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| OSP | 2013 |

1. No.26

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Uses crt;  var N,hasil: integer;  procedure solve(X:integer);  begin  if (X>1) then  begin  hasil:=hasil+1;  solve(X div 2 + X mod 2);  end;  end;    begin  readln(N);  hasil:=0;  solve(N);  writeln(hasil);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| uses crt;  var  N,hasil : integer;  procedure solve(x : integer);  var  hasildiv,hasilmod,jumlah : integer;  begin  if(x > 1) then  begin  hasildiv:=x div 2;  hasilmod:=x mod 2;  jumlah:=hasildiv + hasilmod;  hasil:=hasil+1;  solve(hasildiv + hasilmod);  writeln('Solve(',hasildiv,' + ',hasilmod,') = ',jumlah,' ');  end;  end;  begin  write('Masukkan N : '); readln(N);  hasil:=0;  solve(N);  write('Hasil : ',hasil);  readkey;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Masukkan N : 77  1. Solve(1 + 0) = 1  2. Solve(1 + 1) = 2  3. Solve(2 + 1) = 3  4. Solve(5 + 0) = 5  5. Solve(10 + 0) = 10  6. Solve(19 + 1) = 20  7. Solve(38 + 1) = 39  Program akan berhenti ketika x tidak lebih dari satu maka ada 7 pengulangan  Hasil : 7 |

1. No.27

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| uses crt;  var  kata,kalimat,base : string;  i : integer;  begin  base := 'QWERTYUIOPLKJHGFDSAZXCVBNM';  kata := '';  kalimat := 's4yA-BuK4N+oRanG aLaY!?' ;  for i:= length(kalimat) downto 1 do  begin  if pos(kalimat[i], base) > 0 then  kata:= kata + kalimat[i];  end;  writeln(kata);  readkey;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| uses crt;  var  kata,kalimat,base : string;  i : integer;  begin  base := 'QWERTYUIOPLKJHGFDSAZXCVBNM';  kata := '';  kalimat := 's4yA-BuK4N+oRanG aLaY!?' ;  for i:= length(kalimat) downto 1 do  begin  if pos(kalimat[i], base) > 0 then  kata:= kata + kalimat[i];  writeln(kata);  end;  readkey;  end.  Output Dari Kode Program Yang Dimodifikasi : |
| Y  Y  YL  YL  YL  YLG  YLG  YLG  YLGR  YLGR  YLGR  YLGRN  YLGRN  YLGRNK  YLGRNK  YLGRNKB  YLGRNKB  YLGRNKBA  YLGRNKBA  YLGRNKBA  YLGRNKBA |

1. No.28

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No. 29

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| uses crt;  var we: longint;  Z: array[1..15] of longint = (64, 19, 56, 67, 66, 82, 31, 20, 67, 10, 94, 100, 57, 14, 86);    function f(x: longint; y: longint): longint;  var a, b: longint;  begin  if (x = y) then f := Z[y]  else  begin  a := f(x, (x+y) div 2);  b := f((x+y) div 2+1, y);  if (a < b) then f := a  else f := b;  end;  end;    begin  z[1]:=64;  z[2]:=19;  z[3]:=56;  z[4]:=67;  z[5]:=66;  z[6]:=82;  z[7]:=31;  z[8]:=20;  z[9]:=67;  z[10]:=10;  z[11]:=94;  z[12]:=100;  z[13]:=57;  z[14]:=14;  z[15]:=86;    we := f(3,11);  writeln(we);  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| uses crt;  var  we: longint;  Z : array[1..15] of integer;  function f(x: longint; y: longint): longint;  var  a, b: longint;  tambah,bagi,tambah\_b,bagi\_b : integer;  begin  if (x = y) then  begin  f := Z[y];  writeln('f:=z[',y,'] = ',z[y],'');  end  else  begin  tambah:=x+y;  bagi:=tambah div 2;  a := f(x, bagi);  writeln('a:= f(',x,',',bagi,')');  bagi\_b:=(x+y) div 2+1;  b := f(bagi\_b, y);  writeln('b:= f(',bagi\_b,',',y,') ');  writeln;  if (a < b) then  begin  f := a;  writeln('jika ',a,' < ',b,' maka a = ',f);  end  else  begin  f := b;  writeln('jika ',a,' > ',b,' maka b = ',f);  end;  end;  end;  begin  z[1]:=64;  z[2]:=19;  z[3]:=56;  z[4]:=67;  z[5]:=66;  z[6]:=82;  z[7]:=31;  z[8]:=20;  z[9]:=67;  z[10]:=10;  z[11]:=94;  z[12]:=100;  z[13]:=57;  z[14]:=14;  z[15]:=86;  we := f(3,11);  writeln(we);  readkey;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| f:=z[3] = 56  a:= f(3,3)  f:=z[4] = 67  b:= f(4,4)  jika 56 < 67 maka a = 56  a:= f(3,4)  f:=z[5] = 66  b:= f(5,5)  jika 56 < 66 maka a = 56  a:= f(3,5)  f:=z[6] = 82  a:= f(6,6)  f:=z[7] = 31  b:= f(7,7)  jika 82 > 31 maka b = 31  b:= f(6,7)  jika 56 > 31 maka b = 31  a:= f(3,7)  f:=z[8] = 20  a:= f(8,8)  f:=z[9] = 67  b:= f(9,9)  jika 20 < 67 maka a = 20  a:= f(8,9)  f:=z[10] = 10  a:= f(10,10)  f:=z[11] = 94  b:= f(11,11)  jika 10 < 94 maka a = 10  b:= f(10,11)  jika 20 > 10 maka b = 10  b:= f(8,11)  jika 31 > 10 maka b = 10  10 |

