SPRINT-2

DATE	**10-11-2022**
TEAM ID	**PNT2022TMID27922**
PROJECT NAME	**Gas Leakage Monitoring and Alerting System**

WOKWI SIMULATION:

```
// Team ID - PNT2022TMID27922

// Including Required Header Files
#include <WiFi.h>
#include <PubSubClient.h>
#include <DHTesp.h>
#include <Stepper.h>
#include <ESP32Servo.h>

/*
 NOTE:
 As Gas Sensor is not available in Wokwi platform.
 Slide Potentiometer is used instead of Gas Sensor, to variably set level of
gas leakage.
*/

// Defining Constants
#define DHTPIN 15
#define GAS_LEVER 34  // Slide Potentiometer
#define buzzer 13
#define LED 5
const int servoPin = 12;
Servo valve;
DHTesp dhtsensor;
Stepper stepper(1000, 19,21,22,23);

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

#define ORG "msi400"
#define DEVICE_TYPE "Gasleak"
#define DEVICE_ID "6068"
#define TOKEN "123456781"

String data3;
float h, t, g;
int pos=0;
```

```
boolean valve_open=true;
//-------- Customise the above values --------
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char subscribetopic[] = "iot-2/cmd/test/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);
  dhtsensor.setup(DHTPIN,DHTesp::DHT22);
  stepper.setSpeed(100);
  valve.attach(servoPin);
  pinMode(GAS_LEVER, INPUT);
  pinMode(buzzer,OUTPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
  valve.write(90);

}

void loop()
{
  TempAndHumidity data=dhtsensor.getTempAndHumidity();
  t=data.temperature;
  h=data.humidity;
  g=map(int(analogRead(GAS_LEVER)), 0, 4095, 200, 2000);
  Serial.print("temperature:");
  Serial.println(t);
  Serial.print("Humidity:");
  Serial.println(h);
  Serial.print("Gas Level:");
  Serial.println(g);

  if(g>500){
    tone(buzzer, 1000);
    stepper.step(1000);
    valve.write(180);
  }
  else{
    valve.write(90);
    noTone(buzzer);
  }
  PublishData(t, h, g);
  delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }
}


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

void PublishData(float temp, float humid, float gas_level) {
  mqttconnect();
  String payload = "{\"temperature\":";
  payload += temp;
  payload += "," "\"humidity\":";
  payload += humid;
  payload += "," "\"gas_level\":";
  payload += gas_level;
  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");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
}

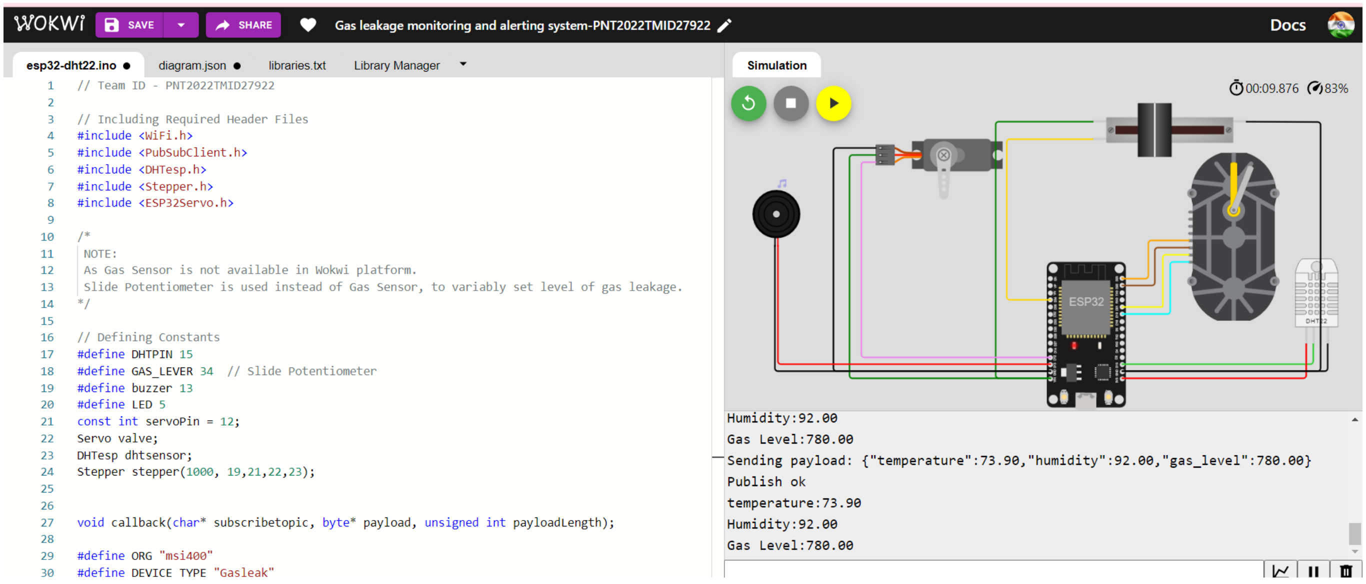
void initManagedDevice() {
  if (client.subscribe(subscribetopic)) {
    Serial.println((subscribetopic));
    Serial.println("subscribe to cmd OK");
  } else {
    Serial.println("subscribe to cmd FAILED");
  }
}

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);

  data3="";
}
```



