

```

//-----PSEUDOCODE:-----//

#define speedSoundMicro 0.034

//---- Arduino pins----//

int trigPin = 7; //digital
int echoPin = 8; //digital
int rearLine = 10; //digital
int frontLine = 11; //digital
int leftEnableDC = 6; //pwm
int rightEnableDC = 9; //pwm
int in1 = 2; //input1 for left DC motor
int in2 = 3; //input2 for left DC motor
int in3 = 4; //input1 for right DC motor
int in4 = 5; //input2 for right DC motor

void setup() {
  // put your setup code here, to run once:

  pinMode(trigPin,OUTPUT);
  pinMode(echoPin,INPUT);

  pinMode(leftEnableDC,OUTPUT); (should be PWM capable)
  pinMode(rightEnableDC,OUTPUT); (should be PWM capable)

  Set up input pins (4 total)
  pinMode(in1,OUTPUT);
  pinMode(in2,OUTPUT);
  pinMode(in3,OUTPUT);
  pinMode(in4,OUTPUT);

  pinMode(rearLine,OUTPUT);
  pinMode(frontLine,OUTPUT);

  pinMode(13, OUTPUT); //built in LED for debugging
  Serial.begin(9600); //debugging
}

//Ultrasonic sensor -- as function

int ultrasonicFunction() {

  initialize variable for duration of type long;
  initialize variable for distance (robot distance ~10cm. depends on length of our arms) to
  activate
  acceleration. type = int.

```

```
Create trigger pulse (10 microseconds)
record time for the pulse to reach the echo component
distance = duration*speedSoundMicro/2; //in cm
```

```
return distance;
}
```

```
//IR line tracer sensor function
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```
int ringDetect() //need to calibrate sensor first
{
    initialize int variable to store light sensor reading
    variable for front sensor.
    variable for rear sensor.
    obtain data from sensors using digitalRead()
    return 1 (for rear IR sensor, return 2 (for front sensor) OR
    return 0 (inside ring)
```

```
return integer;
```

```
}
```

```
void loop() {
    // put your main code here, to run repeatedly:
```

```
//Ring :: Detects the edge of the ring (with IR line sensor) + motor controller function
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```
if (rear light sensor detects line) ie: function returns 1 {
    enable both left and right DC motors at 250
    (forward direction)
    Set up forward rotation direction in left motor (HIGH and LOW)
    Set up forward rotation direction in right motor (HIGH and LOW)
} else if (front light sensor detects line) ie: function returns 2 {
    enable both left and right DC motors at 250
    (reverse direction)
    Set up backward rotation direction in left motor (LOW and HIGH)
    Set up backward rotation direction in right motor (LOW and HIGH)
} else { //ie: function returns 0
    Continue motion as normal.forward
    set normal speed ~200
    Enable pin for left DC
    Enable pin for right DC
    Set up forward rotation direction in left motor
    Set up forward rotation direction in right motor
}
```

```
//Detection :: Opponent at arm distance away

if (ultrasonicFunction() == 10) {
  Accelerate -> maximise leverage of arms
  Enable pins for both DC motors to be set with PWM to be highest speed. (analog pins) =
255
  Duration of ~5-8 seconds
  lower speed back to original speed
}

}

//-----END_PSEUDOCODE:-----//
```