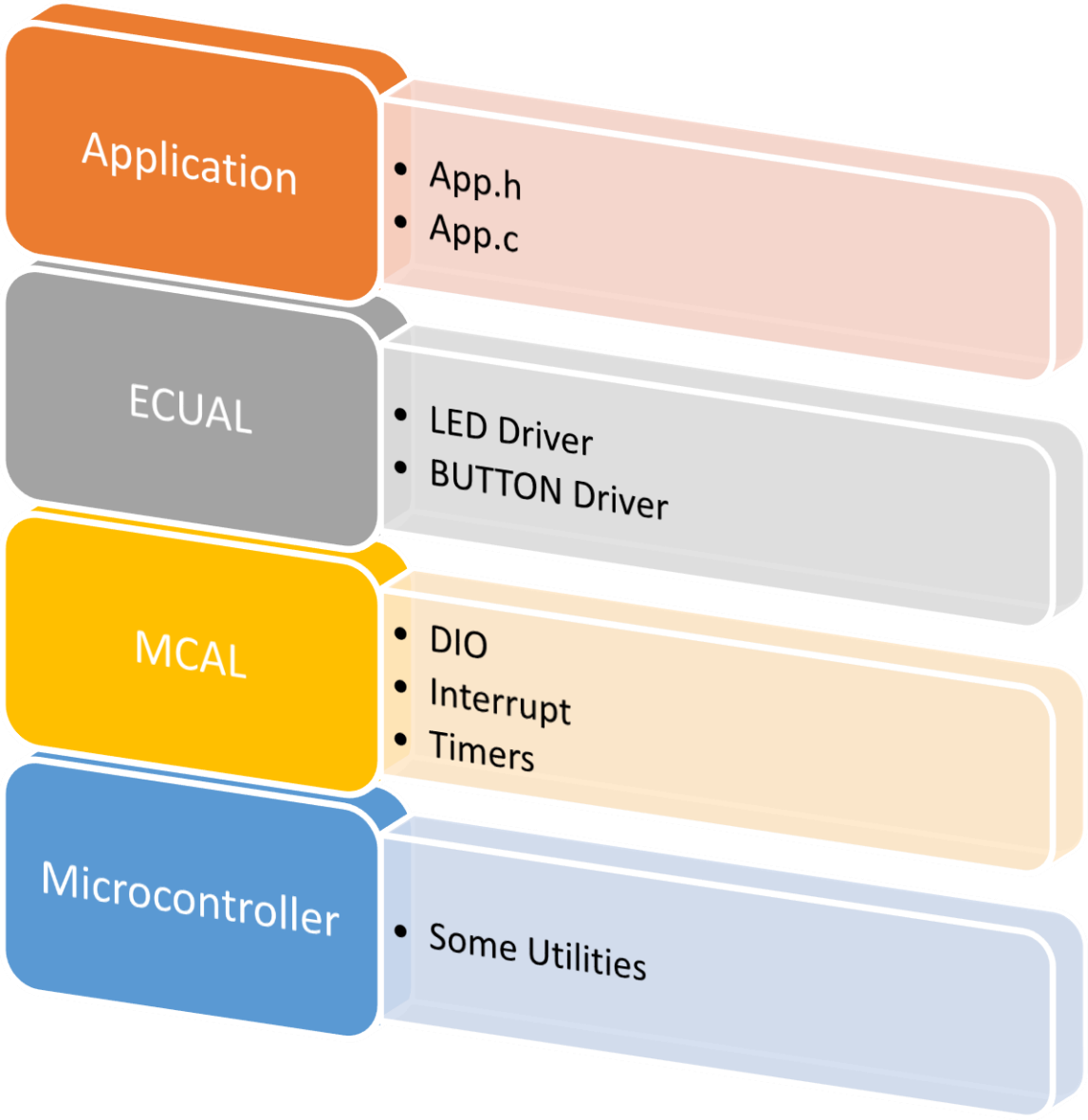
System Description

- Starting from Normal Mode (Cars' LEDs will be changed every five seconds starting from Green then yellow blinking then red then yellow then Green and so on)
- Check if the user pressed the button or not if yes, then change to pedestrian mode
- But first check the status of Cars' LEDS when he pressed the button:
    - If pressed when the cars' Red LED is on, the pedestrian's Green LED and the cars' Red LEDs will be on for five seconds, this means that pedestrians can cross the street while the pedestrian's Green LED is on, then the cars' Red LED will be off and both Yellow LEDs start blinking for 5 seconds and the pedestrian's Green LED is still on.
    - If pressed when the cars' Green LED is on or the cars' Yellow LED is blinking, the pedestrian Red LED will be on then both Yellow LEDs start to blink for five seconds, then the cars' Red LED and pedestrian Green LEDs are on for five seconds, this means that pedestrian must wait until the Green LED is on, then the cars' Red LED will be off and both Yellow LEDs start blinking for 5 seconds and the pedestrian's Green LED is still on.

