**LightControlModule**

Create a SW module (LightControlModule) which to handle the whole Lighting related functionalities in a Car.

Create a ControlerECU simulator which to be able to test all the functionalities by keyboard commands.

**The LightControlModule module will be used by:**

 - TrunkECU

 - DoorECU

 - BrakeECU

 - GloveboxECU

 - HeadUnitECU

 - KeyHandlingECU (the ECU that communicates with the car owner's key)

 - SteeringWheel\_StickECU (the stick located next to the steering wheel)

 - DiagnosticECU (that ECU is used to inform the system for any updates of the car state)

The LightControlModule shall provide the functionality to control all the car available lights to every ECU

The LightControlModule has to be flexible enough to be able to support new ECUs in the future

**The Light modules that has to be controled are:**

 - FogLights

 - DayLights

 - LowBeam

 - HighBeam

 - BackLights

 - Blinkers

 - StopLights

 - NumberPlateLights

 - CeilingLights (the lights in the car coupe)

 - TrunkLights

 - GloveboxLights

 - AmbientLights

 - DoorLights

 - FloorLights

**Functional APIs:**

TrunkECU

 - TrunkOpen

 - TrunkClosed

DoorECU

 - DoorOpened

 - DoorClosed

BrakeECU

 - BrakePressed

 - BrakeReleased

GloveboxECU

 - Glovebox\_Opened

 - Glovebox\_Closeed

KeyHandlingECU

 - Car\_Unlocked

    -> Blink once all blinkers

    -> Start the LowBeam

 - Car\_Locked

    -> Blink once all blinkers

    -> Stop all lights

 - OpenTrunk

    -> Start Trunk Lights

SteeringWheel\_StickECU

 - Daylights\_OnOff

 - LowBeam\_OnOff

 - HighBeam\_OnOff

 - Blinkers\_Left\_OnOff

 - Blinkers\_Left\_5Blinks

 - Blinkers\_Right\_OnOff

 - Blinkers\_Right\_5Blinks

DiagnosticECU

 - LightsTest\_On/Off

    -> On/Off all the lights

 - GetStatus

    -> Report all info for particular light

    -> Report all info for all lights

 - LightUpdate (to add/replace bulb. Set/updated bulb life expectency (0%-100%)

    -> For particular light

    -> For all lights

HeadUnitECU

 - WarningLights\_OnOff

    -> Start/Stop all the blinkers

 - SetAmbientLightsColor

 - AdjustAmbientLightsBrightness

 - AmbientLights\_OnOff

 - AdjustCoupeLightsBrightness (including the trunk lights)

 - CoupeLights\_OnOff

    -> for particular Ceiling light or trunk light

Main Lights Functionality:

    |FogLights

    |DayLights

    |LowBeam

    |HighBeam

    |BackLights

    |Blinkers

    |StopLights

    |NumberPlateLights

    |DoorLights

    |----> On/Off

    |----> Light info control (Life in percents ++ hasBulb?)

    |CeilingLights (the lights in the car coupe)

    |TrunkLights

    |GloveboxLights

    |FloorLights

    |----> On/Off

    |----> BrightnessAdjust

    |----> Light info control (Life in percents ++ hasBulb?)

    |AmbientLights

    |----> On/Off

    |----> BrightnessAdjust

    |----> Light info control (Life in percents ++ hasBulb?)

    |----> Color Control

Deliverables:

 - UML Diagram

 - 3 Seqence diagrams (3 different API calls)

 - Code Implementation

 - Report: who did what