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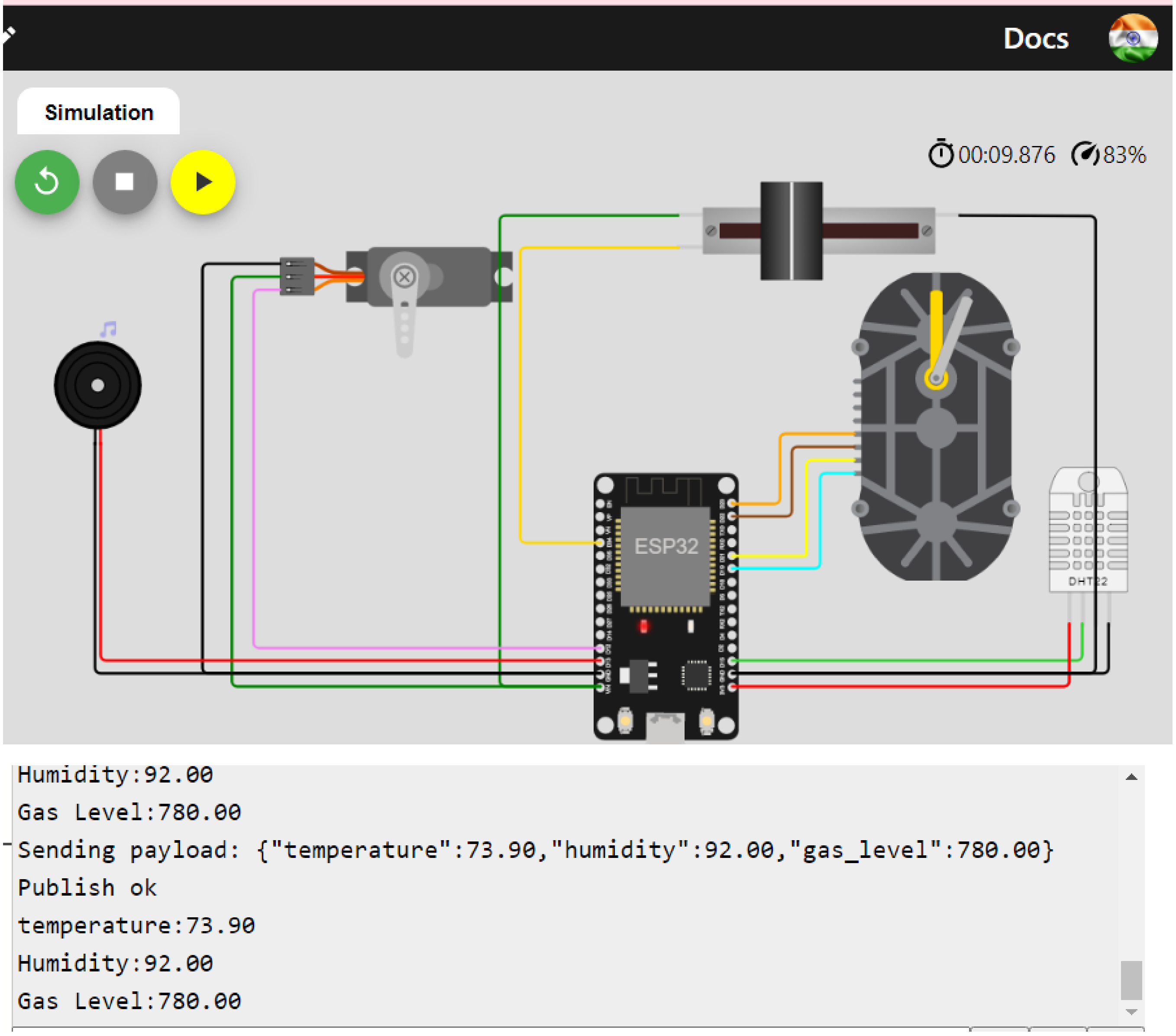
#define ORG "msi400"
#define DEVICE TYPE "Gasleak"
```

```
Humidity:92.00
Gas Level:780.00
Sending payload: {"temperature":73.90,"humidity":92.00,"gas_level":780.00}
Publish ok
temperature:73.90
Humidity:92.00
Gas Level:780.00
```



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