

# LAMPIRAN

LAMPIRAN A  
SOURCE CODE

```
#include <AFMotor.h>
#include <Servo.h>

#define TRIG_PIN A4
#define ECHO_PIN A5

AF_DCMotor leftMotor(3, MOTOR12_8KHZ);
AF_DCMotor rightMotor(1, MOTOR12_8KHZ);
AF_DCMotor FanMotor(2, MOTOR12_8KHZ);
Servo ServoMotor;

const int pingPin = A4; // Trigger Pin of Ultrasonic Sensor
const int echoPin = A5; // Echo Pin of Ultrasonic Sensor
String motorSet = "";
int speedSet = 0;
int pos = 0;
int cm_Left = 0;
int cm_Right = 0;
int cm_Centre = 0;
int FireSensorLeft = 0;
int FireSensorRight = 0;
int FireSensorCentre = 0;
int SmokeSensorLeft = 0;
int SmokeSensorRight = 0;
int SmokeSensorCentre = 0;
int LED = 13;
int smoke = A3;
```

```

void setup() {
  Serial.begin(9600);
  ServoMotor.attach(9);
  ServoMotor.write(90);
  pinMode(LED, OUTPUT);
  pinMode(smoke, INPUT);
  delay(2000);
}

void loop() {

  checkDistanceCentre();
  if (cm_Centre >=30)
  {
    moveForward();
    moveStop();
  }
  checkDistanceLeft();
  if ( (cm_Left >=10)&&(cm_Left<=30))
  {
    turnRight();
    moveStop();
  }
  checkDistanceRight();
  if ( (cm_Right >=10)&&(cm_Right<=30))

```

```

{
  turnLeft();
  moveStop();
}
checkDistanceCentre();
if (cm_Centre >=30)
{
  moveForward();
  moveStop();
}

CheckFireLeft();
if (((FireSensorLeft >=400)&&(FireSensorLeft<=700))|| ((SmokeSensorLeft
>=100)&&(SmokeSensorLeft <=200)))
{
  turnLeft();
  moveStop();
  FanMotorOut();
  digitalWrite(LED, HIGH);
  delay(1000);
  digitalWrite(LED, LOW);
  delay(1000);
  digitalWrite(LED, HIGH);
  delay(1000);
  digitalWrite(LED, LOW);
  delay(1000);
  moveStop();
}
CheckFireRight();

```

```

if (((FireSensorRight >=400)&&(FireSensorRight<=700))|| ((SmokeSensorRight
>=100)&&(SmokeSensorRight <=200)))
{
    turnRight();
    moveStop();
    FanMotorOut();
    digitalWrite(LED, HIGH);
    delay(1000);
    digitalWrite(LED, LOW);
    delay(1000);
    digitalWrite(LED, HIGH);
    delay(1000);
    digitalWrite(LED, LOW);
    delay(1000);
    moveStop();
}
CheckFireCentre();
if      (((FireSensorCentre      >=20)&&(FireSensorCentre<=900))||
((SmokeSensorCentre >=100)&&(SmokeSensorCentre <=200)))
{
    moveFire();
    moveStop();
    FanMotorOut();
    digitalWrite(LED, HIGH);
    delay(1000);
    digitalWrite(LED, LOW);
    delay(1000);
    digitalWrite(LED, HIGH);
    delay(1000);
    digitalWrite(LED, LOW);
}

```

```

    delay(1000);
    moveStop();
}
moveStop();
}

void checkDistanceLeft()
{
    for (pos = 0; pos <= 180; pos += 1)
    {
        ServoMotor.write(pos);
        long duration,cm;
        pinMode(pingPin, OUTPUT);
        digitalWrite(pingPin, LOW);
        delayMicroseconds(2);
        digitalWrite(pingPin, HIGH);
        delayMicroseconds(10);
        digitalWrite(pingPin, LOW);
        pinMode(echoPin, INPUT);
        duration = pulseIn(echoPin, HIGH);
        cm_Left = microsecondsToCentimeters(duration);
        Serial.print(cm_Left);
        Serial.print("cm_Left");
        Serial.println();
        delay(15);
    }
}

void checkDistanceRight()

```

```

{
  for (pos = 180; pos >= 0; pos -= 1)
  {
    ServoMotor.write(pos);
    long duration,cm;
    pinMode(pingPin, OUTPUT);
    digitalWrite(pingPin, LOW);
    delayMicroseconds(2);
    digitalWrite(pingPin, HIGH);
    delayMicroseconds(10);
    digitalWrite(pingPin, LOW);
    pinMode(echoPin, INPUT);
    duration = pulseIn(echoPin, HIGH);
    cm_Right = microsecondsToCentimeters(duration);
    Serial.print(cm_Right);
    Serial.print("cm_Right");
    Serial.println();
    delay(15);
  }
}

```

```

void checkDistanceCentre()
{
  ServoMotor.write(90);
  long duration,cm;
  pinMode(pingPin, OUTPUT);
  digitalWrite(pingPin, LOW);
  delayMicroseconds(2);
  digitalWrite(pingPin, HIGH);

