ASSIGNMENT 4
WOKWI SIMULATION

Assignment Date	12th November 2022
Student Name	SRINITHI V
Student Roll Number	737819ECR187
Team Id	PNT2022TMID04740
Maximum Marks	2 Marks

QUESTION:

Write a code and make a connection in WOKWI for ultrasonic sensor. Whenever distance is less than 100 , send “alert” to IBM cloud and display in device recent events.

PROGRAM:

```
#include <WiFi.h> #include
<PubSubClient.h>WiFiClient
wifiClient; String data3;
#define ORG "d5oxwa"
#define DEVICE_TYPE "ibm-device"
#define DEVICE_ID "ibmid"
#define TOKEN "vtn5w?t3s?vX-vn8Z8"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";char
publishTopic[] = "iot-2/evt/data/fmt/json";
char topic[] = "iot-2/cmd/led/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=5;
const int echopin=18;String
command;
```

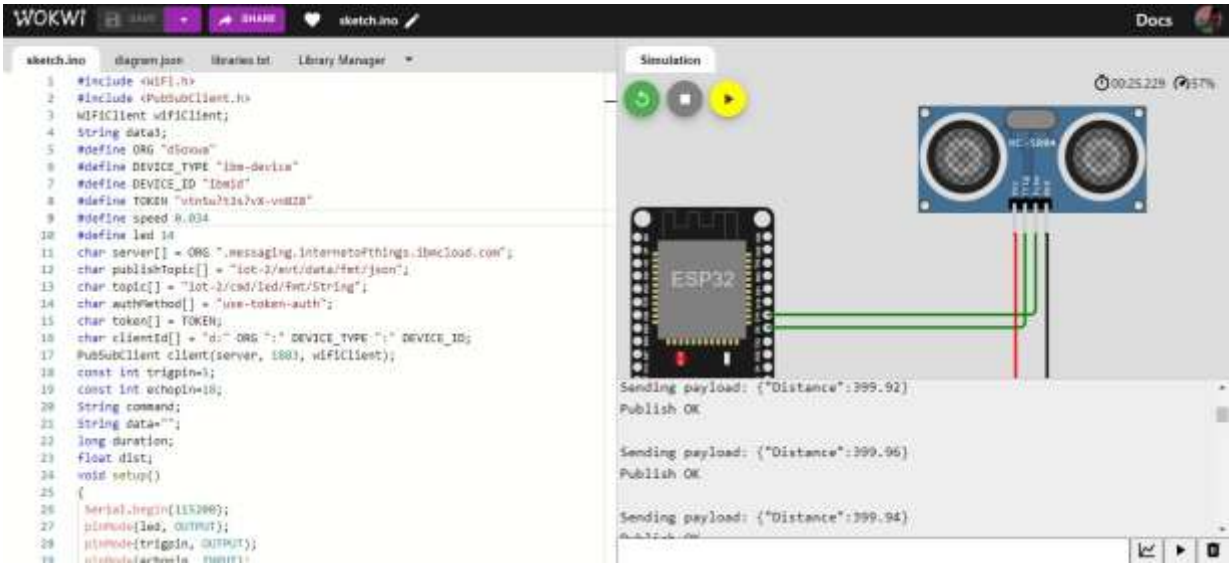
```
String data="";long
duration; float
dist; void setup()
{
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect();
  mqttConnect();
}
void loop() {
  bool isNearby = dist < 100;
  digitalWrite(led, isNearby);
  publishData();
  delay(500);
  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");
  }
```

