Team ID: PNT2022TMID11128

Coding for Notification:

```
 include<WiFi.h>//library for

wifi

#include<PubSubClient.h>//library for MQTT

void callback(char* subscribetopic, byte* payload,unsigned int
payloadlength);
//------------------credentials of IBM Account-------

#define ORG "45z3o2"// IBM ORGANIZATION ID

#define DEVICE_TYPE "ESP32_Controller"//DEVICE TYPE

MENTIONED IN IOT WATSON PLATFORM #define DEVICE_ID

"bme2"//DEVICE ID MENTIONED IN IOT WATSON PLATEFORM

#define TOKEN
```

```
"OKZ+q@JfPWDOd6wBTj"//Token

String data3;

float dist;

//-------------customize the above value-------

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

char

 publishtopic[]="ultrasonic/evt/Data/fmt/json";/*topic

 name and type of event performand format in which

 data to be send*/

char

subscribetopic[]="ultrasonic/cmd/test/fmt/Strin

g";/*cmd  REPRESENT  Command  tupe  and COMMAND IS TEST OF FORMAT

STRING*/
```

```
char  authMethod[]="use-token-

auth";//authenticationmethod char

token[]=TOKEN;

char  clientid[]="d:" ORG  ":"  DEVICE_TYPE":"  DEVICE_ID;//CLIENT  ID

//.....

WiFiClient wifiClient;// creating an instance for wificlient

PubSubClient client(server, 1883 , callback ,

wifiClient);/*calling the predefined client idby

passing parameter like server id,portand

wificredential*/

int  LED  =4;

int

trig
```

```
=5;
int
echo=18;
void
setup()
{
  Serial.begin
  (115200);
  pinMode(tri
  g,OUTPUT);
  pinMode(echo,
  INPUT);
  pinMode(LED,OUT
  PUT);
```

```
  delay(10);
  Serial.printl
  n();
  wificonnect(
  );
  mqttconnect(
  );
}
```

```
void loop() {
 digitalWrite(t
 rig,LOW);
 digitalWrite(t
 rig,HIGH);
 delayMicrosecon
 ds(10);
 digitalWrite(t
 rig,LOW);
 float
 dur=pulseIn(echo,
 HIGH); float
 dist=(dur *
```

```
 0.0343)/2;
 Serial.print("dis
 tance in cm");
 Serial.println(di
 st);
 PublishData(dist)
 ; delay(1000); if
 (!client.loop())
 {
  mqttconnect();
 }
}

/*.....retrivi
ng                to..... cloud
```

```
                                        */
void PublishData(float dist){
 mqttconnect();//function
 call for connecting to ibm

 /*creating the string in form of JSON to
 update the data to ibm cloud*/String
 object;
```

```
if(dist<100)
{
 digitalWrite(LED,HIGH
 );
 Serial.println("no
 object is near");
 object="Near";
}
else
{
 digitalWrite(LED,LOW
 );
 Serial.println("no
 object found");
```

```
 object="No";
}
String
payload="{\"dista
nce\":"; payload
+=dist;

payload +=","
"\"object\":\"";
payload +=
object;
payload += "\"}";


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

```
  if(client.publish(publishtopic,  (char*)  payload.c_str())){
   Serial.println("Publish  ok");/*  if  its  sucessfully
   upload  data  on  the  cloud  then  it  will  print publish
   ok in serial monitor or else it will print publish
   failed*/
  }  else{
   Serial.println("Publish  failed");
  }
}
void mqttconnect(){
  if(!client.connected()){
   Serial.print("Reconnecting
   client  to  ");
   Serial.println(server);
```

```
    while(!!!client.connect(clie
    ntid,authMethod,  token)){
      Serial.print(".
      ");
      delay(500);
    }
    initManagedDevice();
    Serial.println();
  }
}
void wificonnect()//function defenition for  wificonnect
```

```
{
 Serial.println();
 Serial.print("Connecting to ");

 WiFi.begin("vivo 1816", "taetae95",6);//PASSING THE WIFI CREDIDENTIALS
 TO ESTABLISH CONNECTION

 while (WiFi.status()

   !=WL_CONNECTED){

   delay(500);

