LAMPIRAN A. Listing Program.

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(*    PROGRAM     :  SIMULASI PADA SISTEM OPERASI                     *)
(*                   UNTUK MASALAH 'DINING PHILOSOPHERS'             *)
(*    PROGRAMER   :  WIJI SARININGSIH                                 *)
(*    FAK./JUR.   :  MIPA/MATEMATIKA                                  *)
(*    BAHASA      :  TURBO PASCAL VERSI 7.0                           *)
(*                                                                    *)
(*               UNIVERSITAS  DIPONEGORO                              *)
(*                   S E M A R A N G                                  *)
(*::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::*)

Uses Crt,DOS,Graph;
Const On=true;
      Off=false;
TYPE
ANTRI=^Jobb;
Jobb=RECORD
           Nama_job:char;
           Dt1,Dt2,Dt3:Integer;
           Berikut:antri
end;

Node_Job_DPP=^Dt_Job_DPP;
Dt_Job_DPP=Record
      Nama_Job:Char;
      Dt1,Dt2,Dt3:Integer;
      Berikut:Node_Job_DPP
End;

Var
    komputer,kompt_Box,Tmbol,Gbr_proses:pointer;

    Dt_mkr_aw,Dt_mkr_akh,Dt_mkn_aw,Dt_mkn_ak,Dt_lpr_aw,Dt_lpr_ah,
    Awal_hasil_e,akhir_hasil_e,BantuE,BantuE1:Node_Job_DPP;

    awal_antri,akhir_antri,aktif,bantu:Antri;

    l_l,p_l,l_d,p_d,Dt_jb1,V_j,B_d,Y,X,Kx,Ky,Xyinp_odd,a,b,i,j,k,
    klok_kuant,kuantum,Yinp,Xinp,PxH,PyH,Klok_proses,Ba_ct_hlp,jm,jmlbd,
    jb1,jb2,jb3,Pos_H_Y:Integer;

    berkas,NamaFB:Text;
    Namafile:string[12];
    Reg:registers;
    Tekan:Char;
    Px,Py,Ukuran:word;
    Wr_D,Wr_S,jd,aa,bb,cc:Byte;

    Str1,str2,str3,str_angk,StrNmJb:String;

    inp_md,Input_Node,Input,Inp_B_kdtg,Psn_Ex,Inp_Kuant,Stop_input,
    Tampln_hsl,menu_utm,Dpp,P_Idle,Proses,hlp,Key,Extcode:Boolean;


Procedure Awal_Graph (Bkcolor : Byte);
var GraphDriver,GraphMode:integer;
Begin
 GraphDriver:=VGA;GraphMode:=VGAHi;
 InitGraph(GraphDriver,GraphMode,'');
 SetBkcolor(Bkcolor);
End;
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Procedure Input_Keyboard(Var kode_tmbl:char;var extcode,
Status_tekan:Boolean);
var key_Buff,ad_old,ad_rel:byte;
Begin
  ad_rel:=mem[$0000:$041c];
  ad_old:=ad_rel;key_buff:=mem[$0000:$0400+ad_rel-2];
  if ad_old <> $20 then
    begin
    if key_buff in [$0,$E0] then
      begin
         tekan :=chr(mem[$0000:$0400+Ad_Rel-1]);
         Extcode:=True;
      end
    else
      begin
        tekan:=chr(key_buff);
        extcode:=false;
       end;
    status_tekan:=true;
    end
  else
    status_tekan:=false;
    if ad_rel=ad_old then Mem[$0000:$041c]:=$20
End;

Procedure Citra_Box(X1,Y1,X2,Y2:Integer;Var BoxCtr:pointer);
Begin
 ukuran:=Imagesize(x1,y1,x2,y2);
 getmem(boxCtr,ukuran);
 GetImage(x1,y1,x2,y2,BoxCtr^);
End;

Procedure Init_q(var head,tail:antri);
Begin
 new(head);tail:=head;head:=nil;tail:=nil;
End;

Procedure Init_Job_s_q(var head,tail:Node_job_DPP);
Begin
 new(head);tail:=head;head:=nil;tail:=nil;
End;

Procedure Tambah_el_q(Var head,tail:antri;Var Nm_job:char;
Var V_Job:integer;lm_ant,Si_job:integer;Var cacah_ktrl:Integer);
var baru: antri;
Begin
New(baru);
Baru^.nama_job:=Nm_job;
Baru^.Dt1:=V_Job;
Baru^.Dt2:=Si_Job;
Baru^.Dt3:=lm_ant;
if head= nil then head:=baru else tail^.berikut:=baru;
tail:=baru;tail^.berikut:=nil;cacah_Ktrl:=cacah_ktrl+1;
End;

Procedure Tambah_el_Job_s_q(Var head,tail:Node_Job_DPP;Var Nm_Job:char;
Var lm_mkn,lm_mkr:integer;lm_lpr:integer);
var Baru:Node_Job_DPP;
Begin
New(baru);
Baru^.Nama_Job:=Nm_Job;
Baru^.Dt1:=lm_mkn;
Baru^.Dt2:=lm_mkr;
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Baru^.Dt3:=lm_lpr;
If head=nil then head:=baru else tail^.berikut:=Baru;
Tail:=Baru;tail^.Berikut:=nil;
End;

Procedure Hapus_el_q(Var head:antri;var cacah_Ktrl:Integer);
var hapus:Antri;
Begin
If head^.Berikut=nil then head :=nil
else begin
     hapus:=head;head:=hapus^.Berikut;
     dispose(hapus)
     end;
cacah_Ktrl:=cacah_Ktrl-1;
End;

Procedure Hapus_el_Job_s_q(Var head:Node_Job_DPP);
var hapus: Node_Job_DPP;
Begin
If head^.Berikut=nil Then head :=nil
else begin
     hapus:=head;head:=hapus^.Berikut;
     dispose(hapus)
     end
End;

Procedure Cat_Box(X1,Y1,X2,Y2:Integer;Wr_D:Byte);
Begin
Setcolor(Wr_D);
For Y1:=Y1 to Y2 do
line (X1,Y1,X2,Y2)
End;

Procedure Cat_Blok(X1,Y1,X2,Y2:Integer;Wr_D:Byte);
Begin
Setcolor(Wr_D);
For Y1:=Y1 to Y2 do
rectangle (X1,Y1,X2,Y2)
End;

Function hx(l_l,l_d:integer):Integer;
Begin
hx:=(l_l-l_d) DIV 2
End;

Function hy(p_l,p_d:Integer):Integer;
Begin
hy:=(p_l-p_d) DIV 2
End;

Procedure Gbrknop(x,y,l_l,p_l,l_d,p_d:integer;Wr_Grs,Wr_S,Wr_G,Wr_D:Byte;
Knop:Boolean);
Var Xa,Ya,xx,yy,xxa,yya,Xc,Yc,c:integer;
Begin
setcolor(Wr_Grs);Xa:=x+l_l;Ya:=y+p_l;
xx:=x+hx(l_l,l_d); yy:=y+hy(p_l,p_d);
xxa:=xx+l_d;yya:=yy+p_d;
Rectangle(x,y,xa,ya);setcolor(Wr_S);
for c:=y+1 to yy-1 do line (x+1,c,xa-1,c);
for c:=x+1 to xx-1 do line (c,y+1,c,ya-1);
setcolor(Wr_Grs);Rectangle(xx,yy,xxa,yya);
if knop then
cat_box (xx+1,yy+1,xxa-1,yya-1,Wr_D);
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setcolor(Wr_Grs);xc:=xx;c:=0;
for yc:=yya to ya-1 do
   begin
      Line(xc,yc,xc+xxa-xx+c,yc); xc:=xc-1;c:=c+2
   end;
      yc:=yy;c:=0;
for xc:=xxa+1 to xa-1 do
  begin
     Line(xc,yc,xc,yc+yya-yy+c);
     yc:=yc-1;c:=c+2;
  end;
Setcolor(Wr_grs);Line(x,y,xx,yy);Line(x,ya,xx,yya);Line(xxa,yy,xa,y);
End;

Procedure Gbrknop1(x,y,l_l,p_l,l_d,p_d:integer;Wr_Grs,Wr_S,Wr_G,
Wr_D:Byte;Knop:Boolean);
Var Xa,Ya,xx,yy,xxa,yya,Xc,Yc,c:integer;
Begin
setcolor(Wr_Grs);Xa:=x+l_l;Ya:=y+p_l;
xx:=x+hx(l_l,l_d); yy:=y+hy(p_l,p_d);
xxa:=xx+l_d;yya:=yy+p_d;
Rectangle(x,y,xa,ya);setcolor(Wr_S);
for c:=y+1 to yy-1 do line (x+1,c,xa-1,c);
for c:=x+1 to xx-1 do line (c,y+1,c,ya-1);
setcolor(Wr_Grs);Rectangle(xx,yy,xxa,yya);
if knop then
cat_blok (xx+1,yy+1,xxa-1,yya-1,Wr_D);
setcolor(Wr_Grs);xc:=xx;c:=0;
for yc:=yya to ya-1 do
   begin
      Line(xc,yc,xc+xxa-xx+c,yc); xc:=xc-1;c:=c+2
   end;
      yc:=yy;c:=0;
for xc:=xxa+1 to xa-1 do
   begin
     Line(xc,yc,xc,yc+yya-yy+c);
     yc:=yc-1;c:=c+2;
   end;
Setcolor(Wr_grs);Line(x,y,xx,yy);Line(x,ya,xx,yya);Line(xxa,yy,xa,y);
End;

Procedure Tbl_Off(x,y,l_l,p_l,l_d,p_d:Integer;Wr_Grs,Wr_D:Byte);
Begin
for i:= 1 to 2 do
  begin
   setcolor(Wr_Grs);
   Line(x+1,y+i,x+l_l-1,y+i);Line(x+i,y+1,x+i,y+p_l-1);setcolor(15);
   Line(x+1,y+p_l-i,x+l_l-1,y+p_l-i);Line(x+l_l-i,y+1,x+l_l-i,y+p_l)
  end;
   setcolor(Wr_D);
   if hx(l_l,l_d) > hy(p_l,p_d) Then
   For i:= 1 to hx(l_l,l_d)-2 do
   Rectangle(x+2+i,y+2+i,x+l_l-2-i,y+p_l-2-i)
   else
   For i:= 1 To hy(p_l,p_d)-2 do
   Rectangle(x+2+i,y+2+i,x+l_l-2-i,y+p_l-2-i)
End;

Procedure kursor_In(x,y,l_l,p_l,l_d,p_d:Integer;Wr_D:Byte;On:Boolean);
Var xa,ya,xb,yb:Integer;
Procedure Hit_Jarak;
Begin
     xa:=x+hx(l_l,l_d)+3;ya:=y+hy(p_l,p_d)+3;
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   xb:=x+l_l-hx(l_l,l_d)-3;yb:=y+p_l-hy(p_l,p_d)-3
End;