  After the five seconds in these two case the pedestrian Green LED will be off, and both the pedestrian Red LED and the cars' Green LED will be on (back to Normal again).

System Design



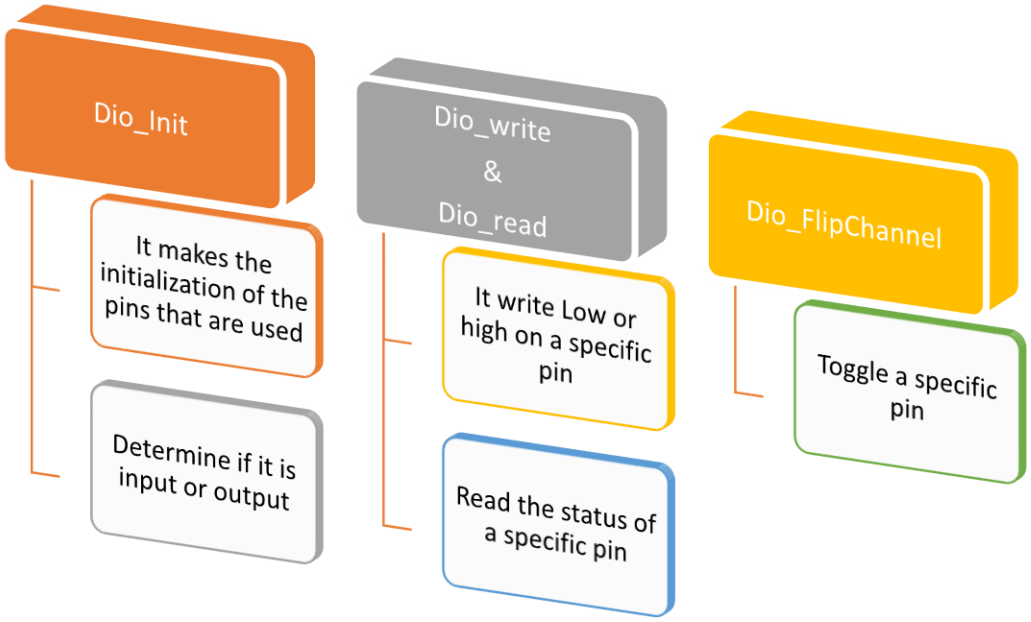
Microcontroller

It contains some useful header files:

- Registers.h ❼ All Microcontroller Registers
- Bit_Math.h ❼ BitMath operations (Macros) that are the foundation of Dio functions • STS_Types.h ❼ Definition of important data types

