Assignment-6

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Code:

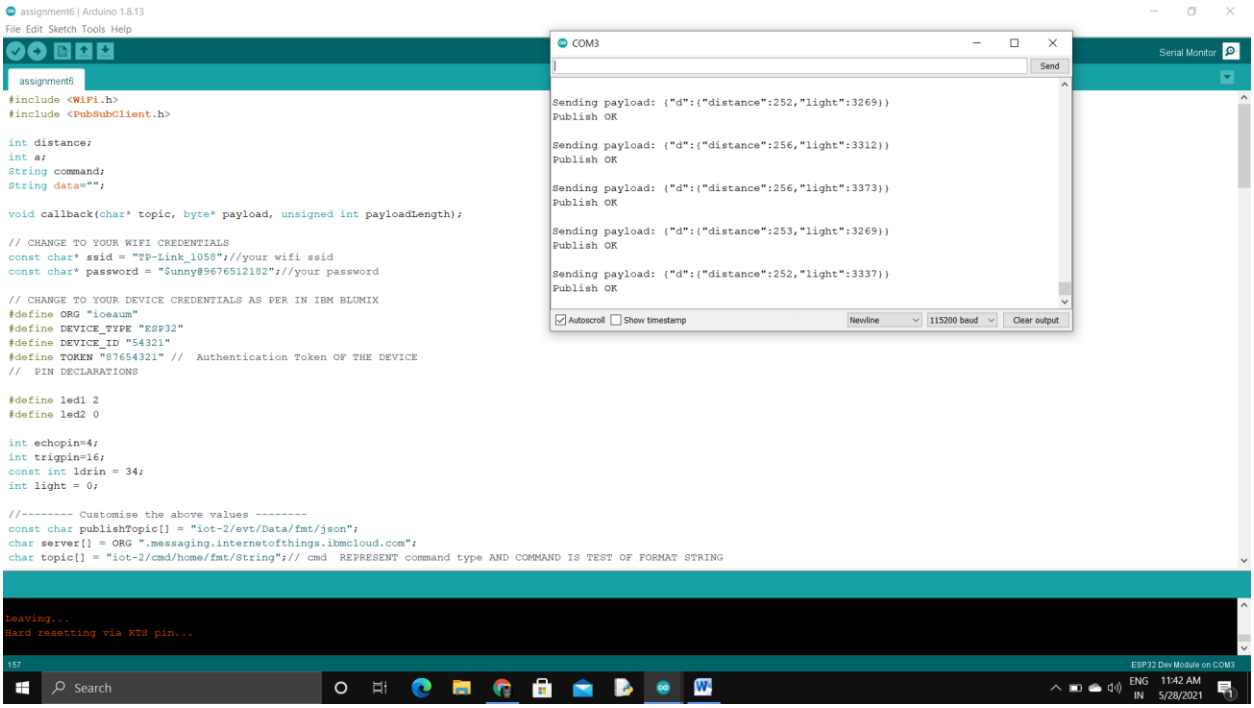
```
#include <WiFi.h>
#include <PubSubClient.h>

int distance;
int a;
String command;
String data="";

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

// CHANGE TO YOUR WIFI CREDENTIALS
const char* ssid = "TP-Link_1058";//your wifi ssid
const char* password = "$unny@9676512182";//your password

// CHANGE TO YOUR DEVICE CREDENTIALS AS PER IN IBM BLUMIX
#define ORG "ioeaum"
#define DEVICE_TYPE "ESP32"
#define DEVICE_ID "54321"
#define TOKEN "87654321" //  Authentication Token OF THE DEVICE
//  PIN DECLARATIONS

#define led1 2
#define led2 0

int echopin=4;
int trigpin=16;
const int ldrin = 34;
int light = 0;

//-------- Customise the above values --------
const char publishTopic[] = "iot-2/evt/Data/fmt/json";
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char topic[] = "iot-2/cmd/home/fmt/String";// cmd  REPRESENT command type AND COMMAND IS TEST
OF FORMAT 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);
```

```
int publishInterval = 5000; // 30 seconds
long lastPublishMillis;
void publishData();

void setup() {
  pinMode(echopin,INPUT);
  pinMode(trigpin,OUTPUT);
  Serial.begin(115200);
  Serial.println();


  wifiConnect();
  mqttConnect();
}

void loop() {
  digitalWrite(trigpin,HIGH);
  delay(1000);
  digitalWrite(trigpin,LOW);
  int duration=pulseIn(echopin,HIGH);
