SOURCE CODE

```
' {$STAMP BS2sx}
' {$PBASIC 2.5}


'------------Variabel dan konfigurasi pin Motor--------
motor1  PIN 1
ainput  PIN 3
motor2  PIN 0
binput  PIN 2

'----------------konfigurasi pin dan variabel cek kompas----------------
DinDout PIN 6 ' P6 transceives to/from Din/Dout
Clk PIN 5 ' P5 sends pulses to HM55B's Clk
En PIN 4 ' P4 controls HM55B's /EN(ABLE)

Reset CON %0000 ' Reset command for HM55B
Measure CON %1000 ' Start measurement command
Report CON %1100 ' Get status/axis values command
Ready CON %1100 ' 11 -> Done, 00 -> no errs
NegMask CON %1111100000000000 ' For 11-bit negative to 16-bits

x VAR Word ' x-axis data
y VAR Word ' y-axis data
status VAR Nib ' Status flags
angle VAR Word ' Store angle measurement
Temp VAR Word 'Temp register for manipulating bits

'-------------------Variabel perhitungan err dan setpoint-----------
sp VAR Word
err VAR Byte

'---- Program utama --------------------------

DO
GOSUB Cek_kompas            ' Get x, and y values
  angle = x ATN -y          ' Convert x and y to brads
  angle = angle */ 360      ' Convert brads to degrees

  DEBUG HOME, "x-axis N(-S) = ",SDEC x, ' Display axes and degrees
  CLREOL, CR, "y-axis W(-E) = ",
  SDEC y, CLREOL, CR, CR, "angle = ",
  DEC angle, " degrees", CLREOL


'---------Hitung error------------------------
sp=45
err =ABS ( angle-sp )

DEBUG?err
```

```
IF angle < 45 OR angle > 225 THEN 'kuadran I dan IV
    GOSUB belka
    IF err = 0 THEN
    PAUSE 5000
      GOTO Sudut_90
    ENDIF
ELSEIF angle > 45 OR angle < 225 THEN 'kuadran II dan III
     GOSUB belki
     IF err = 0 THEN
     PAUSE 5000
      GOTO sudut_90
     ENDIF
   ELSE
   PAUSE 5000
  GOTO sudut_90
  PAUSE 1000
    ENDIF
   LOOP

sudut_90 :
DO
GOSUB Cek_kompas            ' Get x, and y values
  angle = x ATN -y          ' Convert x and y to brads
  angle = angle */ 360      ' Convert brads to degrees

  DEBUG HOME, "x-axis N(-S) = ",SDEC x, ' Display axes and degrees
  CLREOL, CR, "y-axis W(-E) = ",
  SDEC y, CLREOL, CR, CR, "angle = ",
  DEC angle, " degrees", CLREOL
 sp=90
err =ABS ( angle-sp )
DEBUG?err
IF angle < 90 OR angle > 270 THEN 'kuadran I dan IV
    GOSUB belka
    IF err = 0 THEN
    PAUSE 5000
      GOTO sudut_180
    ENDIF
ELSEIF angle > 90 OR angle < 270 THEN 'kuadran II dan III
     GOSUB belki
     IF err = 0 THEN
      PAUSE 5000
      GOTO sudut_135
     ENDIF
   ELSE
   PAUSE 5000
  GOTO sudut_135
  PAUSE 1000
 ENDIF
 LOOP
```

```
sudut_135 :
DO
GOSUB Cek_kompas            ' Get x, and y values
  angle = x ATN -y          ' Convert x and y to brads
  angle = angle */ 360      ' Convert brads to degrees

  DEBUG HOME, "x-axis N(-S) = ",SDEC x, ' Display axes and degrees
  CLREOL, CR, "y-axis W(-E) = ",
  SDEC y, CLREOL, CR, CR, "angle = ",
  DEC angle, " degrees", CLREOL
 sp=135
err =ABS ( angle-sp )
DEBUG?err
IF angle < 135 OR angle > 315 THEN 'kuadran I dan IV
    GOSUB belka
    IF err = 0 THEN
    PAUSE 5000
      GOTO sudut_180
    ENDIF
ELSEIF angle > 135 OR angle < 315 THEN 'kuadran II dan III
     GOSUB belki
     IF err = 0 THEN
      PAUSE 5000
      GOTO sudut_180
     ENDIF
   ELSE
   PAUSE 5000
  GOTO sudut_180
  PAUSE 1000
 ENDIF
 LOOP

sudut_180 :
DO
GOSUB Cek_kompas            ' Get x, and y values
  angle = x ATN -y          ' Convert x and y to brads
  angle = angle */ 360      ' Convert brads to degrees

  DEBUG HOME, "x-axis N(-S) = ",SDEC x, ' Display axes and degrees
  CLREOL, CR, "y-axis W(-E) = ",
  SDEC y, CLREOL, CR, CR, "angle = ",
  DEC angle, " degrees", CLREOL
sp= 180
err =ABS ( angle-sp )
DEBUG?err
IF angle < 180 OR angle > 270 THEN 'kuadran I dan IV
    GOSUB belka
    IF err = 0 THEN
    PAUSE 5000
      GOTO sudut_225
```

```
    ENDIF
ELSEIF angle > 180 OR angle < 270 THEN 'kuadran II dan III
     GOSUB belki
     IF err = 0 THEN
      GOTO sudut_225
     ENDIF
   ELSE
  GOTO sudut_225
  PAUSE 1000
 ENDIF
 LOOP

sudut_225:
DO
GOSUB Cek_kompas            ' Get x, and y values
