

Udacity – Egypt FWD Embedded Systems Professional Track

On-demand Traffic Light Control

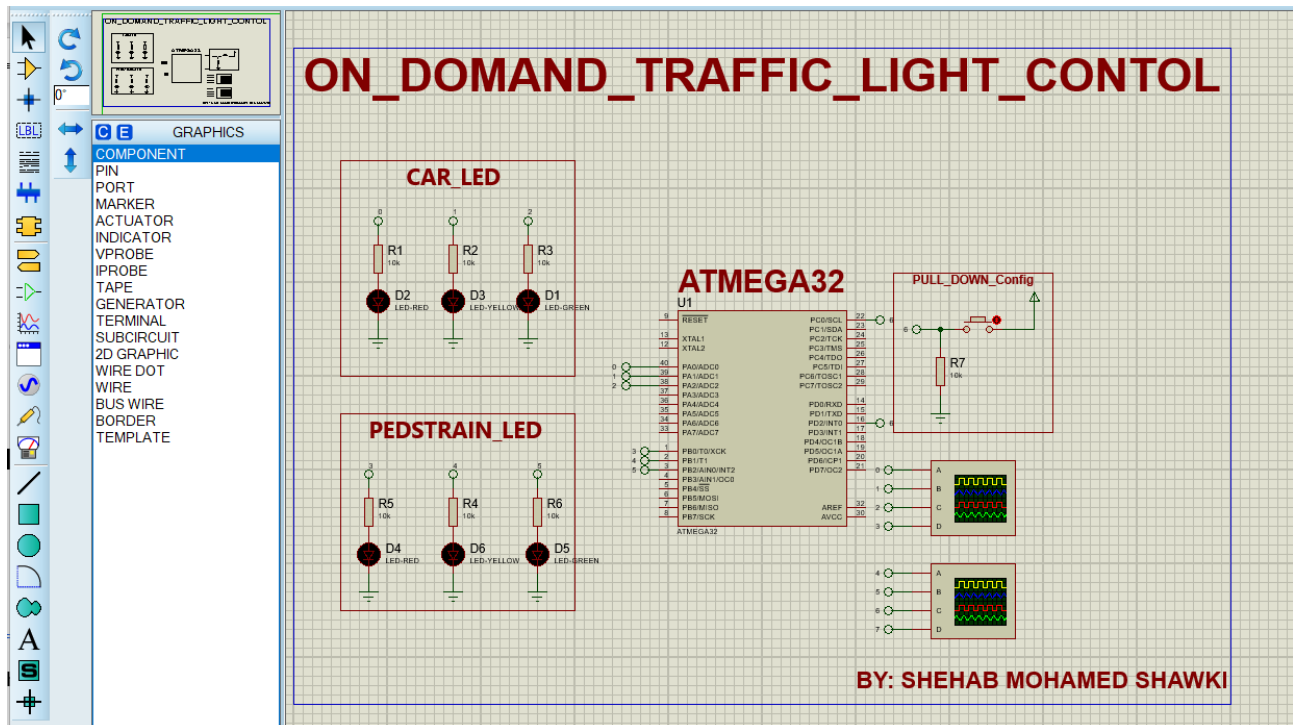
Creating By :

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System Description :



About the project :

Traffic Light System has Two modes : one mode is normal mode which is car traffic light The second mode is pedestrian traffic light , when the button is pressed the system switch from normal mode to pedestrian mode on different state .

system design :

