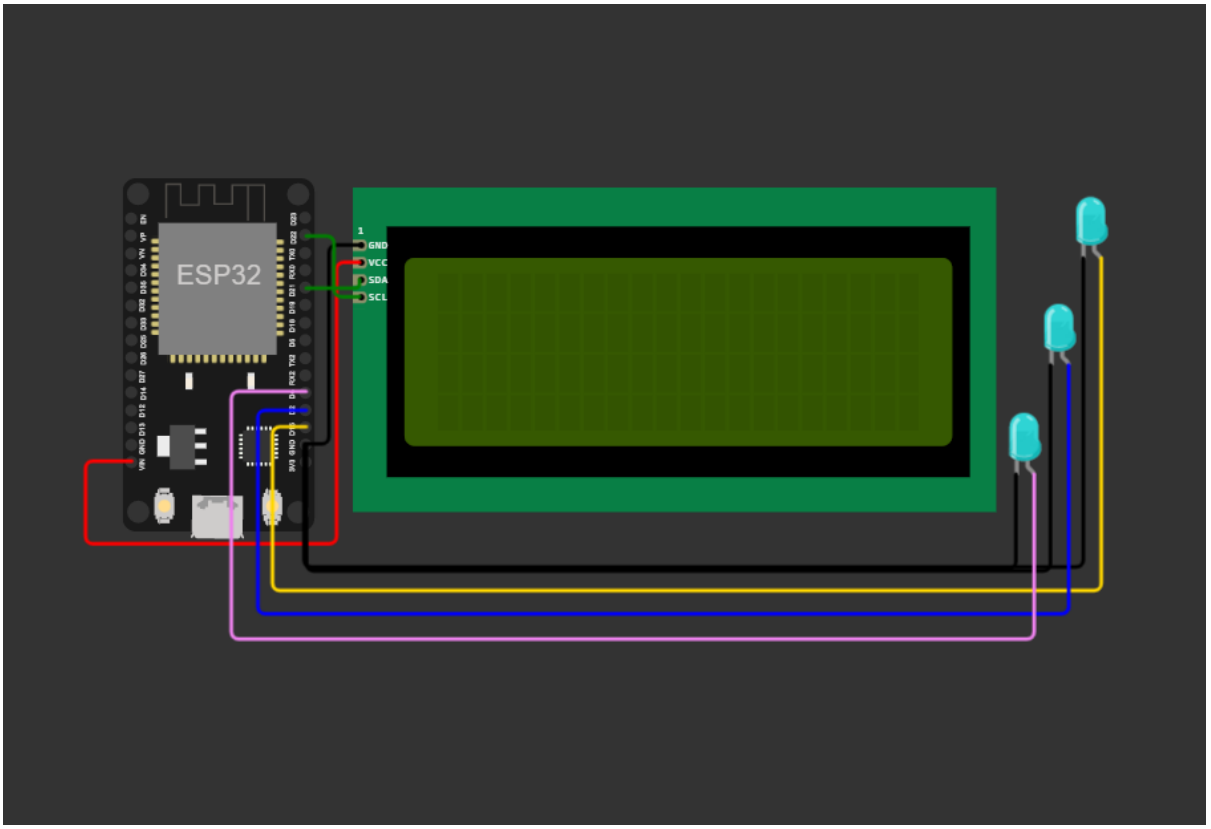
SPRINT - 4

Team ID	PNT2022TMID27886
Project Name	Project - Personal Assistance for Senior Citizens Who are self reliant

Wokwi Setup:-

Circuit:-



Code:-

```
#include <WiFi.h>//library for wifi

#include <PubSubClient.h>//library for MQtt

#include<ESP32Servo.h>

#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27, 20, 4);

#define LED 2

void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);

//-------credentials of IBM Accounts------

#define ORG "0sha8g"//IBM ORGANITION ID

#define DEVICE_TYPE "1234"//Device type mentioned in ibm watson IOT
Platform

#define DEVICE_ID "1919"//Device ID mentioned in ibm watson IOT
Platform

#define TOKEN "12345678"      //Token

String data3;

float h, t;

//-------- Customise the above values --------

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";//
Server Name

char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type
of event perform and format in which data to be send

char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd
REPRESENT command type AND COMMAND IS TEST OF FORMAT STRING

char authMethod[] = "use-token-auth";// authentication method

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id

WiFiClient wifiClient; // creating the instance for wificlient

PubSubClient client(server, 1883, callback ,wifiClient); //calling the
predefined client id by passing parameter like server id,portand
wificredential
```

```
char compartment_med[3][20];

char compartment_count[3][20],alertArr[20];

String username=" ",devicedetails,alert;

int f=0;

void setup()// configureing the ESP32

{

  Serial.begin(115200);

  pinMode(LED,OUTPUT);

  pinMode(4, OUTPUT);

  pinMode(2, OUTPUT);

  pinMode(15, OUTPUT);

  delay(10);

  Serial.println();

  wificonnect();

  mqttconnect();

  //PublishData("getdetail");

  //PublishData(compartment);

  PublishData("getdetail");

  lcd.begin(20,4);

  lcd.init();

  lcd.backlight();

  lcd.setCursor(5, 1);

  lcd.print("GetMeds");

  lcd.setCursor(6, 2);

  lcd.print("Welcome!");

  delay(2000);

  lcd.clear();

}

void loop()// Recursive Function
```

```
{
  //PublishData(compartment);
  PublishData("getdetail");
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("Username:"+username);
  //lcd.setCursor(0,1);
  //lcd.print("Medicine : Count");
  //lcd.setCursor(0,2);
  for(int i =0;i<2;i++)
  {
    /*lcd.print(compartment_med[i]);
    lcd.print(":");
    lcd.print(compartment_count[i]);
    lcd.print(" ");*/
    devicedetails += compartment_med[i];
    devicedetails += "$";
    devicedetails += compartment_count[i];
    devicedetails += "$";
  }
  if(f==0)
  {
    digitalWrite(4, LOW);
    digitalWrite(2, LOW);
    digitalWrite(15, LOW);
    lcd.setCursor(0,1);
  lcd.print(compartment_med[0]);
  lcd.print(":");
  lcd.print(compartment_count[0]);
```

```
lcd.setCursor(0,2);
lcd.print(compartment_med[1]);
lcd.print(":");
lcd.print(compartment_count[1]);
lcd.setCursor(0,3);
lcd.print(compartment_med[2]);
lcd.print(":");
lcd.print(compartment_count[2]);
}
else if(f==1)
{
  lcd.setCursor(0,1);
  lcd.print("It's time to take ");
  lcd.setCursor(0,2);
  lcd.print("medicine ,");
  lcd.setCursor(0,3);
  lcd.print(alert);
  for(int j=0;j<alert.length();j++)
  {
    alertArr[j]=alert[j];
  }
  Serial.println(alertArr);
  for(int i=0;i<3;i++)
  {
    if(strcmp(compartment_med[i],alertArr)==0)
    {
      if(i==0){
        digitalWrite(15, HIGH);
      }
```

```
        else if(i==1){
          digitalWrite(2, HIGH);
        }
        else if(i==2){
          digitalWrite(4, HIGH);
        }
      }
    }
  }
  //Serial.println(devicedetails);
  devicedetails = "";
  delay(1000);
  if (!client.loop()) {
    mqttconnect();
  }
}
/*.....retrieving to Cloud.....*/
void PublishData(String comp) {
  mqttconnect();//function call for connecting to ibm
  /*
     creating the String in in form JSon to update the data to ibm cloud
  */
  String payload="";
  if(comp=="getdetail")
  {
    payload="{\"Command\":";
    payload+="\"";
    payload+=comp;
```

```
    payload+="\"";
    payload += " ,";
    payload += "\"user\":";
    payload += "\"";
    payload += username;
    payload += "\"";
    payload += " }";
  }
  else {
  payload = "{\"Medicine\":";
  payload += "\"";
  payload += comp ;
  payload += "\"";
  payload += " ,";
  payload += "\"User\":";
  payload += "\"";
  payload += username;
  payload += "\",";
  payload += "\"Command\":";
  payload += "\"senddetail\"";
  payload += " }";
  }
  Serial.print("Sending payload: ");
  Serial.println(payload);
  if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");// if it sucessfully upload data on
the cloud then it will print publish ok in Serial monitor or else it
will print publish failed
  } else {
    Serial.println("Publish failed");
```

```
  }
}
void mqttconnect() {
  if (!client.connected()) {
    Serial.print("Reconnecting client to ");
    Serial.println(server);
    while (!!!client.connect(clientId, authMethod, token)) {
      Serial.print(".");
      delay(500);
    }
     initManagedDevice();
     Serial.println();
  }
}
void wificonnect() //function defination for wificonnect
{
  Serial.println();
  Serial.print("Connecting to ");
  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to
establish the connection
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());
}
```

```
void initManagedDevice() {
  if (client.subscribe(subscribetopic)) {
    Serial.println((subscribetopic));
    Serial.println("subscribe to cmd OK");
  } else {
    Serial.println("subscribe to cmd FAILED");
  }
}
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength)
{
  Serial.print("callback invoked for topic: ");
  Serial.println(subscribetopic);
  for (int i = 0; i < payloadLength; i++) {
    //Serial.print((char)payload[i]);
    data3 += (char)payload[i];
  }
  Serial.println(data3);
  char arr[6][20];
  int k=0;
  for(int i=0 ;i<6;i++)
  {
    if(k<=data3.length()){
      for(int j=0 ;j<20;j++)
    {
      if(data3[k]!='$'){
        arr[i][j] = data3[k++];
    }
    else {
```

```
      arr[i][j]='\0';
      k++;
      break;
    }
    }
  }
  else
  break;
  }
  Serial.println(arr[0]);
  if(strcmp(arr[0],"clearAlert")==0)
  {
    f=0;
  }
  else if(strcmp(arr[0],"ALERT")==0){
    f=1;
    alert=arr[1];
  }
  else {
     k=0;
    for(int i=0;i<3;i++)
    {
      strcpy(compartment_med[i] , arr[k++]);
      strcpy(compartment_count[i] , arr[k++]);
    }
  }
  data3="";
}
```