

LAMPIRAN A

Program

```
//inisialisasi
int EN1 = 9;
int EN2 = 11;
int MNe1 = 12; //motor kanan
int MPo1 = 4;
int MPo2 = 13; //motor kiri
int MNe2 = 3;
int pingPin = 7; // sensor kiri
int pingPin1 = 2; // sensor kanan
long duration, cm;

void setup(){
  pinMode (EN1, OUTPUT);
  pinMode (EN2, OUTPUT);
  pinMode (pingPin, OUTPUT);
  pinMode (pingPin1, OUTPUT);
  pinMode (MNe1, OUTPUT);
  pinMode (MPo1, OUTPUT);
  pinMode (MNe2, OUTPUT);
  pinMode (MPo2, OUTPUT);
  Serial.begin(9600);
}

void loop () {

  long duration, cm, cm1;

  pinMode(pingPin, OUTPUT);
  digitalWrite(pingPin, LOW);
  delayMicroseconds(2);
  digitalWrite(pingPin, HIGH);
  delayMicroseconds(5);
  digitalWrite(pingPin, LOW);

  pinMode(pingPin, INPUT);
  duration = pulseIn(pingPin, HIGH);
  cm = microsecondsToCentimeters(duration);
  Serial.println(cm);
```

```

pinMode(pingPin1, OUTPUT);
digitalWrite(pingPin1, LOW);
delayMicroseconds(2);
digitalWrite(pingPin1, HIGH);
delayMicroseconds(5);
digitalWrite(pingPin1, LOW);

pinMode(pingPin1, INPUT);
duration = pulseIn(pingPin1, HIGH);
cm1 = microsecondsToCentimeters(duration);
Serial.println(cm1);

robotMaju();
if ((cm > 7) && (cm1 < 7)){
    putarKiri();
}
else if ((cm < 7) && (cm1 > 7)){
    putarKanan();
}
else if ((cm <= 4) && (cm1 <= 4)){
    mundur();
    delay(2000);
    putarKiri();
    delay(3000);
}

delay(100);

}

void robotMaju(){

    digitalWrite(EN1,LOW);
    digitalWrite(EN2,LOW);
    delayMicroseconds(100);
    digitalWrite(4,LOW);
    digitalWrite(12,HIGH);
    delayMicroseconds(100);
    digitalWrite(13,LOW);
    digitalWrite(3,HIGH);
    delayMicroseconds(100);
    digitalWrite(EN1,HIGH);
    digitalWrite(EN2,HIGH);
    delay(25);
}

```

```

void putarKanan(){ //belok kanan
    digitalWrite(4,LOW);
    digitalWrite(12,LOW);
    delayMicroseconds(100);
    digitalWrite(13,LOW);
    digitalWrite(3,HIGH);
    delayMicroseconds(100);
    digitalWrite(EN1,HIGH);
    digitalWrite(EN2,HIGH);
    delayMicroseconds(200);
    delay(900);
}

```

```

void putarKiri(){ // belok kiri
    digitalWrite(4,LOW);
    digitalWrite(12,HIGH);
    delayMicroseconds(100);
    digitalWrite(13,LOW);
    digitalWrite(3,LOW);
    delayMicroseconds(100);
    digitalWrite(EN1,HIGH);
    digitalWrite(EN2,HIGH);
    delayMicroseconds(200);
    delay(900);
}

```

```

void mundur(){
    digitalWrite(4,HIGH);
    digitalWrite(12,LOW);
    delayMicroseconds(100);
    digitalWrite(13,HIGH);
    digitalWrite(3,LOW);
    delayMicroseconds(100);
    digitalWrite(EN1,HIGH);
    digitalWrite(EN2,HIGH);
    delayMicroseconds(200);
    delay(1000);
}

```

```

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

```

LAMPIRAN B

Skematik

