

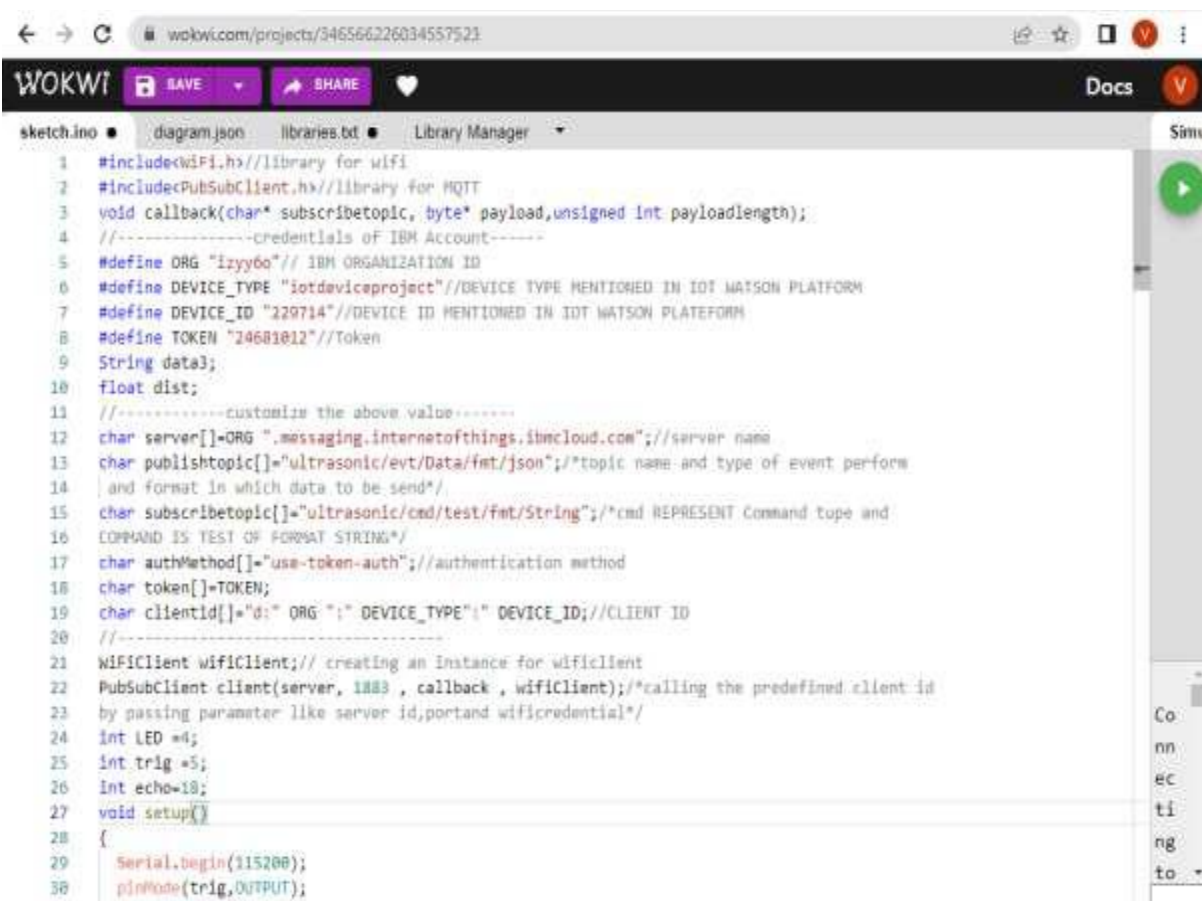
Assignment 4:

IOT Enabled Smart Farming Application"

Batch NO: B9-3A5E

Assignment 4:

