END SEMESTER ASSESSMENT (ESA)
B.TECH. (CSE)
IV SEMESTER

UE19CS256 – MICROPROCESSOR AND COMPUTER ARCHITECTURE LABORATORY

PROJECT REPORT

ON

Smart Cities on the wake of COVID-19

SUBMITTED BY

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ABSTRACT OF THE PROJECT:

- Smart City transformation can no longer be seen as a luxury as we emerge from the immediate crisis of COVID-19. Smart Cities are resilient cities and, through the integration of physical and digital environments, we can address the gaps in resilience which COVID-19 has exposed.

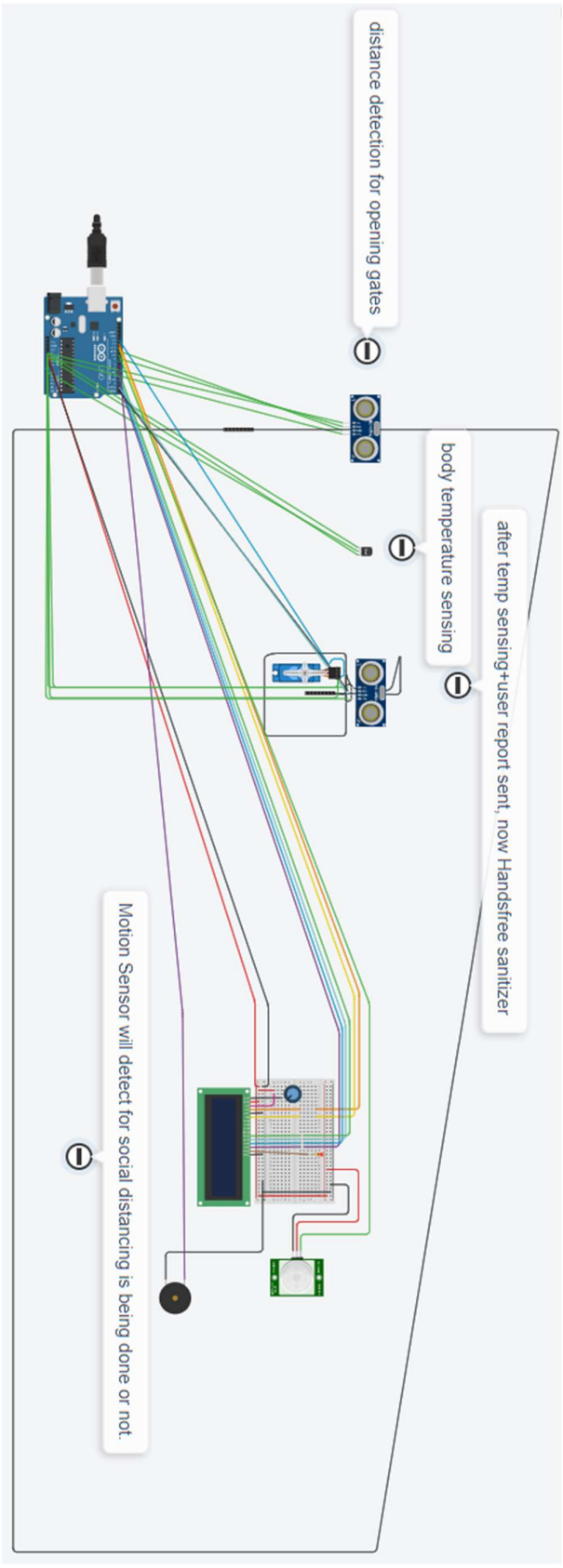
- The technology has become a daily necessity to utmost of the effective participants in which we interact and communicate among ourselves by switching data and information sensed about the environment and atmosphere.

- By making use of Arduino, we can relate autonomously to the real world events and offer us with services with or without direct human interference

- Our project focuses on scanning the person for covid-19 symptoms at any entrance of college or classroom.

- It firstly uses the ultrasonic sensor to detect whether someone's is present at the designated door step, then through the camera sensor, checks if he/she has a mask on or not. Then their body temperature checked, a report made and sent to the mobile phone via network.

