Advanced Embedded Systems

Automotive door control system design

Dynamic Design Analysis

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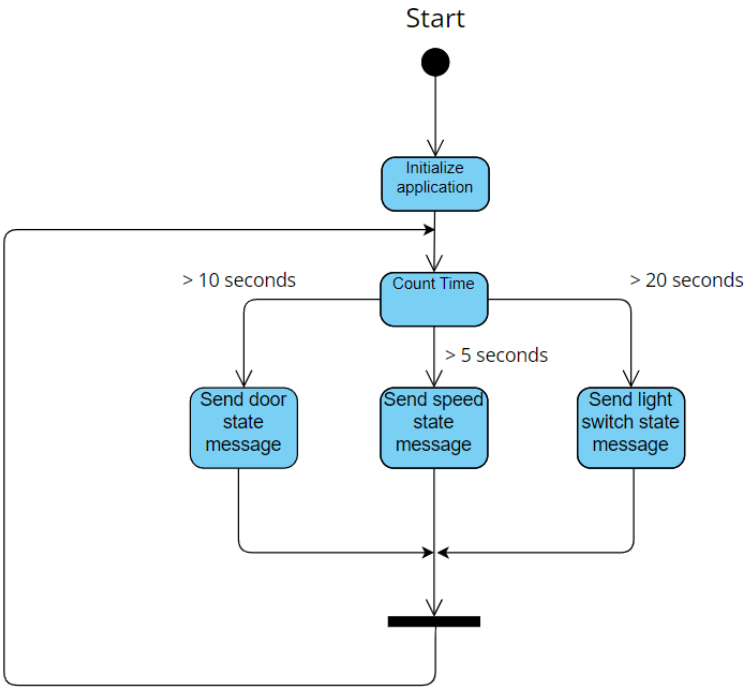
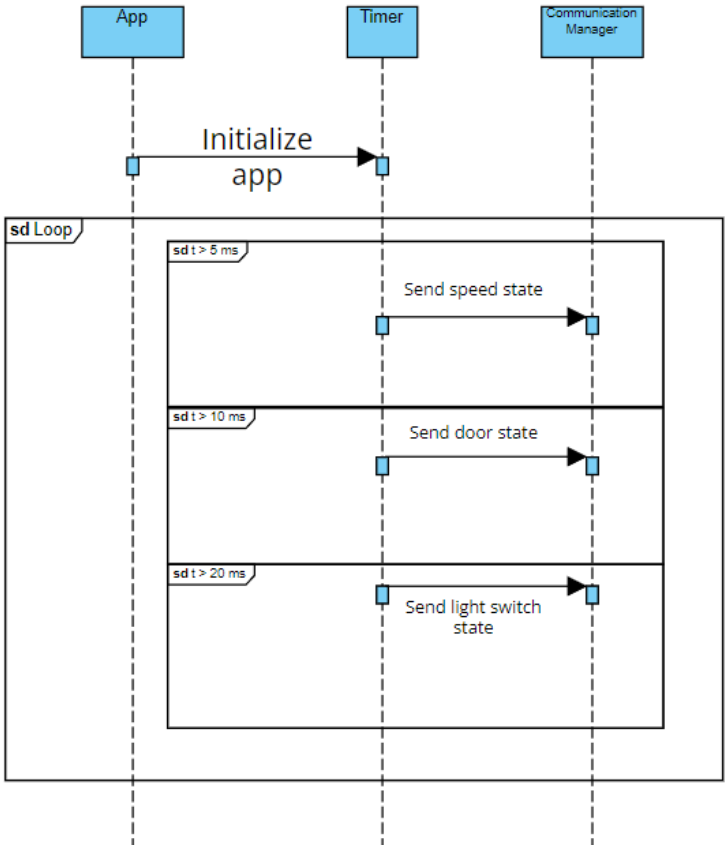
1 ECU (1)

