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| OSP | 2014 |

1. NO 26

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var  i, j, total : integer;  begin  total := 0;  for i := 1 to 100 do  for j := 1 to 100 do  total := total + i - j;  writeln(total);  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function looping(a,b:integer):integer;  var  i,j,ttl,total : integer;  begin  total := 0;  for i := 1 to a do  for j := 1 to b do  begin  total := total + i - j;  writeln('i = ',i,' j = ',j,' total = ',total);  end;  looping:=total;  end;  begin  writeln(looping(10,10));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| i = 1 j = 1 total = 0  i = 1 j = 10 total = -45  i = 2 j = 10 total = -80  i = 3 j = 10 total = -105  i = 4 j = 10 total = -120  i = 5 j = 10 total = -125  i = 6 j = 10 total = -120  i = 7 j = 10 total = -105  i = 8 j = 10 total = -80  i = 9 j = 10 total = -45  i = 10 j = 10 total = 0 |

2. NO 27

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function cimi(x,y:integer):integer;  begin  if (x + y = 0) then begin  cimi := 0;  end else if (x > y) then begin  cimi := y + cimi(x-1,y);  end else begin  cimi := x + cimi(x,y-1);  end;  end;  begin  writeln(cimi(5,7));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function cimi(x,y:integer):integer;  begin  if (x + y = 0) then begin  cimi := 0;  end else if (x > y) then  begin  writeln('(',x,'>',y,')');  writeln('cimi = ', y,' + cimi(',x-1,',',y,')');  cimi := y + cimi(x-1,y);  writeln('cimi:= ',cimi);  end  else  begin  writeln('cimi:= ',x,'+ cimi(',x,',',y-1,')');  cimi := x + cimi(x,y-1);  writeln('cimi:= ',cimi);  end;  end;  begin  writeln(cimi(5,7));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |

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| cimi:= 5+ cimi(5,5)  cimi:= 5+ cimi(5,4)  (5>4)  cimi = 4 + cimi(4,4)  cimi:= 4+ cimi(4,3)  (4>3)  cimi = 3 + cimi(3,3)  cimi:= 3+ cimi(3,2)  (3>2)  cimi = 2 + cimi(2,2)  cimi:= 2+ cimi(2,1)  (2>1)  cimi = 1 + cimi(1,1)  cimi:= 1+ cimi(1,0)  (1>0)  cimi = 0 + cimi(0,0)  cimi:= 0  cimi:= 1  cimi:= 2  cimi:= 4  cimi:= 6  cimi:= 9  cimi:= 12  cimi:= 16  cimi:= 20  cimi:= 25  cimi:= 30  cimi:= 35 |

3. NO 28

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function cimi(x,y:integer):integer;  begin  if (x + y = 0) then begin  cimi := 0;  end else if (x > y) then begin  cimi := y + cimi(x-1,y);  end else begin  cimi := x + cimi(x,y-1);  end;  end;  begin  writeln(cimi(5,7));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function cimi(x,y:integer):integer;  begin  if (x + y = 0) then begin  cimi := 0;  end else if (x > y) then  begin  writeln('(',x,'>',y,')');  writeln('cimi = ', y,' + cimi(',x-1,',',y,')');  cimi := y + cimi(x-1,y);  writeln('cimi:= ',cimi);  end  else  begin  writeln('cimi:= ',x,'+ cimi(',x,',',y-1,')');  cimi := x + cimi(x,y-1);  writeln('cimi:= ',cimi);  end;  end;  begin  writeln(cimi(29,13));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |

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| cimi:= 0  cimi:= 1  cimi:= 2  cimi:= 4  cimi:= 6  cimi:= 9  cimi:= 12  cimi:= 16  cimi:= 20  cimi:= 25  cimi:= 30  cimi:= 36  cimi:= 42  cimi:= 49  cimi:= 56  cimi:= 64  cimi:= 72  cimi:= 81  cimi:= 90  cimi:= 100  cimi:= 110  cimi:= 121  cimi:= 132  cimi:= 144  cimi:= 156  cimi:= 169  cimi:= 182  cimi:= 195  cimi:= 208  cimi:= 221  cimi:= 234  cimi:= 247  cimi:= 260  cimi:= 273  cimi:= 286  cimi:= 299  cimi:= 312  cimi:= 325  cimi:= 338  cimi:= 351  cimi:= 364  cimi:= 377  nilai cimi : 377  \*catatan: output ini hanya mengambil hasil cimi dari hasil running program di atas |

4. NO 29

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function blossom(x : integer) : integer;  var  ans,i : integer;  begin  ans := 0;  for i := 1 to x do begin  ans := ans + i;  end;  blossom := ans;  end;  function bubble(x : integer) : integer;  var  ans,i : integer;  begin  ans := 0;  for i := 1 to x do begin  ans := ans + blossom(i);  end;  bubble := ans;  end;  function buttercup(x : integer) : integer;  var  ans,i : integer;  begin  ans := 0;  for i := 1 to x do begin  ans := ans + bubble(i);  end;  buttercup := ans;  end;  begin  writeln(buttercup(3));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function blossom(x : integer) : integer;  var  ans,i : integer;  begin  writeln('masuk ke fungsi blossom');  ans := 0;  i:=1;  while(i <= x) do begin  write('ans:= ',ans,' + ',i,' = ');  ans := ans + i;  writeln(‘ans = ’,ans);  inc(i);  end;  blossom := ans;  writeln('blossom = ',blossom);  end;  function bubble(x : integer) : integer;  var  ans,i : integer;  begin  writeln('masuk ke fungsi bubble');  ans := 0;  i:=1;  while(i <= x) do begin  writeln('ans:= ',ans,' + blossom(',i,') ');  ans := ans + blossom(i);  writeln('ans = ',ans);  inc(i);  end;  bubble := ans;  writeln('bubble = ',bubble);  end;  function buttercup(x : integer) : integer;  var  ans,i : integer;  begin  writeln('masuk ke fungsi buttercup');  ans := 0;  i:=1;  while(i <= x) do begin  writeln('ans:= ',ans,' + bubble(',i,') ');  ans := ans + bubble(i);  writeln('ans = ',ans);  inc(i)  end;  buttercup := ans;  writeln('buttercup =',buttercup);  end;  begin  writeln(buttercup(3));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |

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| masuk ke fungsi buttercup  ans:= 0 + bubble(1)  masuk ke fungsi bubble  ans:= 0 + blossom(1)  masuk ke fungsi blossom  ans:= 0 + 1 = 1  blossom = 1  ans = 1  bubble = 1  ans = 1  ans:= 1 + bubble(2)  masuk ke fungsi bubble  ans:= 0 + blossom(1)  masuk ke fungsi blossom  ans:= 0 + 1 = 1  blossom = 1  ans = 1  ans:= 1 + blossom(2)  masuk ke fungsi blossom  ans:= 0 + 1 = 1  ans:= 1 + 2 = 3  blossom = 3  ans = 4  bubble = 4  ans = 5  ans:= 5 + bubble(3)  masuk ke fungsi bubble  ans:= 0 + blossom(1)  masuk ke fungsi blossom  ans:= 0 + 1 = 1  blossom = 1  ans = 1  ans:= 1 + blossom(2)  masuk ke fungsi blossom  ans:= 0 + 1 = 1  ans:= 1 + 2 = 3  blossom = 3  ans = 4  ans:= 4 + blossom(3)  masuk ke fungsi blossom  ans:= 0 + 1 = 1  ans:= 1 + 2 = 3  ans:= 3 + 3 = 6  blossom = 6  ans = 10  bubble = 10  ans = 15  buttercup =15 |

5. NO 30

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function blossom(x : integer) : integer;  var  ans,i : integer;  begin  ans := 0;  for i := 1 to x do begin  ans := ans + i;  end;  blossom := ans;  end;  function bubble(x : integer) : integer;  var  ans,i : integer;  begin  ans := 0;  for i := 1 to x do begin  ans := ans + blossom(i);  end;  bubble := ans;  end;  function buttercup(x : integer) : integer;  var  ans,i : integer;  begin  ans := 0;  for i := 1 to x do begin  ans := ans + bubble(i);  end;  buttercup := ans;  end;  begin  writeln(buttercup(30));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function blossom(x : integer) : integer;  var  ans,i : integer;  begin  ans := 0;  i:=1;  while(i <= x) do begin  ans := ans + i;  inc(i);  end;  blossom := ans;  writeln('blossom = ',blossom);  end;  function bubble(x : integer) : integer;  var  ans,i : integer;  begin  ans := 0;  i:=1;  while(i <= x) do begin  ans := ans + blossom(i);  inc(i);  end;  bubble := ans;  end;  function buttercup(x : integer) : integer;  var  ans,i : integer;  begin  ans := 0;  i:=1;  while(i <= x) do begin  ans := ans + bubble(i);  inc(i)  end;  buttercup := ans;  writeln('jumlah dari semua blossom adalah = ',buttercup,' maka');  writeln('buttercup =',buttercup);  end;  begin  writeln(buttercup(6));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| blossom = 1  blossom = 1  blossom = 3  blossom = 1  blossom = 3  blossom = 6  blossom = 1  blossom = 3  blossom = 6  blossom = 10  blossom = 1  blossom = 3  blossom = 6  blossom = 10  blossom = 15  blossom = 1  blossom = 3  blossom = 6  blossom = 10  blossom = 15  blossom = 21  jumlah dari semua blossom adalah = 126 maka  buttercup =126 |

6. N0 31

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function kandang(ayam, kambing:integer):integer;  var rumput, sapi: integer;  begin  rumput:=(kambing-ayam) div 3;  sapi:=rumput\*2;  if ayam > kambing then  kandang:= 0  else if (kambing-ayam < 3) then  kandang:= 2\*(kambing-ayam)  else  kandang:= kandang(ayam,ayam+rumput)+  kandang(ayam+rumput,ayam+sapi)+  kandang(ayam+sapi,kambing);  end;  begin  writeln(kandang(2,6));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function kandang(ayam, kambing:integer):integer;  var rumput, sapi: integer;  begin  write('rumput:=(',kambing,' - ',ayam,') div 3 = ');  rumput:=(kambing-ayam) div 3;  writeln(rumput);  write('sapi:=rumput \* 2 = ');  sapi:=rumput\*2;  writeln(sapi);  if ayam > kambing then  begin  writeln(ayam,' > ',kambing,' maka');  kandang:= 0;  writeln('kandang:= ',kandang);  end  else if (kambing-ayam < 3) then  begin  writeln(kambing,' - ',ayam,' < 3 maka');  write('kandang:= 2\*(',kambing,' - ',ayam,') = ');  kandang:= 2\*(kambing-ayam);  writeln(kandang);  end  else  begin  writeln('kandang:= kandang(',ayam,',',ayam,'+',rumput,') + kandang(',ayam,'+',rumput,',',ayam,'+',sapi,') + kandang (',ayam,'+',sapi,',',kambing,')');  kandang:= kandang(ayam,ayam+rumput)+kandang(ayam+rumput,ayam+sapi)+  kandang(ayam+sapi,kambing);  writeln('kandang:= ',kandang);  end;  end;  begin  writeln(kandang(2,6));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| rumput:=(6 - 2) div 3 = 1  sapi:=rumput \* 2 = 2  kandang:= kandang(2,2+1) + kandang(2+1,2+2) + kandang (2+2,6)  rumput:=(3 - 2) div 3 = 0  sapi:=rumput \* 2 = 0  3 - 2 < 3 maka  kandang:= 2\*(3 - 2) = 2  rumput:=(4 - 3) div 3 = 0  sapi:=rumput \* 2 = 0  4 - 3 < 3 maka  kandang:= 2\*(4 - 3) = 2  rumput:=(6 - 4) div 3 = 0  sapi:=rumput \* 2 = 0  6 - 4 < 3 maka  kandang:= 2\*(6 - 4) = 4  kandang:= 8 |

7. NO 32

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function kandang(ayam, kambing:integer):integer;  var rumput, sapi: integer;  begin  rumput:=(kambing-ayam) div 3;  sapi:=rumput\*2;  if ayam > kambing then  kandang:= 0  else if (kambing-ayam < 3) then  kandang:= 2\*(kambing-ayam)  else  kandang:= kandang(ayam,ayam+rumput)+ kandang(ayam+rumput,ayam+sapi)+  kandang(ayam+sapi,kambing);  end;  begin  writeln(kandang(2,6));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function kandang(ayam, kambing:integer):integer;  var rumput, sapi: integer;  begin  rumput:=(kambing-ayam) div 3;  sapi:=rumput\*2;  if ayam > kambing then  begin  kandang:= 0;  end  else if (kambing-ayam < 3) then  begin  kandang:= 2\*(kambing-ayam);  end  else  begin  kandang:= kandang(ayam,ayam+rumput)+  kandang(ayam+rumput,ayam+sapi)+  kandang(ayam+sapi,kambing);  writeln('kandang:= ',kandang);  end;  end;  begin  writeln(kandang(2014,3021));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| kandang:= 8  kandang:= 8  kandang:= 6  kandang:= 10  kandang:= 26  kandang:= 8  kandang:= 8  kandang:= 6  kandang:= 10  kandang:= 26  kandang:= 8  kandang:= 8  kandang:= 6  kandang:= 10  kandang:= 26  kandang:= 78  kandang:= 226  kandang:= 674  kandang:= 2014  \*catatan : output ini hanya mengambil beberapa hasil dari kandang dikarenakan outputnya panjang. |

