Embedded Systems Professional Track
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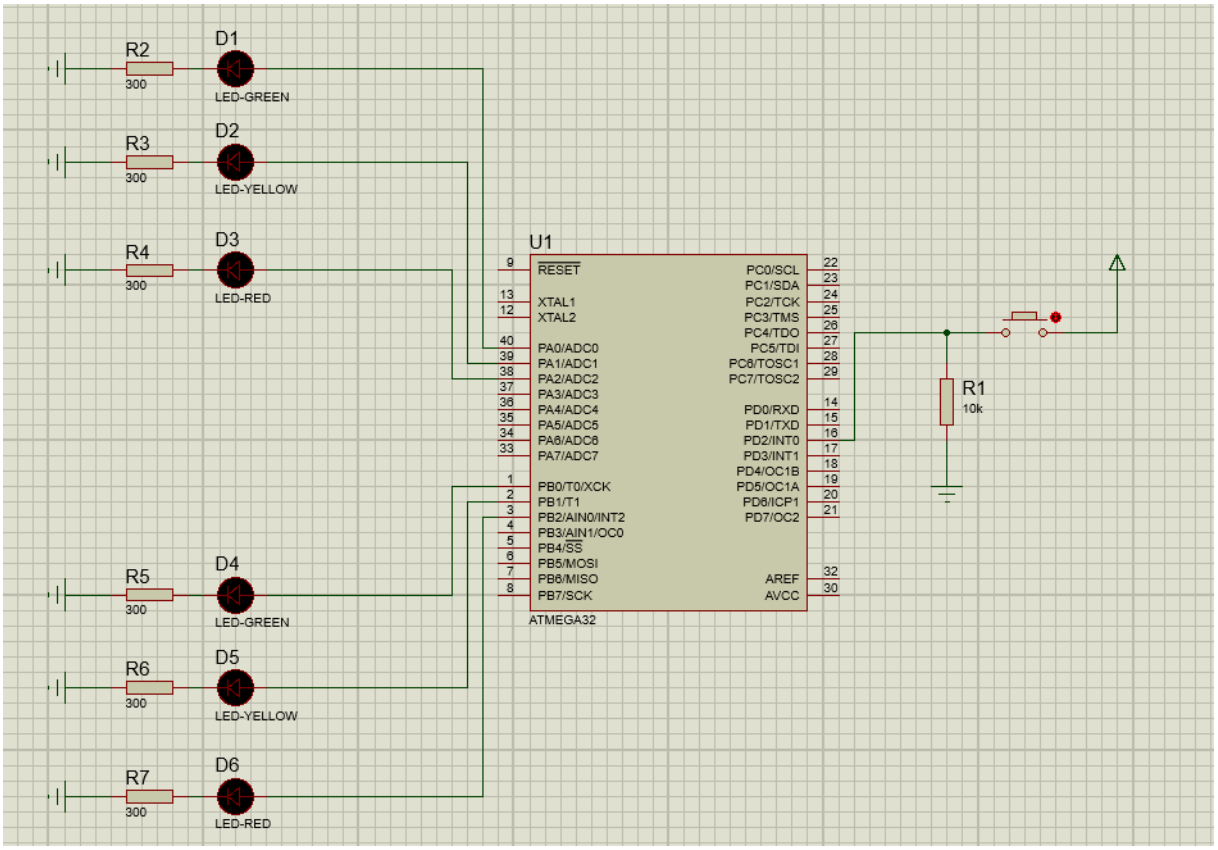
On-Demand Traffic Lights Control Project Documentation

By : Muhammad Mahmoud Shaaban

1- System Description

The system is an on-demand traffic light control which simulates the traffic lights from the real life with an added component which is a button to prioritize the crossing of the pedestrians waiting.
Let’s take a look at the system from proteus software :



