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| NIM | C1B160005 |
| OSP | 2016 (Sesi :2 Bagian: A) |

*Note: Yang dikerjakan mulai No: 30, 31, 32, 33, 34 , 35, 36, 43.*

*No. 26, 27, 28, 29 jawaban didapatkan dari contoh penyelesaian milik Pak Cecep*

1. No.26

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| Kode Program Dalam Soal : |
| 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 : |
| 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 : |
| 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 : |
| 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. 28

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| Kode Program Dalam Soal : |
| 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 : |
| uses crt;  function noan(n : integer) : integer;  begin  if(n < 4) then noan := n  else noan := noan(n-1) + noan(n-2) + noan(n-4);  end;  var n:integer;  begin  read(n);  n:=noan(n);  write(n);  readkey;  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. 29

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| Kode Program Dalam Soal : *(Soal Dirapihkan)* |
| 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 : |
| 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 |

1. No. 30

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| Kode Program Dalam Soal : |
| 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 : |
| Program PENJUMLAHAN\_DERET;  var  N : integer; {Banyaknya suku deret, nilainya positif}  x : integer; {suku deret}  y : integer; {jumlah deret}  begin  write ('Berapa N? '); readln(N);  y:=0; {jumlah deret}  x:=1; {suku deret}  while x <= 10 do  begin  y := y + x;  x := x + 1;  end;  writeln('Jumlah deret = ', y);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| **Berapa N ?**  **Jumlah deret=**  {For examples: Jika saya input nilainya N=2}  Berapa N ? 2  Jumlah deret= 55 |

1. Soal No. 31

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| Kode Program Dalam Soal : |
| 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 : |
| uses crt;  var  ar : array[1..10] of integer;  a, b, c, i : integer;  begin  ar[1]:=4;  ar[2]:=5;  ar[3]:=10;  ar[4]:=5;  ar[5]:=51;  ar[6]:=33;  ar[7]:=49;  ar[8]:=64;  ar[9]:=2;  ar[10]:=7;  a := -1;  for i := 0 to 10 do begin  if a = -1 then a := i  else if ar[i] > ar[a] then a := i;  end;  b := -1;  for i := 0 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 := 0 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 = ', a);  writeln('b = ', b);  writeln('c = ', c);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| **a = 8**  **b = 5**  **c = 7** |

1. Soal No. 32

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| Kode Program Dalam Soal : |
| 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 : |
| uses crt;  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  write ('meong(888)= ');  writeln(meong(888));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| **meong<888>= 11** |

1. Soal No. 33

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| Kode Program Dalam Soal : |
| |  | | --- | | 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;  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 : |
| uses crt;  var  arr: array [1..20] of integer;  function get : integer;  var  m: integer;  left, right: integer;  begin  arr[1]:=303;  arr[2]:=304;  arr[3]:=365;  arr[4]:=454;  arr[5]:=487;  arr[6]:=6;  arr[7]:=12;  arr[8]:=15;  arr[9]:=78;  arr[10]:=90;  arr[11]:=155;  arr[12]:=169;  arr[13]:=183;  arr[14]:=205;  arr[15]:=209;  arr[16]:=218;  arr[17]:=5;  arr[18]:=269;  arr[19]:=282;  arr[20]:=287;  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;  begin  write('result= ',get);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Result= 6 |

1. Soal No. 34

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| Kode Program Dalam Soal : |
| 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;  end. |
| Kode Program Dimodifikasi : |
| 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;  writeln ('banyak elemen pada array yang bernilai true: ', j);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| banyak elemen pada array yang bernilai true: 2000 |

1. Soal No. 35, 36

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| Kode Program Dalam Soal : |
| |  |  | | --- | --- | | |  | | --- | | 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 : |
| var  isi : array[1..10] of integer ;  function X(l, r, v : integer) : longint;  var  temp : integer;  begin  isi[1]:=-4;  isi[2]:=1;  isi[3]:=7;  isi[4]:=9;  isi[5]:=0;  isi[6]:=1;  isi[7]:=2;  isi[8]:=4;  isi[9]:=3;  isi[10]:=-1;  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;  var  hasil,a,b,c : integer;  begin  read(a);  read(b);  read(c);  hasil:=x(a,b,c);  write(hasil);  readln;  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Untuk No. 35:  2  6  4  7  Untuk No. 36:  1  10  0  1 |

1. Soal No. 43

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| Kode Program Dalam Soal : |
| |  |  | | --- | --- | |  | 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); | |
| Kode Program Dimodifikasi : |
| 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]);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| No. 43  100 29 18 10 9 8 7 5 3 1  \_ |