Assignment 4

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Name	BALAJI. R
Team ID	PNT2022TMID32053
Project Name	Project-IoTBasedSafetyGadgetForChild SafetyMonitoring& Notification

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send alert to ibm cloud and display in device recent events. Upload document with wokwi share link and images of ibm cloud

Code

```
#include  <WiFi.h>  #include
<PubSubClient.h>
WiFiClient wifiClient; String
data3;
#define ORG "o6i6hl"
#define DEVICE_TYPE "ultrasonic"
#define DEVICE_ID "ultrasonic"
#define TOKEN "e7Zi4uxVjVZzi+rmEg"
#define speed 0.034 #define
led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; char
publishTopic[]
= "iot-2/evt/shreedharen/fmt/json"; char
topic[] = "iot-2/cmd/led/fmt/String"; char
authMethod[] = "use-token-auth"; char
token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883,
wifiClient); 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);
```
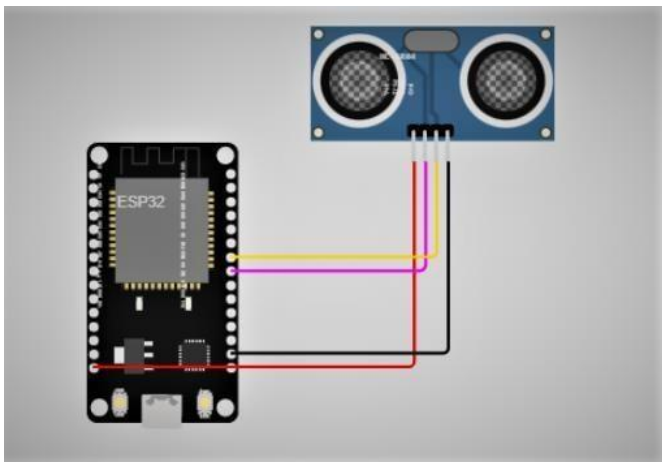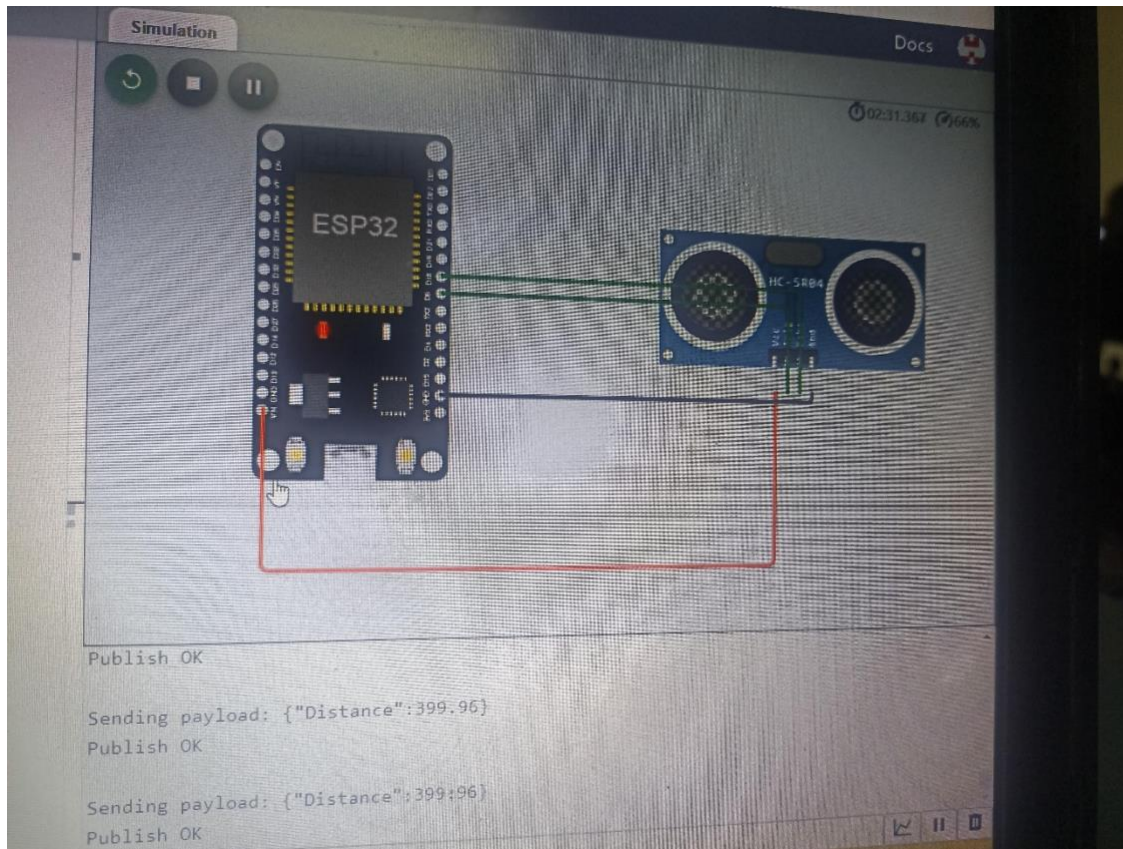
```
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2; if(dist<100){
    String payload = "{\"Alert Distance\":"; payload +=
    dist;