1. No. 30

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.31

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No. 32

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| uses crt;  var  i,j,k,a,b:integer;  procedure tulis(n,m:integer);  begin  for i:=1 to n do  begin  for j:=1 to (n div m) do  for k:=1 to m do  write(l,' \*');  for j:=1 to (n mod m) do  writeln('-');  end;  end;  begin  a:=30;  b:=30;  tulis(a,b);  readkey;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| uses crt;  var  i,j,k,a,b,l:integer;  procedure tulis(n,m:integer);  begin  for i:=1 to n do  begin  for j:=1 to (n div m) do  for k:=1 to m do  begin  l:=l+1;  writeln(l,' \*');  end;  for j:=1 to (n mod m) do  writeln('-');  end;  end;  begin  a:=30;  b:=30;  tulis(a,b);  readkey;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Karena looping terlalu banyak jadi saya hanya menampilkan akhir dari output  872 \*  873 \*  874 \*  875 \*  876 \*  877 \*  878 \*  879 \*  880 \*  881 \*  882 \*  883 \*  884 \*  885 \*  886 \*  887 \*  888 \*  889 \*  890 \*  891 \*  892 \*  893 \*  894 \*  895 \*  896 \*  897 \*  898 \*  899 \*  900 \* |

1. No.33

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.34

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| uses crt;  var  T:array[1..13] of integer ;  function q(c,d:integer):integer;  var  e:integer;  begin  T[1]:=32;  T[2]:=6;  T[3]:=12;  T[4]:=64;  T[5]:=68;  T[6]:=100;  T[7]:=214;  T[8]:=120;  T[9]:=30;  T[10]:=80;  T[11]:=24;  T[12]:=22;  T[13]:=88;  if (d=0) then q:=c  else  begin  e:=c mod d;  q:=q(d,e);  writeln('q:=q(',d,',',e,')');  end;  end;  function p(a,b:integer):integer;  var  i:integer;  begin  p:=T[a];  for i:=a to b do  begin  p:=q(p,T[i]);  writeln('p:=q(',p,',',T[i],')',p);  end  end;  begin  writeln('hasil : ',p(1,13));  readln;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.35

