

ASSIGNMENT 4

Date	30 Oct 22
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Project Name	IOT based smart crop protection system for agriculture

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

CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient;

#define ORG "nhpwjc"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "USE YOUR ID"
#define TOKEN "USE YOUR TOKEN"
#define speed 0.034
  char server[] =
ORG
".messaging.internetofthings.ibmcloud.com"; char
publishTopic[] = "iot-2/evt/Data/fmt/json"; char topic[] =
"iot-2/cmd/home/fmt/String"; char authMethod[] = "usetoken-
auth"; char token[] = TOKEN; char clientId[] = "d:" ORG ":"
DEVICE_TYPE ":" DEVICE_ID; PubSubClient client(server,
1883, wifiClient); void publishData(); const int
trigpin=5;
const int echopin=18;
String command;
String data="";
  long
duration;
float dist;
void
setup()
{
  Serial.begin(115200); pinMode(trigpin,
  OUTPUT);
```

```

pinMode(echopin, INPUT); wifiConnect(); mqttConnect();
} void loop() {

  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("subscribe to cmd
    OK");
  } else {
    Serial.println("subscribe to cmd FAILED"); } }

void publishData()
{ digitalWrite(trigpin, LOW);
  digitalWrite(trigpin, HIGH);

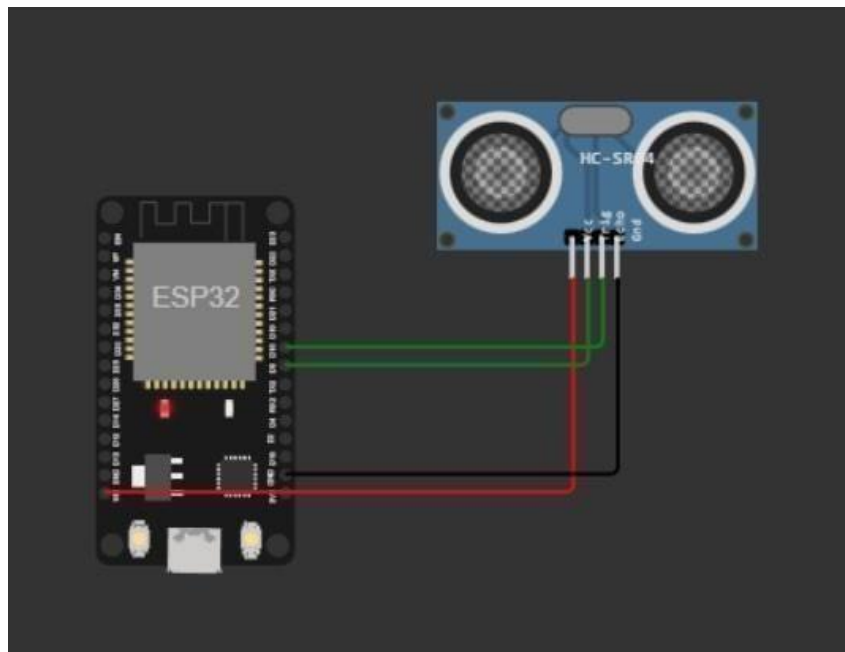
```

```

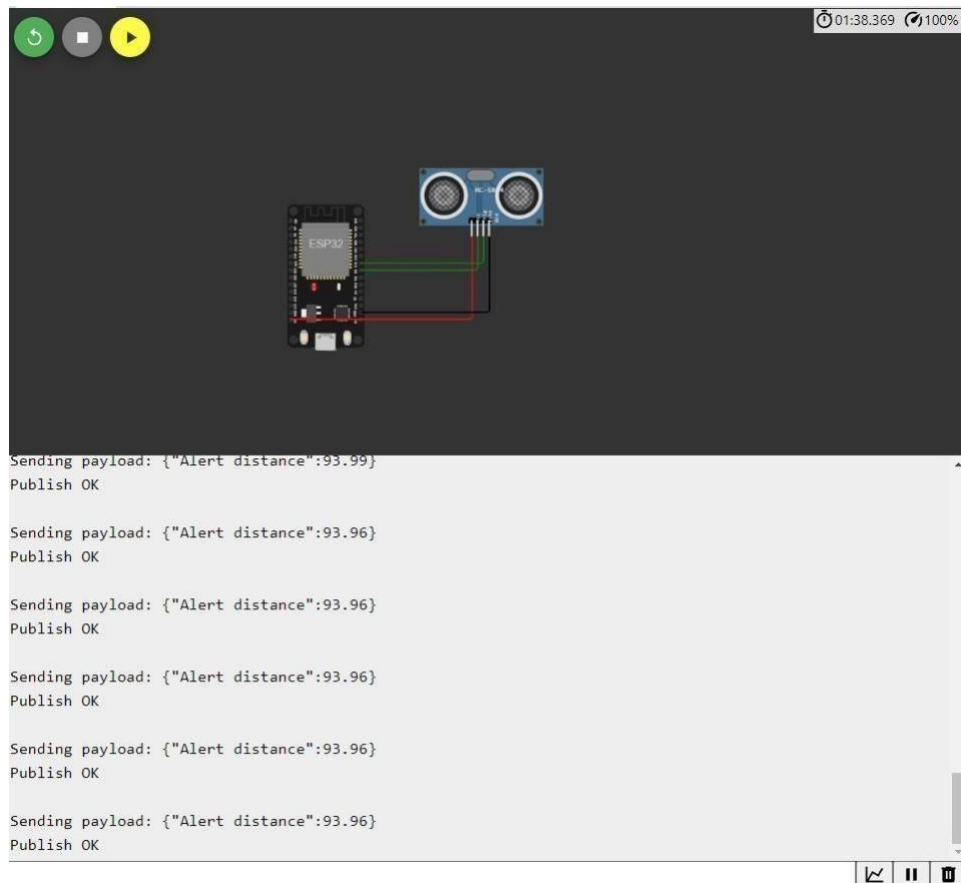
delayMicroseconds(10); digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH); dist=duration*speed/2; if(dist<100){
  String payload = "{\"Alert distance\":\""; payload += dist; payload +=
  "\"}";
  Serial.print("\n");
  Serial.print("Sending payload: "); Serial.println(payload); if
    (client.publish(publishTopic, (char*) payload.c_str()))
  Serial.println("Publish OK");
} else {
  Serial.println("Publish FAILED"); } }
}

```

CONNECTIONS:



OUTPUT:



Wokwi IoT Dashboard

12345 Connected NodeMCU Device Oct 17, 2022 2:36 PM 111719106009@smartinternz.com

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	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago

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WOKWI LINK - <https://wokwi.com/projects/346405970317935188>