LAMPIRAN

Lampiran Program

#include <TimerThree.h>

const int SumbuX = 5;

const int DirX = 4;

const int SumbuY = 6;

const int DirY = 7;

const long CDR = 1000000;

const long fc = 2500;

const int JXCW = 50; //2

const int JXCCW = 51; //4

const int JYCW = 52; //1

const int JYCCW = 53; //3

const int Aatas = 1;

const int Abawah = 0;

const int Akanan = 1;

const int Akiri = 0;

const int LSR = 37;

const int LSL = 35;

const int LSF = 19;

const int LSB = 18;

const int LSU = 41;

const int LSD = 39;

const int LH=10;

const int LK=8;

const int LM=9;

const int OrgX = 17;

const int OrgY = 16;

const int TStart = 11;

const int TReset = 33;

void setup()

{

pinMode(SumbuX, OUTPUT);

pinMode(DirX, OUTPUT);

pinMode(SumbuY, OUTPUT);

pinMode(DirY, OUTPUT);

pinMode(LH,OUTPUT);

pinMode(LK,OUTPUT);

pinMode(LM,OUTPUT);

pinMode(JXCW, INPUT);

pinMode(JXCCW, INPUT);

pinMode(JYCW, INPUT);

pinMode(JYCCW, INPUT);

pinMode(LSR, INPUT);

pinMode(LSL, INPUT);

pinMode(LSF, INPUT);

pinMode(LSB, INPUT);

pinMode(LSU, INPUT);

pinMode(LSD, INPUT);

pinMode(OrgX, INPUT);

pinMode(OrgY, INPUT);

pinMode(TReset, INPUT);

pinMode(TStart, INPUT);

attachInterrupt(1,TEmg,HIGH);

attachInterrupt(0,TStop,FALLING);

digitalWrite(TReset,HIGH);

digitalWrite(TStart,HIGH);

digitalWrite(2,HIGH);

digitalWrite(3,HIGH);

Timer3.initialize(CDR / fc);

Timer3.attachInterrupt(PulseDDA);

Timer3.stop();

Serial.begin(9600);

Serial3.begin(9600);

}

char Sdata[50][50];

char GMode[50];

char GX[50];

char GY[50];

char GZ[50];

char GF[50];

char GR[50];

char CData;

int CountD[50];

int i = 0, j = 0, k = 0, l = 0, m = 0, n = 0, Gcom = 0;

long a = 0, b = 0, c = 0, d = 0, e = 0, f = 0;

boolean FlagA = 0, FlagMode = 0, FlagC = 0, FlagD = 0, FlagF = 0, FlagG = 0, FlagH = 0, FlagI = 0, FlagJ = 0,FlagK=0;

boolean FlagB = 1, FlagE = 1;

unsigned long DSpd, dx = 0, dy = 0, Iter = 0, qx = 0, qy = 0, Rd = 0, Reg = 0, CountBit = 0;

long IRange = 0;

long TLK,TLH;

int GXP = 0, GYP, GZP = 0;

void loop()

{

Gcom = 0;

CData = 0;

if(FlagJ==1){

TLH=millis();

}else if(TLH-millis()>1000){

FlagJ=0;

}

if(FlagG==1){

digitalWrite(LH,LOW);

digitalWrite(LK,LOW);

digitalWrite(LM,HIGH);

}else if(FlagJ==1){

digitalWrite(LH,HIGH);

digitalWrite(LK,LOW);

digitalWrite(LM,LOW);

}else if(FlagJ==0){

digitalWrite(LH,LOW);

digitalWrite(LM,LOW);

if(millis()-TLK>=1000){

TLK=millis();

digitalWrite(LK,!digitalRead(LK));

}

}

if(digitalRead(TReset)==0 && (FlagG==1 || FlagI==1)){

FlagG=0;

FlagH=1;

FlagI=0;

qx=0;

qy=0;

dx=5;

dy=5;

digitalWrite(DirX,Akanan);

digitalWrite(DirY,Aatas);

Iter=8;

Timer3.setPeriod(300);

Timer3.start();

}

if(digitalRead(LSU)==1){

Serial.println("Stop LSU");

}

if(digitalRead(LSD)==1){

Serial.println("Stop LSD");

}

if(FlagH!=1){

if (digitalRead(LSR) == 1){

Serial.println("Stop LSR");

Timer3.stop();

FlagA=0;

FlagB=0;

FlagG=1;

} else if (digitalRead(LSL) == 1) {

Serial.println("Stop LSL");

Timer3.stop();