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| uses crt;  function hap(x,t: integer): integer;  begin  if t = 1 then  hap := x mod 5  else  hap := 5\*x;  end;  function hip(x,y: integer): integer;  begin  if x < y then  hip := hip(y,x)  else  hip := hap(x,1) + hap(y,2);  end;  function hop(x,y,z: integer): integer;  begin  if y > z then  hop := hop(x,z,y)  else if x > y then  hop := hop(y,x,z)  else  hop := hip(x,y) + z;  end;  begin  writeln(hop(18,3,1993));  readkey;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| uses crt;  var  a : integer;  function hap(x,t: integer): integer;  begin  if t = 1 then  begin  hap := x mod 5;  writeln('hap(18,1):= ',x,' mod ',5,' =',hap,'');  end  else  begin  hap := 5\*x;  writeln('hap(3,2):= ',5,'\*',x,' = ',hap,'');  end;  end;  function hip(x,y: integer): integer;  begin  if x < y then  begin  hip := hip(y,x);  writeln('hip:=hip(',y,',',x,')');  end  else  begin  hip := hap(x,1) + hap(y,2);  writeln('hip:=hap(',x,',',1,') + hap(',y,',',2,')');  end;  end;    function hop(x,y,z: integer): integer;  begin  if y > z then  begin  hop := hop(x,z,y);  writeln('hop:=hop(',x,',',z,',',y,')');  end  else if x > y then  begin  hop := hop(y,x,z);  writeln('hop:=hop(',y,',',x,',',z,')');  end  else  begin  hop := hip(x,y) + z;  writeln('hop:=hip(',x,',',y,') + ',z,'');  end;  end;  begin  a:=hop(18,3,1993);  write('hasil : ',a);  readkey;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| hap(18,1):= 18 mod 5 =3  hap(3,2):= 5\*3 = 15  hip:=hap(18,1) + hap(3,2)  hip:=hip(18,3)  hop:=hip(3,18) + 1993  hop:=hop(3,18,1993)  hasil : 2011 |

1. No.36

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.37

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.38

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.39

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.40

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.41

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.42

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| uses crt;  var  data1 : array[1..10] of integer ;  data2,data3 : array[1..10] of integer;  i : integer;  begin  data1[1]:=3;  data1[2]:=9;  data1[3]:=2;  data1[4]:=2;  data1[5]:=1;  data1[6]:=5;  data1[7]:=7;  data1[8]:=5;  data1[9]:=5;  data1[10]:=8;  for i:= 1 to 10 do  data2[i] := 0;    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;  writeln;  for i:= 1 to 10 do  writeln('data3[',i,'] :',data3[i]);  readkey;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| uses crt;  var  data1 : array[1..10] of integer ;  data2,data3 : array[1..10] of integer;  i : integer;  begin  data1[1]:=3;  data1[2]:=9;  data1[3]:=2;  data1[4]:=2;  data1[5]:=1;  data1[6]:=5;  data1[7]:=7;  data1[8]:=5;  data1[9]:=5;  data1[10]:=8;  for i:= 1 to 10 do  begin  data2[i] := 0;  writeln('data2[',i,'] : ',data2[i]);  end;  writeln;  for i:= 1 to 10 do  begin  inc(data2[data1[i]]);  writeln('inc(data2[data1[',i,']] : ',data2[data2[data1[i]]]);  end;  writeln;  for i:= 2 to 10 do  begin  data2[i] := data2[i] + data2[i-1];  writeln('data2[',i,'] := data2[',i,'] + data2[',i-1,'] = ',data2[i],'');  end;  writeln;  for i:= 10 downto 1 do  begin  data3[data2[data1[i]]] := data1[i];  begin  writeln('data3[',data2[data1[i]],'] = ',data3[data2[data1[i]]],'');  end;  dec(data2[data1[i]]);  end;  writeln;  for i:= 1 to 10 do  writeln('data3[',i,'] :',data3[i]);  readkey;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| data2[1] : 0  data2[2] : 0  data2[3] : 0  data2[4] : 0  data2[5] : 0  data2[6] : 0  data2[7] : 0  data2[8] : 0  data2[9] : 0  data2[10] : 0  inc(data2[data1[1]] : 0  inc(data2[data1[2]] : 0  inc(data2[data1[3]] : 0  inc(data2[data1[4]] : 2  inc(data2[data1[5]] : 1  inc(data2[data1[6]] : 1  inc(data2[data1[7]] : 1  inc(data2[data1[8]] : 2  inc(data2[data1[9]] : 1  inc(data2[data1[10]] : 1  data2[2] := data2[2] + data2[1] = 3  data2[3] := data2[3] + data2[2] = 4  data2[4] := data2[4] + data2[3] = 4  data2[5] := data2[5] + data2[4] = 7  data2[6] := data2[6] + data2[5] = 7  data2[7] := data2[7] + data2[6] = 8  data2[8] := data2[8] + data2[7] = 9  data2[9] := data2[9] + data2[8] = 10  data2[10] := data2[10] + data2[9] = 10  data3[9] = 8  data3[7] = 5  data3[6] = 5  data3[8] = 7  data3[5] = 5  data3[1] = 1  data3[3] = 2  data3[2] = 2  data3[10] = 9  data3[4] = 3  data3[1] :1  data3[2] :2  data3[3] :2  data3[4] :3  data3[5] :5  data3[6] :5  data3[7] :5  data3[8] :7  data3[9] :8  data3[10] :9 |

