

On-demand Traffic light control

System Description:

On-demand Traffic light control Consists of two Traffic light one for Vehicles and the other for Pedestrian, and there is two modes the first mode is normal mode that mode is occur when not using Pedestrian Button, and the second mode is pedestrian mode which is occur when using Pedestrian Button,

In Normal mode :

- Cars' LEDs will be changed every five seconds starting from Green then yellow the red then yellow then Green.
- The Yellow LED will blink for five seconds before moving to Green or Red LEDs.

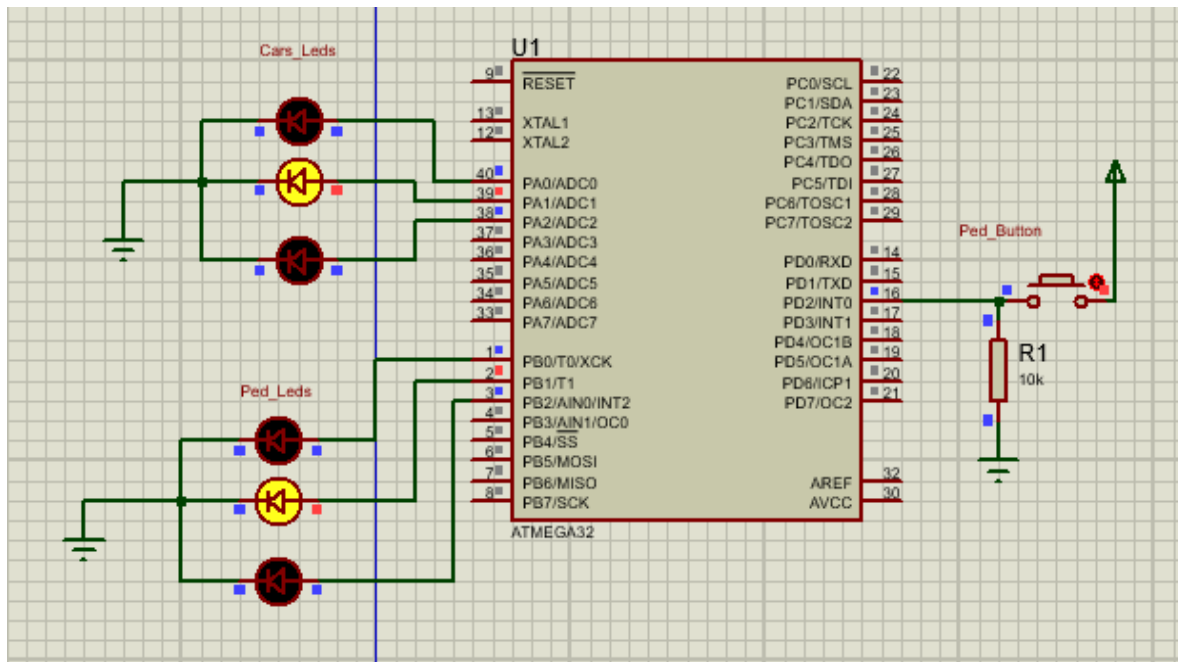
In Pedestrian mode:

- Change from normal mode to pedestrian mode when the pedestrian button is pressed.
- 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.
- 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.
- At the end of the two states, 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 the pedestrian Green LED will be off and both the pedestrian Red LED and the cars' Green LED will be on.
- Traffic lights signals are going to the normal mode again.

