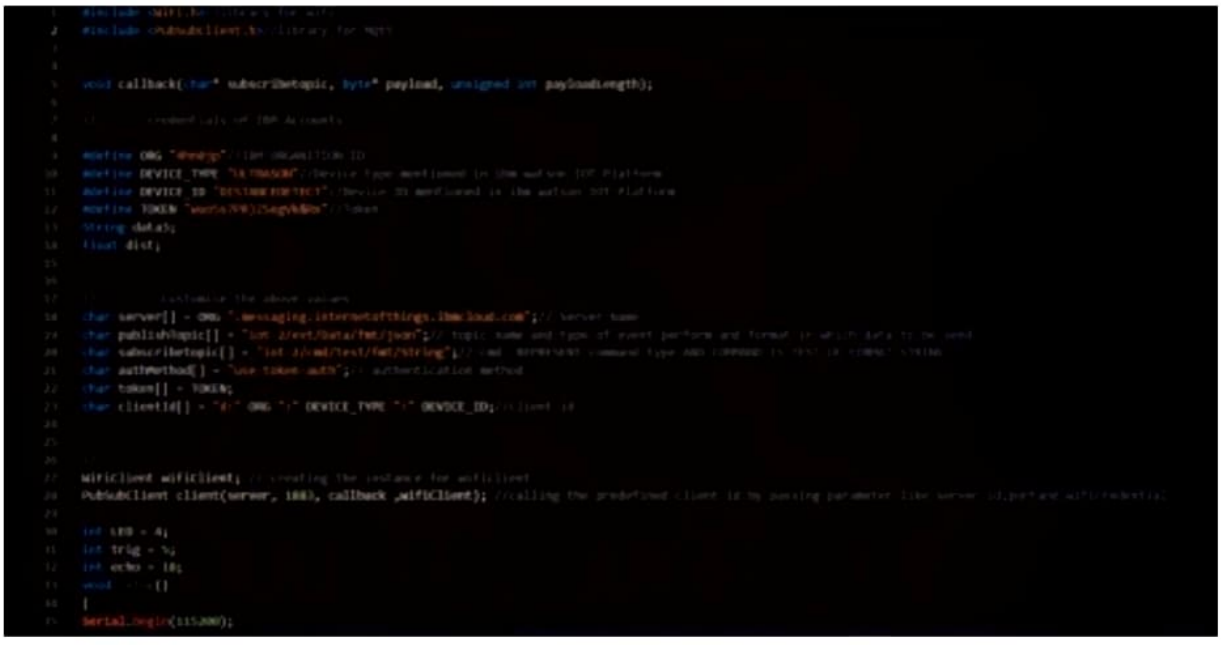
ASSIGNMENT-4

Date	23 October 2022
TeamID	PNT2022TMID49546
Name	Renuka P
MaximumMarks	2Marks

Question 1:

Write code and connections in work for ultrasonic sensor.Whenever distance is less than 100cms send"alert" to ibm cloud and display in device recent events.

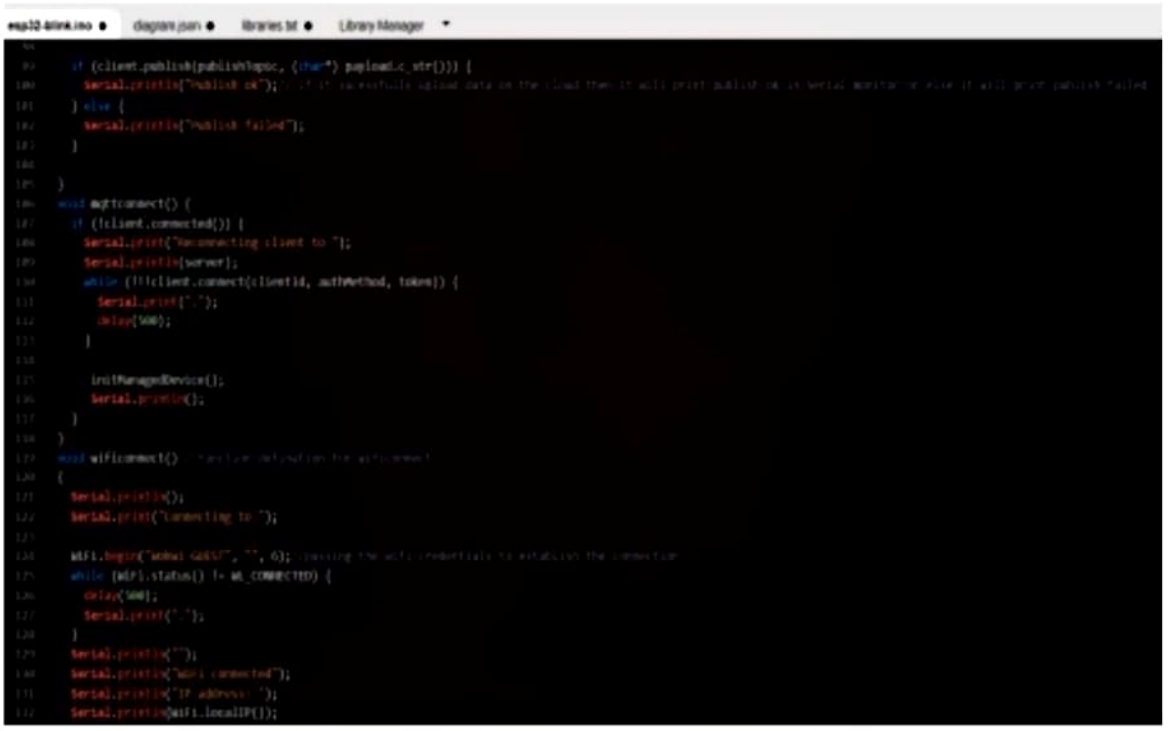
CODE:



esp32-blink.ino ● diagram.json ● libraries.txt ● Library Manager

```
pinMode(trig,OUTPUT);
pinMode(echo,INPUT);
pinMode(LED, OUTPUT);
delay(10);
wificonnect();
mqttconnect();
}
void loop()// Recursive Function
{

 digitalWrite(trig,LOW);
  digitalWrite(trig,HIGH);
  delayMicroseconds(10);
  digitalWrite(trig,LOW);
  float dur = pulseIn(echo,HIGH);
  float dist = (dur * 0.0343)/2;
  Serial.print ("Distancein cm");
  Serial.println(dist);


  PublishData(dist);
  delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }
}



/*.....retrieving to Cloud.....*/

void PublishData(float dist) {
  mqttconnect();//function call for connecting to ibm
  /*
     creating the String in in form JSon to update the data to ibm cloud
```

```
   creating the String in in form JSon to update the data to ibm cloud
 */
 String object;
 if (dist <100)
 {
   digitalWrite(LED,HIGH);
   Serial.println("object is near");
   object = "Near";
 }
 else
 {
   digitalWrite(LED,LOW);
   Serial.println("no object found");
   object = "No";
 }

 String payload = "{\"distance\":";
 payload += dist;
 payload += "," "\"object\":\"";
 payload += object;
 payload += "\"}";


 Serial.print("Sending payload: ");
 Serial.println(payload);
```



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```
    if (client.publish(publishTopic, (char*) payload.c_str())) {
      Serial.println("Publish ok");// if it successfully upload data on the cloud then it will print publish ok in serial monitor or else it will print publish failed
    } else {
      Serial.println("Publish failed");
    }

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

      initManagedDevice();
      Serial.println();
    }
  }
  void wificonnect() //function defination for wificonnect
  {
    Serial.println();
    Serial.print("Connecting to ");

    WiFi.begin("Wokwi-GUEST", "", 6); //passing the wifi credentials to establish the connection
    while (WiFi.status() != WL_CONNECTED) {
      delay(500);
      Serial.print(".");
    }
    Serial.println("");
    Serial.println("WiFi connected");
    Serial.println("IP address: ");
    Serial.println(WiFi.localIP());
```

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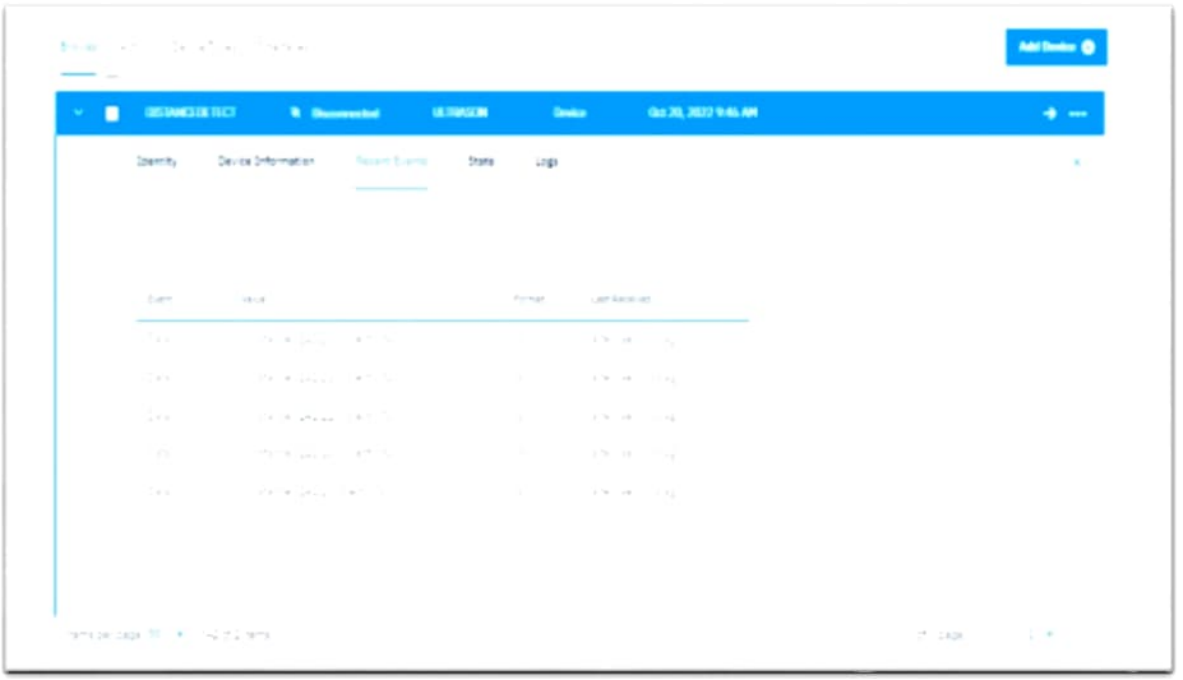
```
    WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection
    while (WiFi.status() != WL_CONNECTED) {
      delay(500);
      Serial.print(".");
    }
    Serial.println("");
    Serial.println("WiFi connected");
    Serial.println("IP address: ");
    Serial.println(WiFi.localIP());
  }

  void initManagedDevice() {
    if (client.subscribe(subscribetopic)) {
      Serial.println((subscribetopic));
      Serial.println("subscribe to cmd OK");
    } else {
      Serial.println("subscribe to cmd FAILED");
    }
  }

  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++) {
      //Serial.print((char)payload[i]);
      data3 += (char)payload[i];
    }

  //   Serial.println("data: "+ data3);
  //   if(data3=="Near")
  //   {
  // Serial.println(data3);
```

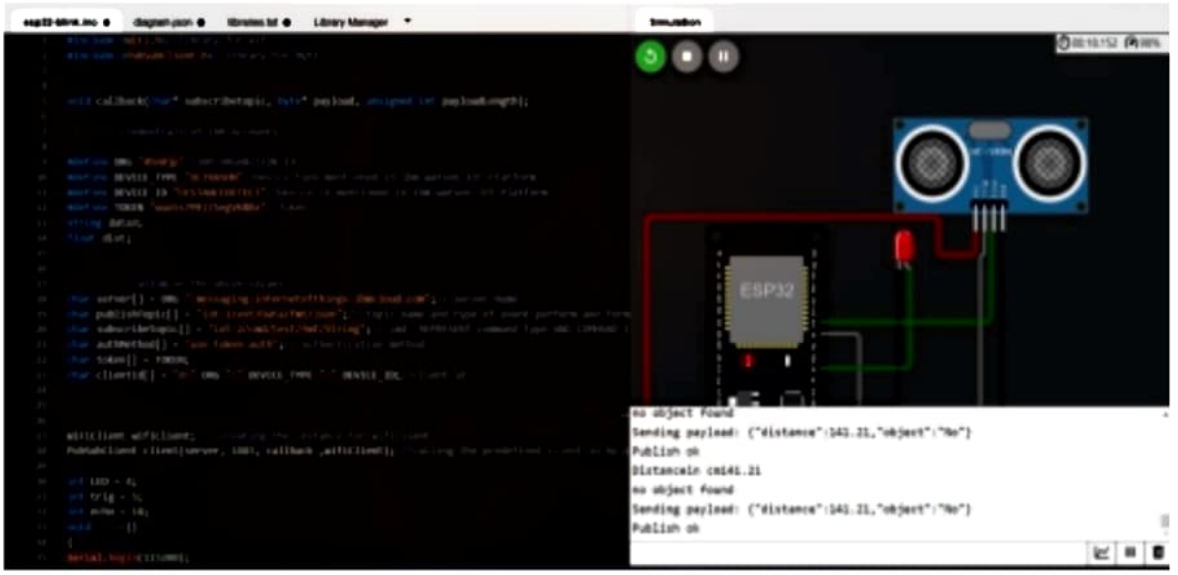
esp32-blink.ino ● diagram.json ● libraries.txt ● Library Manager

```
}

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++) {
    //Serial.print((char)payload[i]);
    data3 += (char)payload[i];
  }