8. NO 33

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var  i,j,x,baa:longint;  begin  x:=0;  baa:=10;  for i:=1 to baa do begin  for j:= 1 to i do begin  if i mod 2=1 then  x:=x-j  else  x:=x+j;  end;  end;  writeln(x);  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function x(baa:longint):longint;  var  i,j:longint;  begin  x:=0;  for i:=1 to baa do begin  for j:= 1 to i do begin  if i mod 2=1 then  begin  writeln('karena ',i,' mod 2 = 1');  writeln('maka x:=x-j');  writeln('x:= ',x,' - ',j);  x:=x-j;  writeln('x:= ',x);  end  else  begin  writeln('karena ',i,' mod 2 = 0');  writeln('maka x:=x+j');  writeln('x:= ', x,' + ',j);  x:=x+j;  writeln('x = ',x);  end;  end;  end;  end;  begin  writeln(x(10));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |

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| karena 10 mod 2 = 0  maka x:=x+j  x:= -22 + 3  x = -19  karena 10 mod 2 = 0  maka x:=x+j  x:= -19 + 4  x = -15  karena 10 mod 2 = 0  maka x:=x+j  x:= -15 + 5  x = -10  karena 10 mod 2 = 0  maka x:=x+j  x:= -10 + 6  x = -4  karena 10 mod 2 = 0  maka x:=x+j  x:= -4 + 7  x = 3  karena 10 mod 2 = 0  maka x:=x+j  x:= 3 + 8  x = 11  karena 10 mod 2 = 0  maka x:=x+j  x:= 11 + 9  x = 20  karena 10 mod 2 = 0  maka x:=x+j  x:= 20 + 10  x = 30  \*catatan: karena hasil output terlalu panjang jadi hanya mengambil beberapa proses terakhir dari hasil running program. |

9. N0 34

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var  i,j,x,baa:longint;  begin  x:=0;  baa:=10;  for i:=1 to baa do begin  for j:= 1 to i do begin  if i mod 2=1 then  x:=x-j  else  x:=x+j;  end;  end;  writeln(x);  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function x(baa:longint):longint;  var  i,j:longint;  begin  x:=0;  for i:=1 to baa do begin  for j:= 1 to i do begin  if i mod 2=1 then  begin  writeln('karena ',i,' mod 2 = 1');  writeln('maka x:=x-j');  writeln('x:= ',x,' - ',j);  x:=x-j;  writeln('x:= ',x);  end  else  begin  writeln('karena ',i,' mod 2 = 0');  writeln('maka x:=x+j');  writeln('x:= ', x,' + ',j);  x:=x+j;  writeln('x = ',x);  end;  end;  end;  end;  begin  writeln(x(1000));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| karena 1 mod 2 = 1  maka x:=x-j  x:= 0 - 1  x:= -1  karena 2 mod 2 = 0  maka x:=x+j  x:= -1 + 1  x = 0  karena 2 mod 2 = 0  maka x:=x+j  x:= 0 + 2  x = 2  karena 3 mod 2 = 1  maka x:=x-j  x:= 2 - 1  x:= 1  proses ini berlangsung hingga nilai x:  x = 243521  x = 244515  x = 245510  x = 246506  x = 247503  x = 248501  x = 249500  x = 250500 |

10. NO 35

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var x,n,lala,lili,i:integer;  begin  x:=7; n:=x;  lala:=10;  lili:=12345;  for i:=0 to lili do  begin  x:=(x\*n) mod lala;  end;  writeln(x);  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| var x,n,lala,lili,i:integer;  begin  x:=7; n:=x;  lala:=10;  lili:=12345;  for i:=0 to lili do  begin  writeln('i = ',i);  writeln('x:=(',x,'\*',n,') mod ',lala);  writeln('x:=(',x\*n,') mod ',lala);  x:=(x\*n) mod lala;  writeln('x:= ',x);  end;  writeln(x);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| i = 12340  x:=(7\*7) mod 10  x:=(49) mod 10  x:= 9  i = 12341  x:=(9\*7) mod 10  x:=(63) mod 10  x:= 3  i = 12342  x:=(3\*7) mod 10  x:=(21) mod 10  x:= 1  i = 12343  x:=(1\*7) mod 10  x:=(7) mod 10  x:= 7  i = 12344  x:=(7\*7) mod 10  x:=(49) mod 10  x:= 9  i = 12345  x:=(9\*7) mod 10  x:=(63) mod 10  x:= 3  \*catatan: output ini hanya mengambil hasil akhir dari running program diatas |

11. NO 36

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var x,n,lala,lili,i:integer;  begin  x:=9; n:=x;  lala:=100;  lili:=12345;  for i:=0 to lili do  begin  x:=(x\*n) mod lala;  end;  writeln(x);  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| var x,n,lala,lili,i:integer;  begin  x:=7; n:=x;  lala:=100;  lili:=12345;  for i:=0 to lili do  begin  writeln('i = ',i);  writeln('x:=(',x,'\*',n,') mod ',lala);  writeln('x:=(',x\*n,') mod ',lala);  x:=(x\*n) mod lala;  writeln('x:= ',x);  end;  writeln(x);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| i = 12340  x:=(7\*7) mod 100  x:=(49) mod 100  x:= 49  i = 12341  x:=(49\*7) mod 100  x:=(343) mod 100  x:= 43  i = 12342  x:=(43\*7) mod 100  x:=(301) mod 100  x:= 1  i = 12343  x:=(1\*7) mod 100  x:=(7) mod 100  x:= 7  i = 12344  x:=(7\*7) mod 100  x:=(49) mod 100  x:= 49  i = 12345  x:=(49\*7) mod 100  x:=(343) mod 100  x:= 43  \*catatan: output ini hanya mengambil hasil akhir dari running program diatas |

