SPRINT 3

Sprint-4	UI/UX Optimization & Debugging	Optimize all the short comings and provide better user experience	2	LOW	Rahul, Kishore, Jenefar Pious, Senti Meren

Direction

```
msg.payload = global.get("dir");
return msg;
```

location

```
msg.payload = msg.payload.location;
return msg;
```

temperature

```
msg.payload = msg.payload.temperature;
return msg;
```

visibility

```
msg.payload = msg.payload.visibility;
return msg;
```

parser

```
global.set("data",msg.payload);
msg.payload.q = msg.payload.location;
msg.payload.appid = "6a514bcfa7e0c5591d5ab0009cc44169";
```

return msg;

logparser

```
weatherObj = JSON.parse(JSON.stringify(msg.payload));
localityObj = global.get("data");
var suggestedSpeedPercentage = 100;
var preciseObject = {
   temperature : weatherObj.main.temp - 273.15,
   location : localityObj.location,
   visibility : weatherObj.visibility/100,
   uid : localityObj.uid,
   direction : global.get("dir")
};
```

Decision

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

var suggestedSpeedPercentage = 100;

var preciseObject = {
   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)
   suggestedSpeedPercentage -=30

switch(String(preciseObject.weather)[-1]) // https://openweathermap.org/weather-conditions refer weather codes meaning here
{
```

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

msg.payload = preciseObject;

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

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

msg.payload = String(returnObject.suggestedSpeed) + " kmph \n\n" +
(returnObject.doNotHonk==1?"Do Not Honk":"") + "$" + String(global.get("dir"));

return msg;
```

dir function

```
global.set("dir",msg.payload.dir);
return msg;
```

wokwi code

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

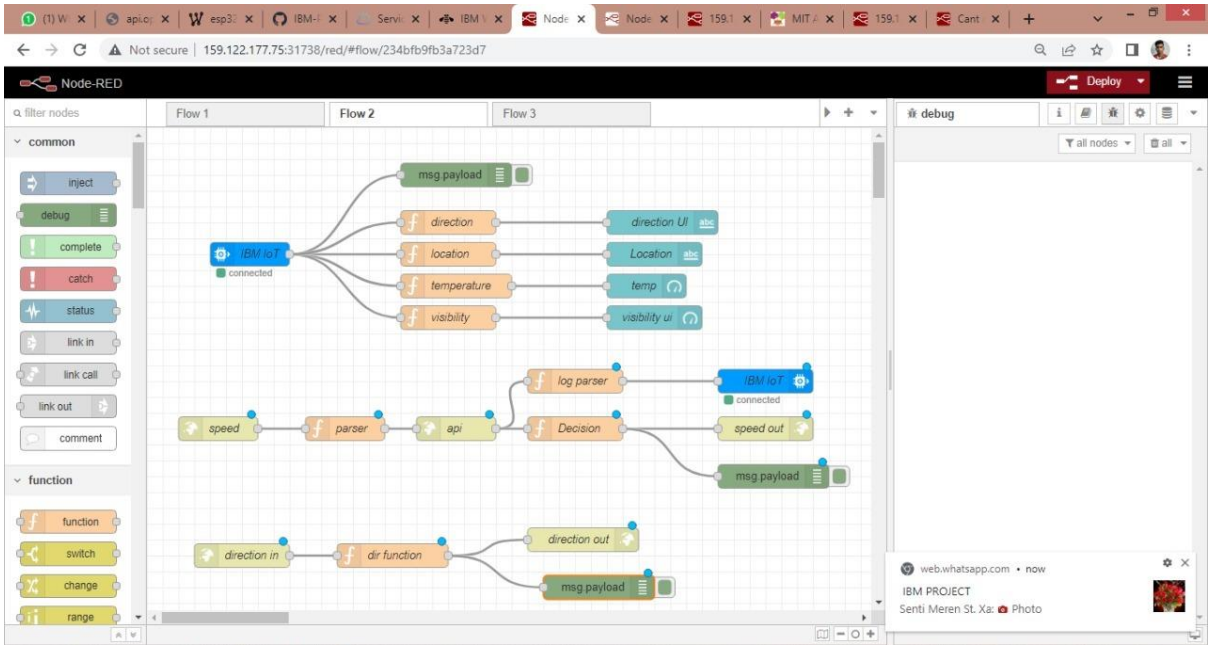
```
const char* ssid = "Wokwi-GUEST";
const char* password = "";

#define TFT_DC 2
#define TFT_CS 15
Adafruit_ILI9341 tft = Adafruit_ILI9341(TFT_CS, TFT_DC);

String myLocation = "Kuzhithurai,IN";
String usualSpeedLimit = "60"; // kmph

int schoolZone = 32;
int hospitalZone = 26;

int uid = 923; // ID Unique to this Micro Contoller

String getString(char x)
{
   String s(1, x);
   return s;
}

String stringSplitter1(String fullString,char delimiter='$')
{
   String returnString = "";
   for(int i = 0; i<fullString.length();i++) {
      char c = fullString[i];
      if(delimiter==c)
         break;
      returnString+=String(c);
   }
```