Begin
     Hit_Jarak;
     If Not On then begin setcolor(Wr_D);  Rectangle(xa,ya,xb,yb) end
     else
     begin setcolor(13);Rectangle(xa,ya,xb,yb);setcolor(Wr_D);
     While xa< xb -3 do
      begin
      Putpixel(xa,ya,Wr_D);
      Putpixel(xa,yb,Wr_D);
      xa:=xa+5
      end;
     Hit_Jarak;
     While ya < yb -3 do
      begin
      Putpixel(xa,ya,Wr_D);
      Putpixel(xb,ya,Wr_D);
      ya:=ya+4
      end
     end
End;

Procedure pindah_kur(x1,y1,x2,y2:Integer);
Begin
if dpp then
if input then
  begin
     Kursor_In(x1,y1,76,26,70,20,7,Off);
     Kursor_In(x2,y2,76,26,70,20,7,On)
  end
else
if stop_Input then
  Begin
     Kursor_In(x1,y1,90,34,76,20,7,Off);
     Kursor_In(x2,y2,90,34,76,20,7,On)
  end
else
  begin
     Kursor_In(x1,y1,80,40,66,26,3,Off);
     Kursor_In(x2,y2,80,40,66,26,3,On)
  end
End;

Procedure Pigura_B(x,y,l_l,p_l:integer);
Begin
     setcolor(4);
     rectangle(x+3,y+3,x+l_l-3,y+p_l-1);
     rectangle(x+1,y+1,x+l_l-1,y+p_l-1);
     rectangle(x,y,x+l_l,y+p_l);
     setcolor(14);
     rectangle(x+2,y+2,x+l_l-2,y+p_l-2);
     setcolor(15);
     rectangle(x+4,y+4,x+l_l-4,y+p_l-4);
End;

Procedure Box_Input;
Begin
Input:=True;Input_Node:=True;str1:='';str2:='';inp_b_kdtg:=false;
v_j:=0;B_D:=0;Klok_proses:=0;Xinp:=375;Yinp:=365;Inp_kuant:=false;
inp_md:=false;str1:='';str2:='';P_idle:=True;strnmjb:='';str_angk:='';
Citra_Box(150,303,497,401,Gbr_proses);
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Pigura_B(150,303,346,98);Cat_Blok(155,307,491,396,9);Setcolor(15);
Rectangle(154,308,492,397);Setcolor(1);Rectangle(160,314,190,329);
Rectangle(160,336,190,351);Rectangle(160,357,190,372);
Cat_Blok(161,315,189,328,7);Cat_Blok(161,337,189,350,7);
Cat_Blok(161,358,189,371,7);Setcolor(1);
OutTextXY(195,320,'Banyak Philosop (min=2,max=5)');
OutTextXY(195,342,'Lama Waktu tunggu saat deadlock');
OutTextXY(195,360,'Lama Proses (max=99)');setcolor(12);
outtextxy(170,385,'Masukkan Input Data');
GbrKnop1(375,365,90,26,80,20,8,15,6,7,On);
Kursor_in(XINP,YINP,90,26,80,20,7,On);Setcolor(1);
OutTextXY(384,375,'OK(enter)');
End;

Procedure Box_Stop;
Var dx,dy,a,b,c:integer;
Begin
Citra_Box(150,353,497,401,Kompt_Box);
x:=150;y:=353;l_l:=346;p_l:=48;dx:=25;dy:=7;a:=90;b:=100;c:=34;
Pigura_B(x,y,l_l,p_l);cat_box(x+5,y+5,x+l_l-5,y+p_l-5,7);
GbrKnop(x+dx,y+dy,a,c,a-14,c-14,6,15,8,7,On);
GbrKnop(x+dx+b,y+dy,a,c,a-14,c-14,6,15,8,7,On);
Kursor_in(x+dx,y+dy,a,c,a-14,c-14,7,On);
GbrKnop(x+dx+2*b,y+dy,a,c,a-14,c-14,6,15,8,7,On);
Setcolor(1);
If Proses then begin OutTextXY(x+dx+20,y+dy+14,'LANJUT');
OUTTEXTXY(x+dx+20,y+dy+15,'_'); end
Else
OutTextXY(x+dx+20,y+dy+14,'BARU');OUTTEXTXY(x+dx+20,y+dy+15,'_');
OutTextXY(x+dx+b+25,y+dy+14,'STOP');OUTTEXTXY(x+dx+b+25,y+dy+15,'_');
OutTextXY(x+dx+2*b+24,y+dy+14,'HAPUS');
OUTTEXTXY(x+dx+2*b+24,y+dy+15,'_');
Xinp:=x+dx; Yinp:=y+dy;
Stop_Input:=True;Proses:=False;
End;

Procedure Bantuan;
Begin
py:=25;Px:=340;ba_ct_hlp:=330;hlp:=true;p_idle:=proses;
proses:=false;str1:='';
Citra_Box(328,12,630,394,Kompt_Box);
Pigura_B(328,12,302,382);
Setcolor(15);
Rectangle(332,17,626,389);
If hlp then Cat_Blok (333,17,625,389,0);
Setcolor(9);
Assign(NamaFB,'BANTUAN.FL');
Reset(NamaFB);
py:=0;
While(not(eof(NamaFB))) do
  begin
  readln(NamaFB,str1);
  outtextXY(336,12*py+20,str1);
  py:=py+1;
  end;
End;

Procedure Tampilan_Menu_Utama;
Begin
Menu_Utm:=True;Hlp:=False;DPP:=False;Awal_Graph(0);
Gbrknop(100,50,400,400,300,300,8,15,10,14,On);
Setcolor(14);Py:=0;Px:=0;Tekan:=#0;
      if Yinp=160 Then GbrKnop1(230,210,100,40,86,26,8,15,4,9,On)
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    else GbrKnop1(230,210,110,40,96,26,8,15,8,9,On);
         setcolor(14);rectangle(180,110,410,151);setcolor(3);
         rectangle(179,111,412,153);
         Cat_Box(180,112,398,149,5);Setcolor(15);
         outTextXY(181,113,'Simulasi pada Sistem Operasi');
         outTextXY(240,125,'untuk masalah');
         outTextXY(215,140,'Dining Philosophers');
         setcolor(15);settextstyle(1,0,1);
         outTextXY(245,218,'DPP(F4)');
End;

Procedure PIGURA_A(JUDUL:STRING);
Begin
  Awal_Graph(15);setcolor(6);
  Rectangle(0,0,639,479);
  Rectangle(3,3,636,476);
  Rectangle(4,4,635,475);
  Pigura_B(10,11,615,41);
  SetTextstyle (1,0,1);setcolor(5);
  Settextstyle(1,0,1);OutTextXY(95,20,Judul) ;
  Settextstyle(0,0,1);
End;

Procedure Tampilan_Algo_DPP;
Begin
  Pigura_A(' #-Dining Philosophers Problem Algorithm-#');
  Psn_Ex:=False;dpp:=true;P_idle:=True;Inp_Kuant:=False;str3:='';
  Xinp:=160;Yinp:=418;B_D:=0;Klok_proses:=0;KUANTUM:=99;klok_kuant:=3;
  Proses:=false;Tampln_hsl:=False;Input:=false;Input_node:=false;
  Stop_input:=False;Hlp:=false;Menu_utm:=false;
  Pigura_B(150,403,346,70);Cat_Box(155,409,491,468,7);
  GbrKnop(160,418,80,40,66,26,1,15,1,3,On);
  Citra_Box(160,418,240,458,tmbol);
  PutImage(240,418,Tmbol^,CopyPut);
  PutImage(320,418,Tmbol^,copyput);
  PutImage(400,418,Tmbol^,CopyPut);
  FreeMem(Tmbol,imagesize(160,418,240,458));
  Setcolor(1);
  OutTextXY(180,433,'Input');
  OutTextXY(179,435,'_');
  OutTextXY(260,433,'Output');
  OutTextXY(259,435,'_');
  OutTextXY(345,433,'Stop');
  OutTextXY(344,435,'_');
  OutTextXY(413,433,'Bantuan');
  Outtextxy(412,435,'_');
  Kursor_In(Xinp,Yinp,80,40,66,26,3,On);
  Init_q(awal_antri,akhir_antri);
End;

Procedure Job_Selesai_Pros;
Begin
Tambah_el_Job_s_q(Awal_hasil_e,Akhir_hasil_e,Aktif^.nama_Job,
                  Aktif^.Dt1,
                  Aktif^.Dt2,
                  Abs(Aktif^.Dt3));

Aktif^.Dt1:=0;
Aktif^.Dt2:=0;
Aktif^.Dt3:=0;
End;
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Procedure cetak_hasil;
var bantu:Node_Job_DPP;
    vjb,wkb:integer;
Procedure Hit_Tot_OutP(Var Kolom_Hit:Node_Job_DPP; Nm_Job_Hit:char);
Var b:integer;
Begin
Bantu:= Kolom_Hit;
    While Bantu^.Nama_Job<>Nm_Job_Hit Do  bantu:=Bantu^.Berikut;
Bantu^.Dt1:=bantu^.Dt1+1;
b:=bantu^.Dt2;
    if kolom_Hit=Dt_mkr_aw Then Bantu^.Dt2:=Bantu^.Dt2+BantuE^.Dt2
    else
    if kolom_Hit=Dt_Mkn_aw then Bantu^.Dt2:=Bantu^.Dt2+BantuE^.Dt1
    else bantu^.Dt2 := Bantu^.Dt2 + BantuE^.Dt3;
if b=Bantu^.Dt2 Then Bantu^.Dt1:=Bantu^.Dt1-1;
end;
Procedure Cetak_Statistik(Var Kolom_Hit:Node_Job_DPP);
Begin
  Py:=190;vjb:=0;wkb:=0;
  For i:=1 to B_D do
  Begin
       if Kolom_Hit=Dt_mkr_Aw Then
          Begin Px:=104;OutTextXY(Px,Py,Kolom_Hit^.Nama_job) end
       else
       if Kolom_Hit=Dt_Mkn_aw then Px:=240
       else    Px:=374;
   str (Kolom_Hit^.Dt1,str1);
   If Kolom_Hit^.Dt1>=10 then
      OutTextXy(Px+50,Py,str1)
   else
      OutTextXY(Px+50,Py,''+str1);
   str(Kolom_Hit^.Dt2,str1);
   if Kolom_Hit^.Dt2>=10 Then
      OutTextXY(Px+100,Py,str1)
   else
      OutTextXY(Px+100,Py,''+str1);
   if Kolom_Hit^.Dt1=0 then OutTextXY(Px+132,Py,'0')
   else
     Begin
       str((Kolom_Hit^.Dt2/Kolom_Hit^.Dt1):3:2,str1);
       If  ( Kolom_Hit^.Dt2/Kolom_Hit^.Dt1) >=10 Then
           OutTextXY(Px+132,Py,Str1)
      Else OutTextXY(Px+132,Py,''+str1)
     end;
   Vjb:=vjb+kolom_hit^.dt1;
   Wkb:=wkb+kolom_hit^.dt2;
   py:=py+15;
   kolom_hit:=kolom_hit^.berikut;
   end;
 str(vjb,str1);outtextxy(px+50,py+15,str1);
 str(wkb,str1);outtextxy(px+98,py+15,str1);
 end;

