

**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 |

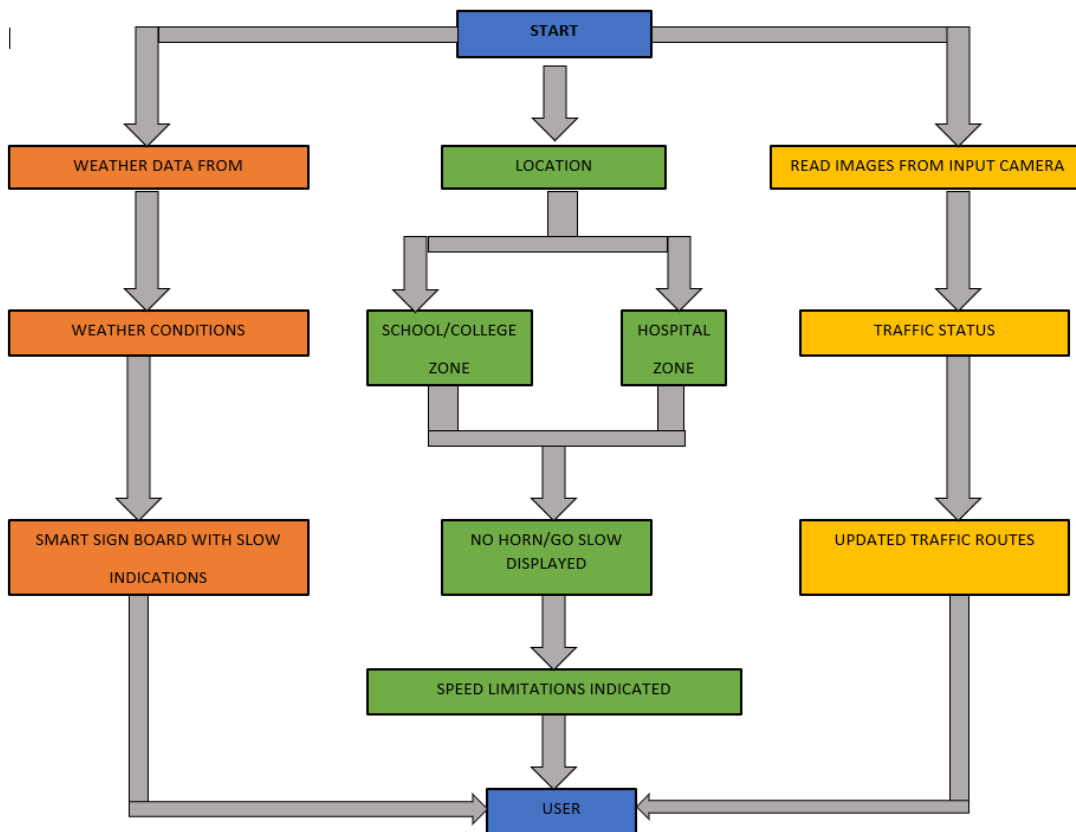
**Project Development – Delivery of Sprint 4:**

**SIGNS WITH SMART CONNECTIVITY FOR BETTER ROAD SAFETY**

**Sprint Goals:**

- Final outcomes for Better Road Safety

**Data Flow:**

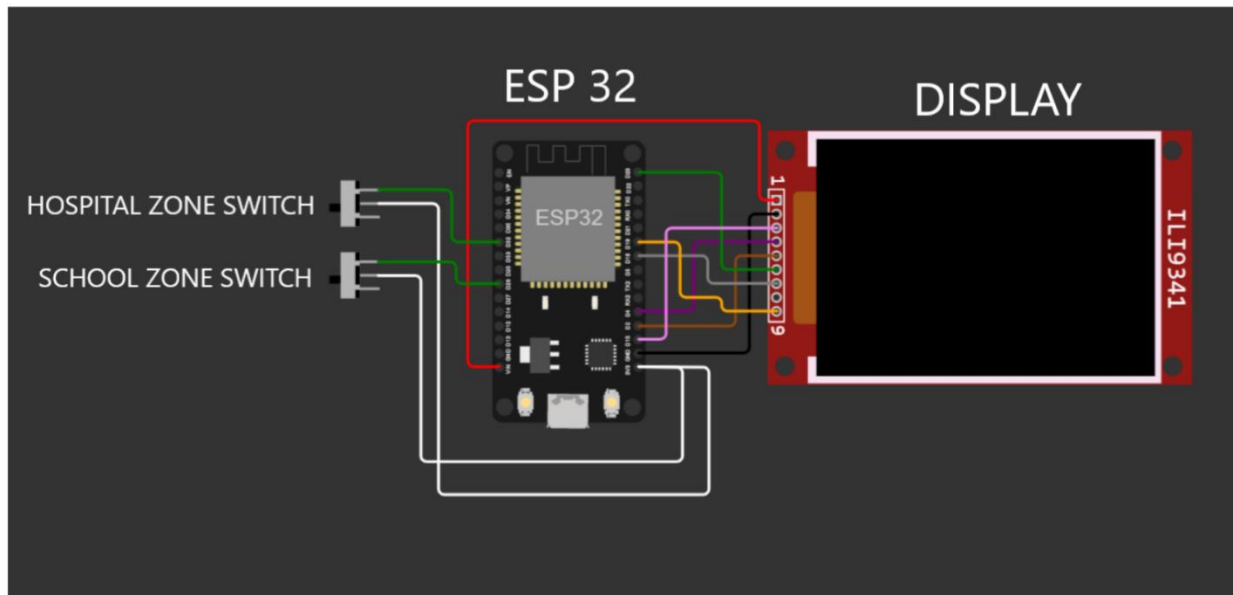


- Wokwi Circuit :

[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);
}

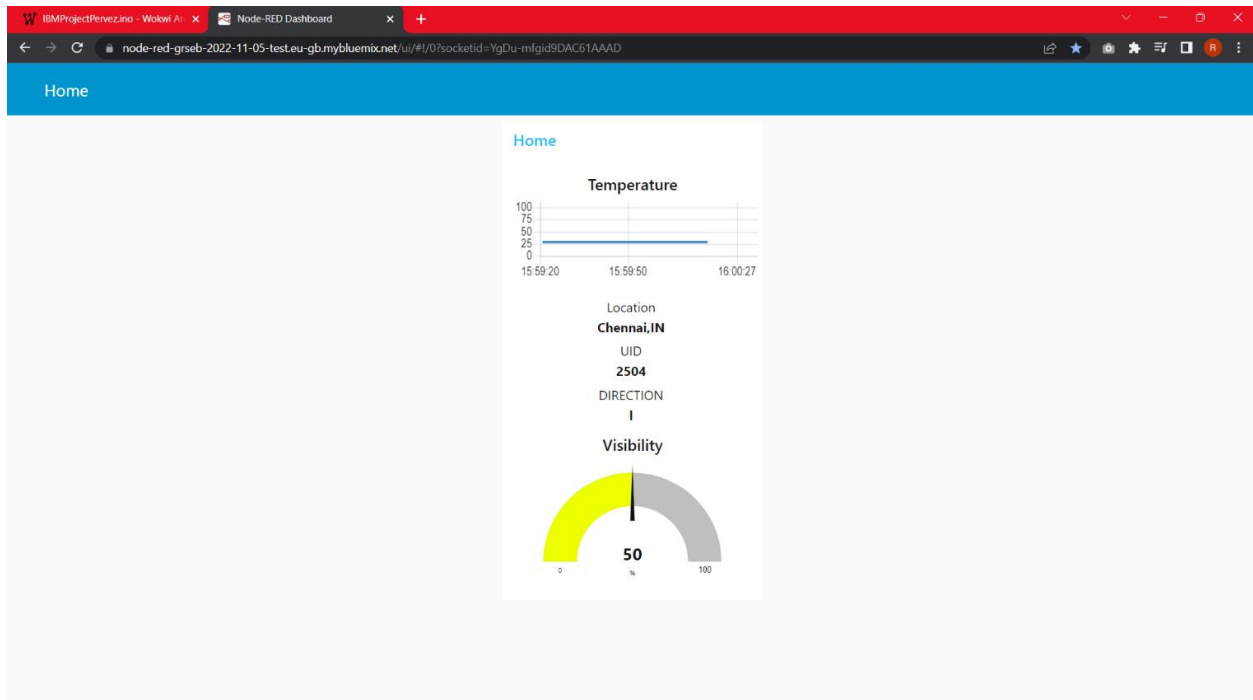
```

}

## Output :

- Node RED Dashboard :

### LINK TO NODE RED DASHBOARD



- Wokwi Output :

### LINK TO WOKWI PROJECT

W IBMProjectPervezino - Wokwi AI X +

wokwi.com/projects/348031776588825171

WOKWI SAVE SHARE IBMProjectPervezino Docs

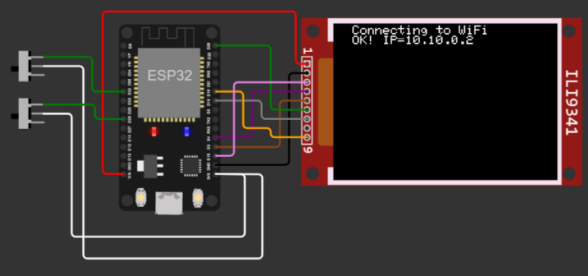
main.ino diagram.json libraries.txt

Library Manager

