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| ASSIGNMENT DATE | 26 OCT |
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| MAXIMUM MARK | 2 MARK |

CODE:

#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "z2nb9k"

#define DEVICE\_TYPE "raspberypi"

#define DEVICE\_ID "123"

#define TOKEN "1234567890"

#define speed 0.034

#define led 14

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/raspberrypi /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 is Nearby = 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 payloadLength) {

**Serial**.print("callback invoked for topic:");

**Serial**.println(subscribeTopic);

  for (int i = 0; i < payloadLength; i++) {

    dist += (char)payload[i];

  }

**Serial**.println("data:" + data3);

  if (data3 == "lighton") {

**Serial**.println(data3);

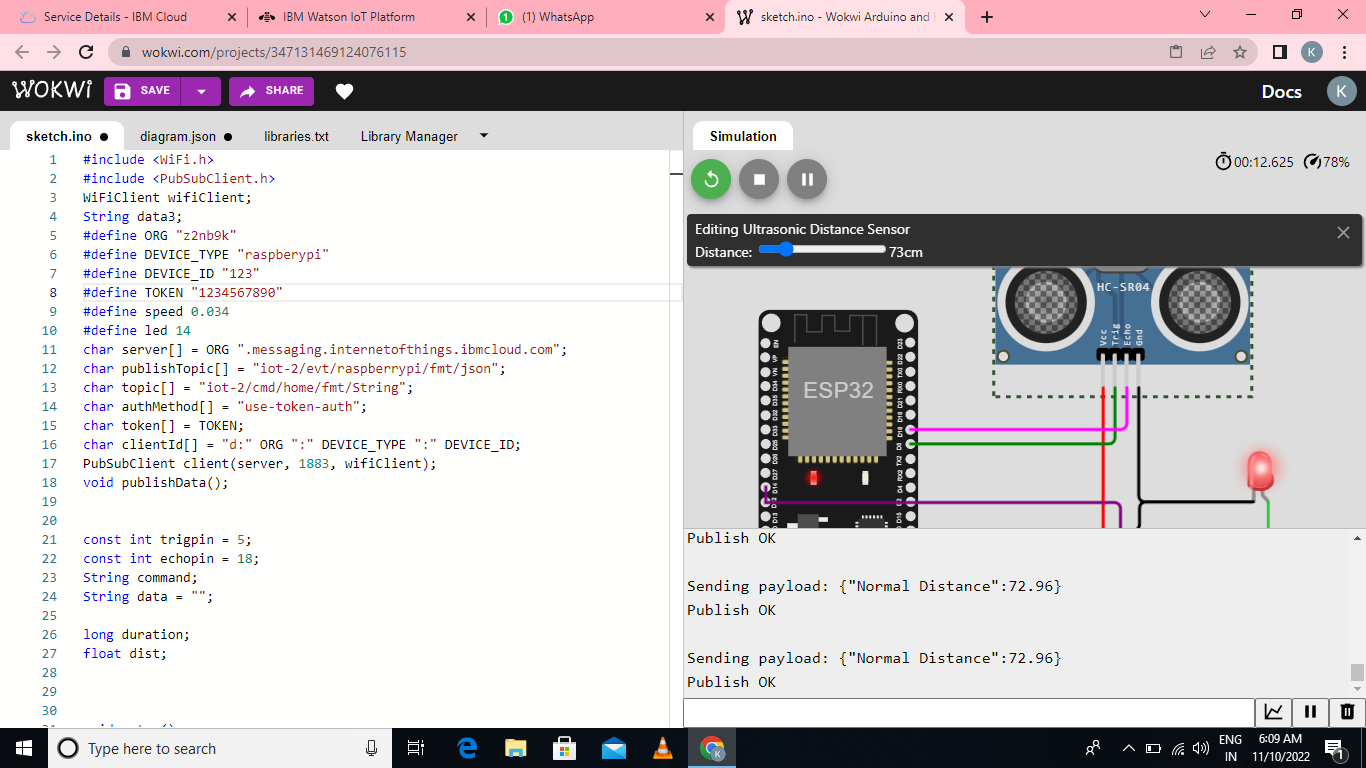
    digitalWrite(led, HIGH);

