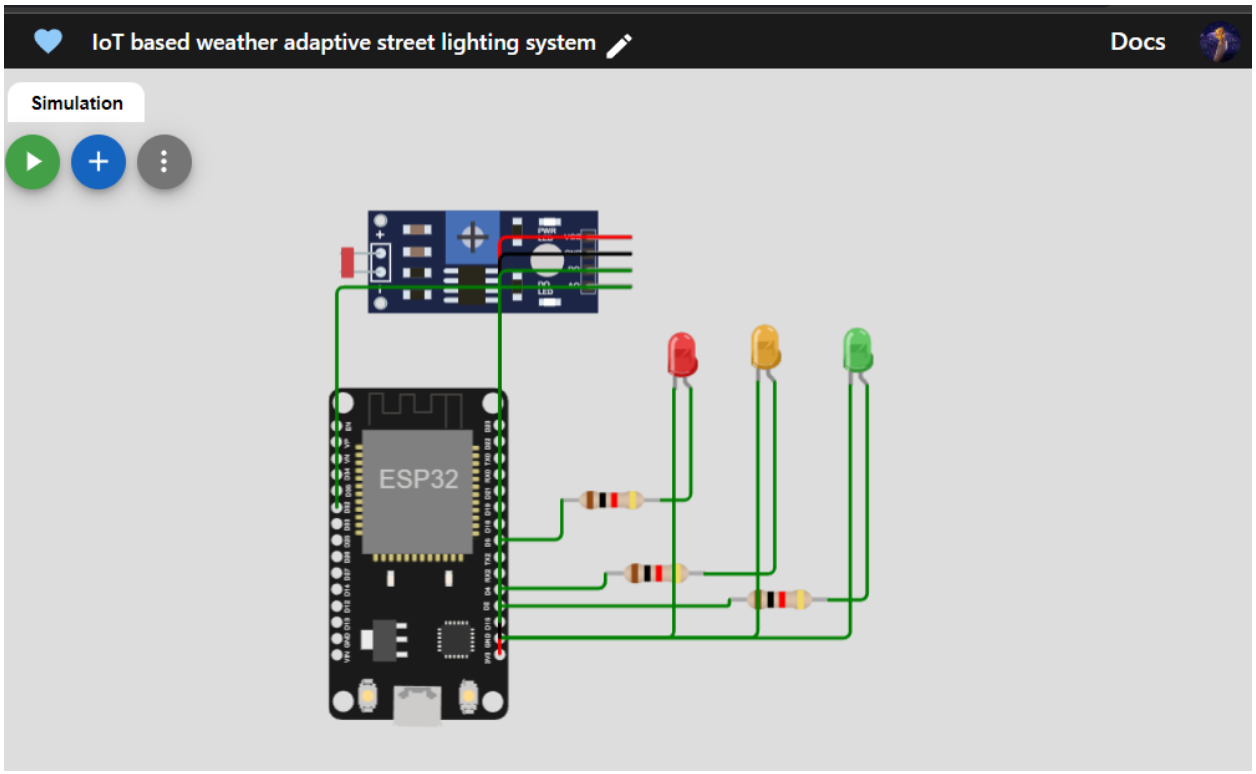
TEAM ID	NM2023TMID15296
PROJECT NAME	IoT BASED WEATHER ADAPTIVE STREET LIGHTING SYSTEM

DEVELOP A DEVICE CODE:

IoT BASED WEATHER ADAPTIVE STREET LIGHTING SYSTEM

WOKWI CONNECTIONS:



WOKWI CODE:

```
#include <WiFi.h>//library for wifi
#include <PubSubClient.h>//library for MQtt
#define LED 5
#define LED2 4
#define LED3 2
int LDR = 32;
int LDRReading = 0;
int threshold_val = 800;
```

