ASSIGNMENT-4
SMART HOME USING TINKERCAD

Assignment Date	18 November 2022
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Maximum Marks	2 Marks

Question

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

Solution

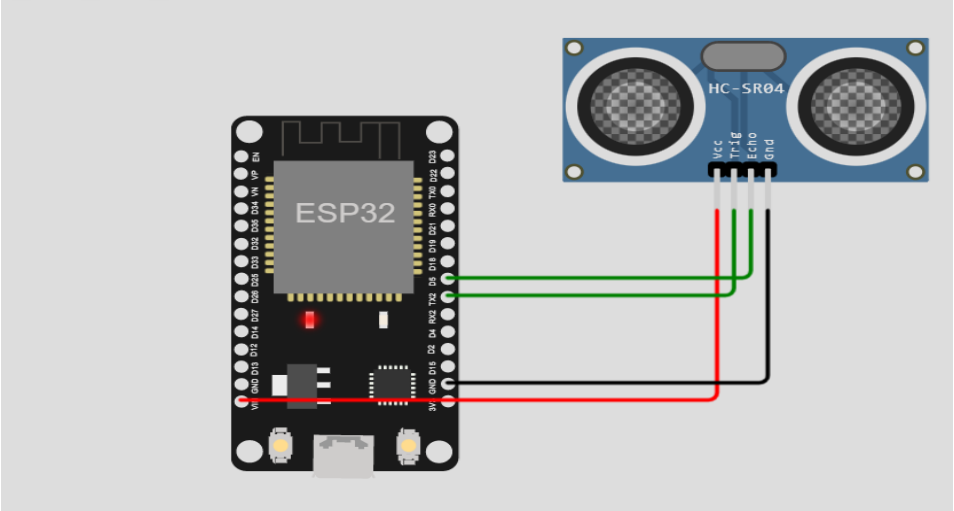
sketch.ino | diagram.json | libraries.txt | Library Manager

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
WiFiClient wifiClient;
#define ORG "zoieul"
#define DEVICE_TYPE "IOT123"
#define DEVICE_ID "12345"
#define TOKEN "123456789"
#define speed 0.034
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/abcd_1/fmt/json";
char topic[] = "iot-2/cmd/home/fmt/String";
char authMethod[] = "use-token-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="";
String lat="14.167589";
String lon="80.248510";
String name="point2";
String icon="";
long duration;
int 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.conn
Serial.print(".");
delay(1000);
}
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()
{
```

```
71   digitalWrite(trigpin,LOW);
72   digitalWrite(trigpin,HIGH);
73   delayMicroseconds(10);
74   digitalWrite(trigpin,LOW);
75   duration=pulseIn(echopin,HIGH);
76   dist=duration*speed/2;
77   if(dist<100){
78   dist=100-dist;
79   icon="fa-trash";
80   }else{
81   dist=0;
82   icon="fa-trash-o";
83   }
84   DynamicJsonDocument doc(1024);
85   String payload;
86   doc["Name"]=name;
87   doc["Latitude"]=lat;
88   doc["Longitude"]=lon;
89   doc["Icon"]=icon;
90   doc["FillPercent"]=dist;
91   serializeJson(doc, payload);
92   delay(3000);
93   Serial.print("\n");
94   Serial.print("Sending payload: ");
95   Serial.println(payload);
96   if (client.publish(publishTopic, (char*) payload.c_str())) {
97   Serial.println("Publish OK");
98   } else {
99   Serial.println("Publish FAILED");
100  }
101  }
102
```

OUTPUT



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

Event	Value	Format	Last Received
abcd_1	{"Name":"point2","Latitude":"14.1675899","Longi...	json	a few seconds ago
abcd_1	{"Name":"point2","Latitude":"14.1675899","Longi...	json	a few seconds ago
abcd_1	{"Name":"point2","Latitude":"14.1675899","Longi...	json	a few seconds ago
abcd_1	{"Name":"point2","Latitude":"14.1675899","Longi...	json	a few seconds ago

0 Simulations running