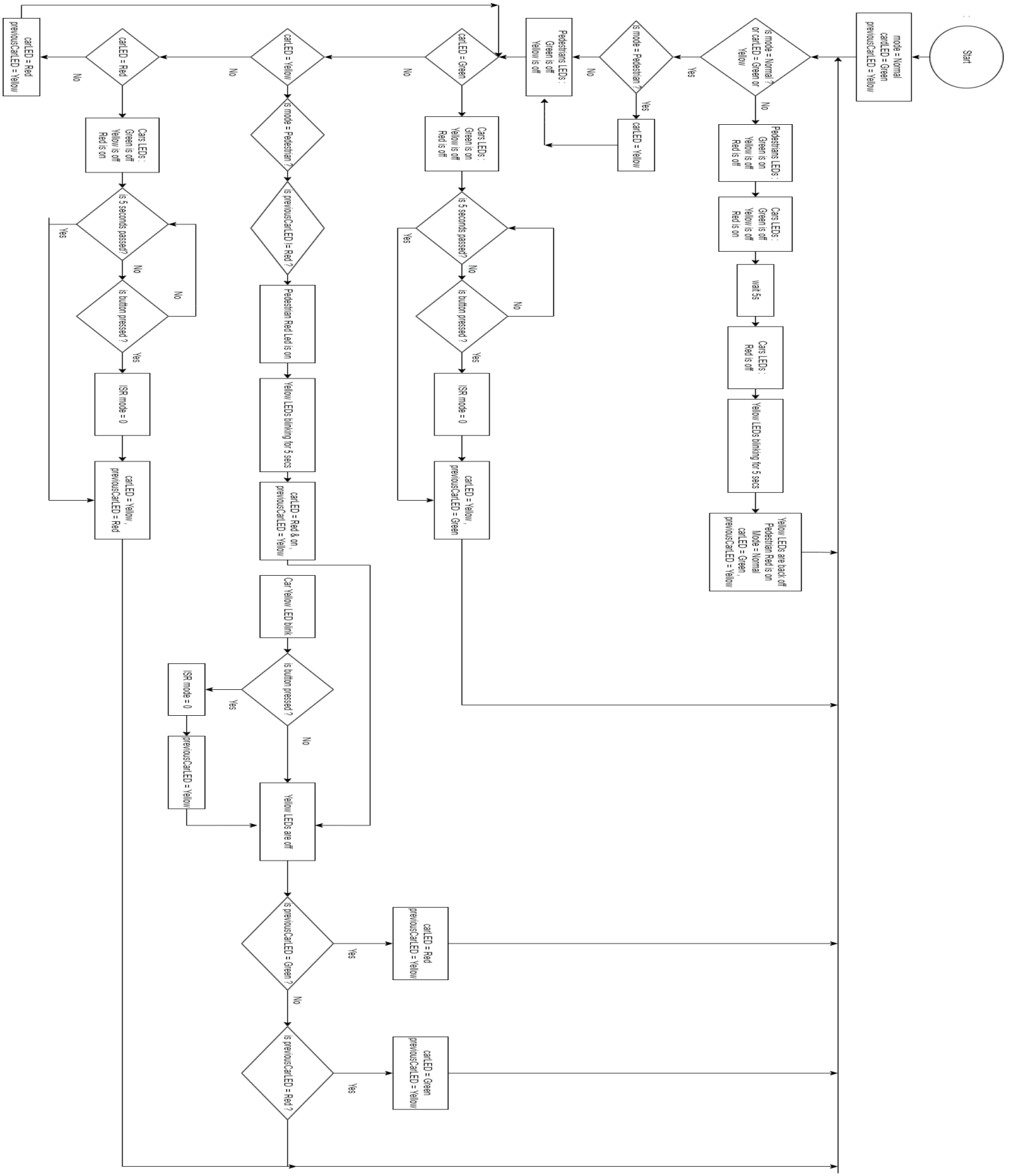
2- System Design

The system consists of :

- • ATMEGA32
- • 2 Green LEDs
- • 2 Yellow LEDs
- • 2 Red LEDs
- • 6 300 Ohm Resistors
- • 1 10k Ohm Resistor
- • 1 Push Button

As we can see from the previous proteus simulation environment, we have 6 LEDs (3 for the Cars & 3 for the Pedestrians) each “3”pair consists of 1 Green led, 1 Yellow led and 1 Red led each one connected to a port in the ATMEGA32 Microcontroller.
To enable the Pedestrians movement we have a push button connected to Interrupt 0 pin.

3- System Flowchart :



4- System Constraints

The system is triggered by a press of a button,
A single short press is more than enough to enable the pedestrian's mode.

By knowing that let's dive into system constraints:

- Double button presses: *when this is the case, the pedestrian mode will be enabled after the first press and the second press will have no impact at all.*
- Long button press: *when making a long press, there won't be any changes in the modes and all will remain in the normal mode.*