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SOCIAL DISTANCE REMAINDER

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Abstract— In recent times the spread of corona virus is gradually increasing. This increase in corona virus can be prevented by maintaining a social distance with each other. After all, prevention is better than cure. This terrific situation can become worse without social distancing. However, it is not possible to always check the social distance and to maintain it with others by keep looking around who is approaching you. It will be useful if we have a reminder to check out. To tackle this situation of covid-19, the social distance remainder has proved to be beneficial to maintain a distance between each other. This is the main concept of this project. This social distance remainder will alert us to maintain a 2-meter distance. Not only it will alert you it also works as a 2 in 1 device. The component thermistor in this device not only increase the alarm sound depending on the temperature but also it can switch its modes by using a button. The first mode gives you a alert when someone gets closer to you and the second mode measures the temperature and the distance of the other person from you. This temperature and distance will be displayed using a lcd display. On testing this social distance remainder, whenever a person gets close to you the buzzer keeps on and alert us. The thermistor will check and senses the temperature of the person and displays it on lcd. This remainder will be very useful in this pandemic situation.

Keywords: Arduino UNO, Arduino Proto shield, Adafruit mini-Breadboard, Elegoo 16*2 LCD Display, Ultrasonic sensor – HC – SR04, Touch sensor, LM35 Thermistor, Resistor 10k ohm, Buzzer, Rotary Potentiometer, Jumper wires, A transparent box

I. INTRODUCTION

The outbreak of COVID-19 which is declared to be a major threat to people and is firstly spread in China. Nearly so many people suffered a lot and died of COVID-19. About 200 countries have reported the spread of COVID-19. The scientists, researchers and doctors have been finding a solution and vaccine to control and cure the cases of COVID-19. But the spread of COVID-19 cases is still increasing day by day. Even if we cannot cure the Coronavirus, we can prevent the spreading of this virus by maintaining social distance and contact with each other. Although the Government has issued laws and rules to the people to maintain social distance, It is very natural and common that people may violate the rules and may get close to each other normally without any social distancing. In order to prevent the spread of COVID19 the people have to follow the rules and must have to maintain a social distance of at least 2 meters. For the people to get remember social distancing there is a device called social distance remainder which reminds people to maintain at least 2-meter distance by buzzering an alarm. This paper deals about the importance of social distancing and the working of social distance remainder.

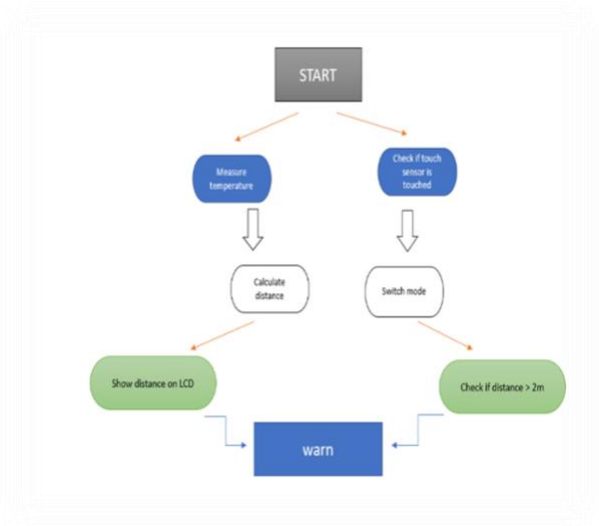
II. PROPOSED SYSTEM

A. SYSTEM OVERVIEW

In the proposed system Arduino estimate the temperature which is used to compute the distance with greater accuracy.

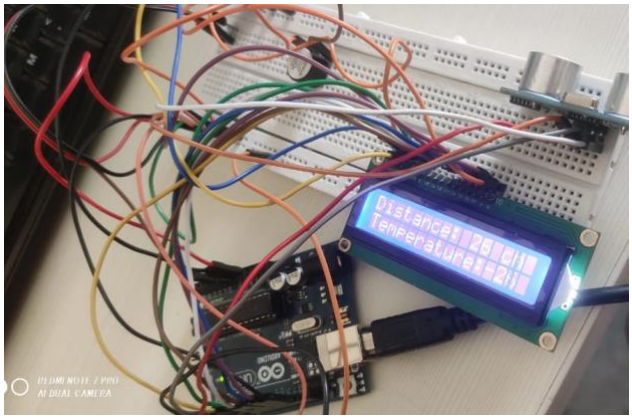
- When the Arduino is in mode –1,
- If the distance is between 2metre and 1metre, the Liquid crystal display backlight lights up and the LCD shows "Please keep away" and how far away the person is.
- If the distance is 1metre - 50centimetre the backlight of the LCD flashes and the LCD shows "Keep away"
- If the distance is less than 50centimetre the backlight turns off and on twice a second and the LCD shows "STAY AWAY!"
- When the Arduino is in mode – 2,
- The LCD reveal the distance on the top, and the temperature on the bottom of the screen.

