SPRINT DELIVERY – 2

Date	7 November 2022
Team ID	PNT2022TMID22430
Project Name	Smart Waste Management System for Metropolitan Cities

Functional Requirement – Dashboard
User story : USN – 4

Code for data transfer from sensors

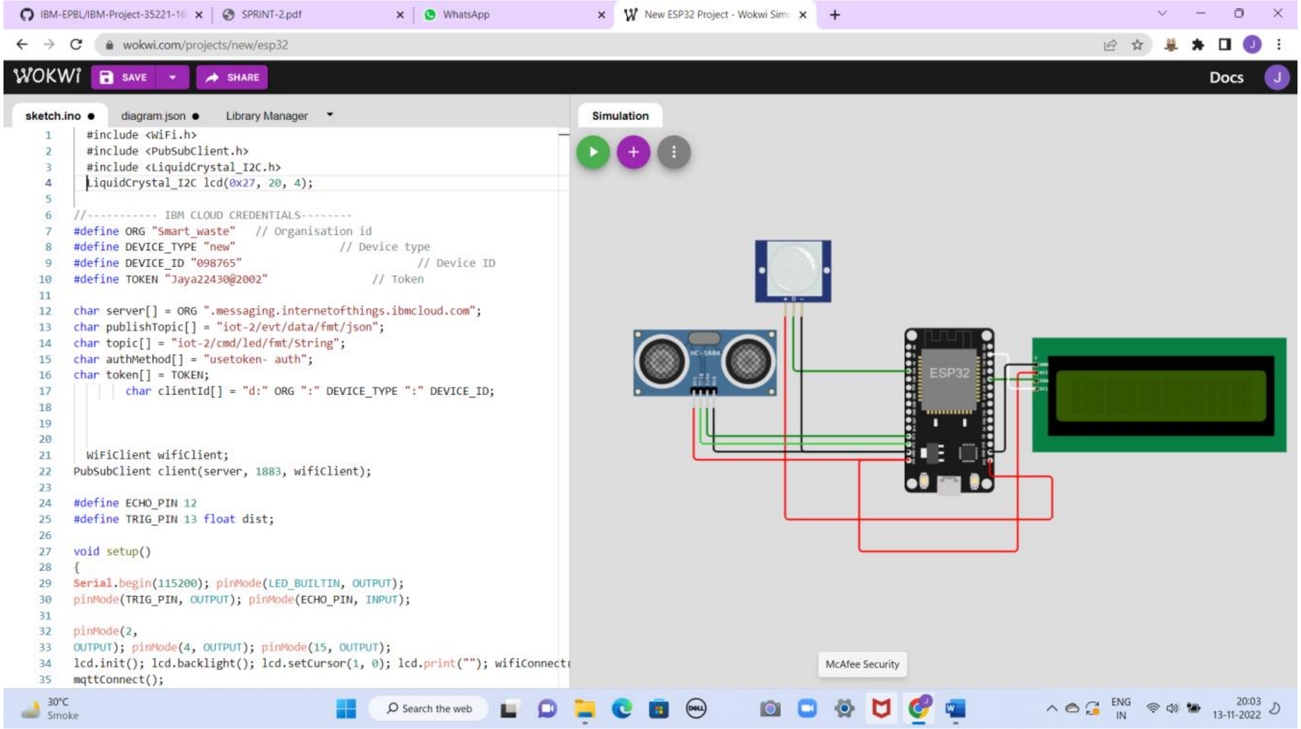
```
#include <WiFi.h>
#include <PubSubClient.h>
   #include <LiquidCrystal_I2C.h>
   LiquidCrystal_I2C lcd(0x27, 20, 4);

//----------- IBM CLOUD CREDENTIALS--------
#define ORG "Smart_waste"                // Organisation id
#define DEVICE_TYPE "new"               // Device type
#define DEVICE_ID "098765"              // Device ID
#define TOKEN                            // Token
"Jaya22430@2002"

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



WiFiClient 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);

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();
     }
    }

    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))
   {
     Serial.println("Motion
   Detected"); Serial.println("Lid
     Opened"); digitalWrite(15, HIGH);
 }
   else
   {
     digitalWrite(15, LOW);
   }

   if(digitalRead(34)== true)
   {
 if(cm <= 100)
   {
     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 > 150 && cm < 250)
   {
     digitalWrite(4, HIGH);
     Serial.println("Warning!!,Trash is about to cross 50% of bin level");
     digitalWrite(2, LOW);
     digitalWrite(23, LOW);
   }
   else if(cm > 250 && cm <=400)
   {
     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");
   }

   if(cm <= 100)
   {
   digitalWrite(21,HIGH);
   String payload = "{\"High Alert!!\":\"";
   payload += cm; payload
   += "left\" }";
   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 or prints publish failed
   {
```

```
Serial.println("Publish OK");
}
}
if(cm <= 250)
{
digitalWrite(22,HIGH);
String payload =
"{\"Warning!!\":\""; payload
+= dist; payload += "left\" }";
Serial.print("\n");
Serial.print("Sending distance: "); Serial.println(cm);
if(client.publish(publishTopic, (char*) payload.c_str()))
{
Serial.println("Publish OK");
}
else
{
Serial.println("Publish FAILED");
}
}
float inches = (cm / 2.54);
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();
}
```

WOKWI Connections



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