12. NO 37

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var x:integer;  function lala(lili:integer):integer;  var abc,i:integer;  begin  abc:=0;  if (lili mod 5 = 0) then  begin  for i:=1 to 7 do abc:=abc+lala(lili div 5);  end else if (lili mod 3 = 0) then  begin  for i:=1 to 5 do abc:=abc+lala(lili div 3);  end else if (lili mod 2 = 0) then  begin  abc:=lala(lili div 2)+lala(lili div 2);  end;  if (lili=1) then lala:=1 else  lala:=abc;  end;  begin  x:=25;  writeln(lala(x));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function lala(lili:integer):integer;  var abc,i:integer;  begin  abc:=0;  if (lili mod 5 = 0) then  begin  writeln(lili,' mod 5 = 0');  i:=1;  while (i<=7) do begin  writeln('abc:= ',abc,' + lala(',lili,' div 5)');  abc:=abc+lala(lili div 5);  writeln('abc = ',abc);  inc(i);  end  end else if (lili mod 3 = 0) then  begin  writeln();  writeln('lili mod 3 = 0');  i:=1;  while (i<=5) do begin  writeln('abc:= ',abc,' + lala(',lili,' div 3)');  abc:=abc+lala(lili div 3);  writeln('abc = ',abc);  inc(i);  end;  end else if (lili mod 2 = 0) then  begin  writeln();  writeln('lili mod 2 = 0');  writeln('abc:= lala(',lili,' div 2)+ lala(',lili,' div 2)');  abc:=lala(lili div 2)+lala(lili div 2);  writeln('abc = ',abc);  end;  if (lili=1) then  begin  writeln();  writeln(lili,' = 1');  lala:=1;  end else  lala:=abc;  writeln('lala:= ', lala);  end;  begin  writeln(lala(25));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |

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| lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 7  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 7  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 7  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 7  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 7  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 7  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 1  lala:= 7  lala:= 49  \*catatan: output hanya mengambil hasil dari lala, langkah-langkah tidak dicantumkan karena akan membuat outputnya panjang. |

13. NO 38

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var x:integer;  function lala(lili:integer):integer;  var abc,i:integer;  begin  abc:=0;  if (lili mod 5 = 0) then  begin  for i:=1 to 7 do abc:=abc+lala(lili div 5);  end else if (lili mod 3 = 0) then  begin  for i:=1 to 5 do abc:=abc+lala(lili div 3);  end else if (lili mod 2 = 0) then  begin  abc:=lala(lili div 2)+lala(lili div 2);  end;  if (lili=1) then lala:=1 else  lala:=abc;  end;  begin  x:=35;  writeln(lala(x));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function lala(lili:integer):integer;  var abc,i:integer;  begin  abc:=0;  if (lili mod 5 = 0) then  begin  writeln(lili,' mod 5 = 0');  i:=1;  while (i<=7) do begin  writeln('abc:= ',abc,' + lala(',lili,' div 5)');  abc:=abc+lala(lili div 5);  writeln('abc = ',abc);  inc(i);  end  end else if (lili mod 3 = 0) then  begin  writeln();  writeln('lili mod 3 = 0');  i:=1;  while (i<=5) do begin  writeln('abc:= ',abc,' + lala(',lili,' div 3)');  abc:=abc+lala(lili div 3);  writeln('abc = ',abc);  inc(i);  end;  end else if (lili mod 2 = 0) then  begin  writeln();  writeln('lili mod 2 = 0');  writeln('abc:= lala(',lili,' div 2)+ lala(',lili,' div 2)');  abc:=lala(lili div 2)+lala(lili div 2);  writeln('abc = ',abc);  end;  if (lili=1) then  begin  writeln();  writeln(lili,' = 1');  lala:=1;  end else  lala:=abc;  writeln('lala:= ', lala);  end;  begin  writeln(lala(35));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| 35 mod 5 = 0  abc:= 0 + lala(35 div 5)  lala:= 0  abc = 0  abc:= 0 + lala(35 div 5)  lala:= 0  abc = 0  abc:= 0 + lala(35 div 5)  lala:= 0  abc = 0  abc:= 0 + lala(35 div 5)  lala:= 0  abc = 0  abc:= 0 + lala(35 div 5)  lala:= 0  abc = 0  abc:= 0 + lala(35 div 5)  lala:= 0  abc = 0  abc:= 0 + lala(35 div 5)  lala:= 0  abc = 0  lala:= 0 |

14. NO 39

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var aku,sayang,kamu:integer;  begin  aku:=1;  sayang:=0;  kamu:=1;  while (sayang<=100) do  begin  aku:=aku+kamu;  inc(sayang);  inc(kamu); inc(kamu);  end;  writeln(aku);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function aku(kamu,cinta:integer):integer;  var  sayang:integer;  begin  aku:=1;  sayang:=0;  for sayang:=0 to cinta do  begin  aku:=aku+kamu;  inc(kamu); inc(kamu);  writeln(' sayang = ',sayang,' aku = ',aku);  end;  writeln();  writeln(' aku:= ',aku);  end;  begin  writeln(aku(1,100));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |

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| Sayang = 0 aku =2  sayang = 1 aku = 5  sayang = 2 aku = 10  sayang = 3 aku = 17  sayang = 4 aku = 26  sayang = 5 aku = 37  sayang = 6 aku = 50  sayang = 7 aku = 65  sayang = 8 aku = 82  sayang = 9 aku = 101  sayang = 10 aku = 122  sayang = 11 aku = 145  sayang = 12 aku = 170  sayang = 13 aku = 197  sayang = 14 aku = 226  sayang = 15 aku = 257  sayang = 16 aku = 290  sayang = 17 aku = 325  sayang = 18 aku = 362  sayang = 19 aku = 401  sayang = 20 aku = 442  sayang = 21 aku = 485  sayang = 22 aku = 530  sayang = 23 aku = 577  sayang = 24 aku = 626  sayang = 25 aku = 677  sayang = 26 aku = 730  sayang = 27 aku = 785  sayang = 28 aku = 842  sayang = 29 aku = 901  sayang = 30 aku = 962  sayang = 31 aku = 1025  sayang = 32 aku = 1090  sayang = 33 aku = 1157  sayang = 34 aku = 1226  sayang = 35 aku = 1297  sayang = 36 aku = 1370  sayang = 37 aku = 1445  sayang = 38 aku = 1522  sayang = 39 aku = 1601  sayang = 40 aku = 1682  sayang = 41 aku = 1765  sayang = 42 aku = 1850  sayang = 43 aku = 1937  sayang = 44 aku = 2026  sayang = 45 aku = 2117  sayang = 46 aku = 2210  sayang = 47 aku = 2305  sayang = 48 aku = 2402  sayang = 49 aku = 2501  sayang = 50 aku = 2602  sayang = 51 aku = 2705  sayang = 52 aku = 2810  sayang = 53 aku = 2917  sayang = 54 aku = 3026  sayang = 55 aku = 3137  sayang = 56 aku = 3250  sayang = 57 aku = 3365  sayang = 58 aku = 3482  sayang = 59 aku = 3601  sayang = 60 aku = 3722  sayang = 61 aku = 3845  sayang = 62 aku = 3970  sayang = 63 aku = 4097  sayang = 64 aku = 4226  sayang = 65 aku = 4357  sayang = 66 aku = 4490  sayang = 67 aku = 4625  sayang = 68 aku = 4762  sayang = 69 aku = 4901  sayang = 70 aku = 5042  sayang = 71 aku = 5185  sayang = 72 aku = 5330  sayang = 73 aku = 5477  sayang = 74 aku = 5626  sayang = 75 aku = 5777  sayang = 76 aku = 5930  sayang = 77 aku = 6085  sayang = 78 aku = 6242  sayang = 79 aku = 6401  sayang = 80 aku = 6562  sayang = 81 aku = 6725  sayang = 82 aku = 6890  sayang = 83 aku = 7057  sayang = 84 aku = 7226  sayang = 85 aku = 7397  sayang = 86 aku = 7570  sayang = 87 aku = 7745  sayang = 88 aku = 7922  sayang = 89 aku = 8101  sayang = 90 aku = 8282  sayang = 91 aku = 8465  sayang = 92 aku = 8650  sayang = 93 aku = 8837  sayang = 94 aku = 9026  sayang = 95 aku = 9217  sayang = 96 aku = 9410  sayang = 97 aku = 9605  sayang = 98 aku = 9802  sayang = 99 aku = 10001  sayang = 100 aku =10202  aku:= 10202 |

