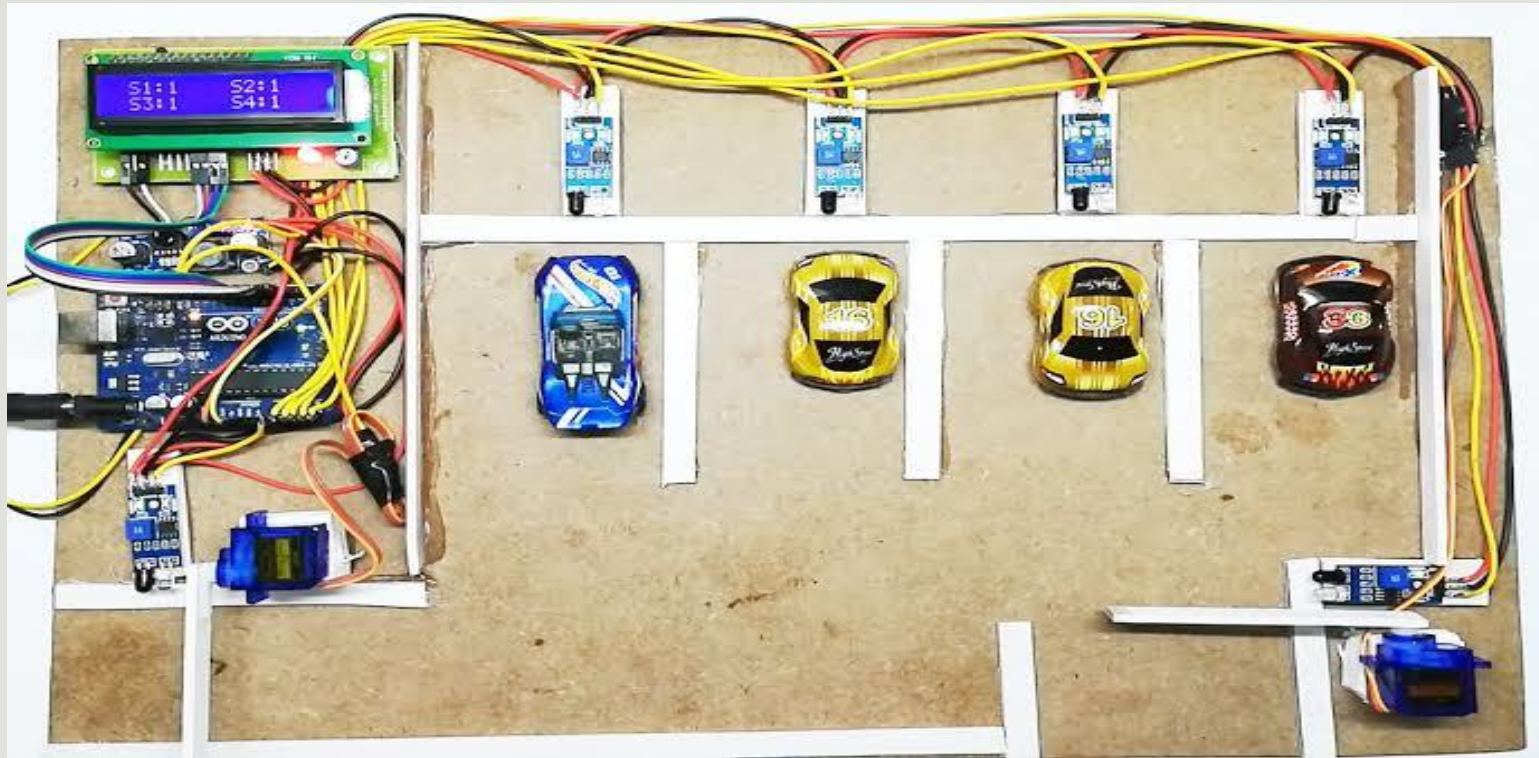


SMART PARKING

USING INTERNET OF THINGS



BASIC DETAILS OF TEAMS

Team Name : proj_224089_Team1

Team Based : Smart Parking

Team Leader Name : Manivannan J

