**#include <Servo.h>**

**#include <HX711.h>**

**#include <Wire.h>**

**#include <LiquidCrystal\_I2C.h>**

**//define servo motors**

**Servo s1, s2;**

**//control(L298N Motor Driver)**

**int ENA=5, IN1=6, IN2=7; //Left Motor**

**int ENB=10, IN3=8, IN4=9; //right Motor**

**//Load Cell**

**#define DT 14**

**#define SCK 15**

**HX711 scale;**

**//Boundry Detection sensor**

**#define trig1 16**

**#define echo1 17**

**#define trig2 18**

**#define echo2 19**

**//Buzer**

**#define buzzer 4**

**//voltage Sensor**

**#define vPin A0**

**//LCD**

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

**const int spd=255; //Moter Speed**

**const int stepDelay=15; //delay for removing extra water**

**long lastWeight=0;**

**//setup servo motor**

**void setup(){**

**s1.attach(12);**

**s2.attach(11);**

**moveArm(160);**

**//ultrasonics setup**

**pinMode(ENA,OUTPUT); pinMode(IN1,OUTPUT); pinMode(IN2,OUTPUT);**

**pinMode(ENB,OUTPUT); pinMode(IN3,OUTPUT); pinMode(IN4,OUTPUT);**

**//initialize load cell**

**scale.begin(DT,SCK);**

**pinMode(trig1,OUTPUT); pinMode(echo1,INPUT);**

**pinMode(trig2,OUTPUT); pinMode(echo2,INPUT);**

**pinMode(buzzer,OUTPUT);**

**//LCD setup**

**lcd.init();**

**lcd.backlight();**

**lcd.setCursor(0,0);**

**lcd.print("System Ready");**

**delay(1000);**

**}**

**void loop(){**

**static bool busy=false;**

**//read distence**

**int d1=busy?999:dist(trig1,echo1); //trash detector**

**int d2=busy?999:dist(trig2,echo2); //Boundry check**

**//trash sensor to 20cm>x**

**if(d1>20||d1==0){**

**forward();**

**show();**

**}**

**//stop,move little back and collect**

**else if(d1<=20&&d1>=10){**

**busy=true;**

**stopM();**

**backward();**

**delay(500);**

**stopM();**

**collect();**

**busy=false;**

**}**

**//boundry detect**

**if(d2<=35&&d2>=30){**

**buzz(2);**

**lcd.setCursor(0,0);**

**lcd.print("Boundary Detect! ");**

**left();**

**delay(1000);**

**stopM();**

**}**

**}**

**//arm controling**

**void moveArm(int angle){**

**int c1=s1.read();**

**int c2=s2.read();**

**if(c1<angle){**

**for(int a=c1;a<=angle;a++){**

**s1.write(a);**

**s2.write(180-a);**

**delay(stepDelay);**

**}**

**} else {**

**for(int a=c1;a>=angle;a--){**

**s1.write(a);**

**s2.write(180-a);**

**delay(stepDelay);**

**}**

**}**

**}**

**void forward(){ motor(HIGH,LOW,HIGH,LOW,spd,spd); }**

**void backward(){ motor(LOW,HIGH,LOW,HIGH,spd,spd); }**

**void left(){ motor(LOW,HIGH,HIGH,LOW,spd,spd); }**

**void right(){ motor(HIGH,LOW,LOW,HIGH,spd,spd); }**

**void stopM(){ motor(LOW,LOW,LOW,LOW,0,0); }**

**void motor(int i1,int i2,int i3,int i4,int sA,int sB){**

**digitalWrite(IN1,i1); digitalWrite(IN2,i2);**

**digitalWrite(IN3,i3); digitalWrite(IN4,i4);**

**analogWrite(ENA,sA);**

**analogWrite(ENB,sB);**

**}**

**long dist(int t,int e){**

**long r[5];**

**for(int i=0;i<5;i++){**

**digitalWrite(t,LOW); delayMicroseconds(2);**

**digitalWrite(t,HIGH); delayMicroseconds(10);**

**digitalWrite(t,LOW);**

**long d=pulseIn(e,HIGH,30000)\*0.034/2;**

**r[i]=(d>0&&d<400)?d:999;**

**delay(2);**

**}**

**for(int i=0;i<4;i++){**

**for(int j=i+1;j<5;j++){**

**if(r[j]<r[i]){ long tmp=r[i]; r[i]=r[j]; r[j]=tmp; }**

**}**

**}**

**return r[2];**

**}**

**void buzz(int m){**

**if(m==1) tone(buzzer,1000,200);**

**else if(m==2) tone(buzzer,2000,200);**

**}**

**void collect(){**

**buzz(1);**

**lcd.clear();**

**lcd.setCursor(0,0);**

**lcd.print("Trash Collecting");**

**moveArm(180);**

**delay(1000);**

**moveArm(50);**

**delay(1000);**

**moveArm(70);**

**delay(2000);**

**moveArm(0);**

**delay(1000);**

**moveArm(160);**

**delay(500);**

**}**

**void show(){**

**lcd.setCursor(0,0);**

**int val=analogRead(vPin);**

**float v=val\*(5.0/1023.0);**

**lcd.print("V:"); lcd.print(v,2); lcd.print("  ");**

**if(millis()-lastWeight>1000){**

**lastWeight=millis();**

**if(scale.is\_ready()){**

**long r=scale.get\_units(3);**

**lcd.setCursor(0,1);**

**lcd.print("W:"); lcd.print(r); lcd.print("    ");**

**}**

**}**

**}**