1. No.43

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| uses crt;  var  i,j,x: integer;    begin  x := 0;  for i:=1 to 5 do  begin  for j:= 5 downto 1 do  begin  x := x + i + j;  end;  end;  writeln(x);  readkey;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| uses crt;  var  i,j,x,x1,x2: integer;    begin  x := 0;  x1 := 0;  writeln('x := x + i + j;');  for i:=1 to 5 do  begin  for j:= 5 downto 1 do  begin  x := x1;  x1 := x + i + j;  x2 := x + i + j;  writeln('x := ',x,' + ',i,' + ',j,' = ',x2,'');  end;  end;  writeln('hasil x = ',x2);  readkey;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| x := x + i + j;  x := 0 + 1 + 5 = 6  x := 6 + 1 + 4 = 11  x := 11 + 1 + 3 = 15  x := 15 + 1 + 2 = 18  x := 18 + 1 + 1 = 20  x := 20 + 2 + 5 = 27  x := 27 + 2 + 4 = 33  x := 33 + 2 + 3 = 38  x := 38 + 2 + 2 = 42  x := 42 + 2 + 1 = 45  x := 45 + 3 + 5 = 53  x := 53 + 3 + 4 = 60  x := 60 + 3 + 3 = 66  x := 66 + 3 + 2 = 71  x := 71 + 3 + 1 = 75  x := 75 + 4 + 5 = 84  x := 84 + 4 + 4 = 92  x := 92 + 4 + 3 = 99  x := 99 + 4 + 2 = 105  x := 105 + 4 + 1 = 110  x := 110 + 5 + 5 = 120  x := 120 + 5 + 4 = 129  x := 129 + 5 + 3 = 137  x := 137 + 5 + 2 = 144  x := 144 + 5 + 1 = 150  hasil x = 150 |

1. No.44 dan 45

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
| uses crt;  var x,y:integer;  procedure abc(a:integer;var b:integer);  var c:integer;  begin  if not((a=0)or(b=0)) then  if (a>b) then  begin  a:=a mod b;  abc(b,a);  end  else  begin  b:=b mod a;  abc(a,b);  end;  end;    begin  x:=219;  y:=168;  abc(x,y);  readkey;  end. |
| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
| uses crt;  var x,y:integer;  procedure abc(a:integer;var b:integer);  var c:integer;  begin  if not((a=0)or(b=0)) then  if (a>b) then  begin  a:=a mod b;  abc(b,a);  writeln(' Hasil a : ',a,' mod ',b,' : ',a);  end  else  begin  b:=b mod a;  abc(a,b);  end;  write('Hasil b : ',b,' mod ',a,' : ',b);  end;    begin  x:=219;  y:=168;  abc(x,y);  readkey;  end. |
| Output Dari Kode Program Yang Dimodifikasi : |
| Hasil b : 0 mod 3 : 0 Hasil a : 0 mod 3 : 0  Hasil b : 3 mod 0 : 3 Hasil a : 3 mod 6 : 3  Hasil b : 6 mod 3 : 6 Hasil a : 6 mod 15 : 6  Hasil b : 15 mod 6 : 15 Hasil a : 15 mod 51 : 15  Hasil b : 51 mod 15 : 51 Hasil a : 51 mod 168 : 51  Hasil b : 168 mod 51 : 168 |

1. No.45
2. No.46
3. No.47

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| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.48

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| --- |
| Kode Program Dalam Soal : *(Soal Dirapikan)* |
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| Kode Program Dimodifikasi : *(Hasil Modifikasi Diwarnai)* |
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| Output Dari Kode Program Yang Dimodifikasi : |
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1. No.49
2. No.50