    payload += "}"; Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if (client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
    }
  }
    if(dist>100){
    String payload = "{\"Distance\":"; payload +=
    dist;
    payload += "}"; Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload); if(client.publish(publishTopic,
      (char*) payload.c_str())) {
        Serial.println("Publish OK");
    }else {
        Serial.println("Publish FAILED");
    }
  }
}
```
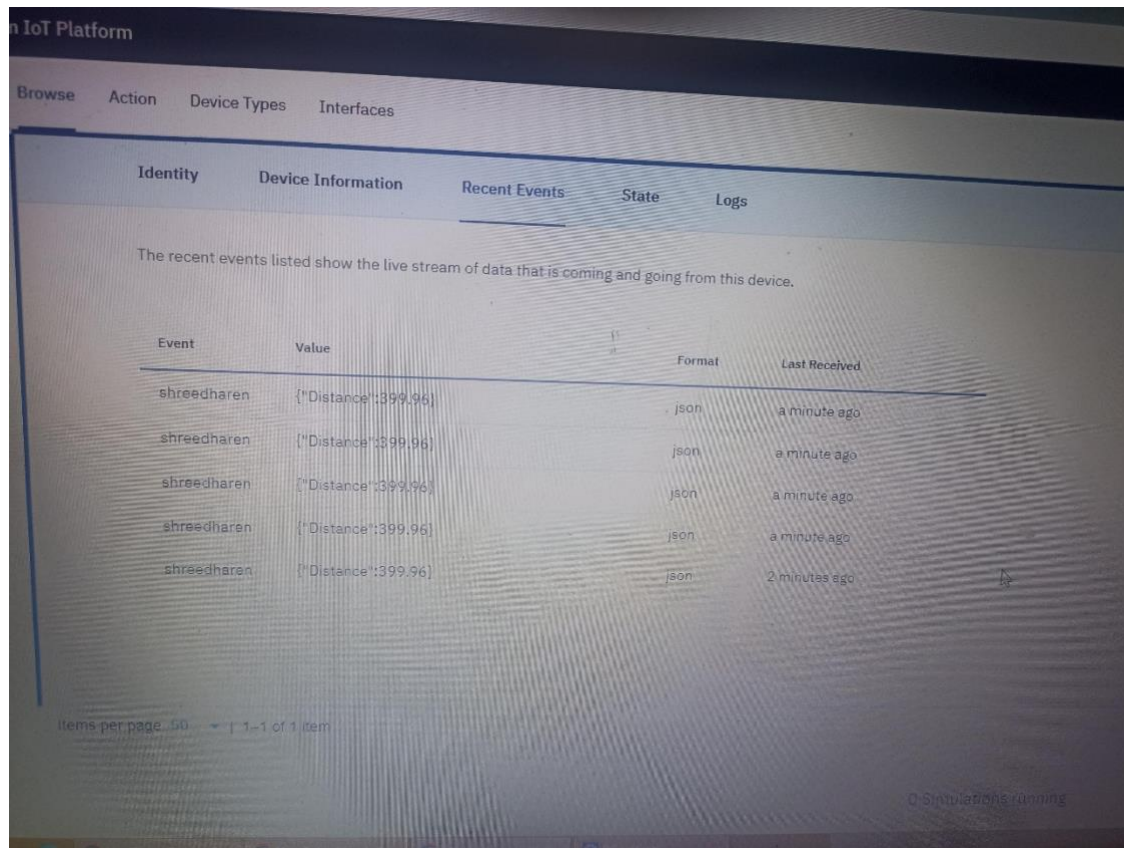
Connections

Output:

Publish OK

Sending payload: {"Distance":399.96}
Publish OK

Sending payload: {"Distance":399:96}
Publish OK

Cloud image

Browse   Action   Device Types   Interfaces

Identity   Device Information   Recent Events   State   Logs

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

Event	Value	Format	Last Received
shreedharen	{"Distance":399.96}	json	a minute ago
shreedharen	{"Distance":399.96}	json	a minute ago
shreedharen	{"Distance":399.96}	json	a minute ago
shreedharen	{"Distance":399.96}	json	a minute ago
shreedharen	{"Distance":399.96}	json	2 minutes ago

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0 Simulations running

Wokwi link

https://wokwi.com/projects/348008759550804564