Assignment -4

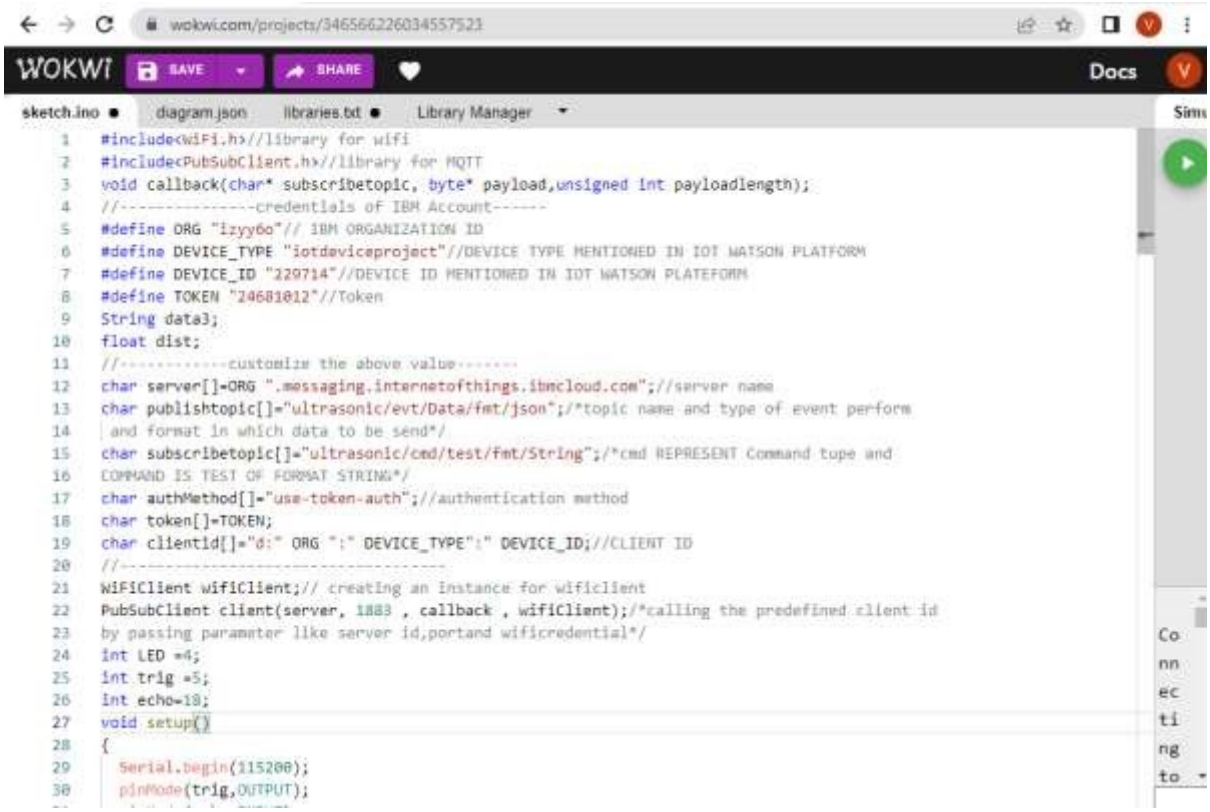
Python Programming

Assignment Date	01 November 2022
Student Name	Malarvizhi.M
Student Roll Number	210819106036
Maximum Marks	2 Marks

Question-1:

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.

Solution:


