WEEK 3 ASSIGNMENT

NAME: ANIRUDH R

REG NO: 20BEC1276

COLLEGE: VIT CHENNAI

INTERN DOMAIN: IOT

TASK:

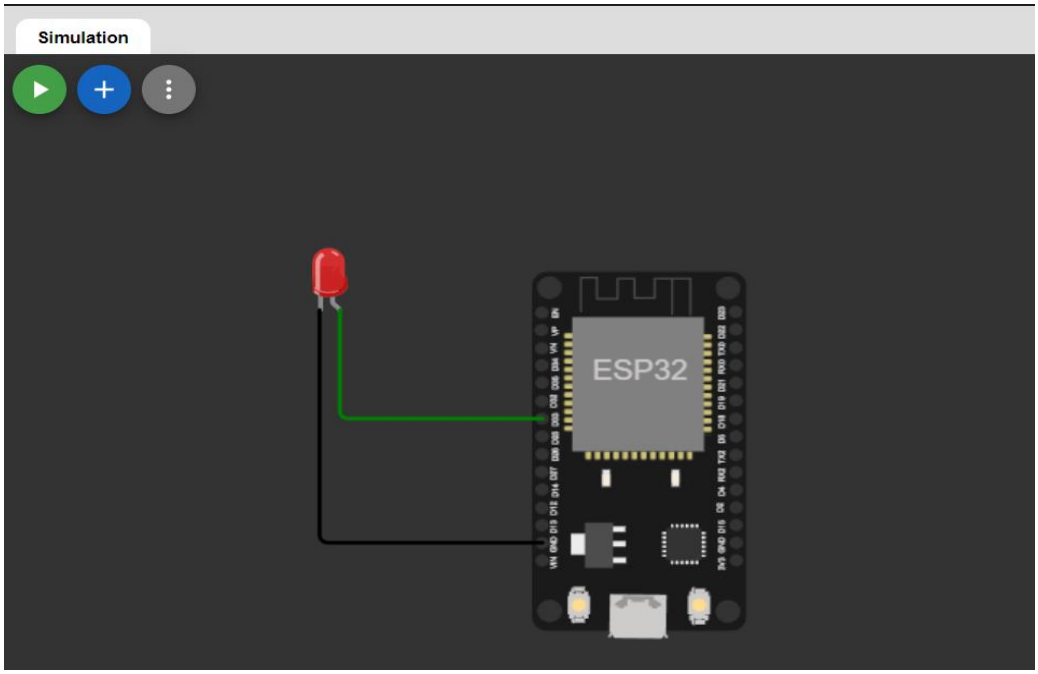
In wokwi add LED and switch on and off from node-red

WOKWI LINK:

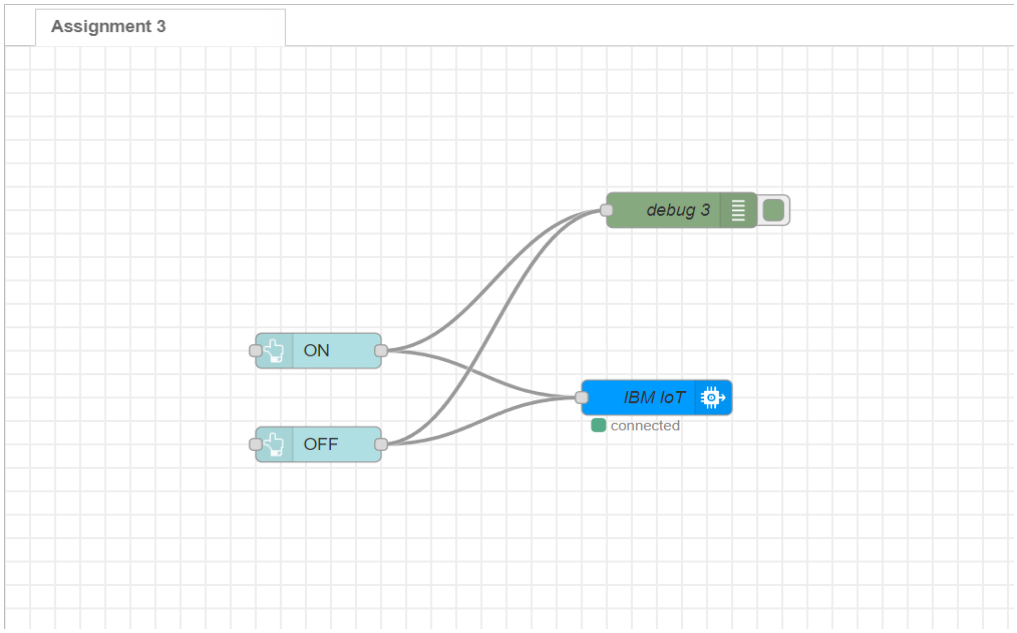
https://wokwi.com/projects/366499932666854401

Circuit Diagram:

Wokwi:

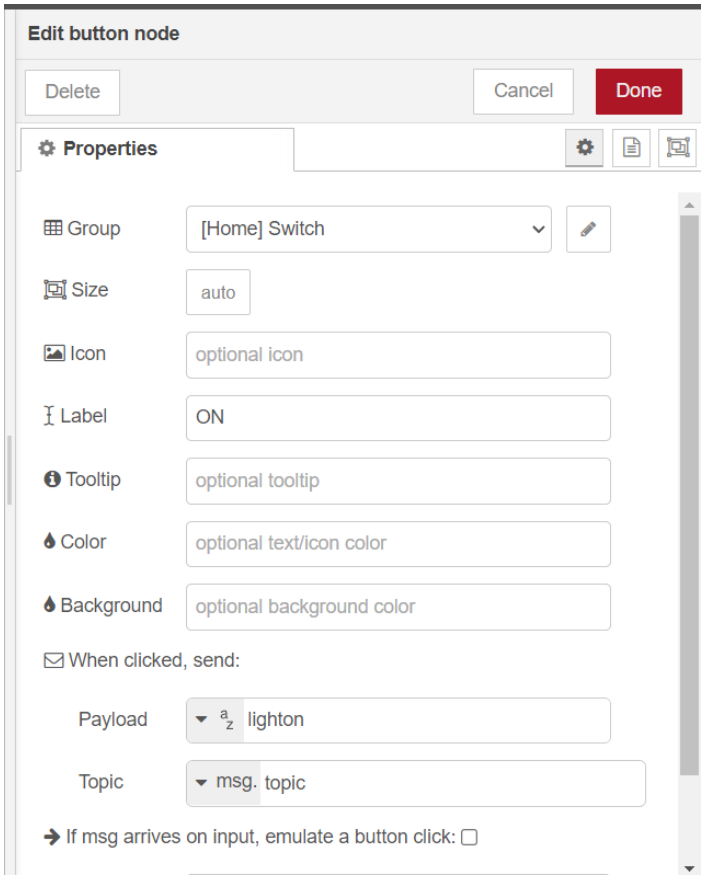


Node-Red:

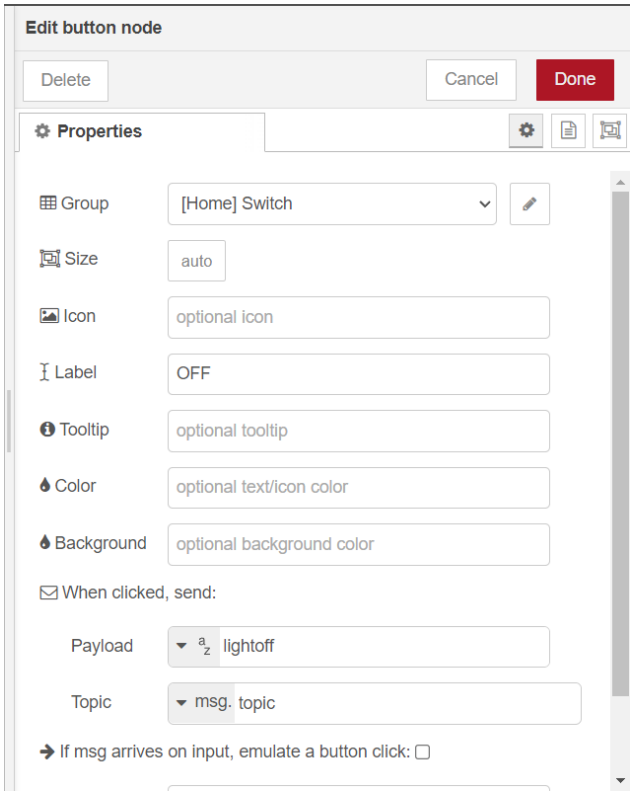


Node Properties:

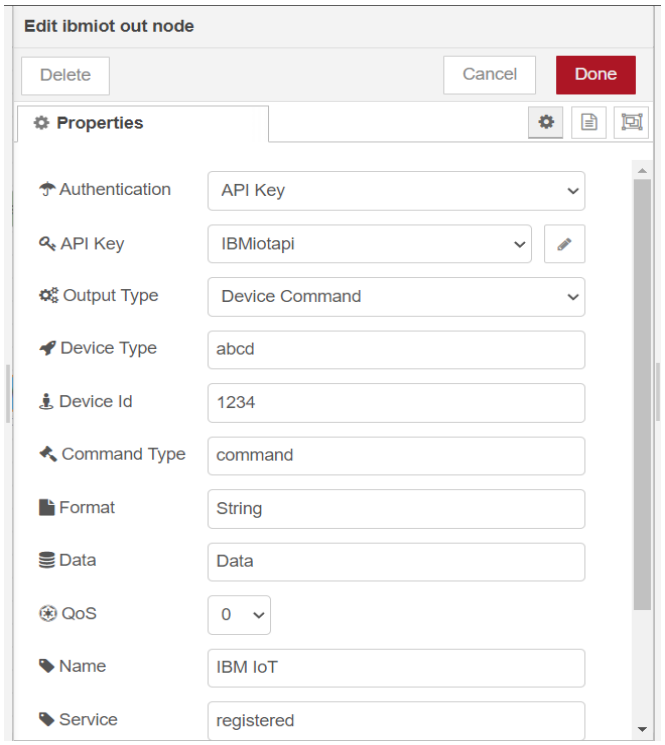
1. Button on



2. Button OFF



3. Ibmiot Out



CODE:

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

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

#define LED 33


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


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


#define ORG "axcdx6"//IBM ORGANITION 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

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/command/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

{
```

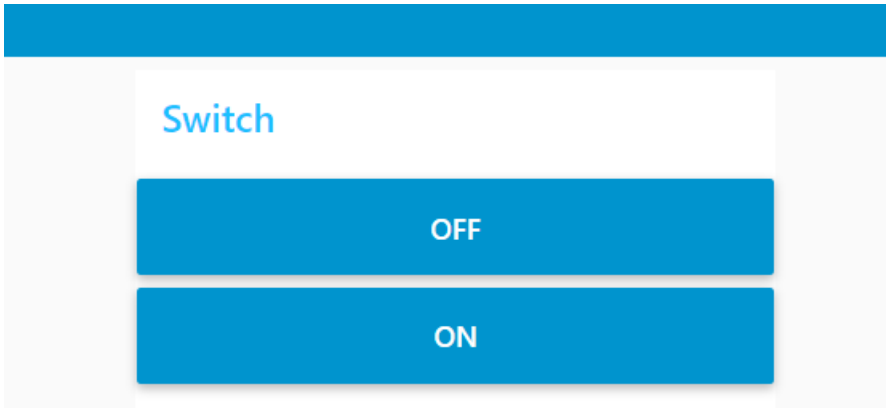
```
  Serial.begin(115200);
  pinMode(LED,OUTPUT);
  delay(10);
  Serial.println();
  wificonnect();
  mqttconnect();
}
void loop()// Recursive Function
{
  if (!client.loop()) {
    mqttconnect();
  }

}

/*.....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 = "{\"temp\":";
  payload += temp;
  payload += "," "\"Humid\":";
  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.println("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=="lighton")
  {
Serial.println(data3);
digitalWrite(LED,HIGH);
  }
  else
  {
Serial.println(data3);
digitalWrite(LED,LOW);
  }
data3="";
}
```

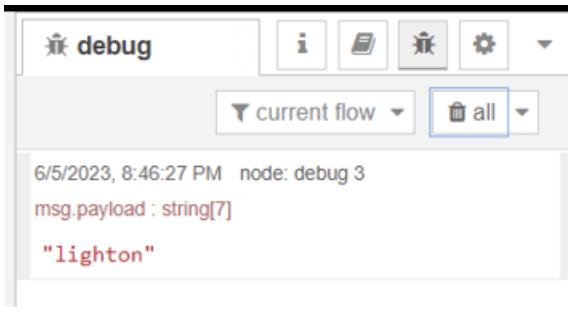
OUTPUTS:

1. Node-Red Dashboard:



2. LED ON:

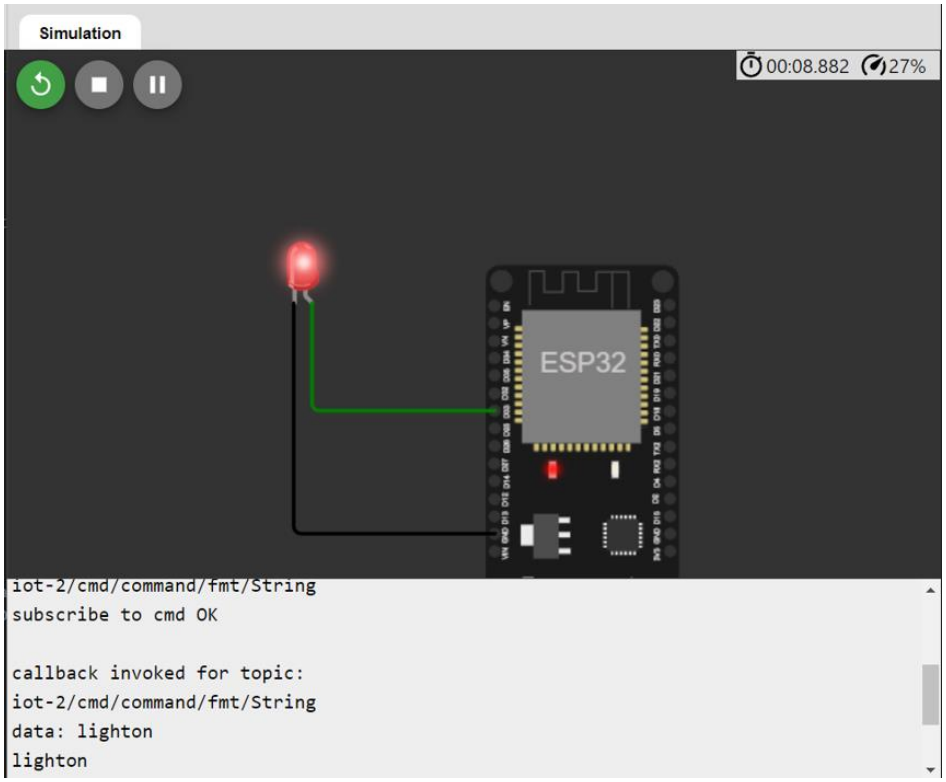
Node-Red Debug console:



Wokwi Serial Monitor:

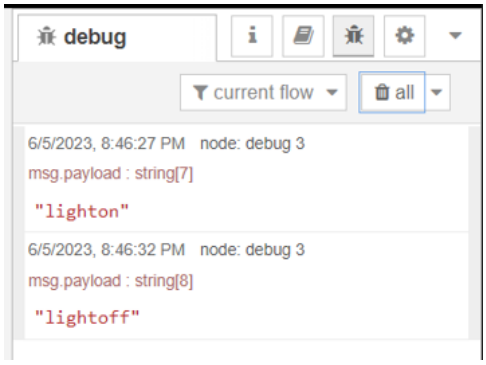
```
iot-2/cmd/command/fmt/String
subscribe to cmd OK

callback invoked for topic:
iot-2/cmd/command/fmt/String
data: lighton
lighton
```

Wokwi LED:



3. LED OFF:

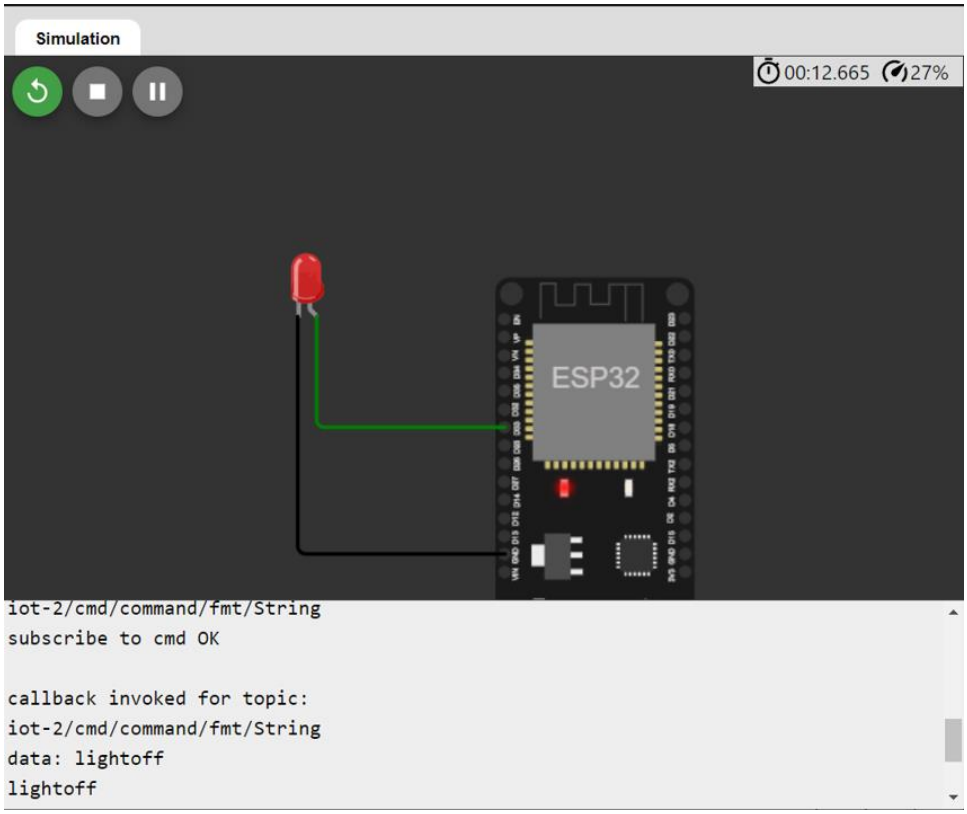
Node-Red Debug console:



Wokwi Serial Monitor:

```
iot-2/cmd/command/fmt/String
subscribe to cmd OK

callback invoked for topic:
iot-2/cmd/command/fmt/String
data: lightoff
lightoff
```

Wokwi LED:



RESULT:

Given task was carried out successfully and the LED was turned ON and OFF using Node-Red.