PROJECT DEVELOPMENT PHASE

PROJECT DEVELOPMENT – DELIVERY OF SPRINT 4

Date	4 November 2022
Team ID	PNT2022TMID15148
Project Name	Project – SIGNS WITH SMART CONNECTIVITY FOR BETTER ROAD SAFETY

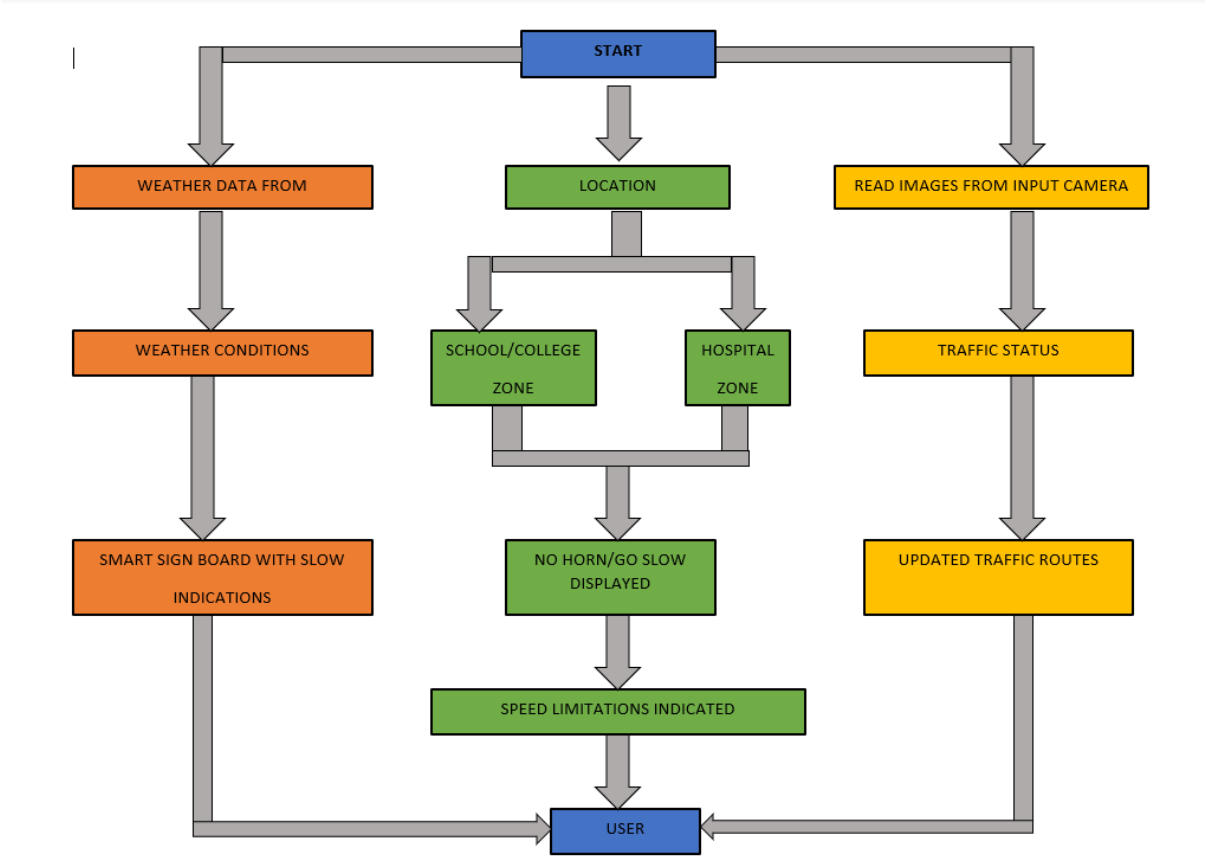
Project Development – Delivery of Sprint 4:

SIGNS WITH SMART CONNECTIVITY FOR BETTER ROAD SAFETY

Sprint Goals:

