Assignment -4

Assignment Date	28 Oct 2022
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Project Name	SmartFarmer-IoT Enabled Smart Farming
	Application

Question:

Write a 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

Code:

```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
WiFiClient wifiClient;
String data3;
#define ORG "g05aq3"
#define DEVICE_TYPE "selva"
#define DEVICE_ID "selva_assignment_4"
#define TOKEN "qwertyuio"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
```

```
char publishTopic[] = "iot-2/evt/selva/fmt/json";
char topic[] = "iot-2/cmd/status/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=19;
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()
```

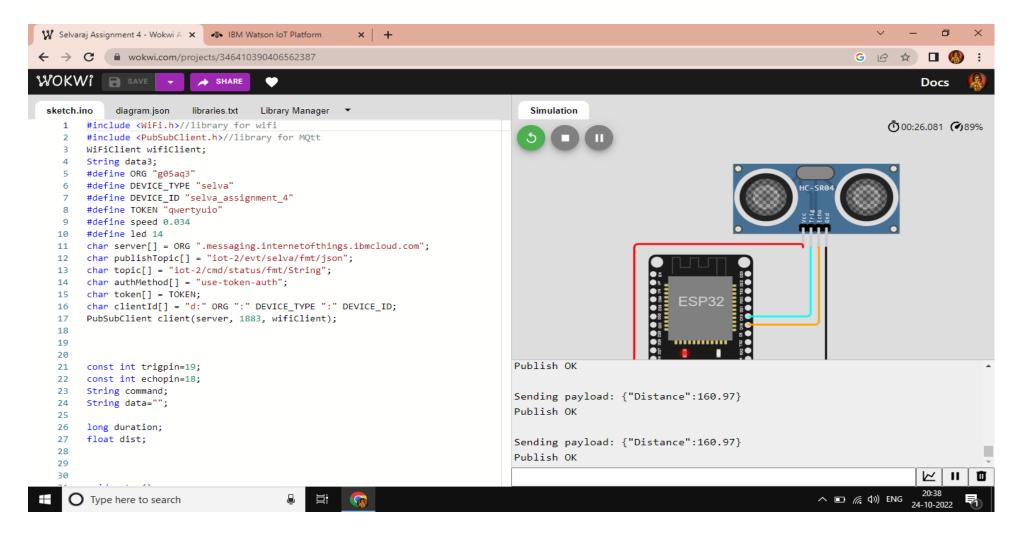
```
bool isNearby = dist < 100;</pre>
 digitalWrite(led, isNearby);
  publishData();
  delay(500);
 if (!client.loop())
   mqttConnect();
void wifiConnect()
 Serial.print("Connecting to "); Serial.print("Wifi");
 WiFi.begin("Wokwi-GUEST", "", 6);
 while (WiFi.status() != WL_CONNECTED)
    delay(500);
   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)</pre>
    String payload = "{\"Alert Distance\":";
    payload += dist;
```

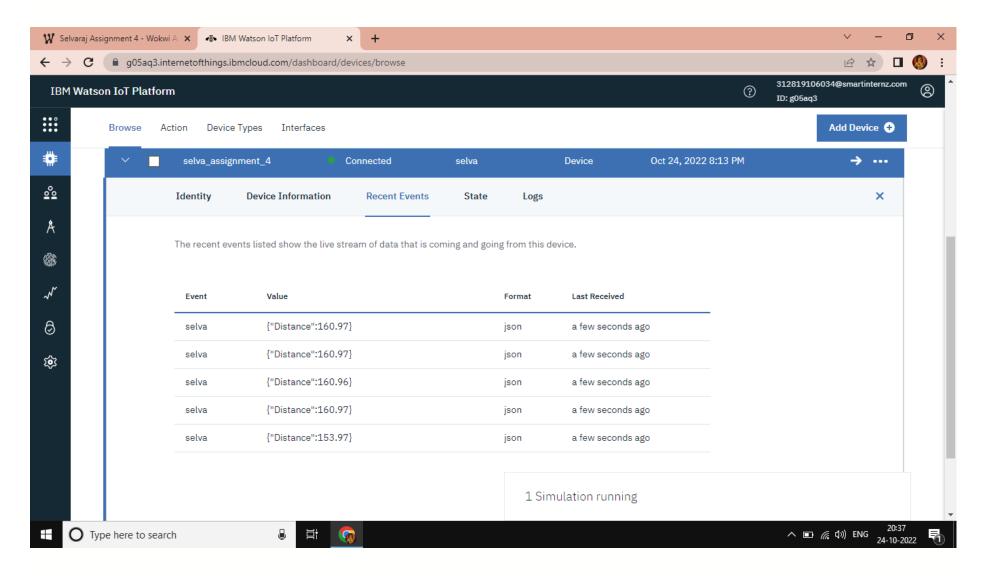
```
payload += "}";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str()))
{
  Serial.println("Publish OK");
if(dist>100){
String payload = "{\"Distance\":";
payload += dist;
payload += "}";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
 if(client.publish(publishTopic, (char*) payload.c_str()))
 {
 Serial.println("Publish OK");
 }
 Else
  Serial.println("Publish FAILED");
```

