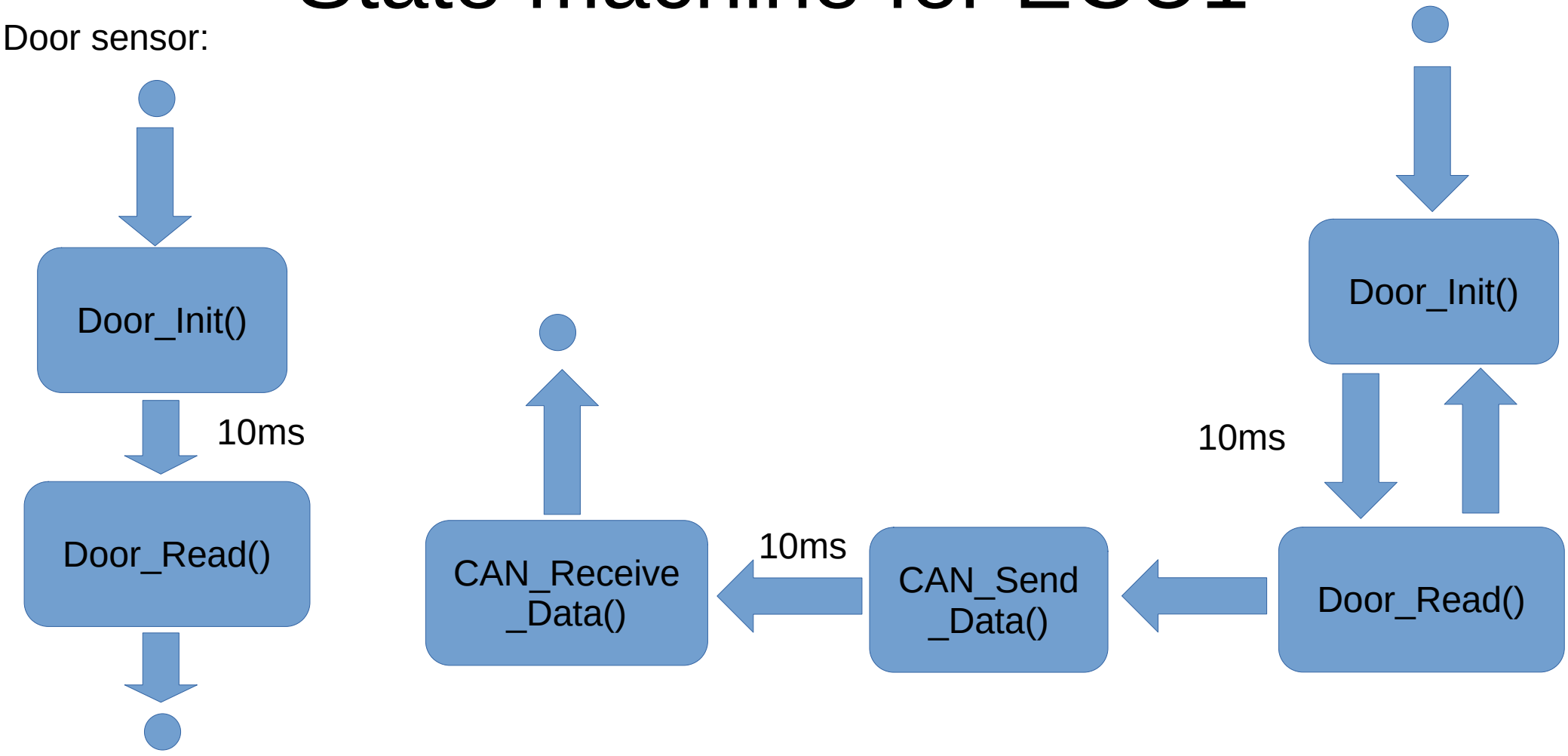
Automotive Door Control System Design

Name: mohamed mohamed taha