 Begin
 Tampln_hsl:=True;
 if dpp then
 begin
   Init_job_S_q(Dt_Mkr_Aw,Dt_Mkr_Akh);
   Init_Job_s_q(Dt_Mkn_aw,Dt_Mkn_Ak);
   Init_Job_s_q(Dt_Lpr_Aw,Dt_Lpr_Ah);
   Citra_Box (78,130,557,400,Kompt_Box);
   P_Idle:=False;
   pigura_B(78,130,479,270);
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cat_blok(83,135,553,395,1);
For k:=1 to B_D Do
 Begin
 Tambah_El_Job_s_q(Awal_hasil_e,Akhir_Hasil_e,Aktif^.Nama_Job,
 Aktif^.Dt1,Aktif^.Dt2,abs(Aktif^.Dt3));
 Aktif:=Aktif^.Berikut;
 end;
 Px:=83;Py:=137;Setcolor(14);
 OutTextXY(Px+3,Py+1,'Output');
 Py:=Py+12;
 OutTextXy(Px,Py,'_____');
 Py:=Py+8;
 OutTextXY(Px,Py,'|Philo|Berfikir|  Makan    |   Kelaparan    |');
 Py:=Py+8;
 OutTextXY(Px,Py,'|sopher|_____|_____|_____|');
 Py:=Py+8;
 OutTextXY(Px,Py,'||Cacah|Lama|Rata|Cacah|Lama|Rata|Cacah|Lama|Rata ');
 Py:=Py+8;
 OutTextXY(Px,Py,'|__|__|__|_____|_____|____|_____|_____|____|_____|');
 Py:=Py+8;
 k:=0;J:=0;str1:='ABCDE';
 For i:=1 to 2*B_D Do
 Begin
 OutTextXY(Px,Py,'|   |   |   |   |   |   |   |   |   |   |');
 Py:=Py+8;
 Tambah_el_job_s_q(Dt_Mkr_aw,Dt_Mkr_akh,str1[i],j,k,0);
 Tambah_el_job_s_q(Dt_Mkn_Aw,Dt_Mkn_ak,str1[i],j,k,0);
 Tambah_el_job_s_q(Dt_Lpr_aw,Dt_Lpr_Ah,str1[i],j,k,0);
 end;
 OutTextXY(Px,Py,'|___|__|_|__|____|____|_____|_____|____|_____|');
 Py:=Py+8;
 OutTextXY(Px,Py,'|Jumlah|   |   |   |   |   |   |   |   |   |');
 Py:=Py+8;
 OutTextXY(Px,Py,'|____|__|__|___|_____|____|_____|_____|____|_____|');
 Py:=Py+15;
 Str(B_D,str1);OutTextXY(Px+3,Py,'Banyak Philosop yang aktif ='+ str1);
 Py:=Py+15;
 Str(klok_proses,str1);OutTextXY(Px+3,Py,'Periode lama proses ='+str1);
 Py:=Py+15;
 str(klok_kuant,str1);OutTextXY(Px+3,Py,'Waktu Tunggu ='+str1);
 BantuE:=awal_Hasil_e;
 while BantuE <> Nil Do
  Begin
  Hit_Tot_OutP(Dt_Mkr_Aw,BantuE^.Nama_Job);
  Hit_Tot_OutP(Dt_Mkn_aw,BantuE^.Nama_Job);
  If BantuE^.Dt3 <> 0 Then Hit_Tot_OutP(Dt_Lpr_Aw,BantuE^.Nama_Job);
  Bantue:= BantuE^.Berikut
  end;
  for i:=1 to B_D do
  begin
  bantuE:=awal_hasil_e;
  While BantuE^.Berikut^.Berikut<> Nil Do  bantuE:=BantuE^.Berikut;
  bantuE1:=Akhir_Hasil_e;Akhir_Hasil_e:=BantuE;
  Akhir_hasil_e^.Berikut:=Nil;Dispose(BantuE1);
  end;
 Cetak_statistik(Dt_Mkr_Aw);
 Cetak_statistik(Dt_Mkn_aw);
 Cetak_statistik(Dt_Lpr_aw);
 While Dt_Mkr_Aw <> Nil Do Hapus_el_job_s_q(Dt_Mkr_aw);
 While Dt_Mkn_aw <> Nil Do hapus_el_job_s_q(Dt_Mkn_aw);
 While Dt_Lpr_aw <> Nil Do Hapus_el_job_s_q(Dt_Lpr_aw);
end
End;
```

```
Procedure Kursor(Mode:Boolean);
Var Warna:Byte;
Begin
  If Input_Node Or Inp_Kuant Then Wr_D:=7;
  If Mode Then Warna:=1
  else  Warna:=Wr_D;
  setcolor(Warna);
  Line(Kx,Ky,Kx,Ky+10);
  PutPixel(Kx-1,Ky,Warna);
  PutPixel(Kx-1,Ky+10,Warna);
  PutPixel(Kx+1,Ky,Warna);
  PutPixel(Kx+1,Ky+10,Warna);
End;

Procedure Gerak_kursor;
Begin
If (Tekan In[#59..#62,#9])and(not(input or tampln_hsl or stop_input or
hlp))
 then
  begin  XyInp_Odd:=Xinp;
  If Menu_Utm then
   begin
    If tekan=#59 Then yinp:=110
    else
    if Tekan=#60 Then Yinp:=160
    else
    if Tekan=#61 then Yinp:=260
    else
    if Tekan=#62 then Yinp:=210
    else write(^G)
   end
  else
  if dpp then
     if Tekan=#9 Then
        If Xinp<>400 then Xinp:=Xinp+80 else XInp:=160
        else If Tekan=#59 Then Xinp:=400
        else If Tekan=#60 Then Xinp:=320
        else If Tekan=#61 Then Xinp:=240
        else Xinp:=160;
     Pindah_Kur(XYinp_ODD,Yinp,XInp,YInp);
     if Tekan <>#9 Then Tekan:=#13
  end
 else
 if Input And (Tekan=#9) Then
   begin
     xyinp_Odd:=Xinp;If xinp=340 then xinp:=340;
     Pindah_Kur(xyinp_Odd,Yinp,Xinp,Yinp);
   end
 else
 If Stop_Input And(Tekan=#9)Then
   begin
     xyinp_Odd:=xinp;
     if xinp<>375 Then xinp:=xinp+100 else xinp:=175;
     Pindah_Kur(xyinp_Odd,Yinp,Xinp,Yinp)
   end
End;

Procedure TRel_Phil_aktf(N_job:Char;Var Pos_H_Y:Integer);
Begin
  If B_D=2 Then
  If N_Job='A' Then Pos_H_Y:=50 Else  Pos_H_Y:=50
  else
  if B_D =3 Then Pos_H_Y:=75
```

```
  else
  If B_D=4 Then If N_Job In['A','D'] Then Pos_H_Y:=75 else Pos_H_Y:=50
  else
  if B_D=5 then if N_Job In['A'..'C','E']  Then Pos_H_Y:=75
  else  Pos_H_y:=50
End;

Procedure PosPhil(N_Job:Char);
Begin
  If B_D=2 Then
  begin If N_Job='A' Then PxH:=160 else PxH:=330;PyH:=150;  end
  else If B_D=3 Then
  begin
    If N_Job='A' Then PxH:=60
    else if N_Job='B' Then PxH:=230
    else If N_Job='C' then PxH:=400;PyH:=150;
  end
    else if B_D=4 Then
     begin
      if N_Job In['A','D'] Then PxH:=160
      else If N_Job In['B','C'] Then PxH:=330;
      if N_Job In['A','B'] Then PyH:=60
      else if N_Job In['C','D'] Then PyH:=218;
    end
   else if B_D=5 Then
    begin
     If N_Job='A' Then PxH:=40
     else If N_Job='B' Then PxH:=210
     else if N_Job='C' Then PxH:=380
     else if N_JOB='D' Then PxH:=330
     else If N_Job='E' Then PxH:=160;
     If N_Job In ['D','E'] Then PyH:=218
     ELSE PYH:=60;
   end
End;

Procedure tulis_namakom(n_job:char);
Begin
Setcolor(1);
If b_d=2 then
   begin
   if N_job='A' then
   outtextxy(220,240,'A')
   else outtextxy(390,240,'B');
   end
Else
If B_D=3 then
   begin
   if N_job='A' then outtextxy(150,240,'A')
   else
   if N_Job='B' then outtextxy(310,240,'B')
   else outtextxy(480,240,'C');
   end
Else
If B_D=4 then
   begin
   if n_job='A' then outtextxy(240,150,'A')
   else
   if N_Job='B' then outtextxy(390,150,'B')
   else
   if N_job='C' then outtextxy(390,310,'C')
   else outtextxy(240,310,'D')
   end
```

```
Else
If B_D=5 then
   begin
   if N_Job='A' then outtextxy(120,150,'A')
   else
   if N_job='B' then outtextxy(290,150,'B')
   else
   if N_job='C' then outtextxy(460,150,'C')
   else
   if N_Job='D' then outtextxy(390,308,'D')
   else outtextxy(240,308,'E')
   end
End;

Procedure Psn_Hungry(x,y:integer);
Var da,db,dx:Byte;
Procedure Poligon(wrn:Byte);
Begin
Setcolor(wrn);
If i<=y+33+20 then
 begin line (x-j,i,x+37+j,i);j:=j+1; end
 else
 Begin line(x-j,i,x+37+j,i);j:=j-1; end
End;

Begin
  j:=1;
  for i:=y+33 To y+73 Do Poligon(1);
  for i:=y+33+2 To y+73-2 Do Poligon(2);
  for i:=y+33+3 To y+73-3 Do Poligon (1);
  for i:=y+33+4 To y+73-4 Do Poligon(15) ;
  for i:=y+33+5 To y+73-5 Do Poligon (10) ;
  setcolor(12);OutTextXY(x-5,y+49,'HUNGRY');
End;

Procedure eat(x,y:integer);
Var da,db,dx:Byte;
Procedure Poligon(wrn:Byte);
Begin
setcolor(wrn);
If i<=y+33+20 then
  begin line (x-j,i,x+37+j,i);j:=j+1; end
 else
  begin line(x-j,i,x+37+j,i);j:=j-1; end
End;

Begin
  j:=1;
  for i:=y+33 To y+73 Do Poligon(1);
  for i:=y+33+2 To y+73-2 Do Poligon(2);
  for i:=y+33+3 To y+73-3 Do Poligon (1);
  for i:=y+33+4 To y+73-4 Do Poligon(15) ;
  for i:=y+33+5 To y+73-5 Do Poligon (10) ;
  setcolor(4);OutTextXY(x+5,y+49,'EAT');
End;

