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| 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)* |
| Program Osp\_16\_26;  Uses crt ;  const  MAXS = 10;  var  i, n : integer;  A : array[1..10] of integer;  klk : 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  writeln(' Posisi dibalik : ');  klok := i;  write(' klok:',klok,' + ');  end  else  begin  tmp := i;  write(' klok:tmp=',tmp,' ');  klik();  writeln;  klok := klok() + klek(tmp);  write(' = Isi 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(' Array A berisi : ');  for i:=1 to 10 do  write(A[i],' ');  writeln;  writeln;  n := 6;  i := n;  klok();  //writeln (klok());  readln;  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)* |
| Program Osp\_16\_27;  Uses crt;  Var  Pr\_0,Pr\_1,Pr\_2,Pr\_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 Pr\_0) or (not Pr\_1) )then  begin  writeln('Proses(',x,')=',x);  if(not Pr\_0)then  Pr\_0:=x=0;  if(not Pr\_1)then  Pr\_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 Pr\_2) or (not Pr\_3)) or (x>3)) then  begin  writeln('Proses(',x,')= Proses(',hsl\_kali,') + Proses(',hsl\_tmbh,') = ',proses);  if(not Pr\_2)then  Pr\_2:=x=2;  if(not Pr\_3)then  Pr\_3:=x=3;  end;  end;  end;  begin  Pr\_0:=false;  Pr\_1:=false;  Pr\_2:=false;  Pr\_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 28

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function noan(n : integer) : integer;  begin  if(n < 4) then  noan := n  else  noan := noan(n-1) + noan(n-2) + noan(n-4);  end; |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program Osp\_16\_28;  uses crt;  var  a: integer;    function noan(n : integer) : integer;  var  n1,n2,n3 : integer;  begin    if(n < 4) then  noan := n  else  begin  n1:=n-1;  n2:=n-2;  n3:=n-4;  noan := noan(n1) + noan (n2) + noan (n3);  writeln('noan 1 (',n1,') + noan 2 (',n2,') + noan 3 (',n3,') = noan ',n,' (',noan,') ');  end;  end;  begin  a := noan(8);  writeln(a);  readln();  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| noan 1 (3) + noan 2 (2) + noan 3 (0) = noan 4 (5)  noan 1 (4) + noan 2 (3) + noan 3 (1) = noan 5 (9)  noan 1 (3) + noan 2 (2) + noan 3 (0) = noan 4 (5)  noan 1 (5) + noan 2 (4) + noan 3 (2) = noan 6 (16)  noan 1 (3) + noan 2 (2) + noan 3 (0) = noan 4 (5)  noan 1 (4) + noan 2 (3) + noan 3 (1) = noan 5 (9)  noan 1 (6) + noan 2 (5) + noan 3 (3) = noan 7 (28)  noan 1 (3) + noan 2 (2) + noan 3 (0) = noan 4 (5)  noan 1 (4) + noan 2 (3) + noan 3 (1) = noan 5 (9)  noan 1 (3) + noan 2 (2) + noan 3 (0) = noan 4 (5)  noan 1 (5) + noan 2 (4) + noan 3 (2) = noan 6 (16)  noan 1 (3) + noan 2 (2) + noan 3 (0) = noan 4 (5)  noan 1 (7) + noan 2 (6) + noan 3 (4) = noan 8 (49)  49 |

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)* |
| Program OS\_16\_29;  uses crt;  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  ar[1] := 1; ar[6] := 7;  ar[2] := 6; ar[7] := 2;  ar[3] := 2; ar[8] := 4;  ar[4] := 3; ar[9] := 2;  ar[5] := 4; ar[10]:= 1;  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],' ');  readln();  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 |

1. NO 30

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  x,y: integer;  begin  x := 1;  y := 0;  while(x <= 10) do  begin  y := y + x;  x := x + x;  end;  writeln(y);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program OSP\_16\_30;  Uses crt;  var  x,y: integer;  xx,yy : integer;  begin  x := 1;  y := 0;  while(x <= 10) do  begin  y := y + x;  x := x + x;  xx := x + x;  yy := y + x;  writeln('penjumlahan y(',y,') + x(',x,') =',yy);  writeln('penjumlahan x(',x,') + x(',x,') =',xx);  end;  writeln;  writeln(y);  readln();  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| penjumlahan y(1) + x(2) =3  penjumlahan x(2) + x(2) =4  penjumlahan y(3) + x(4) =7  penjumlahan x(4) + x(4) =8  penjumlahan y(7) + x(8) =15  penjumlahan x(8) + x(8) =16  penjumlahan y(15) + x(16) =31  penjumlahan x(16) + x(16) =32  15 |