   Serial.print(".");
 }
 Serial.println("");
 Serial.println("WiFi
 connected");
 Serial.println("IP
 address");
 Serial.println(WiFi.localIP
 ());
```

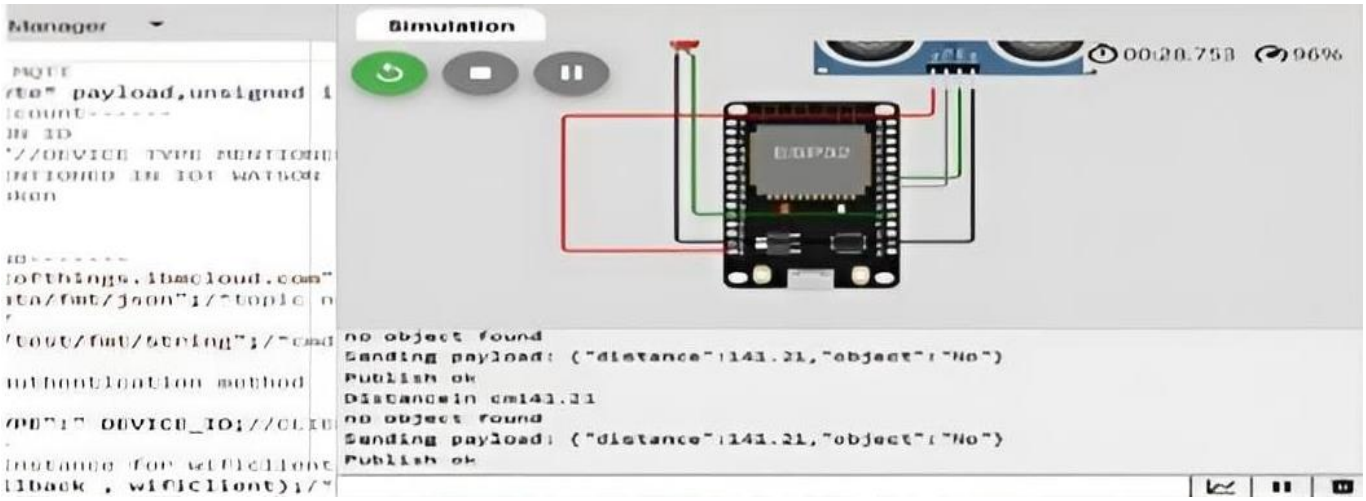
```
}
void
 initManagedDevice(
 ){
 if(client.subscribe
 (subscribetopic)){
  Serial.println((subscribetop
  ic));
  Serial.println("subscribe to
  cmd OK");
 }else{
  Serial.println("subscribe to cmd failed");
 }
```

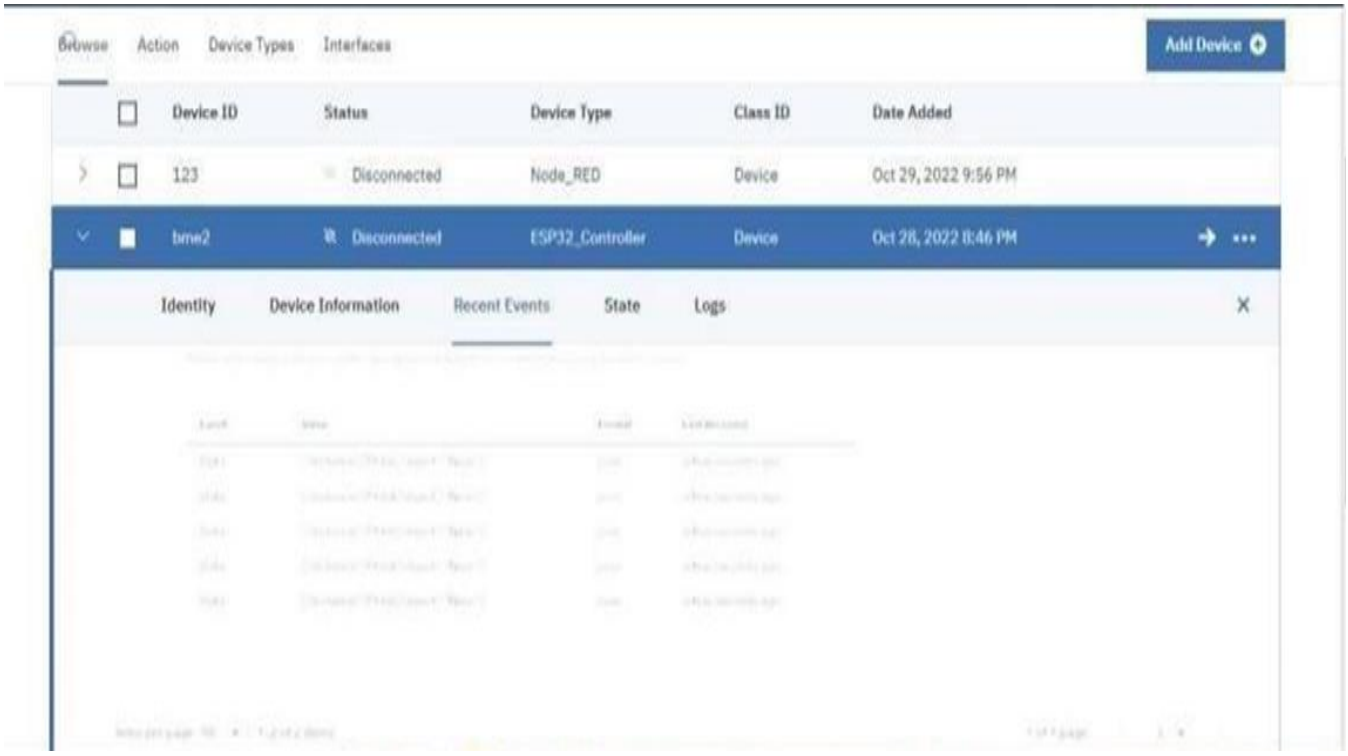
```
}

void callback(char* subscribetopic,byte*payload,unsigned int
payloadLength)
{
 Serial.print("callback invoked for topic: ");
 Serial.println(subsc
 ribetopic); for(int
 i=0; i<
 payloadLength; i++){
  //Serial.print((ch
  ar)payload[i]);
  data3
  +=(char)payload[i
  ];
```

```
  }
  //Serial.println("dta: "+ data3);
  //if(data3=="Near")
  //{
  //Serial.println(data3);
  //digitalWrite(LED,HIGH);
  //}
  //else //{
  //Serial.println(data3);
  //digitalWrite(LED,
  LOW);//} data3="";
}
```

Output:


Manager
Simulation
00:20.758
96%
no object found
Sending payload: {"distance":141.21,"object":"No"}
Publish ok
Distance in cm141.21
no object found
Sending payload: {"distance":141.21,"object":"No"}
Publish ok


Browse
Action
Device Types
Interfaces
Add Device
Device ID
Status
Device Type
Class ID
Date Added
123
Disconnected
Node_RED
Device
Oct 29, 2022 9:56 PM
bme2
Disconnected
ESP32_Controller
Device
Oct 28, 2022 8:46 PM
Identity
Device Information
Recent Events
State
Logs