

Lampiran

Listing Program Pengolahan Sinyal

```

uses String, vga_drv, Dos, Crt, Graph;
type darray = array[0..400000] of byte;
    dsrt = string[10];

const count = 1000;
    Pa = $300;
    Pb = $301;
    Pc = $302;
    Cw = $303;

var bytime, keyb : char;
    speedpl, cpx, cpy, xw, tdiv : integer;
    filenm, datas : dstr;
    dconv : darray;
    dtmp, mpr, dshwr, recsw, plysw, scrsw, swdac : byte;
    dfile : file of byte;
    idx : word;

```

{Procedure untuk mengenali driver vga, font memory dan graph}

Procedure InisialKendaliVgaFont;

Var gr, gm, errcode : integer;

begin

if registerbgidriver(@vgadriver) < 0 then halt;

if registerbgifont(@sanserseriffontproc) < 0 then halt;

if registerbgifont(@smallfontproc) < 0 then halt;

if registerbgifont(@tripfontproc) < 0 then halt;

```

detectgraph(gr,gm);
initgraph(gr,gm,'c:\tpascal7\bgi');
errcode := graphresult;
if errcode > 0 then
begin
    writeln('Graphics error :',GraphErrorMsg(ErrCode));
    halt;
end;
end;

```

{Procedure membuat isi area}

Procedure IsiArea(x1,y1,x2,y2,:integer;clr:byte); {isi area dgn warna clr}

```

begin
    setlinestyle(0,0,1);
    setcolor(clr);
    for y1 :=y1 to y2 do
        line(x1,y1,x2,y1);
    end;

```

{Procedure membuat gambar tombol menu}

Procedure Tombol(x1,y1,width,height : integer; idxt,onof : byte; text : string);

```

var x2,y2,c,l,lbr      : integer;
    tmp,tmp1           : string;

```

```

begin
    x2:=x1+width;y2:=y1+height;
    setlinestyle(0,0,1);
    if onof=1 then setcolor(0) else setcolor(7);

```

```

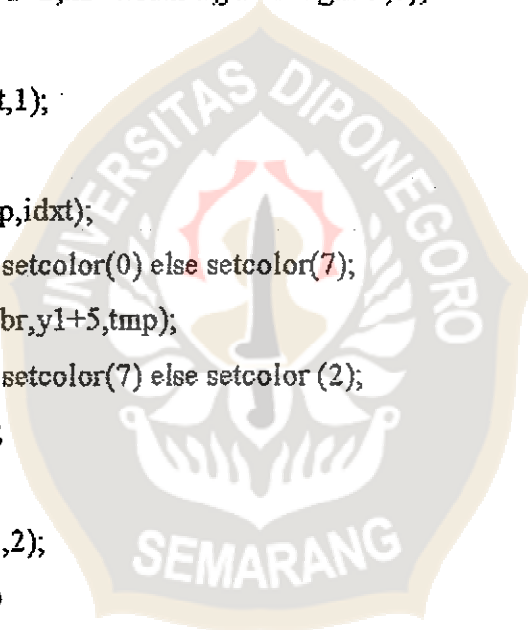
    line(x1,y1,x2,y1);

```

```

line(x1,y1,x1,y2);
if onof=1 then setcolor(7) else setcolor(0);
line(x1,y2,x2,y2);
line(x2,y2,x2,y1);
settextstyle(2,0,5);
settextjustify(1,2);
lbr:=width div 2;
IsiArea(x1+2,y1+2,x1+width-2,y1+height-2,8);
tmp:=text;
delete(tmp,idxt,1);
tmp1:= ' ';
insert(tmp1,tmp,idxt);
if onof=1 then setcolor(0) else setcolor(7);
outtextxy(x1+lbr,y1+5,tmp);
if onof=1 then setcolor(7) else setcolor(2);
l:=length(text);
tmp:= ' ';
settextjustify(1,2);
for c:=1 to l do
if c< idxt then
begin
delete(text,c,1);
insert(tmp,text,c);
end;
outtextxy(x1+lbr,y1+5,text);
end;

```



{Procedure membuat kotak jendela}

Procedure kotak(x1,y1,width,height : integer; onof,clr : byte; text : string);

var x2,y2,lbr,c : integer;

begin

setcolor(clr);

for c:=2 to height-2 do

begin

line(x1+2,y1+c,x1+width-2,y1+c);

end;

setlinestyle(0,0,1);

x2:=x1+width;y2:=y1+height;

if onof=1 then setcolor(7) else setcolor(0);

line(x1,y1,x2,y1);

line(x1,y1,x1,y2);

if onof=1 then setcolor(0) else setcolor(7);

line(x1,y2,x2,y2);

line(x2,y2,x2,y1);

settextstyle(1,0,1);

settextjustify(1,2);

lbr:=width div 2;

outtextxy(x1+lbr,y1+5,text);

end;

{Procedure untuk mengetahui mouse sudah di instal atau belum}

Procedure CekMouseDriver;

var reg : registers;

begin

reg.ax:=0;

intr(\$33,reg);

mpr:=reg.ax and 1;

```

if mpr=0 then
begin
  setcolor(14);
  settextstyle(4,0,3);
  settextjustify(1,1);
  outtextxy(300,200,'Mouse belum di install');
  readkey;
  setcolor(8);
  outtextxy(300,200,'Mouse belum di install');
end;
end;

```

{Procedure untuk mengetahui status mouse}

Procedure StatusMouse(sta:word); assembler;

asm

pusha;

mov al,mpr;

and al,1;

jz @exit;

mov ax,sta;

int \$33;

@exit:popa;

end;

{Procedure untuk mengetahui posisi mouse}

Procedure BacaPosisiMouse(var xm,ym:word;var but : word);assembler;

asm

pusha;

mov ax,6;

```

les di,but;
mov bx,[el:di];
int $33;
les di,xm;
mov[es:di],cx;
les di,ym;
mov[es:di],dx;
les di,but;
mov[es:di],bx;
popa;
end;

```

{Procedure untuk membaca input saat mouse ditekan}

Procedure MouseDitekan;

var but,xm,y : word;

begin

but:=4;

BacaPosisiMouse(xm,ym,but);

if but>=1 then

begin

if (xm>=100) and (xm<=160) and (ym>=350) and (ym<=380) then keyb:='s';

if (xm>=190) and (xm<=250) and (ym>=350) and (ym<=380) then keyb:='o';

if (xm>=280) and (xm<=340) and (ym>=350) and (ym<=380) then keyb:='r';

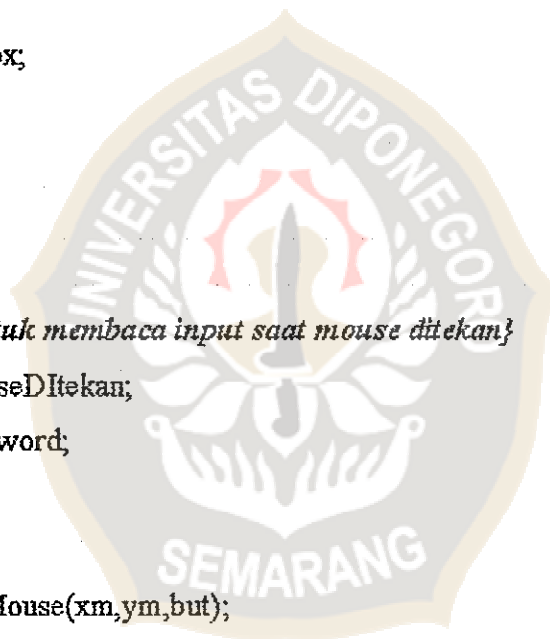
if (xm>=370) and (xm<=430) and (ym>=350) and (ym<=380) then keyb:='p';

if (xm>=460) and (xm<=520) and (ym>=350) and (ym<=380) then keyb:='e';

if scrsw=1 then keyb:='s';

end;

end;



{Procedure menampilkan sinyal dalam bentuk gelombang}

Procedure TampilGel(color : byte);

var yw:integer;

begin

 moveto(80,170);

 setcolor(color);

 for xw:=80 to 560 do

 begin

 yw:=40+dconv[xw-80];

 lineto(xw,yw);

 end;

end;

{Procedure mengenal PPI 8255}

Procedure InitPPI;

begin

 Port[Cw]:=98;

end;

{Procedure mengkonversi sinyal dari analog ke digital dan disimpan dalam file digital}

Procedure A2DConvert(var dconc:darray);

var d,data,int : byte;

 yw : integer;

begin

 port[pc]:=dshwr;

 port[pc]:=dshwr and 7;

 for d:=1 to 1 do

```

port[pc]:=dshwr and $D;
for d:=1 to 1 do
port[pc]:=dshwr and 2;
for d:=1 to 1 do
repeat
data:=port[pc] and $10;
int:=(data shr 4);
until int=0;
port[pc]:=dshwr and $E;
data:=port[pa];
port[pc]:=dshwr or 1;
if swdac=1 then port[pb]:=data;
if (recsw=1) and (bytime in ['n','N']) then
begin
write(dfile,data);
end;
if (recsw=1) and (bytime in ['y','Y']) then
begin
dconv[idx]:=data;inc(idx);
if idx>=40000 then
begin
keyb:='r';
for idx:=1 to 40000 do
begin
write(dfile,dconv[idx]);
end;
end;
end;
if scrs=1) and (recsw=0) then
begin
setcolor(14);

```



```

yw:=40+data;
lineto(xw,yw);
dconv[xw-80]:=data;
xw:=xw+1;
if xw>560 then
begin
  moveto(80,170);
  setcolor(8)
  for xw:=80 to 560 do
  begin
    yw:=40+dconv[xw-80];
    lineto(xw,yw);
  end;
  moveto(80,170);
  setcolor(14);
  xw:=80;
end;
end;

```

{Procedure untuk membaca input dari keyboard}

Procedure Keybin(x1,y1,maxc,pjg : integer; var datas :dstr);

```

var   c,cl,pass,gap,sw      : integer;
      k,ks                  : char;

```

begin

```

  setlinestyle(0,01);

```

```

  datas:= '   ';c:=0;gap:=(5*pjg);

```

```

  setcolor(15);

```

```

  line(x1+30+gap,y1+17,x1+30+5+gap,y1+17);

```

```

  repeat

```

```

StatusMouse(1);
k:=readkey;
StatusMouse(2);
if ((k<=#8) and (k<=#27) and (c<=maxc)) then
begin
  setcolor(8);
  line(x1+30+gap,y1+16,x1+30+5+gap,y1+16);
  line(x1+30+gap,y1+17,x1+30+5+gap,y1+17);
  setcolor(15);
  outtaxyxy(x1+30+gap,y1+10,k);
  datas:=datas+k;
  gap:=gap+8;
  setcolor(15);
  line(x1+30+gap,y1+17,x1+30+5+gap,y1+17);
  inc(c);
end;
if (k=#8) {backspace} then
begin
  if not (c=0) then
  begin
    setcolor(8);
    line(x1+30+gap,y1+16,x1+30+5+gap,y1+16);
    line(x1+30+gap,y1+17,x1+30+5+gap,y1+17);
    gap:=gap-8;
    for cl:=1 to 15 do
      line(x1+30+gap,y1+cl,x1+30+8+gap,y1+cl);
    setcolor(15);
    line(x1+30+gap,y1+17,x1+30+5+gap,y1+17);
    dec(c);
    delete(datas,lenth(datas),1);
  end;
end;

```

```

end;
until (k=#13);
delete(datas,lenth(datas),1);
setcolor(8);
line(x1+30+gap,y1+16,x1+30+5+gap,y1+16);
line(x1+30+gap,y1+17,x1+30+5+gap,y1+17);
end;

```

{Procedure untuk membuat tampilan layar}

Procedure InisialLayar;

begin

```

Setgbpalette(56,24,22,29);
Setgbpalette(1,0,15,35);
Isiarea(1,1,getmaxx,getmaxy,1);
kotak(70,30,500,275,1,8,' ');
kotak(70,310,500,25,1,8,' ');
kotak(70,339,500,50,1,8,' ');
Tombol(100,350,60,30,1,0,'Screen');
Tombol(190,350,60,30,2,0,'sOund');
Tombol(280,350,60,30,1,0,'Record');
Tombol(370,350,60,30,1,0,'Play');
Tombol(460,350,60,30,1,0,'Exit');

```

end;

{Procedure untuk membaca file yang akan ditampilkan}

Procedure Playin;

var err : integer;

begin

```

kotak(280,400,160,58,1,8,' ');

```

```

settextstyle(2,0,5);
setcolor(15);
settextjustify(0,0);
outtextxy(290,420,'File : ');
outtextxy(290,440,'Speed :');
Keybin(310,410,8,3,datas);
filenm:=datas;
keybin(310,430,8,3,datas);
val(datas,speedpl,err);
err:=0;
if speedpl=0 then speedpl := 45;
Isiarea(280,400,280+160,400+58,1);
StatusMouse(1);
if filenm= ' ' then
begin
kotak(70,30,500,275,1,8,' ');
xw:=80;
plysw:=0;
end;
end;

```

{Fungsi untuk mengecek file yang akan ditampilkan}

```
Function CekPlayFile : integer;
```

```
var err : integer;
```

```
begin
```

```
if (plysw=1) then
```

```
begin
```

```
assign(Dfile,filenm);
```

```
{SI-}
```

```
reset(Dfile);
```

```

{$I+}
err:=ioresult;
if err=2 then
begin
    plysw:=0;
    StatusMouse(2);
    Kotak(310,400,180,40,1,8,' ');
    setcolor(15);
    settextxtype(2,0,5);
    settextjustify(centertext,centertext);
    outtextxy(400,420,'File' + filenm + 'Tidak ada');
    StatusMouse(1);
    repeat
    until keypressed;
    StatusMouse(1);
    kotak(70,30,500,275,1,8,' ');
    moveto(80,170);
    xw:=80;
end;
cekplayfile:=err;
end;

end;

{Procedure menampilkan file}
Procedure PlayFile(err:integer);
var dtmp : byte;
label 1,2;
Begin
    if (err=0) and (filenm<>' ') and (plysw=1) and (scrsw=0) then
        begin

```

```

            while not eof(dfile) do

```

```

begin
  read(dfile,dtmp);
  for err:=1 to speedpl do
    begin
      port[pb]:=dtmp;
      if keypressed then goto 1;
    end;
  end;
  if (err=0) and (filenm<>' ') and (scrsw=1) and (plysw=1) then
    begin
      kotak(70,30,500,275,1,8,' ');
      xw:=80;
      moveto(80,170);
      setcolor(14);
      while not(eof(dfile)) do
        begin
          keyb:=readkey;
          kotak(70,30,500,275,1,8,' ');
          xw:=80;
          moveto(80,170);
          setcolor(14);
          if keyb=#27 then
            begin
              keyb=#0;
              goto 2;
            end;
          end;
        end;
      end;
    2: close(dfile);
  end;
end;

```

{Procedure untuk membaca file yang akan direkam}

Procedure RecIn;

begin

if recsw=1 then

begin

kotak(180,400,210,60,1,8,' ');

settextstyle(2,0,5);

setcolor(15);

settextjustify(0,0);

outtextxy(190,420,'File : ');

outtextxy(190,445,'By Time (y/n) : ');

datas:= ' ';

keybin(200,410,7,17,datas);

filenm:=datas;

repeat

datas:= ' ';

keybin(200,440,0,17,datas);

bytime:=datas[1];

if not(bytime in ['y','Y','n','N']) then isiarea(300,435,370,455,8);

until bytime in ['y','Y','n','N'];

if bytime in ['y','Y'] then idx:=1;

statusMouse(1);

if filenm= ' ' then recsw:=0;

end;

end;

{Procedure untuk mengecek file yang akan direkam}

Procedure CekRecFile;

var err : integer;

begin

if filenm <> ' ' then

```

begin
  assign(dfile,filenm);
  {$I-}
  reset(dfile);
  {$I+}
  err:=ioutil;
  if err=2 then rewrite(dfile);
  if err=0 then
    begin
      StatusMouse(2);
      kotak(155,400,190,50,0,8,' ');
      setcolor(15);
      settextstyle(2,0,5);
      setttextjustufy(centertext,centertext);
      outtextxy(250,415,'File'+datas+'Sudah Ada');
      Outtextxy(255,435,'Overwrite Append (y/a/n) ');
      StatusMouse(1);
      repeat
        keyb:=readkey;
      until keyb ['a','A','y','Y','n','N'];
      if keyb in['n','N'] then recsw:=0;
      if keyb in['y','Y'] then begin rewrite(dfile) end;
      if keyb in ['a','A'] then
        begin
          seek(dfile,filesize(dfile));
          truncate(dfile);
        end;
    end;

```



```

        StatusMOuse(1);
        keyb:=#0;
    end;
end;
end;

```

{Proceduri untuk keluar dari sistem}

Procedure Keluar;

```

var    x1,y1,x2,y2    : integer;
        maxy          : word;

```

begin

```

    tombol(460,350,60,30,1,1,'Exit');

```

```

    delay(100);

```

```

    tombol(460,350,60,30,1,0,'Exit');

```

```

    delay(100);

```

```

    y2:=getmaxy;y1:=0;

```

```

    statusmouse(2);

```

```

    repeat

```

```

        setcolor(0);

```

```

        line(0,y1-1,getmaxx,y1-1);

```

```

        setcolor(12);

```

```

        line(0,y1,getmaxx,y1);

```

```

        setcolor(0);

```

```

        line(0,y2+1,getmaxx,y2+1);

```

```

        setcolor(12);

```

```

        line(0,y2,getmaxx,y2);

```

```

        dec(y2);

```

```

        delay(20);

```

```

    until(y1>=(getmaxy/2));

```

```

    closegraph;

```

end;

{Program Utama}

Begin

InitPPI;

xw:=80;dshwr:=255;tdiv:=1;swdac:=0;scrsw:=0;idx:=1;

InisialKendaliVgaFont;

CekMouseDriver;

InisialLayar;

StatusMouse;

repeat

if keypressed then keyb:=readkey;

MouseDiTekan;

Case keyb of

's', 'S' : Begin

if scrsw=1 then scrsw:=0 else scrsw:=1;

StatusMouse(2);

Tombol(100,350,60,30,1,scrsw,'Scren');

StatusMouse(1);

if scrsw=1 then

begin

statusMouse(2);

kotak(70,50,500,275,1,8, ' ');

end

else

begin

TampilGel(14);

StatusMouse(1);

end;

keyb:= ' ';

setcolor(14);

moveto(80,170);

xw:=80;

```
end;
```

```
'o','O' : Begin
```

```
    cpx:=getx;cpy:=gety;
```

```
    if swdac=1 then swdac:=0 else swdac:=1;
```

```
    keyb:= 'o';
```

```
    StatusMouse(2);
```

```
    tombil(190,350,60,30,2,swdac,'sOund');
```

```
    setcolor(14);
```

```
    moveto(cpx,cpy);
```

```
    StatusMouse(1);
```

```
end;
```

```
'p','P' : Begin
```

```
    cpx:=getx;cpy:=gety;
```

```
    keyb:= 'p';
```

```
    if plysw=1 then plysw:=0 else plysw:=1;
```

```
    StatusMouse(2);
```

```
    Tombol(370,350,60,30,1,plysw,'Play');
```

```
    Playin;
```

```
    PlayFile(Cekfile);
```

```
    plysw:=0;
```

```
    StatusMouse(2);
```

```
    Tombol(370,350,60,30,1,plysw,'Play');
```

```
    StatusMouse(1);
```

```
    moveto(80,170);
```

```
end;
```

```
'r','R' : begin
```

```
    cpx:=getx;cpy:=gety;
```

```
    keyb:= 'r';
```

```

if recsw=1 then
begin
    StatusMouse(2);
    kotak(70,30,500,275,1,8,' ');
    recsw:=0;
    filenn:=' ';
    close(dfile);
    StatusMouse(1);
end
else
begin
    recsw:=1;
end;
StatusMouse(2);
Tombol(280,350,60,30,1,recsw,'Record');
StatusMouse(1);
RecIn;CekRecFile;
StatusMouse(2);
Tombol(280,350,60,30,1,recsw,'Record');
StatusMouse(1);
moveto(cpx,cpy);
end;

end;
if (scrs=1) and (plysw=1) then
begin
    xw:=80;
    moveto(80,170);
    while not(eof(dfile)) do
    begin
        read(dfile,dtmp);
        lineto(xw,40+dtmp);

```

```
inc(xw);
if xw >= 80 + 560 then
begin
  readkey;
  kotak(70,30,500,275,1,8,' ');
  xw := 80;
  moveto(80,170);
end;
end;
end;
if (scrsw=1) or (swdac1) or (recsw=1) then
begin
  A2Dconvert(dconv);
end;
until keyb in [#27, 'E', 'e'];
keluar;
end.
```

