

Synchronized traffic light and technical fault simulation

Introduction

The project is based on the simulation of a cross traffic light intersection with the role of directing road traffic. During the project we also simulated a technical failure of the traffic lights that will work on flashing yellow, and we also used a buzzer to attract the attention of pedestrians. I made a model that represents the structure of the intersection next to which I attached the ARDUINO plate and the breadboard.

General description

The intersection works normally when it is connected to the source and when the switch is pressed it switches to fault mode (flashing yellow), the buzzer starts and a white LED will light up throughout the fault simulation. To exit the simulation, press the button again.

https://ocw.cs.pub.ro/courses/_media/pm/prj2022/agmocanu/gijga-maria-claudia-1221b-diagrama.png?w=120&h=84&t=1652295560&tok=073d59

Hardware Design

Lista piese:

- Placa de dezvoltare ArduinoUno
- 4x Modul semafor cu LED
- 1 pushbutton
- 1 rezistenta pentru buton
- 1 Modul buzzer
- fire de legatura
- 1 LED alb

Schema electrica:

<https://ocw.cs.pub.ro/courses/?ns=pm%3Aprj2022%3Aagmocanu%3A&image=pm%3Aprj2022%3Aagmocanu%3Aschema-electrica-gmc1221b.png&do=media>

Software Design

The simulated intersection in the application has two major modes of operation: normal mode and intermittent yellow mode. I will switch between the two depending on the status of the button. If the button is not pressed the intersection will run in normal mode, and if it is pressed in flashing yellow mode.

The four LED traffic light modules are connected diagonally 2 by 2. The traffic light starts with red and green leds on, 2 by 2 and the yellow ones off for 30 seconds. Then, in the next 8 sec I keep on the first pair of red lights, turn off the other pair of green leds and I turn on the yellow leds and the algorithm its repeted for the other case when the second pair of leds become red and so on. When the simulation button is pressed, it enters the error mode. In error mode, an LED lights up on the breadboard and a bell rings. The red and green LEDs are dark, and the yellow LEDs start flashing until I press the button again.

Rezultate Obținute

Concluzii

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<https://github.com/claudiaMaria2001/project>

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