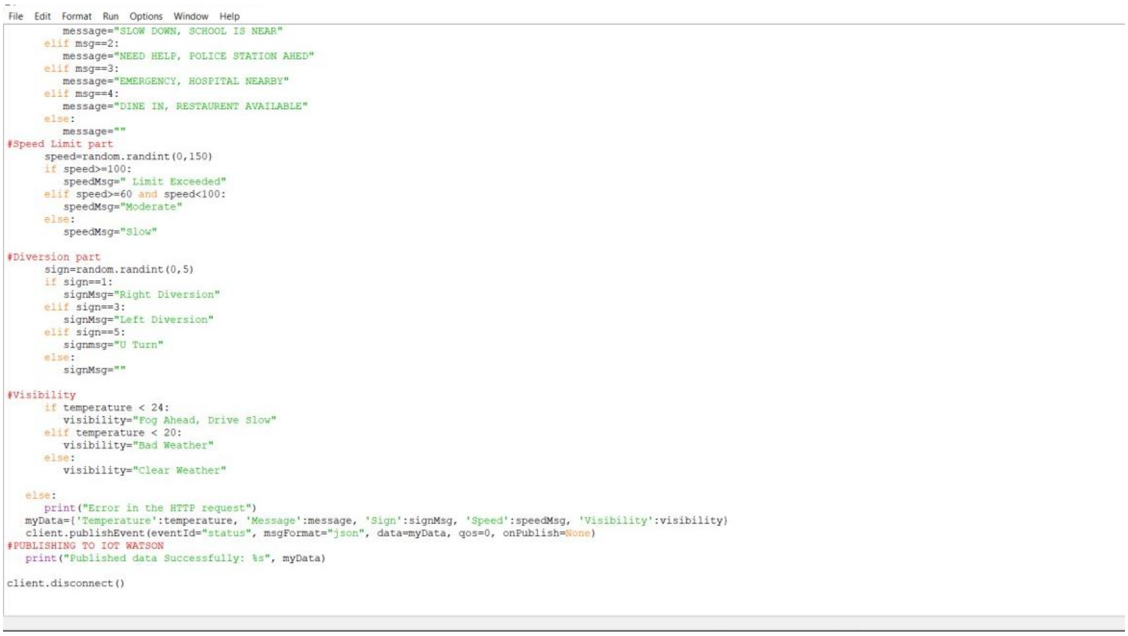
SPRINT 4

Team ID	PNT2022TMID52137
Project Name	Signs with Smart Connectivity for Better Road Safety

SPRINT	FUNCTIONAL REQUIREMENT (EPIC)	USER STORY/TASK	STORY POINTS	PRIORITY	TEAM MEMBERS
Sprint-4	Local server/software run	Write a python program that outputs results given the inputs like weather and location.	1	LOW	Ravichandran.T Pooja.E Robinson.S Rooba.P
Sprint 4	Push the server/software to cloud.	Push the code from Sprint 1 to cloud so it can be accessed from anywhere.	2	MEDIUM	Ravichandran.T Pooja.E Robinson.S Rooba.P

STEP 1:
PYTHON CODE STIMULATION



```
         message="SLOW DOWN, SCHOOL IS NEAR"
      elif msg==2:
         message="NEED HELP, POLICE STATION AHED"
      elif msg==3:
         message="EMERGENCY, HOSPITAL NEARBY"
      elif msg==4:
         message="DINE IN, RESTAURENT AVAILABLE"
      else:
         message=""
#Speed Limit part
      speed=random.randint(0,150)
      if speed>=100:
         speedMsg=" Limit Exceeded"
      elif speed>=60 and speed<100:
         speedMsg="Moderate"
      else:
         speedMsg="Slow"

#Diversion part
      sign=random.randint(0,5)
      if sign==1:
         signMsg="Right Diversion"
      elif sign==3:
         signMsg="Left Diversion"
      elif sign==5:
         signmsg="U Turn"
      else:
         signMsg=""

#Visibility
      if temperature < 24:
         visibility="Fog Ahead, Drive Slow"
      elif temperature < 20:
         visibility="Bad Weather"
      else:
         visibility="Clear Weather"

   else:
      print("Error in the HTTP request")
   myData={'Temperature':temperature, 'Message':message, 'Sign':signMsg, 'Speed':speedMsg, 'Visibility':visibility}
   client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
#PUBLISHING TO IOT WATSON
   print("Published data Successfully: %s", myData)

client.disconnect()
```

