

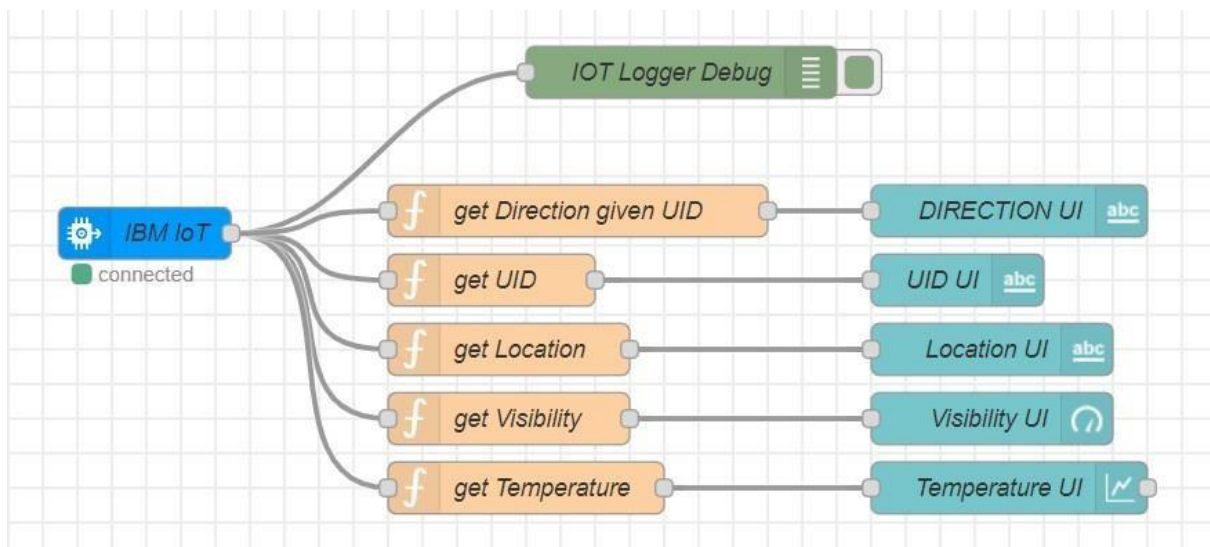
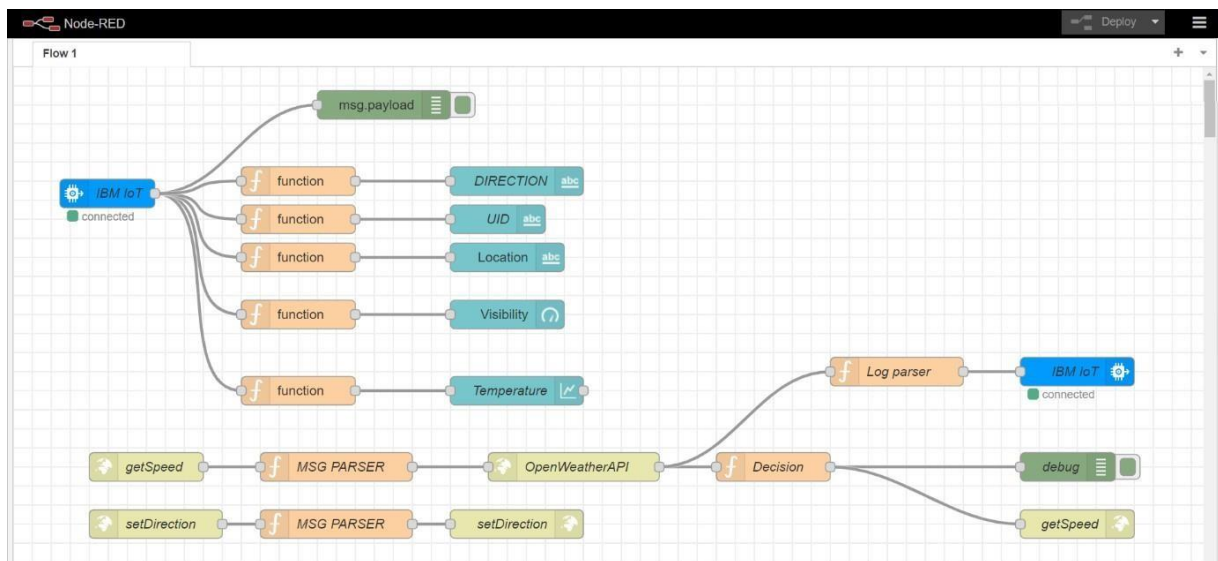
## **Sprint04**

### **SignswithSmartConnectivityforBetterRoadSafety**

Team ID	PNT2022TMID08723
ProjectName	SignswithsmartconnectivityforBetterroad safety

## Node RED:

### NodeREDflow:



```
//getDirectiongivenUID
msg.payload=global.get(String(msg.payload.uid));r
eturnmsg;
```

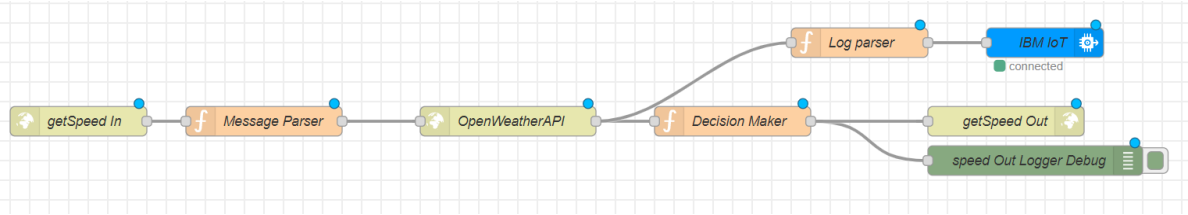
```
// getUID
msg.payload=msg.payload.uid;r
eturnmsg;
```

```
//getLocation
msg.payload=msg.payload.location;r
eturnmsg;
```

```
//getVisibility
msg.payload=msg.payload.visibility;r
eturnmsg;
```

```
//getTemperature
msg.payload =
msg.payload.temperature;returnmsg;
```

getSpeedAPIflow:



```
weatherObj=JSON.parse(JSON.stringify(msg.payload));l  
ocalityObj=global.get("data");
```

```
var suggestedSpeedPercentage =
```

```
100;varpreciseObject={  
    temperature:weatherObj.main.temp-273.15,  
    location:localityObj.location,visibility:we  
    atherObj.visibility/100,uid  
    :localityObj.uid,  
    direction:global.get("direction")  
};
```

```
msg.payload=preciseObject;r
```

```
eturnmsg;
```

```
weatherObj =  
JSON.parse(JSON.stringify(msg.payload));localityObj=g  
lobal.get("data");
```

```
var suggestedSpeedPercentage =
```

```
100;varpreciseObject={  
    temperature:weatherObj.main.temp-273.15,  
    weather:weatherObj.weather.map(x=>x.id).filter(code=>code<700),visibility  
    :weatherObj.visibility/100  
};
```

```
if(preciseObject.visibility<=40)suggestedSpeedPer  
centage-=30
```

```
switch(String(preciseObject.weather)[-1]) // https://openweathermap.org/weather-  
conditionsreferweathercodesmeaninghere
```

```
{  
    case "0" : suggestedSpeedPercentage -  
    =10;break;case"1": suggestedSpeedPercentage-  
    =20;break;case"2":suggestedSpeedPercentage-  
    =30;break;  
}
```

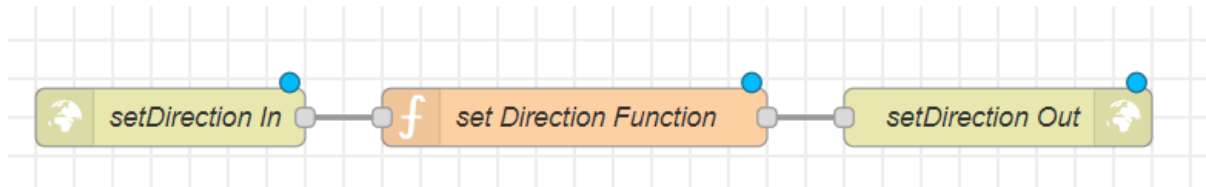
```
msg.payload=preciseObject;
```

```
vardoNotHonk=0;if(localityObj.hospitalZone=="1"||localityObj.schoolZone=="1")  
doNotHonk= 1;
```

```
varreturnObject={  
    suggestedSpeed:localityObj.usualSpeedLimit*(suggestedSpeedPercentage/100),doNotHonk:  
    doNotHonk  
}
```

```
msg.payload = String(returnObject.suggestedSpeed) + " kmph \n\n"
+(returnObject.doNotHonk==1?"DoNotHonk:"")+
"$"+global.get(String(localityObj.uid));
```

```
returnmsg;
```

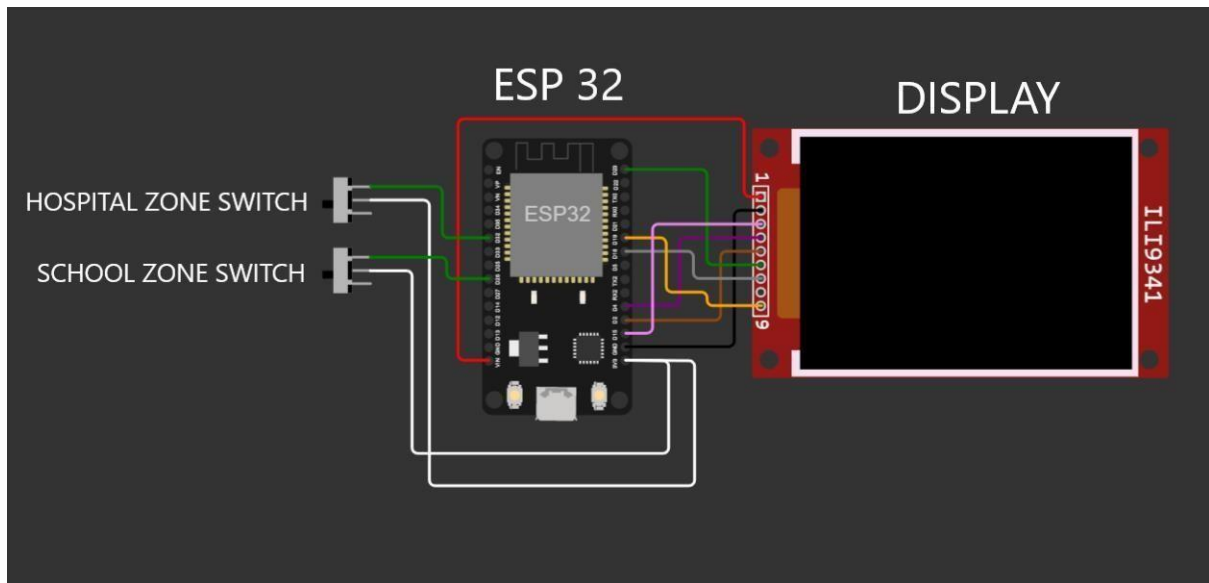


```
global.set(String(msg.payload.uid),msg.payload.dir);r
```

```
eturnmsg;
```

---

**Circuit Diagram:**



### ESP32CODE:

```
#include<WiFi.h>#include
<HTTPClient.h>#include
<Adafruit_GFX.h>
#include<Adafruit_ILI9341.h>
#include<string.h>

const char* ssid = "Wokwi-
GUEST";constchar*password= "";

#defineTFT_DC2
#defineTFT_CS 15
Adafruit_ILI9341tft=Adafruit_ILI9341(TFT_CS,TFT_DC);

StringmyLocation="Chennai,IN";Stringus
ualSpeedLimit="70";//kmph

intschoolZone=32;intho
spitalZone= 26;

intuid=2504;//IDUniquetothisMicroContollerStringgetStr
ing(charx)
{
    Strings(1,x);r
    eturns;
}

StringstringSplitter1(StringfullString,chardelimiter='$')
{
    StringreturnString="";
    for(int i = 0; i<fullString.length();i++) { char c
        =fullString[i];if(delimiter==c)
            break;returnString+=Str
            ing(c);
        }
    return(returnString);
```

```
}
```

```
StringstringSplitter2(StringfullString,chardelimiter='$')
```

```
{
    String returnString =
    "";boolflag=false;
    for(inti=0;i<fullString.length();i++)
        { charc=fullString[i];
            if(flag)
                returnString+=String(c);if(delimiter==c)
                    flag=true;
        }
    return(returnString);
}
```

```
voidrightArrow()
```

```
{
    intrefX=50;
    intrefY=tft.getCursorY()+40;

    tft.fillRect(refX,refY,100,20,ILI9341_RED);
    tft.fillTriangle(refX+100,refY-
30,refX+100,refY+50,refX+40+100,refY+10,ILI9341_RED);
}
```

```
voidleftArrow()
```

```
{
    intrefX=50;
    intrefY=tft.getCursorY()+40;

    tft.fillRect(refX+40,refY,100,20,ILI9341_RED); tft.fillTriangle(refX+40,refY-
30,refX+40,refY+50,refX,refY+10,ILI9341_RED);
}
```

```
voidupArrow()
```

```
{
    intrefX=125;
    intrefY=tft.getCursorY()+30;

    tft.fillTriangle(refX-
40,refY+40,refX+40,refY+40,refX,refY,ILI9341_RED);tft.fillRect(refX-
15,refY+40,30,20,ILI9341_RED);
}
```

```
String APICall()
```

```
{HTTPClienthttp
;
```

```
    String url = "https://node-red-grseb-2022-11-05-test.eu-
gb.mybluemix.net/getSpeed?";
    url+="location="+myLocation+"&";
    url+="schoolZone="+((String)digitalRead(schoolZone)).toString()+"&";
    url+="hospitalZone="+((String)digitalRead(hospitalZone)).toString()+"&";url+="usualSpeedLimit
="+((String)usualSpeedLimit).toString()+"&";
    url+="uid="+((String)uid).toString();
    http.begin(url.c_str());
    inthttpResponseCode=http.GET();
```

```
if(httpResponseCode>0) {
```



```
Stringpayload=http.getString();
```

```

        http.end();return(payload);
    }
    else{
        Serial.print("Error code:
        ");Serial.println(httpResponseCod
        e);
    }
    http.end();
}

voidmyPrint(Stringcontents)
{tft.fillScreen(ILI9341_BLACK
);tft.setCursor(0,
20);tft.setTextSize(4);tft.setText
Color(ILI9341_RED);
//tft.println(contents);

tft.println(stringSplitter1(contents));String c2
=stringSplitter2(contents); if(c2=="s")
//representsStraight
{
    upArrow();
}
if(c2=="l")//representsleft
{
    leftArrow();
}
if(c2=="r")//representsright
{
    rightArrow();
}
}

voidsetup(){
    WiFi.begin(ssid,password,6);

    tft.begin();tft.setRotation(1
);

    tft.setTextColor(ILI9341_WHITE);
    tft.setTextSize(2);tft.print("Connec
tingtoWiFi");

    while(WiFi.status()!=WL_CONNECTED)
        {delay(100);
        tft.print(".");
        }

    tft.print("\nOK!
IP=");tft.println(WiFi.localIP(
));
}

voidloop(){ myPrint(A
PICall());delay(100
);
};

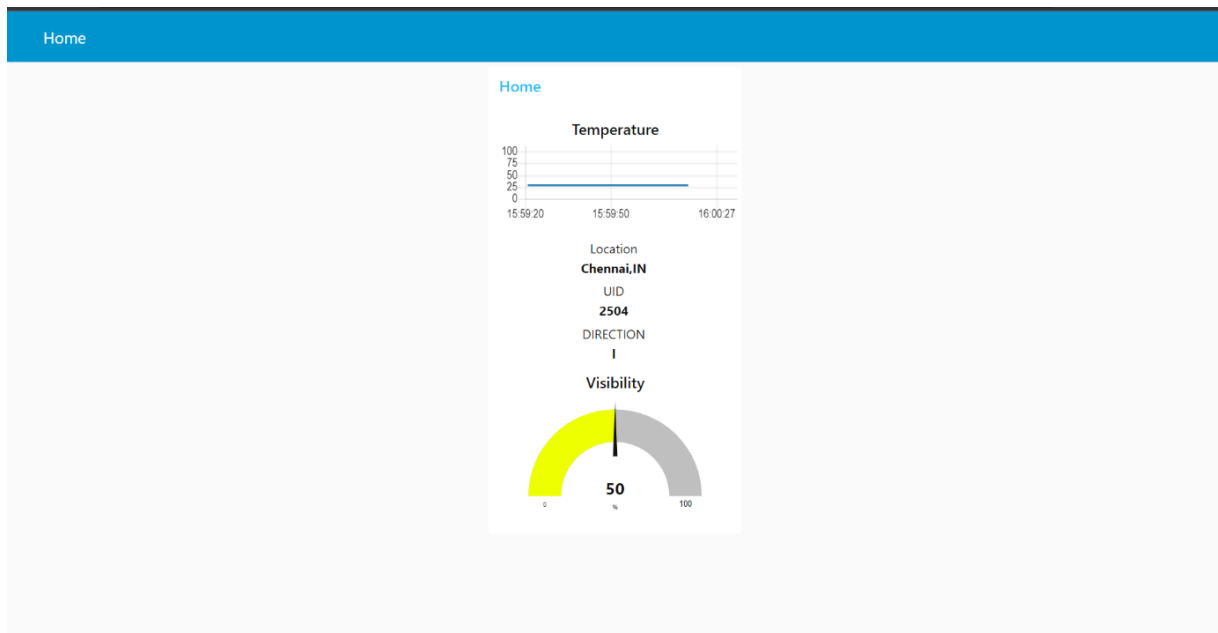
```



---

**Output:**

**NodeREDDashboard:**



**WokwiOutput:**

```
main.ino  diagram.json  libranes.txt
Library Manager
1 #include <WiFi.h>
2 #include <HTTClient.h>
3 #include <Adafruit_GFX.h>
4 #include <Adafruit_ILI9341.h>
5 #include <string.h>
6
7 const char* ssid = "Wokwi-GUEST";
8 const char* password = "";
9
10 #define TFT_DC 2
11 #define TFT_CS 15
12 Adafruit_ILI9341 tft = Adafruit_ILI9341(TFT_CS, TFT_DC);
13
14 String myLocation = "Chennai,IN";
15 String usualSpeedlimit = "70"; // kmph
16
17 int schoolZone = 32;
18 int hospitalZone = 26;
19
20 int uid = 2504;
21
22 String getString(char x)
23 {
24   String s(1, x);
25   return s;
26 }
27
28 String stringsplitter1(String fullString, char delimiter)
29 {
30   String returnString = "";
31   for(int i = 0; i < fullString.length(); i++)
32   {
33     char c = fullString[i];
34     if(delimiter == c)
35       break;
36     returnString += String(c);
37   }
38 }
```

Simulation

00:01.899 26%

ESP32

ILI9341

Connecting to WiFi  
OK! IP=10.10.0.2