- Final outcomes for Better Road Safety

Data Flow:

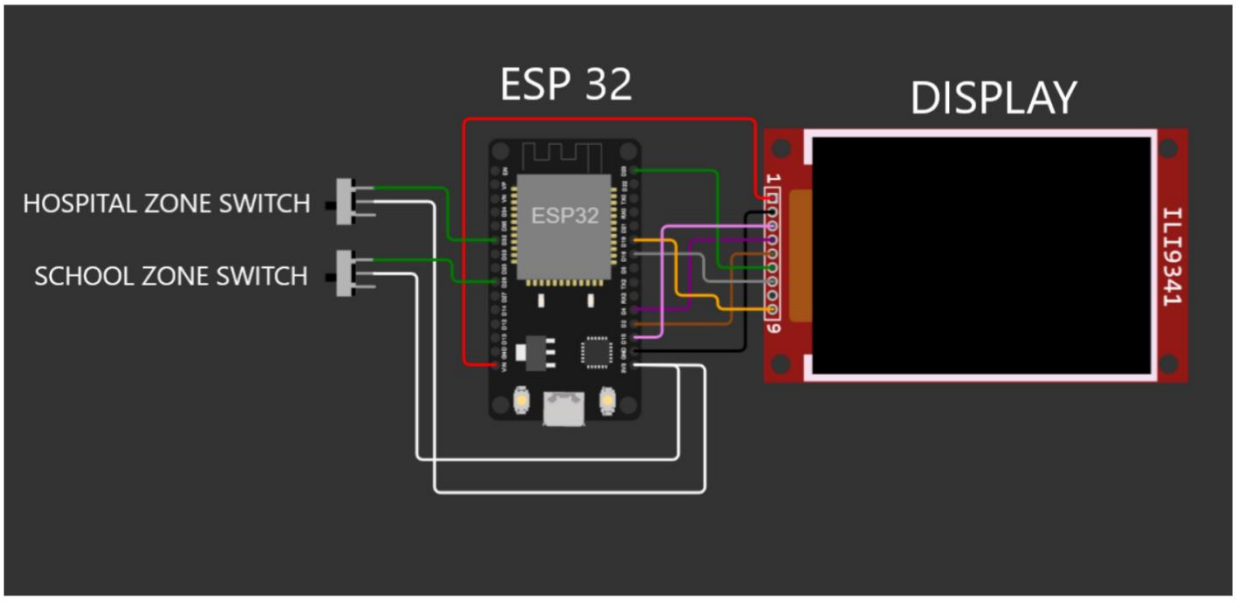


- **Wokwi Circuit :**

Wokwi Code

Wokwi Link

✓ **Circuit Diagram :**



ESP 32 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 = "Chennai,IN";
String usualSpeedLimit = "70"; // kmph

int schoolZone = 32;
```

```
int hospitalZone = 26;

