

# ASSIGNMENT-4

## DISTANCE DETECTION USING ULTRASONIC SENSOR

Date	08 November 2022
Team ID	PNT2022MID51261
Maximum Marks	2 Marks

### Question:

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 centimeters it 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="Alert";
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, IPaddress:"); 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.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");
  }
}

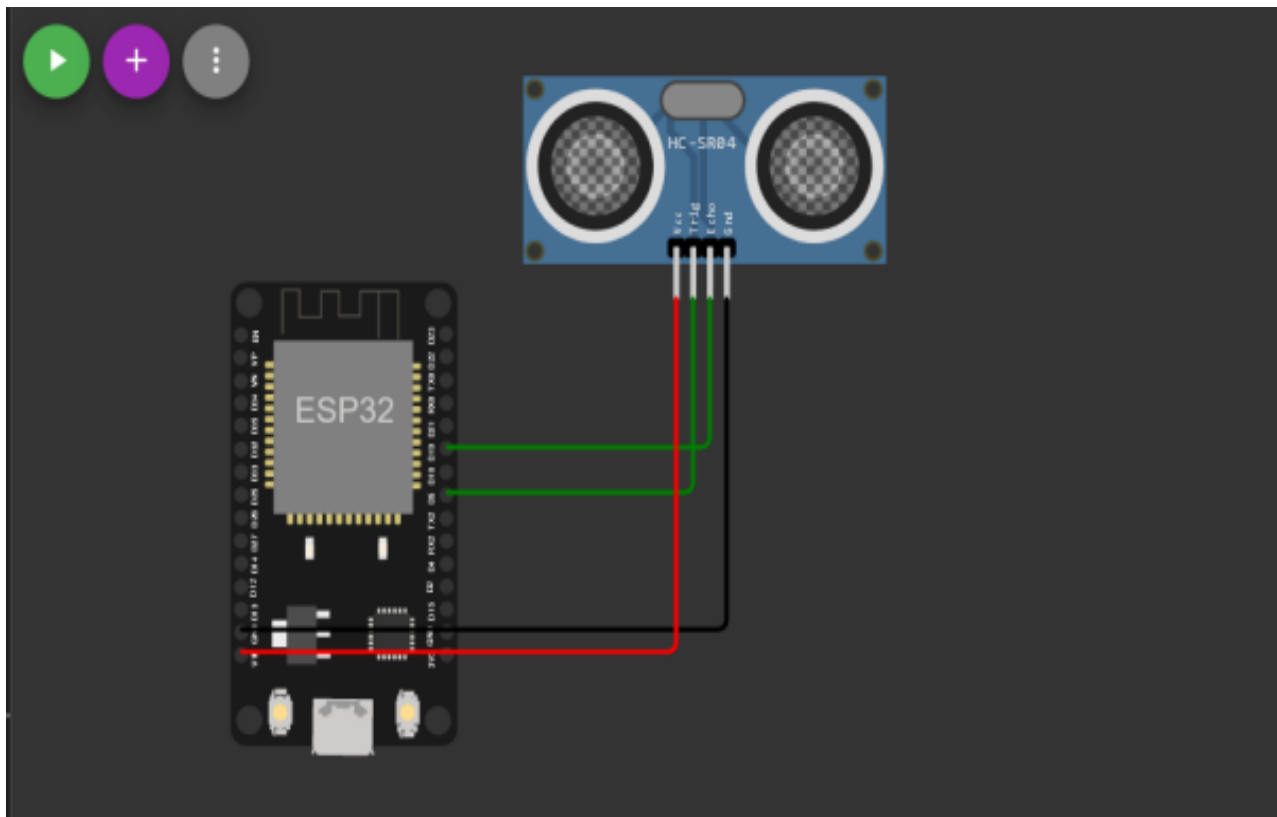
```

```
}  
}
```

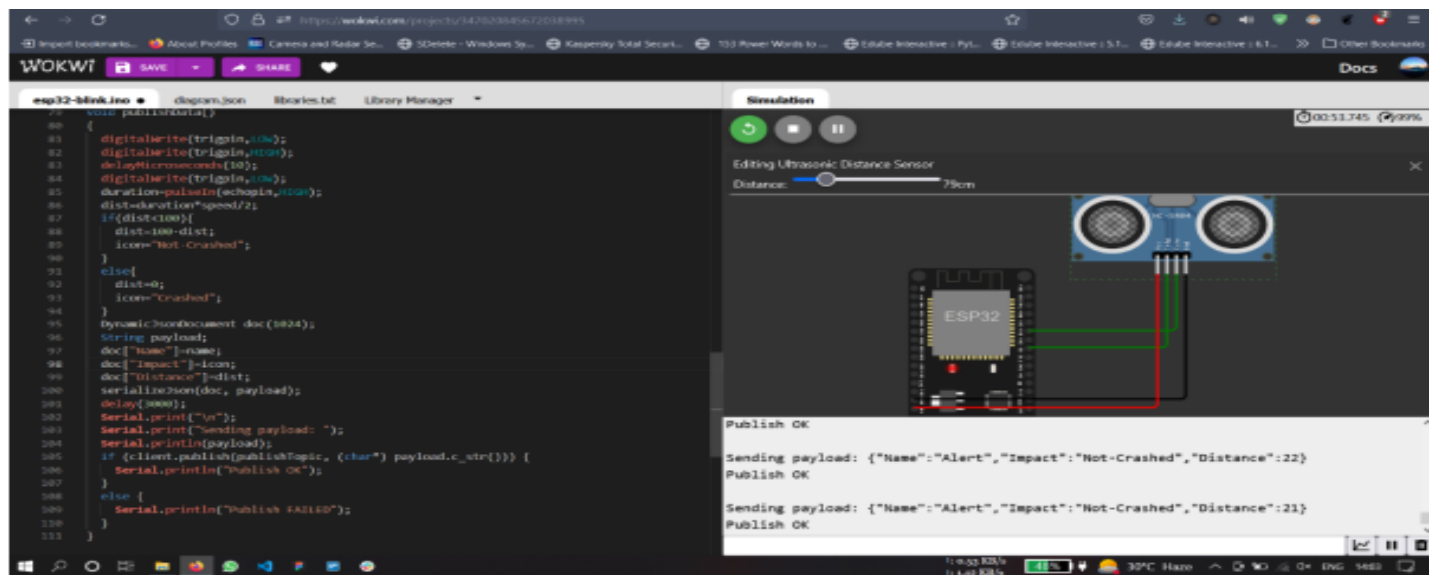