1. Soal no 31

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  ar : array[1..10] of integer = (4, 5, 10, 5, 51, 33, 49, 64, 2, 7);  a, b, c, i : integer;  begin  a := -1;  for i := 1 to 10 do  begin  if a = -1  then a := i  else if ar[i] > ar[a]  then a := i;  end;  b := -1;  for i := 1 to 10 do  begin  if i <> a then  begin  if b = -1 then  b := i  else  if ar[i] > ar[b]  then b := i;  end;  end;  c := -1;  for i := 1 to 10 do  begin  if (i <> a) and (i <> b) then  begin  if c = -1  then c := i  else  if ar[i] > ar[c]  then c := i;  end;  end;  writeln(a, ' ', b, ' ', c);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program OSP\_16\_31;  Uses crt;  var  a,i,b,c,ii : integer;  ar : array[1..10] of integer ;  begin  ar[1] := 4; ar[6] := 33;  ar[2] := 5; ar[7] := 49;  ar[3] := 10; ar[8] := 64;  ar[4] := 5; ar[9] := 2;  ar[5] := 51; ar[10]:= 7;  writeln('isi arr : ');  for ii :=1 to 10 do  begin  write(ar[ii],' ');  write;  end;  a := -1;  writeln;  writeln('nilai awal a adalah : ',a);  for i := 1 to 10 do  begin  write(' (',ar[a],' = ',a,') ');  if a = -1 then  a := i  else  if ar[i] > ar[a]  then a := i;  end;  writeln;  writeln(' isi a sesudah diubah ');  writeln;  for ii :=1 to 10 do  begin  write(' ',ar[ii],' ');  write;  end;  writeln;  writeln;  writeln(' a = ',a,' ar[a] = ',ar[a]);  writeln('==========================================');  b := -1;  writeln(' nilai awal b adalah : ',b);  writeln;  for i := 1 to 10 do  begin  write;  write(' (',ar[b],' = ',b,') ');  write;  if i <> a then  begin  if b = -1  then b := i  else  if ar[i] > ar[b]  then b := i;  end;  end;  writeln;  writeln;  writeln(' isi b sesudah diubah ');  writeln;  for ii :=1 to 10 do  begin  write(' ',ar[ii],' ');  write;  end;  writeln;  writeln;  writeln(' b = ',b,' ar[b] = ',ar[b]);  writeln('==========================================');  c := -1;  writeln(' nilai awal c adalah : ',c);  writeln;  for i := 1 to 10 do  begin  if (i <> a) and (i <> b) then  begin  write(' (',ar[c],' = ',c,') ');  if c = -1 then  c := i  else  if ar[i] > ar[c] then  c := i;  end;  end;  writeln;  writeln;  writeln(' isi c sesudah diubah ');  writeln;  for ii :=1 to 10 do  begin  write(' ',ar[ii],' ');  write;  end;  writeln;  writeln;  writeln(' c = ',c,' ar[c] = ',ar[c]);  writeln('==========================================');  writeln('ini isi dalam angka array : ');  writeln(' ',ar[a],' ',ar[b],' ',ar[c]);  writeln(' ',a, ' ', b, ' ', c);  readln();  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| isi arr :  4 5 10 5 51 33 49 64 2 7  nilai awal a adalah : -1  (0 = -1) (4 = 1) (5 = 2) (10 = 3) (10 = 3) (51 = 5) (51 = 5) (51 = 5) (64 = 8) (64 = 8)  isi a sesudah diubah  4 5 10 5 51 33 49 64 2 7  a = 8 ar[a] = 64  ==========================================  nilai awal b adalah : -1  (0 = -1) (4 = 1) (5 = 2) (10 = 3) (10 = 3) (51 = 5) (51 = 5) (51 = 5) (51 = 5) (51 = 5)  isi b sesudah diubah  4 5 10 5 51 33 49 64 2 7  b = 5 ar[b] = 51  ==========================================  nilai awal c adalah : -1  (-1 = -1) (4 = 1) (5 = 2) (10 = 3) (10 = 3) (33 = 6) (49 = 7) (49 = 7)  isi c sesudah diubah  4 5 10 5 51 33 49 64 2 7  c = 7 ar[c] = 49  ==========================================  ini isi dalam angka array :  64 51 49  8 5 7 |

1. No 32

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function meong(x: longint):integer;  begin  if (x = 0)  then meong := 0  else  if (x mod 2 = 1) and  ((x div 2) mod 2 = 1) then  meong := meong((x div 2) div 2) + 1  else  meong := meong(x + 1) + 1;  end;  begin  writeln(meong(888));  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program OSP\_26\_32;  uses crt;  var  // a\_d : integer;  // a\_t : integer;  b : integer;  function meong(x: longint):integer;  begin  if (x = 0) then  begin  meong := 0  end  else  begin  if (x mod 2 = 1) and ((x div 2) mod 2 = 1) then  begin  meong := meong((x div 2) div 2)+1  end  else  begin  meong := meong(x + 1) + 1;  // a\_d := meong((x div 2) div 2)+1;  //a\_t := meong + a\_d;  //writeln(a\_d);  writeln(' meong = ',meong,'( ',x mod 2 = 1,' ',x,' = x div 2 = ',((x div 2) mod 2 = 1) );  writeln;  //writeln('isi meong (',a\_d,') ');  //writeln('jumlah = ',a\_t);  //writeln;  end  end;  end;  begin  writeln;  b := meong (888);  writeln('meong (888) = ',b,' false');  //writeln(meong(888);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| meong = 3( FALSE 14 = x div 2 = TRUE  meong = 4( TRUE 13 = x div 2 = FALSE  meong = 7( FALSE 222 = x div 2 = TRUE  meong = 9( FALSE 890 = x div 2 = TRUE  meong = 10( TRUE 889 = x div 2 = FALSE  meong = 11( FALSE 888 = x div 2 = FALSE  meong (888) = 11 false |

1. N0 33

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| arr: array [1..20] of integer = (303, 304, 365, 454, 487, 6, 12, 15, 78, 90,  155, 169, 183, 205, 209, 218, 5, 269, 282, 287);  function get:integer;  var  m: integer;  left, right: integer;  begin  if (arr[1] < arr[20]) then  get := 1  else  begin  left := 1;  right := 20;  while (left < right) do  begin  m := (left+right) div 2;  if (arr[1]<=arr[m])then  left := m+1  else  right := m;  end;  get := left;  end;  end; |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program OSP\_30\_16;  Uses crt;  var  arr: array [1..20] of integer;// = (303, 304, 365, 454, 487, 6, 12, 15, 78, 90,  // 155, 169, 183, 205, 209, 218, 5, 269, 282, 287);  function get:integer;  var  m: integer;  hsl\_div : integer;  jml\_lr : integer;  left, right: integer;  begin  if (arr[1] < arr[20]) then  begin  get := 1  end  else  writeln('===================================');  begin  left := 1;  right := 20;  while (left < right)do  begin  writeln(' left right ');  writeln(' ',left,' ',right);  writeln(' ',arr[left],' ',arr[right]);  m := (left+right) div 2;  hsl\_div := m;  jml\_lr := left+right;  //writeln;  writeln(' jml\_lr = ',left,' + ',right,' = ',jml\_lr);  writeln;  writeln(' m := ',jml\_lr,' div 2 = ',hsl\_div);  //writeln;  if (arr[1]<=arr[m])then  left := m+1  else  right := m;    writeln(' arr[m] = ',arr[m],' maka m = ',m);  writeln('===================================');  for i :=1 to 20 do  begin  write;  write(arr[i],' ');  write;  end;  writeln;  writeln(' left = ',left, ' , right = ',right);  end;  get := right;  writeln();  writeln('jadi get = ',get);  end;  end;  begin  arr[1] := 303; arr[11]:= 155;  arr[2] := 304; arr[12]:= 169;  arr[3] := 365; arr[13]:= 183;  arr[4] := 454; arr[14]:= 205;  arr[5] := 487; arr[15]:= 209;  arr[6] := 6; arr[16]:= 218;  arr[7] := 12; arr[17]:= 5;  arr[8] := 15; arr[18]:= 269;  arr[9] := 78; arr[19]:= 282;  arr[10]:= 90; arr[20]:= 287;  writeln(get);  readln();  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| ===================================  left right  1 20  303 287  jml\_lr = 1 + 20 = 21  m := 21 div 2 = 10  arr[m] = 90 maka m = 10  ===================================  303 304 365 454 487 6 12 15 78 90 155 169 183 205 209 218 5 269 282 287  left = 1 , right = 10  left right  1 10  303 90  jml\_lr = 1 + 10 = 11  m := 11 div 2 = 5  arr[m] = 487 maka m = 5  ===================================  303 304 365 454 487 6 12 15 78 90 155 169 183 205 209 218 5 269 282 287  left = 6 , right = 10  left right  6 10  6 90  jml\_lr = 6 + 10 = 16  m := 16 div 2 = 8  arr[m] = 15 maka m = 8  ===================================  303 304 365 454 487 6 12 15 78 90 155 169 183 205 209 218 5 269 282 287  left = 6 , right = 8  left right  6 8  6 15  jml\_lr = 6 + 8 = 14  m := 14 div 2 = 7  arr[m] = 12 maka m = 7  ===================================  303 304 365 454 487 6 12 15 78 90 155 169 183 205 209 218 5 269 282 287  left = 6 , right = 7  left right  6 7  6 12  jml\_lr = 6 + 7 = 13  m := 13 div 2 = 6  arr[m] = 6 maka m = 6  ===================================  303 304 365 454 487 6 12 15 78 90 155 169 183 205 209 218 5 269 282 287  left = 6 , right = 6  jadi get = 6  6 |

