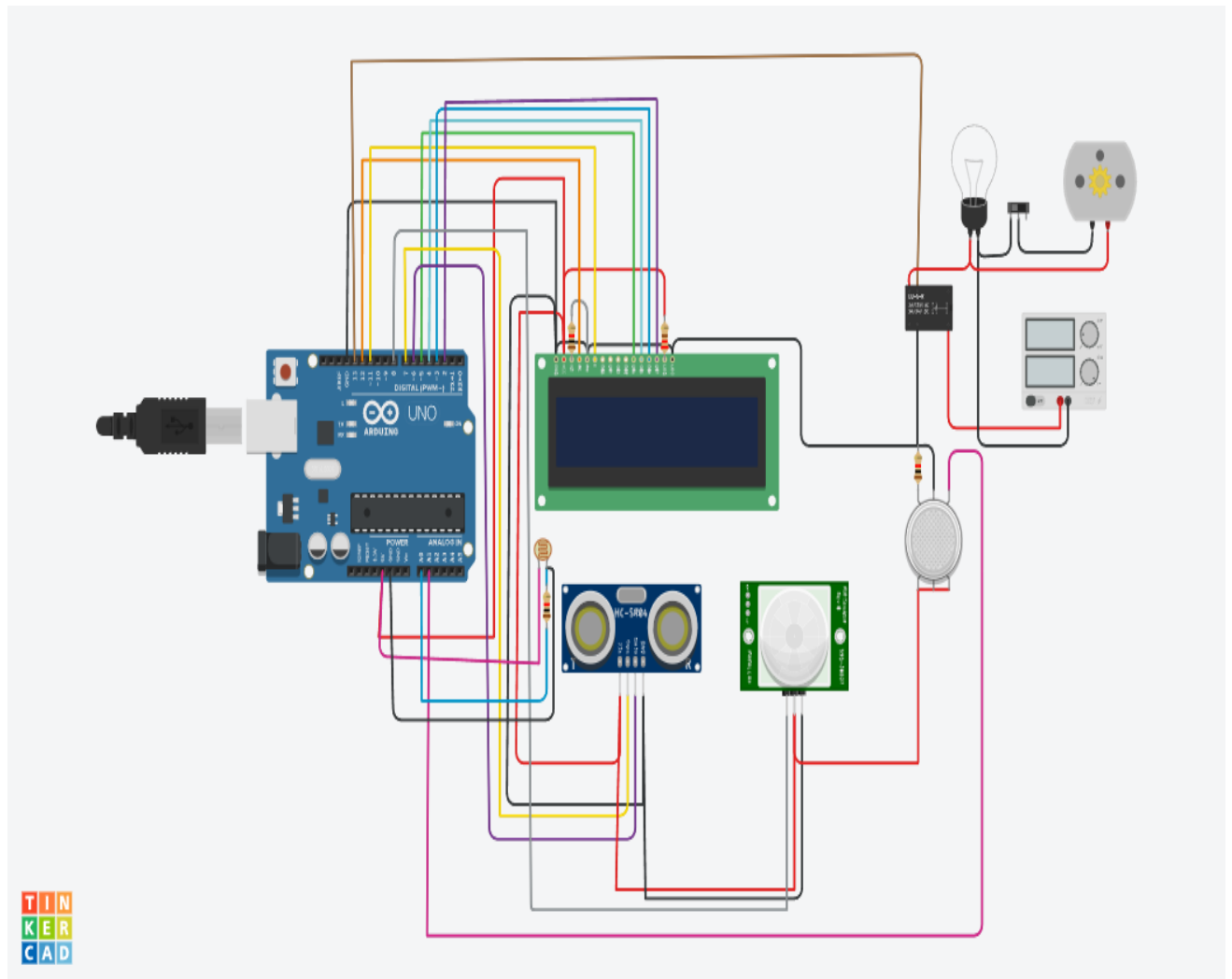


ASSIGNMENT 1

SMART HOME AUTOMATION:

CIRCUIT DIAGRAM:



CODE:

```
#include <LiquidCrystal.h>

// initialize the library with the numbers of the interface pins
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);


//For ultrasound sensor
int distanceThreshold = 0;

int cm = 0;

int inches = 0;


//for Relay Control
int releNO = 13;

int inputPir = 8;

int val = 0;

int resuldoSensorLDR;

int sensorLDR = A0;


//For Gas sensor
int const PINO_SGAS = A1;


long readUltrasonicDistance(int triggerPin, int echoPin)
{
    pinMode(triggerPin, OUTPUT); // Clear the trigger
    digitalWrite(triggerPin, LOW);
    delayMicroseconds(2);
    // Sets the trigger pin to HIGH state for 10 microseconds
    digitalWrite(triggerPin, HIGH);
```

```

delayMicroseconds(10);
digitalWrite(triggerPin, LOW);
pinMode(echoPin, INPUT);
// Reads the echo pin, and returns the sound wave travel time in microseconds
return pulseIn(echoPin, HIGH);
}

```

```

void setup() {
  // set up the LCD's number of columns and rows:
  lcd.begin(16, 2);

  pinMode(releNO, OUTPUT);
  pinMode(inputPir, INPUT);
  pinMode(sensorLDR, INPUT);
  Serial.begin(9600);
}

```

```

void loop() {
  // set threshold distance to activate LEDs
  distanceThreshold = 350;
  // measure the ping time in cm
  cm = 0.01723 * readUltrasonicDistance(7, 6);
  // convert to inches by dividing by 2.54
  inches = (cm / 2.54);

```

```

  lcd.setCursor(0,0); // Sets the location at which subsequent text written to the LCD will be
  displayed
  lcd.print("D:"); // Prints string "Distance" on the LCD
  lcd.print(cm); // Prints the distance value from the sensor
  lcd.print("cm");
  delay(10);

```

```

    val = digitalRead(inputPir);
    resuldoSensorLDR = analogRead(sensorLDR);
    if(resuldoSensorLDR<600)
    {
        if(val == HIGH)
        {
            digitalWrite(releNO, HIGH);
            lcd.setCursor(0,1);
            lcd.print("L: On ");
            delay(5000);
        }
        else{
            digitalWrite(releNO, LOW);lcd.setCursor(0,1);
            lcd.print("L: Off");
            delay(300);
        }
    }
    else{ digitalWrite (releNO, LOW);
    Serial.println(resuldoSensorLDR);
    delay(500);
    }

```

```

int color = analogRead(PINO_SGAS);

```

```

lcd.setCursor(8,0);
//lcd.print("");
if(color <= 85){
    lcd.print("G:Low ");
} else if(color <= 120){
    lcd.print("G:Med ");
}

```

```
} else if(color <= 200){  
    lcd.print("G:High");  
} else if(color <= 300){  
    lcd.print("G:Ext ");  
}  
  
delay(250);  
}
```