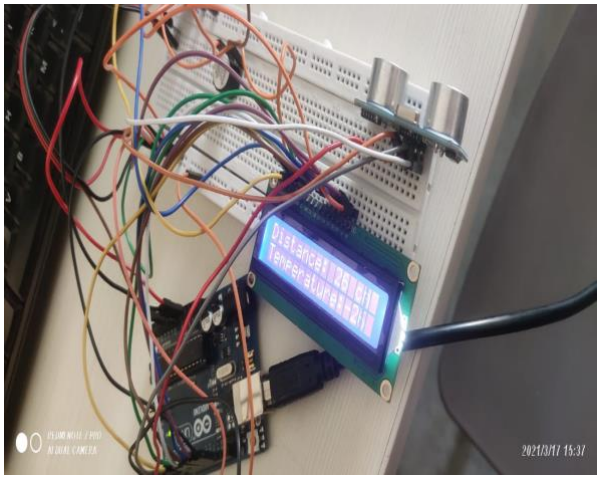
III. BLOCK DIAGRAM



IV. SYSTEM AND IMPLEMENTATION

The connection between system's different electronic components of the sensing and sink nodes was designed using open-source hardware as shown in Figure 2 and Figure 3 respectively. In the sensing unit, the trigger pin of the ultrasonic sensor is connected to the pin 7 of the Arduino, the echo pin is connected to pin 6 of the Arduino. The positive pin of the buzzer is connected to pin 9 of the Arduino, negative pin of the buzzer is connected to ground of the Arduino. the ultrasonic sensor is connected to the 5V pin of the Arduino while the GND pin of the buzzer and the ultrasonic sensor are connected to the GND pin of the Arduino microcontroller. The touch sensor consists of 3 pins such as ground, Vcc, signal pins. The Vcc is connected to 5V , the signal pin is connected to the digital pin 2 of the Arduino. The liquid crystal display is connected to the respective pins (12,11,3,5,4,8) as shown. The LM35 is a temperature sensor to detect the body temperature, the Vcc pin is connected to the 5V breadboard, the analog pin of the LM35 temperature sensor is connected to the ground of the Arduino.





1. ARDUINO UNO

The Arduino Uno development board is shown in Figure. It is an open-source microcontroller based on the chip ATmega328P. It has so many analog and digital pins. Arduino can be used for the projects which includes both analog and digital pins. It can be used for the projects and components that require I/O pins, more memory and RAM. There are 14 digital pins and 6 analog pins in the Arduino. Among the 14 digital pins 6 pins uses PWM (Pulse Width Modulation). These pins are used to interface various components, expansion boards with 32kbyte memory, serial communication interface, 16MHz quartz crystal and a reset button. This Arduino can be commanded by using Arduino programming code. This code can be run in the software called Arduino IDE software. This software can be used in windows, Linux and Mac.

Figure A. Arduino Uno

B. ULTRASONIC SENSOR HC-SR04

Ultrasonic sensors are a popular component in electronics in measuring distance in recent times. It is very accurate and very simple in measuring distance. Ultrasonic sensors work with the change in sound velocity with respect to the propagation medium. The range of the ultrasonic sensor HC-SR04 module is 2cm to 400cm. The ultrasonic sensor has four pins VCC, GND, Trigger and Echo. It has a transceiver and a receiver which is used to transmit and receive waves from the detected objects.

***Figure B**. Ultrasonic sensor HC- SR04*

C. LM35 thermistor:

LM 35 is the type of temperature sensor which senses the temperature and detects it. the output voltage is linearly proportional to the centigrade temperature.

Fig C. Thermistor

D. TOUCH SENSOR:

It is a sensor which is operated only when it is touched. Touch sensors act as a switch between two modes. There are different types of touch sensors like resistive touch sensor, capacitive touch sensors, etc. which changes its modes and operate according to the change in temperature and resistance. Here the touch sensor is used to switch between two modes like 1. measure temperature and 2. measure temperature.

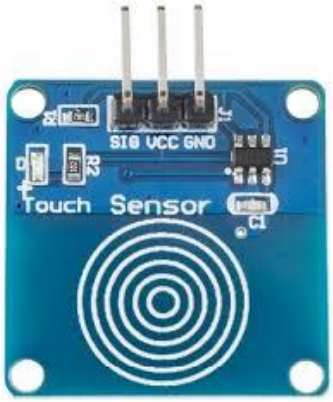


Fig D. Touch sensor

V. SYSTEM AND IMPLEMENTATION

When a person is below the social distancing limit. i.e., below 2 meters, the buzzer will be on when the social distance remainder is in the first mode. It will detect the distance and the person's temperature when it is in the second mode. This is the output of the project.

VI. ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my professor who gave me the golden opportunity to do this wonderful project on the topic social distance remainder, which also helped me in doing a lot of research and I came to know about so many new things, and I am really thankful to them.

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