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.



```
1 #include<WiFi.h>//library for wifi
2 #include<PubSubClient.h>//library for MQTT
3 void callback(char* subscribetopic, byte* payload,unsigned int payloadlength);
4 //-----credentials of IBM Account-----
5 #define ORG "izyy6o"// IBM ORGANIZATION ID
6 #define DEVICE_TYPE "iotdeviceproject"//DEVICE TYPE MENTIONED IN IOT WATSON PLATFORM
7 #define DEVICE_ID "229714"//DEVICE ID MENTIONED IN IOT WATSON PLATFORM
8 #define TOKEN "24681012"//Token
9 String data3;
10 float dist;
11 //-----customize the above value-----
12 char server[]=ORG ".messaging.internetofthings.ibmcloud.com";//server name
13 char publishtopic[]="ultrasonic/evt/Data/fmt/json";//topic name and type of event perform
14 | and format in which data to be send*/
15 char subscribetopic[]="ultrasonic/cmd/test/fmt/String";//cmd REPRESENT Command tupe and
16 COMMAND IS TEST OF FORMAT STRING*/
17 char authMethod[]="use-token-auth";//authentication method
18 char token[]=TOKEN;
19 char clientId[]="d:" ORG ":" DEVICE_TYPE":" DEVICE_ID;//CLIENT ID
20 //-----
21 WiFiClient wificlient;// creating an instance for wificlient
22 PubSubClient client(server, 1883 , callback , wificlient);/*calling the predefined client id
23 by passing parameter like server id,portand wificredential*/
24 int LED =4;
25 int trig =5;
26 int echo=18;
27 void setup()
28 {
29   Serial.begin(115200);
30   pinMode(trig,OUTPUT);
```

```

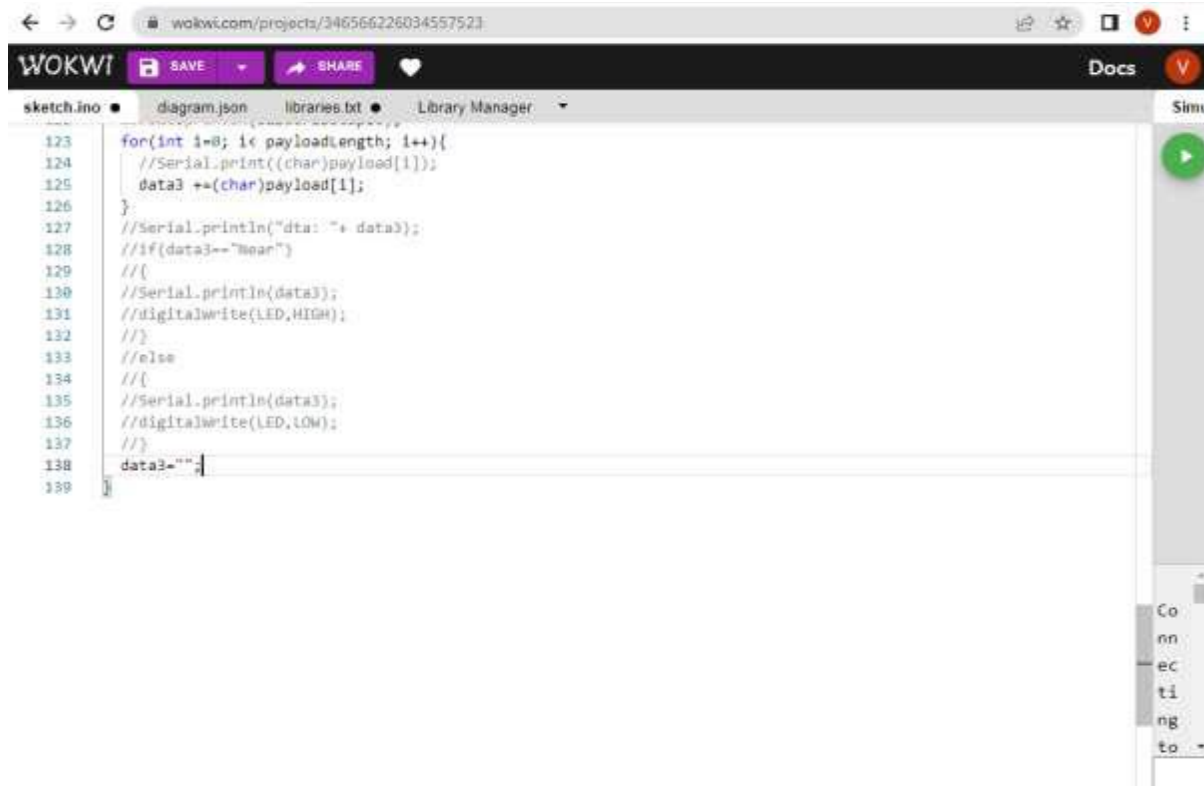
61 Serial.println("no object is near");
62 object="None";
63 }
64 else
65 {
66   digitalWrite(LED,LOW);
67   Serial.println("no object found");
68   object="No";
69 }
70 String payload="{\"distance\": ";
71 payload +=dist;
72 payload +=",\" \"object\":\"\"";
73 payload += object;
74 payload += "\"}";
75
76 Serial.print("Sending payload: ");
77 Serial.println(payload);
78 if(client.publish(subscribtopic, (char*) payload.c_str())){
79   Serial.println("Publish ok");// if its successfully upload data on the cloud then it will print
80   publish ok in serial monitor or else it will print publish failed//
81 } else{
82   Serial.println("Publish failed");
83 }
84 }
85
86 void mqttconnect(){
87   if(!client.connected()){
88     Serial.println("Reconnecting client to ");
89     Serial.println(server);
90     while(!client.connect(clientId,authmethod, token)){
91       Serial.println(" ");
92       delay(500);
93     }
94   }
95 }

