Smart Social Distance Monitor through Message Intimation and Transfer

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ABSTRACT

Due to the COVID-19 pandemic there have been many life losses and health issues especially respiratory syndrome. To overcome this it is mandatory that people should wear mask and strictly follow social distancing in public places. In order to bring it as a strict rule it would be easy if we monitor the social distance in a frequent basis. This project as named social distance monitor will help all individuals to maintain the required social distance. It will continuously calculate distance between the individuals using this device and others approaching them and if distance is violated and not maintain properly will intimate and make them to correct it. Thereby social distancing can be maintained perfectly in all public places particularly focusing on institutions like schools, colleges, hospitals, workplaces etc. In case if distance has been violated continuously information can be sent to authorities via e-mail, SMS.

Keywords:-*Distance monitor, calculate, violates, public places*

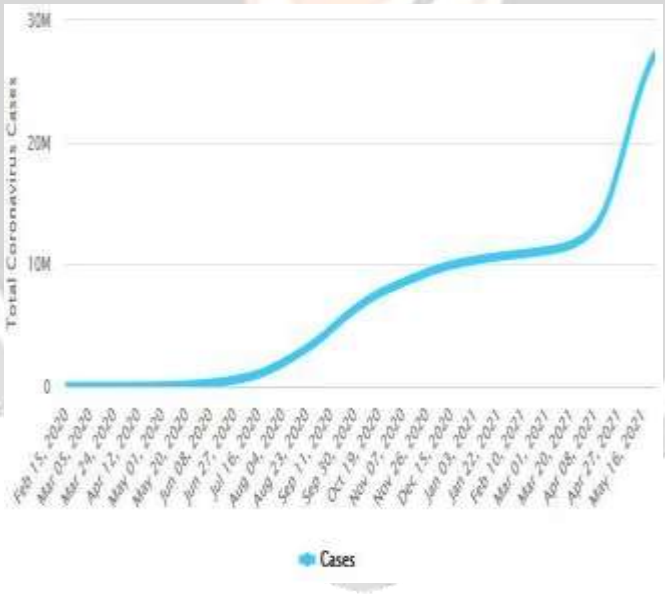
1. INTRODUCTION

Due to the deadly COVID-19 pandemic, people must maintain a safe social distancing majorly in public places, but many of them are not following and maintaining a proper and safe social distancing among them as they are not aware of this deadly corona virus, this project will guide us in an easiest way to overcome the deadly corona virus by giving a message intimation. Now let's see about the corona virus (COVID-19). The origin of COVID-19 is from China, has affected many countries worldwide since 2021. In the year 2020 on march 11 the World Health Organization announced that the corona virus will be an epidemic diseases because the corona virus were spreading over 114 countries which leads to four thousand deaths in that overall countries and above one lakh. And also in the year 2020 on October 7, the World Health Organization announced that there are more that 3 crores confirmed corona virus cases which includes more than 10 lakhs deaths. Most of the well care managements , medical professionals and scientists are trying to implement antivirus vaccines and medicines to overcome this hazardous corona virus. To help people from this hazardous virus most of the medical organizations are trying to find a new method to find the antivirus to help protect people from this deadly corona virus. The corona virus mainly spreads among people who are between then, so the organizations highly recommend us to maintain at least six feet social distancing between all of us. The disease spreads when an infected person touches or sneezes in front of nearby peoples. This also spreads through animals and also through water. Some of the new current studies show that people with no symptoms but are infected with the corona virus were letting others in trouble. Therefore, it's necessary to take care of a minimum of 6 feet distance from others, even though people don't have any symptoms. Now let's see about the existing works, [1] In this project they were using strict autonomous surveillance and one of its drawbacks is high cost which was published in ieee journal in January 2021. [2] In the year 2020 on November a project named My SD: in this project they named as a smart Social Distancing Monitoring System, in this project they were using location detection with GPS and one of its disadvantages is it consumes more time to execute which was published in the ieee journal in November 2020. [3] A project named A comprehensive survey, which is based on fundamentals with the technologies enabling, this project provides detailed information of severity for the disease and one of its disadvantages is

