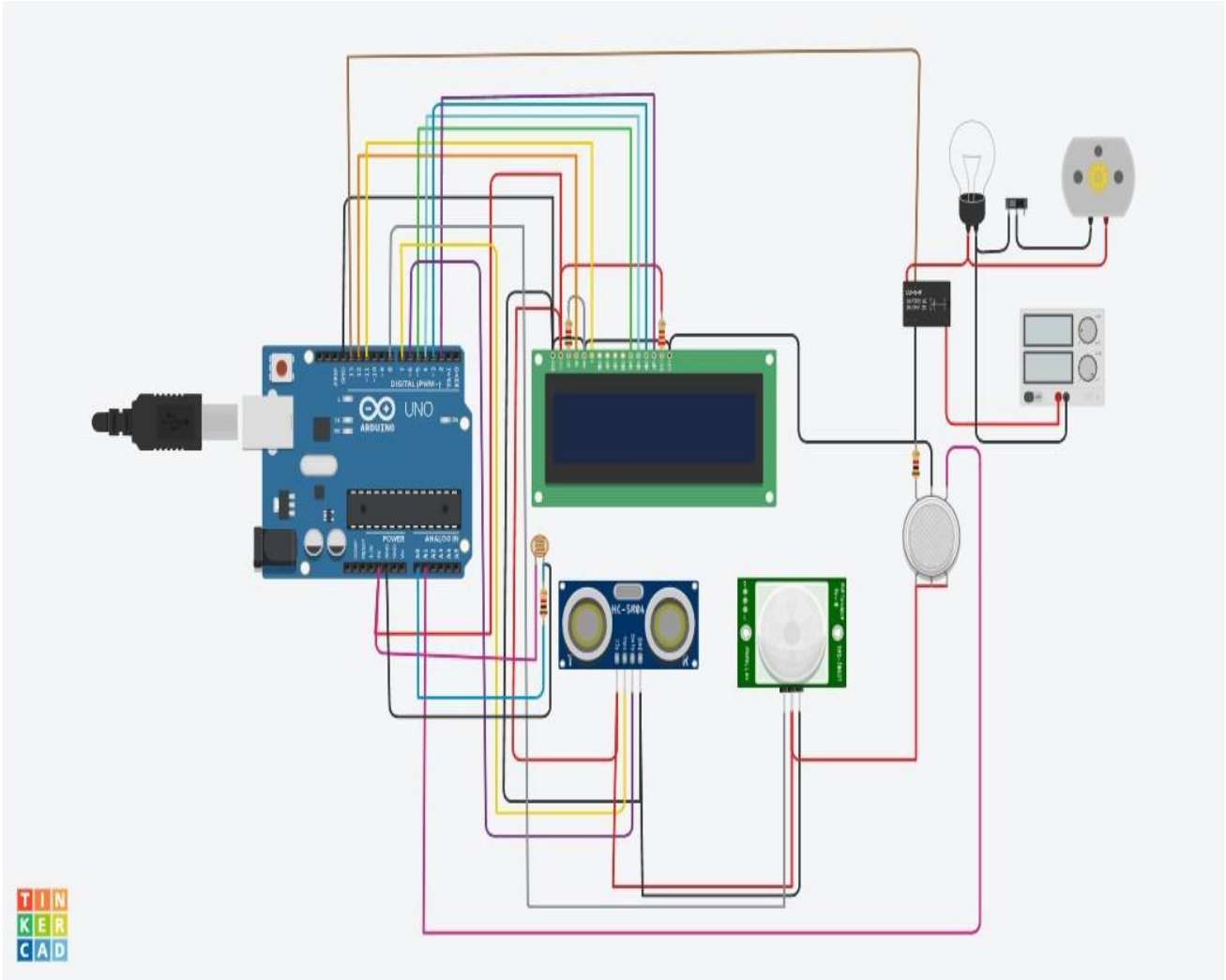
ASSIGNMENT 1

Date	**13 September 2022**
Team ID	PNT2022TMID23797
Project Name	Real time river water quality monitoring and Control System
Maximum Marks	**2 Marks**

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);
}
```