```

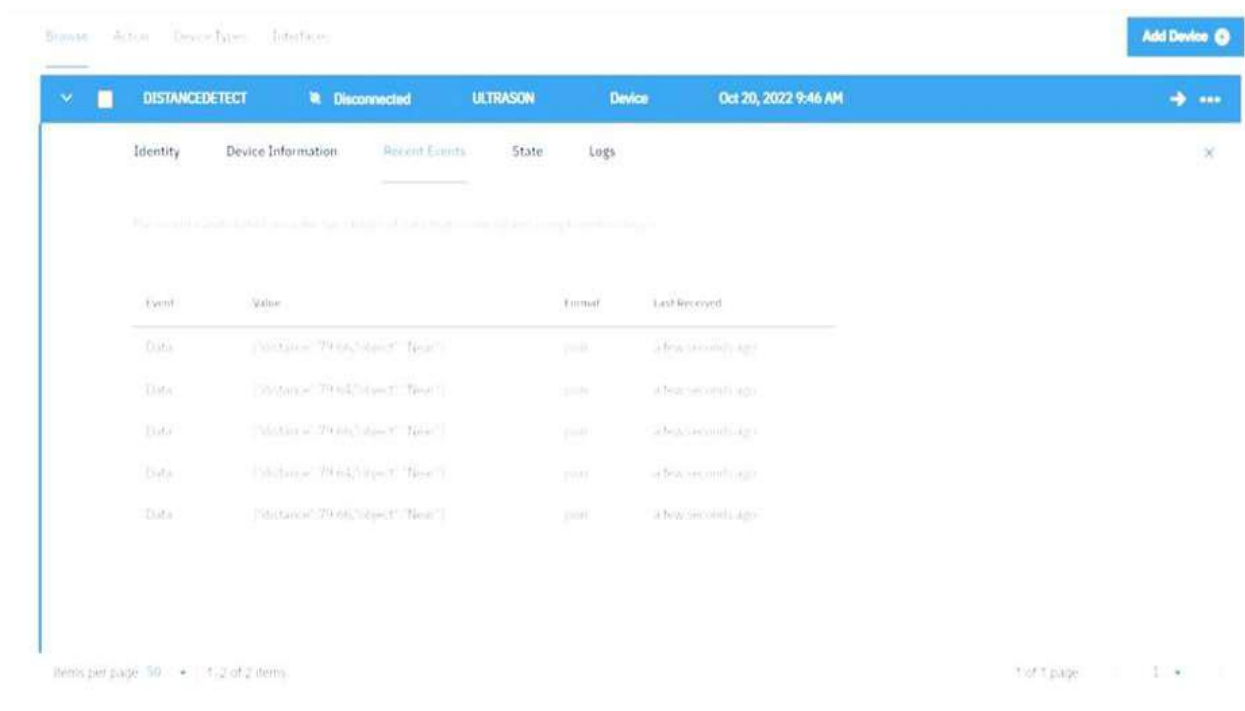
```

96 }
97
98 void initManagedDevice(){
99   Serial.println();
100 }
101
102 void wificonnect();//function definition for wificonnect
103 {
104   Serial.println();
105   Serial.print("Connecting to ");
106   WiFi.begin("Wokwi-GUEST", ""); //FILLING THE WIFI CREDENTIALS TO ESTABLISH CONNECTION
107   while (WiFi.status() != WL_CONNECTED){
108     delay(1000);
109     Serial.print(".");
110   }
111   Serial.println("");
112   Serial.println("WiFi connected");
113   Serial.println("IP address");