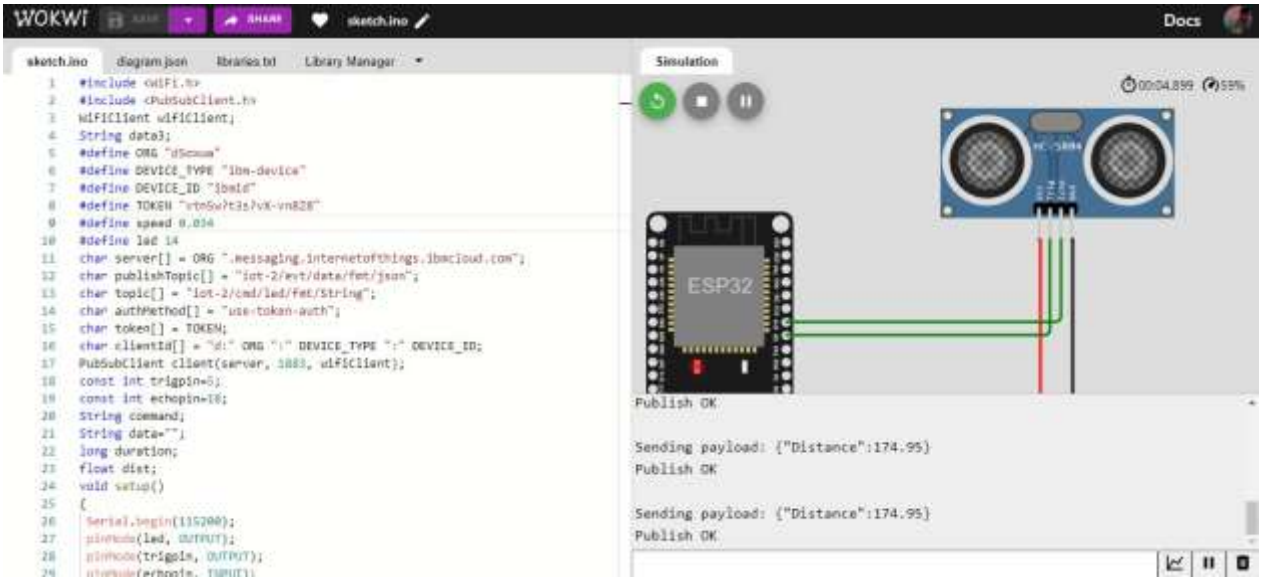
```
}
if(dist>100){
String payload = "{\"Distance\":";payload +=
dist;
payload += "}";
Serial.print("\n"); Serial.print("Sending
payload: ");Serial.println(payload);
if(client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish OK");
}else {
Serial.println("Publish FAILED");
}

}

}
```

OUTPUT:

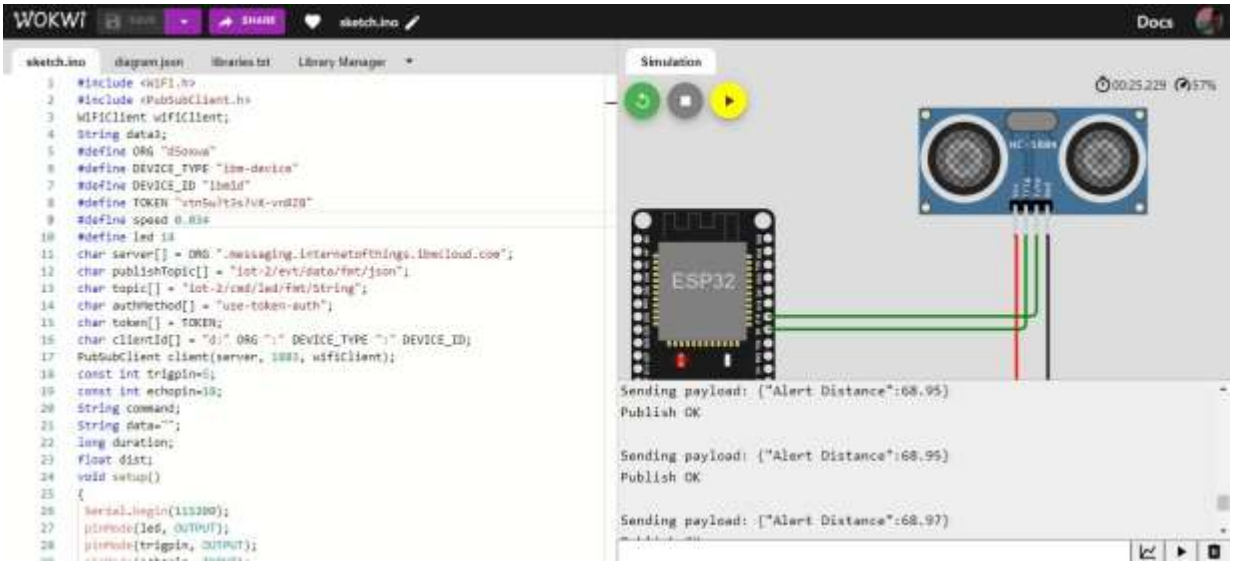
WOKWI SIMULATION:



When distance>100



When distance<100



IBM CLOUD OUTPUT:

Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	{"Normal Distance":92.99}	json	a few seconds ago
Data	{"Normal Distance":92.99}	json	a few seconds ago
Data	{"Normal Distance":92.99}	json	a few seconds ago
Data	{"Normal Distance":92.99}	json	a few seconds ago
Data	{"Normal Distance":92.99}	json	a few seconds ago