



Course Name: Reat Time Systems

Course Code: OSS 3001

Prof. Name: Mehdi Niknam

Red Light Buzzer

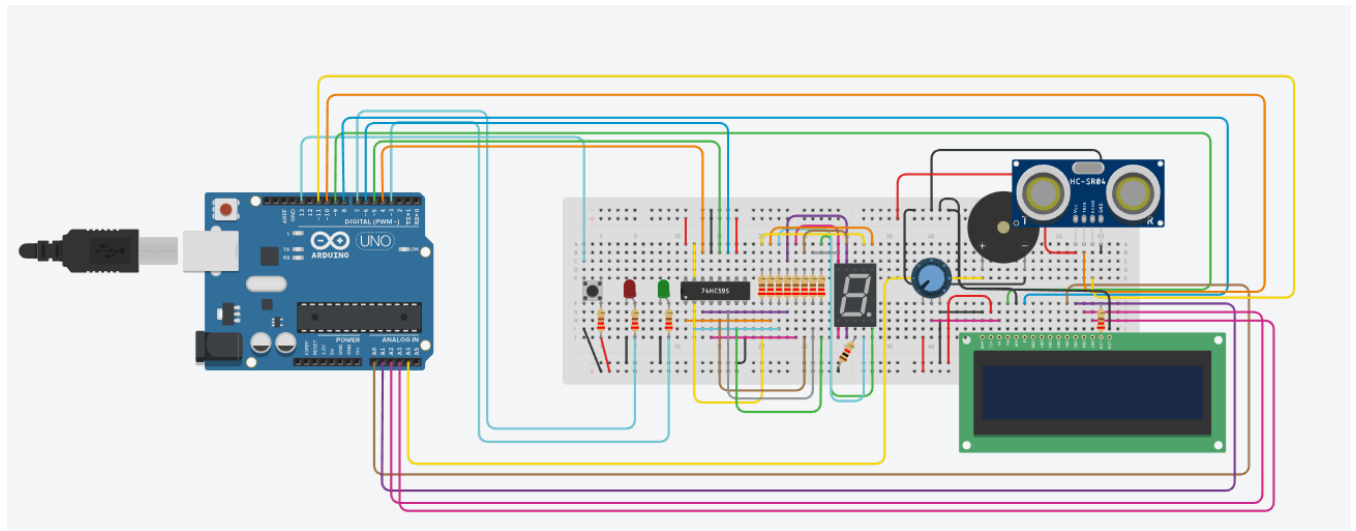
Group Number: 21

Group Members: Ahmed K, Aidan S

System Objective

Our system aims to act as if you were a pedestrian at a cross. We implement a red light and green light to simulate this further. Along with an LCD and 7 segment display. The 7Segment display shows the time you have left on your turn. While the the LCD shows when a car is approaching in tandem with a ultrasonic sensor. The ultrasonic sensor will also trigger a audio buzzer. This will create sound to alert the pedestrian a car is approaching.

System Circuit Schematic



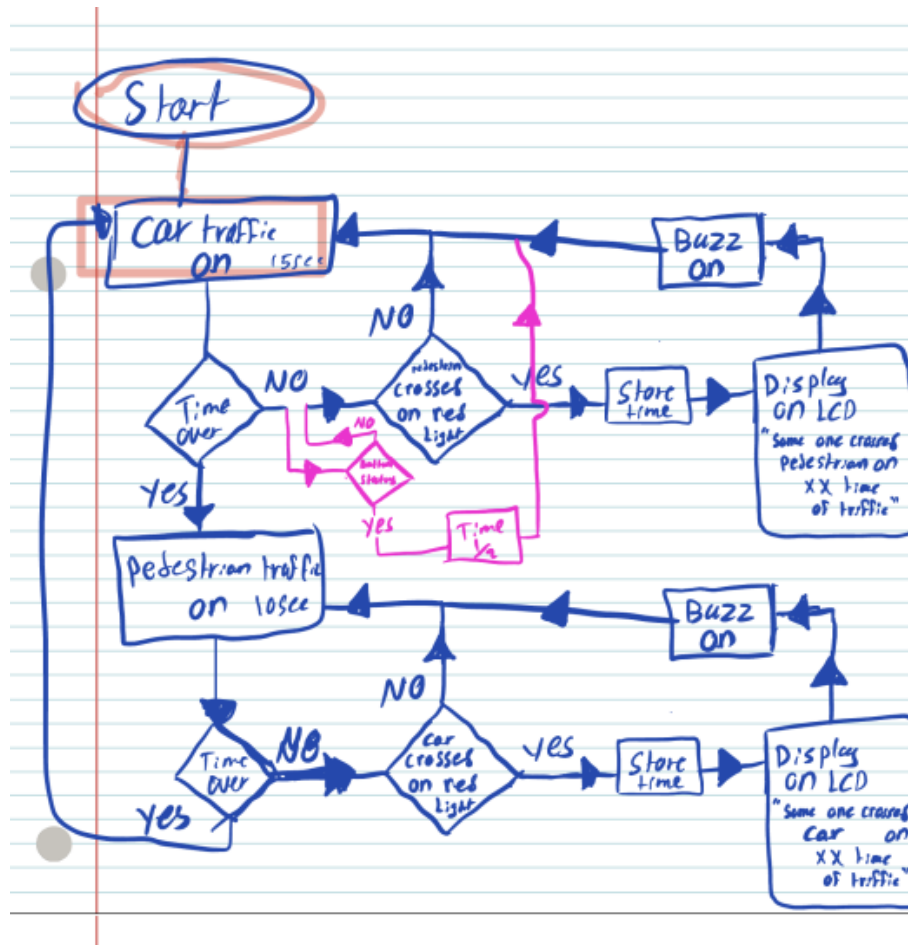
LCD pin #11	PORT C, PIN A0
LCD	PORT C, PIN A1
LCD	PORT C, PIN A2
LCD	PORT C, PIN A3
Ultrasonic trigPin	PORT B, PIN 10
Ultrasonic echoPin	PORT B, PIN 11

Reference Point, LCD screen is on the Bottom right: Starting from Left to right!

Required Equipment:

- 12 x 220 Ohm Resistors
- 1 x 1k Ohm Resistor
- 1 x LCD
- 1 x button
- 1 x Piezo/Buzzer
- 1 x Arduino Uno
- 1 x 7 Segment Display
- 1 x Potentiometer
- 2 x LEDs
- 1 x Ultrasonic Distance Sensor
- 1 x Shift-Register

Flowchart of how the system works



Short reflection talking about the experiences and challenges. What would you do differently if you did the project again?

Problems found regarding the project could easily relate to finding ways to utilize all components in a cohesive way. Additionally, we found it difficult to balance the pins being used and have pins free for timer-related components like the ultrasonic sensor.

The sensor posed a challenge to understanding how it worked. Although the way we solved this by calling it in an init function and simply calling the function in the main. Then we used a separate function to read the distance. This was the best way to keep our code clean and organized.


We also ran into problems getting the code to work in general. The sheer amount of wiring gave us problems to keep the circuit organized as well.

Another problem we had was finding a way to include interrupts into the system. This was something that racked our brain for a few days.

If the project was to be done again I think we could take a more organized approach to the circuit building process. If we built the circuit first, it would be too messy to read and copy to a digital version on tinkercad. We did not do this and lacked the communication to do both

parts relatively close. However there is always problems that will arise where we need to rewire certain things, next time we would prefer to stay on top of this and make updates as we go.

Video Demo:

 Real time system-Term project-Red light Buzzer