Procedure THINK(x,y:integer);
Var da,db,dx:Byte;
Procedure Poligon(wrn:Byte);
Begin
 setcolor(wrn);
 If i<=y+33+20 then
  begin line (x-j,i,x+37+j,i);j:=j+1;
```

```
 end
 else
 Begin line(x-j,i,x+37+j,i);j:=j-1; end
End;

Begin
  j:=1;
  for i:=y+33 To y+73 Do Poligon(1);
  for i:=y+33+2 To y+73-2 Do Poligon(2);
  for i:=y+33+3 To y+73-3 Do Poligon (1);
  for i:=y+33+4 To y+73-4 Do Poligon(15) ;
  for i:=y+33+5 To y+73-5 Do Poligon (10) ;
  setcolor(7);OutTextXY(x-3,y+49,'THINK');
End;

Function Randomkan(Bil:integer):integer;
Begin
   Randomize;
   j:=Random(Bil);
   Randomkan:=j
End;

Procedure Manipulasi_Var(str_var:string;Var str_obj:string;
                         Var Int_var:integer;x,y,xkursor:integer);
Var b:integer;
Procedure Rubah_Var;
Begin
Kursor(Off);Val(str_var,int_var,i);
If Not input_node  Then
   if Int_Var=0 Then str_Var:='';
Setcolor(15);OutTextXy(x,y,str_var);Str_obj:=str_Var;
Kx:=xKursor;Kursor(ON)
End;

Begin
If Tekan<>#8 Then
    begin
      if Input_Node Then B:=1 else B:=2;
      if Length(str_obj) < B Then Rubah_var
      else write(^G)
    end
Else if Length(str_obj) > 0 Then Rubah_var
else Write(^G)
End;

Function Phil_Eating(Var Philosop : Antri):Boolean;
Begin
If (Philosop^.Dt1>0) Then Phil_Eating:=True
else Phil_Eating:=False
End;

Function Phil_Hungry(Var Philosop : Antri):Boolean;
Begin
If(Randomkan(99)>=50) Or (Philosop^.Dt3>0) Then Phil_Hungry:=True
else Phil_Hungry:=False
End;

Procedure Proses_Makan;
Begin
TRel_Phil_Aktf(Aktif^.Nama_Job,Pos_H_Y);
Aktif^.Dt1:=Aktif^.Dt1+1;
GbrKnop1(PxH+Pos_H_Y-20,PyH+75,78,14,74,10,7,15,14,4,On);
Setcolor(14);str(aktif^.Dt1,str1);
```

```
OutTextXY(PxH+Pos_H_Y-20+25,PyH+80,str1);
If Aktif^.Dt1>0 Then
 begin
   Cat_Blok(PxH+Pos_H_Y-23,PyH+20,PxH+Pos_H_Y-20+70+10,PyH+75,8);
   EAT(PXH+POS_H_Y,PYH);
   Aktif^.Dt3:=-1*aktif^.Dt3
 end;
End;

Procedure Proses_Lapar;
Begin
TRel_Phil_Aktf(Aktif^.Nama_Job,Pos_H_Y);
Aktif^.Dt3:=Aktif^.Dt3+1;
GbrKnop1(PxH+Pos_H_Y-20,PyH+75,78,14,74,10,7,15,13,10,On);
setcolor(14);str(Aktif^.Dt3,str1);
OutTextXy(PxH+Pos_H_Y-20+25,PyH+80,str1);
If Aktif^.Dt3>0 Then
  begin
    Cat_Blok(PxH+Pos_H_Y-23,PyH+20,PxH+Pos_H_Y-20+70+10,PyH+75,8);
    Psn_Hungry(PxH+Pos_H_Y,PyH);
  end;
End;

Procedure Proses_Mikir;
Begin
TRel_Phil_Aktf(Aktif^.Nama_Job,Pos_H_Y);
Aktif^.Dt2:=Aktif^.Dt2+1;
GbrKnop1(PxH+Pos_H_Y-20,PyH+75,78,14,74,10,7,15,13,7,On);
Setcolor(14);str(Aktif^.Dt2,str1);
OutTextXy(PxH+Pos_H_Y-20+25,PyH+80,str1);
If Aktif^.Dt2>0 Then
  Begin
    Cat_Blok(PxH+Pos_H_Y-23,PyH+20,PxH+Pos_H_Y-20+70+10,PyH+75,8);
    THINK(PXH+POS_H_Y,PYH);
end;
End;

Procedure Proses_DPP;
Begin
Tulis_namakom(aktif^.nama_job);
If Phil_Hungry(Aktif) Then
  if  Not (Phil_Eating(bantu)) Then
      If Not Phil_Eating(aktif^.Berikut) Then
             If(Aktif^.Dt3 Mod Klok_Kuant=0) Then  Proses_Makan
             else  Proses_Lapar
      else Proses_Lapar
  else Proses_Lapar
else
If Phil_Eating(Aktif) Then
   begin
    Job_selesai_Pros;
    Proses_Mikir
   end
else proses_mikir;
aa := AKTIF^.DT1;
bb := AKTIF^.DT2;
cc := AKTIF^.DT3;
If((AKTIF^.DT1>0)or(AKTIF^.DT2>0)or(AKTIF^.DT3>0))then
begin
     jd:=jd+1;
     If(jd=1)Then Klok_proses:=Klok_proses+1;
end;
Bantu:=Aktif;Aktif:=Aktif^.Berikut;
```

```
PosPhil(Aktif^.Nama_Job);
End;

Procedure Control_Tekan_Esc;
Procedure Pesan_Masih_Proses;
Begin
  Proses:=False;hlp:=false;tampln_hsl:=false;stop_input:=false;
  Px:=150;Py:=353;Citra_Box(150,353,497,401,Kompt_Box);
  GbrKnop1(Px,Py,345,46,337,38,4,15,4,3,On);
  Tekan:=#0;Psn_Ex:=True; Setcolor(4);
  OutTextXY(Px+18,Py+15,'Sedang Proses,Yakin Mau Keluar(Y/T)?');
End;
Procedure Tekan_Escape(x,y,obj:integer;var obj_aktif:boolean);
Begin
If Not Psn_Ex Then
   begin Xinp:=x;Yinp:=y;end;
If Obj=1 Then
   begin
      while awal_hasil_e <> nil do hapus_el_job_s_q(awal_hasil_e);
      Akhir_Antri^.Berikut:=Nil;
      While Awal_antri<> Nil Do Hapus_el_q(awal_antri,B_D);
      Xinp:=x;Yinp:=y;Tampilan_Menu_utama;
   end
else
If dpp then
   begin
     if input then
      begin
      putimage(150,303,gbr_proses^,copyput);
      freemem(gbr_proses,(imagesize(150,303,497,401)));
      end
     else  if stop_input or Psn_ex then
      begin
      Putimage (150,353,kompt_Box^,copyput);
      freemem(kompt_box,(imagesize(150,353,497,401)));
      if psn_ex then  proses:=false
      end
     else if Hlp then
      begin proses:=P_idle;close(namaFB);
      PutImage(328,12,kompt_box^,Copyput);
      freemem(kompt_box,(imagesize(328,12,630,394))) end
     else if Tampln_hsl then
      begin
      Putimage(78,130,Kompt_Box^,Copyput);
      freemem(kompt_box,(imagesize(78,130,557,400)))
      end;
   If Not psn_ex then
   GbrKnop(Xinp,Yinp,80,40,66,26,1,15,1,3,Off) end;
 If obj_aktif=input_node then input_node:=false;
 tekan:=#0; obj_aktif:=false;
 end;

 Begin
 If DPP then
     If Input Then
     begin
      Tekan_escape(160,418,2,Input);
      input_node:=false;Inp_Kuant:=False;inp_md:=false;
     end
     else
     If Stop_Input Then
        If Xinp=175 then
           if P_idle Then {*untuk LANJUT*}
```

```
        begin Proses:=True;Tekan_Escape(320,418,2,Stop_Input)  end
        else       {*untuk BARU*}
        begin
        Klok_Proses:=0;P_idle:=Not P_idle;
        While Awal_hasil_e<> Nil DO Hapus_el_job_s_q(awal_hasil_e);
        Aktif:=awal_antri;
        For i:=1 To B_D DO
          begin
          Aktif^.Dt1:=0;
          Aktif^.Dt2:=0;
          Aktif^.Dt3:=0;
          PosPhil(Aktif^.Nama_Job);
          TRel_Phil_Aktf(Aktif^.Nama_Job,Pos_H_Y);
          Aktif:=aktif^.berikut;
          end;
        proses:=true;
        tekan_escape(320,418,2,stop_input)
        end
      else
      if xinp=375 then {*untuk HAPUS*}
          begin
          akhir_antri^.berikut:=nil;
          while awal_antri<> nil do hapus_el_q(awal_antri,B_D);
          while awal_hasil_e<> nil do hapus_el_job_s_q(awal_hasil_E);
          putimage(150,353,kompt_box^,copyput);
          freemem(kompt_box,imagesize(150,353,497,401));
          Cat_Blok(6,60,633,401,0);
          P_idle:=Not P_idle;Xinp:=320;Yinp:=418;stop_input:=false;
          Tekan:=#0;
          GbrKnop(Xinp,Yinp,80,40,66,26,1,15,1,3,Off)
          end
    else
    Begin  {*untuk STOP*}
       Tekan_Escape(320,418,2,stop_Input);
       P_idle:=Not P_idle
    end
  else If Tampln_hsl Then Tekan_Escape(240,418,2,Tampln_hsl)
  else If hlp then tekan_escape(400,418,2,hlp)
  else If Psn_ex Then
    If Upcase(Tekan)='Y' Then Tekan_Escape(200,260,1,DPP)
    else Tekan_Escape(150,353,2,Psn_Ex)
  else If B_D<>0 Then Pesan_Masih_Proses
  else  Tekan_Escape(200,260,1,DPP);
End;

Procedure Tekan_Panah(t1,t2:integer);
Begin
Kursor(Off);
If Tekan=#80 Then
   if Input_Node Then  begin Input_Node:=False;Inp_Kuant:=True;end
   else
   if inp_Kuant Then Inp_Kuant:=False
   else Write(^G)
Else
If Tekan=#72 Then
   if Inp_Kuant Then begin Input_Node:=True; Inp_Kuant:=False;  end
   else
   if Not Input_Node Then Inp_Kuant:=True
   else write(^G);
Kx:=t1;Ky:=t2;
End;
```