Email: mohamed.ismail.mohamed.taha@gmail.com

Dynamic Design

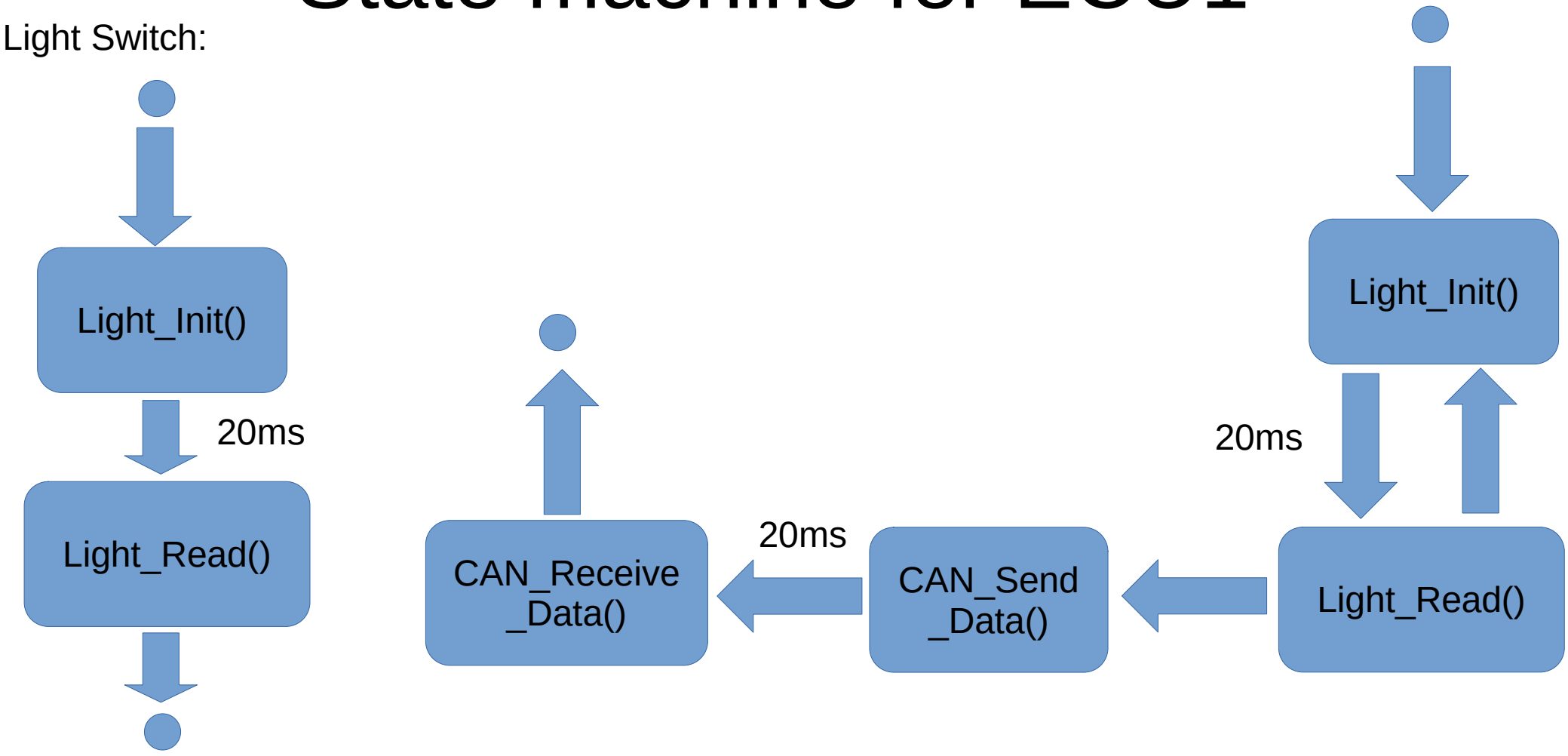
State machine for ECU1

Door sensor:



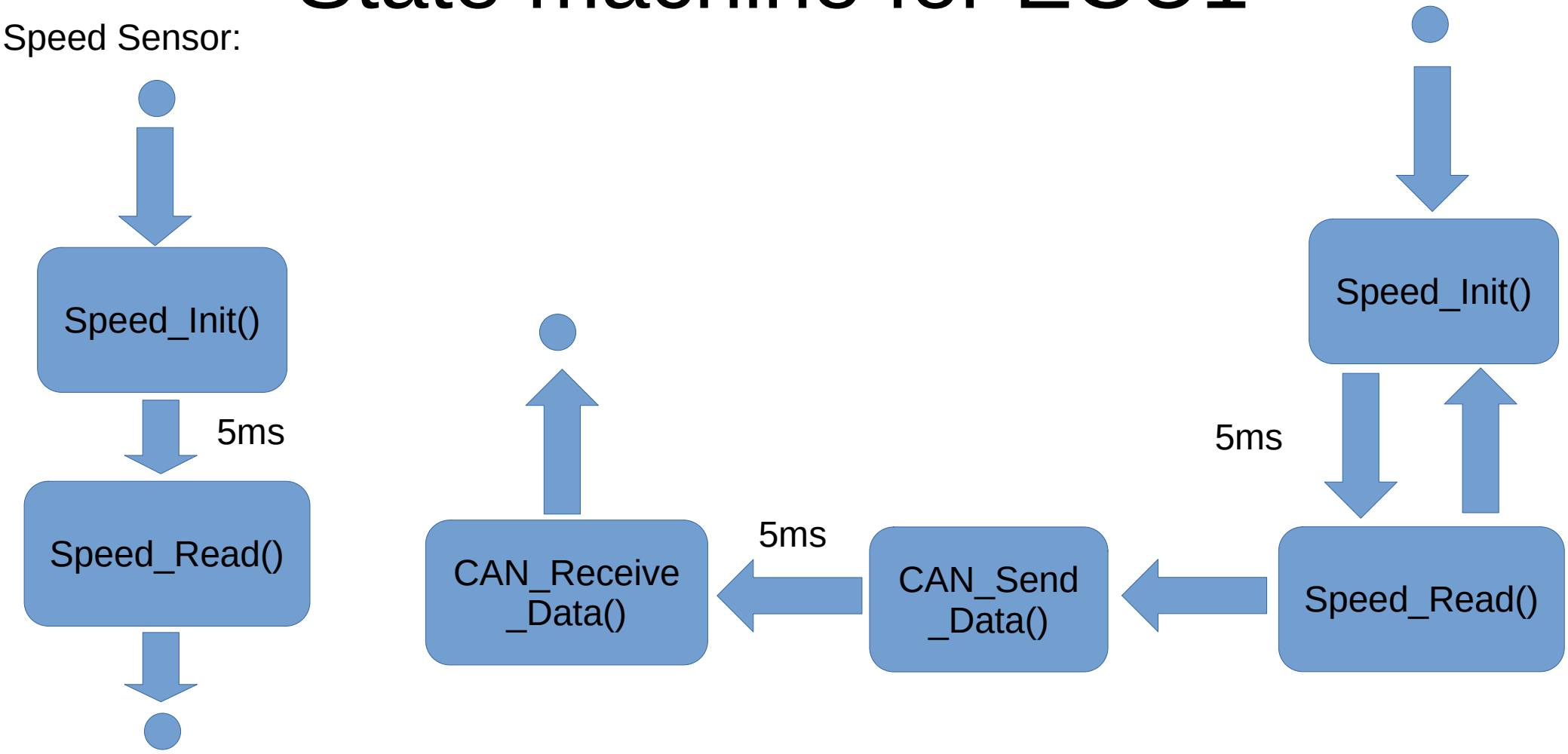
State machine for ECU1

Light Switch:

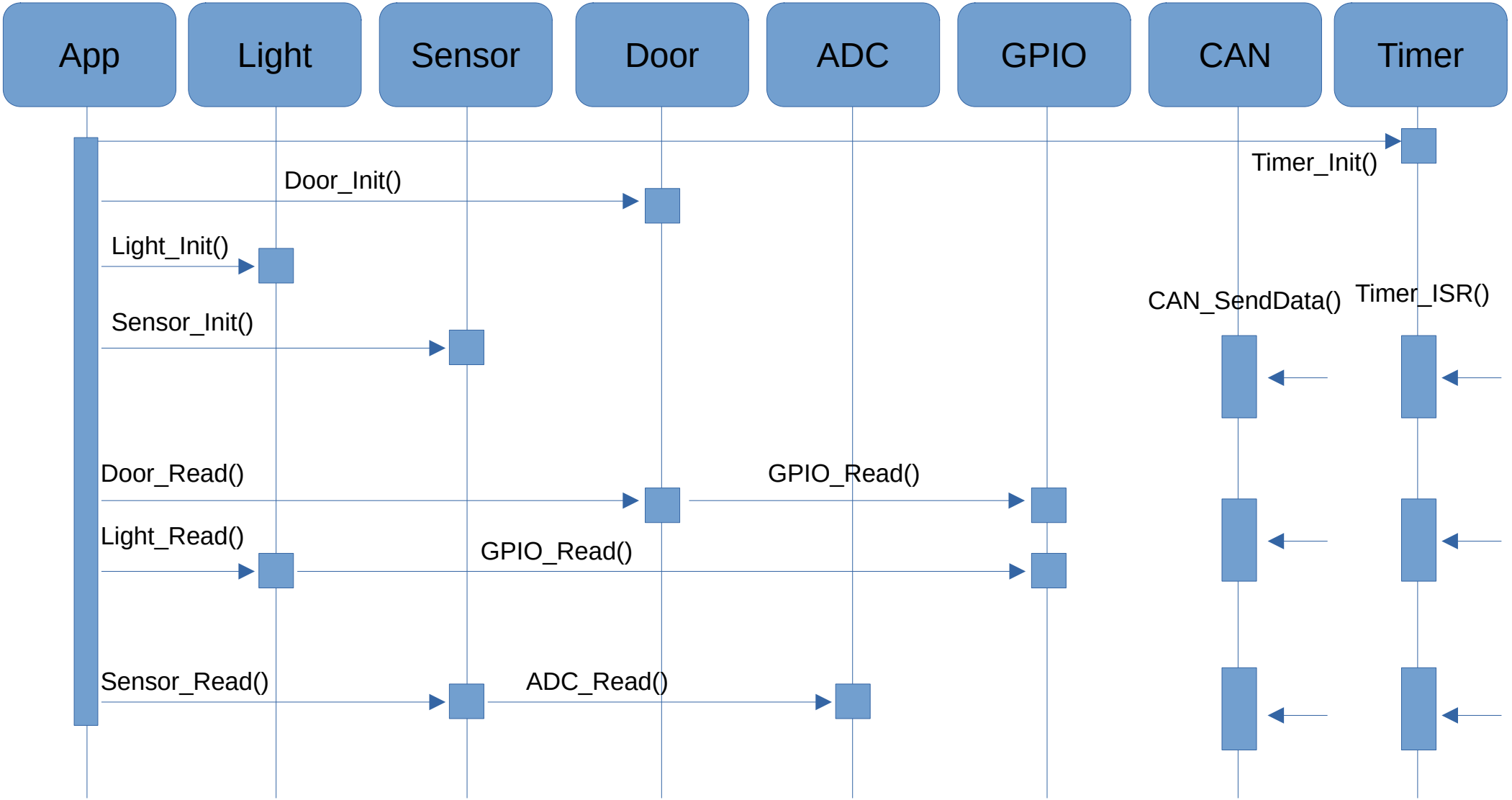


State machine for ECU1

Speed Sensor:



Sequence Diagram for CPU1

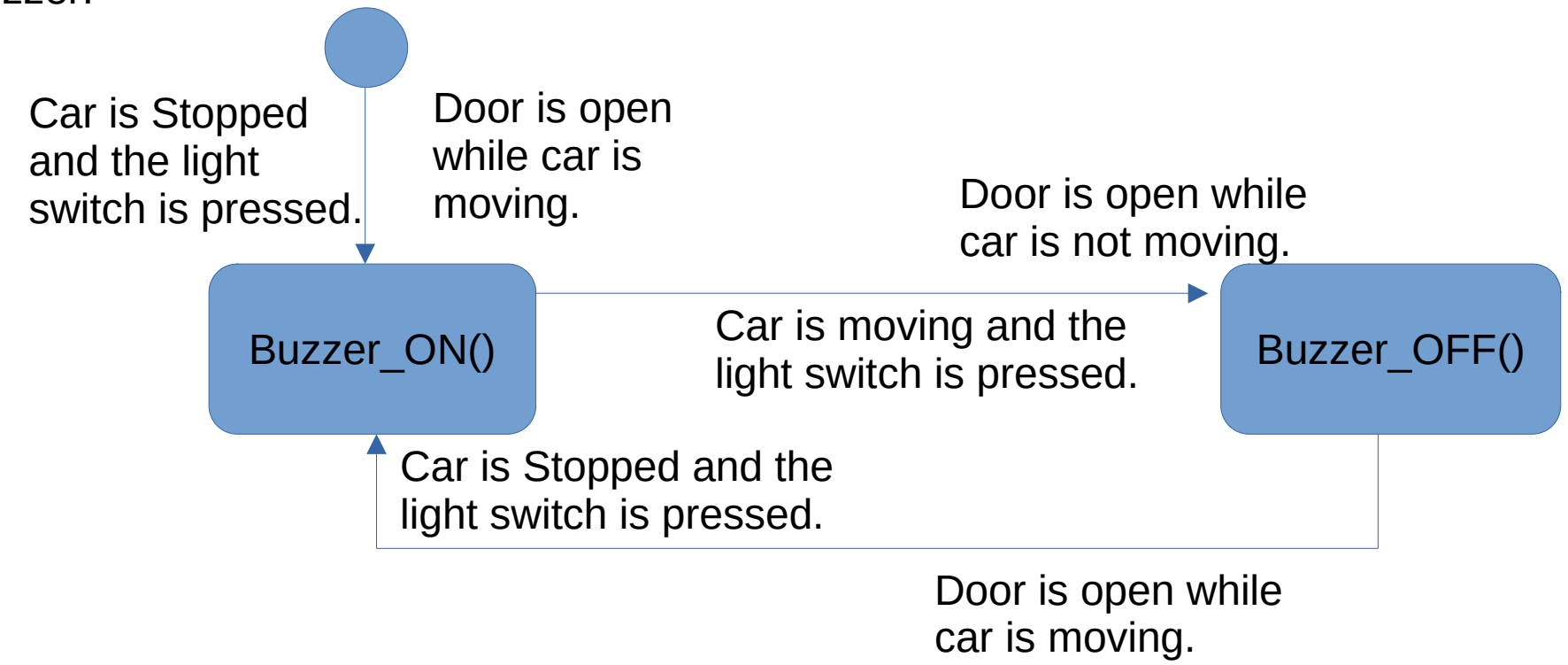

App
Light
Sensor
Door
ADC
GPIO
CAN
Timer
Timer_Init()
Door_Init()
Light_Init()
Sensor_Init()
CAN_SendData()
Timer_ISR()
Door_Read()
GPIO_Read()
Light_Read()
GPIO_Read()
Sensor_Read()
ADC_Read()

