SPRINT 2

TEAM ID PNT2022TMID47006

CODE :

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

#include <PubSubClient.h> // library for MQTT

#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27, 20, 4);

//----------------------- credentials of IBM Accounts ------------------------------

// IBM organisation id

#define DEVICE_TYPE "abcd" // Device type mentioned in ibm watson iot platform

#define DEVICE_ID "1234" // Device ID mentioned in ibm watson iot platform

#define TOKEN "12345678" // Token

//----------------------- customise 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 topic[] = "iot-2/cmd/led/fmt/String"; // cmd Represent type and command is test format of

strings

char authMethod[] = "use-token-auth"; // authentication method

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //Client id

//-----------------------------------------------------------------------------------------------------------------------

WiFiClient wifiClient; // creating instance for wificlient
```

```
PubSubClient client(server, 1883, wifiClient);

#define ECHO_PIN 12

#define TRIG_PIN 13

float dist;

void setup()

{

Serial.begin(115200);

pinMode(LED_BUILTIN, OUTPUT);

pinMode(TRIG_PIN, OUTPUT);

pinMode(ECHO_PIN, INPUT);

//pir pin

#define ORG "wjmfdn"

pinMode(34, INPUT);

//ledpins

pinMode(23, OUTPUT);

pinMode(2, OUTPUT);

pinMode(4, OUTPUT);

pinMode(15, OUTPUT);

lcd.init();

lcd.backlight();

lcd.setCursor(1, 0);

lcd.print("");

wifiConnect();

mqttConnect();

}

float readcmCM()

{
```

```
digitalWrite(TRIG_PIN, LOW);
delayMicroseconds(2);
digitalWrite(TRIG_PIN, HIGH);
delayMicroseconds(10);
digitalWrite(TRIG_PIN, LOW);
int duration = pulseIn(ECHO_PIN, HIGH);
return duration * 0.034 / 2;
}
void loop()
{
lcd.clear();
publishData();
delay(500);
if (!client.loop())
{
mqttConnect(); // function call to connect to IBM
}
}
/* -------------------------------retrieving to cloud----------------------------------------------------*/
void wifiConnect()
{
Serial.print("Connecting to ");
Serial.print("Wifi");
WiFi.begin("Wokwi-GUEST", "", 6);
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
```

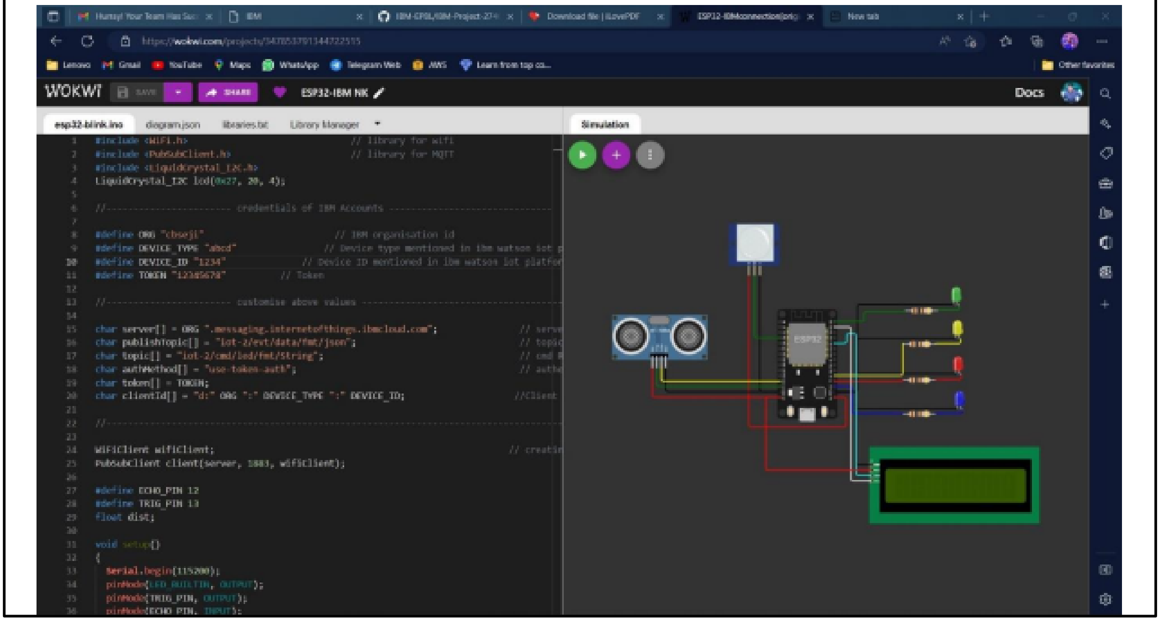
```
{
Serial.println("subscribe to cmd FAILED");
}
}
void publishData()
{
float cm = readcmCM();
if(digitalRead(34)) //pir motion detection
{
Serial.println("Motion Detected");
Serial.println("Lid Opened");
digitalWrite(15, HIGH);
if(digitalRead(34)== true)
{
if(cm <= 60) //Bin level detection
{
digitalWrite(2, HIGH);
Serial.println("High Alert!!!,Trash bin is about to be full");
Serial.println("Lid Closed");
lcd.print("Full! Don't use");
delay(2000);
lcd.clear();
digitalWrite(4, LOW);
digitalWrite(23, LOW);
}
else if(cm > 60 && cm < 120)
{
```