PYTHON CODE:

```
import wiotp.sdk.device
import time
import random
import ibmiotf.application
import ibmiotf.device
import requests, json

myConfig = { #Configuration
   "identity": {
"orgId": "d5zx56",
"typeId": "Connectivity123", "deviceId":"ESP32"},
#API Key
"auth": {
"token": "9514598766"
}
}

#Receiving callbacks from IBM IOT platform
def myCommandCallback(cmd):
  print("Message received from IBM IoT Platform: %s" % cmd.data['command'])
  m=cmd.data['command']

client = wiotp.sdk.device.DeviceClient(config=myConfig,logHandlers=None)
client.commandCallback= myCommandCallback
client.connect()

#OpenWeatherMap Credentials
BASE_URL ="https://api.openweathermap.org/data/2.5/weather?"
CITY = "Chennai"
URL = BASE_URL + "q=" + CITY + "&units=metric"+"&appid=" +
"9cca583812b638930cefd580106f6c58"

while True:
  response =  requests.get(URL)
  if response.status_code ==200:
    data =  response.json()
    main = data['main']
    temperature =main['temp']
    humidity = main['humidity']
    pressure  = main['pressure']
    report = data['visibility']

#messge part
    msg=random.randint(0,5)
    if msg==1:
      message="SLOW DOWN, SCHOOL IS NEAR"
    elif msg==2:
      message="NEED HELP, POLICE STATION AHED"
    elif msg==3:
      message="EMERGENCY, HOSPITAL NEARBY"
    elif msg==4:
      message="DINE IN, RESTAURENT AVAILABLE"
    else:
      message=""
#Speed Limit part
    speed=random.randint(0,150)
    if speed>=100:
      speedMsg=" Limit Exceeded"
    elif speed>=60 and speed<100:
      speedMsg="Moderate"
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      speedMsg="Slow"

#Diversion part
    sign=random.randint(0,5)
    if sign==1:
      signMsg="Right Diversion"
    elif sign==3:
      signMsg="Left Diversion"
    elif sign==5:
      signmsg="U Turn"
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      signMsg=""

#Visibility
    if temperature < 24:
      visibility="Fog Ahead, Drive Slow"
    elif temperature < 20:
      visibility="Bad Weather"
    else:
      visibility="Clear Weather"

  else:
    print("Error in the HTTP request")
  myData={'Temperature':temperature, 'Message':message, 'Sign':signMsg, 'Speed':speedMsg,
'Visibility':visibility}
  client.publishEvent(eventId="status", msgFormat="json", data=myData, qos=0, onPublish=None)
#PUBLISHING TO IOT WATSON
  print("Published data Successfully: %s", myData)

client.disconnect()
```
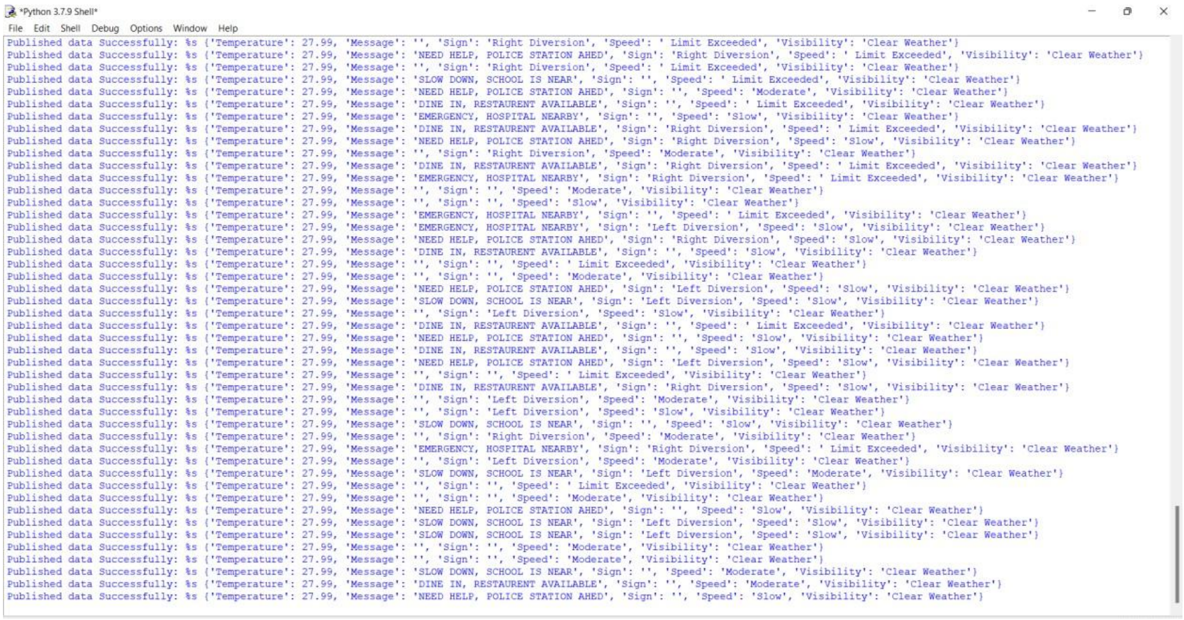

