

Code for the Project:

The project was done in three parts, first checking the functionality of Ultrasonic Sensor and followed by L293D Motor Module and finally Ultrasonic sensor based Motor Activation part.

Here all the codes are enclosed. Source of code is from create.arduino.cc/projecthub

Part 1 : HC-SR04 Code

```
// ----- //
// Arduino Ultrasonic Sensor HC-SR04
// Re-writed by Arbi Abdul Jabbaar
// Using Arduino IDE 1.8.7
// Using HC-SR04 Module
// Tested on 17 September 2019
// ----- //

#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

// defines variables
long duration; // variable for the duration of sound wave travel
int distance; // variable for the distance measurement

void setup() {
  pinMode(trigPin, OUTPUT); // Sets the trigPin as an OUTPUT
  pinMode(echoPin, INPUT); // Sets the echoPin as an INPUT
  Serial.begin(9600); // // Serial Communication is starting with 9600 of baudrate speed
  Serial.println("Ultrasonic Sensor HC-SR04 Test"); // print some text in Serial Monitor
  Serial.println("with Arduino UNO R3");
}

void loop() {
  // Clears the trigPin condition
  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; // Speed of sound wave divided by 2 (go and back)
  // Displays the distance on the Serial Monitor
  Serial.print("Distance: ");
  Serial.print(distance);
```

```
Serial.println(" cm");  
}
```

Part 2 : L293D MOTOR Module Code

```
//Motor A  
const int inputPin1 = 10; // Pin 15 of L293D IC  
const int inputPin2 = 11; // Pin 10 of L293D IC  
//Motor B  
const int inputPin3 = 9; // Pin 7 of L293D IC  
const int inputPin4 = 8; // Pin 2 of L293D IC  
  
void setup()  
{  
  pinMode(inputPin1, OUTPUT);  
  pinMode(inputPin2, OUTPUT);  
  pinMode(inputPin3, OUTPUT);  
  pinMode(inputPin4, OUTPUT);  
}  
  
void loop()  
{  
  digitalWrite(inputPin1, HIGH);  
  digitalWrite(inputPin2, LOW);  
  digitalWrite(inputPin3, HIGH);  
  digitalWrite(inputPin4, LOW);  
}
```

Part 3 : OBSTACLE AVOIDING Code (Combining 2 & 3)

```
const int trig = 9; // Ultrasonic sensor trig pin with arduino pin 9  
const int echo = 8; // ultrasonic sensor echo pin with arduino pin 8  
const int leftForward = 4; //from J8 pin 3 with arduino pin 4  
const int leftBackward = 5; // from J8 pin 4 with arduino pin 5  
const int rightForward = 6; // from J8 pin 6 with arduino pin 6  
const int rightBackward = 7; // From J8 pin 5 with arduino pin 7  
  
int duration = 0 ;  
int distance = 0 ;  
  
void setup()  
{  
  
  pinMode(trig , OUTPUT);  
  pinMode(echo , INPUT);
```

```
pinMode(leftForward, OUTPUT);
pinMode(leftBackward, OUTPUT);
pinMode(rightForward, OUTPUT);
pinMode(rightBackward, OUTPUT);
Serial.begin(9600);
}
```

```
void loop()
```

```
{
digitalWrite(trig, HIGH);
delayMicroseconds(1000);
digitalWrite(trig, LOW);
```

```
duration = pulseIn(echo, HIGH);
distance = (duration/2)/ 30;
Serial.println(distance);
```

```
if (distance < 20)
```

```
{
digitalWrite(4, LOW);
digitalWrite(5, HIGH);
digitalWrite(6, HIGH);
digitalWrite(7, LOW);
delay(1000);
```

```
}
```

```
else
```

```
{
```

```
digitalWrite(4, HIGH);
digitalWrite(5, LOW);
digitalWrite(6, HIGH);
digitalWrite(7, LOW);
```

```
}
```

```
}
```

THANK YOU.