difficult in troubleshooting the issues caused which was published in the ieee journal in august 2020. [4] In this project they were majorly concentrated in predicting the risk level of disease but its disadvantage is it cannot be used by all the people, that is it cannot be used as an handy model which was published in the ieee journal in august 2020. [5] In this project they were including segmented ROI which is the main advantage of it and one of its drawbacks is its not cost efficient system which was published in the ieee journal in September 2020. [6] In this project they used wireless technology with distancing monitoring through microchips which is one of its advantages but it is quite complex in manufacturing the product which is the disadvantage of this project which was published in the year 2020 in the ieee journal. [7] The Visual Social Distance Problem, in this project they were using proxemics with person detection and pose estimation which is the main advantage of it but it requires an additional process to give the message intimation which was published in the year 2020 in the month of june. [8] The title named COVID SAFE in this project they used an automated IoT based monitoring system which is the main advantage of this system but its disadvantage is it consumes more time to give the results which was published in the ieee journal in October 2020. [9] In this project the detection is very much precise with deep learning and graphical processing unit which is the advantage of this project but it's not cost efficient which is the drawback of this model which was published in the ieee journal in December 2020. [10] Real Time

Remote system to monitor patient based on IoT, in this project they used remote control management system and Electrocardiogram with MQTT protocol which is the main advantage of this model but it is very complex to install and requires more cost in manufacturing the product which is the disadvantage of this product which was published in the ieee journal in april 2020.