FlagA=0;

FlagB=0;

FlagG=1;

} else if (digitalRead(LSF) == 1) {

Serial.println("Stop LSF");

Timer3.stop();

FlagA=0;

FlagB=0;

FlagG=1;

} else if (digitalRead(LSB) == 1) {

Serial.println("Stop LSB");

Timer3.stop();

FlagA=0;

FlagB=0;

FlagG=1;

//}else if(digitalRead(LSU)==1){

//Serial.println("Stop LSU");

//Timer3.stop();

//FlagA=0;

//FlagB=0;

//FlagB=1;

//FlagG=1;

//}else if(digitalRead(LSD)==1){

//Serial.println("Stop LSD");

//Timer3.stop();

//FlagA=0;

//FlagB=0;

//FlagB=1;

//FlagG=1;

}else if(FlagG==1){

Timer3.stop();

Serial.println("Stop");

FlagA=0;

FlagB=0;

FlagI=0;

}if (digitalRead(TStart)==0 && FlagI==1){

FlagI=0;

Timer3.start();

} else {

if (Serial.available() && FlagB == 1)

{

CData = Serial.read();

if (CData == '\*')

{

i = 0;

j = 0;

k = 0;

l = 0;

m = 0;

memset(Sdata, 0, sizeof(Sdata));

memset(CountD, 0, sizeof(CountD));

while (CData != ';')

{

CData = 0;

j = 0;

while (CData != '/' && CData != ';')

{

if (Serial.available())

{

CData = Serial.read();

Sdata[i][j] = CData;

Serial.print(Sdata[i][j]);

CountD[i] = j;

j++;

}

}

i++;

}

FlagA = 1;

FlagB = 0;

}

}

if (FlagA == 1)

{

Serial.println("");

m = 0;

GXP = 0;

GYP = 0;

GZP = 0;

Serial.println(m);

Serial.println(l);

Serial.println(CountD[l]);

memset(GMode, 0, sizeof(GMode));

memset(GX, 0, sizeof(GX));

memset(GY, 0, sizeof(GY));

memset(GZ, 0, sizeof(GZ));

memset(GF, 0, sizeof(GF));

while (m < CountD[l])

{

Serial.println(Sdata[l][m]);

switch (Sdata[l][m])

{

case 'G':

Gcom = 1;

k = m + 1;

break;

case ' ':

Gcom = 0;

break;

case 'X':

Gcom = 2;

k = m + 1;

break;

case 'Y':

Gcom = 3;

k = m + 1;

break;

case 'Z':

Gcom = 4;

k = m + 1;

break;

case 'F':

Gcom = 5;

k = m + 1;

break;

case 'R':

Gcom = 6;

k = m + 1;

break;

default:

if (Gcom == 1)

{

GMode[m - k] = Sdata[l][m] ;

}

else if (Gcom == 2)

{

if (Sdata[l][m] == '-')

{

GXP = 1;

k = m + 1;

}

else

{

GX[m - k] = Sdata[l][m];

}

}

else if (Gcom == 3)

{

if (Sdata[l][m] == '-')

{

GYP = 1;

k = m + 1;

}

else

{

GY[m - k] = Sdata[l][m];

}

}

else if (Gcom == 4)

{

if (Sdata[l][m] == '-')

{

GZP = 1;

k = m + 1;

}

else

{

GZ[m - k] = Sdata[l][m];

}

}

else if (Gcom == 5)

{

GF[m - k] = Sdata[l][m];

}

else if (Gcom == 6)

{

GR[m - k] = Sdata[l][m];

}

break;

}

m++;

}

a = atoi(GMode);

b = atoi(GX);

c = atoi(GY);

d = atoi(GZ);

e = atoi(GF);

f = atoi(GR);

l++;

if (a == 1 && d != 0) {

if(l>=i-1){

FlagA = 0;

FlagB = 1;

}else{

FlagA=1;

}

Serial.println("Sumbu Z");

Serial3.print("\*1 ");

Serial3.print(GZP);

Serial3.print(" ");

Serial3.print(d\*25);

Serial3.print(" ");

Serial3.print(e);

delay(2000);

}

else if (a == 1)

{

dx = b;

dy = c;

if (dx >= dy)

{

Reg = BitSize(dx);

Serial.println(Reg);

}

else if (dy > dx)

{

Reg = BitSize(dy);

Serial.println(Reg);

}

Iter = 1;

for (n = 0; n < Reg; n++)

{

Iter \*= 2;

}

Serial.println(Iter);

IRange = Iter \* 250;