```

```

delayMicroseconds(10);
digitalWrite(pingPin, LOW);
pinMode(echoPin, INPUT);
duration = pulseIn(echoPin, HIGH);
cm_Centre = microsecondsToCentimeters(duration);
Serial.print(cm_Centre);
Serial.print("cm_Centre");
Serial.println();
delay(100);
}

```

```

void CheckFireLeft()
{
  for (pos = 0; pos <= 180; pos += 1)
  {
    ServoMotor.write(pos);
    FireSensorLeft = analogRead(A1);
    Serial.print("FireSensorLeft=");
    Serial.println(FireSensorLeft);
    SmokeSensorLeft = analogRead(smoke);
    Serial.print("SmokeLeft: ");
    Serial.println(SmokeSensorLeft);
    delay(50);
  }
}

```

```

void CheckFireRight()
{
  for (pos = 180; pos >= 0; pos -= 1)

```



```
{  
  ServoMotor.write(pos);  
  FireSensorRight = analogRead(A1);  
  Serial.print("FireSensorRight=");  
  Serial.println(FireSensorRight);  
  SmokeSensorRight = analogRead(smoke);  
  Serial.print("SmokeRight: ");  
  Serial.println(SmokeSensorRight);  
  delay(50);  
}  
}
```

```
void CheckFireCentre()
```

```
{  
  ServoMotor.write(90);  
  FireSensorCentre = analogRead(A1);  
  Serial.print("FireSensorCentre=");  
  Serial.println(FireSensorCentre);  
  SmokeSensorCentre = analogRead(smoke);  
  Serial.print("SmokeCentre: ");  
  Serial.println(SmokeSensorCentre);  
  delay(100);  
}
```

```
void moveStop()
```

```
{  
  leftMotor.run(RELEASE);  
  rightMotor.run(RELEASE);  
}
```

```
FanMotor.run(RELEASE);  
delay(50);  
}
```

```
void moveFire() {  
    motorSet = "FORWARD";  
    leftMotor.run(FORWARD);  
    rightMotor.run(FORWARD);  
    leftMotor.setSpeed(50);  
    rightMotor.setSpeed(50);  
    delay(300);  
}
```

```
void moveForward() {  
    motorSet = "FORWARD";  
    leftMotor.run(FORWARD);  
    rightMotor.run(FORWARD);  
    leftMotor.setSpeed(100);  
    rightMotor.setSpeed(100);  
    delay(500);  
}
```

```
void moveBackward() {  
    motorSet = "BACKWARD";  
    leftMotor.run(BACKWARD);  
    rightMotor.run(BACKWARD);  
    leftMotor.setSpeed(100);  
    rightMotor.setSpeed(100);  
    delay(500);  
}
```

```
}
```

```
void turnRight() {  
    motorSet = "RIGHT";  
    leftMotor.run(FORWARD);  
    rightMotor.run(BACKWARD);  
    leftMotor.setSpeed(100);  
    rightMotor.setSpeed(150);  
    delay(700);  
}
```

```
void turnLeft() {  
    motorSet = "LEFT";  
    leftMotor.run(BACKWARD);  
    rightMotor.run(FORWARD);  
    leftMotor.setSpeed(150);  
    rightMotor.setSpeed(100);  
    delay(600);  
}
```

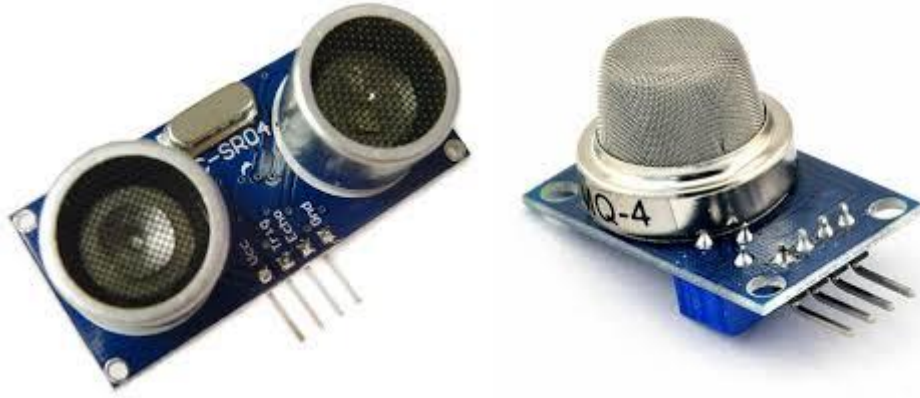
```
void FanMotorOut() {  
    motorSet = "BACKWARD";  
    FanMotor.run(BACKWARD);  
    FanMotor.setSpeed(200);  
    delay(5000);  
}
```

```
long microsecondsToInches(long microseconds) {
```

```
    return microseconds / 74 / 2;
}

long microsecondsToCentimeters(long microseconds) {
    return microseconds / 29 / 2;
}
```

LAMPIRAN B  
FOTO ALAT



- 1 = Output
- 2 = Vcc (positive voltage)
- 3 = Gnd