15. NO 40

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var i,j:integer;  lala:boolean;  begin  for i:=2 to 100 do  begin  lala:=true;  j:=2;  while (j\*j<=i) do  begin  if (i mod j = 0) then lala:=false;  inc(j);  end;  if (lala=true) then write(i);  end;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| uses crt;  var i,j,k:integer;  lala:boolean;  begin  k:=0;  for i:=2 to 100 do  begin  lala:=true;  j:=2;  while (j\*j<=i) do  begin  if (i mod j = 0) then lala:=false;  inc(j);  end;  if (lala=true) then  begin  write('k:= ',k,' + ',i,' = ');  k:=k+i;  writeln(k);  end;  end;  writeln('maka totalnya adalah : ',k);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| k:= 0 + 2 = 2  k:= 2 + 3 = 5  k:= 5 + 5 = 10  k:= 10 + 7 = 17  k:= 17 + 11 = 28  k:= 28 + 13 = 41  k:= 41 + 17 = 58  k:= 58 + 19 = 77  k:= 77 + 23 = 100  k:= 100 + 29 = 129  k:= 129 + 31 = 160  k:= 160 + 37 = 197  k:= 197 + 41 = 238  k:= 238 + 43 = 281  k:= 281 + 47 = 328  k:= 328 + 53 = 381  k:= 381 + 59 = 440  k:= 440 + 61 = 501  k:= 501 + 67 = 568  k:= 568 + 71 = 639  k:= 639 + 73 = 712  k:= 712 + 79 = 791  k:= 791 + 83 = 874  k:= 874 + 89 = 963  k:= 963 + 97 = 1060  maka totalnya adalah : 1060 |

16. NO 41

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function iseng(x, y:integer):integer;  begin  if (y <= 0) then  iseng := x  else if (y mod 2 = 0) then  iseng := iseng(x-y, y-1)  else  iseng := iseng(x+2\*y, y-1);  end;  begin  writeln(iseng(500,100));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function iseng(x, y:integer):integer;  begin  if (y <= 0) then  begin  writeln('iseng:=x');  iseng := x;  writeln('iseng:= ',iseng);  end  else if (y mod 2 = 0) then  begin  writeln('y:',y,' mod 2 = 0');  writeln('iseng:= iseng(',x-y,',',y-1,')');  iseng := iseng(x-y, y-1);  end  else  begin  writeln('y',y,' mod 2 = 1');  writeln('iseng:= iseng(',x+2\*y,', ',y-1);  iseng := iseng(x+2\*y, y-1);  end;  end;  begin  writeln('iseng(500,100)');  writeln(iseng(500,100));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| y:2 mod 2 = 0  iseng:= iseng(2948,1)  y:1 mod 2 = 1  iseng:= iseng(2950, 0)  iseng:=x  iseng:= 2950  \*catatan: output program diatas hanya mengambil enam baris terakhir dari keluaran program diatas. |

17. NO 42

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  Count,i,x:integer;  begin  count := 0;  for i := 1 to n do  begin  x := i;  while (x > 0) do  begin  if (x mod 10 = 1) then  inc(count);  x := x div 10;  end;  end;  end;  writeln(count);  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function count(n:integer):integer;  var  i,x:integer;  begin  count := 0;  for i := 1 to n do  begin  writeln;  writeln('i = ',i);  x := i;  writeln(' x = ',x);  writeln('x = ',x,' > 0 ');  while (x > 0) do  begin  writeln('x = ',x,' mod 10 = 1 ');  if (x mod 10 = 1) then  inc(count);  writeln('count = ',count);  writeln('x := ',x,' div 10 = ');  x := x div 10;  write('x = ',x);  writeln();  end;  end;  end;  begin  writeln(count(12));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |

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| i = 1  x = 1  x = 1 > 0  x = 1 mod 10 = 1  count = 1  x := 1 div 10  x = 0  i = 2  x = 2  x = 2 > 0  x = 2 mod 10 = 1  count = 1  x := 2 div 10  x = 0  i = 3  x = 3  x = 3 > 0  x = 3 mod 10 = 1  count = 1  x := 3 div 10  x = 0  i = 4  x = 4  x = 4 > 0  x = 4 mod 10 = 1  count = 1  x := 4 div 10  x = 0  i = 5  x = 5  x = 5 > 0  x = 5 mod 10 = 1  count = 1  x := 5 div 10  x = 0  i = 6  x = 6  x = 6 > 0  x = 6 mod 10 = 1  count = 1  x := 6 div 10  x = 0  i = 7  x = 7  x = 7 > 0  x = 7 mod 10 = 1  count = 1  x := 7 div 10  x = 0  i = 8  x = 8  x = 8 > 0  x = 8 mod 10 = 1  count = 1  x := 8 div 10  x = 0  i = 9  x = 9  x = 9 > 0  x = 9 mod 10 = 1  count = 1  x := 9 div 10  x = 0  i = 10  x = 10  x = 10 > 0  x = 10 mod 10 = 1  count = 1  x := 10 div 10  x = 1  x = 1 mod 10 = 1  count = 2  x := 1 div 10  x = 0  i = 11  x = 11  x = 11 > 0  x = 11 mod 10 = 1  count = 3  x := 11 div 10  x = 1  x = 1 mod 10 = 1  count = 4  x := 1 div 10  x = 0  i = 12  x = 12  x = 12 > 0  x = 12 mod 10 = 1  count = 4  x := 12 div 10  x = 1  x = 1 mod 10 = 1  count = 5  x := 1 div 10  x = 0  count = 5; |

18. NO 43

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Var  Count,i,x:integer;  begin  count := 0;  for i := 1 to n do  begin  x := i;  while (x > 0) do  begin  if (x mod 10 = 1) then  inc(count);  x := x div 10;  end;  end;  end;  writeln(count);  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| var  count,i,x:integer;  begin  count := 0;  for i := 1 to 10000 do  begin  x := i;  while (x > 0) do  begin  if (x mod 10 = 1) then  inc(count);  writeln('count:= ',count);  x := x div 10;  end;  end;  writeln(count);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| count:= 1  count:= 1  .  .  .  Hingga count:  count:= 4000  count:= 4001 |

19. NO 44

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function gembel(x,y : integer) : integer;  var  i:integer;  begin  if y=0 then gembel := x  else  gembel := gembel(y,x mod y);  end;  function wedhus(n : integer) : integer;  var pedhet,i : integer;  begin  pedhet := 0;  for i:= n-1 downto 1 do  begin  if gembel(n,i)=1 then pedhet := pedhet+1;  end;  wedhus := pedhet;  end;  begin  writeln(wedhus(30));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function gembel(x,y : integer) : integer;  var  i:integer;  begin  writeln;  writeln('masuk ke fungsi gembel');  if y=0 then  begin  writeln('gembel := x');  gembel := x;  writeln('gembel := ',gembel);  end  else  begin  writeln('karena else maka: ');  writeln('gembel := gembel(y,x mod y)');  writeln('gembel := gembel(',y,',',x,' mod ',y,’)’);  gembel := gembel(y,x mod y);  end;  end;  function wedhus(n : integer) : integer;  var pedhet,i : integer;  begin  writeln;  writeln('masuk ke fungsi wedhus');  pedhet := 0;  for i:= n-1 downto 1 do  begin  if gembel(n,i)=1 then  begin  writeln('gembel(',n,',',i,') = 1');  writeln('pedhet := pedhet+1');  pedhet := pedhet+1;  writeln('pedhet := ',pedhet);  end;  end;  wedhus := pedhet;  writeln('wedhus := ',wedhus);  end;  begin  writeln(wedhus(30));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |

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| masuk ke fungsi gembel  gembel := x  gembel := 1  gembel(30,11) = 1  pedhet := pedhet+1  pedhet := 6  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(10,30 mod 10)  masuk ke fungsi gembel  gembel := x  gembel := 10  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(9,30 mod 9)  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(3,9 mod 3)  masuk ke fungsi gembel  gembel := x  gembel := 3  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(8,30 mod 8)  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(6,8 mod 6)  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(2,6 mod 2)  masuk ke fungsi gembel  gembel := x  gembel := 2  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(7,30 mod 7)  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(2,7 mod 2)  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(1,2 mod 1)  masuk ke fungsi gembel  gembel := x  gembel := 1  gembel(30,7) = 1  pedhet := pedhet+1  pedhet := 7  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(6,30 mod 6)  masuk ke fungsi gembel  gembel := x  gembel := 6  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(5,30 mod 5)  masuk ke fungsi gembel  gembel := x  gembel := 5  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(4,30 mod 4)  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(2,4 mod 2)  masuk ke fungsi gembel  gembel := x  gembel := 2  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(3,30 mod 3)  masuk ke fungsi gembel  gembel := x  gembel := 3  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(2,30 mod 2)  masuk ke fungsi gembel  gembel := x  gembel := 2  masuk ke fungsi gembel  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(1,30 mod 1)  masuk ke fungsi gembel  gembel := x  gembel := 1  gembel(30,1) = 1  pedhet := pedhet+1  pedhet := 8  wedhus := 8  \*catatan: output ini hanya mengambil proses terakhir dari hasil running program diatas |

20. NO 45

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| --- |
| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| function gembel(x,y : integer) : integer;  begin  if y=0 then gembel := x  else gembel := gembel(y,x mod y);  end;  function wedhus(n : integer) : integer;  var pedhet : integer;  begin  pedhet := 0;  for i:= n-1 downto 1 do  begin  if gembel(n,i)=1 then pedhet := pedhet+1;  end;  wedhus := pedhet;  end; |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| function pangkat(p,x : integer) : integer;  var  i:integer;  c:integer;  begin  c:=1;  for i:=1 to x do  begin  write('pangkat:= ',c,' \* ',p,' = ');  c:=c\*p;  pangkat:=c;  writeln(pangkat);  end;  end;  function gembel(x,y : integer) : integer;  var  i:integer;  begin  writeln;  writeln('masuk ke fungsi gembel');  writeln('gembel(',x,',',y,')');  if y=0 then  begin  writeln('gembel := x');  gembel := x;  writeln('gembel := ',gembel);  end  else  begin  writeln('karena else maka: ');  writeln('gembel := gembel(y,x mod y)');  writeln('gembel := gembel(',y,',',x,' mod ',y,')');  writeln('gembel := gembel(',y,',',x mod y,')');  gembel := gembel(y,x mod y);  writeln('gembel:= ',gembel);  end;  end;  function wedhus(n : integer) : integer;  var pedhet,i : integer;  begin  writeln;  writeln('masuk ke fungsi wedhus');  writeln('n:= ',n);  pedhet := 0;  for i:= n-1 downto 1 do  begin  writeln('gembel(',n,',',i,') = 1');  if gembel(n,i)=1 then  begin  writeln('pedhet := pedhet+1');  pedhet := pedhet+1;  writeln('pedhet := ',pedhet);  end;  end;  wedhus := pedhet;  writeln('wedhus := ',wedhus);  end;  begin  writeln(wedhus(pangkat(2,2)));  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| pangkat:= 1 \* 2 = 2  pangkat:= 2 \* 2 = 4  masuk ke fungsi wedhus  n:= 4  gembel(4,3) = 1  masuk ke fungsi gembel  gembel(4,3)  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(3,4 mod 3)  gembel := gembel(3,1)  masuk ke fungsi gembel  gembel(3,1)  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(1,3 mod 1)  gembel := gembel(1,0)  masuk ke fungsi gembel  gembel(1,0)  gembel := x  gembel := 1  gembel:= 1  gembel:= 1  pedhet := pedhet+1  pedhet := 1  gembel(4,2) = 1  masuk ke fungsi gembel  gembel(4,2)  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(2,4 mod 2)  gembel := gembel(2,0)  masuk ke fungsi gembel  gembel(2,0)  gembel := x  gembel := 2  gembel:= 2  gembel(4,1) = 1  masuk ke fungsi gembel  gembel(4,1)  karena else maka:  gembel := gembel(y,x mod y)  gembel := gembel(1,4 mod 1)  gembel := gembel(1,0)  masuk ke fungsi gembel  gembel(1,0)  gembel := x  gembel := 1  gembel:= 1  pedhet := pedhet+1  pedhet := 2  wedhus := 2 |

