#include <AFMotor.h>

#include <Servo.h>

#include <NewPing.h>

#define TRIG\_PIN 9

#define ECHO\_PIN 8

#define MAX\_DISTANCE 300

#define MAX\_SPEED 100

#define MAX\_SPEED\_OFFSET 40

#define COLL\_DIST 35

#define TURN\_DIST COLL\_DIST+15

NewPing sonar(TRIG\_PIN, ECHO\_PIN, MAX\_DISTANCE);

AF\_DCMotor leftMotor(2, MOTOR12\_8KHZ);

AF\_DCMotor rightMotor(1, MOTOR12\_8KHZ);

Servo myservo;

int leftDistance, rightDistance;

int curDist = 0;

String motorSet = "";

int speedSet = 0;

void setup() {

myservo.attach(10);

myservo.write(90);

delay(1000);

}

void loop() {

myservo.write(90);

delay(90);

curDist = readPing();

if (curDist < COLL\_DIST) {changePath();}

moveForward();

delay(500);

}

void changePath() {

moveStop();

myservo.write(10);

delay(500);

leftDistance = readPing();

delay(500);

myservo.write(180);

delay(700);

rightDistance = readPing();

delay(500);

myservo.write(90);

delay(100);

compareDistance();

}

void compareDistance()

{

if (leftDistance>rightDistance)

{

turnLeft();

}

else if (rightDistance>leftDistance)

{

turnRight();

}

else

{

turnAround();

}

}

int readPing() {

delay(70);

unsigned int uS = sonar.ping();

int cm = uS/US\_ROUNDTRIP\_CM;

return cm;

}

void moveStop() {leftMotor.run(RELEASE); rightMotor.run(RELEASE);}

void moveForward() {

motorSet = "FORWARD";

leftMotor.run(FORWARD);

rightMotor.run(FORWARD);

for (speedSet = 0; speedSet < MAX\_SPEED; speedSet +=2)

{

leftMotor.setSpeed(100);

rightMotor.setSpeed(100);

delay(5);

}

}

void turnRight() {

motorSet = "RIGHT";

leftMotor.run(FORWARD);

rightMotor.run(BACKWARD);

rightMotor.setSpeed(speedSet+MAX\_SPEED\_OFFSET);

delay(350);

motorSet = "FORWARD";

leftMotor.run(FORWARD);

rightMotor.run(FORWARD);

}

void turnLeft() {

motorSet = "LEFT" ;

leftMotor.run(BACKWARD);

leftMotor.setSpeed(speedSet+MAX\_SPEED\_OFFSET);

rightMotor.run(FORWARD);

delay(350);

motorSet = "FORWARD";

leftMotor.run(FORWARD);

rightMotor.run(FORWARD);

}

void turnAround() {

motorSet = "TURNAROUND";

leftMotor.run(FORWARD);

rightMotor.run(BACKWARD);

rightMotor.setSpeed(speedSet+MAX\_SPEED\_OFFSET);

delay(700);

motorSet = "FORWARD";

leftMotor.run(FORWARD);

rightMotor.run(FORWARD);

}