1. Soal no 34

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| //rapihkan kodenya  Var  isi : array[1..10] of integer = (-4,1,7,9,0,1,2,4,3,-1);  function X(l, r, v : integer) : longint;  var  temp : integer;  begin  if(l = r)  then X := isi[l]  else  begin  temp := (l + r) div 2;  if(isi[temp] > v)  then  begin  X := X(l, temp, v); end else  X := X(temp + 1, r, v);  end;  end; |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| //rapihkan kodenya  //ini rekrusif lihat contoh osp 2016 no 27  Program OSP\_16\_32;  Uses crt; |
| Output Dari Kode Program Yang Dimodifikasi : |
| //ini rekrusif lihat contoh osp 2016 no 27  Bs [] |

1. No 35

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  isi : array[1..10] of integer = (-4,1,7,9,0,1,2,4,3,-1);  function X(l, r, v : integer) : longint;  var  temp : integer;  begin  if(l = r)  then X := isi[l]  else  begin  temp := (l + r) div 2;  if(isi[temp] > v)then  begin  X := X(l, temp, v);  end  else X := X(temp + 1, r, v);  end;  end; |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program Osp\_16\_35;  uses crt;  var  isi : array[1..10] of integer ; //= (-4,1,7,9,0,1,2,4,3,-1);  function X(l, r, v : integer) : longint;  var  temp : integer;  t : integer;  begin  isi[1]:=-4; isi[6]:=1;  isi[2]:=1; isi[7]:=2;  isi[3]:=7; isi[8]:=4;  isi[4]:=9; isi[9]:=3;  isi[5]:=0; isi[10]:=-1;  if(l = r) then  begin  X := isi[l]  end  else  begin  temp := (l + r) div 2;  t := l + r;  writeln;  writeln(' l + r = ',l,' + ',r,' = ',t,' div 2 = ', temp);  writeln;  if(isi[temp] > v) then  begin  X := X(l, temp, v);  writeln(' X := ',X,'(',l,' ',temp,' ',v,')');  end  else  begin  X := X(temp + 1, r, v);  writeln;  end  end;  end;  var  hasil,l,r,v : integer;  begin  // read(l);  l := 2;  // read(r);  r := 6;  // read(v);  v := 4;  hasil:=x(l,r,v);  writeln;  write(' ',hasil);  writeln;  readln;  readln();  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| l + r = 2 + 6 = 8 div 2 = 4  l + r = 2 + 4 = 6 div 2 = 3  l + r = 2 + 3 = 5 div 2 = 2  X := 7(2 3 4)  X := 7(2 4 4)  7 |

1. Soal no 36

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  ar : array[1..1000]  of Boolean;  i,j : integer;  begin  for i := 1 to 1000 do  ar[i] := false;  for i := 1 to 1000 do  begin j := i;  while(j <= 1000) do  begin ar[j] := not(ar[j]);  j := j + i;  end;  end;  readln();  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program OSP\_16\_32;  Uses crt; |
| Output Dari Kode Program Yang Dimodifikasi : |
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1. No 37

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var  daebak : array [0..2015] of char;  w, x, y, z, i : integer;  procedure saranghae(x : integer; len : integer);  var  i : integer; store : char;  begin  store := daebak[x];  for i := len-1 downto 0 do  begin  if (i = 0) then  daebak[x+((i+1) mod len)] := store  else  daebak[x+((i+1) mod len)] := daebak[x+i];  end;  end;  procedure anyeong  (arr\_sz : integer; part\_sz :integer);  Var  i:integer;  begin  for i:= 0 to (arr\_sz div part\_sz)-1 do  begin  saranghae(i \* part\_sz, part\_sz);  end;  end;  procedure oppa (n:integer);  var  i : integer;  begin  for i := 0 to n-1 do  begin  if(i mod 4 = 0)  then daebak[i] := 'T'  else  if(i mod 4 = 1)  then daebak[i] := 'O'  else  if(i mod 4 = 2)  then daebak[i] := 'K'  else  daebak[i] := 'I';  end;  end;  begin  readln(w, x, y, z); oppa(w);  for i := 1 to x do  anyeong(y, z);  for i := 0 to w-1 do  begin  if(i mod 4 = 0) and (i <> 0) then  write(“ “);  write(daebak[i]);  end;  writeln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| program OSP\_16\_37;  uses crt;  var  daebak : array [0..2015] of char;  w, x, y, z, i : integer;  procedure saranghae(x : integer; len : integer);  var  i,idx,j : integer;  store : char;  begin  write(' saranghae(',x,',',len,')');  store := daebak[x];  //writeln(' store = daebak[',x,']=',store);  for i := len-1 downto 0 do  begin  //write(' i ',i);  idx:=x+((i+1) mod len);  if (i = 0) then  begin  daebak[idx]:= store;  //write(' daebak[',idx,']=store=',daebak[idx]);  for j := 0 to 16 do  write(' ',daebak[j],' ');  writeln;  end  else  begin  daebak[idx] := daebak[x+i];  //write(' daebak[',idx,']=daebak[',x+i,'] = ',daebak[idx]);  end;  //for j := 0 to 16 do  //write(' ',daebak[j],' ');  //writeln;  end;  end;  procedure anyeong(arr\_sz : integer; part\_sz :integer);  Var  i:integer;  begin  writeln('anyeong(',arr\_sz,',',part\_sz, ')');  for i:= 0 to (arr\_sz div part\_sz)-1 do  begin  //writeln(' i : ',i);  saranghae(i \* part\_sz, part\_sz);  end;  end;  procedure oppa(n:integer);  var  i,j : integer;  begin  writeln('Oppa(',n,')');  for i := 0 to n-1 do  begin  //write('i : ',i,' ');  if(i mod 4 = 0) then  daebak[i] := 'T'  else  if(i mod 4 = 1) then  daebak[i] := 'O'  else  if(i mod 4 = 2) then  daebak[i] := 'K'  else  daebak[i] := 'I';  //for j := 0 to n-1 do  //write(daebak[j],' ');  //writeln;  end;  for j := 0 to n-1 do  write(daebak[j],' ');  writeln;  end;  begin // bagian program utama  //readln(w, x, y, z);  w:=16;  x:=2;  y:=12;  z:=4;  oppa(w);  writeln;  for i := 1 to x do  begin  writeln('i : ',i);  anyeong(y, z);  end;  writeln;  for i := 0 to w-1 do  begin  if(i mod 4 = 0) and (i <> 0) then  write(' ');  write(daebak[i]);  end;  writeln;  readln();  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Oppa(16)  T O K I T O K I T O K I T O K I  i : 1  anyeong(12,4)  saranghae(0,4) I T O K T O K I T O K I T O K I  saranghae(4,4) I T O K I T O K T O K I T O K I  saranghae(8,4) I T O K I T O K I T O K T O K I  i : 2  anyeong(12,4)  saranghae(0,4) K I T O I T O K I T O K T O K I  saranghae(4,4) K I T O K I T O I T O K T O K I  saranghae(8,4) K I T O K I T O K I T O T O K I  KITO KITO KITO TOKI |