```
digitalWrite(4, HIGH);
Serial.println("Warning!!,Trash is about to cross 50% of bin level");
digitalWrite(2, LOW);
digitalWrite(23, LOW);
}
else if(cm > 120)
{
digitalWrite(23, HIGH);
Serial.println("Bin is available");
digitalWrite(2,LOW);
digitalWrite(4, LOW);
}
delay(10000);
Serial.println("Lid Closed");
}
else
{
Serial.println("No motion detected");
digitalWrite(2, LOW);
digitalWrite(15, LOW);
digitalWrite(4, LOW);
digitalWrite(23, LOW);
}
}
else
{
digitalWrite(15, LOW);
```

```
}
if(cm <= 60)
{
digitalWrite(21,HIGH);
String payload = "{\"High_Alert\":";
payload += cm;
payload += " }";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())) // if data is uploaded to cloud successfully,prints publish ok
else prints publish failed
{
Serial.println("Publish OK");
}
}
else if(cm <= 120)
{
digitalWrite(22,HIGH);
String payload = "{\"Warning\":";
payload += cm ;
payload += " }";
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if(client.publish(publishTopic, (char*) payload.c_str()))
{
```

```
Serial.println("Publish OK");
}
else
{
Serial.println("Publish FAILED");
}
}
else
{
Serial.println();
}
float inches = (cm / 2.54); //print on lcd
lcd.setCursor(0,0);
lcd.print("Inches");
lcd.setCursor(4,0);
lcd.setCursor(12,0);
lcd.print("cm");
lcd.setCursor(1,1);
lcd.print(inches, 1);
lcd.setCursor(11,1);
lcd.print(cm, 1);
lcd.setCursor(14,1);
delay(1000);
lcd.clear();
}
```

CIRCUIT



```
#include <WiFi.h>                                    // library for wifi
#include <PubSubClient.h>                            // library for MQTT
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 20, 4);

//-------------------- credentials of IBM Accounts ------------------------

#define ORG "cbseji"                                // IBM organisation id
#define DEVICE_TYPE "abcd"                       // Device type mentioned in ibm watson iot p
#define DEVICE_ID "1234"                      // Device ID mentioned in ibm watson iot platfor
#define TOKEN "12345678"          // Token

//-------------------- customise above values --------------------------

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";            // serve
char publishTopic[] = "iot-2/evt/data/fmt/json";                           // topic
char topic[] = "iot-2/cmd/led/fmt/String";                                 // cmd R
char authMethod[] = "use-token-auth";                                      // authe
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;                 //Client

//---------------------------------------------------------------------

WiFiClient wifiClient;                                                    // creatin
PubSubClient client(server, 1883, wifiClient);

#define ECHO_PIN 12
#define TRIG_PIN 13
float dist;

void setup()
{
  Serial.begin(115200);
  pinMode(LED_BUILTIN, OUTPUT);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
```