```
Procedure Tekan_Enter;
Begin
If Menu_Utm Then
   if (Px=340) Then
      Begin Control_Tekan_Esc;Px:=0 end
   else
   begin
     if hlp then bantuan
     else
     if yinp=210 then Tampilan_Algo_DPP end
  else
  if dpp then
   if Tampln_hsl Or Hlp Or Stop_Input Then Tekan:=#27
   else
   if Input_node Then
      if Xinp=375 Then
         if(B_D<6) and (B_D>1) Then
           begin Control_Tekan_Esc;K:=0;
            For i:=1 To B_D DO
             begin
             strNmJb[1]:=chr(64+i);
             Tambah_El_q(awal_antri,akhir_antri,strNmJb[1],V_J,0,0,K);
             end;
            Aktif:=Awal_antri;Bantu:=Akhir_antri;
            Akhir_antri^.Berikut:=awal_antri;
            TRel_Phil_Aktf(Aktif^.Nama_Job,Pos_H_Y);
            PosPhil(Aktif^.Nama_Job);
            Proses:=true
            end
          else Write(^G)
     else Tekan:=#27
    else
    if input and(j<>0) then
       begin klok_kuant:=j;
          tekan:=#72;tekan_panah(165+length(str_angk)*7,317);
             inp_Kuant:=false;Input_Node:=true;
       end
    else
    if not psn_ex then
    begin
    if(Xinp=160) And (B_D=0) AND NOT Proses Then
      begin Tbl_Off(160,418,80,40,66,24,1,3);Box_Input End
    else
    If(Xinp=320) And (B_D>0) Then
      begin
        If Proses Then While Aktif<>Awal_Antri DO Proses_DPP;
           Tbl_Off(320,418,80,40,66,24,1,3); Box_Stop
      end
     else
     if(xinp=400) then
       begin Tbl_Off(400,418,80,40,66,24,1,3);Bantuan end
     else
     If (Xinp=240) And (B_D>0) And Not Proses Then
         Begin Tbl_Off(240,418,80,40,66,24,1,3); Cetak_Hasil end
     else
     Write(^G)
     end
End;

Procedure Tekan_PanahAtas;
Begin
If input then
      if inp_kuant then tekan_panah(165+length(str_angk)*7,317)
```

```
      else
      if  not input_node then tekan_panah(165+length(str1)*7,339)
End;

Procedure Tekan_PanahBawah;
Begin
If input then
   if input_node then tekan_panah(165+length(str1)*7,339)
   else
   if inp_kuant then tekan_panah(165+length(str2)*7,360)
End;

Procedure Tekan_Backspace;
Begin
If Input Then
 if Input_Node Then
  begin
   Cat_Blok(161,315,189,328,7);
   Manipulasi_Var(copy(str_angk,1,Length(str_angk)-1),str_angk,B_D,165,
   317,Kx-7)
  end
 else
 if Inp_Kuant Then
  begin
   Cat_Blok(161,337,189,350,7);
   Manipulasi_Var(Copy(str1,1,Length(str1)-1),str1,j,165,339,Kx-7)
  end
 else
  begin
   Cat_Blok(161,358,189,371,7);
   Manipulasi_Var(copy(str2,1,Length(str2)-1),str2,kuantum,165,360,Kx-7)
  end
End;

Procedure Input_Data_Char;
Procedure Ctrl_tbl_Hrf;
Begin
  Extcode:=True;
  If UPcase(Tekan)='I' Then Tekan:=#62
  ELSE
  If UPcase(Tekan)='O' Then Tekan:=#61
  ELSE
  If UPcase(Tekan)='S' Then Tekan:=#60
  ELSE
  If UPcase(Tekan)='B' Then Tekan:=#59
  Else
  begin Extcode:=False;write(^G);end
End;
Procedure Kontrol_Stop;
Begin
If UpCase(Tekan) In['B','L']Then Xinp:=175
else
If Upcase(Tekan) ='S' Then xinp:=275
else xinp:=375;
Tekan:=#27;
End;

Procedure Kontrol_Psn_Exit;
Begin
If Upcase(Tekan) In ['Y','T'] Then Control_Tekan_Esc
else
begin
   key:=false;write(^G);end
```

```
end;
Begin
If Stop_Input Then
   if Upcase(Tekan) In ['B','L','S','H'] Then   Kontrol_Stop
   else Write(^G)
Else
If Psn_Ex Then  Kontrol_Psn_Exit
else
If  Upcase(tekan) In['I','O','S','B'] THEN Ctrl_tbl_hrf
else write(^G)
End;

Procedure Input_Data_Bil;
Begin
   If Input Then
      if Input_Node Then
         Manipulasi_Var(Concat(str_angk,Tekan),str_Angk,B_D,165,317,Kx+7)
      else
      if Inp_Kuant Then
         Manipulasi_Var(Concat(str1,Tekan),str1,j,165,339,Kx+7)
      else
         Manipulasi_Var(Concat(str2,Tekan),str2,kuantum,165,360,Kx+7);
End;

Procedure Siapkan_file(var berkas:text);
Begin
Assign (berkas,'c:\pascal\hasil.pas');
REWRITE(BERKAS);
end;

Procedure tampil_data_difile(var berkas:text);
Begin
If (aa>0)or(bb>0)or(cc>0)Then
  begin
    if (jm=0) then
     begin
         WRITELN(BERKAS,'KETERANGAN:');
         WRITELN(BERKAS,'----------');
         WRITELN(BERKAS,'Banyak Philosop=',b_d:2,'');
         WRITELN(BERKAS,'Lama Proses=',Kuantum:3,'  ');
         WRITELN(berkas,'Waktu Tunggu=',KLOK_KUANT:3,'  ');
         WRITELN(BERKAS,'******************');
           If b_d=2 then
              begin
                    WRITE(BERKAS,'|   A    ');
                    WRITELN(BERKAS,'|    B');
                    WRITELN(BERKAS,'====================');
              end;
           If b_d=3 then
              begin
                    WRITE(BERKAS,'|   A    ');
                    WRITE(BERKAS,'|    B    ');
                    WRITELN(BERKAS,'|    C     ');
                    WRITELN(BERKAS,'==============================');
              end;
           If b_d=4 then
              begin
                    WRITE(BERKAS,'|    A   ');
                    WRITE(BERKAS,'|    B    ');
                    WRITE(BERKAS,'|    C    ');
                    WRITELN(BERKAS,'|    D');
                    WRITELN(BERKAS,'==================================');
              end;
```

```
          If b_d=5 then
             begin
                   WRITE(BERKAS,'|    A     ');
                   WRITE(BERKAS,'|     B     ');
                   WRITE(BERKAS,'|     C     ');
                   WRITE(BERKAS,'|     D     ');
                   WRITELN(BERKAS,'|     E');
                   WRITELN(BERKAS,'==========================================');
              end;
      Jm:=Jm+5;
      end;
    If(jd>=1)and(jd<=B_d) Then
    begin
      If aa>0 then write(berkas,'| Eat     |')
      else
      If cc>0 then write(berkas,'| Hungry  |')
      else
      If bb>0 then write(berkas,'| Think   |');
    end;
  end;
If (Jd=b_d)then
  begin
     WRITELN(BERKAS,'|',KLOK_PROSES:3,'|'); jd:=0;
  end;

END;


Procedure Hentikan_ProsesDPP;
Begin
Tekan:=#60;Extcode:=true;Key:=true;delay(2000);
end;

{MAINPROGRAM}
BEGIN
siapkan_file(berkas);
Jm:=0;Jmlbd:=0;jd:=0;klok_proses:=0;
     New(Aktif);Awal_Graph(0);
     proses:=false;dpp:=false;Inp_Kuant:=False;Tampln_hsl:=False;
     stop_input:=false;Input:=False;Xinp:=200;Yinp:=160;input_node:=false;
     hlp:=false;Ba_Ct_Hlp:=0;key:=false;extcode:=false;
 Tampilan_Menu_utama;
 Repeat
 Kursor(On);
 if proses then
  if dpp then
    Begin Proses_DPP;
    If(Klok_Proses Mod Kuantum=0)AND(jd=b_d)Then
    Hentikan_ProsesDPP;
    Tampil_data_difile(berkas);
    end;

  if hlp and not (eof(namafb)) and (Py<Ba_Ct_Hlp) Then Bantuan;
  Input_Keyboard(Tekan,extcode,key);
  if key then
     begin
     If tekan=#8 then tekan_backspace;
     If tekan=#9 then gerak_kursor;
     If Not Extcode Then
        if tekan in['a'..'z','A'..'Z'] then input_data_char
        else
        if tekan In['0'..'9'] then Input_Data_Bil;
```

```
    If Extcode then
       if tekan In[#59..#62] Then Gerak_Kursor

       else
       if tekan=#72 then tekan_panahatas
       else
       if tekan=#80 then tekan_panahbawah;
       If tekan=#13 Then Tekan_Enter;
       if tekan=#27 Then Control_Tekan_Esc;
    end;
Kursor(Off);
Until Tekan=#27;
Reg.Al:=3;Reg.Ah:=0;
Intr($10,Reg);Clrscr;
Window(1,1,80,25);TextBackground(0);Clrscr;
Window(5,5,75,20);TextBackground(9);clrscr;
Textcolor(14);
gotoxy(18,3);Write('==>Thank"s....for your attention<==');
gotoxy(28,4);write(' Bye...Bye... .');
gotoxy(50,15);write('*#*Sharie_Math`96*#*');
window(10,10,70,15);textcolor(0+BLINK);TextBackground(12);clrscr;
gotoxy(10,3);Write('D I P O N E G O R O   U N I V E R S I T Y');
close(berkas);
Readln;
end.
```

LAMPIRAN B. Tabel Tingkah Laku Filsuf

Hasil tabel 3.3

```
KETERANGAN:
----------
Banyak Philosop= 2
Lama Proses= 20
Waktu Tunggu=  3
******************
|   A     ||    B    ||
=====================
| Eat     || Think  ||  1|
| Think   || Think  ||  2|
| Think   || Think  ||  3|
| Think   || Think  ||  4|
| Think   || Think  ||  5|
| Think   || Eat    ||  6|
| Hungry  || Eat    ||  7|
| Hungry  || Eat    ||  8|
| Hungry  || Eat    ||  9|
| Hungry  || Think  || 10|
| Hungry  || Think  || 11|
| Hungry  || Eat    || 12|
| Hungry  || Eat    || 13|
| Hungry  || Eat    || 14|
| Hungry  || Think  || 15|
| Eat     || Hungry || 16|
| Eat     || Hungry || 17|
| Eat     || Hungry || 18|
| Eat     || Hungry || 19|
| Eat     || Hungry || 20|
```

Hasil tabel 3.4

