#include <Wire.h>

#include <LiquidCrystal\_I2C.h>

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

LiquidCrystal\_I2C lcd(0x27, 16, 2);

int motor1a = 7;

int motor1b = 8;

int motor2a= 9; //motor ports to transmit data

int motor2b= 10;

int frontIR =11;

int backIR =12;

int enablem1 = 5;

int enablem2 = 6;

#define echoPin 2 // attach pin D2 Arduino to pin Echo of HC-SR04

#define trigPin 3 //attach pin D3 Arduino to pin Trig of HC-SR04

long duration,duration1; // variable for the duration of sound wave travel

int distance,distance1,cruiseend; // variable for the distance measurement

char lastval='x';

void setup() {

// initialize the LCD

lcd.begin();

// Turn on the blacklight and print a message.

lcd.backlight();

lcd.print(" Auto Park ");

lcd.setCursor(0,1);

lcd.print("Vehicle System");

// put your setup code here, to run once:

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

pinMode(13, OUTPUT);

digitalWrite(13,LOW);

pinMode(motor1a, OUTPUT);

pinMode(motor1b, OUTPUT);

pinMode(motor2a, OUTPUT);

pinMode(motor2b, OUTPUT); //motor pins declared as output

pinMode(echoPin, INPUT); // Sets the echoPin as an INPUT

pinMode(trigPin, OUTPUT);

pinMode(frontIR, INPUT);

pinMode(backIR, INPUT);

pinMode(enablem1, OUTPUT);

pinMode(enablem2, OUTPUT);

delay(2000);

lcd.clear();

lcd.print("Prees Button To ");

lcd.setCursor(0,1);

lcd.print(" Park Vehicle ");

}

void loop() {

// put your main code here, to run repeatedly:

digitalWrite(trigPin, LOW);

delayMicroseconds(2);

// Sets the trigPin HIGH (ACTIVE) for 10 microseconds

digitalWrite(trigPin, HIGH);

delayMicroseconds(10);

digitalWrite(trigPin, LOW);

// Reads the echoPin, returns the sound wave travel time in microseconds

duration = pulseIn(echoPin, HIGH);

// Calculating the distance

distance = duration \* 0.034 / 2;

Serial.println(distance);

int frontIRred=digitalRead(frontIR);

int backIRred=digitalRead(backIR);

if (frontIRred ==0)

{

lcd.clear();

lcd.print("Front Object Detected");

delay(2000);

digitalWrite(motor1a,LOW);

digitalWrite(motor1b,LOW);

digitalWrite(motor2a,LOW);

digitalWrite(motor2b,LOW); //stops

Serial.print("IN front IR stop");

}

else

{

Serial.print("IN front IR gooo");

if(distance > 23)

{

lcd.clear();

lcd.print("Found Park Space ");

park();

}

else

{

analogWrite(enablem1,230);

analogWrite(enablem2,230);

digitalWrite(motor1a,HIGH); //forward movement of RIGHT motor 1

digitalWrite(motor1b,LOW);

digitalWrite(motor2a,HIGH);

digitalWrite(motor2b,LOW); //forward movement of LEFT motor 2

delay(8);

Serial.print("forward");

digitalWrite(motor1a,LOW);

digitalWrite(motor1b,LOW);

digitalWrite(motor2a,LOW);

digitalWrite(motor2b,LOW); //stops

Serial.print("stop");

delay(15);

}

}

delay(1);

}

void park()

{

analogWrite(enablem1,255);

analogWrite(enablem2,255);

digitalWrite(motor1a,HIGH); //forward movement of RIGHT motor 1

digitalWrite(motor1b,LOW);

digitalWrite(motor2a,HIGH);

digitalWrite(motor2b,LOW); //forward movement of LEFT motor 2

delay(175);

Serial.print("forward");

digitalWrite(motor1a,LOW);

digitalWrite(motor1b,LOW);

digitalWrite(motor2a,LOW);

digitalWrite(motor2b,LOW); //stops

Serial.print("stop");

delay(3000);

digitalWrite(motor1a,HIGH);

digitalWrite(motor1b,LOW); // IMPLIES SHARP RIGHT TURN

digitalWrite(motor2a,LOW);

digitalWrite(motor2b,HIGH);

Serial.print("right");

delay(235);

digitalWrite(motor1a,LOW);

digitalWrite(motor1b,LOW);

digitalWrite(motor2a,LOW);

digitalWrite(motor2b,LOW); //stops

Serial.print("stop");

delay(3000);

digitalWrite(motor1a,LOW); //backward movement of RIGHT motor 1

digitalWrite(motor1b,HIGH);

digitalWrite(motor2a,LOW);

digitalWrite(motor2b,HIGH); //backward movement of LEFT motor 2

delay(222);

Serial.print("back");

digitalWrite(motor1a,LOW);

digitalWrite(motor1b,LOW);

digitalWrite(motor2a,LOW);

digitalWrite(motor2b,LOW); //stops

Serial.print("stop");

delay(3000);

digitalWrite(motor1a,LOW);

digitalWrite(motor1b,HIGH); // IMPLIES SHARP LEFT TURN

digitalWrite(motor2a,HIGH);

digitalWrite(motor2b,LOW);

delay(270);

Serial.print("left");

digitalWrite(motor1a,LOW);

digitalWrite(motor1b,LOW);

digitalWrite(motor2a,LOW);

digitalWrite(motor2b,LOW); //stops

lcd.clear();

lcd.print(" Vehicle Parked ");

digitalWrite(13,HIGH);

Serial.print("stop");

delay(100000000);

}