int uid = 2504; // 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 = "https://node-red-grseb-2022-11-05-test.eu-
gb.mybluemix.net/getSpeed?";
  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();
}
```

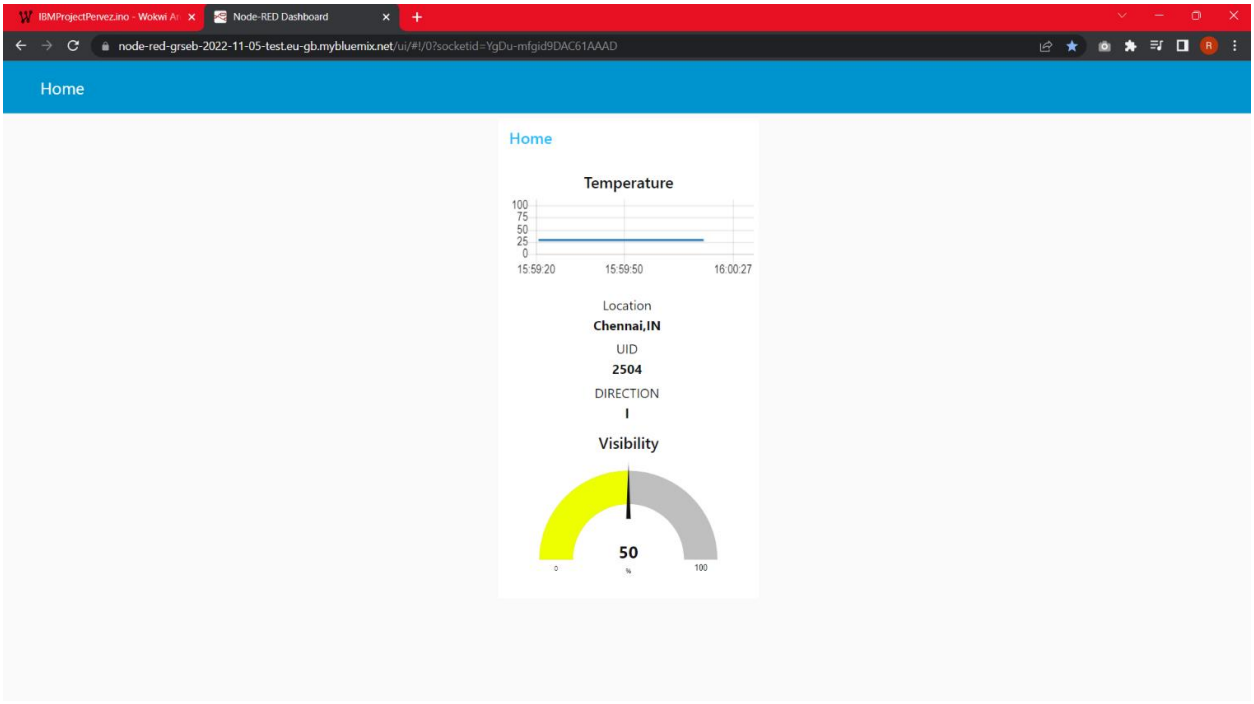
```
void myPrint(String contents) {
  tft.fillScreen(ILI9341_BLACK);
  tft.setCursor(0, 20);
  tft.setTextSize(4);
  tft.setTextColor(ILI9341_RED);
  //tft.println(contents);