wokwi.com/projects/346566226034557523
WOKWI
SAVE
SHARE
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
#include<WiFi.h>//library for wifi
#include<PubSubClient.h>//library for MQTT
void callback(char* subscribetopic, byte* payload,unsigned int payloadlength);
//----------credentials of IBM Account------
#define ORG "izyy6o"// IBM ORGANIZATION ID
#define DEVICE_TYPE "iotdeviceproject"//DEVICE TYPE MENTIONED IN IOT WATSON PLATFORM
#define DEVICE_ID "229714"//DEVICE ID MENTIONED IN IOT WATSON PLATEFORM
#define TOKEN "24681012"//Token
String data3;
float dist;
//-----------customize the above value-------
char server[]=ORG ".messaging.internetofthings.ibmcloud.com";//server name
char publishtopic[]="ultrasonic/evt/Data/fmt/json";/*topic name and type of event perform
and format in which data to be send*/
char subscribetopic[]="ultrasonic/cmd/test/fmt/String";/*cmd REPRESENT Command tupe and
COMMAND IS TEST OF FORMAT STRING*/
char authMethod[]="use-token-auth";//authentication method
char token[]=TOKEN;
char clientId[]="d:" ORG ":" DEVICE_TYPE":" DEVICE_ID;//CLIENT ID
//-----------------------------------
WiFiClient wifiClient;// creating an instance for wificlient
PubSubClient client(server, 1883 , callback , wifiClient);/*calling the predefined client id
by passing parameter like server id,portand wificredential*/
int LED =4;
int trig =5;
int echo=18;
void setup()
{
Serial.begin(115200);
pinMode(trig,OUTPUT);
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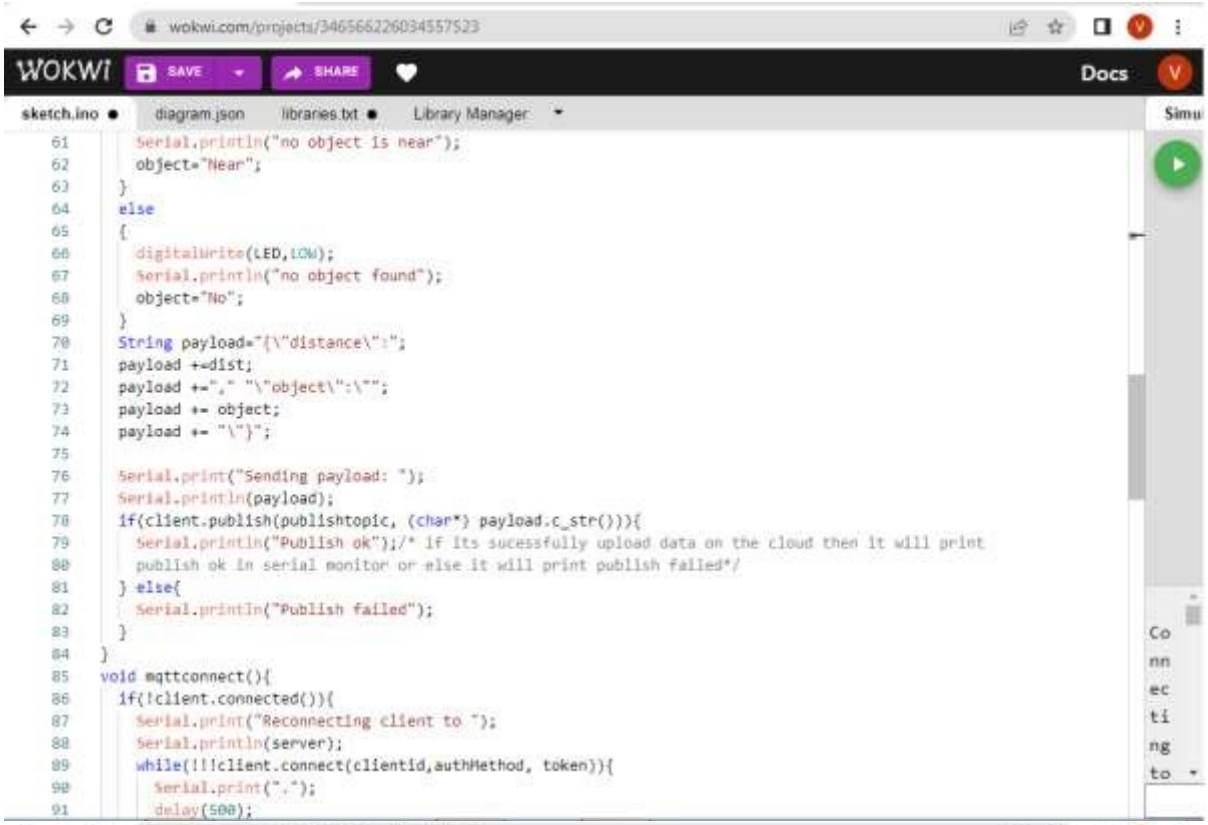