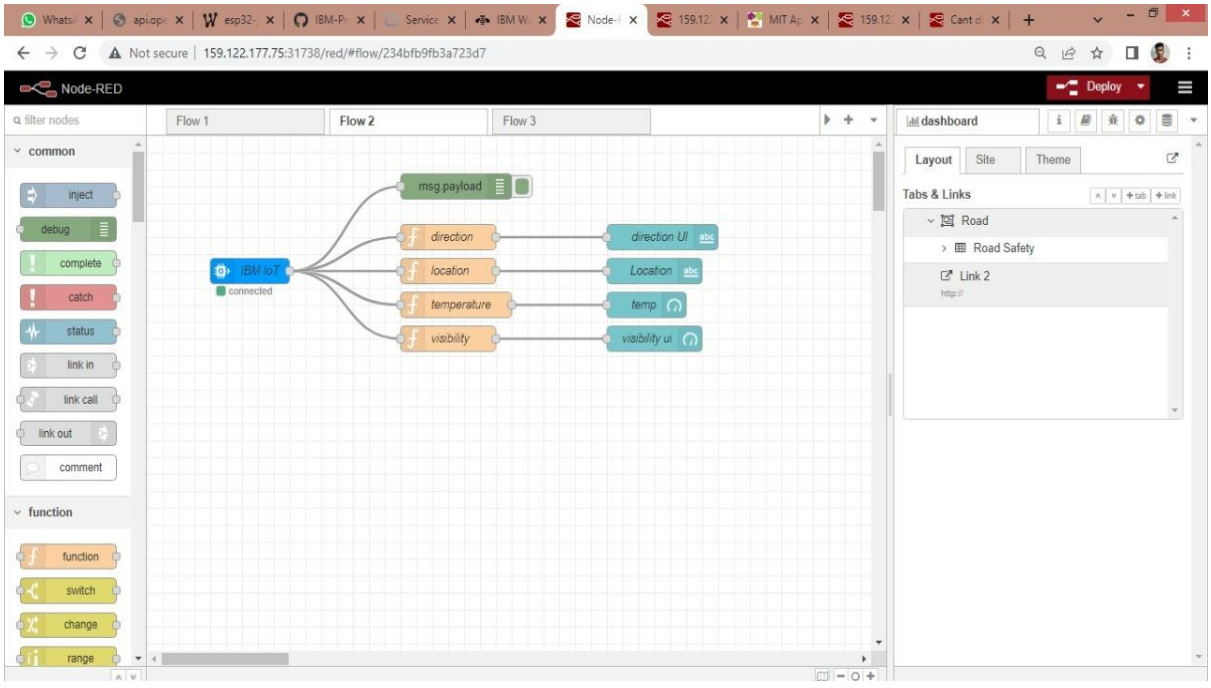
```
    return(returnString);
}

String stringSplitter2(String fullString,char delimiter='$')
{
    String returnString = "";
    bool flag = false;
    for(int i = 0; i<fullString.length();i++) {
        char c = fullString[i];
        if(flag)
            returnString+=String(c);
        if(delimiter==c)
            flag = true;
    }
    return(returnString);
}

void rightArrow()
{
  int refX = 50;
  int refY = 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);
}

void leftArrow()
{
  int refX = 50;
  int refY = tft.getCursorY() + 40;
```

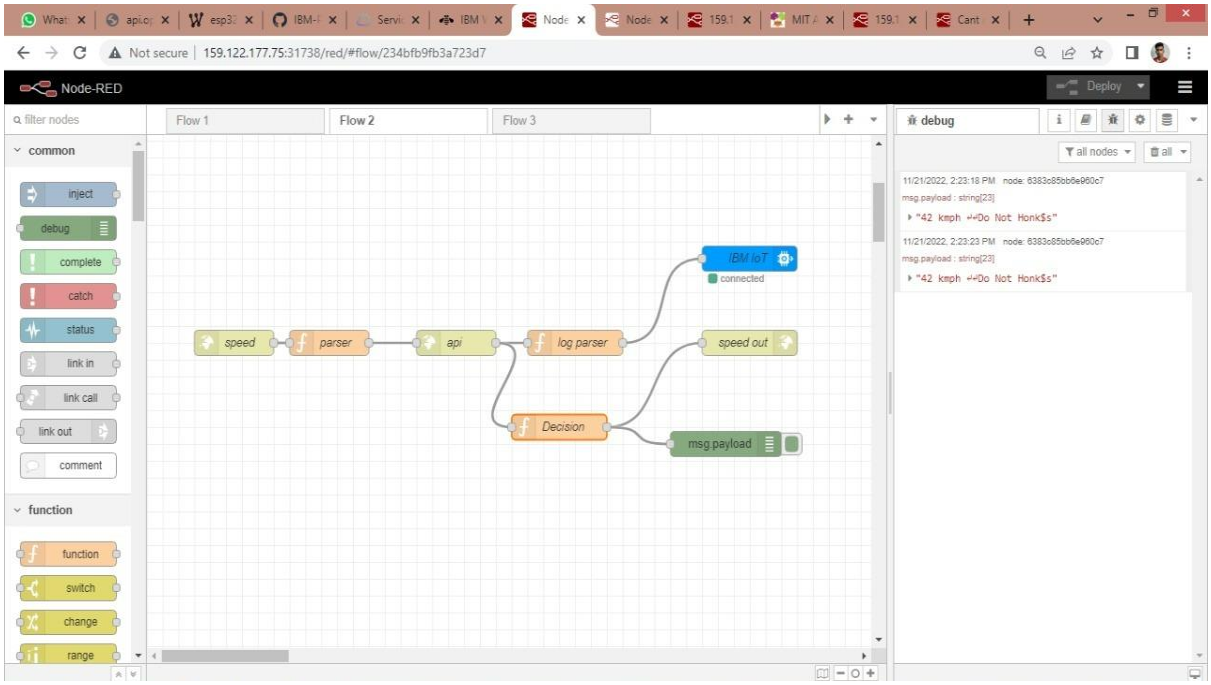
```
  tft.fillRect(refX+40,refY,100,20,ILI9341_RED);
  tft.fillTriangle(refX+40,refY-30,refX+40,refY+50,refX,refY+10,ILI9341_RED);
}

void upArrow()
{
  int refX = 125;
  int refY = 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() {
  HTTPClient http;

  String url = "http://159.122.177.75:31738/speed?";
  url += "location="+myLocation+"&";
  url += "schoolZone="+(String)digitalRead(schoolZone)+(String)"&";
  url += "hospitalZone="+(String)digitalRead(hospitalZone)+(String)"&";
  url += "usualSpeedLimit="+(String)usualSpeedLimit+(String)"&";
  url += "uid="+(String)uid;
  http.begin(url.c_str());
  int httpResponseCode = http.GET();

  if (httpResponseCode>0) {
    String payload = http.getString();
    http.end();
    return(payload);
  }
  else {
```

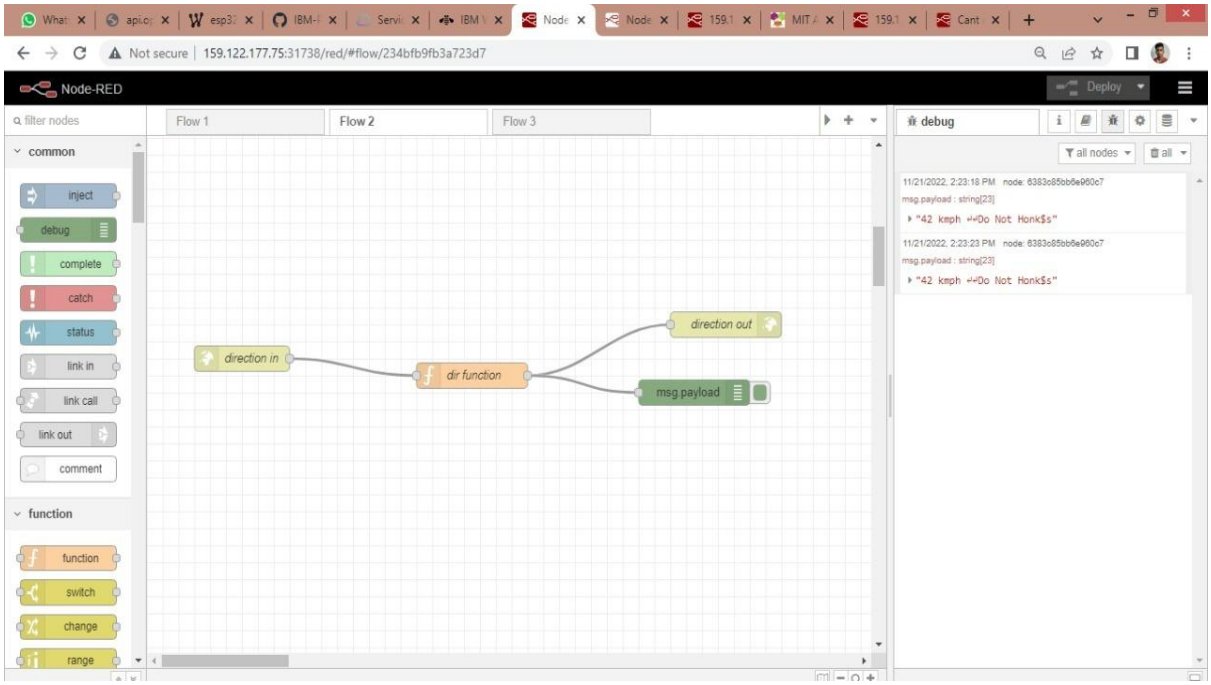
```
    Serial.print("Error code: ");
    Serial.println(httpResponseCode);
  }
  http.end();
}

void myPrint(String contents) {
  tft.fillScreen(ILI9341_BLACK);
  tft.setCursor(0, 20);
  tft.setTextSize(4);
  tft.setTextColor(ILI9341_RED);
  //tft.println(contents);

  tft.println(stringSplitter1(contents));
  String c2 = stringSplitter2(contents);
  if(c2=="s") // represents Straight
  {
    upArrow();
  }
  if(c2=="l") // represents left
  {
    leftArrow();
  }
  if(c2=="r") // represents right
  {
    rightArrow();
  }
}

void setup() {
  WiFi.begin(ssid, password, 6);
```

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

  tft.setTextColor(ILI9341_WHITE);
  tft.setTextSize(2);
  tft.print("Connecting to WiFi");

