Assignment-4

Assignment Date	29 October 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. Upload document with wokwi share link and images of IBM cloud.

Wokwi Link:

https://wokwi.com/projects/347777130081288786

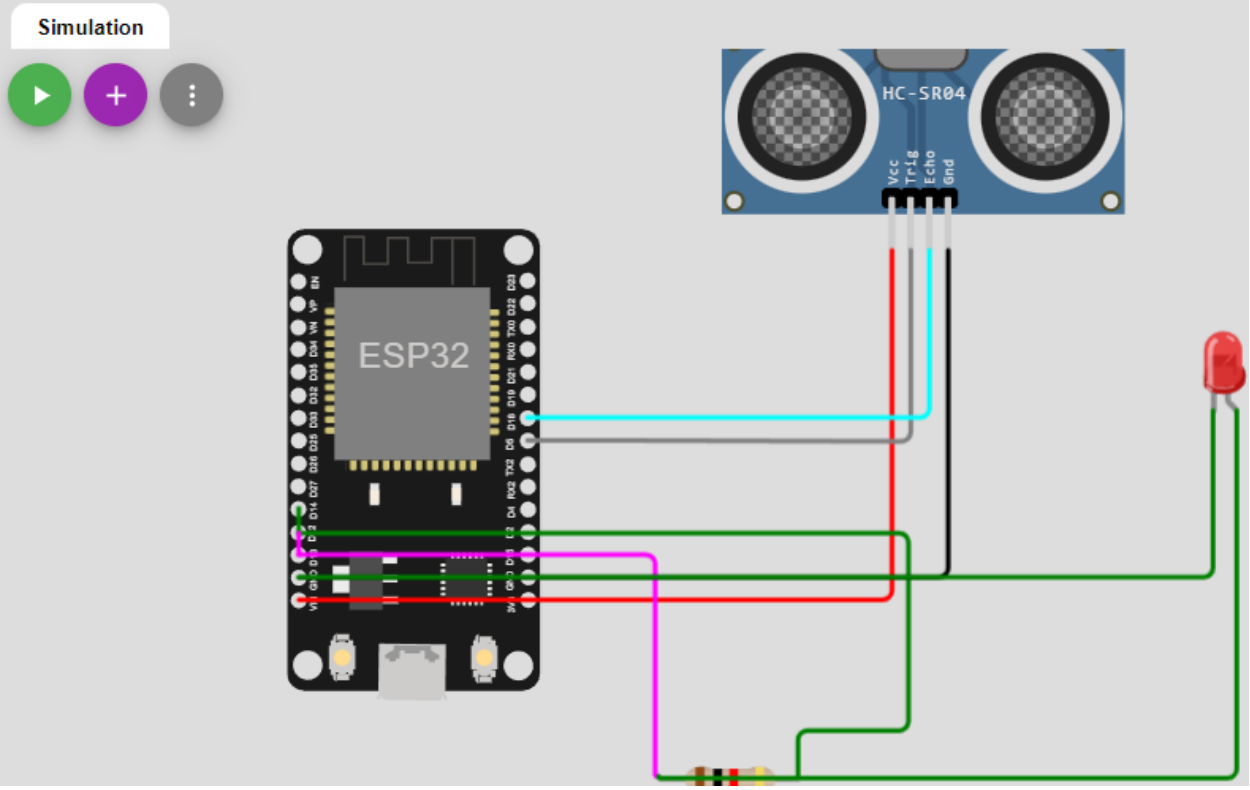
Code:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "05wk10"
#define DEVICE_TYPE "Assignment_4"
#define DEVICE_ID "1234"
#define TOKEN "123456789"
#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/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 = "";
```

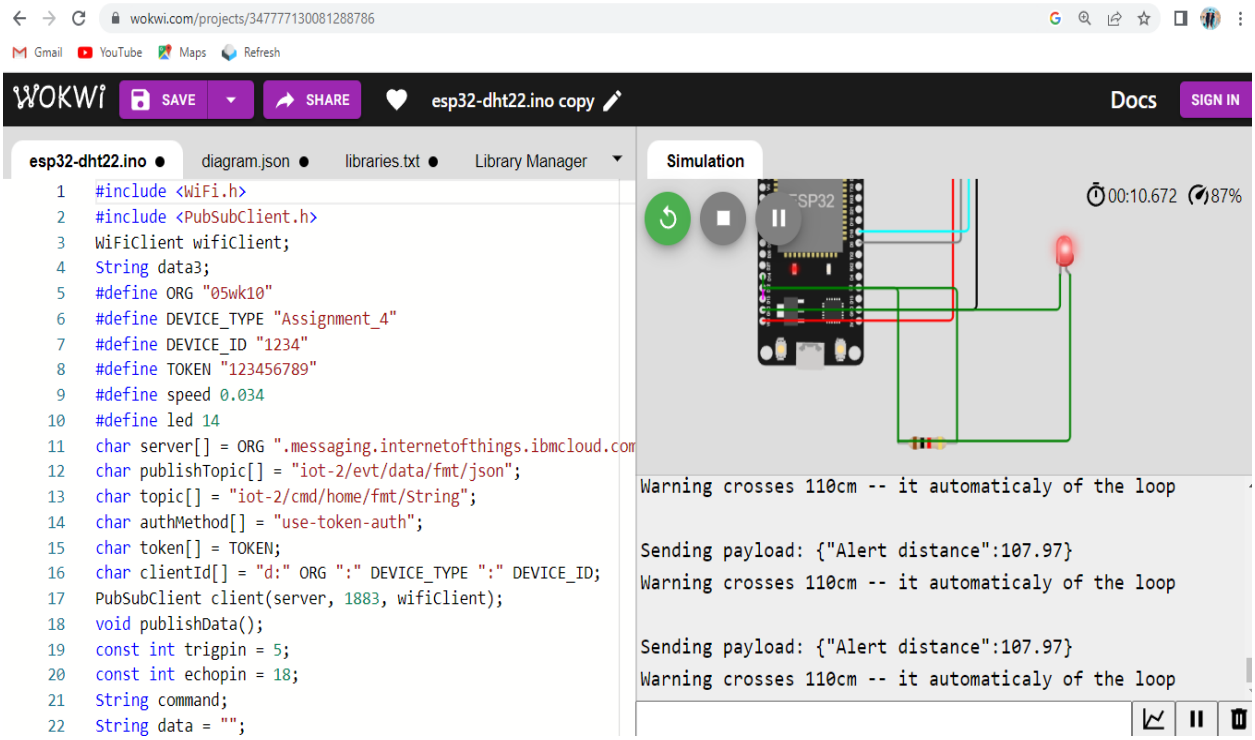
```
long duration;
float dist;
void setup()
{
Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
}
void loop() {
bool isNearby = dist < 100;
digitalWrite(led, isNearby);
publishData();
delay(500);
if (!client.loop()) {
mqttConnect();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

