Assignment -4
WOWKI SIMULATION

Assignment Date	4th NOVEMBER 2022
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Maximum Marks	2 Marks

Question-1:

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.
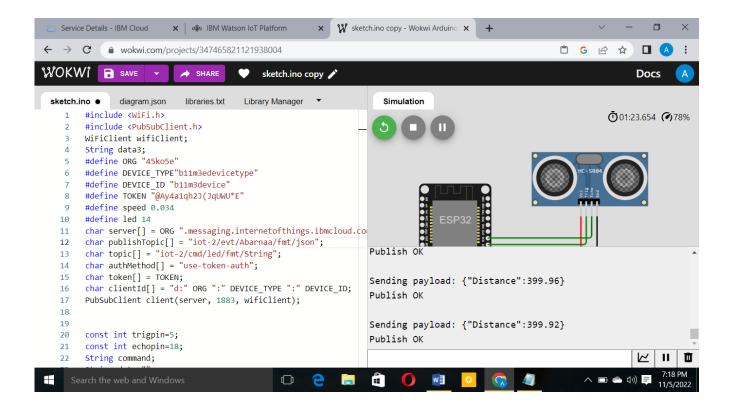
PROGRAM

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient;
String data3;
#define ORG "2t8zs3"
#define DEVICE_TYPE "b11m3e-device" #define
DEVICE_ID "11111111deviceid"
#define TOKEN "2*kzBuumHxd+BeL*H)"
#define speed 0.034  #define led 14 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[] =
"iot-2/evt/Amrin/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()
```

```cpp
{
  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 {
```
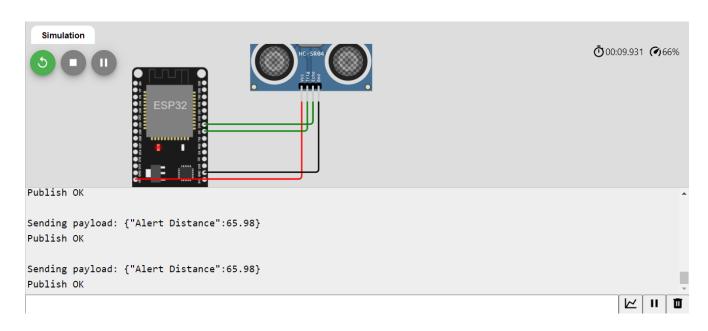
```
    Serial.println("subscribe to cmd FAILED");
  }
}
void publishData()
{
  digitalWrite(trigpin,LOW);
digitalWrite(trigpin,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;   if(dist<100){
String payload = "{\"Alert Distance\":";
payload += 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");
  }

 }


 }
```
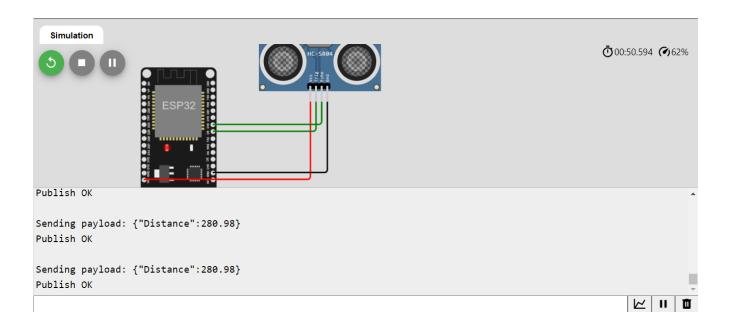
OUTPUT:

<u>**WOKWI SIMULATION**</u>

```
sketch.ino                      diagram.json    libraries.txt    Library Manager

  1   #include <WiFi.h>
  2   #include <PubSubClient.h>
  3   WiFiClient wifiClient;
  4   String data3;
  5   #define ORG "45ko5e"
  6   #define DEVICE_TYPE"b11m3edevicetype"
  7   #define DEVICE_ID "b11m3device"
  8   #define TOKEN "@Ay4a1qh2J(JqUWU*E"
  9   #define speed 0.034
 10   #define led 14
 11   char server[] = ORG ".messaging.internetofthings.ibmcloud.co
 12   char publishTopic[] = "iot-2/evt/Abarnaa/fmt/json";
 13   char topic[] = "iot-2/cmd/led/fmt/String";
 14   char authMethod[] = "use-token-auth";
 15   char token[] = TOKEN;
 16   char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
 17   PubSubClient client(server, 1883, wifiClient);
 18
 19
 20   const int trigpin=5;
 21   const int echopin=18;
 22   String command;
```

When distance<100:

When distance>100:

Publish OK

Sending payload: {"Distance":280.98}
Publish OK

Sending payload: {"Distance":280.98}
Publish OK

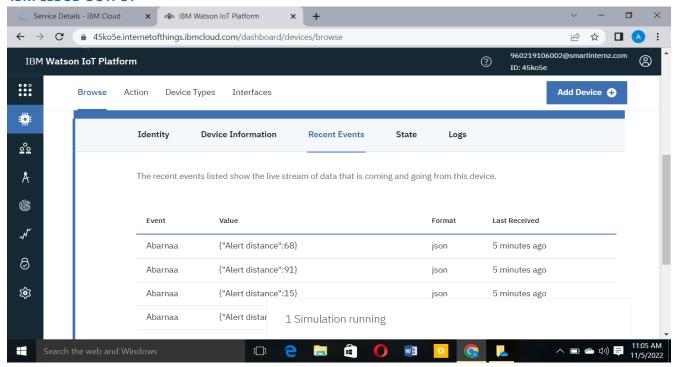**IBM CLOUD OUTPUT**

WOKWI LINK:

https://wokwi.com/projects/347465821121938004