  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);
```

}

Output :

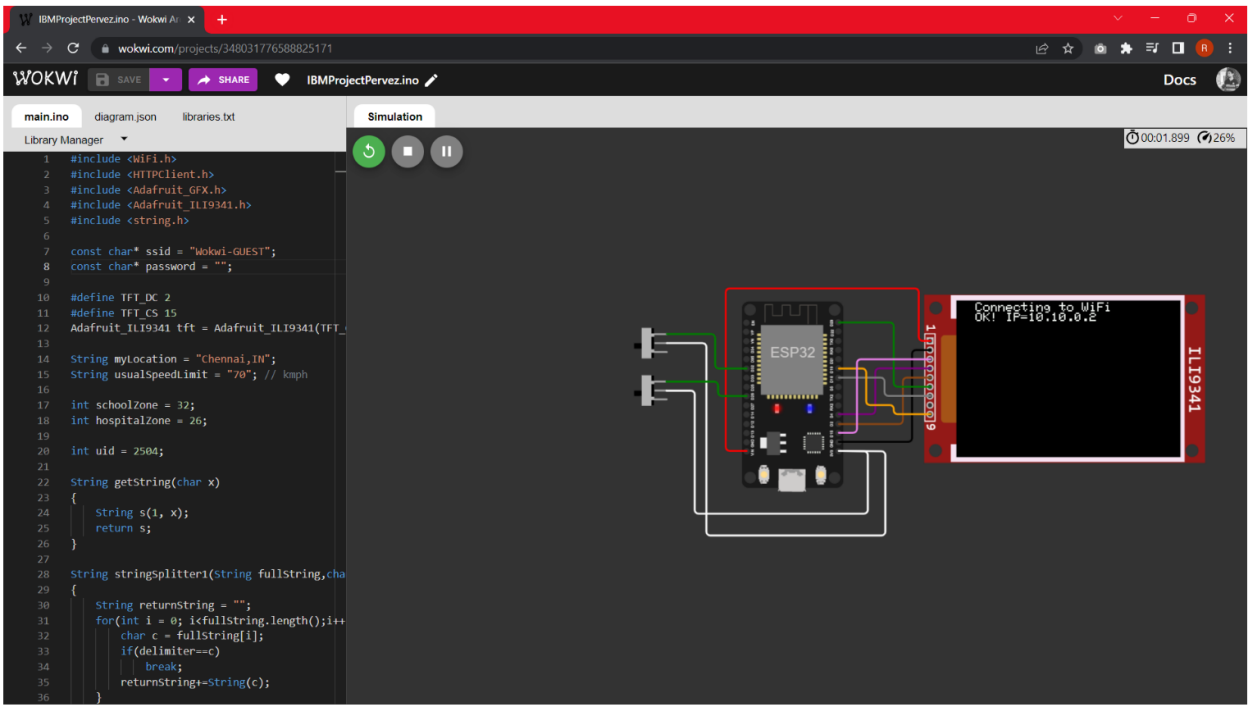
- Node RED Dashboard :

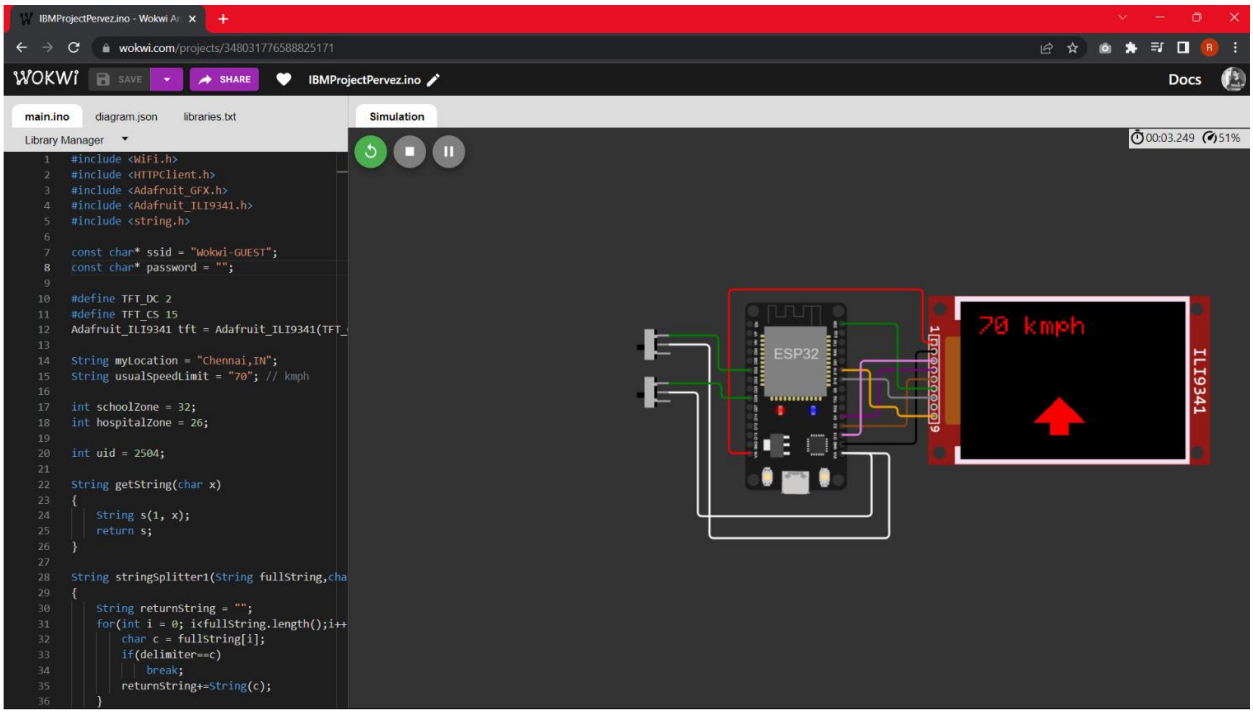
LINK TO NODE RED DASHBOARD

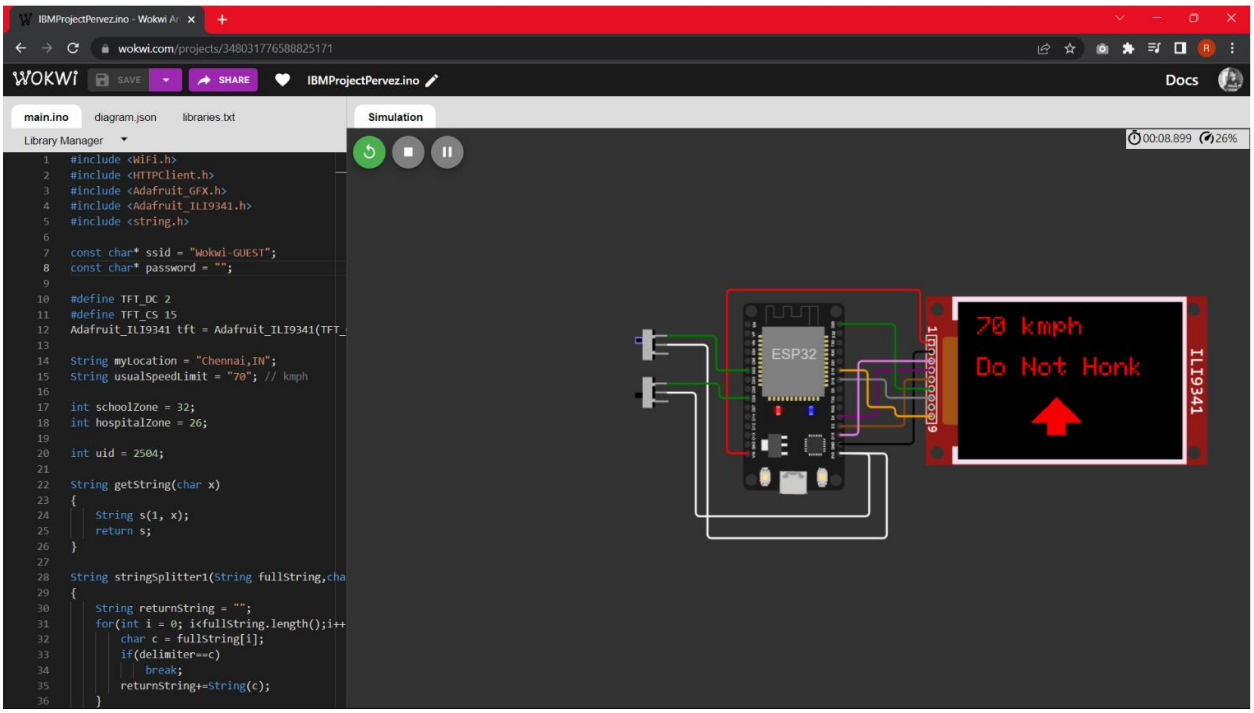


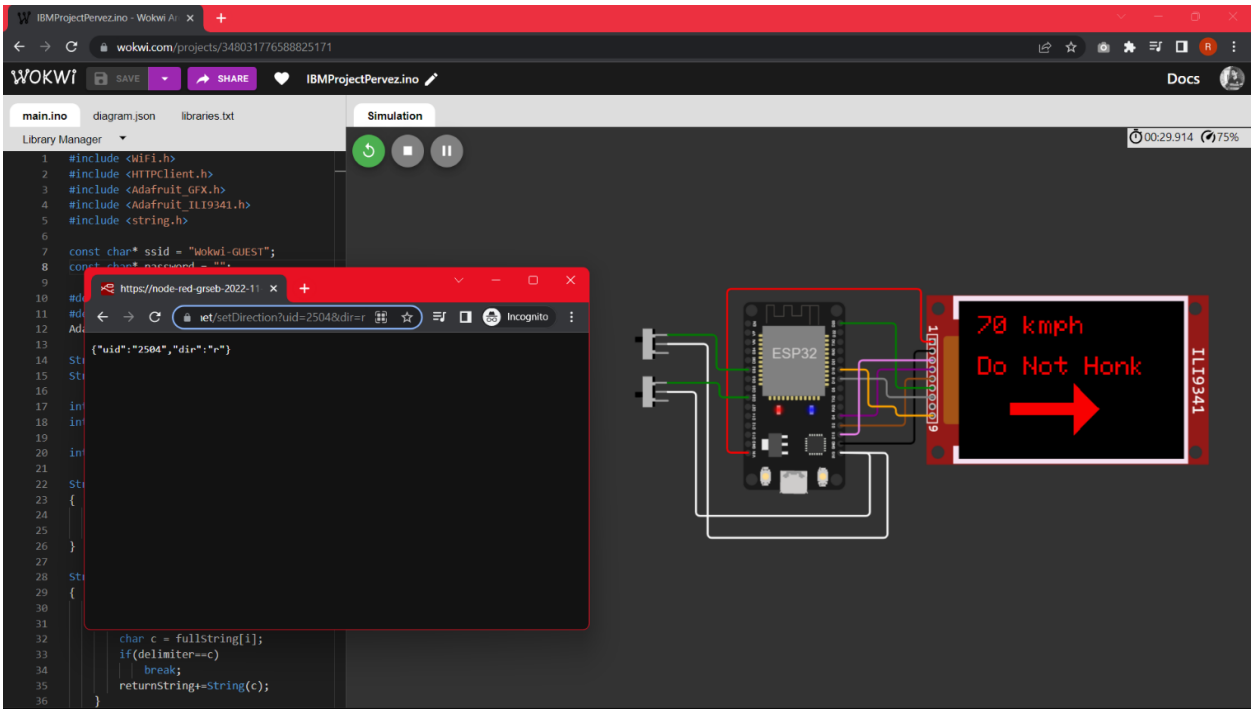
- Wokwi Output :

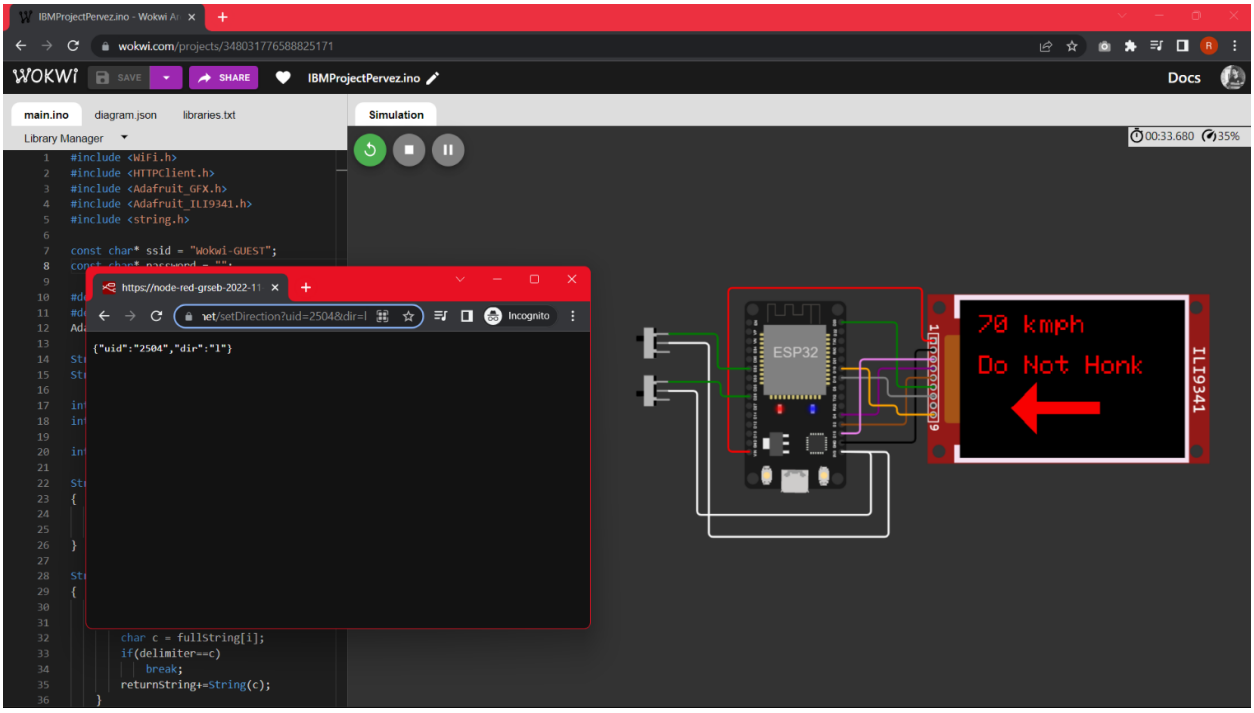
LINK TO WOKWI PROJECT


IBMProjectPervez.ino - Wokwi Ar
wokwi.com/projects/348031776588825171
WOKWI
SAVE
SHARE
IBMProjectPervez.ino
Docs
main.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:01.899
26%
ESP32