Rd = sqrt(pow(dx, 2) + pow(dy, 2));

DSpd = 1000000 / (e \* Iter);

qx = 0;

qy = 0;

FlagA = 0;

Serial.print("Frequency = ");

Serial.print(DSpd \* Rd);

Serial.print(" Pulse X = ");

Serial.print(dx);

Serial.print(" Pulse Y = ");

Serial.println(dy);

Serial.print(" Register Size = ");

Serial.print(Reg);

Serial.print(" Iteration = ");

Serial.print(Iter);

Serial.print(" Range = ");

Serial.println(IRange);

Serial.print(" Arah sumbu X = ");

Serial.print(GXP);

Serial.print(" Arah sumbu Y = ");

Serial.println(GYP);

if (GXP == 0)

{

digitalWrite(DirX, Akanan);

}

else

{

digitalWrite(DirX, Akiri);

}

if (GYP == 0)

{

digitalWrite(DirY, Aatas);

}

else

{

digitalWrite(DirY, Abawah);

}

Timer3.setPeriod(DSpd \* Rd);

Timer3.start();

}

else if (a == 2)

{

Reg = BitSize(f \* 250);

Iter = 1;

for (n = 0; n < Reg; n++)

{

Iter \*= 2;

}

IRange = floor(1.57 \* Iter);

DSpd = 1000000 \* 250 / (e \* IRange);

FlagA = 0;

qx = 0;

qy = 0;

Serial.print("Frequency = ");

Serial.print(DSpd \* f);

Serial.print(" Register Size = ");

Serial.print(Reg);

Serial.print(" Iteration = ");

Serial.print(Iter);

Serial.print(" Range = ");

Serial.println(IRange);

Serial.print(" Arah sumbu X = ");

Serial.print(GXP);

Serial.print(" Arah sumbu Y = ");

Serial.println(GYP);

if (GXP == 0 && GYP == 1)

{

dx = f \* 250;

dy = 0;

digitalWrite(DirX, Akanan);

digitalWrite(DirY, Abawah);

}

else if (GXP == 1 && GYP == 1)

{

dx = 0;

dy = f \* 250;

digitalWrite(DirX, Akiri);

digitalWrite(DirY, Abawah);

}

else if (GXP == 1 && GYP == 0)

{

dx = f \* 250;

dy = 0;

digitalWrite(DirX, Akiri);

digitalWrite(DirY, Aatas);

}

else if (GXP == 0 && GYP == 0)

{

dx = 0;

dy = f \* 250;

digitalWrite(DirX, Akanan);

digitalWrite(DirY, Aatas);

}

Timer3.setPeriod(DSpd \* f);

Timer3.start();

}

else if (a == 3)

{

Reg = BitSize(f \* 250);

Iter = 1;

for (n = 0; n < Reg; n++)

{

Iter \*= 2;

}

IRange = floor(1.57 \* Iter);

DSpd = 1000000 \* 250 / (e \* IRange);

FlagA = 0;

qx = 0;

qy = 0;

Serial.print("Frequency = ");

Serial.print(DSpd \* f);

Serial.print(" Register Size = ");

Serial.print(Reg);

Serial.print(" Iteration = ");

Serial.print(Iter);

Serial.print(" Range = ");

Serial.println(IRange);

Serial.print(" Arah sumbu X = ");

Serial.print(GXP);

Serial.print(" Arah sumbu Y = ");

Serial.println(GYP);

if (GXP == 1 && GYP == 0)

{

dx = 0;

dy = f \* 250;

digitalWrite(DirX, Akiri);

digitalWrite(DirY, Aatas);

}

else if (GXP == 1 && GYP == 1)

{

dx = f \* 250;

dy = 0;

digitalWrite(DirX, Akiri);

digitalWrite(DirY, Abawah);

}

else if (GXP == 0 && GYP == 1)

{

dx = 0;

dy = f \* 250;

Serial.println(dy);

digitalWrite(DirX, Akanan);

digitalWrite(DirY, Abawah);

}

else if (GXP == 0 && GYP == 0)

{

dx = f \* 250;

dy = 0;

digitalWrite(DirX, Akanan);

digitalWrite(DirY, Aatas);

}

Timer3.setPeriod(DSpd \* f);

Timer3.start();

}

}

/\*

if(FlagB==1 && FlagK==1)

{

Serial.println("Hahahaha");

if(digitalRead(JXCW)==1)

{

a=9;

FlagD=1;

digitalWrite(DirX,Akanan);

Serial.println("XCW");

