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ASSIGNMENT-4

CODE:

```
#include  <WiFi.h>

#include <PubSubClient.h>

void callback(char* subscribetopic,byte* payload, unsigned int
payloadLength);

#define ORG "1eozpn"

#define DEVICE_TYPE "esp"

#define DEVICE_ID "123"

#define TOKEN "12345678"

String data3;


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

char publishTopic[]="iot-2/evt/distance/fmt/json";

char subscribeTopic[]="iot-2/cmd/test/fmt/String";

char authMethod[]="use-token-auth";

char token[]=TOKEN;

char clientID[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;


WiFiClient wifiClient;

PubSubClient client(server,1883,callback,wifiClient);


#define ECHO_PIN 14

#define TRIG_PIN 12
```

```
#define led 27


void setup() {
  // put your setup code here, to run once:
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
  wificonnect();
  mqttconnect();
}
float readDistanceCM()
  { digitalWrite(TRIG_PIN,
  LOW);delayMicroseconds(2);
  digitalWrite(TRIG_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
  int duration=random(1,200);
  //Serial.println(duration);
  //duration = pulseIn(ECHO_PIN, HIGH);
  return duration ;
  //Serial.println(duration);


}
```

```
void loop() {
  float distance = readDistanceCM();
  //Serial.println(distance);

  bool isNearby = distance < 100;
  digitalWrite(led, isNearby);

  Serial.print("Measured distance: ");
  Serial.println(distance);
  if(distance<100){ PublishData2(dist
  ance);

  }else{ PublishData1(dista
    nce);

  }
  //PublishData(distance);
  delay(1000);
  if(!client.loop()){ mqttco
  nnect();
  }

  //delay(2000);
}
void PublishData1(float dist){
```

```
  mqttconnect();
  String payload= "{\"distance\":";
  payload += dist;
  payload+="}";

  Serial.print("Sending payload:");
  Serial.println(payload);

  if(client.publish(publishTopic,(char*)payload.c_str())){Serial.p
    rintln("publish ok");
  } else{
    Serial.println("publish failed");
  }
}
void PublishData2(float
  dist){mqttconnect();
  String payload= "{\"ALERT\":";
  payload += dist;
  payload+="}";

  Serial.print("Sending payload:");
  Serial.println(payload);

  if(client.publish(publishTopic,(char*)payload.c_str())){Serial.p
    rintln("publish ok");
```

```
  } else{
    Serial.println("publish failed");
  }
}
void
  mqttconnect(){ if(!client.connected()){ Se
  rial.print("Reconnecting 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(".");
```

