# Car Simulation on Arduino

Group: #4 – Madeline Quang, Sayfullah Eid

Contribution:

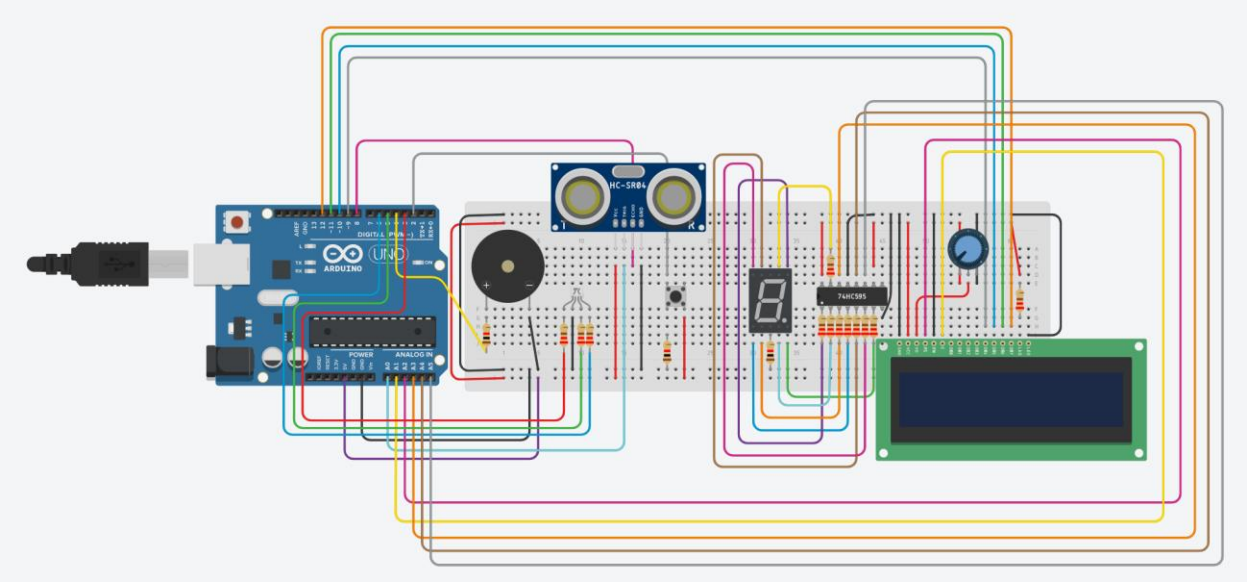
Madeline: Wrote the report, added the code for ultrasonic, PWM LED, speaker and LCD

Sayfullah: Provided the initial code setup with the libraries, coded the shift register, 7-segment and button

Description:

The project our group is doing is to mimic a car's distance from the car in front of them using ultrasonics sensors, LEDs and LCD screen. It will indicate to the user whether it is a safe distance they are following or if it is too close. If it is too close, it will let the driver know and if it is really too close, it will safely stop the car so it does not hit the car.

Circuit Diagram:

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Components and topics:

- LEDs
- USART
- Timers
- Push buttons
- 7-segment
- LCD
- Shift registers
- Speaker

Pseudocode:

-read ultrasonic distance

-continuously output the distance to USART

- if greater than 50,

-LCD outputs “distance is Safe”

-LED outputs green

- if between 30-50

- LCD outputs be “distance is cautious”

-LED outputs yellow

- if 10-30

- LCD outputs distance is dangerous”

-LED outputs orange;

- if less than 5

- LCD outputs “Car will stop”

-LED is red

-the speaker beeps

-7 segment counts down from 5 and writes B (as in car is braked)

- afterward, if button is pressed, everything is reset

Reflection:

This project showed us that we can mimic any kind of system and in our case, it was similar to a car detecting the front object and breaking. The challenges we had was organizing which ports to use for the different components because we had to change the circuit diagram quite a few times. If we did this project again, I would most likely add a motor to show that it runs then when the distance is less than 5, it slows down and breaks safely. I would also use a better distance sensor because the ultrasonic seems to be not as accurate sometimes.