OUTPUT OF PYTHON CODE:



```
Published data Successfully: %s {'Temperature': 27.99, 'Message': '', 'Sign': 'Right Diversion', 'Speed': ' Limit Exceeded', 'Visibility': 'Clear Weather'}
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Published data Successfully: %s {'Temperature': 27.99, 'Message': 'NEED HELP, POLICE STATION AHED', 'Sign': '', 'Speed': 'Slow', 'Visibility': 'Clear Weather'}
```
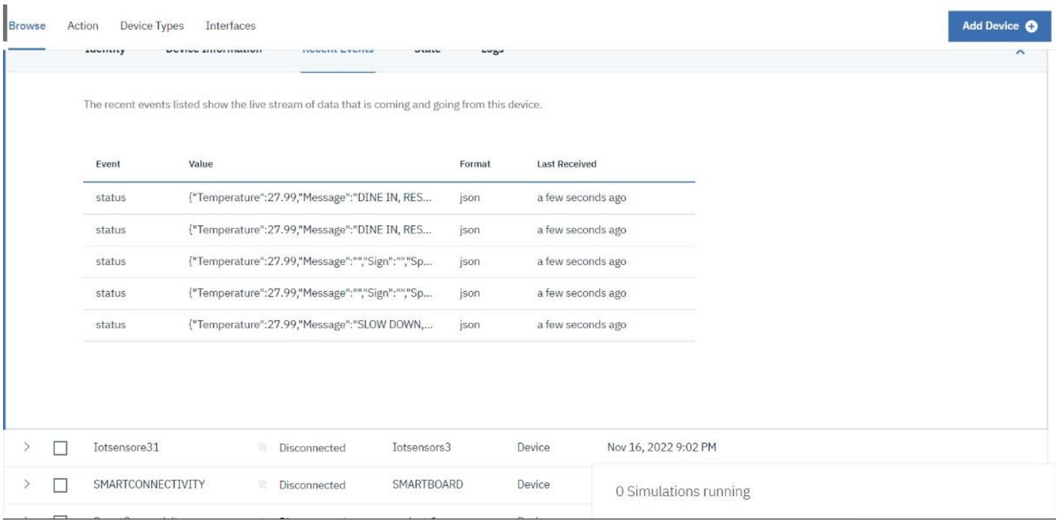

STEP 2:

IOT DEVICE- IOT PLATFORM

By running the code in python IDLE ,the data is published in IBM cloud.