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

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

void loop() {
  myPrint(APICall());
  delay(100);
}
```


Not secure | 159.122.177.75:31738/red/#flow/234bfb9fb3a723d7
Node-RED
Deploy
Flow 1
Flow 2
Flow 3
debug
common
inject
debug
complete
catch
status
link in
link call
link out
comment
function
function
switch
change
range
msg.payload
direction
location
temperature
visibility
IBM IoT
connected
direction UI
Location
temp
visibility ui
log parser
speed
parser
api
Decision
speed out
direction in
dir function
direction out
web.whatsapp.com • now
IBM PROJECT
Senti Meren St. Xa: Photo


Not secure | 159.122.177.75:31738/red/#flow/234bfb9fb3a723d7
Node-RED
Deploy
Flow 1
Flow 2
Flow 3
dashboard
Layout
Site
Theme
Tabs & Links
Road
Road Safety
Link 2
common
function
msg.payload
direction
location
temperature
visibility
IBM IoT
connected
direction UI
Location
temp
visibility ui


Not secure | 159.122.177.75:31738/red/#flow/234bfb9fb3a723d7
Node-RED
Deploy
filter nodes
Flow 1
Flow 2
Flow 3
debug
common
inject
debug
complete
catch
status
link in
link call
link out
comment
function
function
switch
change
range
all nodes
all
11/21/2022, 2:23:18 PM node: 8383c85bb6e960c7
msg.payload : string[23]
"42 kmph ↵Do Not Honk$s"
11/21/2022, 2:23:23 PM node: 8383c85bb6e960c7
msg.payload : string[23]
"42 kmph ↵Do Not Honk$s"
speed
parser
api
log parser
IBM IoT
connected
speed out
Decision
msg.payload


Not secure | 159.122.177.75:31738/red/#flow/234bfb9fb3a723d7
Node-RED
Deploy
filter nodes
Flow 1
Flow 2
Flow 3
debug
common
inject
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complete
catch
status
link in
link call
link out
comment
function
function
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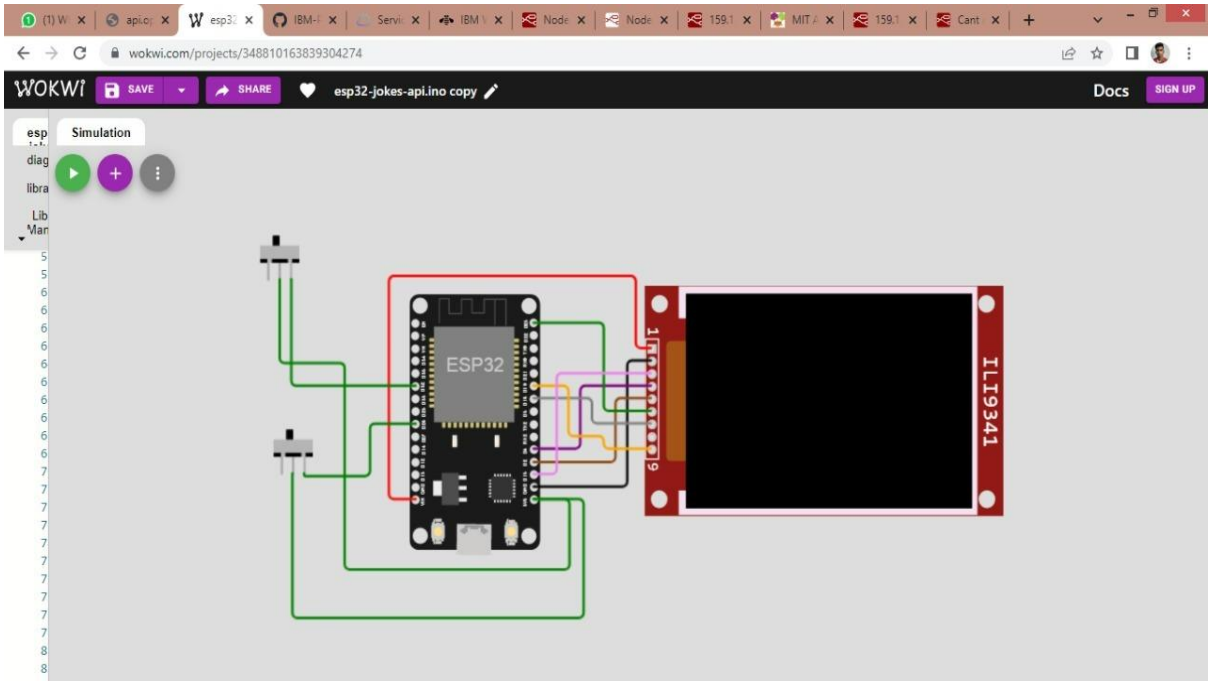
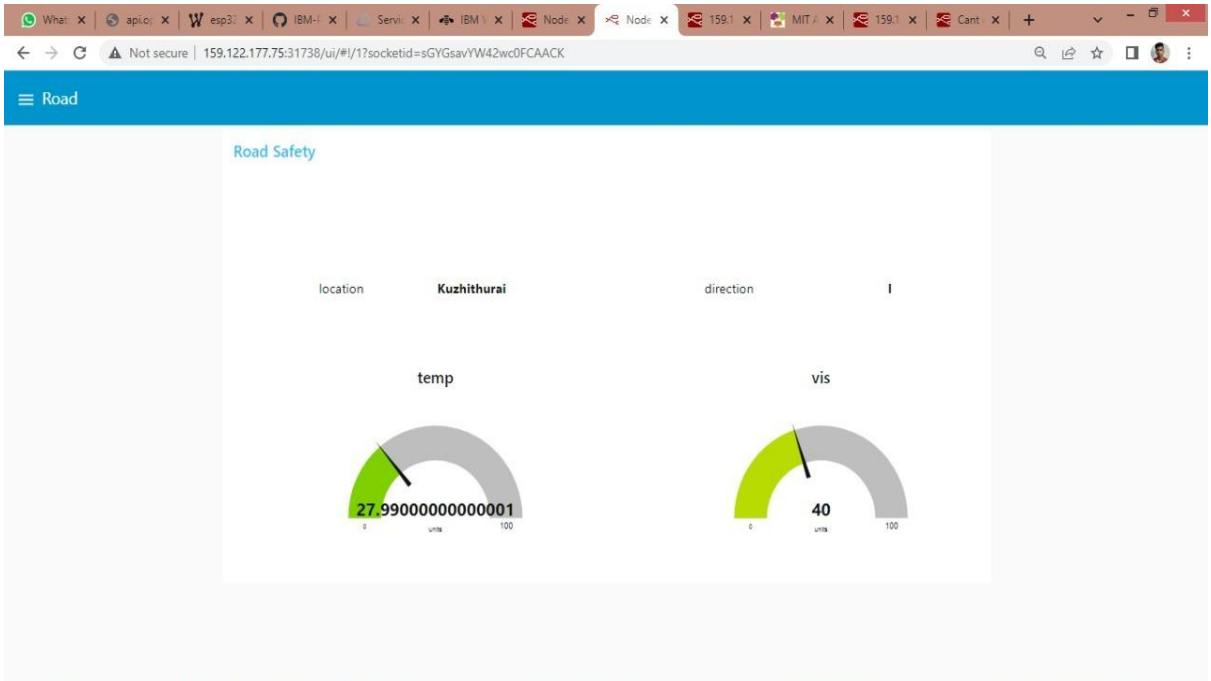
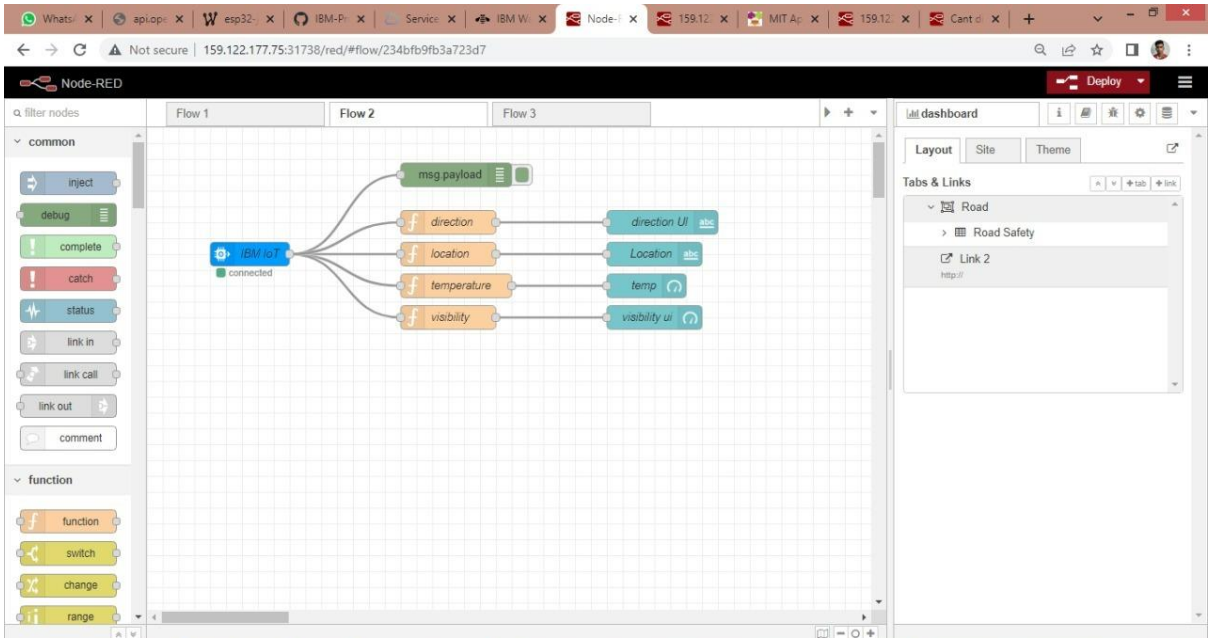
all nodes
all
11/21/2022, 2:23:18 PM node: 8383c85bb6e960c7
msg.payload : string[23]
"42 kmph ↵Do Not Honk$s"
11/21/2022, 2:23:23 PM node: 8383c85bb6e960c7
msg.payload : string[23]
"42 kmph ↵Do Not Honk$s"
