//#include <Adafruit\_LiquidCrystal.h>

#include <Servo.h>

#include <LiquidCrystal\_I2C.h>

#include <Wire.h>

//#include<hd44780.h>

//#include <hd44780ioClass/hd44780\_I2Cexp.h>

//hd44780\_I2Cexp lcd;

Servo servo;

int pushButtonPin=2;

int greenLedPin=10; // connect Green LED to pin 10 (PWM pin)

int redLedPin=11; // connect Red LED to pin 11 (PWM pin)

int servoPin=9;

int triggerPin=7;

int echoPin=8;

int maxRange = 300; // Maximum range

int minRange = 0; // Minimum range

long centim=0;//ultra Sonic

int duration=0;//ultra Sonic

//Adafruit\_LiquidCrystal lcd\_1(0);

int pushButtonValue;

boolean start = false;

boolean readDistance = false;

// Set the LCD address to 0x27 for a 16 chars and 2 line display

 LiquidCrystal\_I2C lcd(0x27, 16, 2);

void setup()

{

    pinMode(greenLedPin, OUTPUT);

    pinMode(redLedPin, OUTPUT);

    pinMode(servoPin,OUTPUT);

    pinMode(pushButtonPin,INPUT);

    digitalWrite(pushButtonPin,HIGH);

    pinMode(triggerPin,INPUT);

    pinMode(echoPin,OUTPUT);

    Serial.println("set up done");

  //LCD For Simulator:

    lcd.begin(16, 2);

//LCD For Real:

    //initialize the LCD

   lcd.init();

  lcd.backlight();

Serial.begin(9600);

}

void loop()

{

  Serial.println(centim);

  // קריאת ערכים מהחיישנים

  pushButtonValue = digitalRead(pushButtonPin);

  //ultrasonicCheck();

  centim=readUltrasonicDistance(7,8)/58;

  if (pushButtonValue == 0){

      if (centim >= 10){

        digitalWrite(greenLedPin, HIGH); //הדלקת נורה ירוקה

        digitalWrite(redLedPin,LOW);

        startServo(); //לסובב את מנוע הסרבו

      }

      else {

        digitalWrite(redLedPin, HIGH); //הדלקת נורה ירוקה

        digitalWrite(greenLedPin, LOW);

        printToLCD(); //הדפסת הודעה מתאימה למסך

      }

   }

} // end LOOP

// ------------ Functions --------------

void startServo(){ // סיבוב מנוע הסרבו

  servo.attach(servoPin);

  servo.write(300);

}

void redLightBlinking(){

  for(int i=0 ; i < 5 ; i++){

    digitalWrite(redLedPin, HIGH);   // turn the LED on (HIGH is the voltage level)

    delay(1000);              // wait for a second

    digitalWrite(redLedPin, LOW);    // turn the LED off by making the voltage LOW

    delay(1000);

  }

}

void printToLCD(){

  lcd.setBacklight(1);

  lcd.setCursor(0, 0);

  lcd.print("You're too close");

  lcd.setCursor(0, 1);

  lcd.print("to the screen!");

  delay(500); // Wait for 500 millisecond(s)

  lcd.setBacklight(0);

  delay(500); // Wait for 500 millisecond(s)

}

// ------------ Ultrasonic --------------

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);

}