Assignment -4

Assignment Date	28 Oct 2022
Team ID	PNT2022TMID16916
Student Name	Kamatchi M
Student Roll Number	92172019102061
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;
  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
    {
```

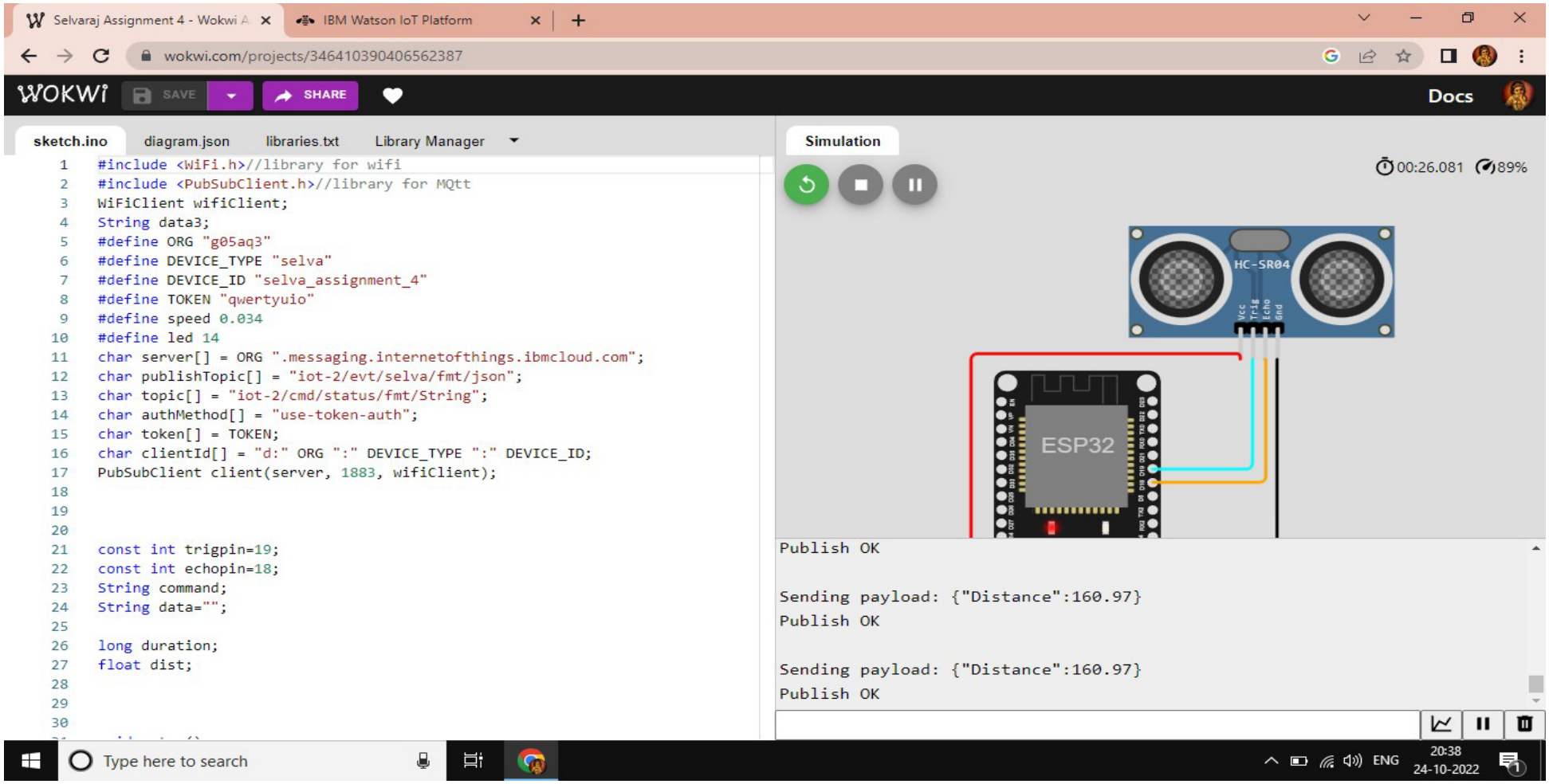
```
      Serial.println("Publish FAILED");
    }

  }

}
```

Output:

1.When distance greater than 100 cm



2.When distance less than 100 cm