```
KETERANGAN:
----------
Banyak Philosop= 2
Lama Proses= 20
Waktu Tunggu= 10
******************
|   A     ||    B    ||
=====================
| Think   || Think  ||  1|
| Think   || Think  ||  2|
| Think   || Eat    ||  3|
| Hungry  || Think  ||  4|
| Hungry  || Think  ||  5|
| Hungry  || Think  ||  6|
| Hungry  || Eat    ||  7|
| Hungry  || Eat    ||  8|
| Hungry  || Eat    ||  9|
| Hungry  || Eat    || 10|
| Hungry  || Eat    || 11|
| Hungry  || Eat    || 12|
| Hungry  || Eat    || 13|
```

Hungry		Eat		14
Hungry		Eat		15
Hungry		Think		16
Hungry		Think		17
Hungry		Eat		18
Hungry		Think		19
Hungry		Think		20

Hasil tabel 3.5

KETERANGAN:

Banyak Philosop= 3
Lama Proses= 60
Waktu Tunggu= 10
****

A	B	C	
Think	Eat	Hungry	1
Hungry	Eat	Hungry	2
Hungry	Eat	Hungry	3
Hungry	Think	Hungry	4
Hungry	Think	Hungry	5
Hungry	Eat	Hungry	6
Hungry	Think	Hungry	7
Hungry	Think	Hungry	8
Hungry	Think	Hungry	9
Hungry	Eat	Hungry	10
Hungry	Eat	Hungry	11
Hungry	Eat	Hungry	12
Hungry	Think	Hungry	13
Hungry	Eat	Hungry	14
Hungry	Eat	Hungry	15
Hungry	Eat	Hungry	16
Hungry	Eat	Hungry	17
Hungry	Eat	Hungry	18
Hungry	Think	Hungry	19
Hungry	Think	Hungry	20
Hungry	Think	Eat	21
Hungry	Hungry	Eat	22
Hungry	Hungry	Eat	23
Hungry	Hungry	Eat	24
Hungry	Hungry	Eat	25
Hungry	Hungry	Eat	26
Hungry	Hungry	Eat	27
Hungry	Hungry	Think	28
Hungry	Hungry	Think	29
Hungry	Hungry	Eat	30
Hungry	Hungry	Eat	31
Hungry	Hungry	Think	32
Hungry	Hungry	Think	33
Hungry	Hungry	Eat	34
Hungry	Hungry	Eat	35
Hungry	Hungry	Think	36
Hungry	Hungry	Think	37

Hungry		Hungry		Think		38
Hungry		Hungry		Eat		39
Hungry		Hungry		Think		40
Hungry		Hungry		Think		41
Eat		Hungry		Think		42
Think		Hungry		Think		43
Think		Hungry		Think		44
Eat		Hungry		Hungry		45
Eat		Hungry		Hungry		46
Eat		Hungry		Hungry		47
Eat		Hungry		Hungry		48
Think		Hungry		Hungry		49
Eat		Hungry		Hungry		50
Think		Hungry		Hungry		51
Think		Eat		Hungry		52
Hungry		Eat		Hungry		53
Hungry		Eat		Hungry		54
Hungry		Think		Eat		55
Hungry		Think		Think		56
Hungry		Think		Think		57
Hungry		Think		Think		58
Hungry		Think		Think		59
Hungry		Think		Think		60

Hasil tabel 3.6

KETERANGAN:

Banyak Philosop= 3
Lama Proses= 60
Waktu Tunggu= 40
****
| A || B || C ||
==========

Eat		Hungry		Think		1
Think		Hungry		Think		2
Think		Hungry		Think		3
Think		Hungry		Eat		4
Hungry		Hungry		Eat		5
Hungry		Hungry		Eat		6
Hungry		Hungry		Eat		7
Hungry		Hungry		Eat		8
Hungry		Hungry		Eat		9
Hungry		Hungry		Think		10
Hungry		Hungry		Think		11
Hungry		Hungry		Think		12
Hungry		Hungry		Eat		13
Hungry		Hungry		Think		14
Hungry		Hungry		Think		15
Hungry		Hungry		Eat		16
Hungry		Hungry		Eat		17
Hungry		Hungry		Eat		18
Hungry		Hungry		Think		19
Hungry		Hungry		Think		20
Hungry		Hungry		Eat		21

Hungry		Hungry		Eat		22
Hungry		Hungry		Think		23
Hungry		Hungry		Think		24
Hungry		Hungry		Eat		25
Hungry		Hungry		Eat		26
Hungry		Hungry		Eat		27
Hungry		Hungry		Eat		28
Hungry		Hungry		Eat		29
Hungry		Hungry		Think		30
Hungry		Hungry		Think		31
Hungry		Hungry		Think		32
Hungry		Hungry		Think		33
Hungry		Hungry		Think		34
Hungry		Hungry		Eat		35
Hungry		Hungry		Eat		36
Hungry		Hungry		Eat		37
Hungry		Hungry		Eat		38
Hungry		Hungry		Think		39
Hungry		Hungry		Eat		40
Hungry		Hungry		Think		41
Hungry		Hungry		Think		42
Hungry		Hungry		Think		43
Hungry		Hungry		Think		44
Eat		Hungry		Hungry		45
Eat		Hungry		Hungry		46
Eat		Hungry		Hungry		47
Think		Hungry		Hungry		48
Eat		Hungry		Hungry		49
Eat		Hungry		Hungry		50
Think		Hungry		Hungry		51
Eat		Hungry		Hungry		52
Think		Hungry		Hungry		53
Think		Hungry		Hungry		54
Think		Hungry		Hungry		55
Eat		Hungry		Hungry		56
Eat		Hungry		Hungry		57
Think		Hungry		Hungry		58
Eat		Hungry		Hungry		59
Eat		Hungry		Hungry		60

Hasil tabel 3.7

KETERANGAN:

Banyak Philosop= 4
Lama Proses= 30
Waktu Tunggu= 5
****

A || B || C || D	
Think || Eat || Hungry || Eat || 1
Hungry || Eat || Hungry || Eat || 2
Hungry || Eat || Hungry || Eat || 3
Hungry || Eat || Hungry || Eat || 4

Hungry	Think	Hungry	Think	5
Hungry	Think	Eat	Think	6
Eat	Hungry	Eat	Hungry	7
Eat	Hungry	Eat	Hungry	8
Eat	Hungry	Eat	Hungry	9
Think	Hungry	Eat	Hungry	10
Eat	Hungry	Eat	Hungry	11
Eat	Hungry	Eat	Hungry	12
Think	Hungry	Think	Hungry	13
Think	Hungry	Think	Hungry	14
Think	Hungry	Think	Hungry	15
Think	Hungry	Think	Hungry	16
Eat	Hungry	Eat	Hungry	17
Eat	Hungry	Eat	Hungry	18
Think	Hungry	Think	Hungry	19
Think	Hungry	Think	Hungry	20
Think	Hungry	Think	Hungry	21
Think	Eat	Think	Eat	22
Think	Eat	Hungry	Eat	23
Hungry	Eat	Hungry	Eat	24
Hungry	Think	Hungry	Think	25
Hungry	Think	Hungry	Think	26
Hungry	Think	Hungry	Eat	27
Hungry	Eat	Hungry	Eat	28
Hungry	Eat	Hungry	Think	29
Hungry	Think	Hungry	Think	30

Hasil tabel 3.8

KETERANGAN:

Banyak Philosop= 4
Lama Proses= 30
Waktu Tunggu= 20
****

A	B	C	D	
Think	Think	Think	Eat	1
Hungry	Eat	Hungry	Eat	2
Hungry	Eat	Hungry	Eat	3
Hungry	Think	Hungry	Think	4
Hungry	Think	Hungry	Think	5
Hungry	Eat	Hungry	Eat	6
Hungry	Eat	Hungry	Think	7
Hungry	Think	Hungry	Think	8