direction in
dir function
direction out
msg.payload


wokwi.com/projects/348810163839304274
WOKWI
SAVE
SHARE
esp32-jokes-api.ino copy
Docs
SIGN UP
Simulation
ESP32
ILI9341


Not secure | 159.122.177.75:31738/ui/#!/1?socketid=sGYGsavYW42wc0FCAACK
Road
Road Safety
location
Kuzhithurai
direction
I
temp
27.99000000000001
vis
40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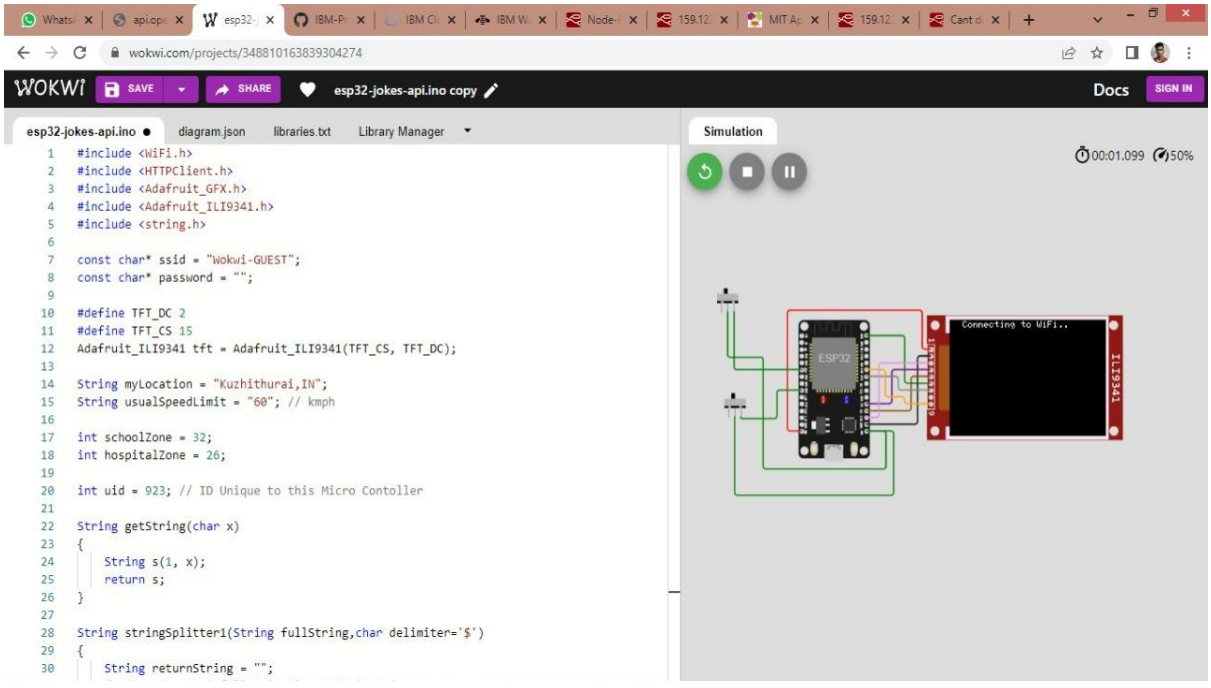
temperature
visibility
IBM IoT
connected
direction UI
Location
temp
visibility ui
dashboard
Layout
Site
Theme
Tabs & Links
Road
Road Safety
Link 2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WOKWI
SAVE
SHARE
esp32-jokes-api.ino copy
Docs
SIGN IN
esp32-jokes-api.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:01.099
50%
Connecting to WiFi..
ESP32
ILI9341
#include <WiFi.h>
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const char* password = "";
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#define TFT_CS 15
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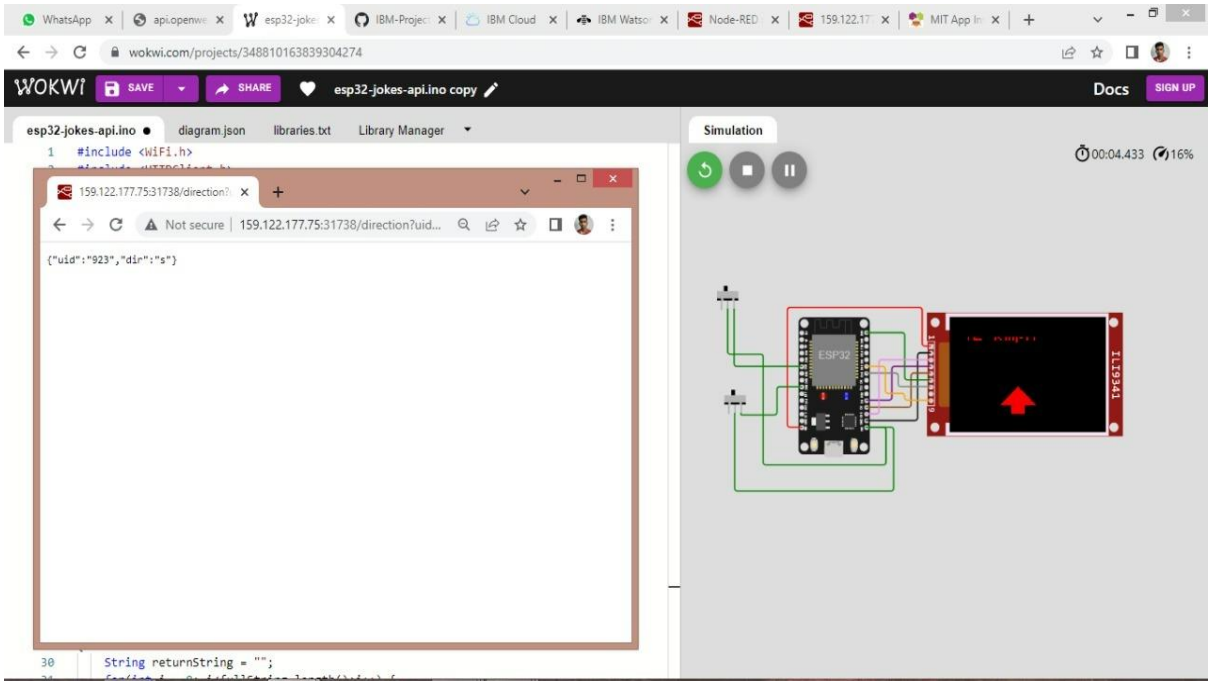