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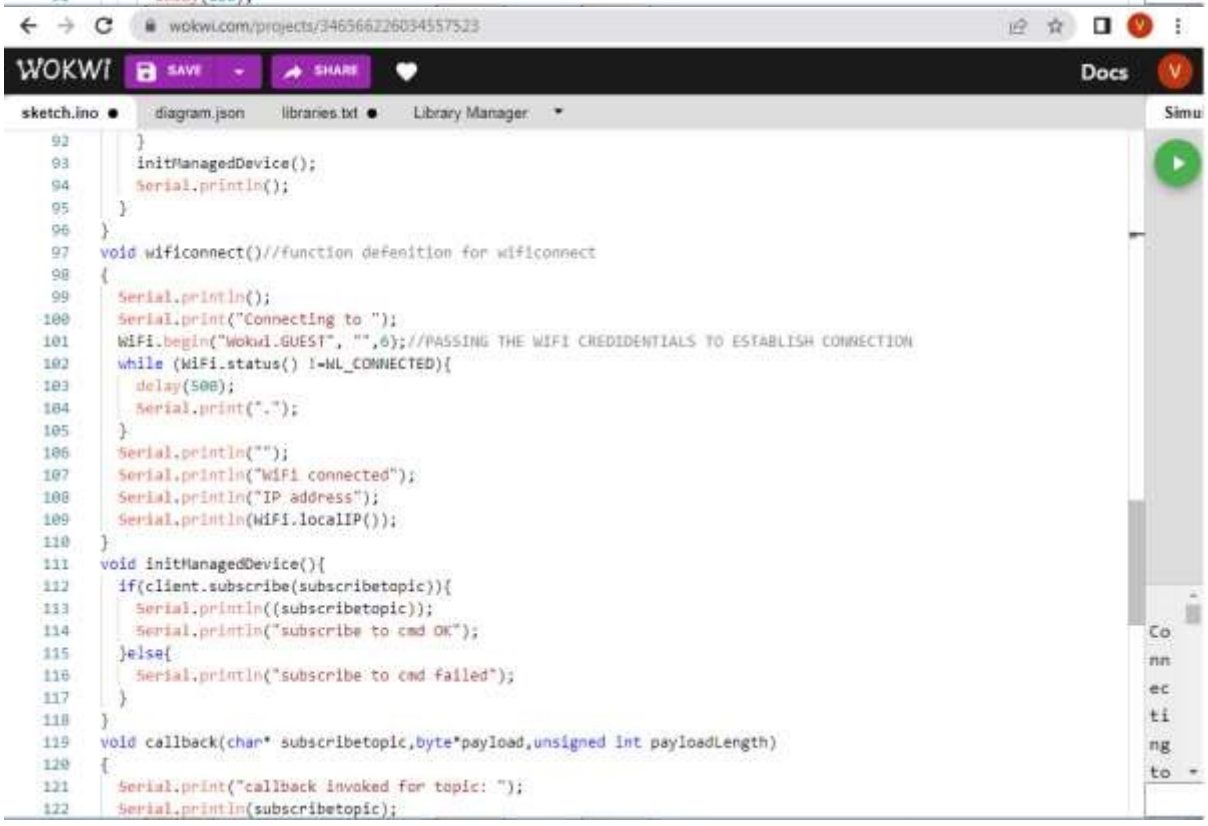
WOKWI SAVE SHARE Docs

sketch.ino ● diagram.json libraries.txt ● Library Manager Simu

```
61      Serial.println("no object is near");
62      object="Near";
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(publishtopic, (char*) payload.c_str())){
79      Serial.println("Publish ok");/* If its sucessfully 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  void mqttconnect(){
86    if(!client.connected()){
87      Serial.print("Reconnecting client to ");
88      Serial.println(server);
89      while(!!!client.connect(clientid,authMethod, token)){
90        Serial.print(".");
91        delay(500);
```