1. No 38

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var  daebak : array [0..2015] of char;  w, x, y, z, i : integer;  procedure saranghae(x : integer; len : integer);  var  i : integer; store : char;  begin  store := daebak[x];  for i := len-1 downto 0 do  begin  if (i = 0) then  daebak[x+((i+1) mod len)] := store  else  daebak[x+((i+1) mod len)] := daebak[x+i];  end;  end;  procedure anyeong  (arr\_sz : integer; part\_sz :integer);  Var  i:integer;  begin  for i:= 0 to (arr\_sz div part\_sz)-1 do  begin  saranghae(i \* part\_sz, part\_sz);  end;  end;  procedure oppa (n:integer);  var  i : integer;  begin  for i := 0 to n-1 do  begin  if(i mod 4 = 0)  then daebak[i] := 'T'  else  if(i mod 4 = 1)  then daebak[i] := 'O'  else  if(i mod 4 = 2)  then daebak[i] := 'K'  else  daebak[i] := 'I';  end;  end;  begin  readln(w, x, y, z); oppa(w);  for i := 1 to x do  anyeong(y, z);  for i := 0 to w-1 do  begin  if(i mod 4 = 0) and (i <> 0) then  write(“ “);  write(daebak[i]);  end;  writeln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| program OSP\_16\_38;  uses crt;  var  daebak : array [0..2015] of char;  w, x, y, z, i : integer;  procedure saranghae(x : integer; len : integer);  var  i,idx,j : integer;  store : char;  begin  write(' saranghae(',x,',',len,')');  store := daebak[x];  //writeln(' store = daebak[',x,']=',store);  for i := len-1 downto 0 do  begin  //write(' i ',i);  idx:=x+((i+1) mod len);  if (i = 0) then  begin  daebak[idx]:= store;  //write(' daebak[',idx,']=store=',daebak[idx]);  for j := 0 to 16 do  write(' ',daebak[j],' ');  writeln;  end  else  begin  daebak[idx] := daebak[x+i];  //write(' daebak[',idx,']=daebak[',x+i,'] = ',daebak[idx]);  end;  //for j := 0 to 16 do  //write(' ',daebak[j],' ');  //writeln;  end;  end;  procedure anyeong(arr\_sz : integer; part\_sz :integer);  Var  i:integer;  begin  writeln('anyeong(',arr\_sz,',',part\_sz, ')');  for i:= 0 to (arr\_sz div part\_sz)-1 do  begin  //writeln(' i : ',i);  saranghae(i \* part\_sz, part\_sz);  end;  end;  procedure oppa(n:integer);  var  i,j : integer;  begin  writeln('Oppa(',n,')');  for i := 0 to n-1 do  begin  //write('i : ',i,' ');  if(i mod 4 = 0) then  daebak[i] := 'T'  else  if(i mod 4 = 1) then  daebak[i] := 'O'  else  if(i mod 4 = 2) then  daebak[i] := 'K'  else  daebak[i] := 'I';  //for j := 0 to n-1 do  //write(daebak[j],' ');  //writeln;  end;  for j := 0 to n-1 do  write(daebak[j],' ');  writeln;  end;  begin // bagian program utama  //readln(w, x, y, z); //16 4 10 5  w:=16;  x:=4;  y:=10;  z:=5;  oppa(w);  writeln;  for i := 1 to x do  begin  writeln('i : ',i);  anyeong(y, z);  end;  writeln;  for i := 0 to w-1 do  begin  if(i mod 4 = 0) and (i <> 0) then  write(' ');  write(daebak[i]);  end;  writeln;  readln();  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Oppa(16)  T O K I T O K I T O K I T O K I  i : 1  anyeong(10,5)  saranghae(0,5) T T O K I O K I T O K I T O K I  saranghae(5,5) T T O K I O O K I T K I T O K I  i : 2  anyeong(10,5)  saranghae(0,5) I T T O K O O K I T K I T O K I  saranghae(5,5) I T T O K T O O K I K I T O K I  i : 3  anyeong(10,5)  saranghae(0,5) K I T T O T O O K I K I T O K I  saranghae(5,5) K I T T O I T O O K K I T O K I  i : 4  anyeong(10,5)  saranghae(0,5) O K I T T I T O O K K I T O K I  saranghae(5,5) O K I T T K I T O O K I T O K I  OKIT TKIT OOKI TOKI |