MCAL

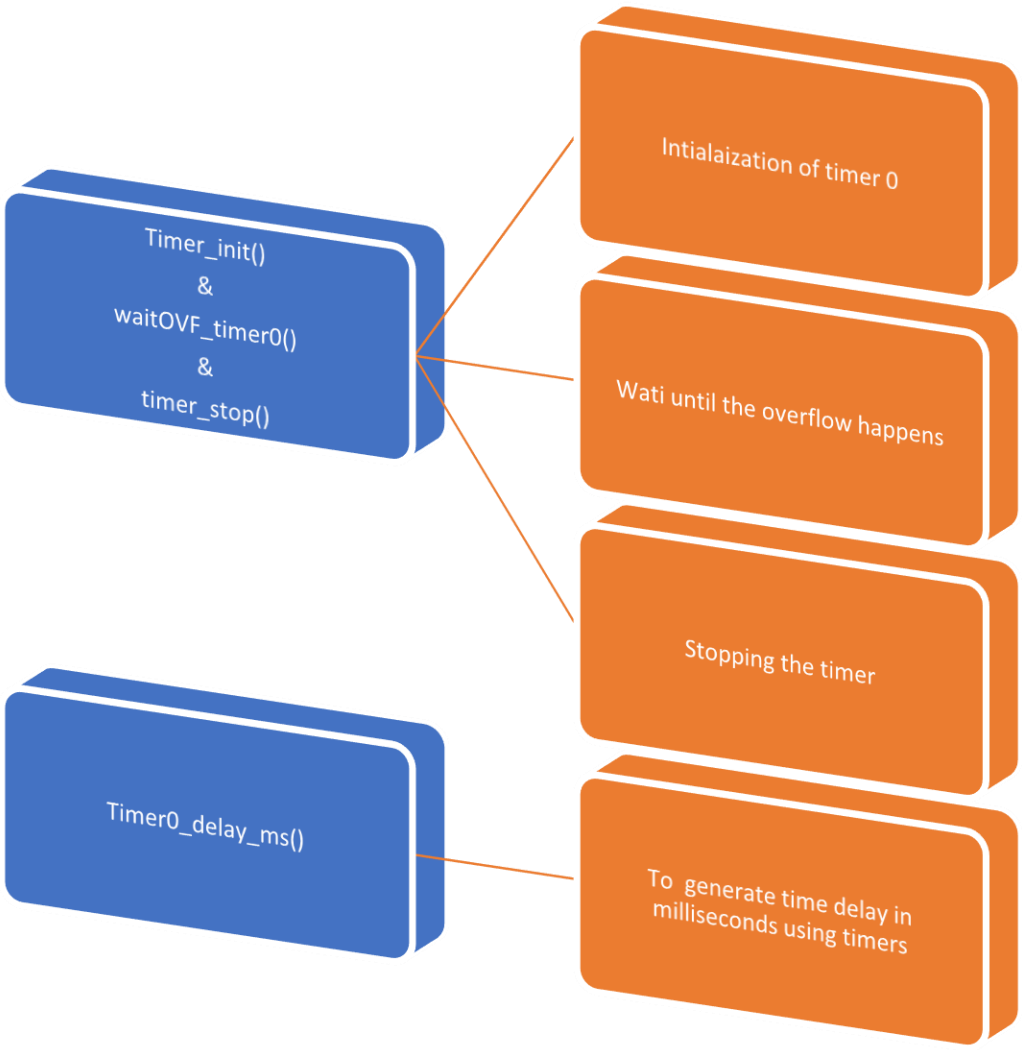
- Dio Driver



- EXT_INTERRUPTS

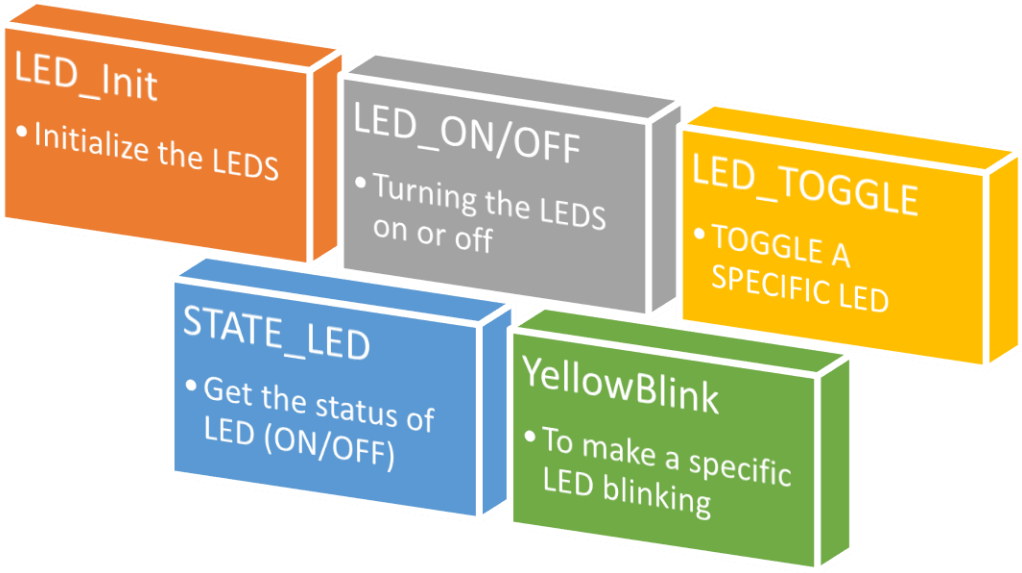
    - Initialaization of interrupts ○ Enable or disable a specific interrupt ○ Set_Call_Back functions and ISR

- Timer Driver



ECUAL

- LED Driver



- Button Driver
  - Only include a function called (BUTTON_read) to get the status of the switch

System Constraints

1. When you are in normal mode, and you switch to pedestrian mode, you can't get out of it manually, you must wait till the sequence is over, then it will switch to the normal mode again
2. When you press the button, the action will be taken after you finish pressing, after the pressing is over.

System Flow Chart