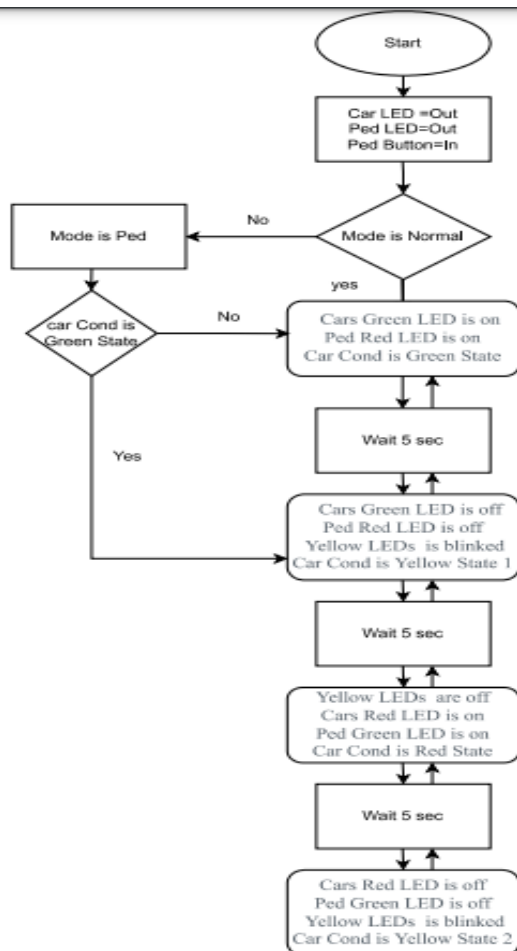
System Description:

System Component :

- ATmega32 microcontroller.
- One push button connected to INTO pin for pedestrian.
- Three LEDs for cars - Green, Yellow, and Red, connected on port A, pins 0, pins 1, and pins 2.
- Three LEDs for pedestrians - Green, Yellow, and Red, connected on port B, pins 0, pins 1, and pins 2.

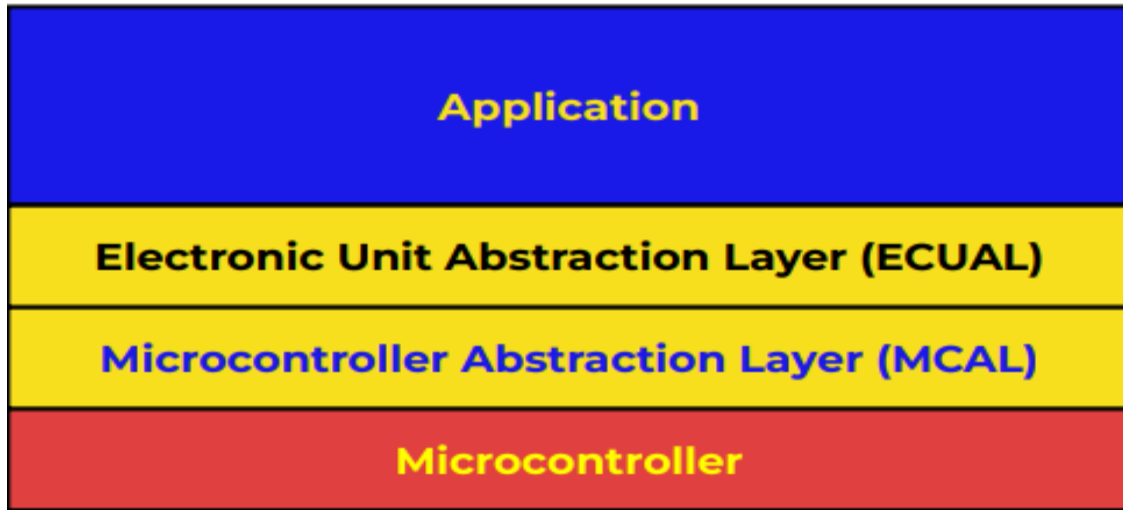


System Flowchart



Static Architecture for the System

System Layers: MCAL & MCUAL



System Drivers :

- In MCAL: DIO DRIVER , TIMER DRIVER , INTERRUPT DRIVER
- In MCUAL: LED DRIVER , BUTTON DRIVER

System Constrains:

- 1) when Pedestrian made a long press on the crosswalk button nothing will be done as shown in User Story 4.
- 2) when Pedestrian made a double press on the crosswalk button, the first press will do the action and nothing to be done after the second press as shown in User Story 5.