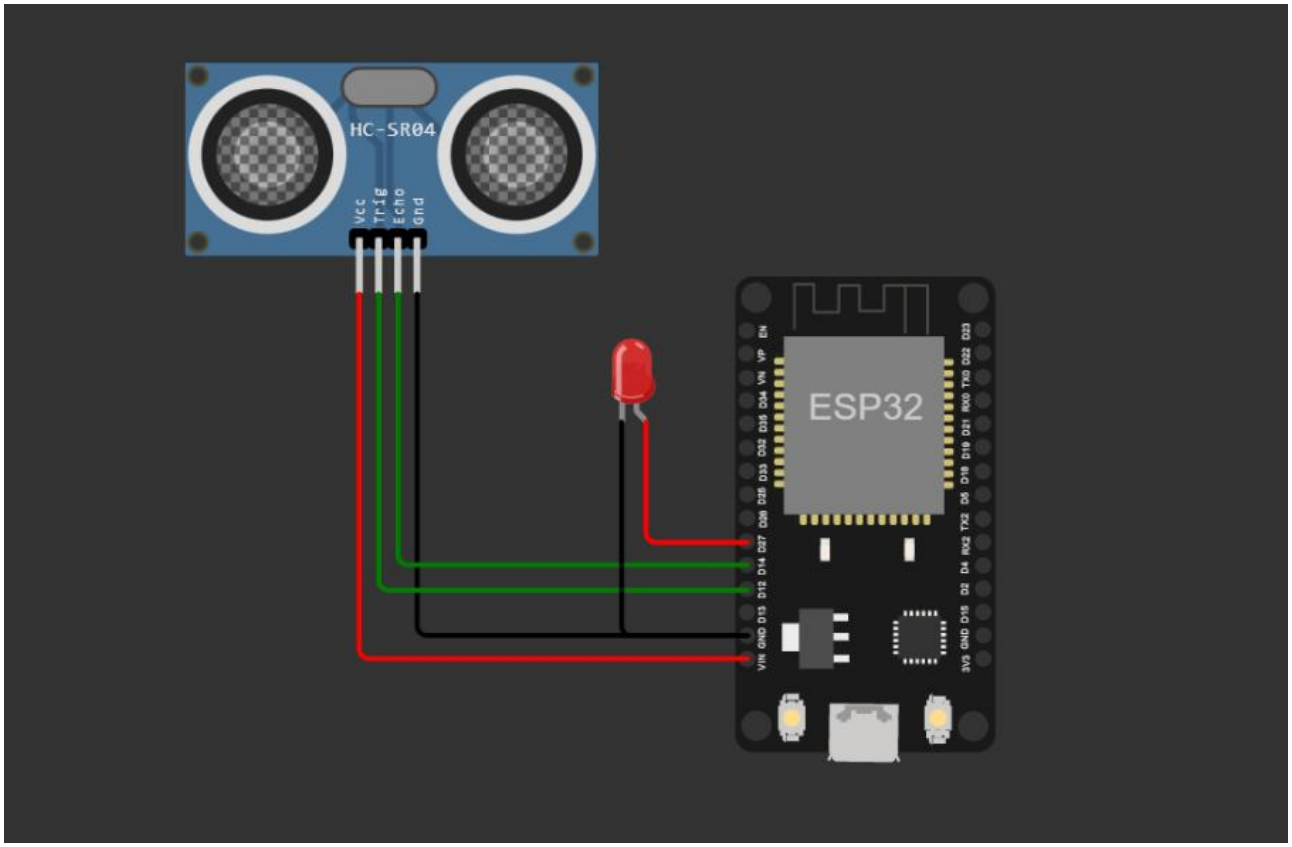
```
  }
  Serial.println("");
  Serial.println("WIFI CONNECTED");
  Serial.println("IP address:");
  Serial.println(WiFi.localIP());
}

void
  initManagedDevice(){ if(client.subscribe(subscribe
  Topic)){ 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);
  if(data3=="lighton"){
```

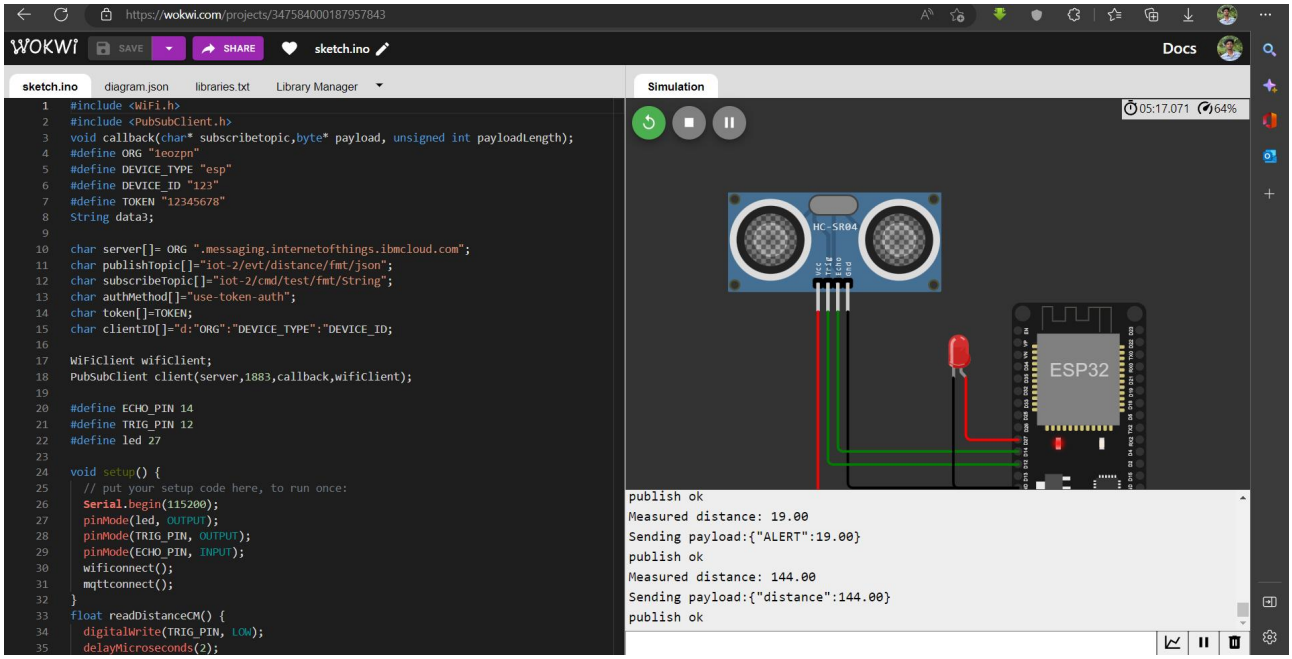
```
    Serial.println(data3);
    digitalWrite(led,HIGH);
  }else{ Serial.println(dat
    a3);
    digitalWrite(led,LOW);
  }
  data3="";
}
```