  distance=(duration*0.034)/2;
  delay(1000);

  light = analogRead(ldrin);
  delay(1000);

 if (millis() - lastPublishMillis > publishInterval)
  {
    publishData();
    lastPublishMillis = millis();
  }

  if (!client.loop()) {
    mqttConnect();
  }
}

void wifiConnect() {
  Serial.print("Connecting to "); Serial.print(ssid);
  WiFi.begin(ssid, password);
  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("subscribe to cmd OK");
  } else {
    Serial.println("subscribe to cmd FAILED");
  }
}

void callback(char* topic, byte* payload, unsigned int payloadLength) {

  Serial.print("callback invoked for topic: ");
  Serial.println(topic);

  for (int i = 0; i < payloadLength; i++) {

    command+= (char)payload[i];
  }

  Serial.print("data: "+ command);
  control_func();
  command= "";
}

void control_func()
{


  if(command== "lightoff")
 {

 digitalWrite(led1,LOW);
     digitalWrite(led2,LOW);
```

```
    Serial.println(".......lights are off.........");

  }
  else if(command== "lighton")
  {
     digitalWrite(led1,HIGH);
      digitalWrite(led2,HIGH);
     Serial.println(".......lights are on.........");

  }


  else
  {
   Serial.println("......no commands have been subscribed.........");

    }
}

void publishData()
{




  String payload = "{\"d\":{\"distance\":";
  payload += distance;
  payload += ","\"light\":";
  payload += light;
  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");
  }
}
```