Chart-1: Total corona virus cases in India



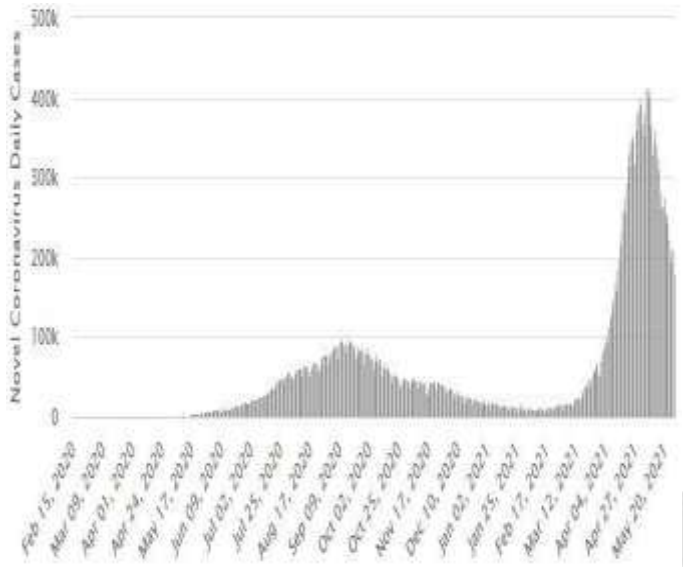


Chart – 2: New daily corona virus cases in India

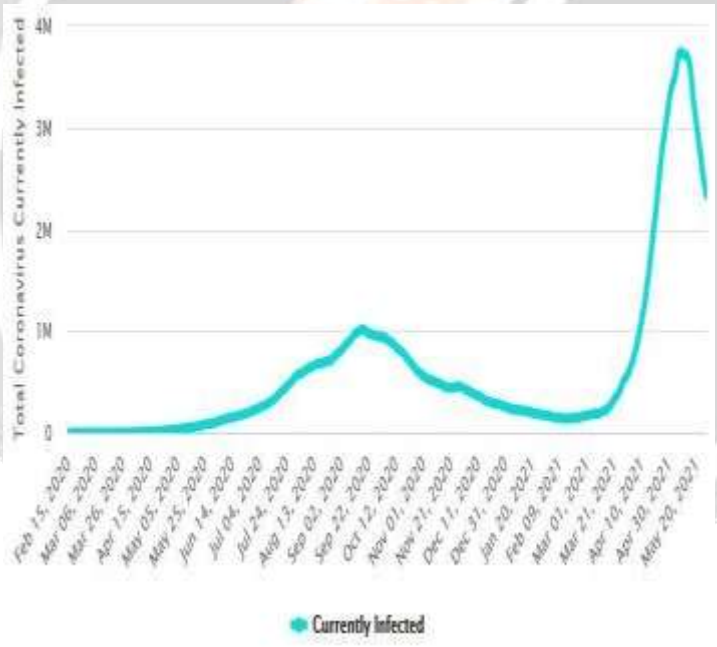


Chart -3: Total corona virus active cases in India

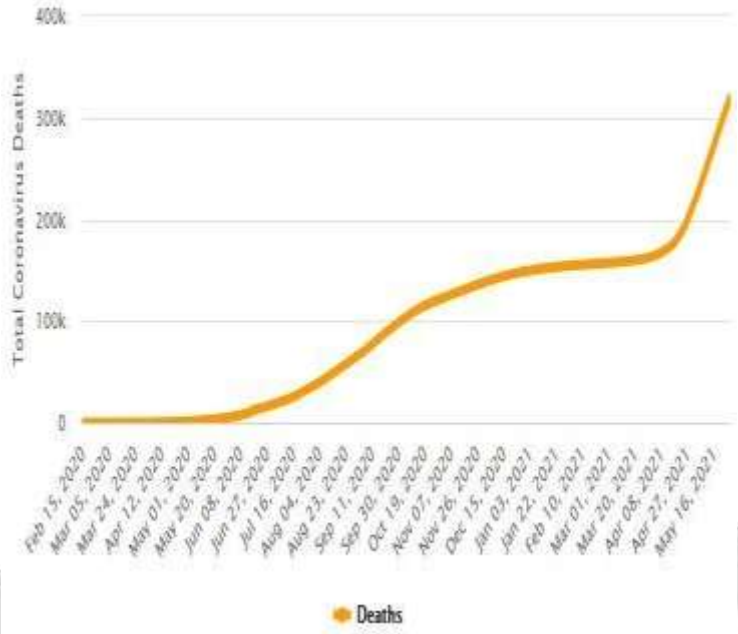


Chart – 4: Total corona virus deaths in India

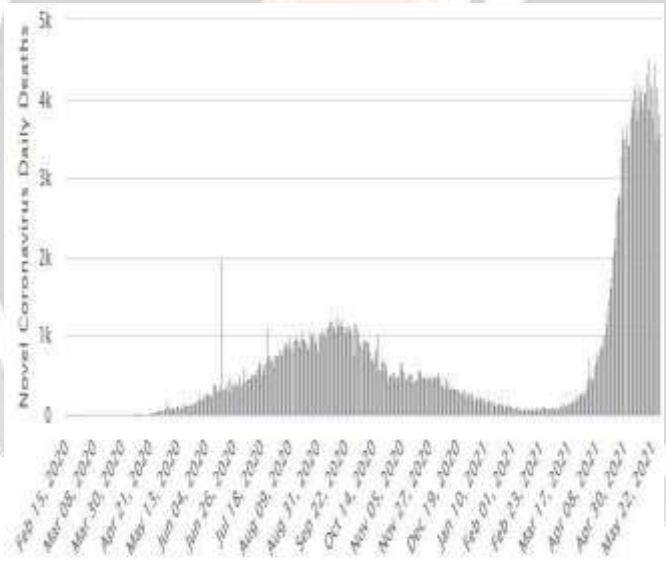


Chart – 5: New deaths in India

Finally from all the above details it is clearly known that the corona virus is spreading and the rate of infected people is also increasing. Hence to solve this issue, this project as named smart social distance monitor will guide us in an easiest way to stay safe from COVID-19 and other diseases too. So now let's see about this project smart social distance monitor, this will help us in maintaining a safe social distancing majorly in Schools, Colleges, Companies, Industries, Hospitals, Shopping malls etc. Hence this smart social distance monitor works by giving message intimation if any person approaches us. The nearby person will be sensed by a sensor which calculates the distance between them so that the message intimation is given via a Beep sound and light, so that the person can adjust the distance properly to stay safe from these kind of diseases. After intimating a person via messages as will as if a person violates more than once then the number of violated attempts will be sent to the authority through e-mail and SMS. Hence by using this smart social distance monitor a person will be in a safe condition from COVID-19 or any other diseases and making this norm strictly, the death rates will be reduced.

2. OBJECTIVE

The main objective of this project smart social distance monitor is to stay safe from COVID-19 and also from other diseases as well. To stay safe from this, the smart social distance monitor will help us to maintain a safe social distancing, majorly in Schools, Collages, Companies, Industries, Shopping malls etc. Hence this smart social distance monitor works by giving a message intimation if any person approaches us. The nearby person will be sensed by a sensor which calculates the distance between them so that the message intimation is given via a Beep sound and light, so that the person can adjust the distance properly to stay safe from these kind of diseases. After intimating a person via messages as will as if a person violates more than once then the number of violated attempts will be sent to the authority through an e-mail and SMS. Hence by using this smart social distance monitor a person will be in a safe condition from COVID-19 or any other diseases.