Circuit:

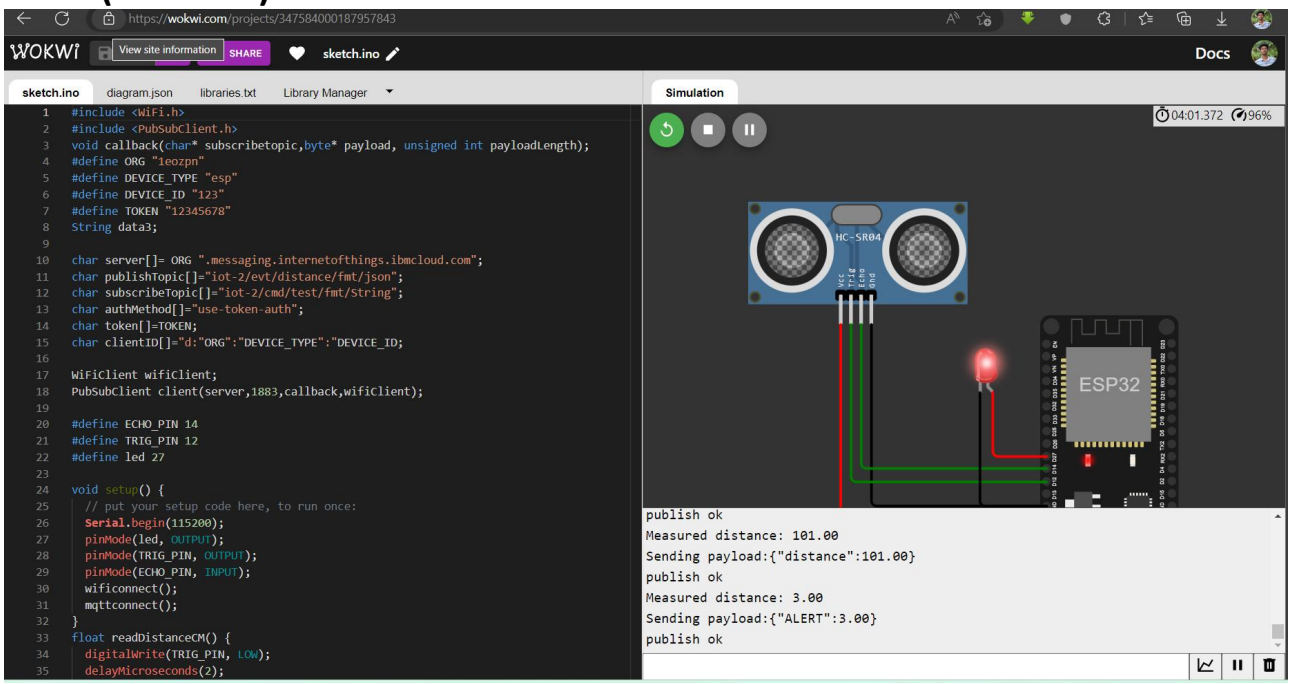


Output:

normal(>100cms)



Alert(<100cms)



IBM CLOUD RECEIVED DATA: