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| Nama |  |
| NIM |  |
| OSP | 2016 |

1. No.26

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| const  MAXS = 10;  var  i, n : integer;  A : array[1..10] of integer;    procedure klik();  begin  i := i-1;  end;    function klek(x : integer) : integer;  begin  if(x = MAXS) then  klek := A[x] \* A[1]  else  klek := A[x] \* A[x+1];  end;    function klok() : integer;  var  tmp : integer;  begin  if(i = 0) then  klok := i  else  begin  tmp := i;  klik();  klok := klok() + klek(tmp);  end;  end;  begin  A[1] := 1;  A[2] := 2;  A[3] := 3;  A[4] := 4;  A[5] := 5;  A[6] := 6;  A[10] := 11;  A[9] := 9;  A[7] := 8;  A[8]:=7;  read(n);  i := n;  writeln(klok());  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| const  MAXS = 10;  var  i, n : integer;  A : array[1..10] of integer;    procedure klik();  begin  i := i-1;  writeln('klik:i=',i,' ');  end;    function klek(x : integer) : integer;  begin  if(x = MAXS) then  klek := A[x] \* A[1]  else  klek := A[x] \* A[x+1];  write('klek:',klek,' ');  end;    function klok() : integer;  var  tmp : integer;  begin    if(i = 0) then  begin  klok := i;  writeln('Rekrusif Balik : ');  write('klok:',klok,' + ');  end  else  begin  tmp := i;  write('klok:tmp=',tmp,' ');  klik();  writeln;  klok := klok() + klek(tmp);  write('= klok:',klok,' + ');  end;  end;  begin  A[1] := 1;  A[2] := 2;  A[3] := 3;  A[4] := 4;  A[5] := 5;  A[6] := 6;  A[10] := 11;  A[9] := 9;  A[7] := 8;  A[8]:=7;    writeln('Isi Array A : ');  for i:=1 to 10 do  write(A[i],' ');    writeln;  writeln;    n:=6;  i := n;  klok();  //writeln(klok());  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Isi Array A :  1 2 3 4 5 6 8 7 9 11  klok:tmp=6 klik:i=5  klok:tmp=5 klik:i=4  klok:tmp=4 klik:i=3  klok:tmp=3 klik:i=2  klok:tmp=2 klik:i=1  klok:tmp=1 klik:i=0  Rekrusif Balik :  klok:0 + klek:2 = klok:2 + klek:6 = klok:8 + klek:12 = klok:20 + klek:20 = klok:40 + klek:30 = klok:70 + klek:48 = klok:118 + |

1. No.27

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function Proses(x : integer) : integer;  begin  if(x <= 1) then  Proses := x  else  Proses := Proses(x div 2 \* x mod 2) + Proses(x div 2 + x mod 2);  end; |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| var  is\_0,is\_1,is\_2,is\_3: boolean;    function Proses(x : integer) : integer;  var  hsl\_div : integer;  hsl\_mod : integer;  hsl\_kali : integer;  hsl\_tmbh : integer;  begin  if(x <= 1) then  begin  Proses := x;  if( (not is\_0) or (not is\_1) )then  begin  writeln('Proses(',x,')=',x);  if(not is\_0)then  is\_0:=x=0;  if(not is\_1)then  is\_1:=x=1;  end;    end  else  begin  hsl\_div := x div 2;  hsl\_mod := x mod 2;  hsl\_kali := hsl\_div\*hsl\_mod;  hsl\_tmbh := hsl\_div+hsl\_mod;  Proses := Proses(hsl\_kali) + Proses(hsl\_tmbh);  if(((not is\_2) or (not is\_3)) or (x>3)) then  begin  writeln('Proses(',x,')= Proses(',hsl\_kali,') + Proses(',hsl\_tmbh,') = ',proses);  if(not is\_2)then  is\_2:=x=2;  if(not is\_3)then  is\_3:=x=3;  end;  end;  end;  begin  is\_0:=false;  is\_1:=false;  is\_2:=false;  is\_3:=false;  Proses(11);  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Proses(0)=0  Proses(1)=1  Proses(2)= Proses(0) + Proses(1) = 1  Proses(2)= Proses(0) + Proses(1) = 1  Proses(3)= Proses(1) + Proses(2) = 2  Proses(5)= Proses(2) + Proses(3) = 3  Proses(6)= Proses(0) + Proses(3) = 2  Proses(11)= Proses(5) + Proses(6) = 5 |

1. No. 29

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var  ar : array[1..10] of integer = (1,6,2,3,4,7,2,4,2,1);  procedure mantaps(n : integer);  var  i : integer;  iNi : integer;  temp : integer;  begin  if(n > 1) then  begin  iNi := n;    for i := 1 to n-1 do  begin  if(ar[i] < ar[iNi]) then  iNi := i;  end;    temp := ar[n];  ar[n] := ar[iNi];  ar[iNi] := temp;  mantaps(n-1);    end;    end; |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| var  ar : array[1..10] of integer = (1,6,2,3,4,7,2,4,2,1);  procedure mantaps(n : integer);  var  i,j : integer;  iNi : integer;  temp : integer;  begin  if(n > 1) then  begin  iNi := n;  write(iNi,' ');    for i := 1 to n-1 do  begin  if(ar[i] < ar[iNi]) then  iNi := i;  end;    write(iNi,' ');    temp := ar[n];  ar[n] := ar[iNi];  ar[iNi] := temp;    for j:=1 to 10 do  write(ar[j],' ');    writeln;    mantaps(n-1);    end;    end;  var  i:integer;  begin  writeln('Isi ar sebelum mantaps : ');  for i:=1 to 10 do  write(ar[i],' ');  writeln;    writeln('Isi ar dalam mantaps : ');  writeln('ini ini ar ');  mantaps(5);  writeln;    writeln('Isi ar setelah mantaps : ');  for i:=1 to 10 do  write(ar[i],' ');  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Isi ar sebelum mantaps :  1 6 2 3 4 7 2 4 2 1  Isi ar dalam mantaps :  ini ini ar  5 1 4 6 2 3 1 7 2 4 2 1  4 3 4 6 3 2 1 7 2 4 2 1  3 3 4 6 3 2 1 7 2 4 2 1  2 1 6 4 3 2 1 7 2 4 2 1  Isi ar setelah mantaps :  6 4 3 2 1 7 2 4 2 1 |

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| OSP | 2014 |

1. No. 48

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var  data1 : array[1..10] of integer = (4,11,2,5,1,9,7,5,6,8);  data2,data3 : array[1..10] of integer;  i : integer;  begin  for i:= 1 to 10 do  data2[i] := 1;    for i:= 1 to 10 do  inc(data2[data1[i]]);    for i:= 2 to 10 do  data2[i] := data2[i] + data2[i-1];  for i:= 10 downto 1 do  begin  data3[data2[data1[i]]] := data1[i];  dec(data2[data1[i]]);  end;    for i:= 1 to 10 do  write(data3[i]);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| var  data1 : array[1..10] of integer = (4,10,2,5,1,9,7,5,6,8);  data2,data3 : array[1..10] of integer;  i : integer;  begin  writeln('Isi Data2 :');  for i:= 1 to 10 do  begin  data2[i] := 1;  write(data2[i],' ; ');  end;  writeln;  writeln;  writeln('i':2,'data1':7,'data2':7);  for i:= 1 to 10 do  begin  inc(data2[data1[i]]);  writeln(i:2,data1[i]:7,data2[data1[i]]:7);  end;  writeln;  writeln;  writeln('i ':2,'data2[i]+data2[i-1]':7,'data2[i]':7);  for i:= 2 to 10 do  begin  write(i:2,data2[i]:7,data2[i-1]:7);  data2[i] := data2[i] + data2[i-1];  writeln(data2[i]:7);  end;  writeln;  writeln('i ':2,' data1':7,' data2':7,' data3':7,' dec(data2)':7);  for i:= 10 downto 1 do  begin  data3[data2[data1[i]]] := data1[i];  write(i:2,data1[i]:7,data2[data1[i]]:7,data3[data2[data1[i]]]:7);  dec(data2[data1[i]]);  writeln(data2[data1[i]]:10);  end;    writeln('Isi Data3 :');  for i:= 1 to 30 do  writeln(i:2,data3[i]:7);  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Isi Data2 :  1 ; 1 ; 1 ; 1 ; 1 ; 1 ; 1 ; 1 ; 1 ; 1 ;  i data1 data2  1 4 2  2 10 2  3 2 2  4 5 2  5 1 2  6 9 2  7 7 2  8 5 3  9 6 2  10 8 2  i data2[i]+data2[i-1] =data2[i]  2 2 2 4  3 1 4 5  4 2 5 7  5 3 7 10  6 2 10 12  7 2 12 14  8 2 14 16  9 2 16 18  10 2 18 20  i data1 data2 data3 dec(data2)  10 8 16 8 15  9 6 12 6 11  8 5 10 5 9  7 7 14 7 13  6 9 18 9 17  5 1 2 1 1  4 5 9 5 8  3 2 4 2 3  2 10 20 10 19  1 4 7 4 6  Isi Data3 :  1 0  2 1  3 0  4 2  5 0  6 0  7 4  8 0  9 5  10 5  11 0  12 6  13 0  14 7  15 0  16 8  17 0  18 9  19 0  20 10  21 0  22 0  23 0  24 0  25 0  26 0  27 0  28 0  29 0  30 0 |

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| Nama |  |
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| OSP | 2013 |

1. No. 26

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var N,hasil: integer;    procedure solve(X:integer);  begin  if (X>1) then  begin  hasil:=hasil+1;  solve(X div 2 + X mod 2);  end;  end;  begin  readln(N);  hasil:=0;  solve(N);  writeln(hasil);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| var N,hasil: integer;    procedure solve(X:integer);  begin  if (X>1) then  begin  hasil:=hasil+1;  writeln(hasil:7,x:7,(x div 2):7,(x mod 2):7,((x div 2)+(x mod 2)):7);  solve(X div 2 + X mod 2);  end;  end;  begin  N:=77;  hasil:=0;  writeln('hasil':7,'x':7,'div':7,'mod':7,'div+mod':10);  solve(N);  //writeln(hasil);  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| hasil x div mod div+mod  1 77 38 1 39  2 39 19 1 20  3 20 10 0 10  4 10 5 0 5  5 5 2 1 3  6 3 1 1 2  7 2 1 0 1 |

1. No. 27

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| base := ‘QWERTYUIOPLKJHGFDSAZXCVBNM’;  kata := ‘’;  readln(kalimat);  for i:= length(kalimat) downto 1 do  begin  if pos(kalimat[i], base) > 0 then  kata:= kata & kalimat[i];  end;  writeln(kata); |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| var  base,kata,kalimat : string;  i : integer;  begin  base := 'QWERTYUIOPLKJHGFDSAZXCVBNM';  kata := '';  kalimat:='s4yA-BuK4N+oRanG aLaY!?';  for i:= length(kalimat) downto 1 do  begin  if pos(kalimat[i], base) > 0 then  begin  writeln(kalimat[i]);  kata:= kata & kalimat[i];  end;  end;  //writeln(kata);  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Y  L  G  R  N  K  B  A |