1. NO 39

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  s,t : string;  x,l,r,k : byte;  temp : char;  begin  readln(s);  k := 0;  x := 0;  l := 1;  r := length(s);  t := '';  while (l <= r) do  begin  if (k mod 2) = 0 then  begin  temp := s[r];  r := r – 1;  end  else  begin  temp := s[l];  l := l + 1;  end;  k := k + 1;  //ord(c) adalah fungsi untuk mengubah  //karakter c menjadi nilai pada ASCII  //ord('A') = 65  //ord('B') = 66  //...  //ord('Z') = 90  x := (x + ord(temp) - ord('A')) mod 26;  t := t + chr(x + ord('A'));  end;  writeln(t);  end;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program Osp\_16\_39;  Uses crt;  Var  s,t,i,tt,f : string;  x,l,r,k,z : byte;  temp :char;  begin  writeln(' IXYBEJVCE : no 39');  writeln;  readln(s);  k := 0;  x := 0;  l := 1;  r := length(s);  t := '';  while (l <= r) do  begin  if (k mod 2) = 0 then  begin  temp := s[r];  r := r - 1;  end  else  begin  temp := s[l];  l := l + 1;  end;  k := k + 1;  //ord(c) adalah fungsi untuk mengubah  //karakter c menjadi nilai pada ASCII  //ord('A') = 65  //ord('B') = 66  //...  //ord('Z') = 90  x := (x + ord(temp) - ord('A')) mod 26;  writeln('====');  tt := t + chr(x + ord('A'));  t := t + chr(x + ord('A'));  writeln(x,' + ',ord(temp),' - ',ord('A'),' = ',x,' = ',tt);  //writeln('====');  //writeln(x,' = ',tt);  end;  writeln(t);  writeln;  readln();  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| IXYBEJVCE : no 39  IXYBEJVCE  ====  4 + 69 - 65 = 4 = E  ====  12 + 73 - 65 = 12 = EM  ====  14 + 67 - 65 = 14 = EMO  ====  11 + 88 - 65 = 11 = EMOL  ====  6 + 86 - 65 = 6 = EMOLG  ====  4 + 89 - 65 = 4 = EMOLGE  ====  13 + 74 - 65 = 13 = EMOLGEN  ====  14 + 66 - 65 = 14 = EMOLGENO  ====  18 + 69 - 65 = 18 = EMOLGENOS  EMOLGENOS |

1. No 40

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  s,t : string;  x,l,r,k : byte;  temp : char;  begin  readln(s);  k := 0;  x := 0;  l := 1;  r := length(s);  t := '';  while (l <= r) do  begin  if (k mod 2) = 0 then  begin  temp := s[r];  r := r – 1;  end  else  begin  temp := s[l];  l := l + 1;  end;  k := k + 1;  //ord(c) adalah fungsi untuk mengubah  //karakter c menjadi nilai pada ASCII  //ord('A') = 65  //ord('B') = 66  //...  //ord('Z') = 90  x := (x + ord(temp) - ord('A')) mod 26;  t := t + chr(x + ord('A'));  end;  writeln(t);  end;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program Osp\_16\_40;  Uses crt;  Var  s,t,i,tt,f : string;  x,l,r,k,z : byte;  temp :char;  begin  writeln(' “RJJJVDPII : no 40');  writeln;  readln(s);  k := 0;  x := 0;  l := 1;  r := length(s);  t := '';  while (l <= r) do  begin  if (k mod 2) = 0 then  begin  temp := s[r];  r := r - 1;  end  else  begin  temp := s[l];  l := l + 1;  end;  k := k + 1;  //ord(c) adalah fungsi untuk mengubah  //karakter c menjadi nilai pada ASCII  //ord('A') = 65  //ord('B') = 66  //...  //ord('Z') = 90  x := (x + ord(temp) - ord('A')) mod 26;  writeln('====');  tt := t + chr(x + ord('A'));  t := t + chr(x + ord('A'));  writeln(x,' + ',ord(temp),' - ',ord('A'),' = ',x,' = ',tt);  //writeln('====');  //writeln(x,' = ',tt);  end;  writeln(t);  writeln;  readln();  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| RJJJVDPII : no 40  RJJJVDPII  ====  8 + 73 - 65 = 8 = I  ====  25 + 82 - 65 = 25 = IZ  ====  7 + 73 - 65 = 7 = IZH  ====  16 + 74 - 65 = 16 = IZHQ  ====  5 + 80 - 65 = 5 = IZHQF  ====  14 + 74 - 65 = 14 = IZHQFO  ====  17 + 68 - 65 = 17 = IZHQFOR  ====  0 + 74 - 65 = 0 = IZHQFORA  ====  21 + 86 - 65 = 21 = IZHQFORAV  IZHQFORAV |

1. No 41

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  Q : array[1..15] of integer = (1,5,2,3,4,6,2,7,3,4,6,0,-1,2,3);  P : array[0..15] of integer;  i, a, b,total : integer;  begin  P[0] := 0;  for i := 1 to 15 do  begin  P[i] := P[i-1] + Q[i];  end;    readln (a,b);  total := 0; // baris-1  for i := a to b do // baris-2  begin  total := total + Q[i]; // baris-3  end; // baris-4  writeln(total);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program Osp\_16\_41;  uses crt;  Var  Q : array[1..15] of integer; //= (1,5,2,3,4,6,2,7,3,4,6,0,-1,2,3);  P : array[0..15] of integer;  i, a, b,total : integer;  begin  Q[1]:=1; Q[9]:=3;  Q[2]:=5; Q[10]:=4;  Q[3]:=2; Q[11]:=6;  Q[4]:=3; Q[12]:=0;  Q[5]:=4; Q[13]:=-1;  Q[6]:=6; Q[14]:=2;  Q[7]:=2; Q[15]:=3;  Q[8]:=7; P[0] := 0;  //readln (a,b);  a := 6 ;  b := 10;  writeln;  writeln('penjumlahan array Q dari ',a,' ke ',b,' : ');  writeln;  total := 0; // baris-1  for i := a to b do // baris-2  begin  write(Q[i],' + ');  total := total + Q[i]; // baris-3  //total := P[b] - P[a-1];  end; // baris-4  //writeln;  write('0 = ',total);  writeln;  writeln(total);  writeln;  writeln('jadi total nya ialah : ',total);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Bs [] |

