**PROJECT TITLE : SOCIAL DISTANCING INDICATOR AND**

**ALARMING SYSTEM**

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**ABOUT PROJECT**

This project is about designing a device that works by indicating to the people by the sense or knowledge of close distance between two people through alarming buzzer type sound .

**PROJECT ABSTRACT**

The project mainly uses the Ultrasonic distance

sensor (HC-SR04) that measures the distance of the target or a object which is inside range from 1 to 3 meters so, that basically senses and sends electrical signals and a Piezo buzzer that generates basic beeps and

tones in which these two components play a major role in this project . And Moreover it gives an indicator of how close the object is using special leds. These special led components are called Neopixel rings . These all can be put into a connection with arduino UNO and a

breadboard which works as a real or we can say original social indicator and alarming system . Basically this can easily be done through online simulator software that is available which is Tinkercad Circuits in which it is so helpful to make it as physical .

**NEED OF THIS PROJECT**

The need for this project is, as we know the whole world is suffering from this deadly coronavirus, which is an infectious disease that causes people to experience a mild to moderate respiratory illness that most of the time leads to death . As all of us are aware that due to the global coronavirus pandemic, social distancing is considered as one of the best ways to prevent ourselves from the chances of spread of this infection from person to person in which this distancing factor work can be done by placing this device’s distance sensor . It would be useful to have this device with us right now like at this pandemic when we are going out of home .

**MOTIVATION**

Social distancing indicator is a hot cake project right now which will be very useful during this pandemic situation as we most of them mostly forgets to leave or maintain a proper social distance while we are busy with our other so much important works . So whenever there is a need to maintain a gap between a person whether he/she is infected or not infected it reminds us by a beep sound from the piezo buzzer because this device may not know or we can say it cannot judge a person who is affected by coronavirus which requires some physical treatment tests to find it.

**REQUIREMENT ANALYSIS**

**Software :**

Tinkercad Circuits **TinkerCAD** is a free online service for creating basic 3D shapes and developing digital pro- totypes of electronic components. These pro- totypes include basic circuits with LED lights, buzzers, switches, and even light sensors. ... They can be programmed to manipulate electronic components like LED lights and buzzers. And no **hardware** requirement is needed .

**Components required**

**1.** Ultrasonic distance sensor

**2.** Neopixel Ring

**3.** Piezo Buzzer

**4.** Arduino UNO R3

**5.** Breadboard small

**1. Ultrasonic distance sensor -** an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear) . In this project it plays a main role , senses any objects in its range.

**2. Neopixel ring -** circular rigid printed circuit boards festooned with NeoPixel LEDs, it shows the user how far he is close to our source in this project with a red led light glow .

**3. Piezo Buzzer -** device that can generate basic beeps and tones. They work by using a piezo crystal, a special material that changes shape when voltage is applied to it .

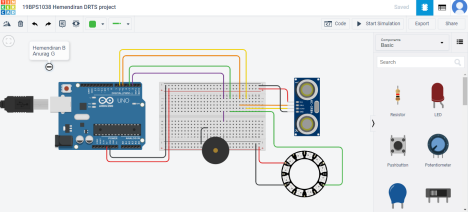
**4. Arduino UNO R3 -** Arduino Uno is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output

pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.. You can tinker with your Uno without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.

**5. Breadboard**

A breadboard is a solderless device for temporary prototypes with electronics and test circuit designs. In this project it is mainly used for connecting every other component together.

**PROJECT CIRCUIT SCREENSHOT :**

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**SOURCE CODE**

#include <Adafruit\_NeoPixel.h>

int ledPin= 3;

int ledNo= 12;

Adafruit\_NeoPixel strip=

Adafruit\_NeoPixel(ledNo,ledPin,NEO\_RGB+NEO\_KHZ800);

int buzzerPin= 2;

int echoPin= 6;

int trigPin= 5;

int minDistance = 100;

int maxDistance = 300;

void setup()

{

pinMode(buzzerPin, OUTPUT);

pinMode(trigPin, OUTPUT);

pinMode(echoPin, INPUT);

Serial. begin(9600);

strip.begin();

for(int i = 0; i < ledNo; i++)

{

strip.setPixelColor(i,strip.Color(0,0,0));

}

strip.show();

}

void loop()

{

int distance = calcDistance();

//Serial.println(distance);

int ledsToGlow = map(distance, minDistance, maxDistance, ledNo, 1);

//Serial.println(ledsToGlow);

if(ledsToGlow == 12)

{

digitalWrite(buzzerPin, HIGH);

}

else

{

digitalWrite(buzzerPin, LOW);

}

for(int i = 0; i < ledsToGlow; i++)

{

if(i < 4)

{

strip.setPixelColor(i,strip.Color(50,0,0));//green,red,blue }

else if(i >= 4 && i < 8)

{

strip.setPixelColor(i,strip.Color(50,50,0));//green,red,blue }

else if(i >= 8 && i < 12)

{

strip.setPixelColor(i,strip.Color(0,50,0));//green,red,blue }

}

for(int i = ledsToGlow; i < ledNo; i++)

{

strip.setPixelColor(i,strip.Color(0,0,0));

}

strip.show();

delay(50);

}

int calcDistance()

{

long distance,duration;

digitalWrite(trigPin, LOW);

delayMicroseconds(2);

digitalWrite(trigPin, HIGH);

delayMicroseconds(10);

digitalWrite(trigPin, LOW);

duration = pulseIn(echoPin, HIGH);

distance = duration / 29 / 2;

if(distance >= maxDistance)

{

distance = maxDistance;

}

if(distance <= minDistance)

{

distance = minDistance;

}

return distance;

}

**ADVANTAGES**

1. **Main advantage** is as the name suggests, it detects objects or any thing in its range and intimates us with a sound.

2. No fear while we are in a crowded areas for social distancing 3. We can be safe from any other persons who got infected or may not infected.

4. No worries for social distancing we just need to carry this with us while we are going out…!!

**CONCLUSION**

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus.

Most people who fall sick with COVID-19 will experience mild to moderate symptoms and recover without special treatment.Mostly people fall sick with corona due to a lot of reasons but it is fast spreading while we are forgetting about social distancing, in which it easily thrives through our body . A very important project in this situation is needed for a device or a system to keep us intimated while we are not maintaining the social distance. This project concludes with a design that a device that works by indicating to the people by the sense or knowledge of close distance between two people through alarming buzzer type sound . Mainly uses the Ultrasonic distance sensor (HC-SR04) that measures the distance of the target or a object which is inside range from 1 to 3 meters so, that basically senses and sends electrical signals and a Piezo buzzer that generates basic beeps and tones in which these two components play a major role in this project . And Moreover it gives an indicator of how close the object is using special leds. These special led components are called Neopixel rings . These all can be put into a connection with arduino UNO and a breadboard which works as a real or we can

say original social indicator and alarming system . Basically this can easily be done through online simulator software that is available which is Tinkercad Circuits in which it is so helpful to make it as physical .

As all of us are aware that due to the global coronavirus pandemic, social distancing is considered as one of the best ways to prevent ourselves from the chances of spread of this infection from person to person in which this distancing factor work can be done by placing this device’s distance sensor .

It would be useful to have this device with us right now like at this pandemic when we are going out of home .

So finally conclusion may say this would be a hot cake project right now which

will be very useful during this pandemic situation as we most of them mostly forgets to leave or maintain a proper social distance while we are busy with our other so much important work . So maintain Social distance from a person while you are out...!!! . And please do carry this while you are out…!!!

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