CIRCUIT DIAGRAM:



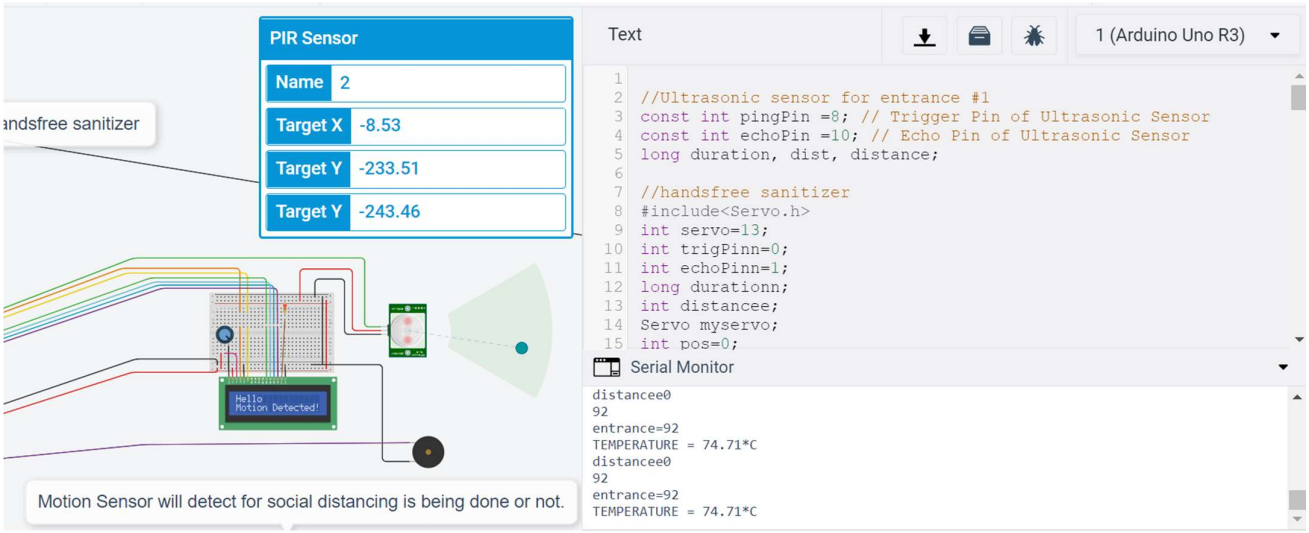
ARDUINO CODE:

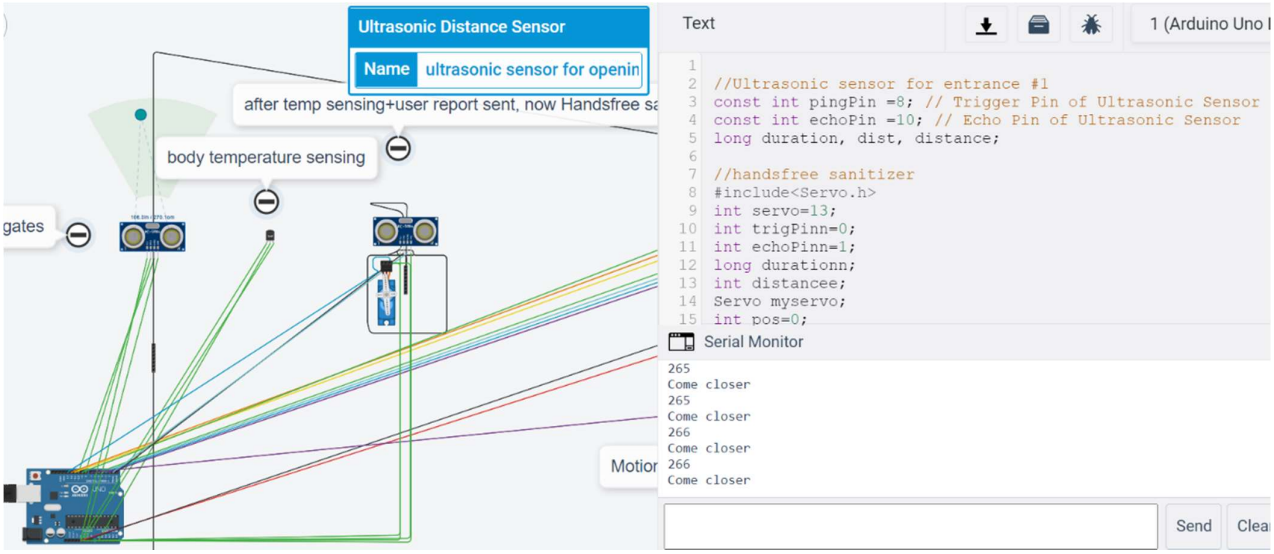
```
//Ultrasonic sensor for entrance #1
const int pingPin =8; // Trigger Pin of Ultrasonic Sensor
const int echoPin =10; // Echo Pin of Ultrasonic Sensor
long duration, dist, distance;

//handsfree sanitizer
#include<Servo.h>
int servo=13;
int trigPinn=0;
int echoPinn=1;
long durationn;
int distancee;
Servo myservo;
int pos=0;

//Temperature sensor
float temp;
int tempPin = 0;

//motion sensor
#include <LiquidCrystal.h>
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);
int sensor = 9;  // the pin that the sensor is attached to
int state = LOW; // by default, no motion detected
int val = 0;
int buzzer= 7;  // the pin that the buzzer is attached to


void setup() {
  Serial.begin(9600); // Starting Serial Terminal

  //ultrasonic sensor #1
  pinMode(pingPin, OUTPUT);
  pinMode(echoPin, INPUT);


 //motion sensor
  pinMode(sensor, INPUT);    // initialize sensor as an input
  pinMode(buzzer, OUTPUT); //initialize buzzer as an OUTPUT
  lcd.begin(16, 2);
  lcd.print("Hello");

 //handsfree sanitizer
 pinMode(trigPinn, OUTPUT);
 pinMode(echoPinn, INPUT);
```