Institution Name : Chendu College of Engineering and Technology

Theme : Real Time Availability and Fire Detection Smart Parking System

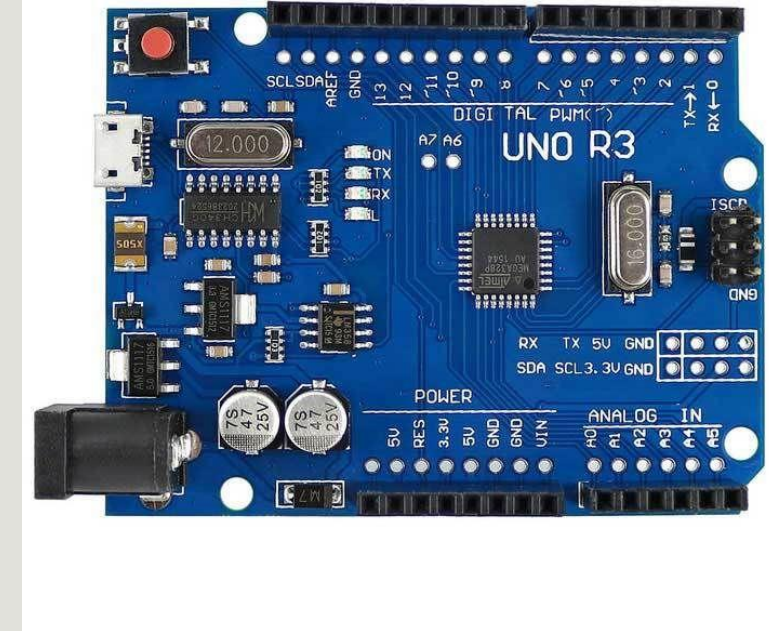
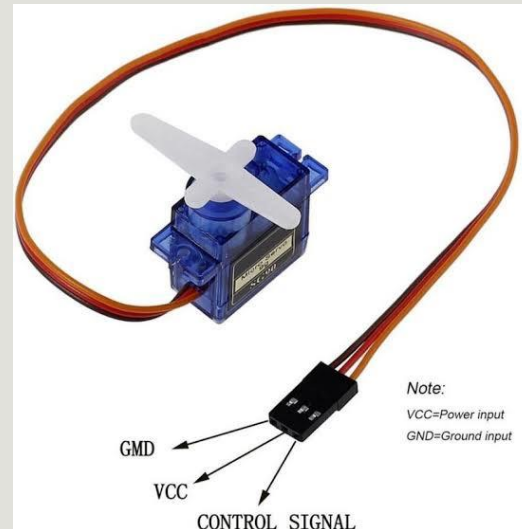
MOTION DETECTION SYSTEM :

Introduction :