3. LITERATURE SURVEY

The existing work includes only the presence of a sensor just to calculate the distance between the two people and displaying it through the help of LCD display. In the existing scenario they were only using sensors and LCD displays to calculate the distance and give message intimation. So that it does not fulfill the necessary requirements to be included. Now let's see the major disadvantages of the existing systems listed below:

- Difficult to install
- High cost
- Difficult to manufacture
- Difficult in troubleshooting the issues
- Not automated
- Applicable only for several places
- Cannot be used by each and every people
- More power consumption
- It's not an handy material

S.NO	TITLE OF THE PAPER	AUTHOR NAME	JOURNAL NAME AND YEAR OF PUBLICATION	MERITS	DEMERITS	REMARKS
1	Autonomous Social Distancing in Urban Environments Using a Quadruped Robot	Zhiming Chen; Tingxiang Fan; Xuan Zhao; Jing Liang	IEEE JANUARY 2021	Autonomous surveillance	High cost	Social distance through artificial intelligence
2	MySD: A smart Social Distancing Monitoring System	Mohd Ezanee Rusli; Salman Yussof; Mohammad Ali; Ahmed Abdullah Abobakr Hassan	IEEE NOVEMBER 2020	Location detection	More time consumption	Location identification with GPS
3	A Comprehensive Survey of Enabling and Emerging Technologies for Social Distancing—Part I: Fundamentals and Enabling Technologies	Cong T. Nguyen; Yuris Mulya Saputra; Nguyen Van Huynh; Ngoc-Tan Nguyen; Tran Viet Khoa	IEEE AUGUST 2020	Provides detailed information	Trouble shooting of defect is complex	Usage of AI
4	The "Screen"ing of You and Me: Effects of COVID-19 on Counterproductive Work Behaviors	Akanksha Malik; Shuchi Sinha; Sanjay Goel	IEEE AUGUST 2020	Risk level is predicted	Cannot be used for all individuals	Duration and severity is predicted
5	Person Detection for Social Distancing and Safety Violation Alert based on Segmented ROI	Afiq Harith Ahamad; Norliza Zaini; Mohd Fuad Abdul Latip	IEEE SEPTEMBER 2020	Includes segmented ROI	Not cost effective	Person detection by segmented ROI
6	Distance Monitoring System with ESP8266 for Industrial Automation Machines	Ia Mosashvili; Salome Oniani	IEEE DECEMBER 2020	Wireless technology is used	Complexity in manufacture	Distance monitoring through microchips
7	The Visual Social Distancing Problem	Marco cristani, Alessio Del Bue, Vittorio Murino, Francesco Setti, Alessandro Vinciarelli	IEEE JULY 2020	Availability of proxemics	Requires additional process to intimate	Person detection and pose estimation
8	COVID-SAFE: An IoT-Based System for Automated Health Monitoring and Surveillance in Post-Pandemic Life	Seyed Shahim Vedaei; Amir Fotovvat; Mohammad Reza Mohebbian; Gazi M. E. Rahman; Khan A. Wahid	IEEE OCTOBER 2020	Light weight and low cost IoT node	More time consumption	Automated IoT based monitoring system
9	On the Comparison of Social Distancing Violation Detectors with Graphical Processing Unit Support	Suryadi Suryadi; Edi Kumiawan; Hendra Adinanta; Bernadus H. Sirenden; Jalu A. Prakosa; Purwowibowo Purwowibowo	IEEE DECEMBER 2020	Precise in detection	Not cost efficient	Deep learning with graphical processing unit
10	IoT Based Real-Time Remote Patient Monitoring System	Hoe Tung Yew; Ming Fung Ng; Soh Zhi Ping; Seng Kheau Chung; Ali Chekima; Jamal A. Dargham	IEEE APRIL 2020	Remote control	Complex for the installation and high cost	Electrocardiogram with MQTT protocol

4. PROPOSED METHODOLOGY

In the planned system the elements used are Ultrasonic sensor, Breadboard, LED, 9V battery, Buzzer, Resistors, Jumper wires, LCD display, Arduino UNO R3, Wi-Fi module. The ultrasonic sensor will sense the person and calculate the distance between them and the message intimation is given with the help of an LED, Buzzer, LCD display as well as the message intimation and the number of violated distance will be sent through e-mail and SMS, this mechanism is achieved by making use of Wi-Fi module. By sending this message intimation through LED as well as through e-mail and SMS people can adjust and maintain a safe social distancing in public places. It's majorly useful in Schools, Colleges, Companies, Hospitals, Shopping malls, Industries etc. Notably this smart social distance monitor is entirely automated, this mechanism is achieved by making use of Arduino UNO R3. Finally the entire system is automated and the entire process is reliable.

