Traffic light control system manual

System Description:

The traffic light control system is a system responsible for allowing the pedestrians to cross the street safely by just pressing a button that will temporarily (5 seconds) stop the cars' flow by lighting the red light to allow the pedestrians to cross safely to the other side.

System Components:

3 LEDs (red,yellow,green) for representing traffic light.

3 LEDs (red,yellow,green) for representing pedestrian light.

1 push button used for pedestrians.

1 Atmega32 micro-controller for controlling the LEDs and interacting with the button.

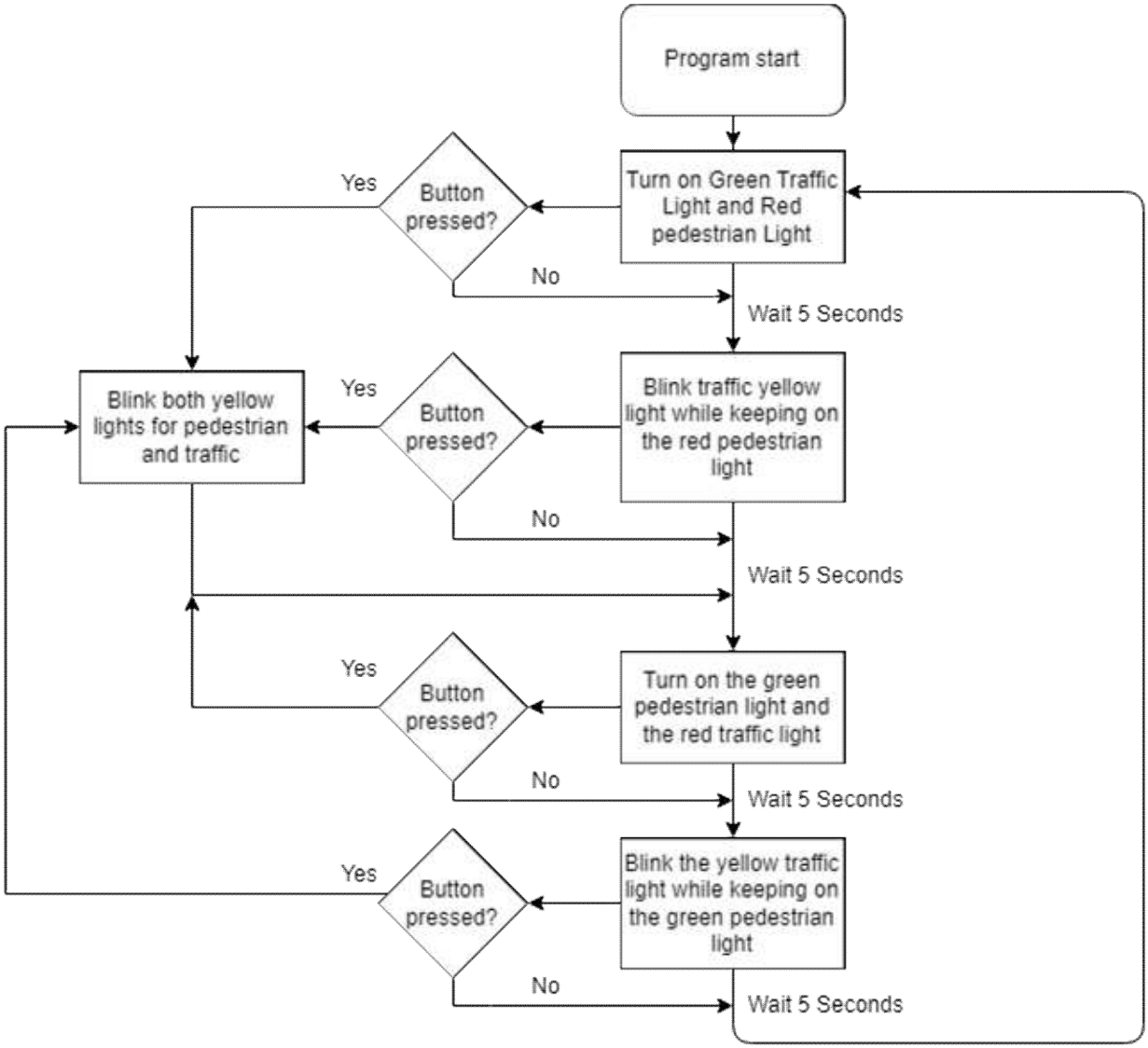
System Design:

The system will be divided into 3 layers: ECUAL "ECU layer", MCAL "microcontroller layer" and APP "application layer", then the ECUAL will contain the drivers for Button and LED, and the MCAL will contain the DIO "digital input/output" , interrupt and timer drivers.

The ECUAL layer APIs will use the MCAL layer APIs to control both the input and output of the LEDs and the button.

The APP layer will contain all the logic and syntax for the application to run using the APIs in the ECUAL layer.

Flow Chart:


Program start
Turn on Green Traffic Light and Red pedestrian Light
Button pressed?
Yes
No
Wait 5 Seconds
Blink traffic yellow light while keeping on the red pedestrian light
Button pressed?
Yes
No
Blink both yellow lights for pedestrian and traffic
Wait 5 Seconds
Turn on the green pedestrian light and the red traffic light
Button pressed?
Yes
No
Wait 5 Seconds
Blink the yellow traffic light while keeping on the green pedestrian light
Button pressed?
Yes
No
Wait 5 Seconds