Project (readme)

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# Brief description

## Introduction

In this project we made a simulation of a traffic light control system. The system has two traffic lights (north to south and east to west). And at each traffic light there is a pedestrian traffic light. The pedestrian traffic light has a button when pressed is stop the main traffic light to allow the pedestrian to cross the road.

## Needed components

Each traffic light has 3 LEDs (green, yellow and red), and each pedestrian traffic light has 2 LEDs (green and red) and one button.

## code

In the code the 2 buttons are external interrupts (GPIO interrupt), the timers that act as the delay are internal interrupts.

In traffic light, the delay in Green LED is 5 seconds, Yellow LED is 2 second, and before transitioning form one traffic light to the next one Red LEDs is turned on and 1 second delay and the same sequence is happened to the next traffic light.

In pedestrian traffic light, when the button is pressed the pedestrian Green LED is turned on for 2 seconds and main traffic lights Red LED is turned on.

### Handling

1. Handle the case if two pedestrians pushed the button together in two different traffics:

we reset the timer (two seconds) every time two pedestrians pushed the button together in two different traffics.

1. Handle the case if the same button was being pressed more than one time during the same period of pedestrian crossing. (Period of pedestrian crossing is from when the button is pressed for the first time till the pedestrian traffic gets back to RED again.)

we reset the timer (two seconds) if the same button was being pressed more than one time during the same period of pedestrian crossing.

1. Handle the case to delay the request of the pedestrian to cross if the button was pressed after 1 second from the end of the Period of pedestrian crossing.

When 1 second pass and a pedestrian pushed the button, we wait until the time is passed and then another 2 second.

For example:

If button is pressed after 1.5 second, we wait 0.5 seconds until the first 2 second is completed and then start another 2 seconds.

(which means 0.5 + 2 = 2.5 seconds is delayed).