}

else if(digitalRead(JXCCW)==1)

{

a=9;

FlagD=1;

digitalWrite(DirX,Akiri);

Serial.println("XCCW");

}

else

{FlagD=0;}

if(digitalRead(JYCW)==1)

{

a=9;

FlagE=1;

digitalWrite(DirY,Aatas);

Serial.println("YCW");

}

else if(digitalRead(JYCCW)==1)

{

a=9;

FlagE=1;

digitalWrite(DirY,Abawah);

Serial.println("YCCW");

}

else

{FlagE=0;}

if(FlagD==1 || FlagE==1)

{

if(FlagF==1)

{

FlagF=0;

Serial.println("Start");

qx=0;

qy=0;

dx=1;

dy=1;

Iter=2;

Timer3.setPeriod(800);

Timer3.start();

}

}

else

{

Timer3.stop();

FlagJ=0;

//Serial.println("Stop");

FlagF=1;

}

}

\*/

}

}

}

void PulseDDA()

{

FlagJ = 1;

if(FlagG==0 && FlagH==0){

if (a == 1)

{

digitalWrite(SumbuX, LOW);

digitalWrite(SumbuY, LOW);

delayMicroseconds(50);

if (IRange < 1)

{

Serial.println("Timer Stop");

if (l < i - 1)

{

FlagA = 1;

}

else

{

FlagB = 1;

FlagJ = 0;

}

Timer3.stop();

}

else

{

qx += dx;

if (qx >= Iter)

{

qx -= Iter;

digitalWrite(SumbuX, HIGH);

FlagC = 1;

}

qy += dy;

if (qy >= Iter)

{

qy -= Iter;

digitalWrite(SumbuY, HIGH);

FlagC = 1;

}

IRange--;

/\*

if(FlagC==1){

Serial.print(CP1);

Serial.print(" ");

Serial.println(CP2);

FlagC=0;

}

\*/

}

}

else if (a == 2)

{

digitalWrite(SumbuX, LOW);

digitalWrite(SumbuY, LOW);

delayMicroseconds(50);

if (GXP == 0 && GYP == 1)

{

if (IRange < 1)

{

Serial.println("Timer Stop");

if (l < i - 1)

{

FlagA = 1;

}

else

{

FlagB = 1;

FlagJ = 0;

}

Timer3.stop();

}

else

{

qx += dx;

if (qx >= Iter)

{

qx -= Iter;

dy++;

digitalWrite(SumbuX, HIGH);

}

qy += dy;

if (qy >= Iter)

{

qy -= Iter;

dx--;

digitalWrite(SumbuY, HIGH);

}

}

IRange--;

}

else if (GXP == 1 && GYP == 1)

{

if (IRange < 1)

{

Serial.println("Timer Stop");

if (l < i - 1)

{

FlagA = 1;

}

else

{

FlagB = 1;

FlagJ = 0;

}

Timer3.stop();

}

else

{

qx += dx;

if (qx >= Iter)

{

qx -= Iter;

dy--;

digitalWrite(SumbuX, HIGH);

}

qy += dy;

if (qy >= Iter)

{

qy -= Iter;

dx++;

digitalWrite(SumbuY, HIGH);

}

}

IRange--;

}

else if (GXP == 1 && GYP == 0)

{

if (IRange < 1)

{

Serial.println("Timer Stop");

if (l < i - 1)

{

FlagA = 1;

}

else

{

FlagB = 1;

FlagJ = 0;

}

Timer3.stop();

}

else

{

qx += dx;

if (qx >= Iter)

{

qx -= Iter;

dy++;

digitalWrite(SumbuX, HIGH);

}

qy += dy;

if (qy >= Iter)

{

qy -= Iter;

dx--;

digitalWrite(SumbuY, HIGH);

}

}

IRange--;

}

else if (GXP == 0 && GYP == 0)

{

if (IRange < 1)

{

Serial.println("Timer Stop");

if (l < i - 1)

{

FlagA = 1;

}

else

{

FlagB = 1;

FlagJ = 0;

}

Timer3.stop();

}

else

{

qx += dx;

if (qx >= Iter)

{

qx -= Iter;

dy--;

digitalWrite(SumbuX, HIGH);

}

qy += dy;

if (qy >= Iter)

{

qy -= Iter;

dx++;

digitalWrite(SumbuY, HIGH);

}

}

IRange--;

}

}

else if (a == 3)

{

digitalWrite(SumbuX, LOW);

digitalWrite(SumbuY, LOW);

delayMicroseconds(50);

if (GXP == 1 && GYP == 0)