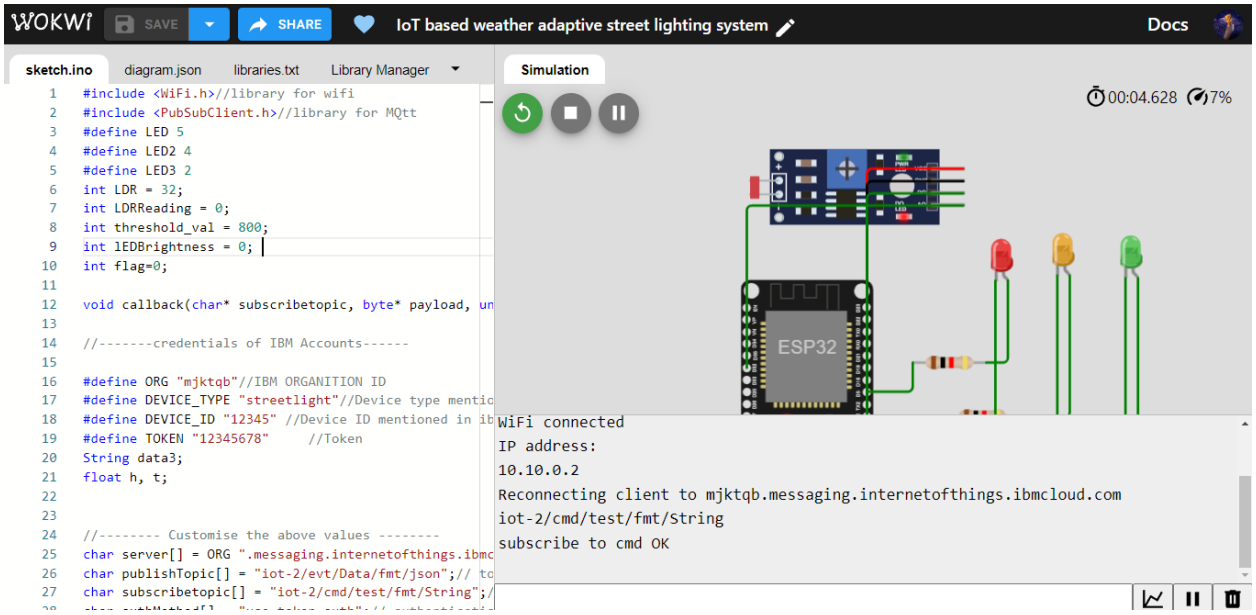
```
int lEDBrightness = 0;
int flag=0;
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
//-------credentials of IBM Accounts------
#define ORG "mjktqb"//IBM ORGANITION ID
#define DEVICE_TYPE "streetlight"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "12345" //Device ID mentioned in ibm watson IOT Platform
#define TOKEN "12345678"     //Token
String data3;
float h, t;
//-------- Customise the 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 subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmd  REPRESENT command type AND COMMAND IS TEST OF FORMAT STRING
char authMethod[] = "use-token-auth";// authentication method
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id
//-----------------------------------------
WiFiClient wifiClient; // creating the instance for wificlient
PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined client id by passing parameter like server id,portand wificredential
void setup()// configureing the ESP32
{
  Serial.begin(115200);
  pinMode(LED,OUTPUT);
  pinMode(LED2,OUTPUT);
  pinMode(LED3,OUTPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
}
void loop()// Recursive Function
{
  //PublishData(t, h);
  //delay(1000);
  /* LDRReading = analogRead(LDR);
  Serial.print("LDR READING:");
```

```
  Serial.println(LDRReading);
  if (LDRReading >threshold_val){
  lEDBrightness = map(LDRReading, 0, 1023, 0, 255);
  Serial.print("LED BRIGHTNESS:");
  Serial.println(lEDBrightness);
  analogWrite(LED, lEDBrightness);
  analogWrite(LED2, lEDBrightness);
  analogWrite(LED3, lEDBrightness);
  }
  else{
  analogWrite(LED, 0);
  analogWrite(LED2, 0);
  analogWrite(LED3, 0);
  }
  delay(300);*/
  if (!client.loop()) {
    mqttconnect();
  }
}
/*.....retrieving to Cloud.....*/
/*void PublishData(float temp, float humid) {
  mqttconnect();//function call for connecting to ibm*/
  /*
     creating the String in in form JSon to update the data to ibm cloud
  */
  /*String payload = "{\"temperature\":";
  payload += temp;
  payload += "," "\"humidity\":";
  payload += humid;
  payload += "}";
  Serial.print("Sending payload: ");
  Serial.println(payload);
  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");// if it sucessfully upload data on the cloud then it will print publish ok in Serial
monitor or else it will print publish failed
  } 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() //function defination for wificonnect
{
  Serial.println();
  Serial.print("Connecting to ");
  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish the connection
  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++) {
    //Serial.print((char)payload[i]);
    data3 += (char)payload[i];
```

```
  }
  Serial.println("data: "+ data3);
  if(data3=="lighton1")
  {
Serial.println(data3);
digitalWrite(LED,HIGH);
  }
  else if(data3=="lightoff1")
  {
Serial.println(data3);
digitalWrite(LED,LOW);
  }
  else if(data3=="lighton2")
  {
Serial.println(data3);
digitalWrite(LED2,HIGH);
  }
  else if(data3=="lightoff2")
  {
Serial.println(data3);
digitalWrite(LED2,LOW);
  }
  else if(data3=="lighton3")
  {
Serial.println(data3);
digitalWrite(LED3,HIGH);
  }
  else if(data3=="lightoff3")
  {
Serial.println(data3);
digitalWrite(LED3,LOW);
 }
data3="";
}
```

OUTPUT:



WOKWI LINK: https://wokwi.com/projects/364901036326401025