System Description:

A traffic light control system which has two sub system and one trigger.

The first sub system is the cars' LEDs (green – yellow – red), the Second sub system is the pedestrians' LEDs (green – yellow – red) and the third part is the trigger (push button switch) which is work via the external interrupt.

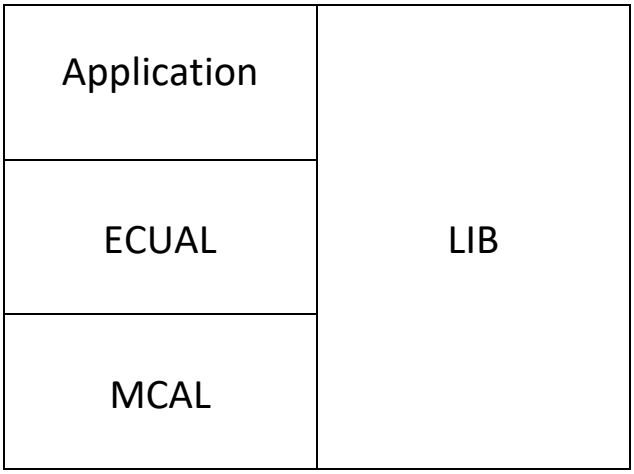
So, from these parts we can conclude what drivers we want. Let's start with the MCAL we need DIO driver so we can configure the pins to be output or input and high or low then we need GIE which is responsible for activate and deactivate the global interrupt and EXTI which is responsible for the settings of the external interrupt and choose its trigger type and lastly the TIMERS driver so that we can use a delay to turn on and off the LEDs with a specific time.

Let's go the ECUAL, I just used a driver for the LEDs because it will be useful in this application.

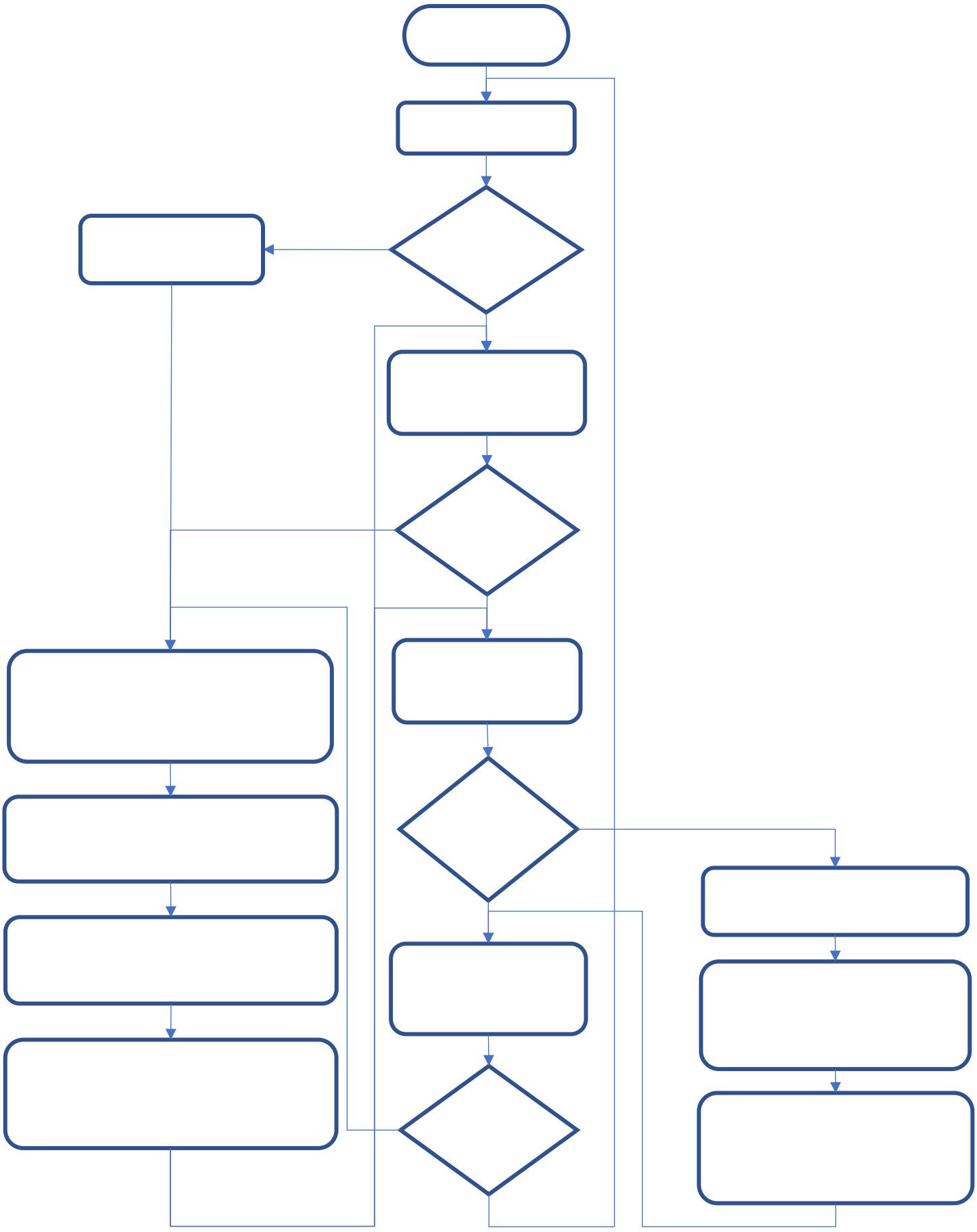
Let's look at the LIB layer the LIB has two files the STD_TYPES which has the standard types, and the BIT_MATH which has the bit manipulation functions.

Lastly the application layer which has the logic of the traffic light in three functions first function App_voidInit that has the instruction that need to be call one time, the App_voidStart which has the Traffic light sequence and the App_voidPedestrainMode that is called by the interrupt when the bush button switch is pressed.

System Design:



System Flow chart:



System constrains:

There is no constrains