CAPE INSTITUTE OF TECHNOLOGY

LEVINJIPURAM

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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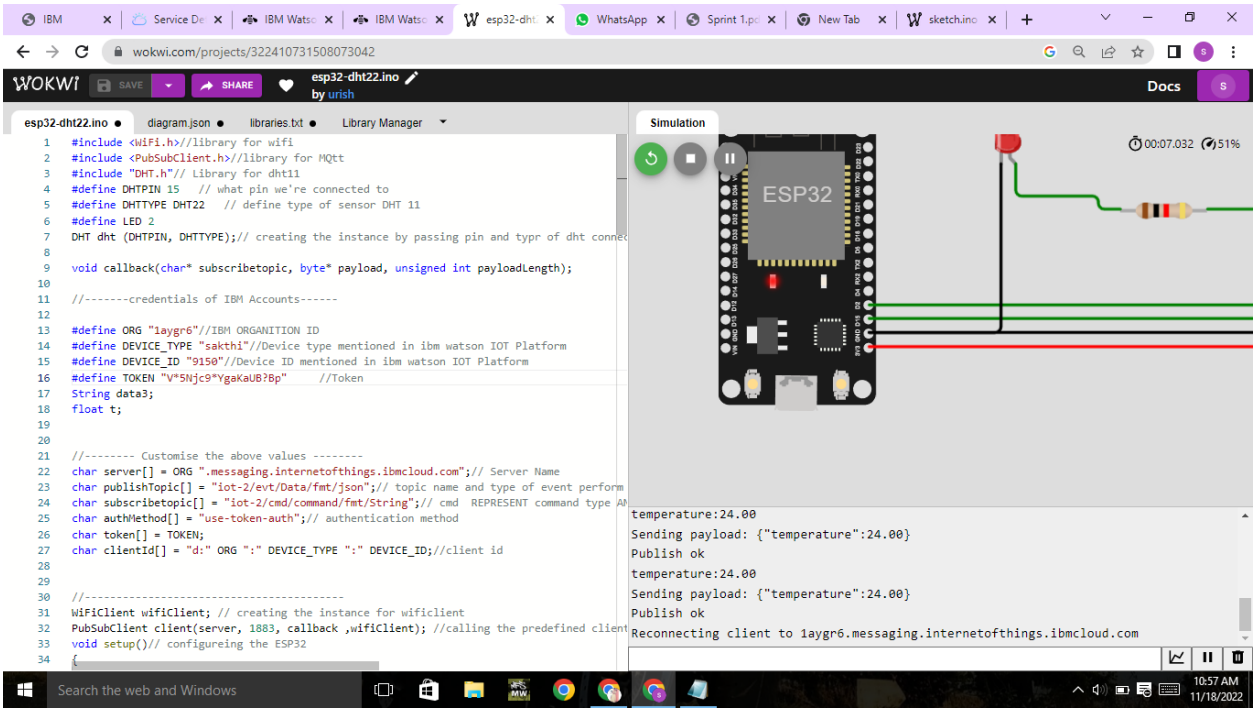
TEAM ID:PNT2022TMID34365

PROJECT NAME:SMART SOLUTIONS FOR RAILWAYS

Sprint-1



Program:

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

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

#include "DHT.h"// Library for dht11

#define DHTPIN 15   // what pin we're connected to

#define DHTTYPE DHT22   // define type of sensor DHT 11

#define LED 2

DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and typr of dht connected
```

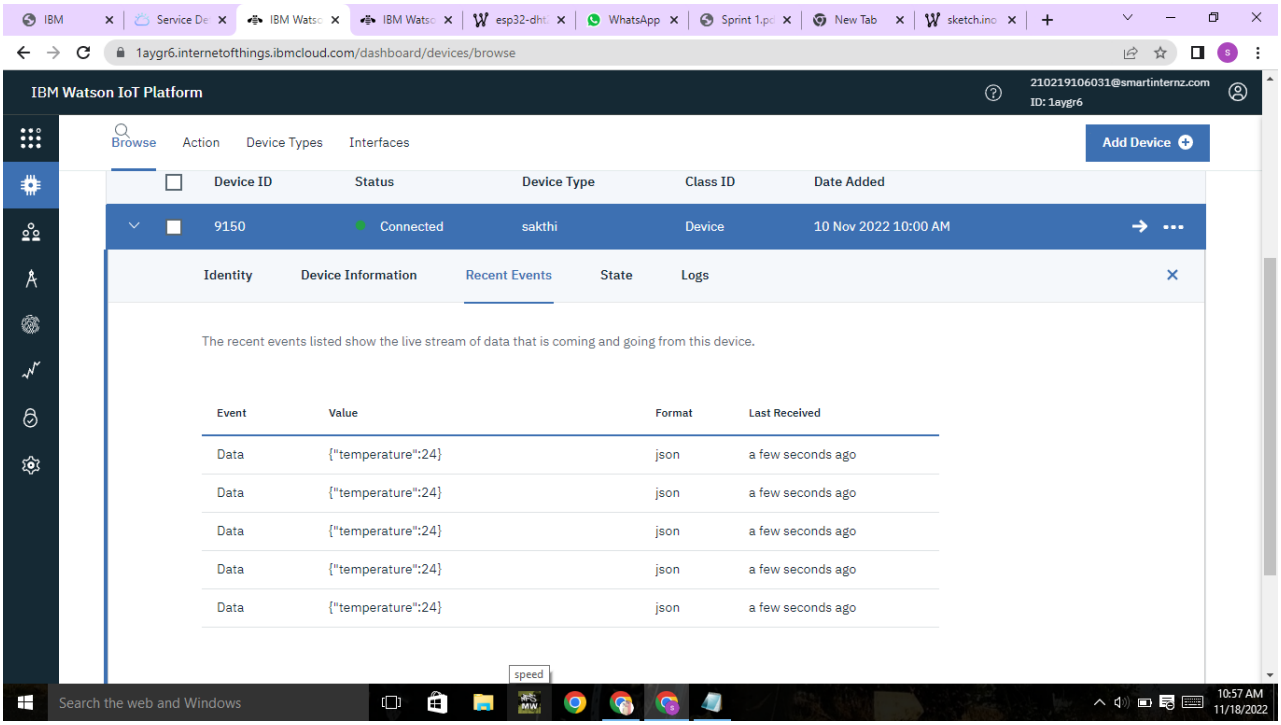
```
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);


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


#define ORG "1aygr6"//IBM ORGANITION ID

#define DEVICE_TYPE "sakthi"//Device type mentioned in ibm watson IOT
Platform

#define DEVICE_ID "9150"//Device ID mentioned in ibm watson IOT Platform

#define TOKEN "V*5Njc9*YgaKaUB?Bp"     //Token
String data3; float 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);   dht.begin();

pinMode(LED,OUTPUT);

delay(10);   Serial.println();

wificonnect();   mqttconnect();


}  void loop()// Recursive
Function
{

 t = dht.readTemperature();

  Serial.print("temperature:");

  Serial.println(t);



  PublishData(t);   delay(1000);   if
(!client.loop()) {     mqttconnect();


  }
```

```
}



/*.....retrieving to  Cloud.....*/

 void PublishData(float temp) {
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 += "}";



    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)
{
```


IBM Watson IoT Platform
210219106031@smartinternz.com
ID: 1aygr6
Browse
Action
Device Types
Interfaces
Add Device
Device ID
Status
Device Type
Class ID
Date Added
9150
Connected
sakthi
Device
10 Nov 2022 10:00 AM
Identity
Device Information
Recent Events
State
Logs
The recent events listed show the live stream of data that is coming and going from this device.
Event
Value
Format
Last Received
Data
{"temperature":24}
json
a few seconds ago
Data
{"temperature":24}
json
a few seconds ago
Data
{"temperature":24}
json
a few seconds ago
Data
{"temperature":24}
json
a few seconds ago
Data
{"temperature":24}
json
a few seconds ago
Search the web and Windows
10:57 AM
11/18/2022

```
                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=="lighton")

  {
Serial.println(data3); digitalWrite(LED,HIGH);


  }    else

  {
Serial.println(data3); digitalWrite(LED,LOW);

   } data3="";
```

}

Displaying DHT22 sensor values: