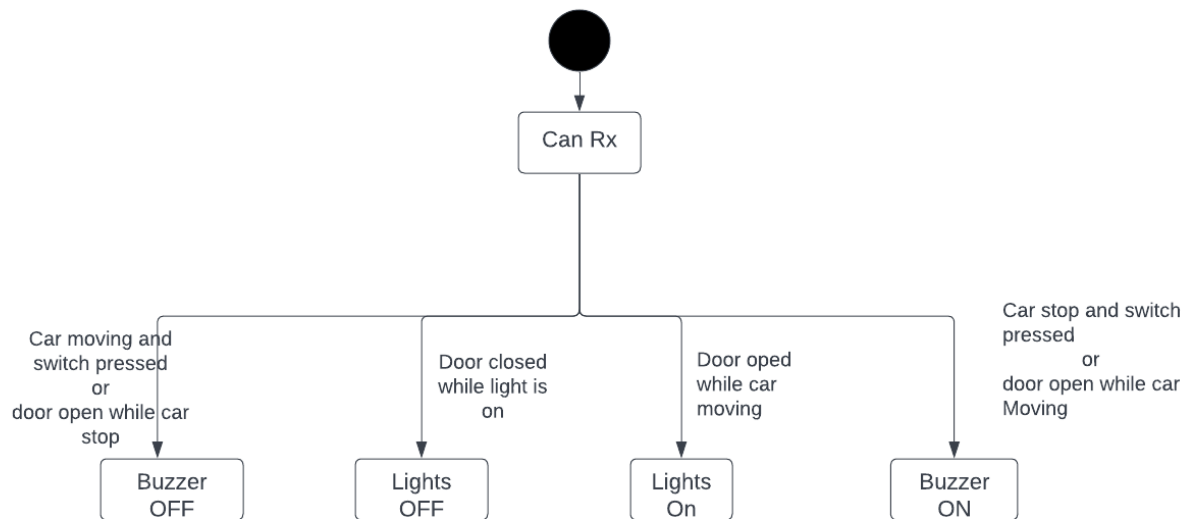
2- Right Light



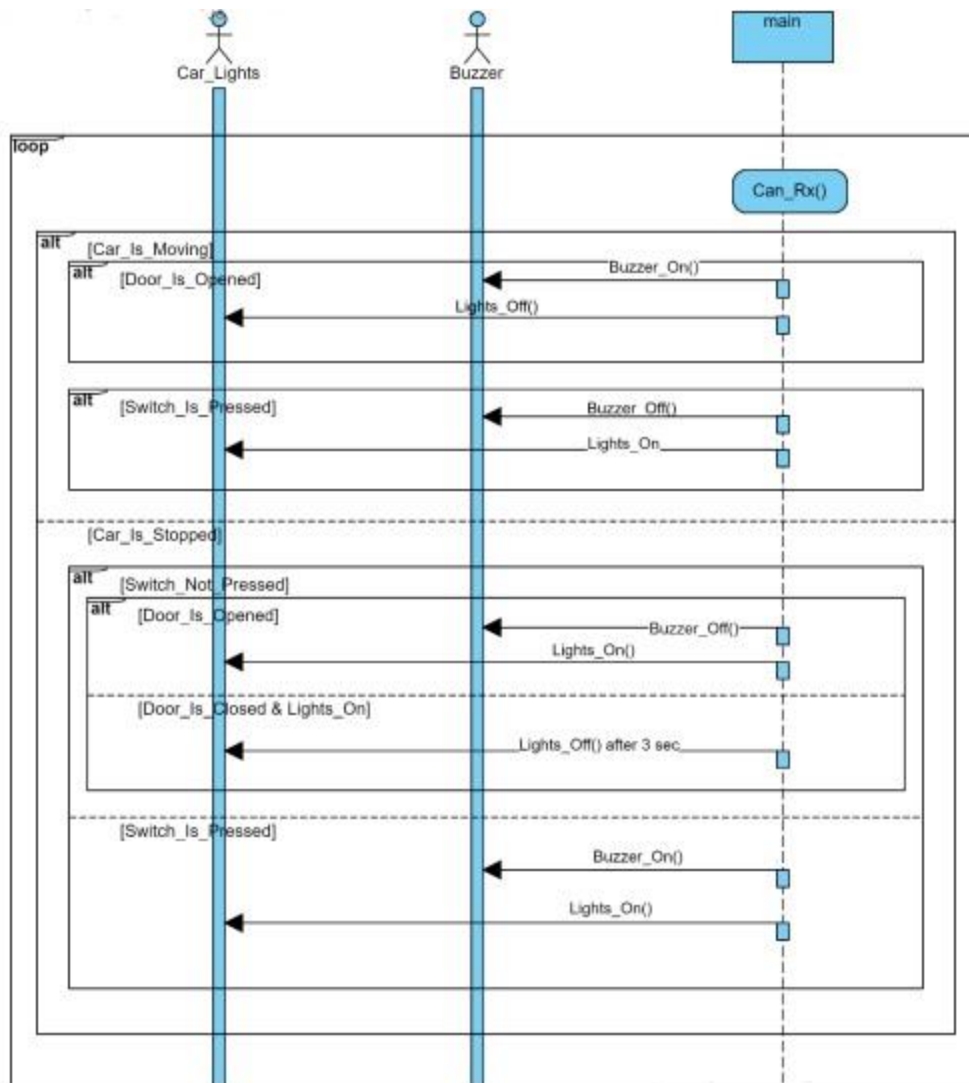
3-Buzzer



- State Machine diagram for the ECU operation



- Sequence diagram for the ECU



CPU for ECU 2:

$$\text{CPU Load} = (E1 + E2 + E3) / \text{hyperperiod} = 50 / 100 = 50\%$$