21. NO 46

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var i,j: integer;  var board: array[0..5] of longint;  function kepo():integer;  var n:integer = 0;  begin  for i := 5 downto 0 do begin  n := n shl 1;  n := n + (board[i] mod 2);  end;  kepo:=n;  end;  procedure tambah();  begin  for i := 0 to 17 do  for j := 0 to 5 do  board[j] := board[j] + sqr(j+i);  end;  begin  for i := 0 to 5 do  board[i] := i;  tambah();  writeln(kepo());  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| var i,j: integer;  var board: array[0..5] of longint;  function kepo():integer;  var  n:integer;  begin  writeln('masukke function kepo');  n:=0;  for i := 5 downto 0 do begin  n := n shl 1;  writeln('n := ',n,'+',board[i] mod 2);  n := n + (board[i] mod 2);  writeln('n = ',n);  end;  kepo:=n;  end;  procedure tambah();  begin  writeln('masuk ke procedure tambah');  writeln('board[j] := board[j] + sqr(j+i)');  for i := 0 to 17 do  for j := 0 to 5 do  begin  board[j] := board[j] + sqr(j+i);  writeln('board[',j,'] =',board[j]);  end;  end;  begin  writeln('isi Array board : ');  for i := 0 to 5 do  begin  board[i] := i;  writeln('board[',i,'], : ',board[i]);  end;  tambah();  writeln(kepo());  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |

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| isi Array board :  board[0], : 0  board[1], : 1  board[2], : 2  board[3], : 3  board[4], : 4  board[5], : 5  masuk ke procedure tambah  board[j] := board[j] + sqr(j+i)  board[0] =0  board[1] =2  board[2] =6  board[3] =12  board[4] =20  board[5] =30  board[0] =1  board[1] =6  board[2] =15  board[3] =28  board[4] =45  board[5] =66  board[0] =5  board[1] =15  board[2] =31  board[3] =53  board[4] =81  board[5] =115  board[0] =14  board[1] =31  board[2] =56  board[3] =89  board[4] =130  board[5] =179  board[0] =30  board[1] =56  board[2] =92  board[3] =138  board[4] =194  board[5] =260  board[0] =55  board[1] =92  board[2] =141  board[3] =202  board[4] =275  board[5] =360  board[0] =91  board[1] =141  board[2] =205  board[3] =283  board[4] =375  board[5] =481  board[0] =140  board[1] =205  board[2] =286  board[3] =383  board[4] =496  board[5] =625  board[0] =204  board[1] =286  board[2] =386  board[3] =504  board[4] =640  board[5] =794  board[0] =285  board[1] =386  board[2] =507  board[3] =648  board[4] =809  board[5] =990  board[0] =385  board[1] =507  board[2] =651  board[3] =817  board[4] =1005  board[5] =1215  board[0] =506  board[1] =651  board[2] =820  board[3] =1013  board[4] =1230  board[5] =1471  board[0] =650  board[1] =820  board[2] =1016  board[3] =1238  board[4] =1486  board[5] =1760  board[0] =819  board[1] =1016  board[2] =1241  board[3] =1494  board[4] =1775  board[5] =2084  board[0] =1015  board[1] =1241  board[2] =1497  board[3] =1783  board[4] =2099  board[5] =2445  board[0] =1240  board[1] =1497  board[2] =1786  board[3] =2107  board[4] =2460  board[5] =2845  board[0] =1496  board[1] =1786  board[2] =2110  board[3] =2468  board[4] =2860  board[5] =3286  board[0] =1785  board[1] =2110  board[2] =2471  board[3] =2868  board[4] =3301  board[5] =3770  masukke function kepo  n := 0+0  n = 0  n := 0+1  n = 1  n := 2+0  n = 2  n := 4+1  n = 5  n := 10+0  n = 10  n := 20+1  n = 21 |

22. NO 47

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| var i,j: integer;  var board: array[0..5] of longint;  function kepo():integer;  var n:integer = 0;  begin  for i := 5 downto 0 do begin  n := n shl 1;  n := n + (board[i] mod 2);  end;  kepo:=n;  end;  procedure tambah();  begin  for i := 0 to 17 do  for j := 0 to 5 do  board[j] := board[j] + sqr(j+i);  end;  begin  for i := 0 to 5 do  board[i] := i;  tambah();  writeln(kepo());  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| var i,j: integer;  var board: array[0..5] of longint;  function kepo():integer;  var  n:integer;  begin  writeln('masukke function kepo');  n:=0;  for i := 5 downto 0 do begin  n := n shl 1;  n := n + (board[i] mod 2);  writeln('n = ',n);  end;  kepo:=n;  end;  procedure tambah();  begin  writeln('masuk ke procedure tambah');  for i := 0 to 17 do  for j := 0 to 5 do  begin  board[j] := board[j] + sqr(j+i);  writeln('board[',j,'] =',board[j]);  end;  writeln;  writeln('board[1] =',board[1]);  end;  begin  writeln('isi Array board : ');  for i := 0 to 5 do  begin  board[i] := i;  writeln('board[',i,'], : ',board[i]);  end;  tambah();  writeln(kepo());  writeln('board[1] =',board[1]);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |

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| isi Array board :  board[0], : 0  board[1], : 1  board[2], : 2  board[3], : 3  board[4], : 4  board[5], : 5  masuk ke procedure tambah  board[0] =0  board[1] =2  board[2] =6  board[3] =12  board[4] =20  board[5] =30  board[0] =1  board[1] =6  board[2] =15  board[3] =28  board[4] =45  board[5] =66  board[0] =5  board[1] =15  board[2] =31  board[3] =53  board[4] =81  board[5] =115  board[0] =14  board[1] =31  board[2] =56  board[3] =89  board[4] =130  board[5] =179  board[0] =30  board[1] =56  board[2] =92  board[3] =138  board[4] =194  board[5] =260  board[0] =55  board[1] =92  board[2] =141  board[3] =202  board[4] =275  board[5] =360  board[0] =91  board[1] =141  board[2] =205  board[3] =283  board[4] =375  board[5] =481  board[0] =140  board[1] =205  board[2] =286  board[3] =383  board[4] =496  board[5] =625  board[0] =204  board[1] =286  board[2] =386  board[3] =504  board[4] =640  board[5] =794  board[0] =285  board[1] =386  board[2] =507  board[3] =648  board[4] =809  board[5] =990  board[0] =385  board[1] =507  board[2] =651  board[3] =817  board[4] =1005  board[5] =1215  board[0] =506  board[1] =651  board[2] =820  board[3] =1013  board[4] =1230  board[5] =1471  board[0] =650  board[1] =820  board[2] =1016  board[3] =1238  board[4] =1486  board[5] =1760  board[0] =819  board[1] =1016  board[2] =1241  board[3] =1494  board[4] =1775  board[5] =2084  board[0] =1015  board[1] =1241  board[2] =1497  board[3] =1783  board[4] =2099  board[5] =2445  board[0] =1240  board[1] =1497  board[2] =1786  board[3] =2107  board[4] =2460  board[5] =2845  board[0] =1496  board[1] =1786  board[2] =2110  board[3] =2468  board[4] =2860  board[5] =3286  board[0] =1785  board[1] =2110  board[2] =2471  board[3] =2868  board[4] =3301  board[5] =3770  board[1] =2110  masukke function kepo  n = 0  n = 1  n = 2  n = 5  n = 10  n = 21  21  board[1] =2110 |