Hungry	Think	Hungry	Eat	9
Hungry	Eat	Hungry	Eat	10
Hungry	Eat	Hungry	Eat	11
Hungry	Eat	Hungry	Eat	12
Hungry	Eat	Hungry	Think	13
Hungry	Think	Hungry	Think	14
Hungry	Think	Hungry	Eat	15
Hungry	Eat	Hungry	Eat	16

Hungry		Eat		Hungry		Eat		17
Hungry		Think		Hungry		Think		18
Hungry		Think		Hungry		Eat		19
Hungry		Think		Hungry		Think		20
Hungry		Think		Hungry		Think		21
Eat		Think		Eat		Hungry		22
Eat		Hungry		Eat		Hungry		23
Eat		Hungry		Eat		Hungry		24
Eat		Hungry		Eat		Hungry		25
Eat		Hungry		Eat		Hungry		26
Eat		Hungry		Eat		Hungry		27
Eat		Hungry		Eat		Hungry		28
Think		Hungry		Think		Hungry		29
Think		Hungry		Think		Hungry		30

Hasil tabel 3.9

KETERANGAN:

Banyak Philosop= 5
Lama Proses= 80
Waktu Tunggu= 30
****

A || B || C || D || E	
Think || Think || Think || Think || Think || 1
Think || Think || Think || Think || Think || 2
Think || Think || Think || Think || Think || 3
Think || Think || Think || Eat || Hungry || 4
Eat || Hungry || Hungry || Eat || Hungry || 5
Think || Hungry || Hungry || Think || Hungry || 6
Eat || Hungry || Hungry || Eat || Hungry || 7
Eat || Hungry || Hungry || Eat || Hungry || 8
Eat || Hungry || Hungry || Think || Hungry || 9
Think || Hungry || Hungry || Think || Hungry || 10
Think || Hungry || Hungry || Eat || Hungry || 11
Eat || Hungry || Hungry || Eat || Hungry || 12
Eat || Hungry || Hungry || Eat || Hungry || 13
Eat || Hungry || Hungry || Eat || Hungry || 14
Think || Hungry || Hungry || Think || Hungry || 15
Think || Hungry || Hungry || Think || Hungry || 16
Eat || Hungry || Hungry || Eat || Hungry || 17
Eat || Hungry || Hungry || Eat || Hungry || 18
Eat || Hungry || Hungry || Eat || Hungry || 19
Eat || Hungry || Hungry || Think || Hungry || 20
Think || Hungry || Hungry || Think || Hungry || 21
Eat || Hungry || Hungry || Eat || Hungry || 22
Think || Hungry || Hungry || Think || Hungry || 23
Think || Hungry || Hungry || Think || Hungry || 24
Think || Hungry || Hungry || Eat || Hungry || 25
Eat || Hungry || Hungry || Eat || Hungry || 26
Think || Hungry || Hungry || Think || Hungry || 27
Think || Hungry || Hungry || Think || Hungry || 28

Think	Hungry	Hungry	Think	Hungry	29
Think	Hungry	Hungry	Eat	Hungry	30
Eat	Hungry	Hungry	Think	Hungry	31
Think	Hungry	Hungry	Think	Hungry	32
Eat	Hungry	Hungry	Eat	Hungry	33
Think	Hungry	Hungry	Think	Eat	34
Hungry	Eat	Hungry	Hungry	Eat	35
Hungry	Eat	Hungry	Hungry	Eat	36
Hungry	Eat	Hungry	Hungry	Think	37
Hungry	Think	Hungry	Hungry	Think	38
Hungry	Eat	Hungry	Hungry	Eat	39
Hungry	Think	Hungry	Hungry	Think	40
Hungry	Think	Hungry	Hungry	Eat	41
Hungry	Eat	Hungry	Hungry	Eat	42
Hungry	Eat	Hungry	Hungry	Think	43
Hungry	Eat	Hungry	Hungry	Eat	44
Hungry	Think	Hungry	Hungry	Think	45
Hungry	Think	Hungry	Hungry	Eat	46
Hungry	Eat	Hungry	Hungry	Eat	47
Hungry	Eat	Hungry	Hungry	Eat	48
Hungry	Eat	Hungry	Hungry	Eat	49
Hungry	Think	Hungry	Hungry	Think	50
Hungry	Think	Hungry	Hungry	Eat	51
Hungry	Eat	Hungry	Hungry	Eat	52
Hungry	Eat	Hungry	Hungry	Eat	53
Hungry	Eat	Hungry	Hungry	Think	54
Hungry	Eat	Hungry	Hungry	Eat	55
Hungry	Eat	Hungry	Hungry	Eat	56
Hungry	Think	Hungry	Hungry	Think	57
Hungry	Think	Hungry	Hungry	Eat	58
Hungry	Eat	Hungry	Hungry	Think	59
Hungry	Eat	Hungry	Hungry	Eat	60
Hungry	Eat	Hungry	Hungry	Eat	61
Hungry	Think	Hungry	Hungry	Think	62
Hungry	Think	Hungry	Hungry	Eat	63
Hungry	Eat	Hungry	Hungry	Think	64
Hungry	Think	Eat	Hungry	Eat	65
Hungry	Hungry	Eat	Hungry	Eat	66
Hungry	Hungry	Eat	Hungry	Think	67
Hungry	Hungry	Think	Hungry	Think	68
Hungry	Hungry	Think	Hungry	Eat	69
Hungry	Hungry	Eat	Hungry	Think	70
Hungry	Hungry	Think	Hungry	Think	71
Hungry	Hungry	Eat	Hungry	Eat	72
Hungry	Hungry	Eat	Hungry	Eat	73
Hungry	Hungry	Think	Hungry	Eat	74
Hungry	Hungry	Eat	Hungry	Think	75
Hungry	Hungry	Think	Hungry	Think	76
Hungry	Hungry	Think	Hungry	Eat	77
Hungry	Hungry	Eat	Hungry	Eat	78
Hungry	Hungry	Think	Hungry	Think	79
Hungry	Hungry	Eat	Hungry	Eat	80

Hasil tabel 3.10

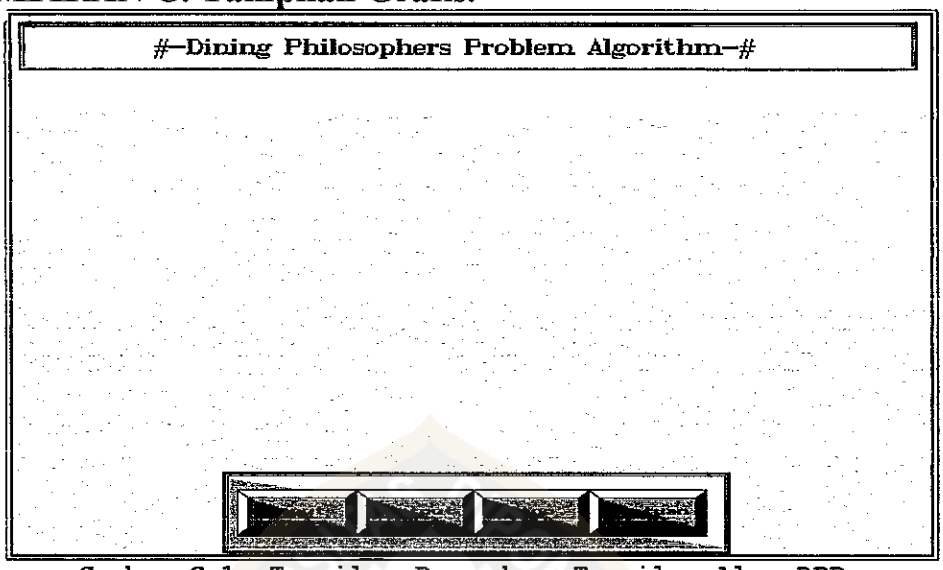
KETERANGAN:

Banyak Philosop= 5
Lama Proses= 80
Waktu Tunggu= 40
****

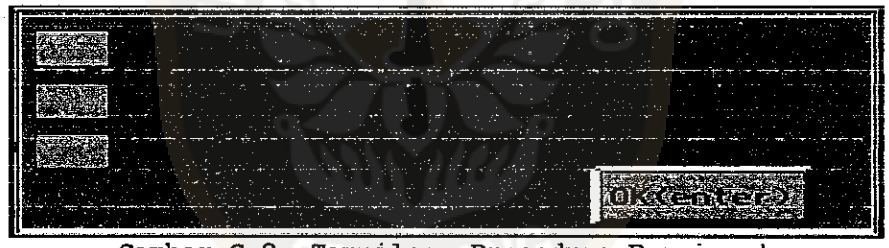
A	B	C	D	E	
Eat	Hungry	Eat	Hungry	Hungry	1
Think	Hungry	Think	Hungry	Hungry	2
Think	Hungry	Think	Hungry	Hungry	3
Think	Hungry	Think	Hungry	Hungry	4
Think	Hungry	Think	Hungry	Hungry	5
Eat	Hungry	Eat	Hungry	Hungry	6
Think	Hungry	Think	Hungry	Hungry	7
Think	Hungry	Eat	Hungry	Hungry	8
Eat	Hungry	Think	Hungry	Hungry	9
Think	Hungry	Think	Hungry	Hungry	10
Eat	Hungry	Eat	Hungry	Hungry	11
Eat	Hungry	Eat	Hungry	Hungry	12
Eat	Hungry	Eat	Hungry	Hungry	13
Eat	Hungry	Eat	Hungry	Hungry	14
Eat	Hungry	Eat	Hungry	Hungry	15
Think	Hungry	Think	Hungry	Hungry	16
Think	Hungry	Think	Hungry	Hungry	17
Eat	Hungry	Eat	Hungry	Hungry	18
Think	Hungry	Eat	Hungry	Hungry	19
Eat	Hungry	Eat	Hungry	Hungry	20
Eat	Hungry	Think	Hungry	Hungry	21
Think	Hungry	Eat	Hungry	Hungry	22
Eat	Hungry	Eat	Hungry	Hungry	23
Think	Hungry	Think	Hungry	Hungry	24
Eat	Hungry	Eat	Hungry	Hungry	25
Think	Hungry	Think	Hungry	Hungry	26
Think	Hungry	Think	Hungry	Hungry	27
