

**LAMPIRAN B**  
**LISTING PROGRAM**

```

$mod51
;#####
;                               I/O mapping
;#####
    delay_hindar equ 10 ;(X 50 milisecond)
    delay_maju_scan equ 2

    ir_dpn equ p1.1
    ir_kiri equ p1.2
    ir_kanan equ p1.0
    ir_bawah equ p1.3

    motor_kiri_maju equ p1.6
    motor_kiri_mundur equ p1.7
    motor_kanan_maju equ p1.4
    motor_kanan_mundur equ p1.5

    adc equ p3

    stepper equ p2
;#####
                               Program Utama
;#####
    mov sp,#30h
main:    lcall init
hindar:  jnb ir_dpn,hindar1
        lcall mundur
        lcall kanan
hindar1: jnb ir_kiri,hindar2
        lcall mundur
        lcall kanan
hindar2: jnb ir_kanan,hindar3
        lcall mundur
        lcall kiri
hindar3: jnb ir_bawah,hindar4
        ljmp scan_cahaya
hindar4: lcall stop
        mov a,#1
        lcall delay
        lcall maju
        ljmp hindar

```

```

scan_cahaya: lcall maju
              mov a,#delay_maju_scan
              lcall delay
              lcall stop
              lcall scan
              clr cy
              mov a,r2
              subb a,r0
              jc belok_kiri
              lcall kanan
              lcall mundur
              mov a, #6
              lcall maju
              lcall delay
              ljmp belok_kanan
belok_kiri:  lcall kiri
              lcall mundur
              mov a, #6
              lcall maju
              lcall delay
belok_kanan: ljmp scan_cahaya

```

```

;#####

```

#### Routine

```

;#####

```

```

init:  clr ir_dpn
        clr ir_kiri
        clr ir_kanan
        clr ir_bawah
        clr motor_kiri_maju
        clr motor_kiri_mundur
        clr motor_kanan_maju
        clr motor_kanan_mundur
        mov adc,#0ffh
        mov stepper,#00h
        ret

```

```

delay:  mov r4, a
loadr5: mov r5, #100 ; 0.05s
loadr6: mov r6, #250 ; 0.5ms
        djnz r6, $
        djnz r5, loadr6
        djnz r4, loadr5
        ret

```

```

delayms:    mov r6, #250 ; 0.5ms
            djnz r6, $
            ret
ambil_adc:  mov adc,#0ffh
            lcall delayms
            mov a,adc
            ret
stop:      clr motor_kiri_mundur
            clr motor_kanan_mundur
            clr motor_kiri_maju
            clr motor_kanan_maju
            ret

maju:      clr motor_kiri_mundur
            clr motor_kanan_mundur
            setb motor_kiri_maju
            setb motor_kanan_maju
            mov a,#2
            lcall delay
            ret

mundur:    mov a,#3
            clr motor_kiri_maju
            clr motor_kanan_maju
            setb motor_kiri_mundur
            setb motor_kanan_mundur
            lcall delay
            ret

kiri:      mov a,#delay_hindar
            clr motor_kiri_maju
            clr motor_kanan_mundur
            setb motor_kiri_mundur
            setb motor_kanan_maju
            lcall delay
            ret

kanan:     mov a,#delay_hindar
            clr motor_kiri_mundur
            clr motor_kanan_maju
            setb motor_kiri_maju
            setb motor_kanan_mundur
            lcall delay
            ret

```

```
scan: lcall stop
      mov stepper,#01h
      mov a,#1
      lcall delay
      lcall ambil_adc
      mov stepper,#02h
      mov r0,a
      mov a,#1
      lcall delay
      mov a,#1
      lcall delay
      mov stepper,#04h
      mov a,#1
      lcall delay
      mov stepper,#08h
      mov a,#1
      lcall delay
      mov stepper,#01h
      mov a,#1
      lcall delay
      mov stepper,#02h
      mov a,#1
      lcall delay
      mov stepper,#04h
      mov a,#1
      lcall delay
      mov stepper,#08h
      mov a,#1
      lcall delay
      mov stepper,#01h
      mov a,#1
      lcall delay
      mov stepper,#02h
      mov a,#1
      lcall delay
      mov stepper,#04h
      mov a,#1
      lcall delay
      mov stepper,#08h
      mov a,#1
      lcall delay
```

```
lcall ambil_adc
mov r2,a

mov stepper,#08h
mov a,#1
lcall delay
mov stepper,#04h
mov a,#1
lcall delay
mov stepper,#02h
mov a,#1
lcall delay
mov stepper,#01h
mov a,#1
lcall delay

mov stepper,#08h
mov a,#1
lcall delay
mov stepper,#04h
mov a,#1
lcall delay
mov stepper,#02h
mov a,#1
lcall delay
mov stepper,#01h
mov a,#1
lcall delay

mov stepper,#08h
mov a,#1
lcall delay
mov stepper,#04h
mov a,#1
lcall delay
mov stepper,#02h
mov a,#1
lcall delay
mov stepper,#01h
ret
```

end