# SPRINT 4

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|---|---|
| **Team ID** | PNT2022TMID37599 |
| **Project Name** | Hazardous Area Monitoring for Industrial Plant powered by IoT |
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**WOKWI CODE:**

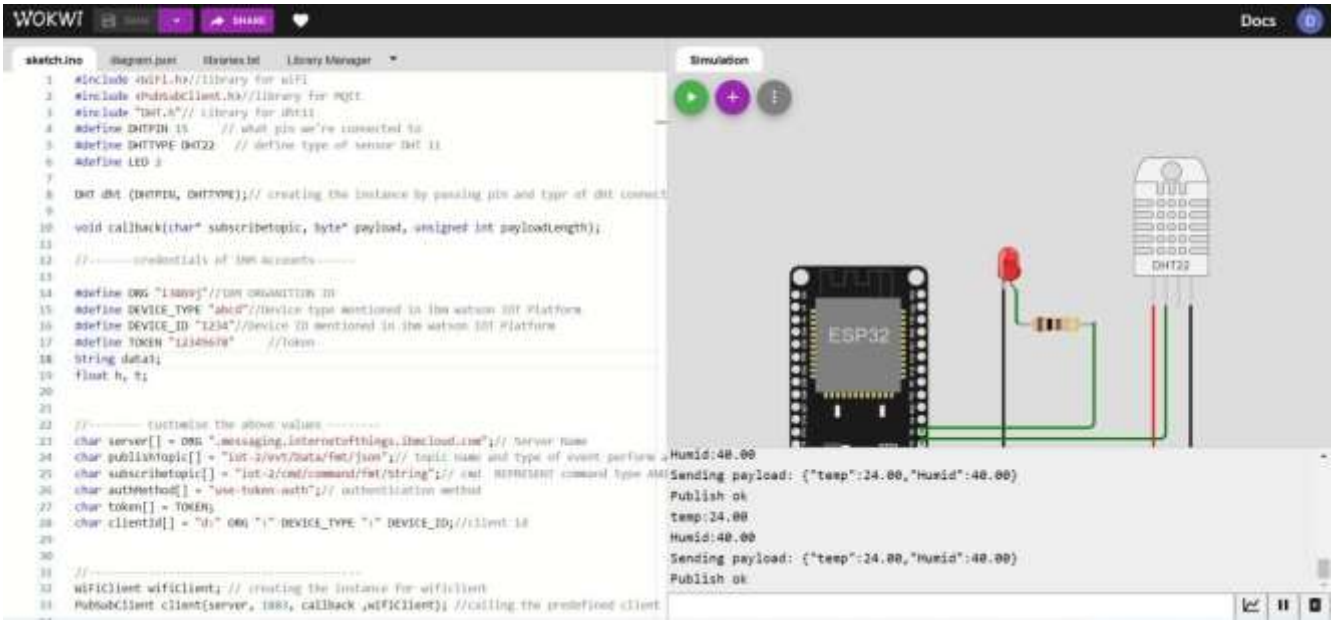
```
 #include <WiFi.h>//library for wifi
 #include <PubSubClient.h>//library for MQtt
 #include "DHT.h"// Library for dht11
#define DHTPIN 15      // what pin we're connected to
 #define DHTTYPE DHT22  // define type of sensor DHT 11 #define
 LED 2

 DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and typr of dht
 connected
 void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
 //-------credentials of IBM Accounts------
 #define ORG "iagqzu"//IBM ORGANITION ID
 #define DEVICE_TYPE "Deepak"//Device type mentioned in ibm watson IOT Platform
 #define DEVICE_ID "123"//Device ID mentioned in ibm watson IOT Platform
 #define TOKEN "12345678"
      //Token String data3; float h,
 t;


 //-------- Customise the above values --------
 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name char
 publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event perform
 and format in which data to be send
 char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd REPRESENT command type
 AND COMMAND IS TEST OF FORMAT STRING char authMethod[] = "use-token-auth";//
 authentication method char token[] = TOKEN;
 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id

// -------------------------------------------
 WiFiClient wifiClient; // creating the instance for wificlient
 PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined
 client id by passing parameter like server id,portand wificredential
```

```
void setup()// configureing the
ESP32
{
  Serial.begin(115200);
  dht.begin();
  pinMode(LED,OUTPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
}
void loop()// Recursive
Function
{

  h = dht.readHumidity(); t
  = dht.readTemperature();
  Serial.print("temp:");
  Serial.println(t);
  Serial.print("Humid:");
  Serial.println(h);
  PublishData(t, h);
  delay(1000); if
  (!client.loop()) {
    mqttconnect();
  }
}



/*.....................................retrieving to
Cloud. ............................. */

void PublishData(float temp, float humid) {
  mqttconnect();//function call for connecting to ibm
  /* creating the String in in form JSon to update the data to ibm
     cloud
  */
  String payload =
  "{\"temp\":"; payload +=
  temp; payload += ","
  "\"Humid\":"; payload +=
  humid; payload += "}";



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

if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");// if it 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(clientId, authMethod, token))
      { Serial.print("."); delay(500);
    }
initManagedDevice();
     Serial.println();
  } } void wificonnect() //function defination for
wificonnect
{
  Serial.println();
  Serial.print("Connecting to ");

  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the
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((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++)
    { //Serial.print((char)payload[i]);
    data3 += (char)payload[i];
  }
```

