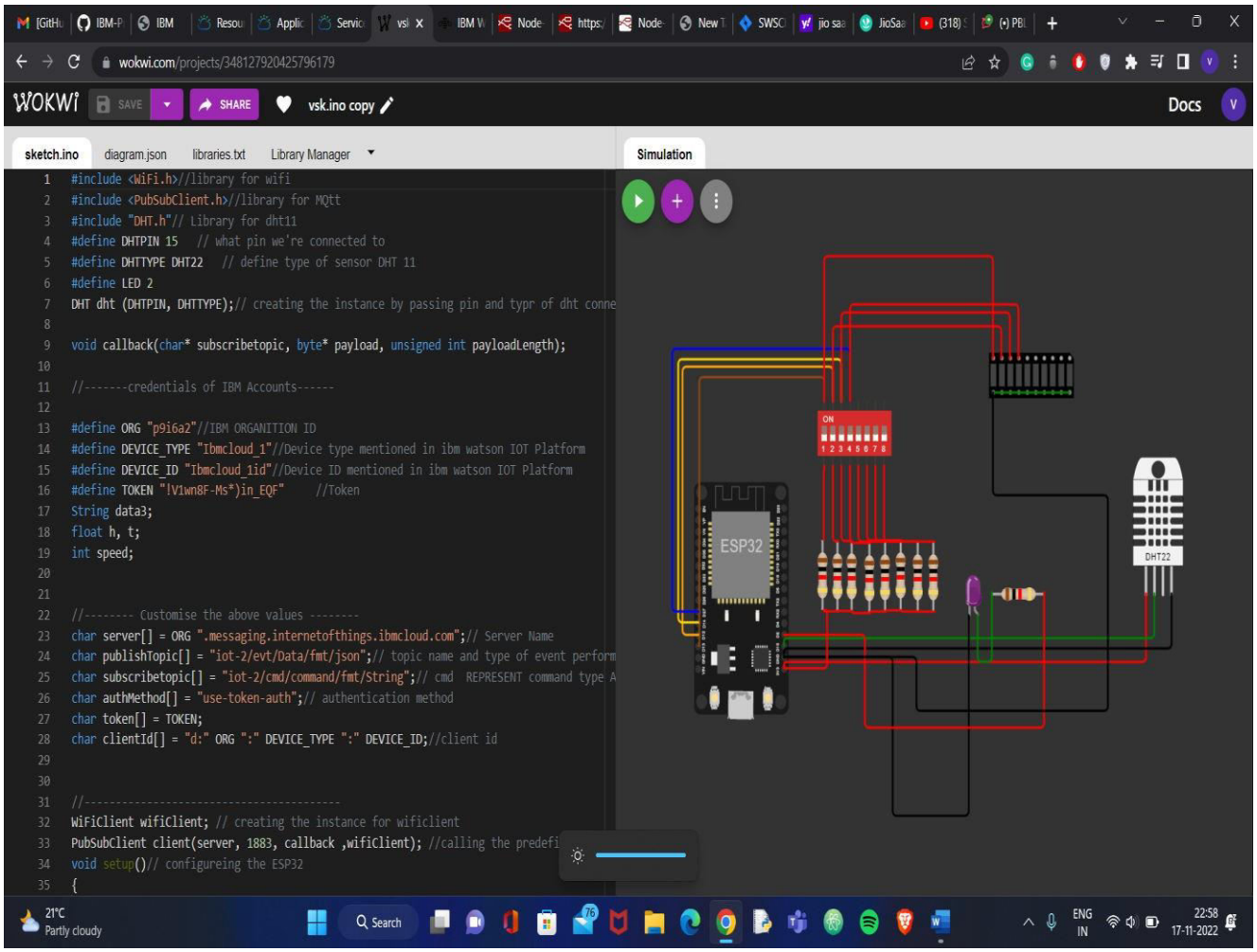
Sprint-1

Date	02 November 2022
Team ID	PNT2022TMID19258
ProjectName	Project–Signs with smartconnectivity for better road safety.

Simulation Creation:



Wokwisimulationlink:https://wokwi.com/projects/348127920425796179

Code:

```
#include<WiFi.h>//libraryforwifi
#include<PubSubClient.h>//library forMQtt
#include"DHT.h"// Libraryfor dht11
#defineDHTPIN 15    //what pinwe're connectedto
#defineDHTTYPE DHT22    //define typeofsensorDHT 11
#defineLED 2
DHTdht (DHTPIN,DHTTYPE);//creatingtheinstanceby passingpin andtypr
ofdhtconnected

voidcallback(char* subscribetopic,byte*payload,unsigned intpayloadLength);

//-------credentialsof IBM Accounts------

#defineORG "p9i6a2"//IBMORGANITION ID
#defineDEVICE_TYPE "Ibmcloud_1"//Devicetypementionedin ibmwatson IOTPlatform
#defineDEVICE_ID "Ibmcloud_1id"//DeviceID mentionedin ibmwatson IOTPlatform
#defineTOKEN "!V1wn8F-Ms*)in_EQF"
                                        //Token
Stringdata3;
floath,
t;intspeed;


//--------Customisetheabove values --------
charserver[] =ORG ".messaging.internetofthings.ibmcloud.com";//Server
Namecharpublish Topic[] ="iot-2/evt/Data/fmt/json";// topicname
andtypeofeventperform andformat inwhich datatobesend
charsubscribetopic[] ="iot-2/cmd/command/fmt/String";// cmd
                                                    REPRESENT
commandtype ANDCOMMAND ISTEST OFFORMATSTRING
charauthMethod[] ="use-token-auth";//
authenticationmethodchartoken[] =TOKEN;
charclientId[] ="d:" ORG":"DEVICE_TYPE":" DEVICE_ID;//clientid


//---------------------------------------
WiFiClientwifiClient; //creating theinstance
forwificlientPubSubClientclient(server,
1883,callback,wifiClient);//callingthepredefinedclient idby
passingparameterlikeserver id,portandwificredential
voidsetup()// configureingthe ESP32
{
  Serial.begin(115200);dht.b
  egin();pinMode(LED,OUTPUT)
  ;pinMode(13,INPUT);//Road1
```

```
  pinMode(12,INPUT);//Road2
  pinMode(14,INPUT);//Road3
  pinMode(27,INPUT);//Road4
  //pinMode(13,INPUT);
  //pinMode(13,INPUT);
  //pinMode(13,INPUT);
  //pinMode(13,INPUT);delay(
  10);Serial.println();wific
  onnect();mqttconnect();
}
intR1, R2,R3, R4;
voidloop()// RecursiveFunction
{

  h=dht.readHumidity();
  t=dht.readTemperature();R1=digitalRea
  d(13);R2=digitalRead(12);R3=digitalRe
  ad(14);R4=digitalRead(27);Serial.prin
  t("Temperature:");Serial.println(t);S
  erial.print("Humidity:");Serial.print
  ln(h);speed=round((h+t)/2);Serial.pri
  nt("Speed:");Serial.println(speed);

  PublishData(t,h, speed,R1,R2,R3
  ,R4);delay(1000);
  if(!client.loop())
    {mqttconnect();
  }
}



/*.....................................retrievingto
Cloud.............................*/

voidPublishData(float temp,float humid,int speed,int R1,int R2,int R3,intR4)
{
  mqttconnect();//functioncall forconnecting toibm
  /*
     creatingthe Stringin inform JSonto updatethe datato ibmcloud
  */
  Stringpayload ="{\"Temperature\":";
```

```
  payload+= temp;
  payload+=
  ","\"Humidity\":";payload+=
  humid;
  payload+=
  ","\"Speed\":";payload+= speed;
  payload+=
  ","\"Road1\":";payload+= R1;
  payload+=
  ","\"Road2\":";payload+= R2;
  payload+=
  ","\"Road3\":";payload+= R3;
  payload+=","
  "\"Road4\":";payload+= R4;
  payload+= "}";


  Serial.print("Sendingpayload: ");
  Serial.println(payload);


  if(client.publish(publishTopic, (char*)payload.c_str())) {
    Serial.println("Publishok");// ifitsucessfullyupload dataon thecloudthenit
willprint publishokinSerial monitoror elseit willprint publishfailed
  }else {
    Serial.println("Publishfailed");
  }

}
voidmqttconnect() {
  if(!client.connected())
    {Serial.print("Reconnectingclient
    to");Serial.println(server);
    while(!!!client.connect(clientId, authMethod,token)) {
      Serial.print(".");dela
      y(500);
    }

     initManagedDevice();
     Serial.println();
  }
}
voidwificonnect() //functiondefinationforwificonnect
{
  Serial.println();Serial.print("Co
  nnectingto");
```

```
  WiFi.begin("Wokwi-GUEST","",6);//passingthe wificredentials
toestablishtheconnection
  while(WiFi.status() !=WL_CONNECTED)
    {delay(500);
    Serial.print(".");
  }
  Serial.println("");Serial.println
  ("WiFiconnected");Serial.println(
  "IPaddress:");Serial.println(WiFi
  .localIP());
}

voidinitManagedDevice() {
  if(client.subscribe(subscribetopic))
    {Serial.println((subscribetopic));Serial.p
    rintln("subscribeto cmdOK");
  }else {
    Serial.println("subscribeto cmdFAILED");
  }
}

voidcallback(char* subscribetopic,byte*payload,unsigned intpayloadLength)
{

  Serial.print("callbackinvoked fortopic: ");
  Serial.println(subscribetopic);
  for(int i=0;i<payloadLength; i++){
    //Serial.print((char)payload[i]);da
    ta3+= (char)payload[i];
  }

  Serial.println("data:"+
  data3);if(data3=="lighton")
  {
Serial.println(data3);digitalWrite(LED,
HIGH);

  }

  else
  {
Serial.println(data3);digita
lWrite(LED,LOW);

  }
data3="";
```

```
}
```