1.1 State machine diagram for the ECU operation



1.2 Sequence diagram for the ECU



1.3 Calculate CPU load for the ECU

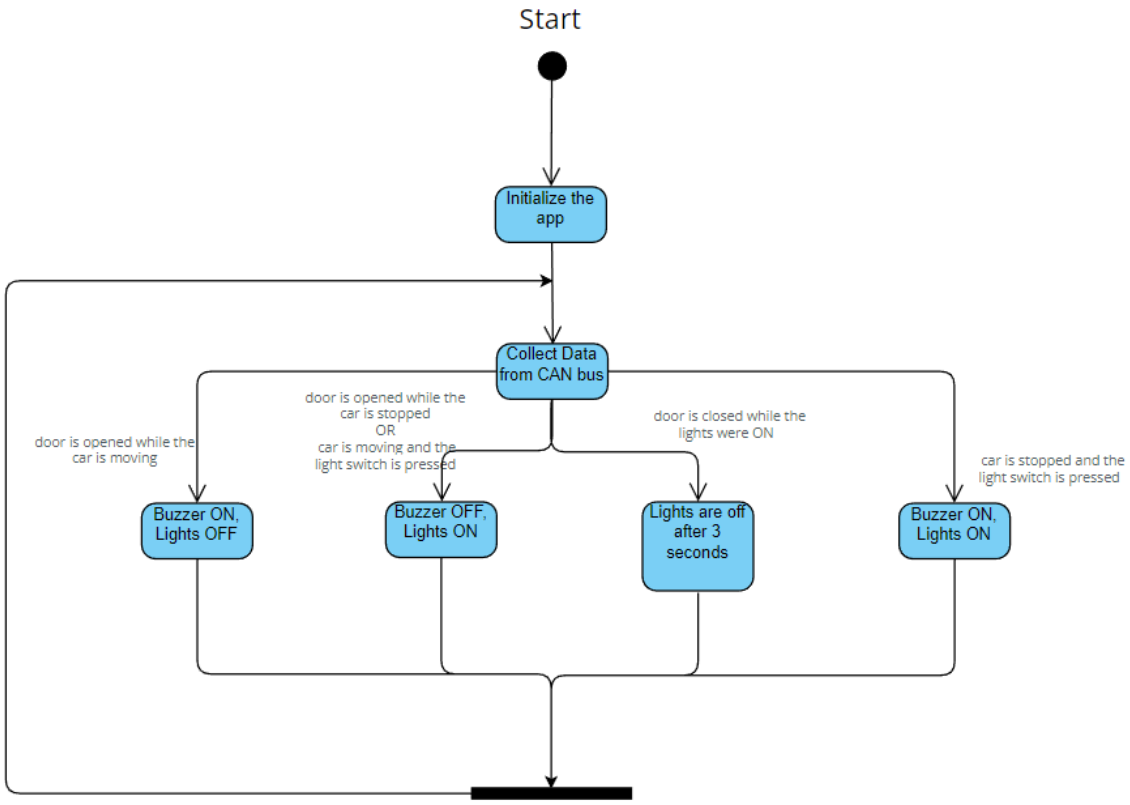
Assume every task executes after 2 ms

Hyper period = 20 ms

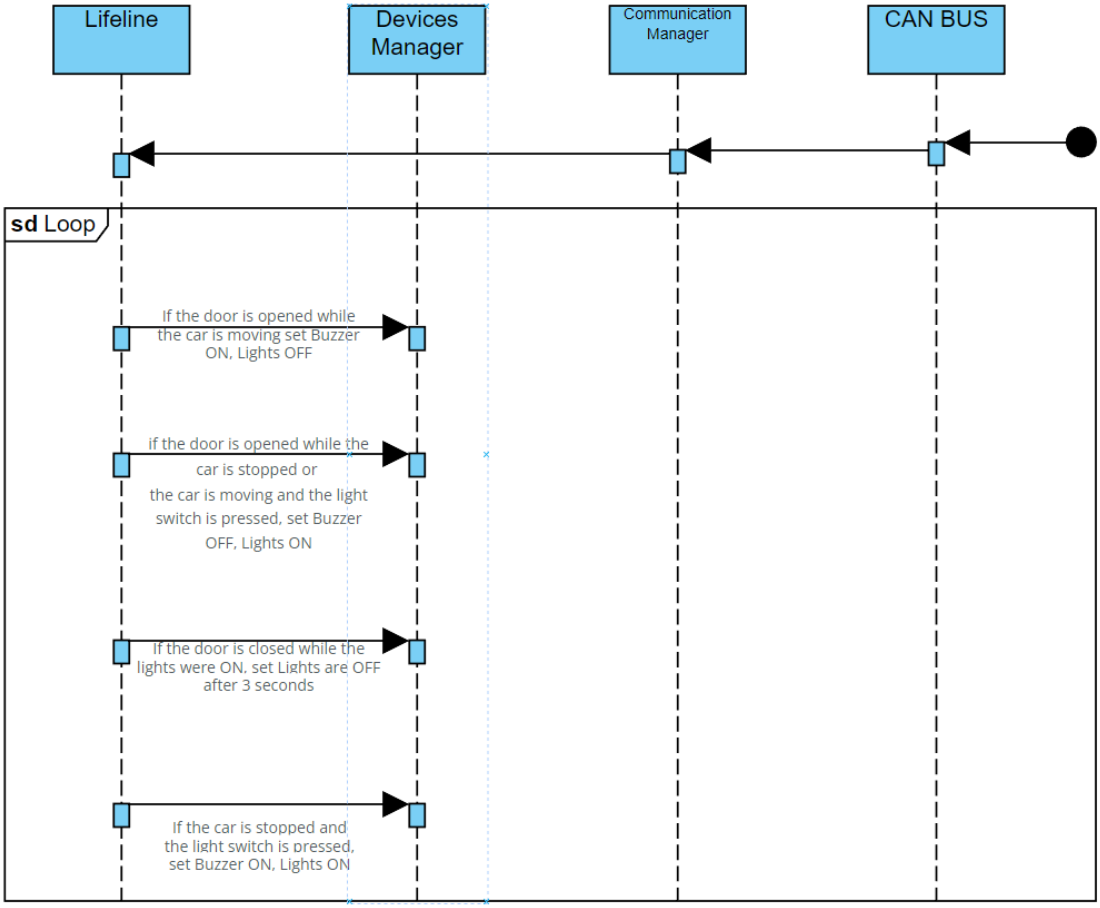
Load = (1*2 + 2*2 + 2*4)/20 = 70%

2 ECU (2)

2.1 State machine diagram for the ECU operation



2.2 Sequence diagram for the ECU



2.3 Calculate CPU load for the ECU

Assume communication over head is 4ms per each 20ms

CPU load = 90 %