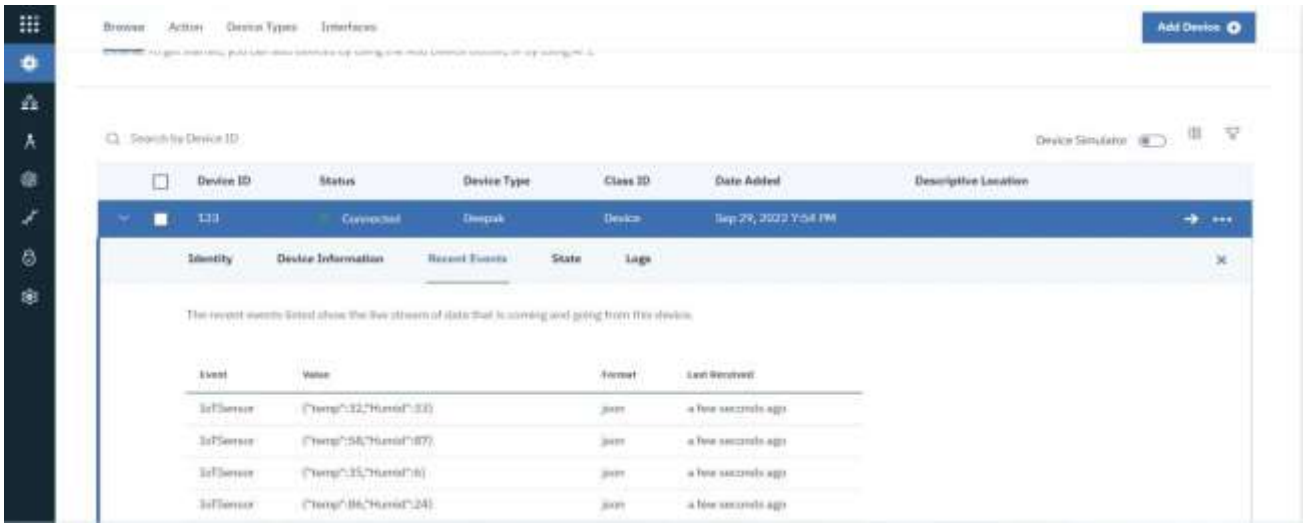
```
  Serial.println("data: "+ data3);
if(data3=="lighton") {
Serial.println(data3);
digitalWrite(LED,HIGH); } else
  {
Serial.println(data3);
digitalWrite(LED,LOW);
  } data3="";
}
```

**WOKWI OUTPUT:**

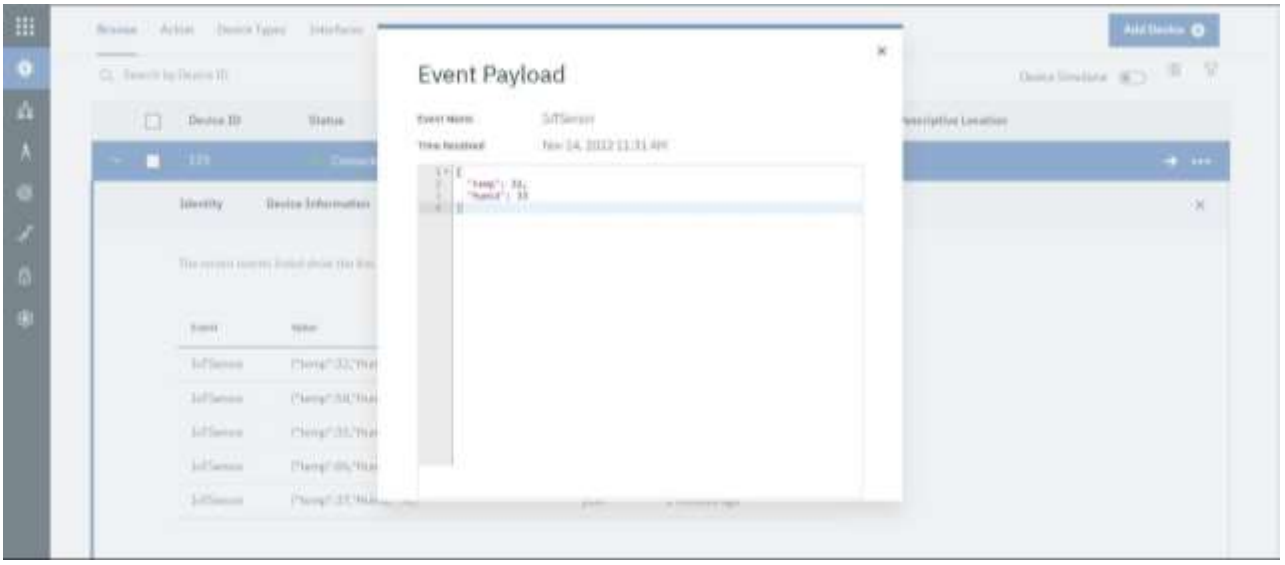



**IBM WATSON PLATFORM ❾**

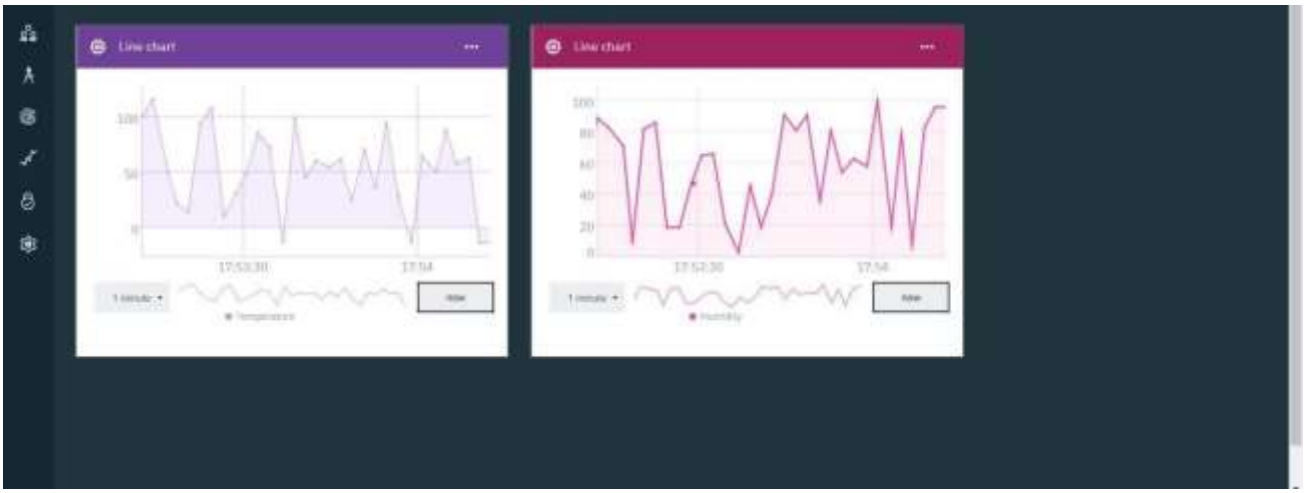
**DEVICE EVENT LOG:**




**DEVICE EVENT PAYLOAD:**




**DEVICE- BOARD:**


Line chart
Line chart