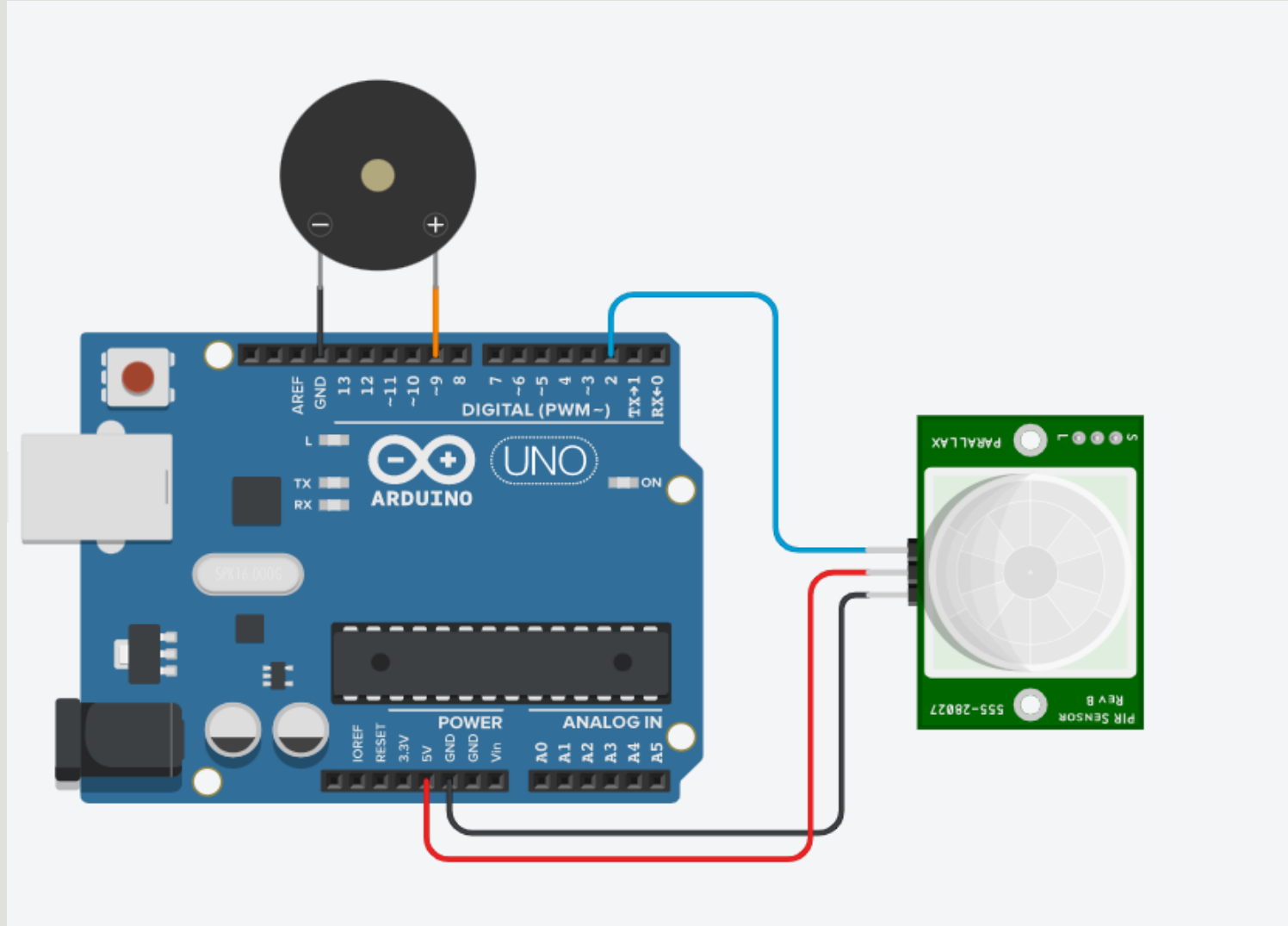
- Arduino is an open-source electronics platform based on easy-to-use hardware and software.
- Arduino boards can read digital & analog inputs from the sensors and The PIR sensor is a special type of sensor which is usually used for security purposes.
- It detects the objects by reading the Infrared radiations emitted by the objects.
- Any object whose temperature is above absolute zero emits radiation.
- This radiation is not visible to human eyes.
- The PIR sensor is designed to detect this Infrared radiation.

Components Required :

- Arduino UNO -> A microcontroller board based on the ATmega328P
- PIR Sensor -> Which detects the motion
- Buzzer -> A device that produces sound or alarm
- Jumper Wires -> For connecting the elements of the circuit



CIRCUIT DIAGRAM :



ARDUINO CODE :

```
//Defining pins

int buzz = 9;
int pir = 2;

void setup()
{

    // Sets the buzzer as an OUTPUT & PIR sensor as an INPUT
    pinMode(buzz, OUTPUT);
    pinMode(pir, INPUT);

    // Serial Communication is starting with 9600 of baudrate speed
    Serial.begin(9600);
}

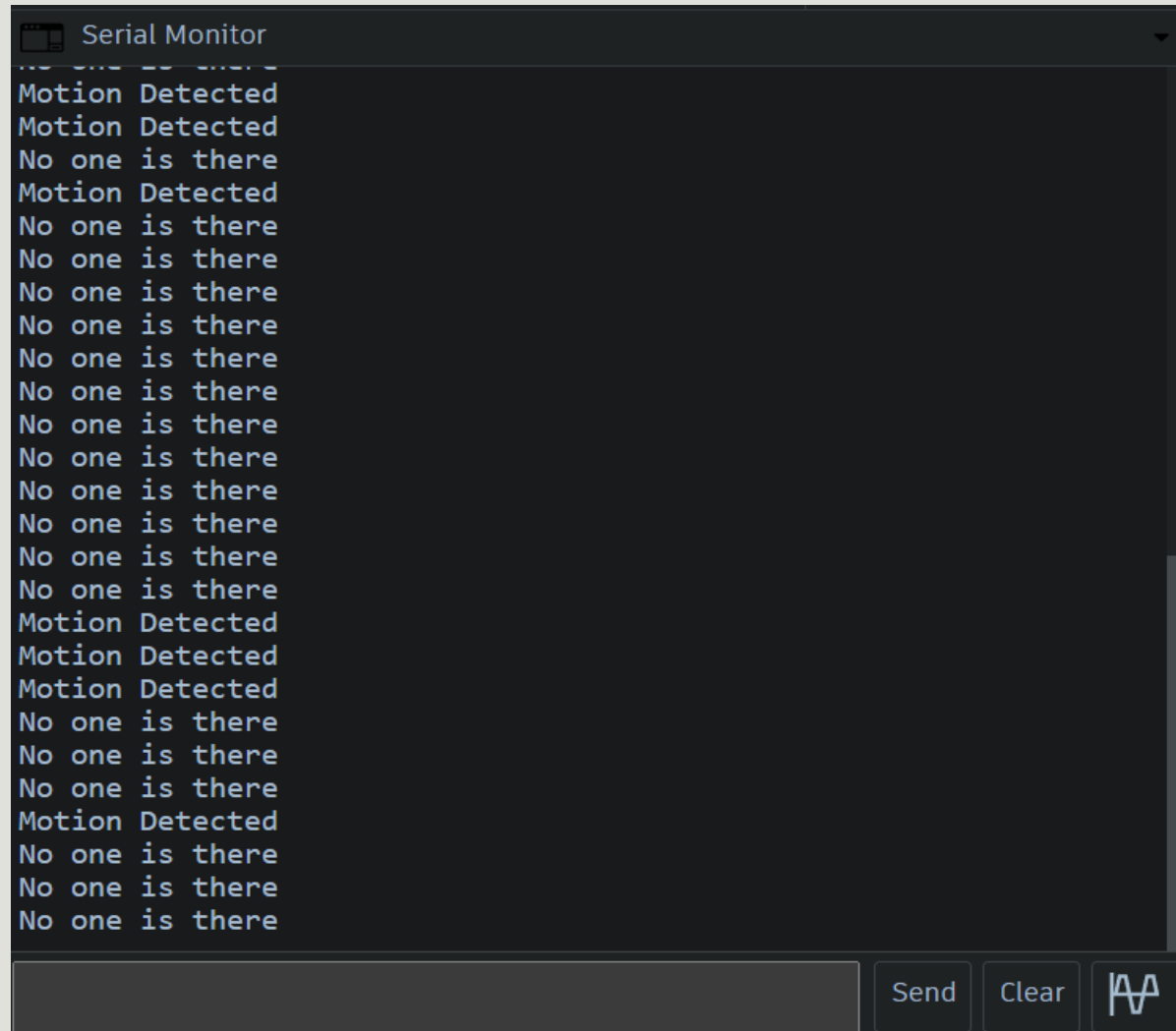
void loop()
{
    //Read data from the sensor
    int status = digitalRead(pir);
```

```
void loop()
{
  //Read data from the sensor
  int status = digitalRead(pir);

  // check data from sensor if there is motion,
  // if will execute otherwise else will execute
  if(status == HIGH)
  {
    Serial.println("Motion Detected");
    tone(buzz,1000,700);
    delay(2000);
  }
  else
  {
    Serial.println("No one is there");
    delay(1000);
  }
}
```

OUTPUT :

SERIAL MONITOR



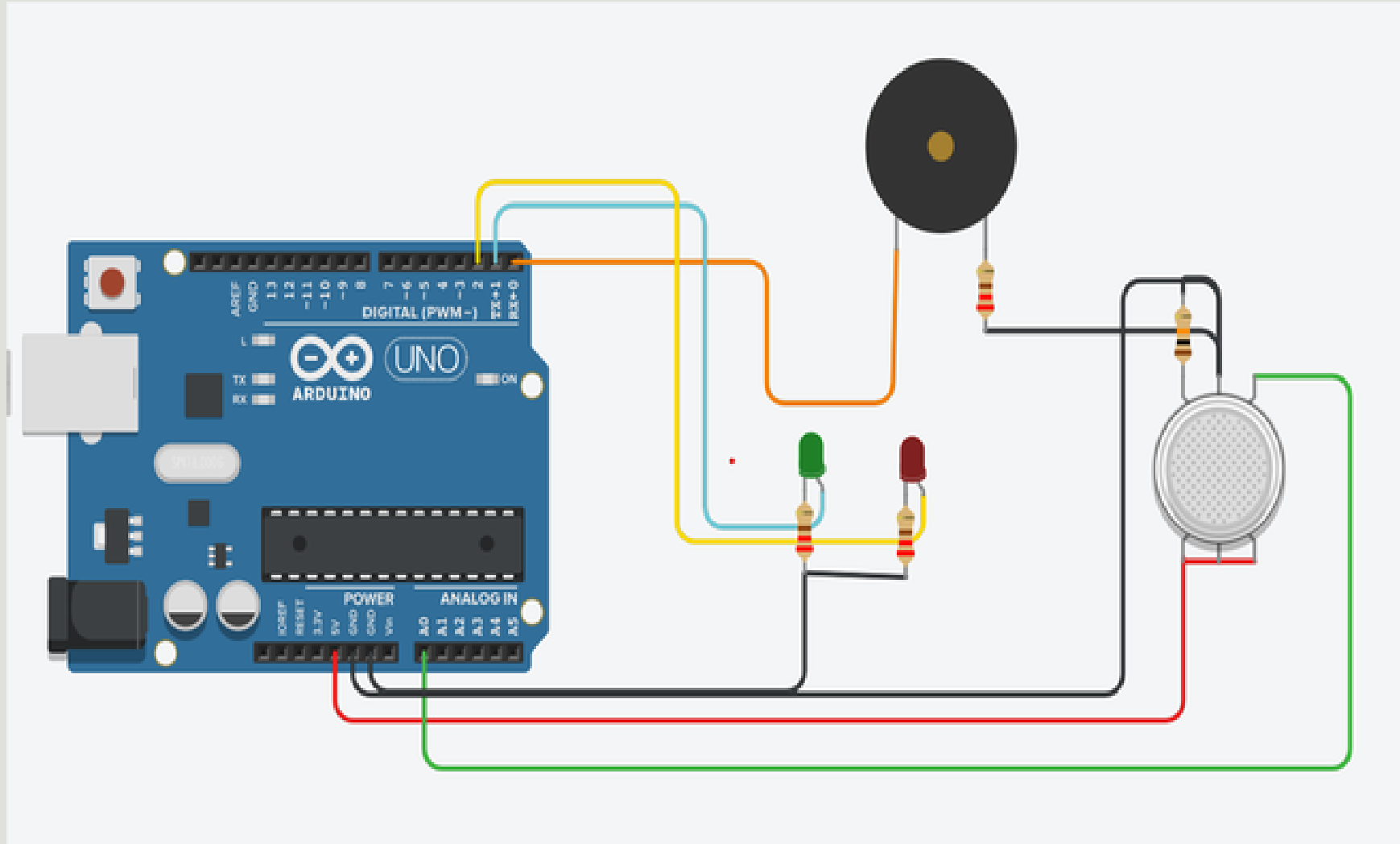
SMOKE DETECTION ALARM :

- Arduino is an open-source electronics platform based on easy-to-use hardware and software.
- Arduino boards can read digital & analog inputs from the sensors .
- The MQ2 smoke sensor is sensitive to smoke gases like LPG, Butane, Propane, Methane, Alcohol, Hydrogen.

Components Required :

- Arduino UNO -> A microcontroller board based on the ATmega328P
- MQ2 Gas Sensor -> Which detects the level of smoke
- Buzzer -> A device that produces sound or alarm
- 5V LED -> A Light-emitting diode that emits light
- 100ohm Resistor -> To resist the current
- Jumper Wires -> For connecting the elements of the circuit

CIRCUIT DIAGRAM :



ARDUINO CODE :

```
//stored pins in variables
```

```
#define gasSensor A0
```

```
#define buzzer 0
```

```
#define ledGreen 1
```

```
#define ledRed 2
```

```
#define HIGH 600
```

```
void setup() {
```

```
    //Initialising all pins
```

```
    pinMode(gasSensor, INPUT);
```

```
    pinMode(buzzer, OUTPUT);
```

```
    pinMode(ledGreen, OUTPUT);
```

```
    pinMode(ledRed, OUTPUT);
```

```
}
```

```
void loop() {
```

```
    //Read data from the sensor
```

```
    int gas_value = analogRead(gasSensor);
```

```
//check data from sensor if there is smoke, if will execute otherwise else will execute
if(gas_value > HIGH)
{
  tone(buzzer,1000,500);
  digitalWrite(ledRed, HIGH);
  digitalWrite(ledGreen,LOW);

}
else
{
  noTone(buzzer);
  digitalWrite(ledGreen,HIGH);
  digitalWrite(ledRed, LOW);
}
delay(200);

}
```

OUTPUT :

~(((SOUND)))~

INTERFACE I2C LCD DISPLAY :

- ☐ I2C LCD uses I2C communication interface to transfer the information required to display the content.
- ☐ I2C LCD requires only 2 lines (SDA and SCL) for transferring the data. So, the complexity of the circuit is reduced.

Interfacing I2C LCD to the Arduino:

- ☐ I2C LCD can be connected to the Arduino directly with SDA pin to SDA pin and SCL pin to SCL pin as per the below circuit diagram. I2C LCD requires additional library to be installed.

COMPONENTS REQUIRED :

- 1.Arduino Uno R3
- 2.I2C LCD display
- 3.Jumper Wires

ARDUINO CODE :

```
// I2C address finding
#include <Wire.h>

void setup()
{
    //Initializing wire
    Wire.begin();
    //Initializing serial monitor at the baudrate of 9600
    Serial.begin(9600);
}

void loop()
{
    byte err, addr;
    //Declaring variable to detect and count no. of I2C device found
    int devices = 0;

    // For loop to try multiple combinations of Address
    for (addr = 1; addr < 127; addr++)
    {
        Wire.beginTransmission(addr);
        err = Wire.endTransmission();
    }
}
```

```
if (!err)
{
    Serial.print("Address 0x");
    if (addr < 16)
    {
        Serial.print("0");
    }

    Serial.println(addr, HEX);
    devices++;
}
else if (err == 4)
{
    Serial.print("Error at address 0x");
    if (addr < 16)
    {
        Serial.print("0");
    }
    Serial.println(addr, HEX);
}

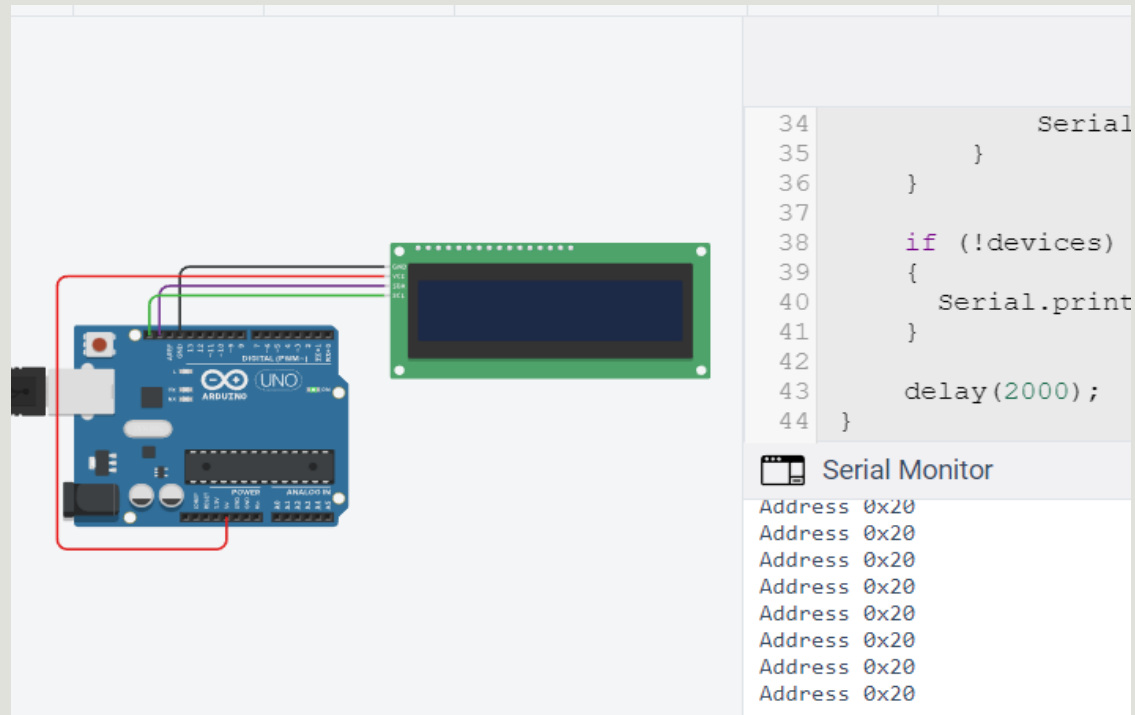
}

//Exception, when there is no I2C device found
if (!devices)
```

```
{
  Serial.println("Please connect your I2C device");
}

//Waiting for 2 seconds
delay(2000);
}
```

OUTPUT :



TEAM MEMBERS DETAILS

ROLE IN TEAM	NAME	BRANCH (B.E)	YEAR
TEAM LEADER	MANIVANNAN J	CSE	III
TEAM MEMBER 1	TAMIL SELVAN S S	CSE	III
TEAM MEMBER 2	THARUN J S	CSE	III
TEAM MEMBER 3	SIVA ABINESHWARAN K	CSE	III