Output:


assignment6 | Arduino 1.8.13
File Edit Sketch Tools Help
assignment6
Serial Monitor
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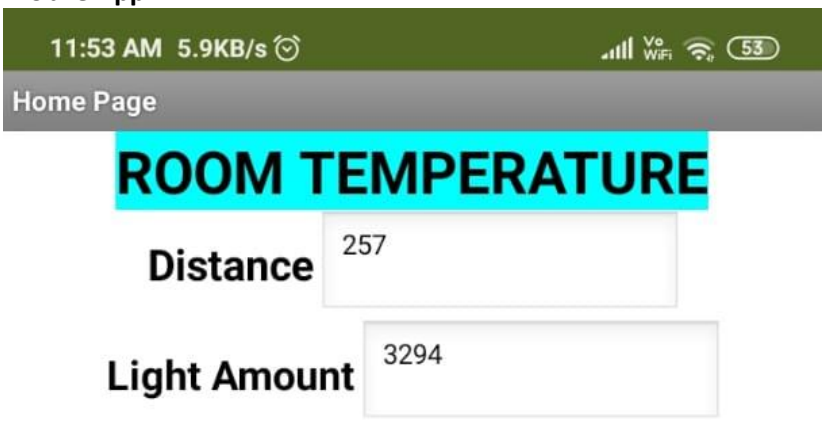
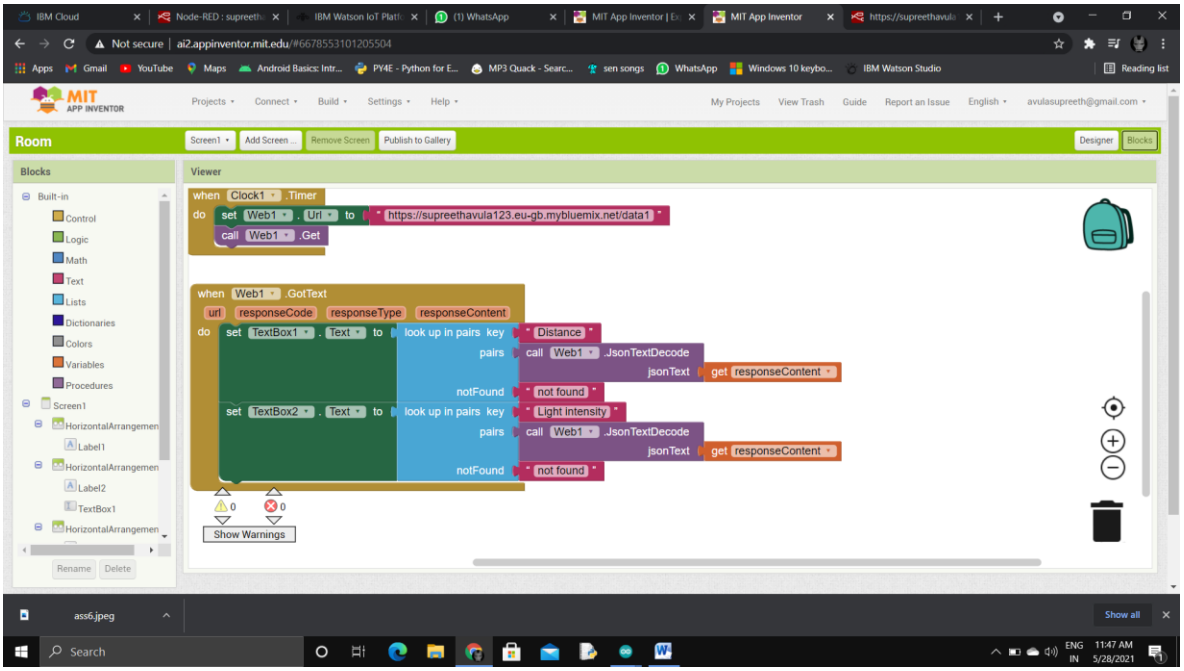
Leaving...
Hard resetting via RTS pin...
157
ESP32 Dev Module on COM3
COM3
Send
Sending payload: {"d":{"distance":252,"light":3269}}
Publish OK
Sending payload: {"d":{"distance":256,"light":3312}}
Publish OK
Sending payload: {"d":{"distance":256,"light":3373}}
Publish OK
Sending payload: {"d":{"distance":253,"light":3269}}
Publish OK
Sending payload: {"d":{"distance":252,"light":3337}}
Publish OK
Autoscroll
Show timestamp
Newline
115200 baud
Clear output
Search
ENG
IN
11:42 AM
5/28/2021

Mobile App:


11:53 AM 5.9KB/s
53
Home Page
ROOM TEMPERATURE
Distance
257
Light Amount
3294


Room
Screen1
Add Screen ...
Remove Screen
Publish to Gallery
Designer
Blocks
Blocks
Viewer
Built-in
Control
Logic
Math
Text
Lists
Dictionaries
Colors
Variables
Procedures
Screen1
Label1
Label2
TextBox1
Rename
Delete
when Clock1 .Timer
do set Web1 . Url to "https://supreethavula123.eu-gb.mybluemix.net/data1"
call Web1 .Get
when Web1 .GotText
url responseCode responseType responseContent
do set TextBox1 . Text to look up in pairs key "Distance"
pairs call Web1 .JsonTextDecode
jsonText get responseContent
notFound "not found"
set TextBox2 . Text to look up in pairs key "Light intensity"
pairs call Web1 .JsonTextDecode
jsonText get responseContent
notFound "not found"
Show Warnings
ass6.jpeg
Show all
Search
ENG
IN
11:47 AM
5/28/2021