# Sprint – 3

| Hazardous Area Monitoring for Industrial Plant powered by IoT |
|---|

**Program:**

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <DHT.h> WiFiClient wifiClient;
String data3;
#define DHTTYPE DHT11
#define DHTPIN 4
#define MQTPIN 34
DHT dht(DHTPIN, DHTTYPE);
#define ORG "v6wg8x"
#define DEVICE_TYPE "projectFinal" #define DEVICE_ID
"FinalDeliverable" #define TOKEN "A1ymH))p*JB&iMWNpY"
#define speed 0.034
void callback(char* topic, byte* playload, unsigned int
payloadLength); char server[] = ORG
".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char topic[] = "iot-2/cmd/test/fmt/String"; char authMethod[] =
"use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, callback , wifiClient); void
publishData();
String command; String data = "";
long duration; float dist;

void setup()
{
 Serial.begin(115200); dht.begin(); wifiConnect();
 mqttConnect();
}

 void loop() { publishData(); delay(500);
```

```cpp
  if (!client.loop()) { mqttConnect();}

void wifiConnect() {
  Serial.print("Connecting to "); Serial.print("Wifi");
  WiFi.begin("JerroldWi-Fi","75779901");
    while (WiFi.status() != WL_CONNECTED) { delay(500);
    Serial.print(".");
  }
  Serial.print("WiFi connected, IP address: ");
Serial.println(WiFi.localIP());
}

void mqttConnect() {
  if (!client.connected()) {
    Serial.print("Reconnecting MQTT client to ");
    Serial.println(server); while (!client.connect(clientId,
    authMethod, token)) {
      Serial.print("."); delay(500);
    }
    initManagedDevice(); Serial.println();
  }
}

void initManagedDevice() {
    if (client.subscribe(topic)) { Serial.println("IBM subscribe
     to cmd OK");
  } else {
    Serial.println("subscribe to cmd FAILED");
  }
}

void publishData()
{
  int sensorValue = analogRead(MQTPIN); //MQT 135 connected to
GPIO 34 (Analog ADC1_CH6)
  Serial.print("AirQua="); Serial.print(sensorValue, DEC);
  Serial.println(" PPM");
  float humid = dht.readHumidity();
```

```
    float temp = dht.readTemperature(true); String payload =
    "{\"Humidity\":"; payload += humid;
    payload += "}";
      if (client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
      }
    payload = "{\"Temperature\":"; payload += temp;
    payload += "}";
      if (client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
      }
    payload = "{\"Air Quality\":"; payload += String(sensorValue);
    payload += "}";
      if (client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
      }
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++) { dist +=
        (char)payload[i];
      }
    Serial.println("data:" + data3); if (data3 == "lighton") {
      Serial.println(data3);
    }
    data3 = "";
  }
```

**Output:**

```
Published Temperature=98 C Noise:61 db Gas_leakage:63 J/Kg Radiation:45 rad  to IBM Watson
Published Temperature=19 C Noise:4 db Gas_leakage:97 J/Kg Radiation:73 rad  to IBM Watson
Published Temperature=70 C Noise:0 db Gas_leakage:85 J/Kg Radiation:64 rad  to IBM Watson
Published Temperature=74 C Noise:61 db Gas_leakage:54 J/Kg Radiation:97 rad  to IBM Watson
Published Temperature=47 C Noise:77 db Gas_leakage:50 J/Kg Radiation:91 rad  to IBM Watson
Published Temperature=78 C Noise:0 db Gas_leakage:33 J/Kg Radiation:27 rad  to IBM Watson
Published Temperature=17 C Noise:6 db Gas_leakage:99 J/Kg Radiation:78 rad  to IBM Watson
Published Temperature=7 C Noise:38 db Gas_leakage:98 J/Kg Radiation:69 rad  to IBM Watson
Published Temperature=5 C Noise:79 db Gas_leakage:91 J/Kg Radiation:50 rad  to IBM Watson
Published Temperature=20 C Noise:35 db Gas_leakage:21 J/Kg Radiation:4 rad  to IBM Watson
Published Temperature=35 C Noise:73 db Gas_leakage:11 J/Kg Radiation:27 rad  to IBM Watson
Published Temperature=61 C Noise:73 db Gas_leakage:55 J/Kg Radiation:68 rad  to IBM Watson
Published Temperature=99 C Noise:76 db Gas_leakage:62 J/Kg Radiation:32 rad  to IBM Watson
Published Temperature=40 C Noise:28 db Gas_leakage:1 J/Kg Radiation:97 rad  to IBM Watson
Published Temperature=10 C Noise:24 db Gas_leakage:83 J/Kg Radiation:76 rad  to IBM Watson
Published Temperature=50 C Noise:18 db Gas_leakage:95 J/Kg Radiation:95 rad  to IBM Watson
Published Temperature=60 C Noise:21 db Gas_leakage:43 J/Kg Radiation:0 rad  to IBM Watson
Published Temperature=60 C Noise:25 db Gas_leakage:5 J/Kg Radiation:3 rad  to IBM Watson
Published Temperature=51 C Noise:40 db Gas_leakage:18 J/Kg Radiation:19 rad  to IBM Watson
Published Temperature=0 C Noise:8 db Gas_leakage:91 J/Kg Radiation:58 rad  to IBM Watson
Published Temperature=41 C Noise:17 db Gas_leakage:90 J/Kg Radiation:95 rad  to IBM Watson
Published Temperature=5 C Noise:30 db Gas_leakage:40 J/Kg Radiation:13 rad  to IBM Watson
Published Temperature=29 C Noise:97 db Gas_leakage:9 J/Kg Radiation:46 rad  to IBM Watson
Published Temperature=6 C Noise:84 db Gas_leakage:64 J/Kg Radiation:80 rad  to IBM Watson
Published Temperature=54 C Noise:73 db Gas_leakage:73 J/Kg Radiation:46 rad
```