ASSIGNMENT-4

CODE:

```
#include<WiFi.h>
#include<PubSubClient.h>
voidcallback(char*subscribetopic,byte*payload,unsignedintpayloadLength);
//-------credentialsofIBMAccounts------
#defineORG"kotoq5"//IBMORGANITIONID
#defineDEVICE_TYPE"ESP32"//DevicetypementionedinibmwatsonIOTPlatform#defi
ne DEVICE_ID "12345"//Device ID mentioned in ibmwatson IOT
Platform#defineTOKEN"12345678"//Token
Stringdata3;
charserver[]=ORG".messaging.internetofthings.ibmcloud.com";charpublishTopic[]="i
o
t-2/evt/Data/fmt/json";
charsubscribetopic[]="iot-2/cmd/test/fmt/String";charauthMethod[]="use-token-auth";
chartoken[]=TOKEN;
charclientId[]="d:"ORG":"DEVICE_TYPE":"DEVICE_ID;
WiFiClientwifiClient;
PubSubClientclient(server,1883,callback,wifiClient);constinttrigPin =5;
constintechoPin = 18;#defineSOUND_SPEED0.034longduration;
floatdistance;voidsetup(){
Serial.begin(115200);pinMode(trigPin,OUTPUT);pinMode(echoPin,
INPUT);wificonnect();mqttconnect();
}
voidloop()
{
digitalWrite(trigPin, LOW);delayMicroseconds(2);digitalWrite(trigPin,
HIGH);delayMicroseconds(10);digitalWrite(trigPin,LOW);duration = pulseIn(echoPin,
HIGH);distance=duration*SOUND_SPEED/2;Serial.print("Distance (cm):
");Serial.println(distance);if(distance<100)
{
Serial.println("ALERT!!");delay(1000);
PublishData(distance);delay(1000);
if(!client.loop()){mqttconnect();
}
}
delay(1000);
}voidPublishData(floatdist){mqttconnect();
Stringpayload="{\"Distance\":";payload+=dist;
payload+=",\"ALERT!!\":""\"Distancelessthan100cms\"";payload+= "}";
Serial.print("Sendingpayload:");
Serial.println(payload);
if(client.publish(publishTopic,(char*)payload.c_str())){
Serial.println("Publishok");
}else{
Serial.println("Publishfailed");
}
}
```
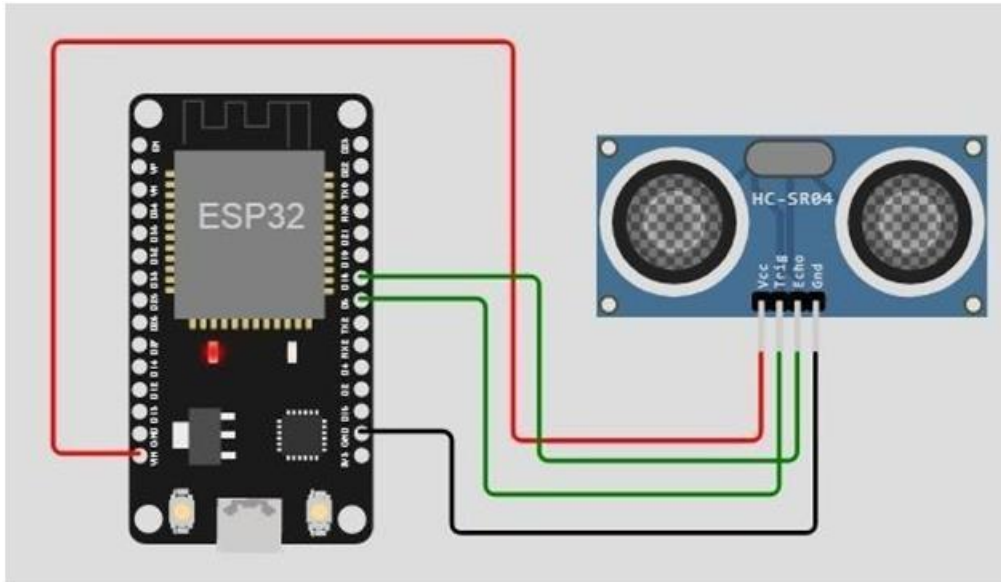
```cpp
voidmqttconnect(){
if(!client.connected()) {Serial.print("Reconnectingclientto");Serial.println(server);
while(!!!client.connect(clientId,authMethod,token)){
Serial.print(".");delay(500);
}
initManagedDevice();
Serial.println();
}
}
voidwificonnect()
{
Serial.println(); Serial.print("Connecting to ");WiFi.begin("Wokwi-GUEST", "", 6);
while (WiFi.status() !=WL_CONNECTED){delay(500);
Serial.print(".");
}
Serial.println(""); Serial.println("WiFiconnected"); Serial.println("IP address:
");Serial.println(WiFi.localIP());
}
voidinitManagedDevice(){
if(client.subscribe(subscribetopic)) {Serial.println((subscribetopic));
Serial.println("subscribe tocmdOK");
}else{
Serial.println("subscribetocmdFAILED");
}
}
voidcallback(char*subscribetopic,byte*payload,unsignedintpayloadLength)
{
Serial.print("callbackinvokedfortopic:");
Serial.println(subscribetopic);
for(inti=0;i<payloadLength;i++){//Serial.print((char)payload[i]);data3+=(char)payload[i
];
}
Serial.println("data:"+data3);data3="";
}
```

Diagram.json:

```json
{
"version":1,
"author": "sweetysharon","editor": "wokwi","parts":[
{"type":"wokwi-esp32-devkit-v1","id":"esp","top":-4.67,"left":-114.67,"attrs":{}},
{"type":"wokwi-hc-sr04","id":"ultrasonic1","top":15.96,"left":89.17,"attrs":{}}
],
"connections":[
["esp:TX0","$serialMonitor:RX","",[]],
["esp:RX0","$serialMonitor:TX","",[]],[
"esp:VIN","ultrasonic1:VCC","red",
["h-37.16","v-178.79","h200","v173.33","h100.67"]
],
["esp:GND.1","ultrasonic1:GND","black",["h39.87","v44.04","h170"]],
["esp:D5","ultrasonic1:TRIG","green",["h54.54","v85.07","h130.67"]],
["esp:D18","ultrasonic1:ECHO","green",["h77.87","v80.01","h110"]]
```

```
]
}
```

CIRCUIT DIAGRAM:

O/P:

```
Connecting to ....
WiFi connected
IP address:
10.10.0.2
Reconnecting client to ytluse.messaging.internetofthings.ibmcloud.com
iot-2/cmd/test/fmt/String
subscribe to cmd OK

Distance (cm): 399.92
Distance (cm): 399.96
Distance (cm): 399.94
Distance (cm): 399.98
Distance (cm): 399.94
Distance (cm): 399.92
Distance (cm): 399.94
```