{

if (IRange < 1)

{

Serial.println("Timer Stop");

if (l < i - 1)

{

FlagA = 1;

}

else

{

FlagB = 1;

FlagJ = 0;

}

Timer3.stop();

}

else

{

qx += dx;

if (qx >= Iter)

{

qx -= Iter;

dy--;

digitalWrite(SumbuX, HIGH);

}

qy += dy;

if (qy >= Iter)

{

qy -= Iter;

dx++;

digitalWrite(SumbuY, HIGH);

}

}

IRange--;

}

else if (GXP == 1 && GYP == 1)

{

if (IRange < 1)

{

Serial.println("Timer Stop");

if (l < i - 1)

{

FlagA = 1;

}

else

{

FlagB = 1;

FlagJ = 0;

}

Timer3.stop();

}

else

{

qx += dx;

if (qx >= Iter)

{

qx -= Iter;

dy++;

digitalWrite(SumbuX, HIGH);

}

qy += dy;

if (qy >= Iter)

{

qy -= Iter;

dx--;

digitalWrite(SumbuY, HIGH);

}

}

IRange--;

}

else if (GXP == 0 && GYP == 1)

{

if (IRange < 1)

{

Serial.println("Timer Stop");

if (l < i - 1)

{

FlagA = 1;

}

else

{

FlagB = 1;

FlagJ = 0;

}

Timer3.stop();

}

else

{

qx += dx;

if (qx >= Iter)

{

qx -= Iter;

dy--;

digitalWrite(SumbuX, HIGH);

}

qy += dy;

if (qy >= Iter)

{

qy -= Iter;

dx++;

digitalWrite(SumbuY, HIGH);

}

}

IRange--;

}

else if (GXP == 0 && GYP == 0)

{

if (IRange < 1)

{

Serial.println("Timer Stop");

if (l < i - 1)

{

FlagA = 1;

}

else

{

FlagB = 1;

FlagJ = 0;

}

Timer3.stop();

}

else

{

qx += dx;

if (qx >= Iter)

{

qx -= Iter;

dy++;

digitalWrite(SumbuX, HIGH);

}

qy += dy;

if (qy >= Iter)

{

qy -= Iter;

dx--;

digitalWrite(SumbuY, HIGH);

}

}

IRange--;

}

}

else if (a == 9)

{

digitalWrite(SumbuX, LOW);

digitalWrite(SumbuY, LOW);

if (FlagD == 1)

{

qx += dx;

if (qx >= Iter)

{

qx -= Iter;

digitalWrite(SumbuX, HIGH);

FlagC = 1;

}

}

if (FlagE == 1)

{

qy += dy;

if (qy >= Iter)

{

qy -= Iter;

digitalWrite(SumbuY, HIGH);

FlagC = 1;

}

}

/\*if(FlagC==1)

{

Serial.print(CP1);

Serial.print(" ");

Serial.println(CP2);

FlagC=0;

}\*/

}

}else if(FlagH==1){

digitalWrite(SumbuX,LOW);

digitalWrite(SumbuY,LOW);

delayMicroseconds(50);

if(digitalRead(LSL)==1){

digitalWrite(DirX,Akanan);

}else if(digitalRead(LSR)==1){

digitalWrite(DirX,Akiri);

}

if(digitalRead(LSB)==1){

digitalWrite(DirY,Aatas);

}if(digitalRead(LSF)==1){

digitalWrite(DirX,Abawah);

}

if(digitalRead(OrgX)==1 && digitalRead(OrgY)==1){

FlagH=0;

FlagB=1;

Serial.println("Home Pos");

FlagJ=0;

Timer3.stop();

}else{

if(digitalRead(OrgX)!=1)

{

qx+=dx;

if(qx>=Iter)

{

qx-=Iter;

digitalWrite(SumbuX,HIGH);

}

}

if(digitalRead(OrgY)!=1)

{

qy+=dy;

if(qy>=Iter)

{

qy-=Iter;

digitalWrite(SumbuY,HIGH);

}

}

}

}

}

int BitSize(float DBit)

{

CountBit = 0;

while (DBit > 1)

{

DBit /= 2;

CountBit++;

}

return CountBit;

}

void TEmg(){

FlagG=1;

Timer3.stop();

FlagA=0;

FlagB=1;

Serial.println("EMG");

}

void TStop(){

if(FlagH==0 && FlagG==0 && FlagJ==1){

Timer3.stop();

FlagI=1;

FlagJ=0;

}

Serial.println("Reset");

}