23. 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)* |
| uses crt;  var  i : integer;  var data1 : array[1..100] of integer;  data2,data3 : array[1..100] of integer;  begin  data1[1]:=4;  data1[2]:=11;  data1[3]:=2;  data1[4]:=5;  data1[5]:=1;  data1[6]:=9;  data1[7]:=7;  data1[8]:=5;  data1[9]:=6;  data1[10]:=8;  writeln(‘mengulang i:=1 to 10’);  for i:= 1 to 10 do  begin  write('data2[',i,'] = ');  data2[i] := 1;  writeln(data2[i]);  end;  writeln();  writeln('mengulang i:=1 to 10');  for i:= 1 to 10 do  begin  write('inc(data2[',data1[i],']) = ');  inc(data2[data1[i]]);  writeln(data2[data1[i]]);  end;  writeln();  writeln('mengulang i:=2 to 10 ');  for i:= 2 to 10 do  begin  write('data2[',i,'] := data2[',i,'] + data2[',i,'-1) = ');  data2[i] := data2[i] + data2[i-1];  writeln(data2[i]);  end;  writeln();  writeln('mengulang i:=10 downto 1');  for i:= 10 downto 1 do  begin  write('data3[',data2[data1[i]],'] = ');  data3[data2[data1[i]]] := data1[i];  writeln(data3[data2[data1[i]]]);  write('dec(',data2[data1[i]],') = ');  dec(data2[data1[i]]);  writeln(data2[data1[i]]);  end;  writeln();  writeln('jadi outputnya adalah : ');  for i:= 1 to 10 do  writeln('data3[',i,']= ',data3[i]);  readln;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| data2[1] = 1  data2[2] = 1  data2[3] = 1  data2[4] = 1  data2[5] = 1  data2[6] = 1  data2[7] = 1  data2[8] = 1  data2[9] = 1  data2[10] = 1  mengulang i:=1 to 10  inc(data2[4]) = 2  inc(data2[11]) = 1  inc(data2[2]) = 2  inc(data2[5]) = 2  inc(data2[1]) = 2  inc(data2[9]) = 2  inc(data2[7]) = 2  inc(data2[5]) = 3  inc(data2[6]) = 2  inc(data2[8]) = 2  mengulang i:=2 to 10  data2[2] := data2[2] + data2[2-1) = 4  data2[3] := data2[3] + data2[3-1) = 5  data2[4] := data2[4] + data2[4-1) = 7  data2[5] := data2[5] + data2[5-1) = 10  data2[6] := data2[6] + data2[6-1) = 12  data2[7] := data2[7] + data2[7-1) = 14  data2[8] := data2[8] + data2[8-1) = 16  data2[9] := data2[9] + data2[9-1) = 18  data2[10] := data2[10] + data2[10-1) = 19  mengulang i:=10 downto 1  data3[16] = 8  dec(16) = 15  data3[12] = 6  dec(12) = 11  data3[10] = 5  dec(10) = 9  data3[14] = 7  dec(14) = 13  data3[18] = 9  dec(18) = 17  data3[2] = 1  dec(2) = 1  data3[9] = 5  dec(9) = 8  data3[4] = 2  dec(4) = 3  data3[1] = 11  dec(1) = 0  data3[7] = 4  dec(7) = 6  jadi outputnya adalah :  data3[1]= 11  data3[2]= 1  data3[3]= 0  data3[4]= 2  data3[5]= 0  data3[6]= 0  data3[7]= 4  data3[8]= 0  data3[9]= 5  data3[10]= 5 |

24. NO 49

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| Kode Program Yang Dibuat |
| uses crt;  var  i,x,n:longint;  deret,j:extended;  begin  i:=1;  write('masukkan jumlah N : ');  readln(n);  while(i <= n) do  begin  x:=(i\*i-i+1)\*(i\*i+i+1);  j:=i/x;  write('deret:= ',deret:0:5,' + ',j:0:5,' = ');  deret:=deret+j;  writeln(deret:0:5);  inc(i);  end;  writeln('deret:= ',deret:0:5);  writeln('jadi outputnya adalah : ',deret:0:5);  readln;  end. |
| Output Program |
| masukkan jumlah N : 5  deret:= 0.00000 + 0.33333 = 0.33333  deret:= 0.33333 + 0.09524 = 0.42857  deret:= 0.42857 + 0.03297 = 0.46154  deret:= 0.46154 + 0.01465 = 0.47619  deret:= 0.47619 + 0.00768 = 0.48387  deret:= 0.48387  jadi outputnya adalah : 0.48387 |

25. NO 50

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| Kode Program Yang Dibuat |
| uses crt;  var  a,b,c,n,total,count:longint;  begin  count:=0;  a:=0;  b:=0;  c:=1;  total:=c;  write('masukkan panjang pipa = ');  readln(n);  writeln('while ',total,' <= ',n,' do');  while total<=n do  begin  b:=a;  a:=c;  write('c:= ',a,' + ',b,' = ');  c:=a+b;  writeln(c);  write('total:= ',total,' + ',c,' = ');  total:=total+c;  writeln(total);  inc(count);  writeln('potongan pipa:= ',count);  end;  writeln('jumlah potongan pipa := ',count);  readln;  end. |
| Output Program |
| masukkan panjang pipa = 7  while 1 <= 7 do  c:= 1 + 0 = 1  total:= 1 + 1 = 2  potongan pipa:= 1  c:= 1 + 1 = 2  total:= 2 + 2 = 4  potongan pipa:= 2  c:= 2 + 1 = 3  total:= 4 + 3 = 7  potongan pipa:= 3  c:= 3 + 2 = 5  total:= 7 + 5 = 12  potongan pipa:= 4  jumlah potongan pipa := 4 |