```
1 #include <WiFi.h>
2 #include <HTTPClient.h>
3 #include <Adafruit_GFX.h>
4 #include <Adafruit_IL19341.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_IL19341 tft = Adafruit_IL19341(TFT_DC, TFT_CS);
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     {
36       returnString += String(c);
```

Simulation

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W IBMProjectPervezino - Wokwi AI X +

wokwi.com/projects/348031776588825171

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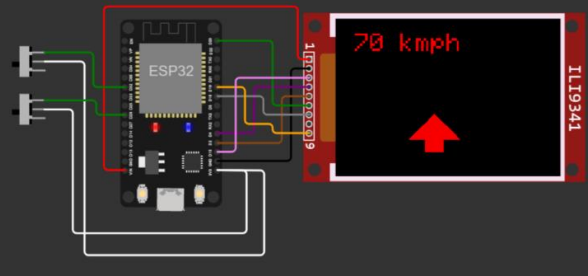
main.ino diagram.json libraries.txt

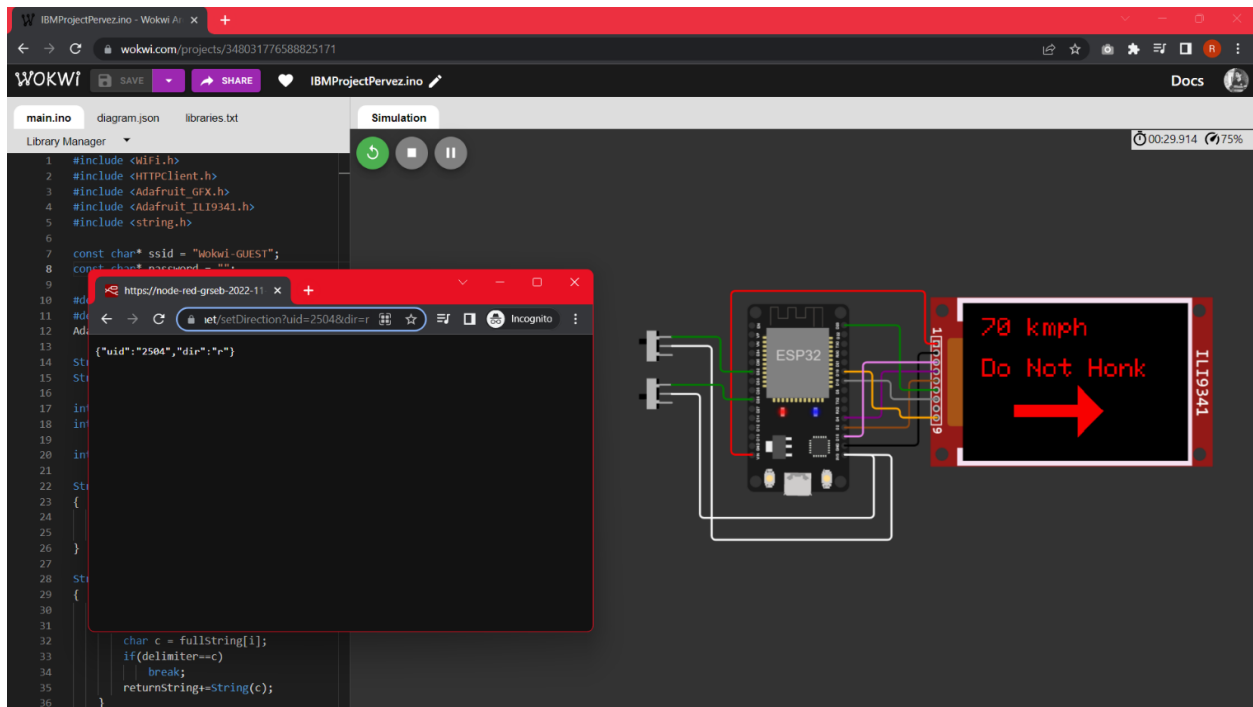
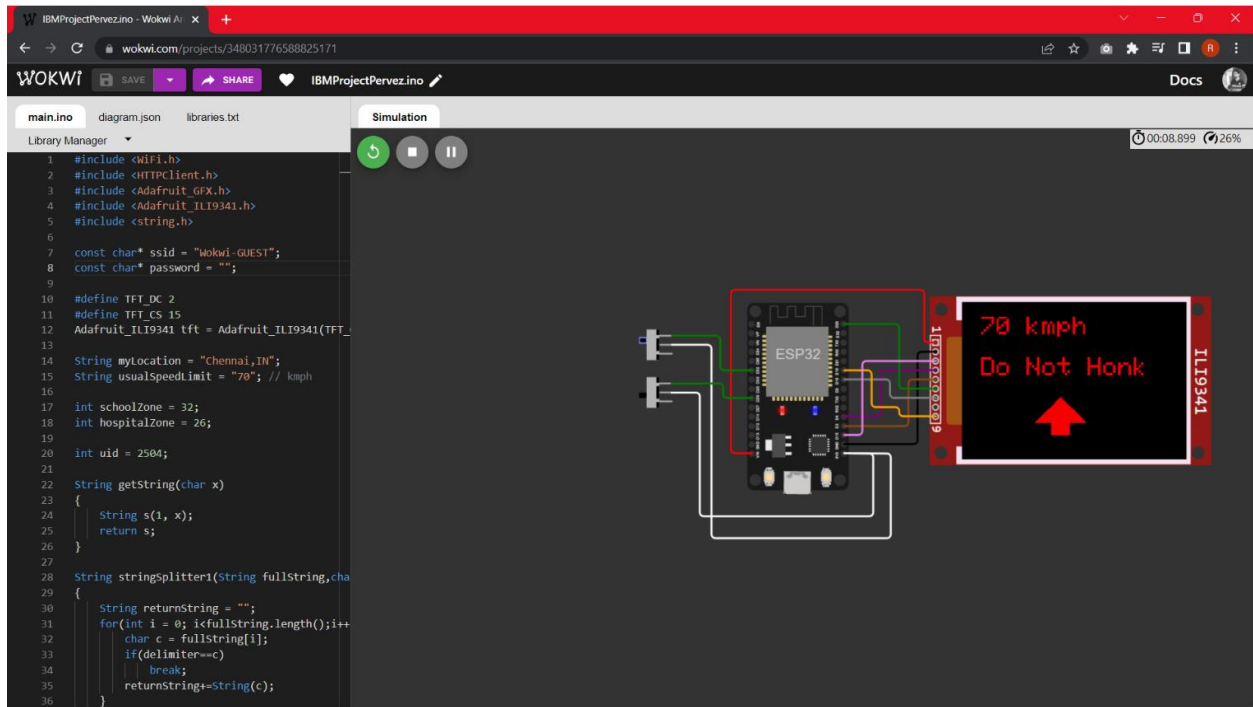
Library Manager

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1 #include <WiFi.h>
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5 #include <string.h>
6
7 const char* ssid = "Wokwi-GUEST";
8 const char* password = "";
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10 #define TFT_DC 2
11 #define TFT_CS 15
12 Adafruit_IL19341 tft = Adafruit_IL19341(TFT_DC, TFT_CS);
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     {
36       returnString += String(c);
```

