#include <NewPing.h>

#include <PWMServo.h>

PWMServo out1; //roll

PWMServo out2; //pitch

PWMServo out3; //throttle

int trig1 = 2;

int echo1 = 2;

int trig2 = 3;

int echo2 = 3;

int trig3 = 4;

int echo3 = 4;

int trig4 = 5;

int echo4 = 5;

int MAX\_DISTANCE = 400;

NewPing sonar1(trig1,echo1,MAX\_DISTANCE);

NewPing sonar2(trig2,echo2,MAX\_DISTANCE);

NewPing sonar3(trig3,echo3,MAX\_DISTANCE);

NewPing sonar4(trig4,echo4,MAX\_DISTANCE);

float dist1,dist2,dist3,dist4;

unsigned long counter\_1, counter\_2, counter\_3, current\_count;

byte last\_CH1\_state, last\_CH2\_state, last\_CH3\_state;

int input\_PITCH; //input on D9 of arduino

int input\_ROLL; //input on D8 of arduino

int input\_THROTTLE; //input on D10 of arduino

int DN;

int UP;

int antiDN;

int prev\_time = 0;

void setup(){

// Serial.begin(115200);

PCICR |= (1 << PCIE0);

PCMSK0 |= (1 << PCINT0);

PCMSK0 |= (1 << PCINT1);

PCMSK0 |= (1 << PCINT2);

out1.attach(13); //roll

out2.attach(11); //pitch

out3.attach(12); //throttle

pinMode(A0,INPUT);

}

void loop(){

int a=160;

int b=160;

int c=160;

int d=160;

int e=160;

if(input\_ROLL>1600){

d=210;

}

else if(input\_ROLL<1400){

c=210;

}

if(input\_PITCH>1600){

a=210;

}

else if(input\_PITCH<1400){

b=210;

}

dist1 = sonar1.ping\_cm();

dist2 = sonar2.ping\_cm();

dist3 = sonar3.ping\_cm();

dist4 = sonar4.ping\_cm();

byte roll = map(input\_ROLL, 1108, 1856, 55, 125); //maping roll

byte pitch = map(input\_PITCH, 1180, 1856, 55, 125); //maping pitch

byte throttle = map(input\_THROTTLE, 1160, 1830, 55, 125); //maping throttle

byte antifront = map(dist1, 6, 210, 55, 60); //force to back

byte antiback = map(dist2, 6, 210, 125, 120); //force to front

byte antileft = map(dist3, 6, 210, 125, 120); //force to right

byte antiright = map(dist4, 6, 210, 55, 60); //force to left

int val = pulseIn(A0,HIGH);

if(val < 1500){

// For Pitch..............

if(dist1<a && dist1>0 && (dist2>b || dist2==0)){

out2.write(antifront);

b=210;

}

else if((dist1>=a || dist1==0) && (dist2>=b || dist2==0)){

out2.write(pitch);

}

else if(dist2<b && dist2>0 && (dist1>a || dist1==0)){

out2.write(antiback);

a=210;

}

else if(dist1<a && dist2<b && dist1>0 && dist2>0){

out2.write(92);

c=210;

d=210;

e=210;

if(dist3>c || dist3==0){

out1.write(55);

}

else if(dist4>d || dist4==0){

out1.write(125);

}

else if(dist2>e ||dist2==0){

out3.write(110);

}

}

// For Roll..............

if(dist3<c && dist3>0 && (dist4>d || dist4==0)){

out1.write(antileft);

d=210;

}

else if(dist3>=c || dist3==0 && dist4>=d || dist4==0){

out1.write(roll);

}

else if(dist4<d && dist4>0 && (dist3>c || dist3==0)){

out1.write(antiright);

c=210;

}

else if(dist3<c && dist4<d && dist3>0 && dist4>0){

out1.write(92);

a=210;

b=210;

e=210;

if(dist1>a || dist1 ==0){

out2.write(125);

}

else if(dist2>b || dist2 ==0){

out2.write(55);

}

}

// For Throttle..............

out3.write(88);

a=210;

b=210;

c=210;

d=210;

if(dist1>a || dist1==0){

out2.write(125);

}

else if(dist2>b || dist2==0){

out2.write(55);

}

else if(dist3>c|| dist3==0){

out1.write(125);

}

else if(dist4>d || dist4==0){

out1.write(55);

}

}

if(input\_THROTTLE <= 1400){

out3.write(throttle);

}

int FB = (dist1<a && dist2<b && dist1>0 && dist2>0);

int LR = (dist3<c && dist4<d && dist3>0 && dist4>0);

if(FB && LR){

out1.write(92);

out2.write(92);

if(input\_THROTTLE <= 1400){

out3.write(throttle);

out3.write(60);

}

else if(val >= 1500){

out1.write(roll);

out2.write(pitch);

out3.write(throttle);

}

int f\_clear = (dist1>a || dist1==0); //front no obstacle

int b\_clear = (dist2>b || dist2==0); //back no obstacle

int l\_clear = (dist3>c || dist3==0); //left no obstacle

int r\_clear = (dist4>d || dist4==0); //right no obstacle

if(f\_clear && b\_clear && l\_clear && r\_clear){

out1.write(roll);

out2.write(pitch);

out3.write(throttle);

//Here the main loop ends

// The Below Codes Reads the PWM value of Receiver

ISR(PCMSK0PCINT0\_vect){

current\_count = micros();

if(PINB & B00000001){

if(last\_CH1\_state == 0){

last\_CH1\_state = 1;

counter\_1 = current\_count;

}+

}

else if(last\_CH1\_state == 1){

last\_CH1\_state = 0;

input\_ROLL = current\_count - counter\_1;

}

if(PINB & B00000010 ){

if(last\_CH2\_state == 0){

last\_CH2\_state = 1;

counter\_2 = current\_count;

}

}

else if(last\_CH2\_state == 1){

last\_CH2\_state = 0;

input\_PITCH = current\_count - counter\_2;

}

if(PINB & B00000100 ){

if(last\_CH3\_state == 0){

last\_CH3\_state = 1;

counter\_3 = current\_count;

}

}

else if(last\_CH3\_state == 1){

last\_CH3\_state = 0;

input\_THROTTLE = current\_count - counter\_3;

}