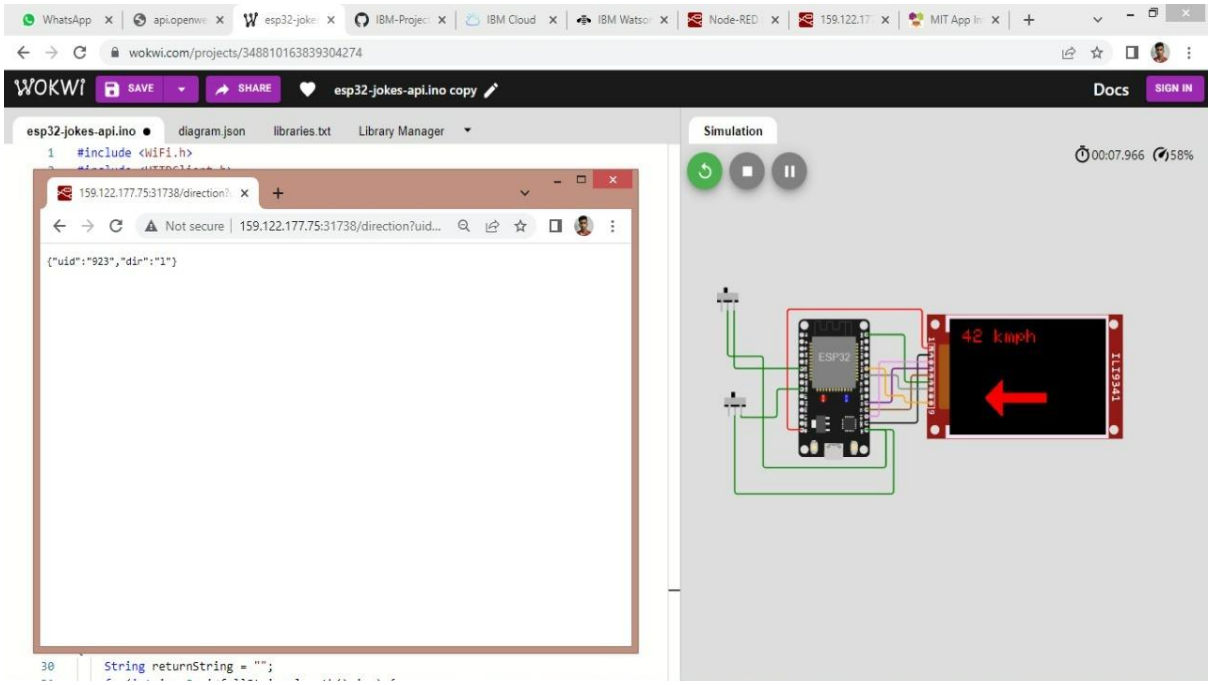
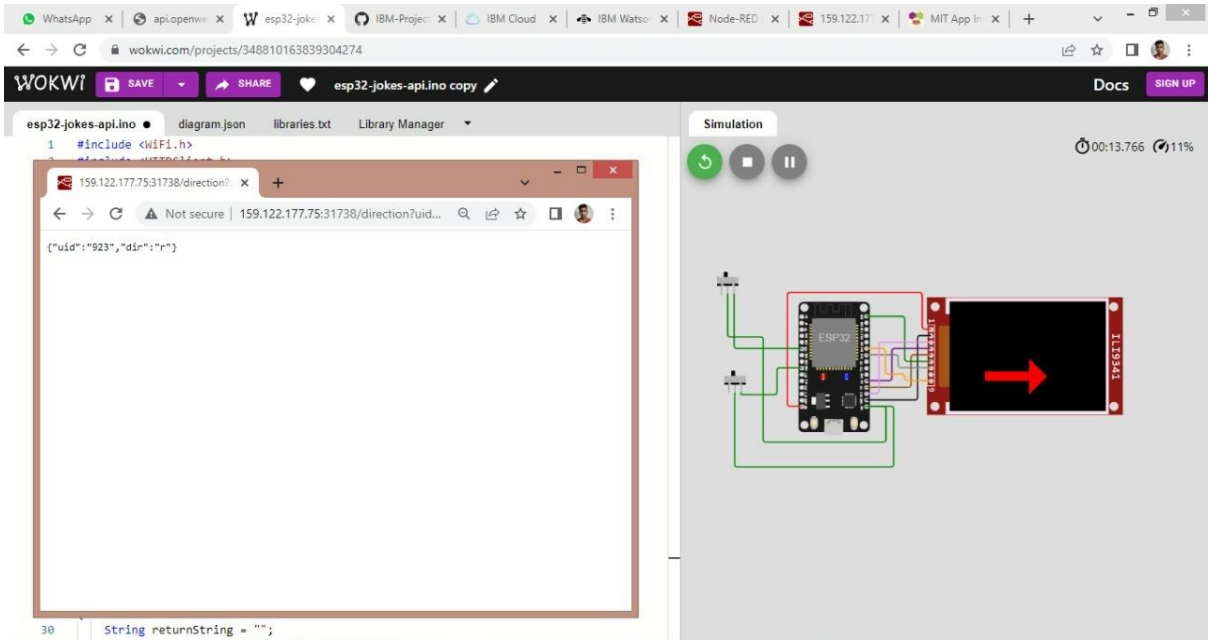
int schoolZone = 32;
int hospitalZone = 26;
int uid = 923; // ID Unique to this Micro Contoller
String getString(char x)
{
String s(1, x);
return s;
}
String stringSplitter1(String fullString,char delimiter='$')
{
String returnString = "";


WOKWI
SAVE
SHARE
esp32-jokes-api.ino copy
Docs
SIGN UP
esp32-jokes-api.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:04.433
16%
159.122.177.75:31738/direction?
Not secure
159.122.177.75:31738/direction?uid...
{"uid":"923","dir":"s"}
#include <WiFi.h>
String returnString = "";
ESP32
ILI9341


WOKWI
SAVE
SHARE
esp32-jokes-api.ino copy
Docs
SIGN IN
esp32-jokes-api.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:07.966
58%
159.122.177.75:31738/direction?
Not secure
159.122.177.75:31738/direction?uid...
{"uid":"923","dir":"1"}
#include <WiFi.h>
String returnString = "";
ESP32
42 kmph
ILI9341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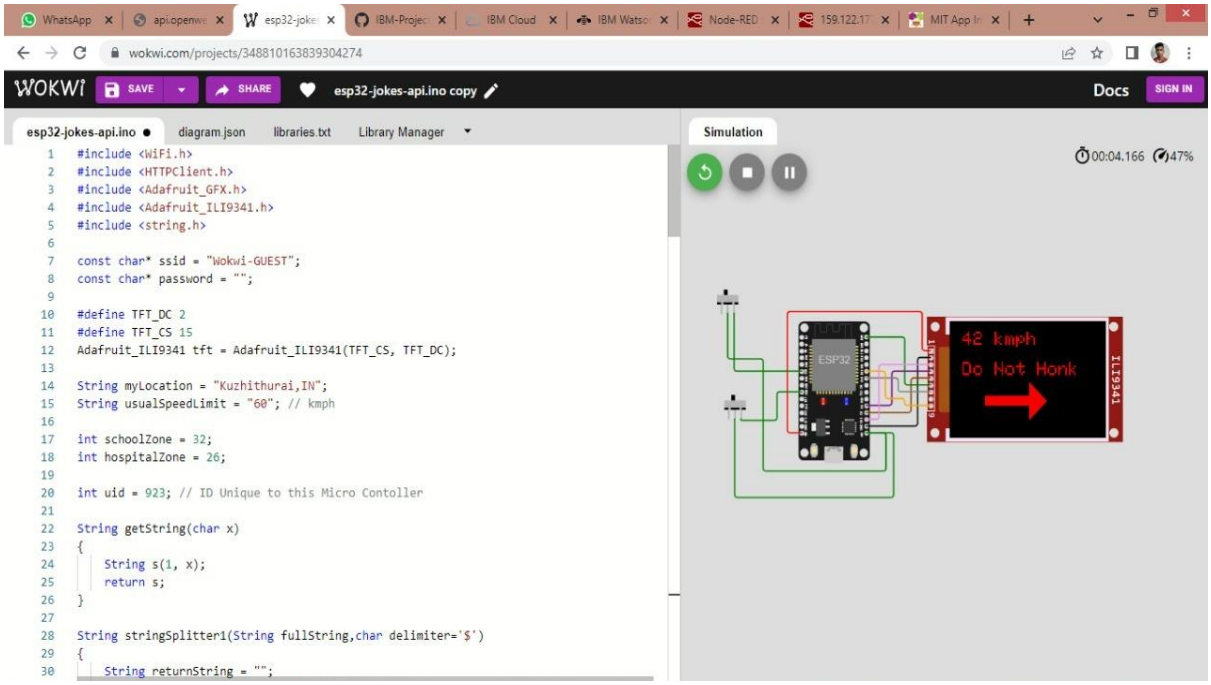
WOKWI
SAVE
SHARE
esp32-jokes-api.ino copy
Docs
SIGN UP
esp32-jokes-api.ino
diagram.json
libraries.txt
Library Manager
#include <WiFi.h>
159.122.177.75:31738/direction?uid...
Not secure
{"uid":"923","dir":"r"}
String returnString = "";
Simulation
00:13.766
11%
ESP32
ILI9341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WOKWI
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Docs
SIGN IN
esp32-jokes-api.ino
diagram.json
libraries.txt
Library Manager
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const char* ssid = "Wokwi-GUEST";
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Adafruit_ILI9341 tft = Adafruit_ILI9341(TFT_CS, TFT_DC);
String myLocation = "Kuzhithurai,IN";
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int schoolZone = 32;
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int uid = 923; // ID Unique to this Micro Contoller
String getString(char x)
{
String s(1, x);
return s;
}
String stringSplitter1(String fullString,char delimiter='$')
{
String returnString = "";
Simulation
00:04.166
47%
ESP32
42 kmph
Do Not Honk
ILI9341