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()
 {
```

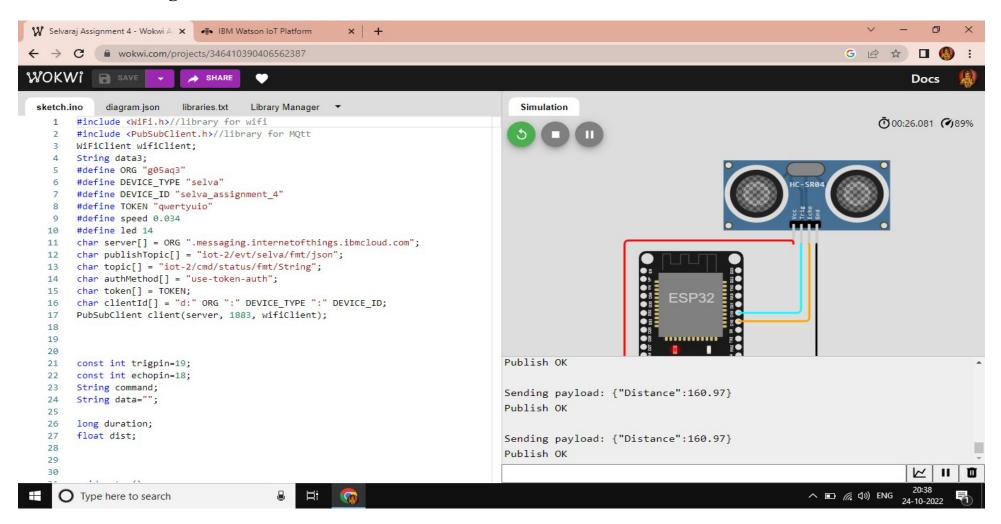
```
Serial.print("Connecting to "); Serial.print("Wifi");
WiFi.begin("Wokwi-GUEST", "", 6);
                                    while
(WiFi.status() != WL CONNECTED)
 {
delay(500);
   Serial.print(".");
 Serial.print("WiFi connected, IP address: "); Serial.println(WiFi.localIP());
void mqttConnect()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



2. When distance less than 100 cm

