Assignment -4

Date	09 November 2022
Team ID	PNT2022TMID18248
Project Name	Project – Smart solution for railways
Maximum Marks	4 Marks

Code

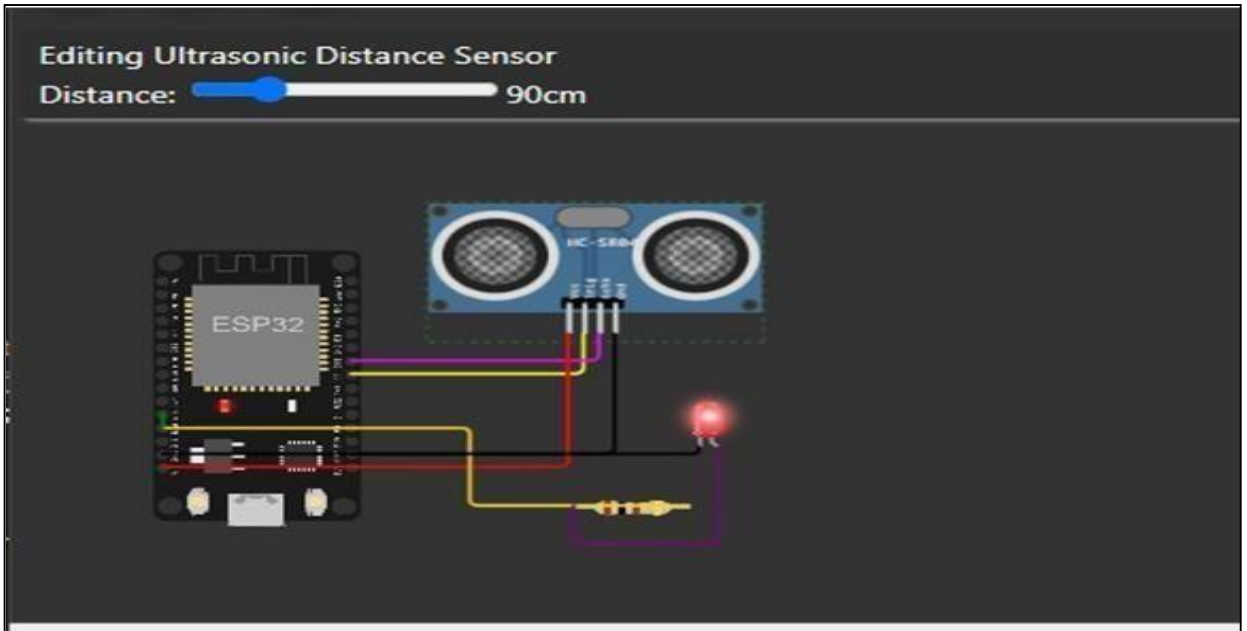
```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "s8ov1q"
#define DEVICE_TYPE "joice"
#define DEVICE_ID "joice04"
#define TOKEN "123456789"
#define speed 0.034  #define
led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Archana/fmt/json"; char topic[] =
"iot-2/cmd/home/fmt/String";   char authMethod[] = "use-token-
auth"; char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient); void
publishData();


const int trigpin=5; const
int echopin=18;
String command;
String data="";

long duration;
float dist;



void setup()
{
  Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
  mqttConnect();
}
```

```
void loop() {   bool isNearby
= dist < 100;
  digitalWrite(led, isNearby);

  publishData();
  delay(500);

  if (!client.loop()) {
    mqttConnect();
  }
}

void wifiConnect() {
  Serial.print("Connecting to "); Serial.print("Wifi");
WiFi.begin("Wokwi-GUEST", "", 6);   while
(WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.print("WiFi connected, IP address: "); Serial.println(WiFi.localIP());
}

void mqttConnect() {   if
(!client.connected()) {
    Serial.print("Reconnecting MQTT client to "); Serial.println(server);
while (!client.connect(clientId, authMethod, token)) {
Serial.print(".");
      delay(500);
    }
    initManagedDevice();
    Serial.println();
  }
}

void initManagedDevice() {
if (client.subscribe(topic)) {
    // Serial.println(client.subscribe(topic));
    Serial.println("IBM subscribe to cmd OK");
  } else {
    Serial.println("subscribe to cmd FAILED");
  }
}
void publishData()
{
```

```
 digitalWrite(trigpin,LOW);
digitalWrite(trigpin,HIGH);
delayMicroseconds(10);   digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;
 if(dist<100){
   String payload = "{\"Alert Distance\":";
payload += dist;
   payload += "}";

   Serial.print("\n");
   Serial.print("Sending payload: ");
Serial.println(payload);
     if(client.publish(publishTopic, (char*) payload.c_str())) {
     Serial.println("Warning crosses 110cm -- it automaticaly of the loop");
digitalWrite(led,HIGH);
   }

 }
   if(dist>101 && dist<111){
   String payload = "{\"Normal Distance\":";
   payload += dist;
   payload += "}";

   Serial.print("\n");
   Serial.print("Sending payload: ");
   Serial.println(payload);

   }

 }



 void callback(char* subscribeTopic, byte* payload, unsigned int payloadLength){
 Serial.print("callback invoked for topic:");
Serial.println(subscribeTopic);   for(int i=0;
i<payloadLength; i++){
   dist += (char)payload[i];
 }
 Serial.println("data:"+ data3);
if(data3=="lighton"){
Serial.println(data3);
   digitalWrite(led,HIGH);
 }
 data3="";
```

```
}
```

Output:




```
Sending payload: {"Normal Distance":89.95}
Publish OK

Sending payload: {"Normal Distance":89.95}
Publish OK

Sending payload: {"Normal Distance":89.95}
Publish OK

Sending payload: {"Normal Distance":89.98}
Publish OK

Sending payload: {"Normal Distance":89.95}
Publish OK

Sending payload: {"Normal Distance":89.95}
Publish OK
```

Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	{"Normal Distance":89.95}	json	a few seconds ago
Data	{"Normal Distance":89.95}	json	a few seconds ago
Data	{"Normal Distance":89.95}	json	a few seconds ago
Data	{"Normal Distance":89.95}	json	a few seconds ago
Data	{"Normal Distance":89.95}	json	a few seconds ago

Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":107.02}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago