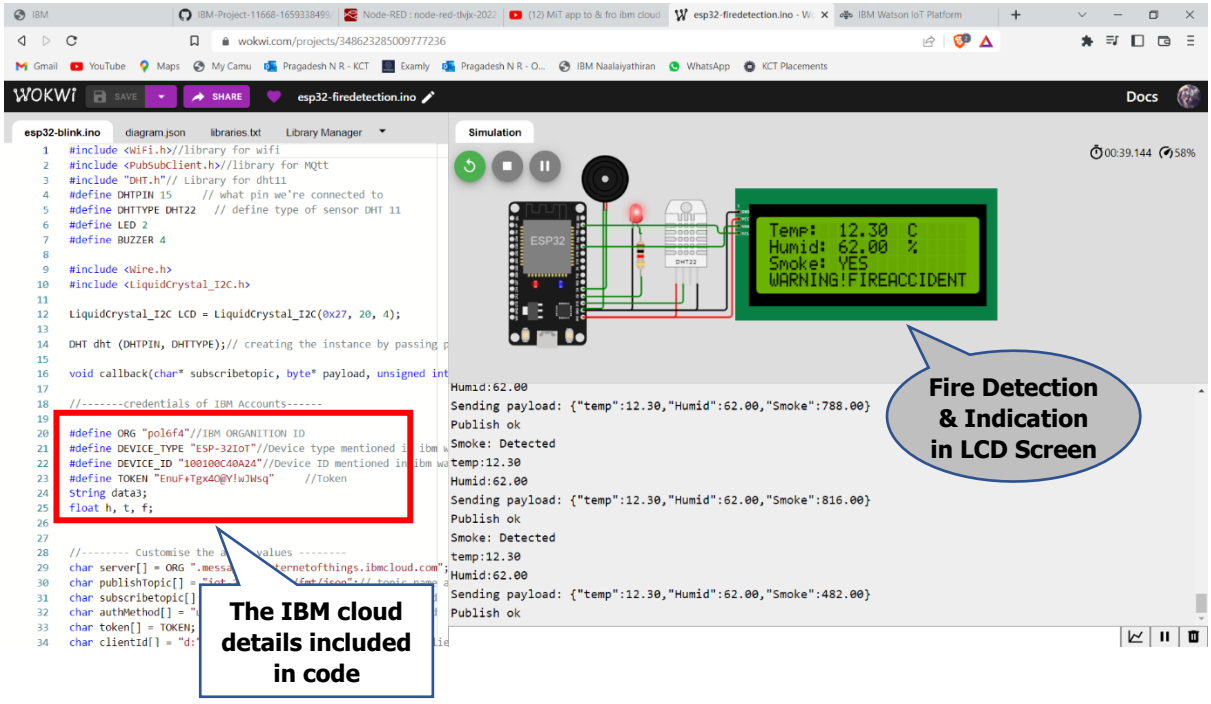
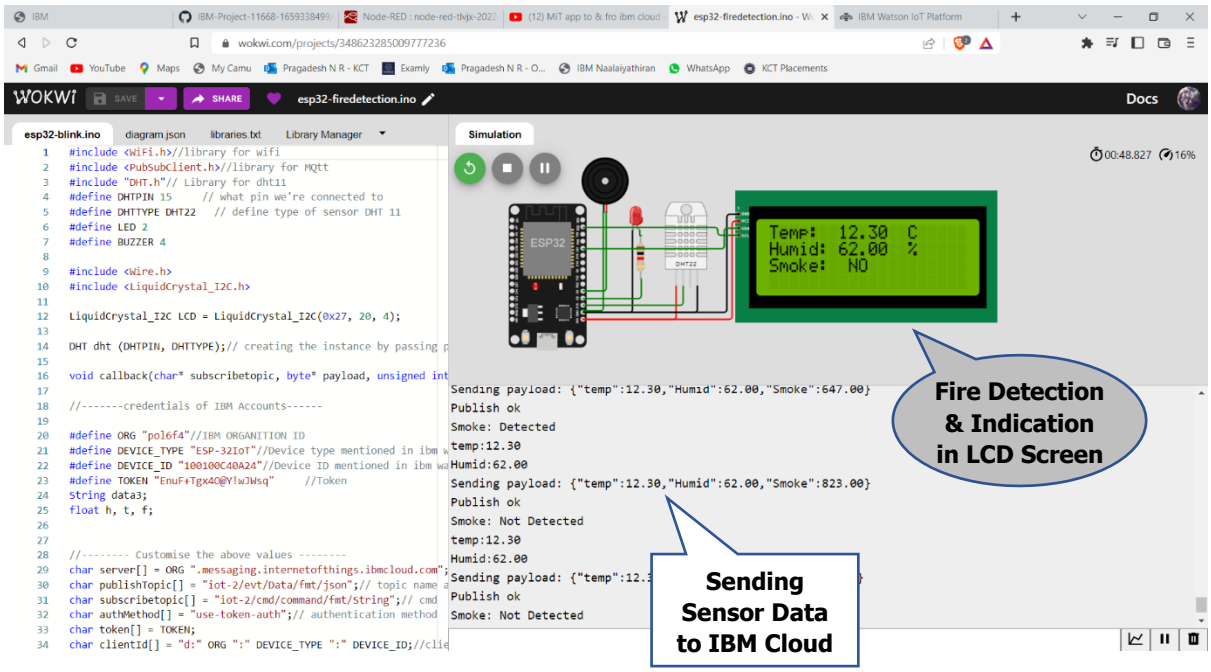
Sprint 2

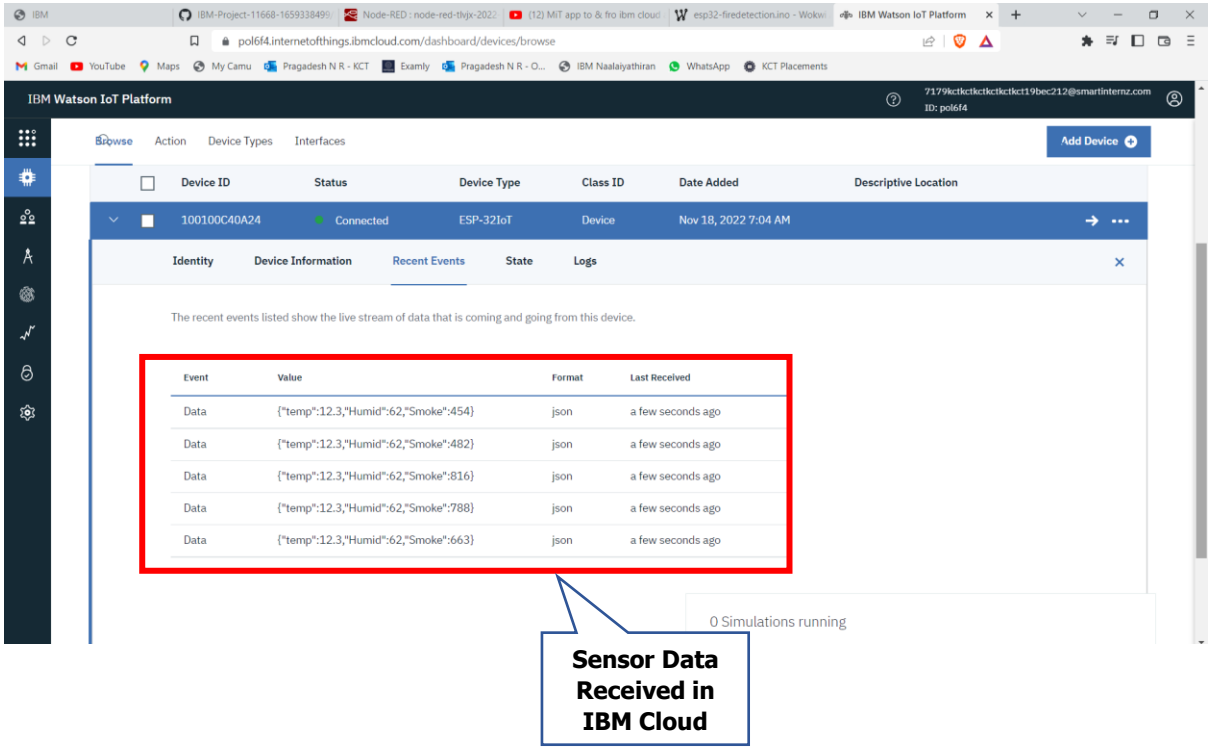
Team ID	PNT2022TMID15161
Project Name	Industry-specific Intelligent Fire Management System