```
void publishData()  
{  
  digitalWrite(trigpin,LOW);  
  digitalWrite(trigpin,HIGH);  
  delayMicroseconds(10);  
  digitalWrite(trigpin,LOW);  
  duration=pulseIn(echopin,HIGH);  
  dist=duration*speed/2;  
  if(dist<100){  
    dist=100-dist;  
    icon="Not-Crashed";  
  }  
  else{  
    dist=0;  
    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");  
}  
}
```

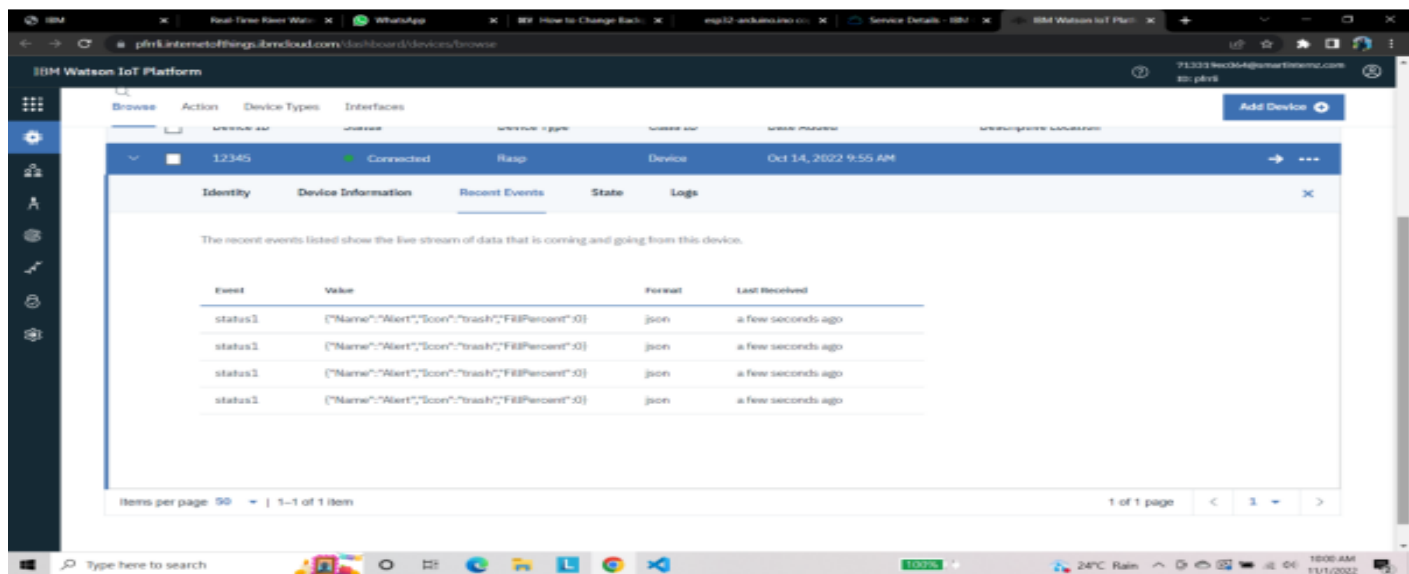
## DIAGRAM:



## Output:



## Data uploaded to Iot Watson Platform



<https://wokwi.com/project/347027183915500115>