

//ARDUINO OBSTACLE AVOIDING CAR//

// Before uploading the code you have to install the necessary library//

//AFMotor Library <https://learn.adafruit.com/adafruit-motor-shield/library-install> //

//NewPing Library <https://github.com/livetronic/Arduino-NewPing>//

//Servo Library <https://github.com/arduino-libraries/Servo.git> //

// To Install the libraries go to sketch >> Include Library >> Add .ZIP File >> Select the Downloaded ZIP files From the Above links //

#include <AFMotor.h>

#include <NewPing.h>

#include <Servo.h>

#define TRIG_PIN A0

#define ECHO_PIN A1

#define MAX_DISTANCE 200

#define MAX_SPEED 190 // sets speed of DC motors

#define MAX_SPEED_OFFSET 20

NewPing sonar(TRIG_PIN, ECHO_PIN, MAX_DISTANCE);

AF_DCMotor motor1(1, MOTOR12_1KHZ);

AF_DCMotor motor2(2, MOTOR12_1KHZ);

AF_DCMotor motor3(3, MOTOR34_1KHZ);

AF_DCMotor motor4(4, MOTOR34_1KHZ);

Servo myservo;

```
boolean goesForward=false;
```

```
int distance = 100;
```

```
int speedSet = 0;
```

```
void setup() {
```

```
    myservo.attach(10);
```

```
    myservo.write(115);
```

```
    delay(2000);
```

```
    distance = readPing();
```

```
    delay(100);
```

```
    distance = readPing();
```

```
    delay(100);
```

```
    distance = readPing();
```

```
    delay(100);
```

```
    distance = readPing();
```

```
    delay(100);
```

```
}
```

```
void loop() {
```

```
    int distanceR = 0;
```

```
    int distanceL = 0;
```

```
    delay(40);
```

```
    if(distance<=15)
```

```
    {
```

```
        moveStop();
```

```
        delay(100);
```

```
moveBackward();  
delay(300);  
moveStop();  
delay(200);  
distanceR = lookRight();  
delay(200);  
distanceL = lookLeft();  
delay(200);  
  
if(distanceR>=distanceL)  
{  
    turnRight();  
    moveStop();  
}else  
{  
    turnLeft();  
    moveStop();  
}  
}else  
{  
    moveForward();  
}  
distance = readPing();  
}  
  
int lookRight()  
{  
    myservo.write(50);
```

```
    delay(500);  
    int distance = readPing();  
    delay(100);  
    myservo.write(115);  
    return distance;  
}
```

```
int lookLeft()  
{  
    myservo.write(170);  
    delay(500);  
    int distance = readPing();  
    delay(100);  
    myservo.write(115);  
    return distance;  
    delay(100);  
}
```

```
int readPing() {  
    delay(70);  
    int cm = sonar.ping_cm();  
    if(cm==0)  
    {  
        cm = 250;  
    }  
    return cm;  
}
```

```
void moveStop() {
```

```
    motor1.run(RELEASE);
```

```
    motor2.run(RELEASE);
```

```
    motor3.run(RELEASE);
```

```
    motor4.run(RELEASE);
```

```
}
```

```
void moveForward() {
```

```
    if(!goesForward)
```

```
    {
```

```
        goesForward=true;
```

```
        motor1.run(FORWARD);
```

```
        motor2.run(FORWARD);
```

```
        motor3.run(FORWARD);
```

```
        motor4.run(FORWARD);
```

```
        for (speedSet = 0; speedSet < MAX_SPEED; speedSet +=2) // slowly bring the speed up to  
        avoid loading down the batteries too quickly
```

```
        {
```

```
            motor1.setSpeed(speedSet);
```

```
            motor2.setSpeed(speedSet);
```

```
            motor3.setSpeed(speedSet);
```

```
            motor4.setSpeed(speedSet);
```

```
            delay(5);
```

```
        }
```

```
    }
```

```
}
```

```
void moveBackward() {  
    goesForward=false;  
    motor1.run(BACKWARD);  
    motor2.run(BACKWARD);  
    motor3.run(BACKWARD);  
    motor4.run(BACKWARD);  
  
    for (speedSet = 0; speedSet < MAX_SPEED; speedSet +=2) // slowly bring the speed up to  
    avoid loading down the batteries too quickly  
    {  
        motor1.setSpeed(speedSet);  
        motor2.setSpeed(speedSet);  
        motor3.setSpeed(speedSet);  
        motor4.setSpeed(speedSet);  
        delay(5);  
    }  
}
```

```
void turnRight() {  
    motor1.run(FORWARD);  
    motor2.run(FORWARD);  
    motor3.run(BACKWARD);  
    motor4.run(BACKWARD);  
    delay(500);  
    motor1.run(FORWARD);  
    motor2.run(FORWARD);  
    motor3.run(FORWARD);  
    motor4.run(FORWARD);  
}
```

```
void turnLeft() {  
    motor1.run(BACKWARD);  
    motor2.run(BACKWARD);  
    motor3.run(FORWARD);  
    motor4.run(FORWARD);  
    delay(500);  
    motor1.run(FORWARD);  
    motor2.run(FORWARD);  
    motor3.run(FORWARD);  
    motor4.run(FORWARD);  
}
```