Output:

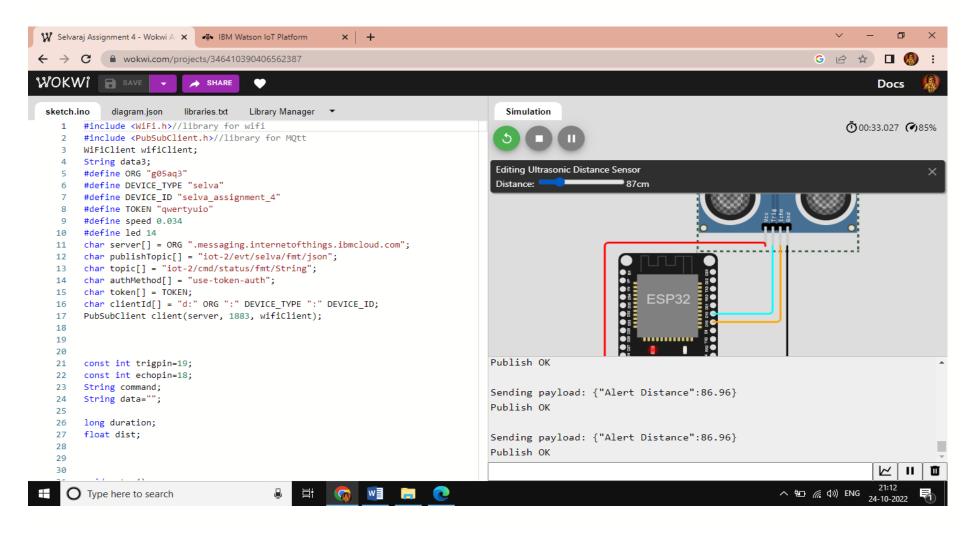
1. When distance greater than 100 cm



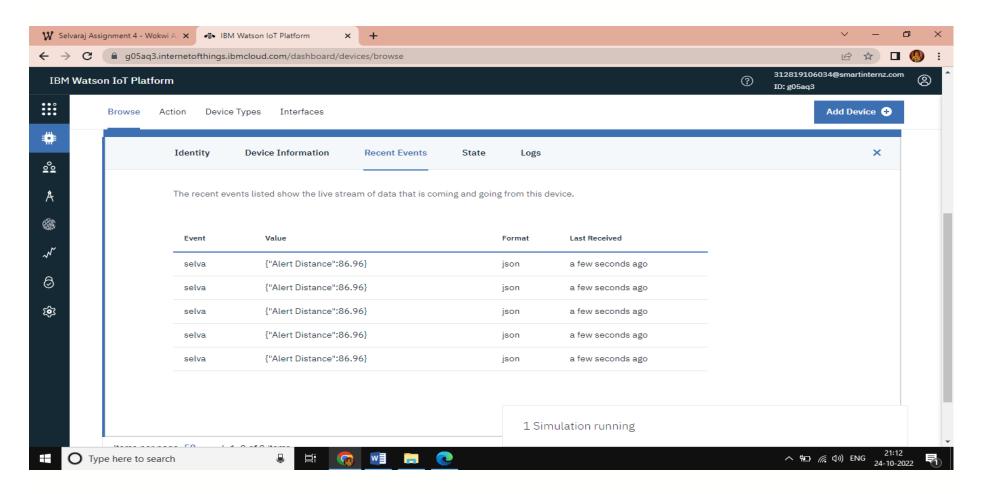
IBM RECENT EVENTS:



2. When distance less than 100 cm



IBM RECENT EVENTS:



WOKWI LINK :- https://wokwi.com/projects/346410390406562387