SPRIN-2

DATE	15 NOVEMBER 2022
TEAM ID	PNT2022TMID40955
PROJECT NAME	SMART WASTE MANAGEMENT FOR METROPOLITANCITIES-IOT

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 ----------------------------
#define ORG "cbseji"                  // 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
inwhich data to be send
char topic[] = "iot-2/cmd/led/fmt/String";                          // cmd Represent type and command is test format
ofstrings
char authMethod[] = "use-token-auth";                               // authentication
methodchar token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;              //Client id
//-------------------------------------------------------------------------------------------------------------------
WiFiClient wifiClient;                                      // creating instance for
wificlientPubSubClient client(server, 1883, wifiClient);
#define ECHO_PIN 12
#define TRIG_PIN
13float dist;
void setup()
{
  Serial.begin(115200);
  pinMode(LED_BUILTIN, OUTPUT);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
  //pir pin
```

```
 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 ");
```

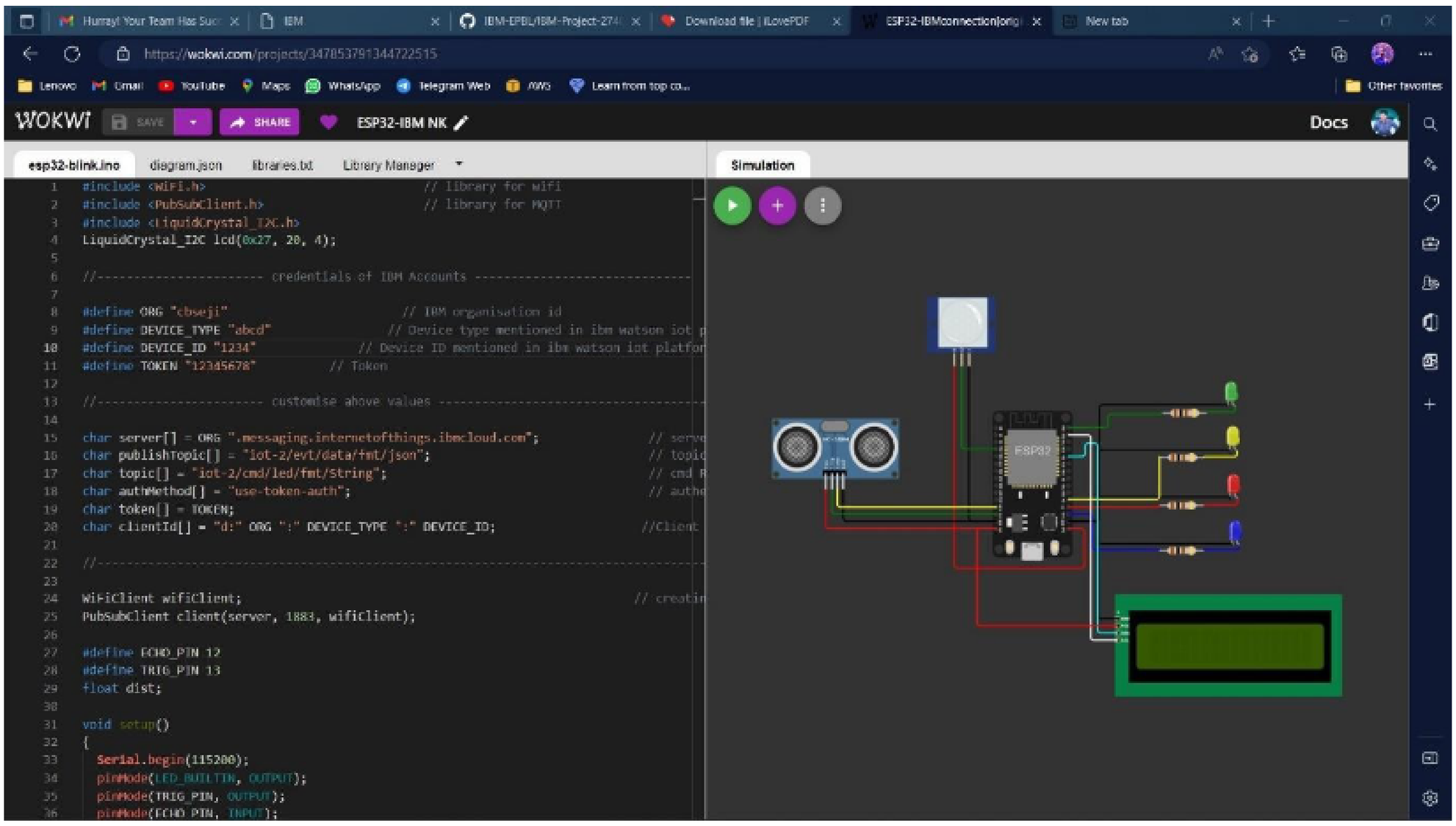
```
Serial.print("Wifi");
WiFi.begin("Wokwi-GUEST", "",
6);
while (WiFi.status() != WL_CONNECTED)
 {
   delay(500);
   Serial.print(".");
 }
  Serial.print("WiFi connected, IP address:
  ");Serial.println(WiFi.localIP());
}
void mqttConnect()
 {
   if (!client.connected())
     {
       Serial.print("Reconnecting 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 okelse 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
  lcdlcd.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 :