Connecting to WiFi
OK! IP=10.10.0.2
ILI9341


IBMProjectPervez.ino - Wokwi Ar
wokwi.com/projects/348031776588825171
WOKWI
SAVE
SHARE
IBMProjectPervez.ino
Docs
main.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:03.249
51%
ESP32
70 kmph
ILI9341


IBMProjectPervez.ino - Wokwi Ar
wokwi.com/projects/348031776588825171
WOKWI
SAVE
SHARE
IBMProjectPervez.ino
Docs
main.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:08.899
26%
#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_
String myLocation = "Chennai,IN";
String usualSpeedLimit = "70"; // kmph
int schoolZone = 32;
int hospitalZone = 26;
int uid = 2504;
String getString(char x)
{
String s(1, x);
return s;
}
String stringSplitter1(String fullString,cha
{
String returnString = "";
for(int i = 0; i<fullString.length();i++
char c = fullString[i];
if(delimiter==c)
break;
returnString+=String(c);
}
ESP32
70 kmph
Do Not Honk
ILI9341


IBMProjectPervez.ino - Wokwi Ar
wokwi.com/projects/348031776588825171
WOKWI
SAVE
SHARE
IBMProjectPervez.ino
Docs
main.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:29.914
75%
https://node-red-grseb-2022-11
Incognito
{"uid":"2504","dir":"r"}
ESP32
70 kmph
Do Not Honk
ILI9341


IBMProjectPervez.ino - Wokwi
wokwi.com/projects/348031776588825171
WOKWI
SAVE
SHARE
IBMProjectPervez.ino
Docs
main.ino
diagram.json
libraries.txt
Library Manager
Simulation
00:33.680
35%
#include <WiFi.h>
#include <HTTPClient.h>
#include <Adafruit_GFX.h>
#include <Adafruit_ILI9341.h>
#include <string.h>
const char* ssid = "Wokwi-GUEST";
https://node-red-grseb-2022-11
Incognito
{"uid":"2504","dir":"1"}
char c = fullString[i];
if(delimiter==c)
break;
returnString+=String(c);
ESP32
70 kmph
Do Not Honk
ILI9341