Simulation

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W IBMProjectPervez.ino - Wokwi AI x +

wokwi.com/projects/348031776588825171

WOKWI SAVE SHARE IBMProjectPervez.ino Docs

main.ino diagram.json libraries.txt Simulation

Library Manager

```
1 #include <WiFi.h>
2 #include <HTTPClient.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 = "12345678";
9
10 #define LED_PIN 13
11 #define Buzzer_PIN 8
12 #define Motor_PIN 9
13
14 void setup() {
15   pinMode(LED_PIN, OUTPUT);
16   pinMode(Buzzer_PIN, OUTPUT);
17   pinMode(Motor_PIN, OUTPUT);
18   digitalWrite(LED_PIN, LOW);
19   digitalWrite(Buzzer_PIN, LOW);
20   digitalWrite(Motor_PIN, LOW);
21
22   Serial.begin(115200);
23   while (!Serial) {
24     ; // wait for serial port to connect
25   }
26
27   Serial.println("Starting...");
28   delay(1000);
29   Serial.println("Connected to WiFi");
30
31   char c = fullString[0];
32   if (delimiter == c) {
33     break;
34   }
35   returnString += String(c);
36 }
```

https://node-red-greeb-2022-11 x +

set/setDirection?uid=2504&dir=l

Incognito

70 kmph  
Do Not Honk  
←

ESP32

ILI9341