2.1 Hardware Requirements

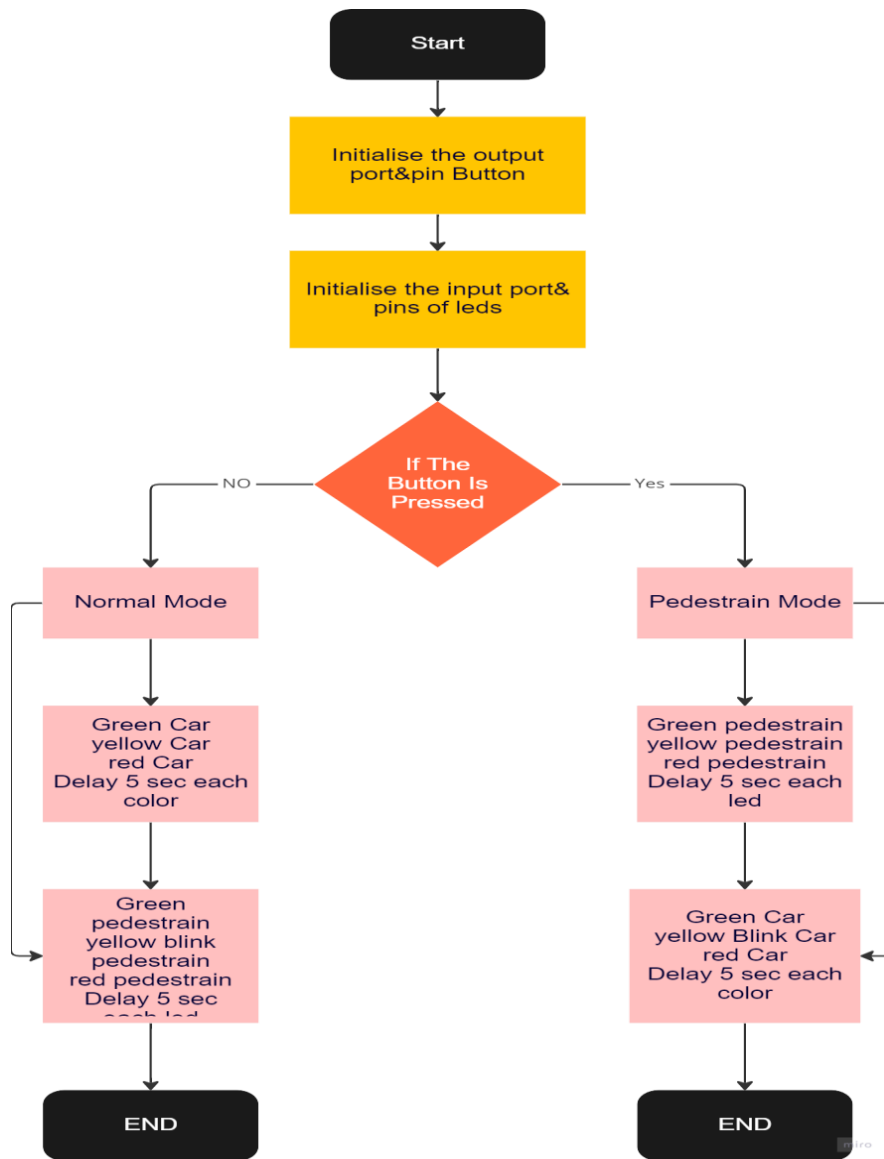
The system consists :

- 1- AVR Atmega32 (1MHz) .
- 2- Pedestrian Red LEDs, Pedestrian Green LEDs , Pedestrian Yellow LEDs.
- 3- CAR Red LEDs, CAR Green LEDs , CAR Yellow LEDs.
- 4- 1 Push Button 6 1K Ohm resistors

2.2 Software requirements

- 1- Proteus simulator.
- 2- Microchip studio IDE2

3.system flow chart



Normal mode:

State_1 : This state starts with car green light ON and pedestrian red light (always) ON.

State_2 : After five seconds, car yellow light starts blinking for five seconds while cars green light is still ON.

State_3 : After five seconds, cars red light is turned on for 5 seconds while car green and yellow lights are turned OFF.

State_4 : yellow light starts blinking again for 5seconds with cars red light is still on.

After that , The system back to state_1 again.

Pedestrian mode:

There is a special response for the pedestrian mode for every phase,depending on when the button is clicked.

1- If pressed in (State_1) it skips green light remaining wait time andturns on car blinking yellow light, while cars green light is still on.

If pressed in (State_2) it resets cars blinking yellow light remainingwait time and turns on pedestrians blinking yellow light.

if pressed in (State_3) it resets cars red light remaining wait time, turnspedestrians green light on and red light off.

if pressed in [State_4] it skips cars blinking yellow light remaining waittime and returns back to State_2.

Then, it turns back the program to (State_2), reversing the flow of thecars light from (yellow to green) to (yellow to red) again.