//   Serial.println("data: "+ data3);
//   if(data3=="Near")
//   {
// Serial.println(data3);
// digitalWrite(LED,HIGH);

//   }

//   else
//   {
// Serial.println(data3);
// digitalWrite(LED,LOW);

//   }
data3="";


}
```

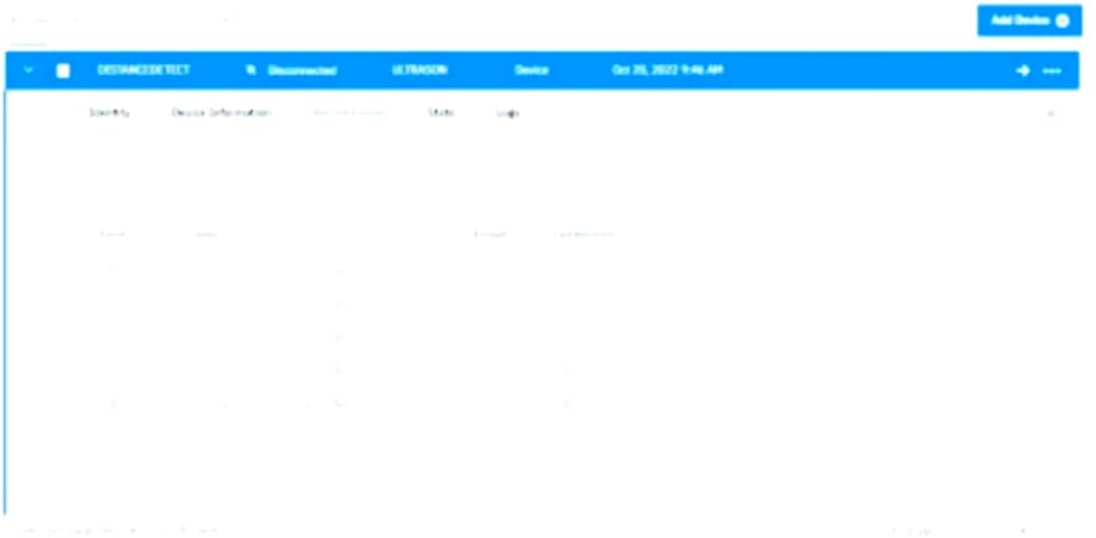
OUTPUT:



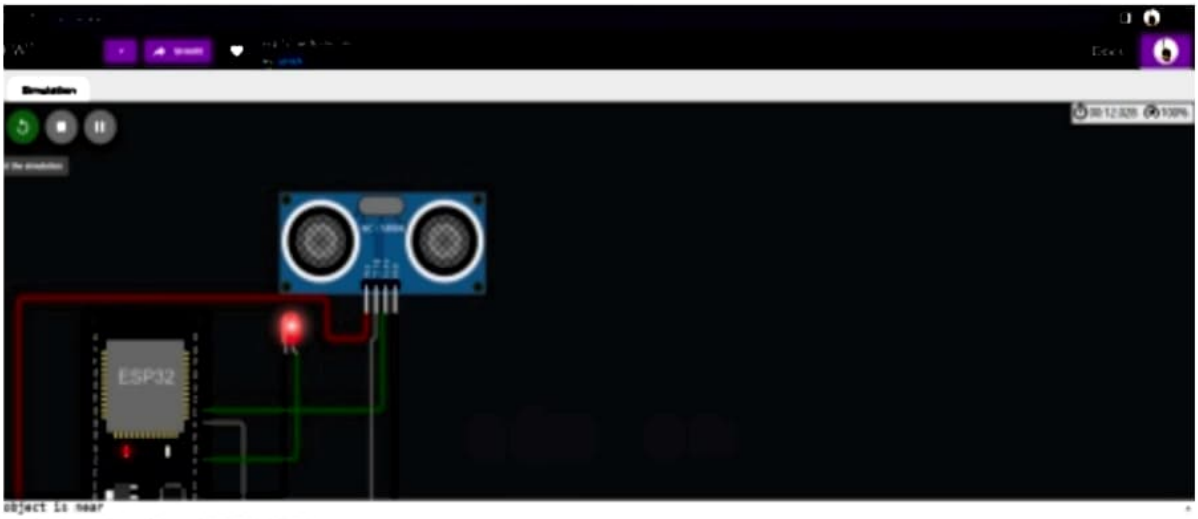
Data send to the IBMcloud device when the objectics far



Data sent to the IBMCloud Device when the objectics near



When objectics near to the ultrasonic sensor




```
object is near
Sending payload: {"distance":97.82,"object":"Near"}
Publish ok
Distancein cm97.82
object is near
Sending payload: {"distance":97.82,"object":"Near"}
Publish ok
```