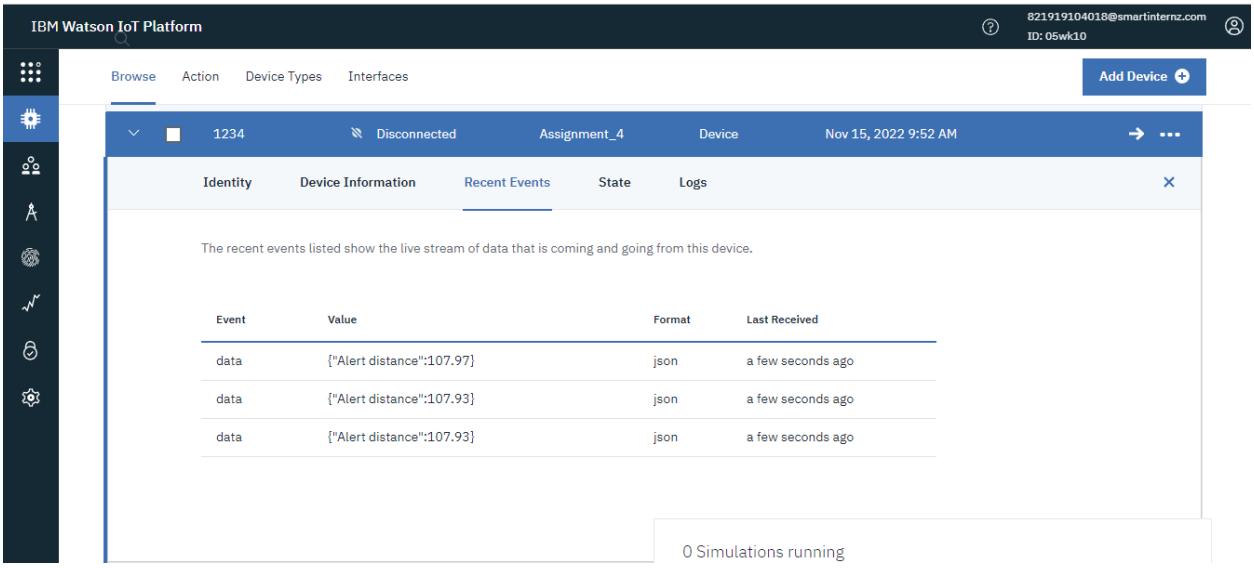
```
 Serial.println("IBM subscribe to cmd OK");
 } else {
 Serial.println("subscribe to cmd FAILED");
 }
 }
 void publishData()
 {
 digitalWrite(trigpin, LOW);
 digitalWrite(trigpin, HIGH);
 delayMicroseconds(10);
 digitalWrite(trigpin, LOW);
 duration = pulseIn(echopin, HIGH);
 dist = duration * speed / 2;
 if (dist < 100) {
 String payload = "{\"Normal 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 > 101 ) {
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("Warning crosses 110cm -- it automaticaly of the loop");
digitalWrite(led, HIGH);
} else {
Serial.println("Publish FAILED");
}
}
}
void callback(char* subscribeTopic, byte* payload, unsigned int payloadLengt
{
Serial.print("callback invoked for topic:");
Serial.println(subscribeTopic);
for (int i = 0; i < payloadLength; i++) {
```

Circuit Diagram:



Output:




IBM Watson IoT Platform
821919104018@smartinternz.com
ID: 05wk10
Browse
Action
Device Types
Interfaces
Add Device
1234
Disconnected
Assignment_4
Device
Nov 15, 2022 9:52 AM
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
{"Alert distance":107.97}
json
a few seconds ago
data
{"Alert distance":107.93}
json
a few seconds ago
data
{"Alert distance":107.93}
json
a few seconds ago
0 Simulations running