Its merits are below:

- Message intimation through LED, LCD display and Beep sound
- The number of attempts crossed and violated distance will be sent through e-mail and SMS
- Very much useful for school and college students
- It can be used as an handy material
- Entire system is automated
- The entire system is cost efficient

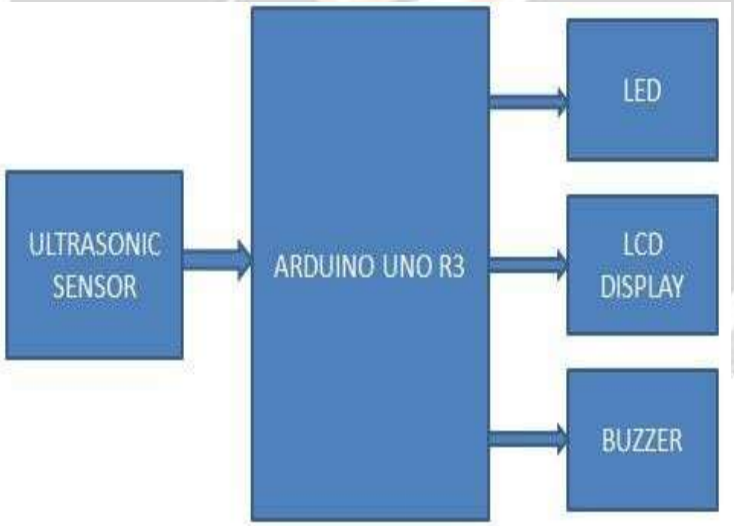


Fig -1 Block diagram

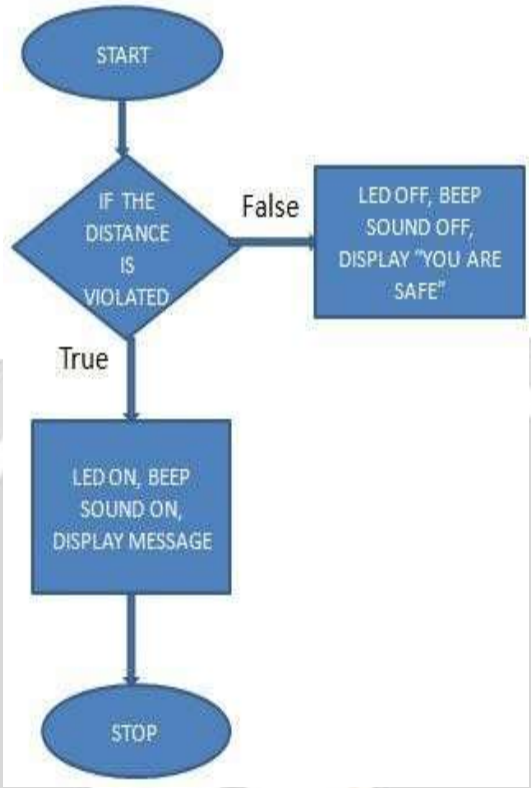


Fig - 2 Flow Diagram

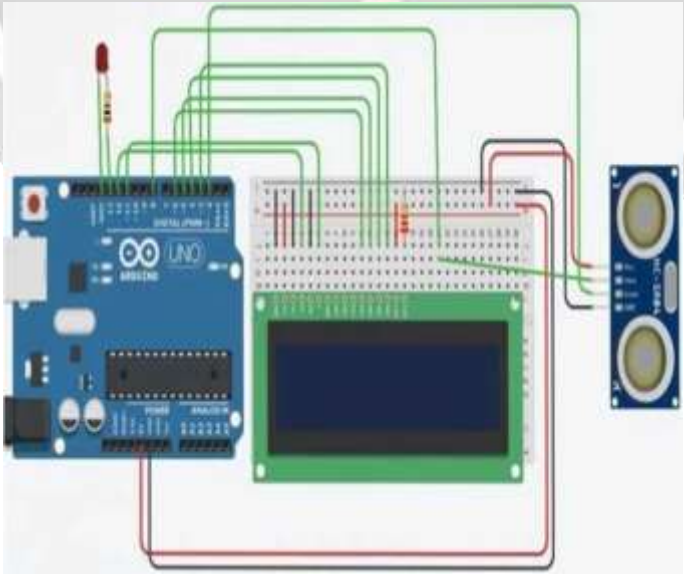


Fig -3 Circuit Diagram for the Hardware setup

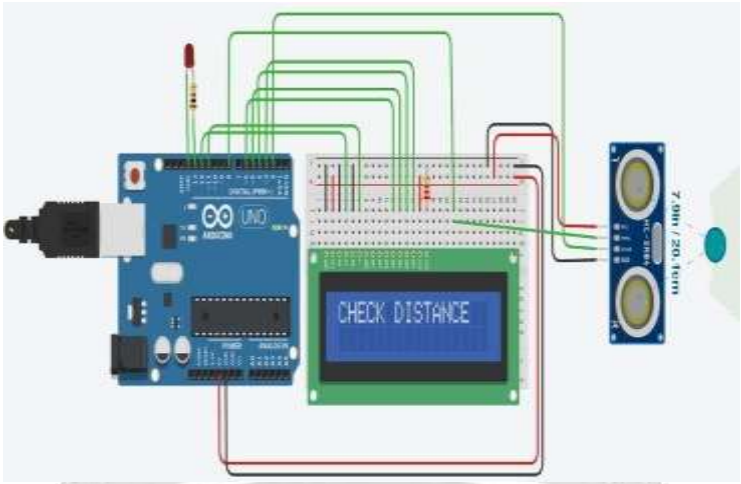


Fig -4 Experimental setup 1

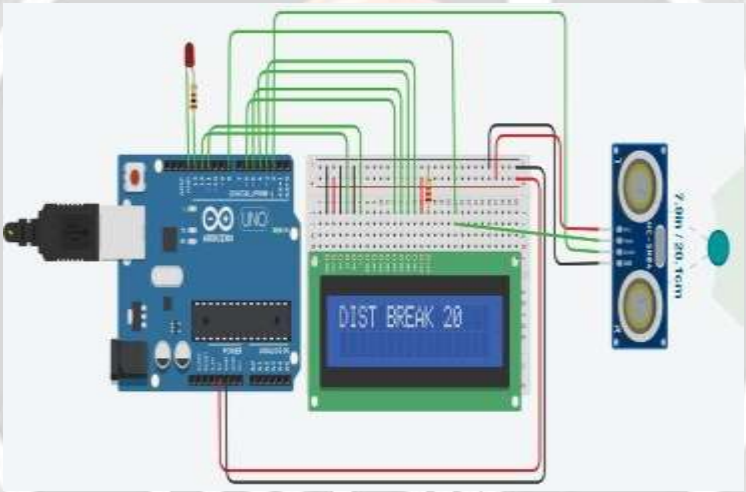


Fig -5 Experimental setup 2

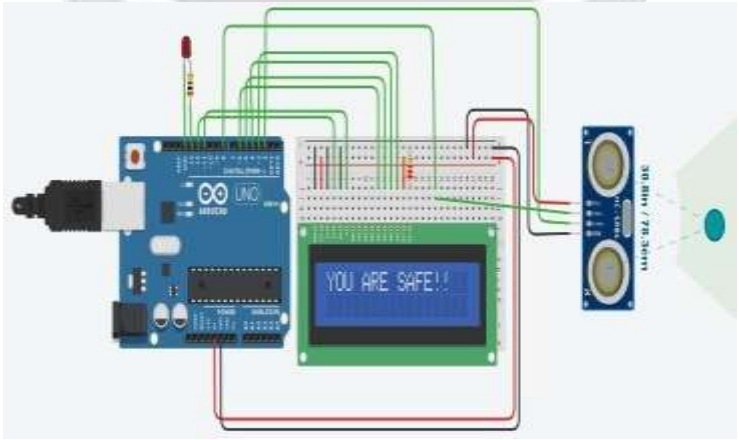


Fig -6 Final Output

The results are below:

By incorporating this smart social distance monitor, each and every person will be in a safe condition from COVID- 19 and also from other diseases too. For each violation the message intimation will be given through LED, LCD display and Buzzer and also it will be sent to the authorities through e-mail and SMS. By doing this the authorities from School, College, Company can give a gentle reminder to maintain a safe social distance to them. And then we can also include an another component called GSM module, which will be helping us in sending the users data and information to the authority to verify whether the details is from which person. Hence by incorporating this method people will be very much safer from COVID-19 as well as other diseases too.

5. CONCLUSION

Finally the entire social distancing system is automated, energy efficient and cost effective. And the message intimation as well as the alert message can be given to the students in schools and colleges. As the number of attempts of violated distance is sent to the authority they can give a reminder to the students to maintain a safe social distancing among them. Hence by incorporating this method there is a massive reduction in the number of COVID-19 cases.

6. REFERENCES

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