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WOKWI SAVE SHARE Docs

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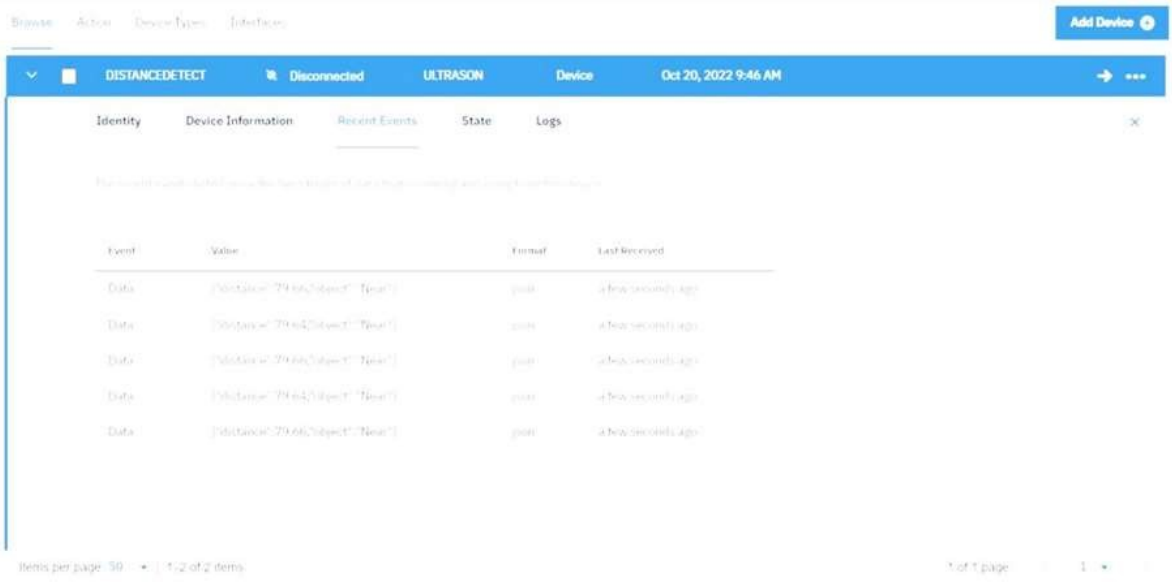
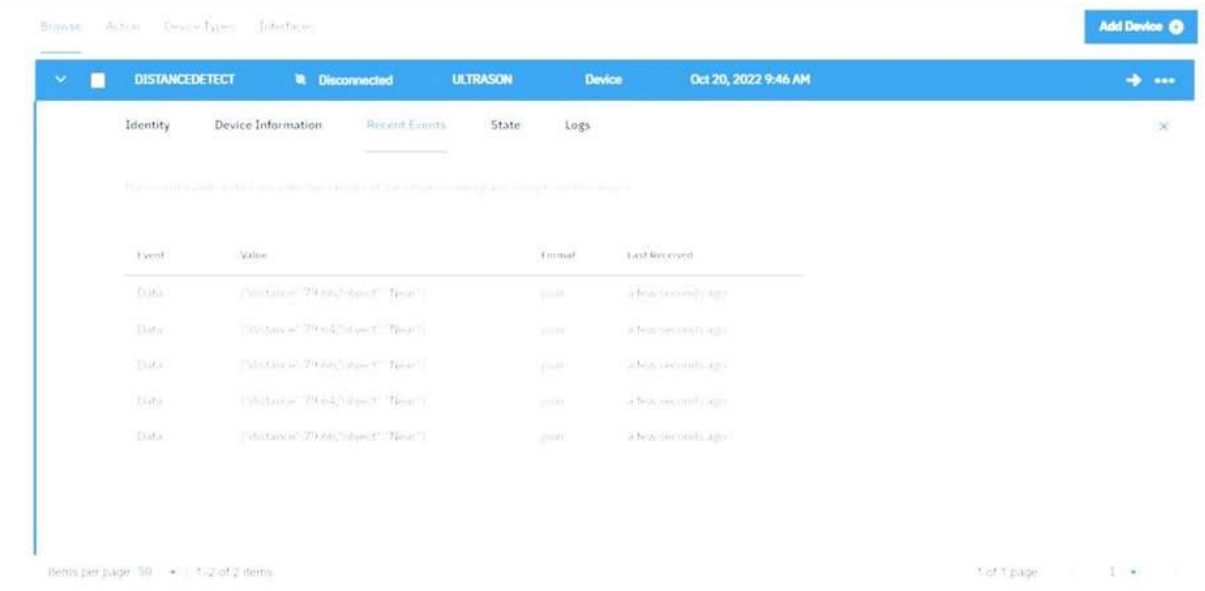
```
92      }
93      initManagedDevice();
94      Serial.println();
95    }
96  }
97  void wificonnect()//function defenition for wificonnect
98  {
99    Serial.println();
100   Serial.print("Connecting to ");
101   WiFi.begin("Wokwi-GUEST", "",6);//PASSING THE WIFI CREDIDENTIALS TO ESTABLISH CONNECTION
102   while (WiFi.status() !=WL_CONNECTED){
103     delay(500);
104     Serial.print(".");
105   }
106   Serial.println("");
107   Serial.println("WiFi connected");
108   Serial.println("IP address");
109   Serial.println(WiFi.localIP());
110 }
111 void initManagedDevice(){
112   if(client.subscribe(subscribetopic)){
113     Serial.println((subscribetopic));
114     Serial.println("subscribe to cmd OK");
115   }else{
116     Serial.println("subscribe to cmd failed");
117   }
118 }
119 void callback(char* subscribetopic,byte*payload,unsigned int payloadLength)
120 {
121   Serial.print("callback invoked for topic: ");
122   Serial.println(subscribetopic);
```

OUTPUT:

DATA IS SENT TO IBM CLOUD WHEN NO OBJECT IS DETECTED



When no object is detected



When object is detected in ultrasonic detector