1. N0 42

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  Q : array[1..15] of integer = (1,5,2,3,4,6,2,7,3,4,6,0,-1,2,3);  P : array[0..15] of integer;  i, a, b,total : integer;  begin  P[0] := 0;  for i := 1 to 15 do  begin  P[i] := P[i-1] + Q[i];  end;    readln (a,b);  total := 0; // baris-1  for i := a to b do // baris-2  begin  total := total + Q[i]; // baris-3  end; // baris-4  writeln(total);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program Osp\_16\_42;  uses crt;  Var  Q : array[1..15] of integer; //= (1,5,2,3,4,6,2,7,3,4,6,0,-1,2,3);  P : array[0..15] of integer;  i, a, b,total,r : integer;  begin  Q[1]:=1; Q[9]:=3; P[1]:= 1; P[9]:= 9;  Q[2]:=5; Q[10]:=4; P[2]:= 2; P[10]:= 10;  Q[3]:=2; Q[11]:=6; P[3]:= 3; P[11]:= 11;  Q[4]:=3; Q[12]:=0; P[4]:= 4; P[12]:= 12;  Q[5]:=4; Q[13]:=-1; P[5]:= 5; P[13]:= 13;  Q[6]:=6; Q[14]:=2; P[6]:= 6; P[14]:= 14;  Q[7]:=2; Q[15]:=3; P[7]:= 7; P[15]:= 15;  Q[8]:=7; P[0] := 0; P[8]:= 8;  //readln (a,b);  a := 6 ;  b := 10;  writeln;  // writeln('penjumlahan array Q dari ',a,' ke ',b,' : ');  // writeln;  // total := 0; // baris-1  // for i := a to b do // baris-2  // begin  // write(Q[i],' + ');  // total := total + Q[i]; // baris-3  // end; // baris-4  // total := P[a\*b]+Q[a-b];  //writeln('total := ',P[a],' \* ',P[b],' + ',Q[a],' - ',Q[b],' = ',total);  writeln('Array P = ');  writeln;  for i := 1 to 15 do  begin  r:= P[i-1] + Q[i];  writeln(P[i],' := ',P[i-1],' + ',Q[i],' = ',r);  P[i] := P[i-1] + Q[i];  end;  total := P[b] - P[a-1];  writeln;  writeln;  writeln('total := ',P[b],' - ', P[a-1],' = ',total);  writeln;  writeln(total);  writeln;  writeln('jadi total nya ialah : ',total);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| 6  10  penjumlahan array Q dari 6 ke 10 :  Array P =  1 := 0 + 1 = 1  2 := 1 + 5 = 6  3 := 6 + 2 = 8  4 := 8 + 3 = 11  5 := 11 + 4 = 15  6 := 15 + 6 = 21  7 := 21 + 2 = 23  8 := 23 + 7 = 30  9 := 30 + 3 = 33  10 := 33 + 4 = 37  11 := 37 + 6 = 43  12 := 43 + 0 = 43  13 := 43 + -1 = 42  14 := 42 + 2 = 44  15 := 44 + 3 = 47  total := 37 - 15 = 22  22  jadi total nya ialah : 22 |

1. No 43

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  isi : array[1..10] of integer;  i : integer;  procedure Whatsup(l, r : integer);  var  X : integer;  begin  X := isi[l];  isi[l] := isi[r];  isi[r] := X;    end;  procedure naoooon(l, r : integer);  var  ini : integer;  kiri, kanan : integer;    begin  if(l < r) then  begin  kiri := l;  kanan := r;  ini := isi[(kiri + kanan) div 2];  while(kiri < kanan) do  begin  while(isi[kiri] > ini) do  kiri := kiri + 1;  while(isi[kanan] < ini) do  kanan := kanan - 1;  if(kiri < kanan) then  Whatsup(kiri, kanan);  end;  naoooon(l, kanan);  naoooon(kanan+1, r);  end;  end;  begin  isi[1] := 5; isi[2] := 10; isi[3] := 18; isi[4] := 1; isi[5] := 7;  isi[6] := 9; isi[7] := 3; isi[8] := 8; isi[9] := 100; isi[10] := 29;  naoooon(1,10);  for i := 1 to 9 do  write(isi[i], ' ');  writeln(isi[10]);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program Osp\_16\_43;  uses crt;  var  isi : array[1..10] of integer;  i : integer;  procedure Whatsup(l, r : integer);  var  X : integer;  begin  writeln;  X := isi[l];  write(' X <- isi l[',isi[l],'] ||');  isi[l] := isi[r];  write(' isi l[',isi[l],'] <- isi r[',isi[r],'] ||');  isi[r] := X;  write(' isi r[',isi[r],'] <- X ||');  write;  writeln;  writeln;  // writeln(' isi[r] := ',isi[r],' := ',x);  end;  procedure naoooon(l, r : integer);  var  kk : integer; //  ini : integer;  bot : integer;  kiri, kanan : integer;  begin  //writeln(l,' < ',r); //  //writeln; //  if(l < r)  then  begin  kiri := l;  kanan := r;  ini := isi[(kiri + kanan) div 2];  bot := ini; //  writeln(' ini = isi[(',kiri,' + ',kanan,') div 2] = ',bot); //  while(kiri < kanan) do  begin  //writeln(isi[kiri],' > ',ini); //  while(isi[kiri] > ini) do  kiri := kiri + 1;  kk := kiri + 1; //  writeln(' kiri = ',kiri,' + ',1,' = ',kk); //  //writeln(isi[kanan],' < ',ini); //  while(isi[kanan] < ini) do  kanan := kanan - 1;  if(kiri < kanan) then  Whatsup(kiri, kanan);  writeln(' kiri = ',kiri,', kanan = ',kanan); //  end;  naoooon(l, kanan);  writeln('naoooon (',l,', ',kanan,')'); //  naoooon(kanan+1, r);  writeln('naoooon(',kanan,' + 1, ',r,')'); //  writeln;  end;  end;  begin  isi[1] := 5; isi[2] := 10; isi[3] := 18; isi[4] := 1; isi[5] := 7;  isi[6] := 9; isi[7] := 3; isi[8] := 8; isi[9] := 100; isi[10] := 29;  for i := 1 to 10 do  begin  write(' ',isi[i],' '); //  write; //  end;  writeln; //  writeln; //  naoooon(1,10); //  // naoooon(3,6); //  writeln; //  writeln(' banyak i adalah := ',i); //  writeln; //  for i := 1 to 9 do  write(' ',isi[i],' ');  writeln(' ',isi[10]);  readln; //  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| 5 10 18 1 7 9 3 8 100 29  ini = isi[(1 + 10) div 2] = 7  kiri = 1 + 1 = 2  X <- isi l[5] || isi l[29] <- isi r[29] || isi r[5] <- X ||  kiri = 1, kanan = 10  kiri = 4 + 1 = 5  X <- isi l[1] || isi l[100] <- isi r[100] || isi r[1] <- X ||  kiri = 4, kanan = 9  kiri = 5 + 1 = 6  X <- isi l[7] || isi l[8] <- isi r[8] || isi r[7] <- X ||  kiri = 5, kanan = 8  kiri = 7 + 1 = 8  X <- isi l[3] || isi l[7] <- isi r[7] || isi r[3] <- X ||  kiri = 7, kanan = 8  kiri = 7 + 1 = 8  kiri = 7, kanan = 7  ini = isi[(1 + 7) div 2] = 100  kiri = 1 + 1 = 2  X <- isi l[29] || isi l[100] <- isi r[100] || isi r[29] <- X ||  kiri = 1, kanan = 4  kiri = 1 + 1 = 2  kiri = 1, kanan = 1  naoooon (1, 1)  ini = isi[(2 + 7) div 2] = 29  kiri = 2 + 1 = 3  X <- isi l[10] || isi l[29] <- isi r[29] || isi r[10] <- X ||  kiri = 2, kanan = 4  kiri = 2 + 1 = 3  kiri = 2, kanan = 2  naoooon (2, 2)  ini = isi[(3 + 7) div 2] = 8  kiri = 5 + 1 = 6  X <- isi l[8] || isi l[9] <- isi r[9] || isi r[8] <- X ||  kiri = 5, kanan = 6  kiri = 6 + 1 = 7  kiri = 6, kanan = 6  ini = isi[(3 + 6) div 2] = 10  kiri = 4 + 1 = 5  kiri = 4, kanan = 4  ini = isi[(3 + 4) div 2] = 18  kiri = 3 + 1 = 4  kiri = 3, kanan = 3  naoooon (3, 3)  naoooon(3 + 1, 4)  naoooon (3, 4)  ini = isi[(5 + 6) div 2] = 9  kiri = 5 + 1 = 6  kiri = 5, kanan = 5  naoooon (5, 5)  naoooon(5 + 1, 6)  naoooon(4 + 1, 6)  naoooon (3, 6)  naoooon(6 + 1, 7)  naoooon(2 + 1, 7)  naoooon(1 + 1, 7)  naoooon (1, 7)  ini = isi[(8 + 10) div 2] = 1  kiri = 9 + 1 = 10  X <- isi l[1] || isi l[5] <- isi r[5] || isi r[1] <- X ||  kiri = 9, kanan = 10  kiri = 10 + 1 = 11  kiri = 10, kanan = 10  ini = isi[(8 + 10) div 2] = 5  kiri = 8 + 1 = 9  X <- isi l[3] || isi l[5] <- isi r[5] || isi r[3] <- X ||  kiri = 8, kanan = 9  kiri = 8 + 1 = 9  kiri = 8, kanan = 8  naoooon (8, 8)  ini = isi[(9 + 10) div 2] = 3  kiri = 9 + 1 = 10  kiri = 9, kanan = 9  naoooon (9, 9)  naoooon(9 + 1, 10)  naoooon(8 + 1, 10)  naoooon (8, 10)  naoooon(10 + 1, 10)  naoooon(7 + 1, 10)  banyak i adalah := 10  100 29 18 10 9 8 7 5 3 1 |