Eat	Hungry	Eat	Hungry	Hungry	28
Think	Hungry	Think	Hungry	Hungry	29
Think	Hungry	Think	Hungry	Hungry	30
Eat	Hungry	Eat	Hungry	Hungry	31
Eat	Hungry	Eat	Hungry	Hungry	32
Eat	Hungry	Think	Hungry	Hungry	33
Eat	Hungry	Eat	Hungry	Hungry	34
Think	Hungry	Think	Hungry	Hungry	35
Think	Hungry	Eat	Hungry	Hungry	36
Eat	Hungry	Eat	Hungry	Hungry	37
Eat	Hungry	Think	Hungry	Hungry	38
Think	Hungry	Eat	Hungry	Hungry	39
Think	Hungry	Think	Hungry	Hungry	40
Think	Eat	Think	Eat	Hungry	41
Hungry	Eat	Hungry	Eat	Hungry	42
Hungry	Eat	Hungry	Eat	Hungry	43
Hungry	Think	Hungry	Eat	Hungry	44
Hungry	Eat	Hungry	Eat	Hungry	45
Hungry	Eat	Hungry	Eat	Hungry	46

Hungry		Think	Hungry		Eat	Hungry		47
Hungry		Think	Hungry		Eat	Hungry		48
Hungry		Eat	Hungry		Eat	Hungry		49
Hungry		Think	Hungry		Eat	Hungry		50
Hungry		Eat	Hungry		Eat	Hungry		51
Hungry		Think	Hungry		Think	Hungry		52
Hungry		Eat	Hungry		Eat	Hungry		53
Hungry		Eat	Hungry		Eat	Hungry		54
Hungry		Eat	Hungry		Eat	Hungry		55
Hungry		Eat	Hungry		Think	Hungry		56
Hungry		Think	Hungry		Think	Hungry		57
Hungry		Eat	Hungry		Eat	Hungry		58
Hungry		Eat	Hungry		Eat	Hungry		59
Hungry		Eat	Hungry		Think	Hungry		60
Hungry		Think	Hungry		Eat	Hungry		61
Hungry		Eat	Hungry		Eat	Hungry		62
Hungry		Think	Hungry		Think	Hungry		63
Hungry		Think	Hungry		Think	Hungry		64
Hungry		Think	Hungry		Think	Hungry		65
Hungry		Eat	Hungry		Eat	Hungry		66
Hungry		Eat	Hungry		Eat	Hungry		67
Hungry		Eat	Hungry		Think	Hungry		68
Hungry		Think	Hungry		Think	Hungry		69
Hungry		Think	Hungry		Think	Hungry		70
Hungry		Think	Hungry		Eat	Hungry		71
Hungry		Eat	Hungry		Eat	Hungry		72
Hungry		Eat	Hungry		Think	Hungry		73
Hungry		Think	Hungry		Think	Hungry		74
Hungry		Think	Hungry		Think	Hungry		75
Hungry		Eat	Hungry		Eat	Hungry		76
Hungry		Think	Hungry		Think	Hungry		77
Hungry		Think	Hungry		Eat	Hungry		78
Hungry		Eat	Hungry		Eat	Hungry		79
Hungry		Eat	Hungry		Think	Hungry		80

LAMPIRAN C. Tampilan Grafis.



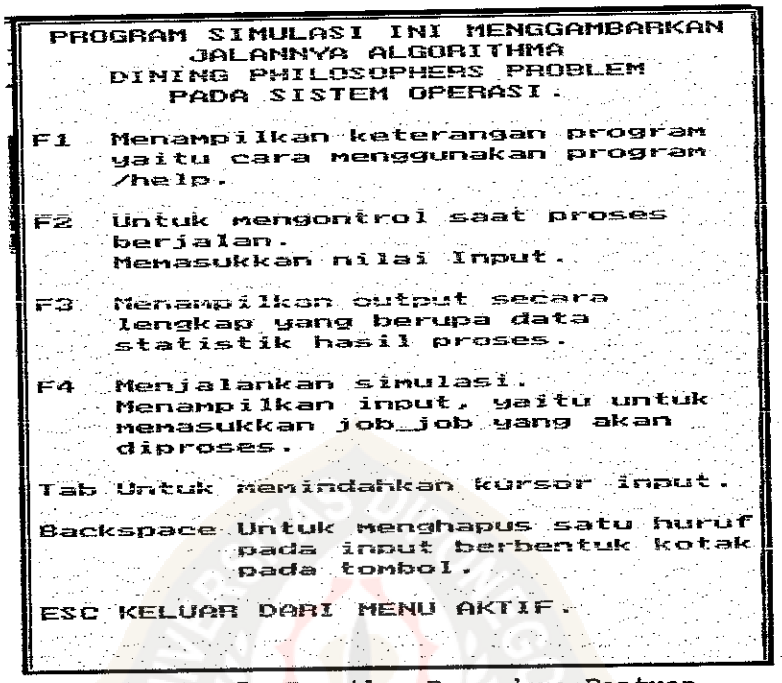
Gambar C.1. Tampilan Procedure Tampilan_Algo_DPP.



Gambar C.2. Tampilan Procedure Box_input.

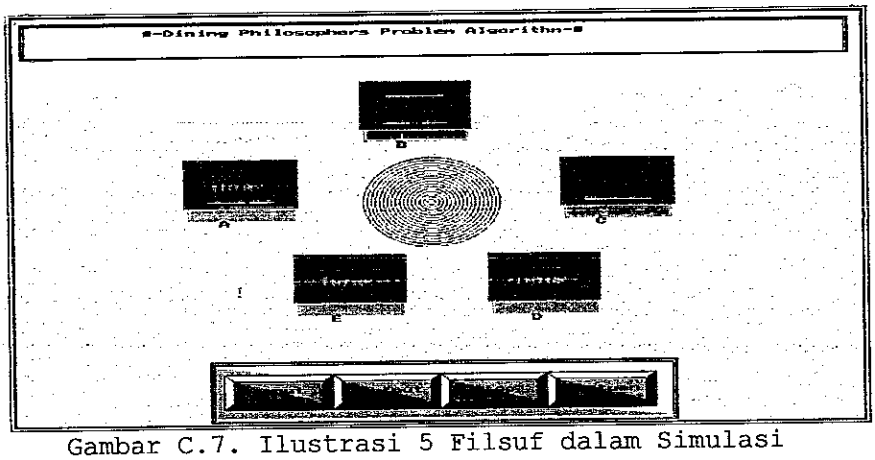
Gambar C.3. Tampilan Procedure Box_stop.

Gambar C.4. Tampilan Procedure Pesan_exit.



Gambar C.5. Tampilan Procedure Bantuan.

Gambar C.6. Tampilan keluar program.



Gambar C.7. Ilustrasi 5 Filsuf dalam Simulasi

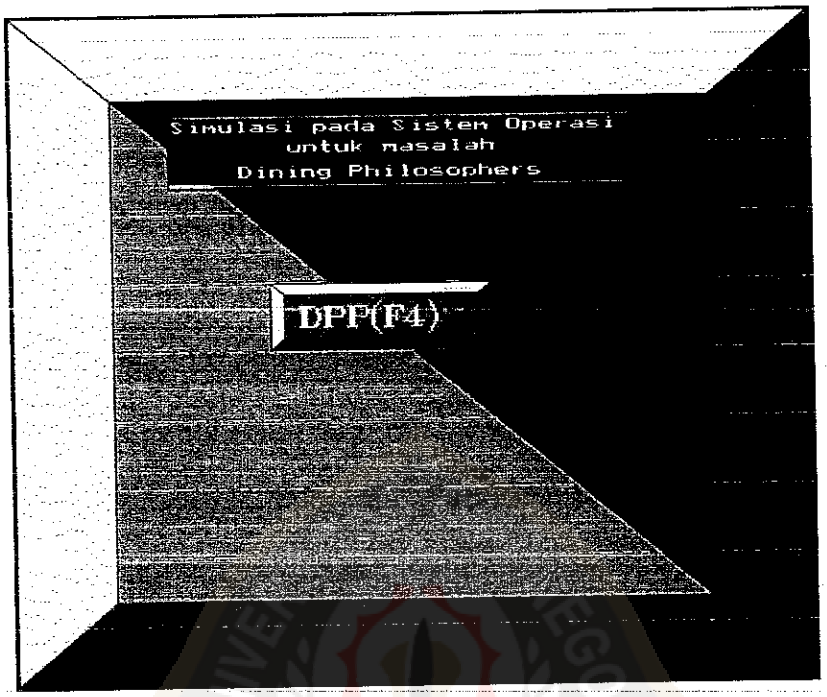
LAMPIRAN D. Menjalankan Program

D.1 Cara Pengoperasian Program.

Dalam pengoperasian program simulasi ini, ada beberapa file yang harus ada antara lain :

1. DPP.EXE adalah file berjenis eksekusi (*execution*), merupakan program simulasi hasil dari kompilasi program dengan bahasa pascal. Jadi untuk menjalankan program simulasi ini dengan mengetikkan nama file tersebut yaitu DPP dari prompt DOS , contoh : C:\ > DPP↵. Atau dapat juga dengan menyorot icon DPP dari desktop.
2. EGA/VGA.BGI merupakan file driver dari program TURBO PASCAL, file ini digunakan untuk mengamati tampilan modus grafis monitor EGA/VGA. program ini hanya jalan pada komputer dengan konfigurasi monitor VGA dengan resolusi 640x480 pixel.
3. TRIP.CHR, merupakan file dari TURBO PASCAL untuk menghasilkan font tulisan dalam program ini. Jadi dalam program simulasi ini teks yang ditampilkan menggunakan font TRIPLEKS.
4. BANTUAN.FL, tampilan pertama dari program simulasi ini berupa menu pull down yang merupakan tampilan program utama.

File-file diatas harus ada dalam satu direktori, jika salah satu dari file tersebut tidak ada maka program akan macet, tidak bisa jalan. Tampilan pertama dari program simulasi ini adalah berupa menu pull down, yang merupakan tampilan program utama. Tampilan tersebut seperti pada gambar :



Gambar D.1 Tampilan menu utama.

Untuk memilih menu yang ada dalam tampilan , menu tersebut dengan menekan tombol F4 untuk DPP.

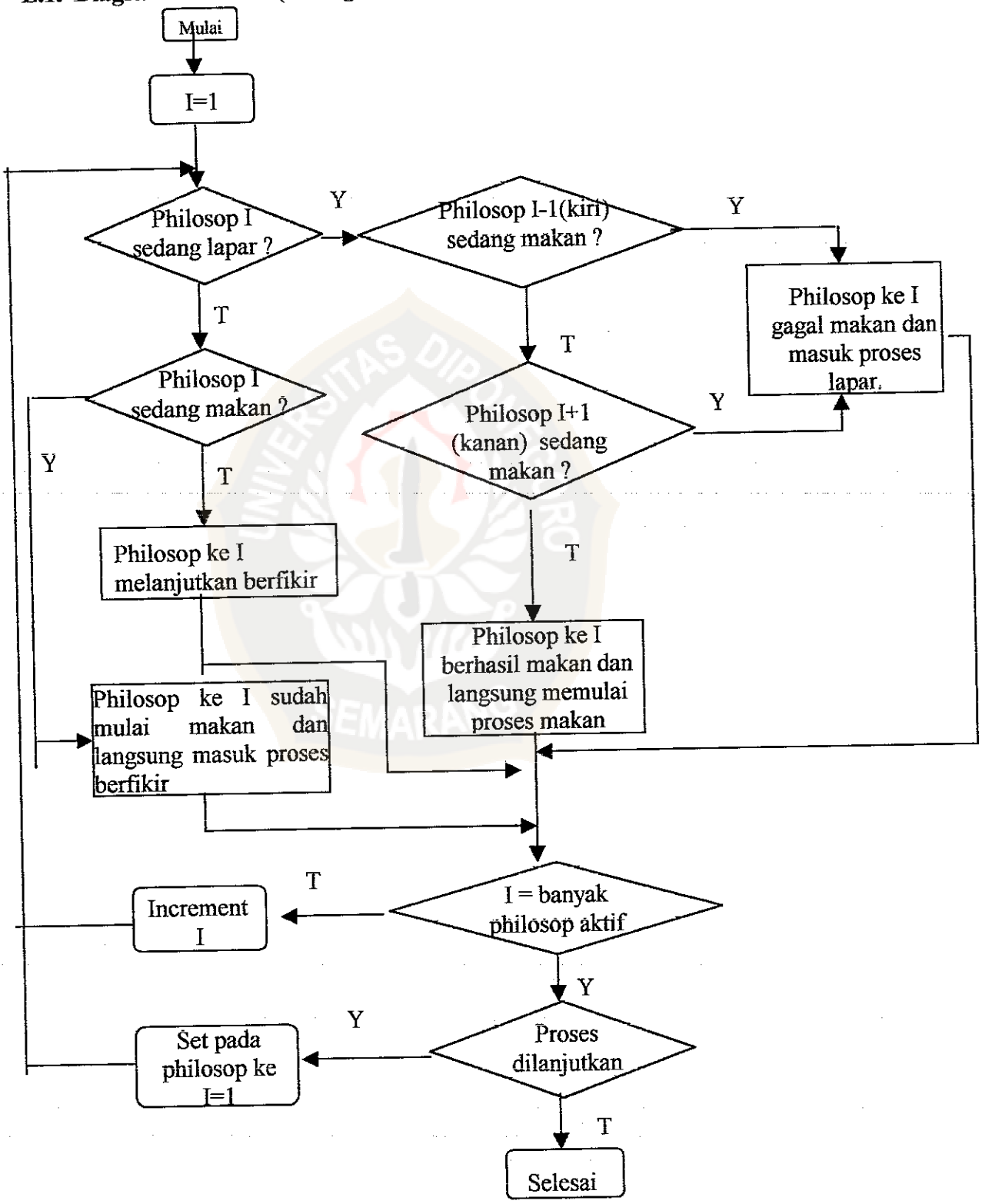
D.2 Mengaktifkan Program.

Untuk mengaktifkan program simulasi ini dari menu utama adalah dengan menekan tombol F4. Perintah dalam bentuk menu tombol juga bisa diaktifkan dengan dua cara, yaitu : dengan menekan tombol F1 sampai F4 atau dengan menyorot icon menu tombol menggunakan tombol TAB kemudian diikuti dengan tombol ENTER. Apabila banyak philosop yang telah aktif telah diisikan lewat kotak dialog input dan mulai proses maka proses akan berjalan selama nilai default lama proses satuan waktu. Jika ingin menghentikan proses yang sedang berjalan adalah dengan menekan tombol F2 dan jika kotak menu kontrol proses

aktif maka pilihan selanjutnya adalah proses ingin dilanjutkan, dihentikan atau selesai (diganti dengan philosop yang baru). Untuk keluar dari program yaitu dengan menekan tombol ESC. Jika ingin keluar pada saat proses sedang berjalan maka akan muncul pesan bahwa proses sedang berjalan dan selanjutnya akan ditanya apa benar-benar ingin keluar atau membatalkannya.

LAMPIRAN E. DIAGRAM ALIR.

E.1. Diagram Alir DPP (Dining Philosophers problem).



E.2. Diagram Alir Program Utama.