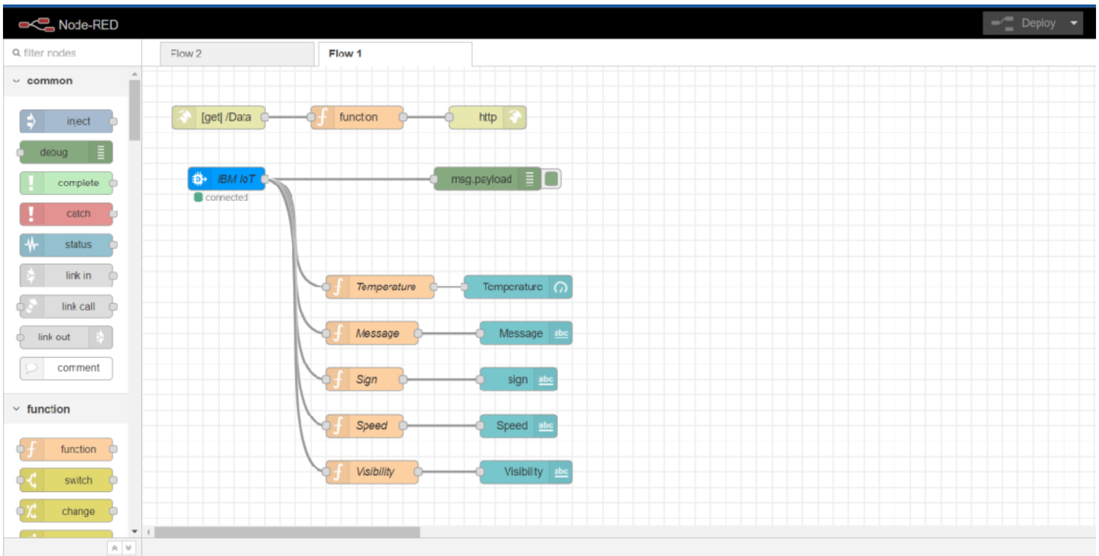
The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
status	{"Temperature":27.99,"Message":"DINE IN, RES...	json	a few seconds ago
status	{"Temperature":27.99,"Message":"DINE IN, RES...	json	a few seconds ago
status	{"Temperature":27.99,"Message":"","Sign":"","Sp...	json	a few seconds ago
status	{"Temperature":27.99,"Message":"","Sign":"","Sp...	json	a few seconds ago
status	{"Temperature":27.99,"Message":"SLOW DOWN,...	json	a few seconds ago

>	□	Iotsensore31	Disconnected	Iotsensors3	Device	Nov 16, 2022 9:02 PM
>	□	SMARTCONNECTIVITY	Disconnected	SMARTBOARD	Device	

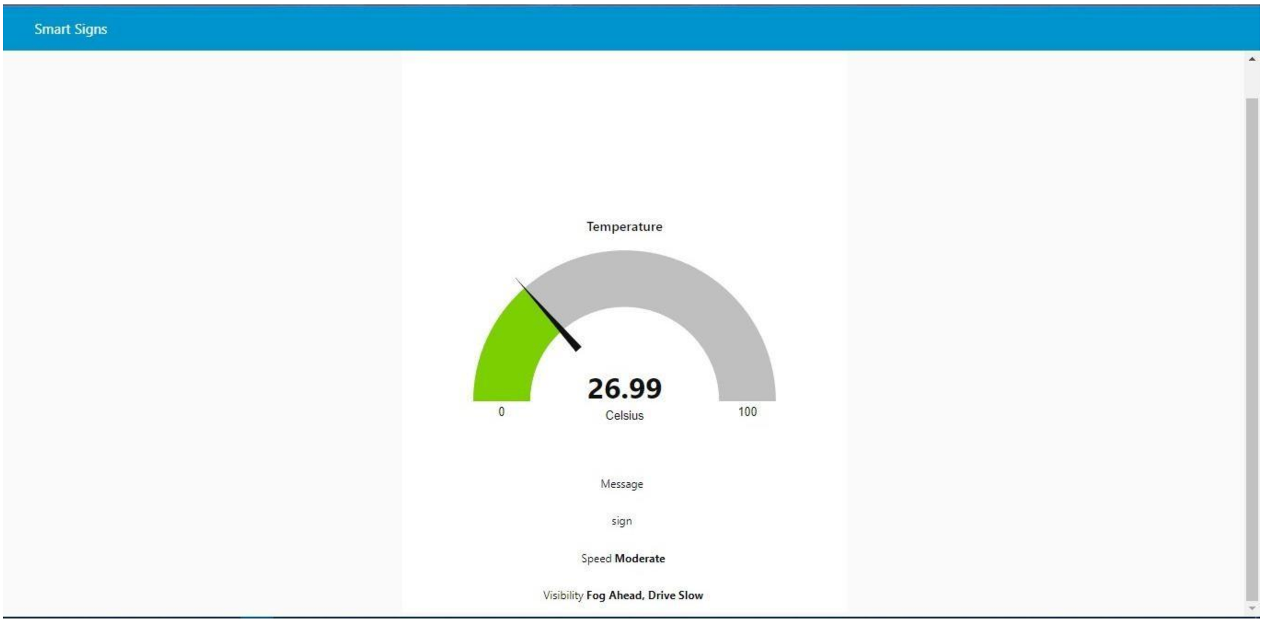
0 Simulations running

STEP 3:
ESTABLISH NODE RED



STEP 4:OUTPUT

After making the connection between the nodes, the deploy will be enabled and the result will be displayed on the node-red dashboard.



Message

sign

Speed **Moderate**

Visibility **Fog Ahead, Drive Slow**