Configuring IBM IoT Platform and sending data to IBM cloud





Publishing Sensor Data & Receiving in IBM Cloud



Sensor Data Received in IBM Cloud

Sprint 2 - Coding:

```
#include <WiFi.h>
#include <PubSubClient.h>
#include "DHT.h"
#define DHTPIN 15
#define DHTTYPE DHT22
#define LED 2
#define BUZZER 4

#include <Wire.h>
#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C LCD = LiquidCrystal_I2C(0x27, 20, 4);

DHT dht (DHTPIN, DHTTYPE);

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

#define ORG "pol6f4"
#define DEVICE_TYPE "ESP-32IoT"
#define DEVICE_ID "100100C40A24"
#define TOKEN "EnuF+Tgx4O@Y!wJWsq"
String data3;
float h, t, f;
```

```
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char subscribetopic[] = "iot-2/cmd/command/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);

void setup()
{
  Serial.begin(115200);
  dht.begin();
  pinMode(LED,OUTPUT);
  pinMode(BUZZER,OUTPUT);
  digitalWrite(LED,LOW);
  digitalWrite(BUZZER,LOW);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
  LCD.init();
  LCD.backlight();
  LCD.setCursor(0, 0);
  LCD.print("Connecting to ");
  LCD.setCursor(0, 1);
  LCD.print("WiFi ");
  delay(1000);
  LCD.clear();
}



void loop()
{
    LCD.setCursor(0,2);
    LCD.print("Smoke: ");
    LCD.setCursor(0, 0);
    LCD.print("Temp: ");
    LCD.setCursor(14, 0);
    LCD.print("C");
    LCD.setCursor(0, 1);
    LCD.print("Humid: ");
    LCD.setCursor(14, 1);
    LCD.print("%");
  h = dht.readHumidity();
  t = dht.readTemperature();
```

```
  f = random(0,900);
  if (f>300)
  {
    Serial.print("Smoke: ");
    Serial.println("Detected");
    digitalWrite(LED,HIGH);
    digitalWrite(BUZZER,HIGH);
     LCD.setCursor(7, 2);
    LCD.print("YES");
    LCD.setCursor(0, 3);
    LCD.print("WARNING!FIREACCIDENT");
  }
  else{
      Serial.print("Smoke: ");
      Serial.println("Not Detected");
      digitalWrite(LED,LOW);
      digitalWrite(BUZZER,LOW);
      LCD.setCursor(7, 2);
     LCD.print(" NO");
     LCD.setCursor(0, 3);
    LCD.print("                    ");
  }
  Serial.print("temp:");
  Serial.println(t);
  LCD.setCursor(7, 0);
  LCD.print(t);
  Serial.print("Humid:");
  Serial.println(h);
  LCD.setCursor(7, 1);
  LCD.print(h);

  PublishData(t, h, f);
  delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }
}

void PublishData(float temp, float humid, float smoke) {

  mqttconnect();
  String payload = "{\"temp\":";
  payload += temp;
  payload += "," "\"Humid\":";
  payload += humid;
  payload += "," "\"Smoke\":";
  payload += smoke;
  payload += "}";
```

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


  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");
  } 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()
{
  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");
  LCD.setCursor(0, 0);
  LCD.print("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++) {
    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="";
}
```