1. No 44

|  |
| --- |
| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  isi : array[1..10] of integer;  i : integer;  procedure Whatsup(l, r : integer);  var  X : integer;  begin  X := isi[l];  isi[l] := isi[r];  isi[r] := X;    end;  procedure naoooon(l, r : integer);  var  ini : integer;  kiri, kanan : integer;    begin  if(l < r) then  begin  kiri := l;  kanan := r;  ini := isi[(kiri + kanan) div 2];  while(kiri < kanan) do  begin  while(isi[kiri] > ini) do  kiri := kiri + 1;  while(isi[kanan] < ini) do  kanan := kanan - 1;  if(kiri < kanan) then  Whatsup(kiri, kanan);  end;  naoooon(l, kanan);  naoooon(kanan+1, r);  end;  end;  begin  isi[1] := 5; isi[2] := 10; isi[3] := 18; isi[4] := 1; isi[5] := 7;  isi[6] := 9; isi[7] := 3; isi[8] := 8; isi[9] := 100; isi[10] := 29;  naoooon(1,10);  for i := 1 to 9 do  write(isi[i], ' ');  writeln(isi[10]);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program Osp\_16\_43;  uses crt;  var  isi : array[1..10] of integer;  i : integer;  procedure Whatsup(l, r : integer);  var  X : integer;  begin  writeln;  X := isi[l];  write(' X <- isi l[',isi[l],'] ||');  isi[l] := isi[r];  write(' isi l[',isi[l],'] <- isi r[',isi[r],'] ||');  isi[r] := X;  write(' isi r[',isi[r],'] <- X ||');  write;  writeln;  writeln;  // writeln(' isi[r] := ',isi[r],' := ',x);  end;  procedure naoooon(l, r : integer);  var  kk : integer; //  ini : integer;  bot : integer;  kiri, kanan : integer;  begin  //writeln(l,' < ',r); //  //writeln; //  if(l < r)  then  begin  kiri := l;  kanan := r;  ini := isi[(kiri + kanan) div 2];  bot := ini; //  writeln(' ini = isi[(',kiri,' + ',kanan,') div 2] = ',bot); //  while(kiri < kanan) do  begin  //writeln(isi[kiri],' > ',ini); //  while(isi[kiri] > ini) do  kiri := kiri + 1;  kk := kiri + 1; //  writeln(' kiri = ',kiri,' + ',1,' = ',kk); //  //writeln(isi[kanan],' < ',ini); //  while(isi[kanan] < ini) do  kanan := kanan - 1;  if(kiri < kanan) then  Whatsup(kiri, kanan);  writeln(' kiri = ',kiri,', kanan = ',kanan); //  end;  naoooon(l, kanan);  writeln;  writeln('naoooon (',l,', ',kanan,')'); //  naoooon(kanan+1, r);  writeln('naoooon(',kanan,' + 1, ',r,')'); //  writeln;  end;  end;  begin  isi[1] := 5; isi[2] := 10; isi[3] := 18; isi[4] := 1; isi[5] := 7;  isi[6] := 9; isi[7] := 3; isi[8] := 8; isi[9] := 100; isi[10] := 29;  for i := 1 to 10 do  begin  write(' ',isi[i],' '); //  write; //  end;  writeln; //  writeln; //  // naoooon(1,10); //  naoooon(3,6); //  writeln; //  writeln(' banyak i adalah := ',i); //  writeln; //  for i := 1 to 9 do  write(' ',isi[i],' ');  writeln(' ',isi[10]);  readln; //  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| 5 10 18 1 7 9 3 8 100 29  ini = isi[(3 + 6) div 2] = 1  kiri = 4 + 1 = 5  X <- isi l[1] || isi l[9] <- isi r[9] || isi r[1] <- X ||  kiri = 4, kanan = 6  kiri = 6 + 1 = 7  kiri = 6, kanan = 6  ini = isi[(3 + 6) div 2] = 9  kiri = 4 + 1 = 5  kiri = 4, kanan = 4  ini = isi[(3 + 4) div 2] = 18  kiri = 3 + 1 = 4  kiri = 3, kanan = 3  naoooon (3, 3)  naoooon(3 + 1, 4)  naoooon (3, 4)  ini = isi[(5 + 6) div 2] = 7  kiri = 5 + 1 = 6  kiri = 5, kanan = 5  naoooon (5, 5)  naoooon(5 + 1, 6)  naoooon(4 + 1, 6)  naoooon (3, 6)  naoooon(6 + 1, 6)  banyak i adalah := 10  5 10 18 9 7 1 3 8 100 29 |