CPU1 Load

CPU Utilization = 100 − IDLE Time = 100 − 65 = 35%

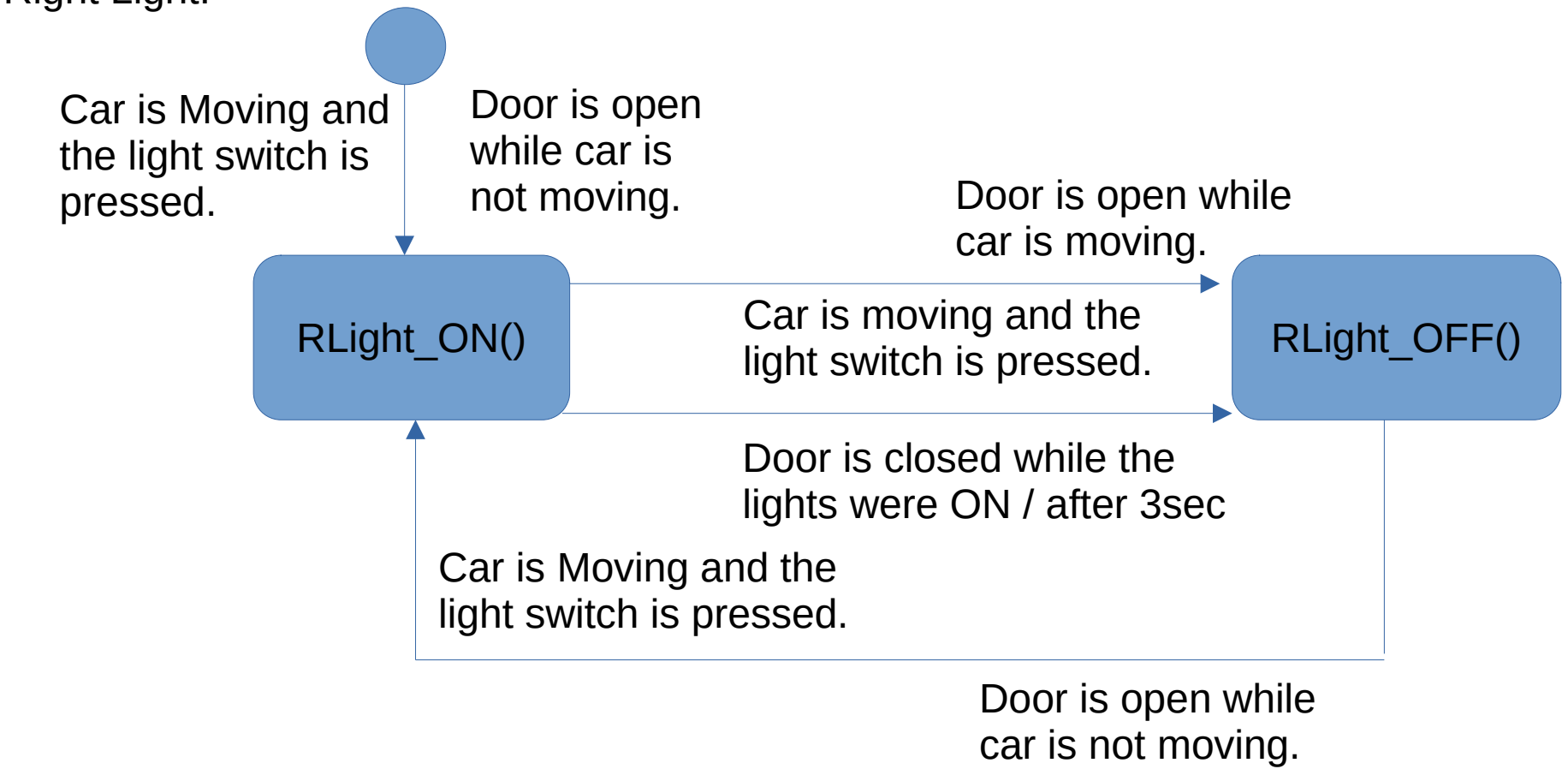
State machine for ECU2

Buzzer:



