Smart Farmer-IOT Enabled Smart Farming Application

IBM NALAIYATHIRAN

Assignment -4

TITLE	**Smart Farmer-IOT Enabled Smart Farming Application**
DOMAIN NAME	INTERNET OF THINGS
TEAM ID	PNT2022TMID46022
LEADER NAME	BRINGLE SCOTT RAILTON .M
TEAM MEMBER NAME	CHANDRAPREM.G HARISH.J ARUN.M

Question-1:

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. Upload document with wokwi share link and images of IBM cloud

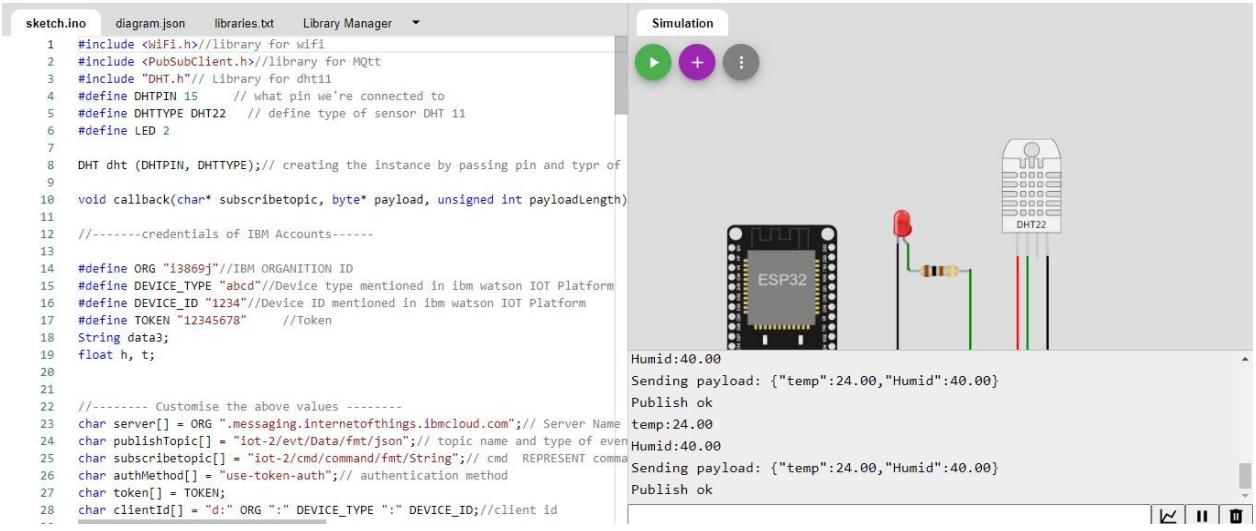
CODE :

```
#include <WiFi.h>
#include <PubSubClient.h>  void callback(char* subscribetopic,  byte* payload,
unsigned int payloadLength);
#define ORG "92zbfc"
#define DEVICE_TYPE "esp32"
#define DEVICE_ID "12345"
#define TOKEN "12345678" String data3; char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[]
= "iot-2/evt/Data/fmt/json"; char subscribetopic[] = "iot-
2/cmd/test/fmt/String"; char authMethod[] = "use-tokenauth";
char token[] = TOKEN; char clientId[] = "d:" ORG ":"
DEVICE_TYPE ":" DEVICE_ID;
```

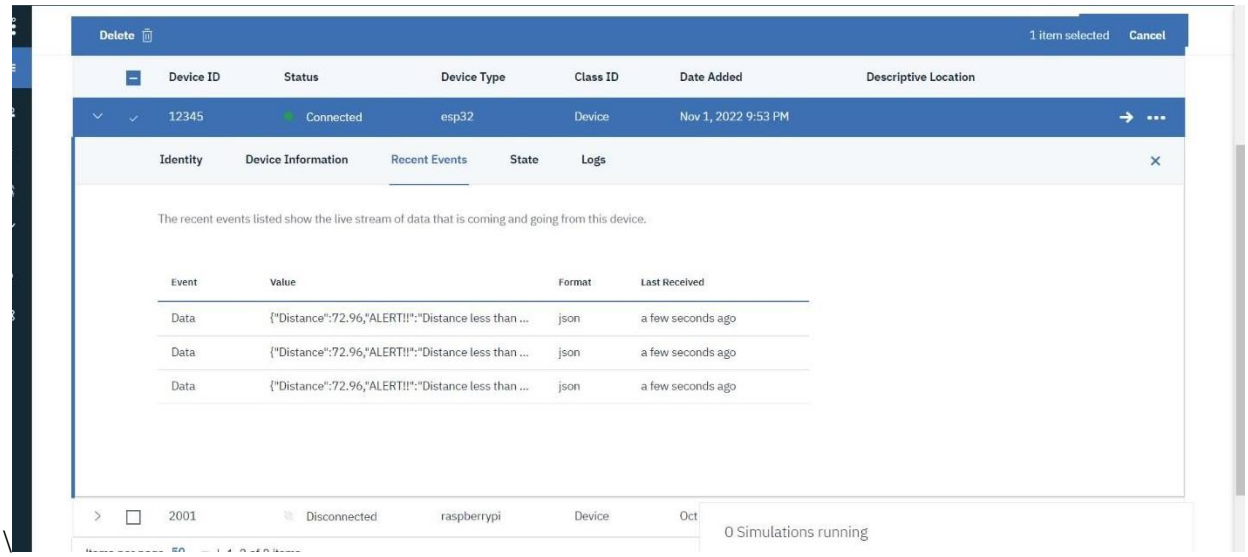
```
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);
const int trigPin = 5; const int echoPin = 18; #define
SOUND_SPEED 0.034 long duration; float distance;
void setup() { Serial.begin(115200); pinMode(trigPin,
OUTPUT); pinMode(echoPin, INPUT); wificonnect();
mqttconnect();
}  void loop() {  digitalWrite(trigPin,
LOW); delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW); duration
= pulseIn(echoPin, HIGH); distance
= duration * SOUND_SPEED/2;
Serial.print("Distance (cm): ");
Serial.println(distance); if(distance<100)
{
Serial.println("ALERT!!")
; delay(1000);
PublishData(distance);
delay(1000); if
(!client.loop()) {
mqttconnect();  } }
delay(1000)
; }
void PublishData(float dist) { mqttconnect();  String
payload = "{\"Distance\":"; payload += dist; payload +=
",\"ALERT!!\":""\"Distance less than 100cms\""; payload
+= "}";
Serial.print("Sending payload: ");
Serial.println(payload);

if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish ok");
} else {
Serial.println("Publish failed");
} }  void
mqttconnect() { if
(!client.connected()) {
Serial.print("Reconnecting client to ");
Serial.println(server);  while
(!!!client.connect(clientId, authMethod, token)) {
Serial.print("."); delay(500);
}
initManagedDevice();
Serial.println();
} }
void wificonnect()
{
Serial.println();
Serial.print("Connecting to "); WiFi.begin("Wokwi-GUEST", "", 6); while (WiFi.status() !=
WL_CONNECTED) { delay(500); Serial.print(".");
```

```
}
Serial.println("");
Serial.println("WiFi connected");
Serial.println("IP address: ");
Serial.println(WiFi.localIP());
}
void initManagedDevice() {
if (client.subscribe(subscribetopic)) { Serial.println((subscribetopic));
Serial.println("subscribe to cmd OK");
} else {
Serial.println("subscribe to cmd FAILED");
} }
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
{
Serial.print("callback invoked for topic: ");
Serial.println(subscribetopic); for (int i = 0; i
< payloadLength; i++)
{
data3 += (char)payload[i];
}
Serial.println("data: "+ data3); data3="";
}
```

Output and Simulation :



Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.


Delete
1 item selected
Cancel
Device ID
Status
Device Type
Class ID
Date Added
Descriptive Location
12345
Connected
esp32
Device
Nov 1, 2022 9:53 PM
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
Data
{"Distance":72.96,"ALERT!!":"Distance less than ...
json
a few seconds ago
Data
{"Distance":72.96,"ALERT!!":"Distance less than ...
json
a few seconds ago
Data
{"Distance":72.96,"ALERT!!":"Distance less than ...
json
a few seconds ago
2001
Disconnected
raspberrypi
Device
0 Simulations running