114   Serial.println(WiFi.localIP());
115 }
116
117 void initManagedDevice(){
118   if(client.subscribe(subscribtopic)){
119     Serial.println((subscribtopic));
120     Serial.println("subscribe to end OK");
121   }else{
122     Serial.println("subscribe to end failed");
123   }
124 }
125
126 void callback(char* subscribtopic,byte*payload,unsigned int payloadlength)
127 {
128   Serial.print("callback invoked for topic: ");
129   Serial.println(subscribtopic);
130 }

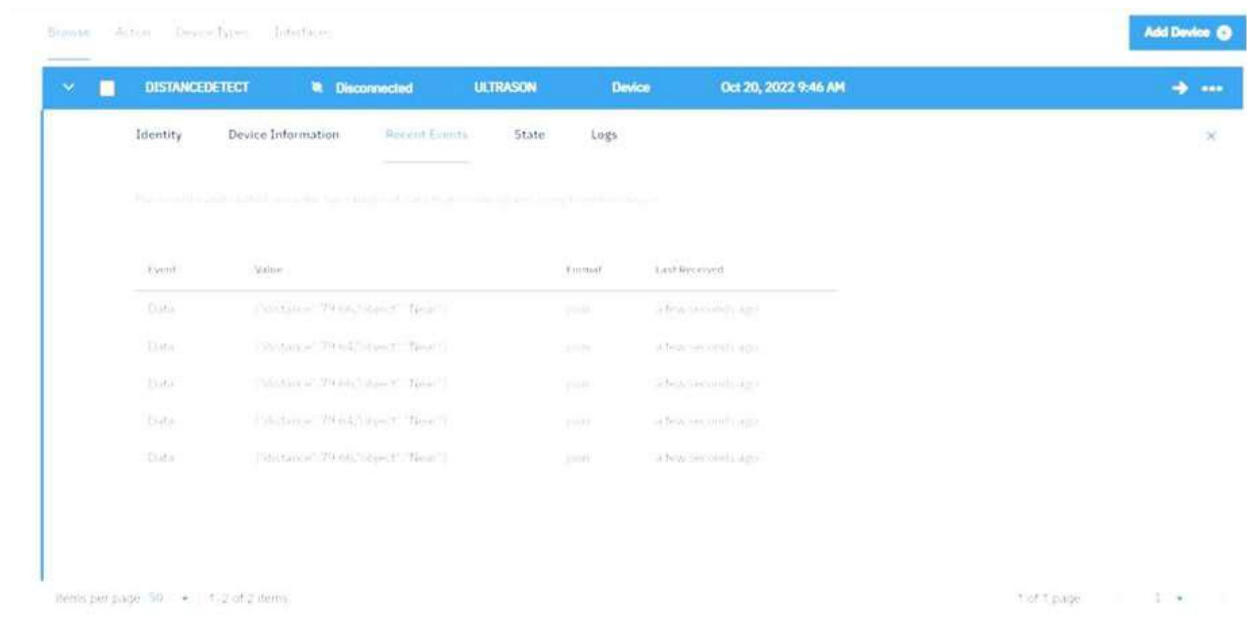
```