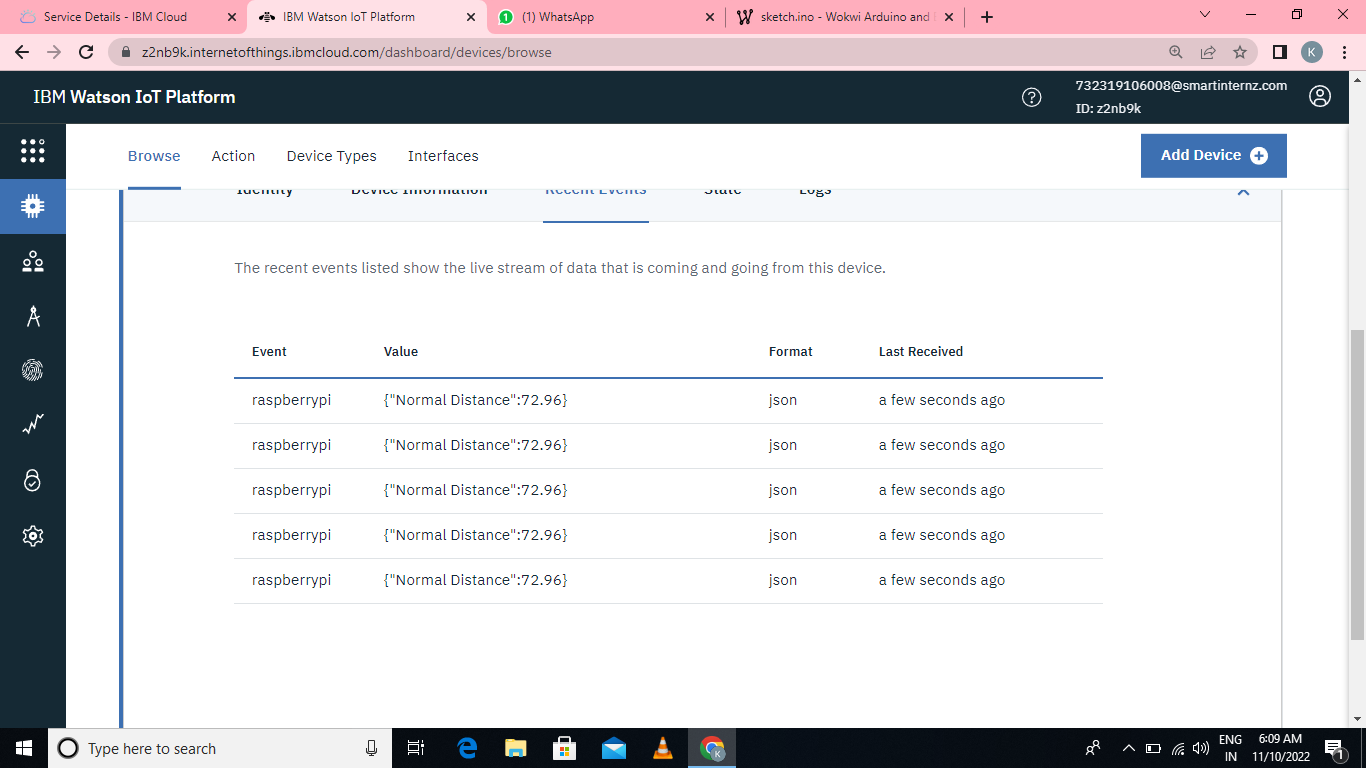
  }

  data3 = "";

}

OUTPUT:

DISTANCE: LESSTHAN 100



DISTANCE: GREATERTHAN 100