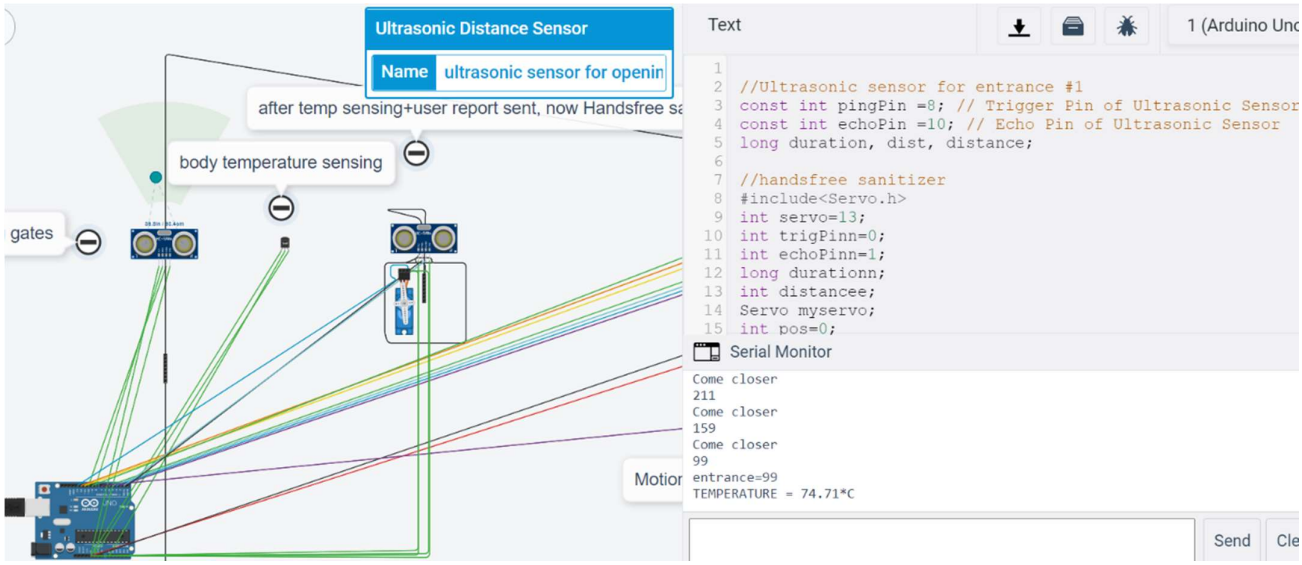
```
 myservo.attach(servo);
 myservo.write(0);


}

void loop() {

  digitalWrite(pingPin, LOW);
  delayMicroseconds(2);
  digitalWrite(pingPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(pingPin, LOW);

  duration = pulseIn(echoPin, HIGH);
  dist= duration*0.034/2;
  distance=dist;
  Serial.println(distance);

 if (distance <125)
 {

  Serial.print("entrance=");
  Serial.println(distance);
  temp = analogRead(tempPin);
  // read analog volt from sensor and save to variable temp
  temp = temp * 0.48828125;
  // convert the analog volt to its temperature equivalent
  Serial.print("TEMPERATURE = ");
  Serial.print(temp); // display temperature value
  Serial.print("*C");
  Serial.println();
  delay(1000); // update sensor reading each one second


  //handsfree sanitizer
   digitalWrite(trigPinn, LOW);
   delayMicroseconds(2);
   digitalWrite(trigPinn, HIGH);
   delayMicroseconds(10);
   digitalWrite(trigPinn, LOW);
   durationn = pulseIn(echoPinn, HIGH);
   distancee = durationn*0.034/2;
   Serial.print("distancee");
   Serial.println(distancee);
   if(distance<100){
     myservo.write(45);
```