OUTPUT:
DATA IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED

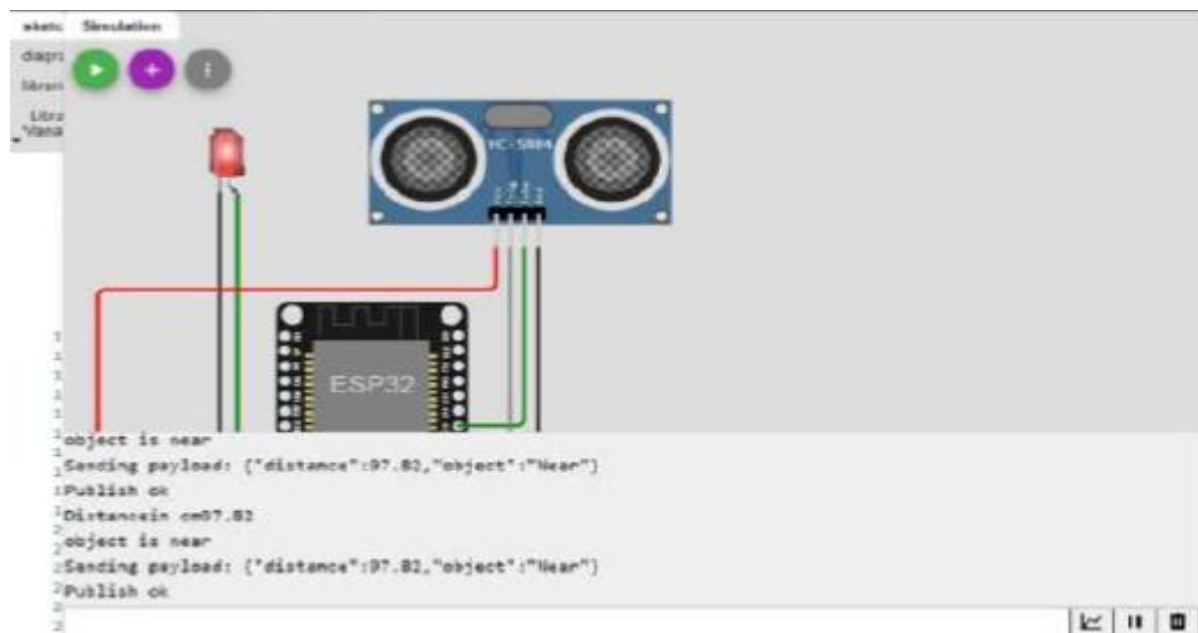


When no object is detected



Event	Value	Format	Last Received
Data	{\"distance\":97.82,\"object\":\"Near\"}	json	a few seconds ago
Data	{\"distance\":97.82,\"object\":\"Near\"}	json	a few seconds ago
Data	{\"distance\":97.82,\"object\":\"Near\"}	json	a few seconds ago
Data	{\"distance\":97.82,\"object\":\"Near\"}	json	a few seconds ago
Data	{\"distance\":97.82,\"object\":\"Near\"}	json	a few seconds ago

Circuit:



DONE BY

BATCH NO: B9-3A5E (917719D023, 917719D011, 917719D049, and 19D069)