WOKWI
SAVE
SHARE
ESP32-IBM NK
Docs
esp32-blink.ino
diagram.json
libraries.txt
Library Manager
Simulation
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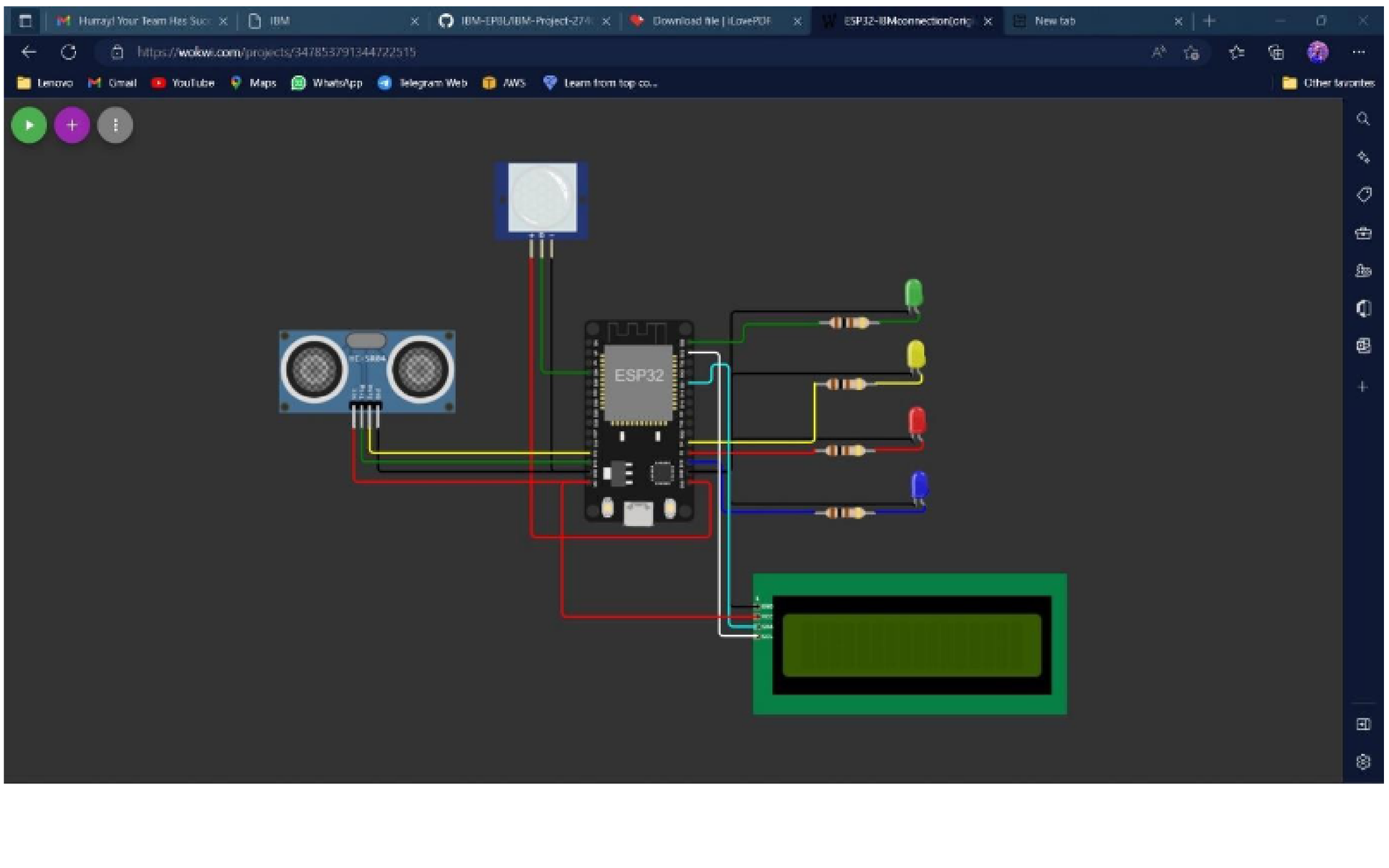
ESP32


ESP32