1. N0 45

|  |
| --- |
| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program Osp\_15\_45;  Uses crt;  Var  ar : array[1..5] of integer;  i : integer;  procedure S(a,b : integer);  var  temp : integer;  begin  temp := ar[a];  //writeln('========================');  // writeln;  writeln('temp <- ar a[',ar[a],']');  ar[a] := ar[b];  writeln(' ar a[',ar[a],'] <- ar b[',ar[b],']');  ar[b] := temp;  writeln(' ar b[',ar[b],'] <- ',temp,'temp');  writeln;  // writeln;  // for i := 1 to 5 do  // begin  // write(' ',ar[i],' ',' ');  // end;  // writeln;  // writeln('==========================================================');  end;  begin  ar[1]:= 1;  ar[2]:= 2;  ar[3]:= 3;  ar[4]:= 4;  ar[5]:= 5;  writeln;  for i := 1 to 5 do  begin  // write('ar[',ar[i],'] ');  write(' ',ar[i],' ',' ');  end;  writeln;  write;  for i := 1 to 5 do  begin  // write('Masukkan ar[i] = ');  // read(ar[i]);  // write('ar[',ar[i],'] ');  // write;  S(3,4);  S(4,1);  S(5,2);  S(5,1);  writeln(' ',ar[i],' ');  end;  writeln;  for i := 1 to 5 do  begin  write('ar[',ar[i],'] ');  end;  writeln;  writeln;  writeln(' 2, 3, 2, 3, 5');  writeln;  for i := 1 to 4 do  begin  write(ar[i], ' ');  // write('ar[',ar[i],'] ');  end;  writeln(ar[5]);  readln;  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| 1 2 3 4 5  temp <- ar a[3]  ar a[4] <- ar b[4]  ar b[3] <- 3temp  temp <- ar a[3]  ar a[1] <- ar b[1]  ar b[3] <- 3temp  temp <- ar a[5]  ar a[2] <- ar b[2]  ar b[5] <- 5temp  temp <- ar a[2]  ar a[3] <- ar b[3]  ar b[2] <- 2temp  2  temp <- ar a[4]  ar a[1] <- ar b[1]  ar b[4] <- 4temp  temp <- ar a[4]  ar a[2] <- ar b[2]  ar b[4] <- 4temp  temp <- ar a[3]  ar a[5] <- ar b[5]  ar b[3] <- 3temp  temp <- ar a[5]  ar a[4] <- ar b[4]  ar b[5] <- 5temp  3  temp <- ar a[1]  ar a[2] <- ar b[2]  ar b[1] <- 1temp  temp <- ar a[1]  ar a[5] <- ar b[5]  ar b[1] <- 1temp  temp <- ar a[4]  ar a[3] <- ar b[3]  ar b[4] <- 4temp  temp <- ar a[3]  ar a[1] <- ar b[1]  ar b[3] <- 3temp  2  temp <- ar a[2]  ar a[5] <- ar b[5]  ar b[2] <- 2temp  temp <- ar a[2]  ar a[3] <- ar b[3]  ar b[2] <- 2temp  temp <- ar a[1]  ar a[4] <- ar b[4]  ar b[1] <- 1temp  temp <- ar a[4]  ar a[2] <- ar b[2]  ar b[4] <- 4temp  3  temp <- ar a[5]  ar a[3] <- ar b[3]  ar b[5] <- 5temp  temp <- ar a[5]  ar a[4] <- ar b[4]  ar b[5] <- 5temp  temp <- ar a[2]  ar a[1] <- ar b[1]  ar b[2] <- 2temp  temp <- ar a[1]  ar a[5] <- ar b[5]  ar b[1] <- 1temp  5  ar[1] ar[2] ar[3] ar[4] ar[5]  2, 3, 2, 3, 5  1 2 3 4 5 |

1. No 46

|  |
| --- |
| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program OSP\_16\_32;  Uses crt; |
| Output Dari Kode Program Yang Dimodifikasi : |
| Bs [] |

1. N0 47

|  |
| --- |
| Kode Program Dalam Soal : *(Soal Dirapikan)* |
|  |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program Osp\_16\_47;  Uses crt;  var  n, m, temp : int64;  a,b,c : int64;  jumlah : int64;  begin  writeln('masukkan nilai n : ');  readln(n);  writeln('masukkan nilai m : ');  readln(m);  if (n > m) then  begin  temp := n;  n := m;  m := temp;  end;  a := n+1 ;  b := 3\*m-n+1;  c := n\*a\*b;  writeln;  writeln(n,' \* ',n,' + 1 \* 3 \* ',m,' - ',n,' + 1) = ',c );  writeln;  writeln(n,' \* ',a,' \* ',b,' = ',c);  writeln;  writeln('c = ',c);  jumlah := c div 6;  writeln;  writeln('jumlah = ',120,' div 6 = ', jumlah);  writeln;  writeln('banyak persegi pada grid ',n,' x ',m,' adalah ',jumlah,' persegi');  readln();  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| masukkan nilai n :  3  masukkan nilai m :  4  3 \* 3 + 1 \* 3 \* 4 - 3 + 1) = 120  3 \* 4 \* 10 = 120  c = 120  jumlah = 120 div 6 = 20  banyak persegi pada grid 3 x 4 adalah 20 persegi |

1. No 48

|  |
| --- |
| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| Program OSP\_16\_32;  Uses crt; |
| Output Dari Kode Program Yang Dimodifikasi : |
| Bs [] |