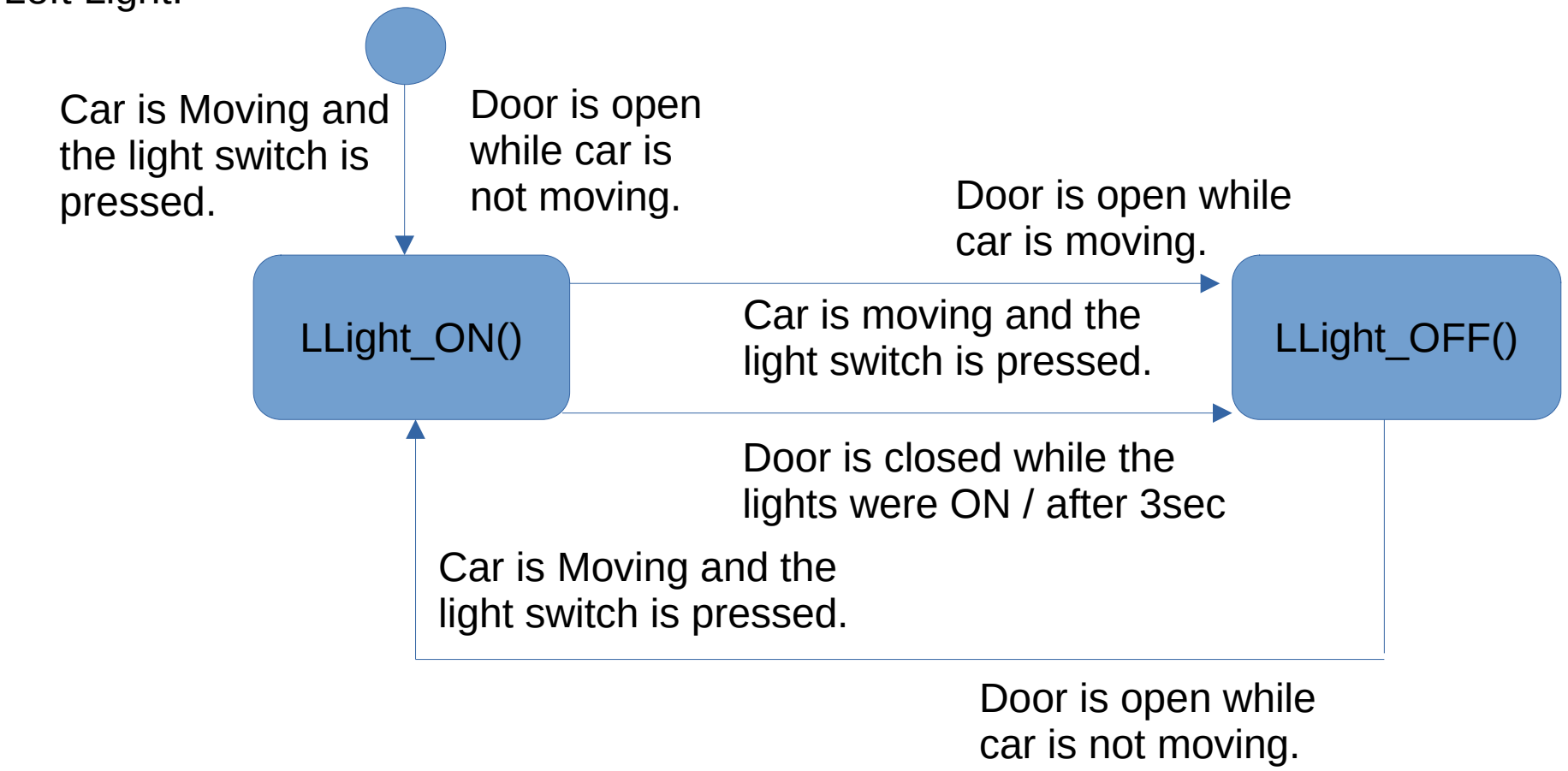
State machine for ECU2

Right Light:

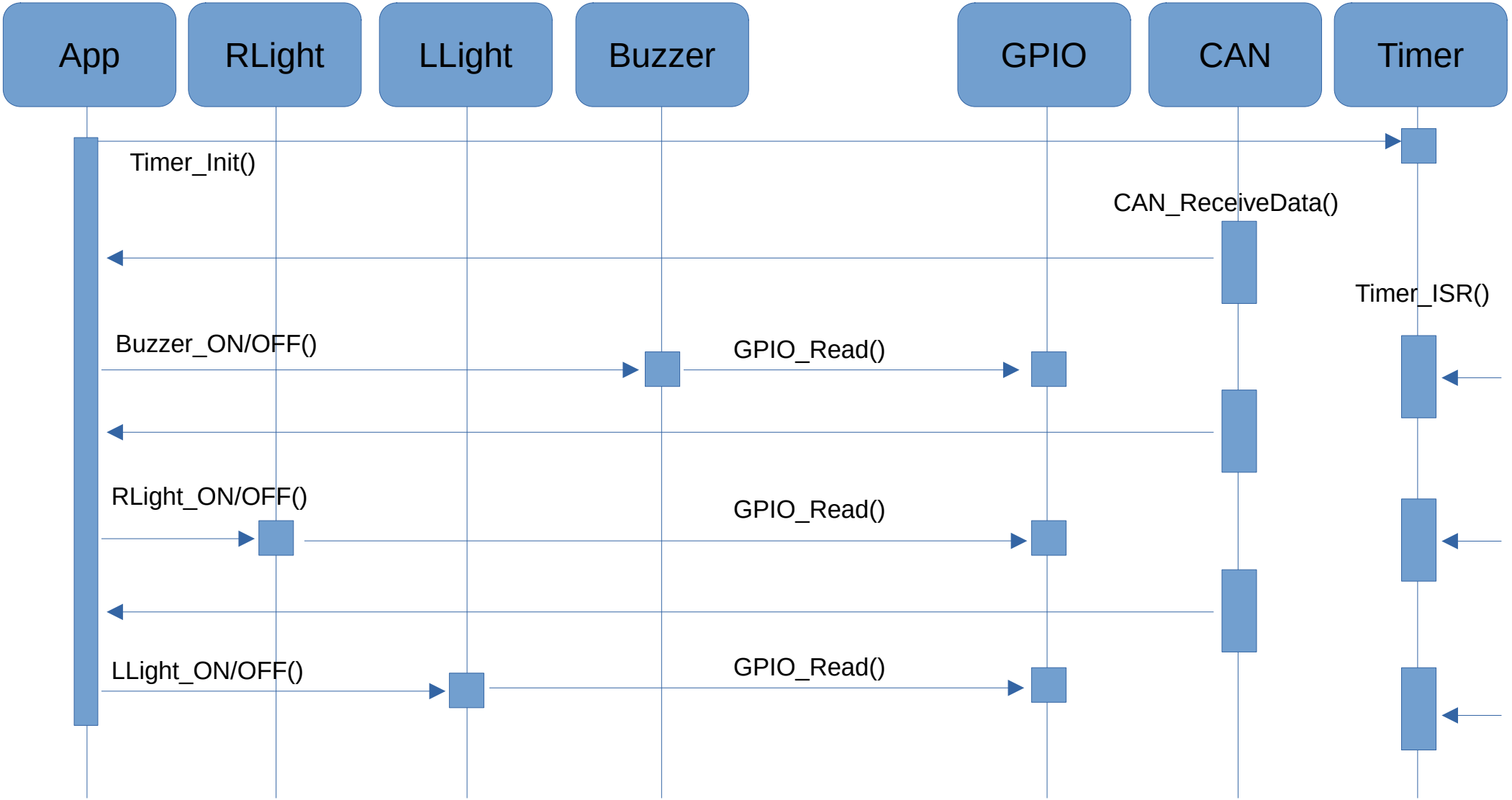


State machine for ECU2

Left Light:



Sequence Diagram for CPU2


App
RLight
LLight
Buzzer
GPIO
CAN
Timer
Timer_Init()
CAN_ReceiveData()
Timer_ISR()
Buzzer_ON/OFF()
GPIO_Read()
RLight_ON/OFF()
GPIO_Read()
LLight_ON/OFF()
GPIO_Read()

CPU2 Load

CPU Utilization = 100 − IDLE Time = 100 − 65 = 35%