ASSIGNMENT-4
DISTANCE DETECTION USING ULTRASONICSENSOR

Date	19 November 2022
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Maximum Marks	2 Marks

Question:

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

Code:

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

#define ORG "9tg03j"

#define DEVICE_TYPE
"RaspberryPi" #define
DEVICE_ID "12345"
#define TOKEN
"12345678" #define
speed 0.034
```

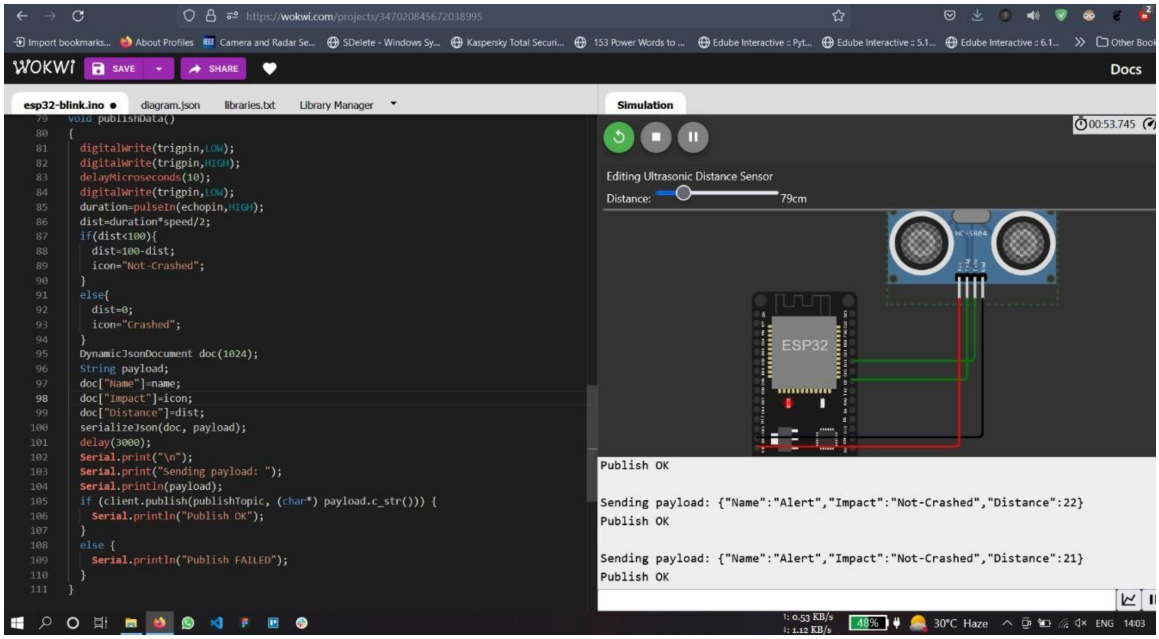
```
char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char
publishTopic[] = "iot-2/evt/status1/fmt/json";
char topic[] =
"iot-2/cmd/home/fmt/String"; char
authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

PubSubClient client(server, 1883,
wifiClient); void publishData();

const int trigpin=5;



const int
echopin=19;
String
command;
String
data="";
String
name="Aler
t"; String
icon="";
long
durat
ion;
int
dist;
void setup()
{  Serial.begi
  n(115200);
  pinMode(trigpin,
  OUTPUT);
  pinMode(echopin,
  INPUT);
  wifiConnect();
  mqttConnect();
}
```

```
void
 loop(
 )
 { pub
 lishD
 ata();
 delay
 (500)
 ;
 if (!
  client.lo
  op())
  { mqttC
  onnect()
  ;
 }
}

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(".");
   Serial.p
   rint("*"
   );
   delay(1
   000);
  }
  initManaged
```

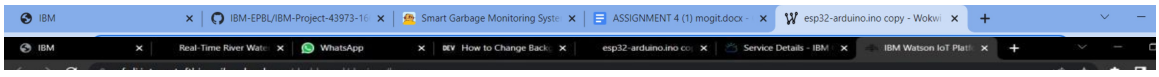
```
    Device();
    Serial.println
    ();
  }
}

void initManagedDevice() {


  if (client.subscribe(topic))
    { Serial.println(client.subscri
    be(topic));
    Serial.println("subscribe to
    cmd OK");
  }
  else {
    Serial.println("subscribe to cmd
  FAILED"); }
}

void
publishD
ata() {
  digitalWrite(trigpin,LO
  W);
  digitalWrite(trigpin,HIG
  H);
  delayMicroseconds(10);
  digitalWrite(trigpin,LO
  W);
  duration=pulseIn(echopi
  n,HIGH);
  dist=duration*speed/2;
  if(dist<100){
    dist=100-
    dist;
    icon="Not-
    Crashed";
  }
  e
```

```
  l
  s
  e
  {
  d
  i
  s
  t
  =
  0
  ;
  icon="Crashed";
 }
 DynamicJsonDocument
 doc(1024); String
 payload;
 doc["Name"]=name;
 doc["Impact"]=icon;
 doc["Distance"]=dist;
 serializeJson(doc,
 payload); delay(3000);
 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"); }
}
```

DIAGRAM:


WOKWI
SAVE
SHARE
Docs
esp32-blink.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:53.745
Editing Ultrasonic Distance Sensor
Distance:
79cm
ESP32
Publish OK
Sending payload: {"Name":"Alert","Impact":"Not-Crashed","Distance":22}
Publish OK
Sending payload: {"Name":"Alert","Impact":"Not-Crashed","Distance":21}
Publish OK

OUTPUT:



Data uploaded to Iot Watson Platform

https://wokwi.com/projects/347824265812247123