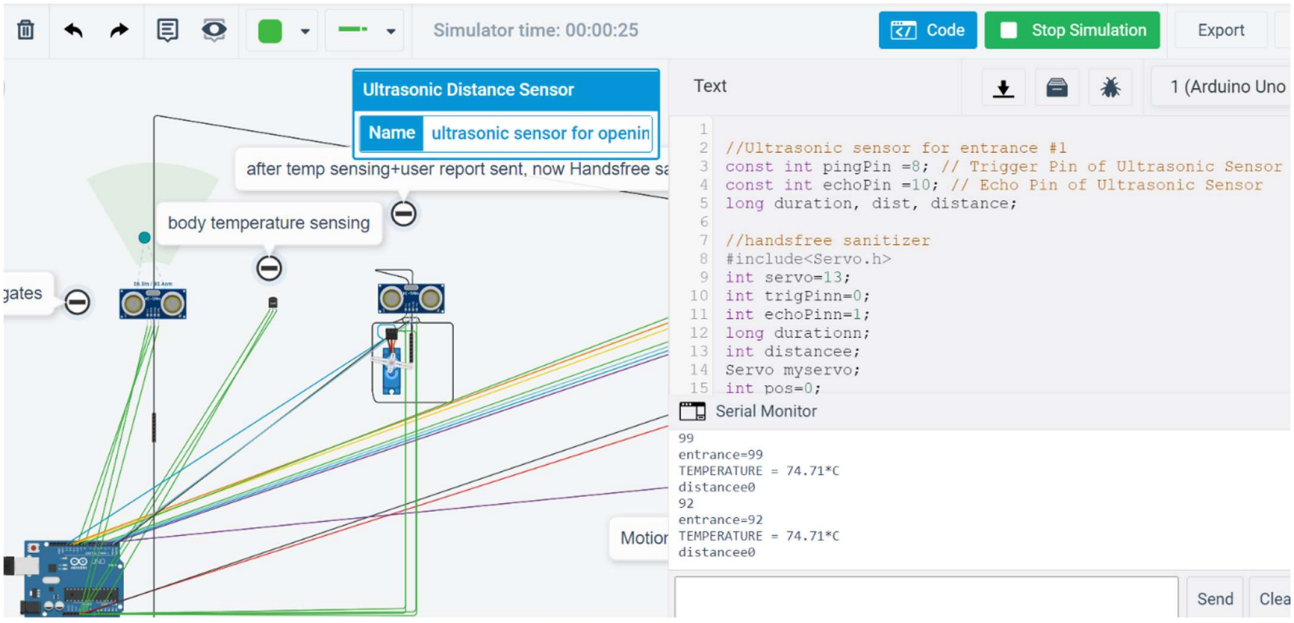
```
    delay(100);
    myservo.write(90);
    delay(100);
    myservo.write(135);
    delay(100);
    myservo.write(180);
    delay(1000);
    myservo.write(0);
    delay(3000);
   }
   else{
    Serial.println("move hands closer");
    }

  //motion sensor
 val = digitalRead(sensor);              // read sensor value
 if (val == HIGH)
 {
 delay(100);                        // delay 100 milliseconds
   if (state == LOW)
     {
  lcd.setCursor(0, 1);
  lcd.print("Motion Detected!");
  digitalWrite(buzzer, HIGH);           // turn the LED/Buzz ON
  state = HIGH;                                 // update variable state to HIGH
     }
    }
 else
  {
    delay(200);                        // delay 200 milliseconds
    if (state == HIGH)
    {
      lcd.setCursor(0, 1);
      lcd.print("Motion Stopped!");
      digitalWrite(buzzer, LOW);    // turn the Buzzer ON
      state = LOW;                          // update variable state to LOW
    }
  }


 }
 else
 {
   Serial.println("Come closer");
   delay(100);
 }
}
```

SCREEN SHOTS OF THE OUTPUT:






Ultrasonic Distance Sensor
Name
ultrasonic sensor for openin
after temp sensing+user report sent, now Handsfree sa
body temperature sensing
gates
Motior
Text
1 (Arduino Unc
//Ultrasonic sensor for entrance #1
const int pingPin =8; // Trigger Pin of Ultrasonic Sensor
const int echoPin =10; // Echo Pin of Ultrasonic Sensor
long duration, dist, distance;
//handsfree sanitizer
#include<Servo.h>
int servo=13;
int trigPinn=0;
int echoPinn=1;
long durationn;
int distancee;
Servo myservo;
int pos=0;
Serial Monitor
Come closer
211
Come closer
159
Come closer
99
entrance=99
TEMPERATURE = 74.71*C
Send
Cle


Simulator time: 00:00:25
Code
Stop Simulation
Export
Ultrasonic Distance Sensor
Name
ultrasonic sensor for openin
after temp sensing+user report sent, now Handsfree sa
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int trigPinn=0;
int echoPinn=1;
long durationn;
int distancee;
Servo myservo;
int pos=0;
Serial Monitor
99
entrance=99
TEMPERATURE = 74.71*C
distancee0
92
entrance=92
TEMPERATURE = 74.71*C
distancee0
Send
Clea

REFERENCES:

http://www.arduino.cc/

https://www.researchgate.net/publication/342044985_COVID-19_Pandemic_A_Review_of_Smart_Cities_Initiatives_to_Face_New_Outbreaks

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