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Coding for Notification:

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

#include<PubSubClient.h>//libr ary   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-

tokenauth";//authentication     method   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);

    }
```

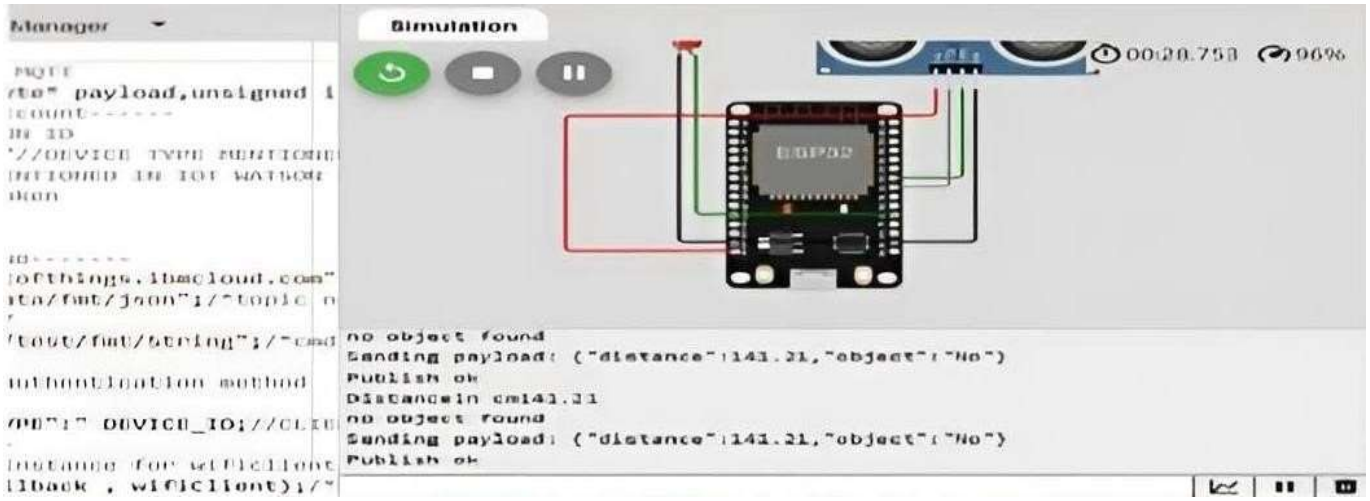
```
    initManagedDevice();
    Serial.println();

  }

}

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(".");

  }
```

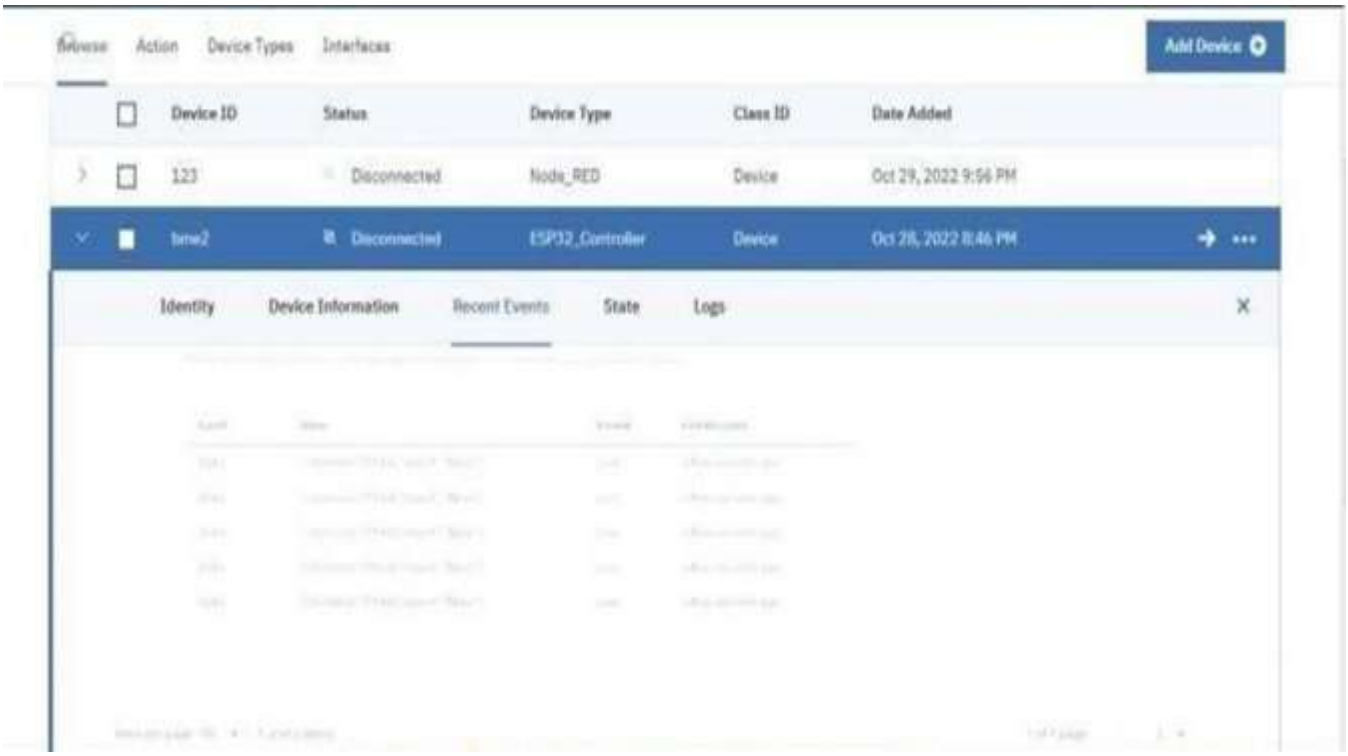
```
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address");
  Serial.println(WiFi.localIP
  ());
}

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
00:20.753
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