  angle = x ATN -y          ' Convert x and y to brads
  angle = angle */ 360      ' Convert brads to degrees

  DEBUG HOME, "x-axis N(-S) = ",SDEC x, ' Display axes and degrees
  CLREOL, CR, "y-axis W(-E) = ",
  SDEC y, CLREOL, CR, CR, "angle = ",
  DEC angle, " degrees", CLREOL
sp= 225
err =ABS ( angle-sp )
DEBUG?err
IF angle < 225 OR angle > 45 THEN 'kuadran I dan IV
    GOSUB belka
    IF err = 0 THEN
      PAUSE 5000
      GOTO sudut_270
    ENDIF
ELSEIF angle > 225 OR angle < 45 THEN 'kuadran II dan III
     GOSUB belki
     IF err = 0 THEN
       PAUSE 5000
      GOTO sudut_270
     ENDIF
   ELSE
   PAUSE 5000
  GOTO sudut_270
  PAUSE 1000
 ENDIF
 LOOP

sudut_270:
DO
GOSUB Cek_kompas            ' Get x, and y values
  angle = x ATN -y          ' Convert x and y to brads
  angle = angle */ 360      ' Convert brads to degrees
```

```
  DEBUG HOME, "x-axis N(-S) = ",SDEC x, ' Display axes and degrees
  CLREOL, CR, "y-axis W(-E) = ",
  SDEC y, CLREOL, CR, CR, "angle = ",
  DEC angle, " degrees", CLREOL
sp= 270
err =ABS ( angle-sp )
DEBUG?err
IF angle < 270 OR angle > 90 THEN 'kuadran I dan IV
    GOSUB belka
    IF err = 0 THEN
      PAUSE 5000
      GOTO sudut_315
    ENDIF
ELSEIF angle > 270 OR angle < 90 THEN 'kuadran II dan III
     GOSUB belki
     IF err = 0 THEN
       PAUSE 5000
      GOTO sudut_315
     ENDIF
   ELSE
   PAUSE 5000
  GOTO sudut_315
  PAUSE 1000
 ENDIF
 LOOP

sudut_315 :
DO
GOSUB Cek_kompas            ' Get x, and y values
  angle = x ATN -y          ' Convert x and y to brads
  angle = angle */ 360      ' Convert brads to degrees

  DEBUG HOME, "x-axis N(-S) = ",SDEC x, ' Display axes and degrees
  CLREOL, CR, "y-axis W(-E) = ",
  SDEC y, CLREOL, CR, CR, "angle = ",
  DEC angle, " degrees", CLREOL
sp= 315
err =ABS ( angle-sp )
DEBUG?err
IF angle < 315 OR angle > 135 THEN 'kuadran I dan IV
    GOSUB belka
    IF err = 0 THEN
      PAUSE 5000
      GOTO sudut_315
    ENDIF
ELSEIF angle > 315 OR angle < 135 THEN 'kuadran II dan III
     GOSUB belki
     IF err = 0 THEN
       PAUSE 5000
      GOTO sudut_360
```

```
    ENDIF
   ELSE
   PAUSE 5000
  GOTO sudut_360
  PAUSE 1000
 ENDIF
 LOOP

sudut_360 :
DO
GOSUB Cek_kompas            ' Get x, and y values
  angle = x ATN -y          ' Convert x and y to brads
  angle = angle */ 360      ' Convert brads to degrees

  DEBUG HOME, "x-axis N(-S) = ",SDEC x, ' Display axes and degrees
  CLREOL, CR, "y-axis W(-E) = ",
  SDEC y, CLREOL, CR, CR, "angle = ",
  DEC angle, " degrees", CLREOL
sp= 357
err =ABS ( angle-sp )
DEBUG?err
IF angle < 180 OR angle < 90 THEN 'kuadran I dan IV
    GOSUB belka
    IF err = 3 THEN
      GOSUB berhenti
    ENDIF
ELSEIF angle > 270  OR angle > 180 THEN 'kuadran II dan III
     GOSUB belki
     IF err = 3 THEN
       GOSUB berhenti
     ENDIF
   ELSE
  GOSUB berhenti
  PAUSE 1000
 ENDIF
 LOOP

'=========================================================

'-------------prosedur belok----------
belki:
LOW ainput
PWM motor1,255,40
LOW binput
PWM motor2,255,40
RETURN

belka:
HIGH ainput
PWM motor1,255,40
```

```
HIGH binput
PWM motor2,255,40
RETURN
'-------------------------Prosedur berhenti----------
berhenti:
HIGH ainput
LOW motor1
LOW binput
LOW motor2
STOP


'-------------------------cek_kompas----------------

Cek_kompas: ' Compass module subroutine

HIGH En: LOW En ' Send reset command to HM55B
SHIFTOUT DinDout,clk,MSBFIRST,[Reset\4]

HIGH En: LOW En ' HM55B start measurement command
SHIFTOUT DinDout,clk,MSBFIRST,[Measure\4]
status = 0 ' Clear previous status flags

DO ' Status flag checking loop
HIGH En: LOW En ' Measurement status command
SHIFTOUT DinDout,clk,MSBFIRST,[Report\4]
SHIFTIN DinDout,clk,MSBPOST,[Status\4] ' Get Status
LOOP UNTIL status = Ready ' Exit loop when status is ready

SHIFTIN DinDout,clk,MSBPOST,[x\11,y\11] ' Get x &amp;amp; y axis values
HIGH En ' Disable module

IF (y.BIT10 = 1) THEN y = y | NegMask ' Store 11-bits as signed word
IF (x.BIT10 = 1) THEN x = x | NegMask ' Repeat for other axis

RETURN

END
```