!!! ATENȚIE !!!

Aceste rezolvări NU au fost aprobate de MINISTERUL EDUCAȚIEI sau altă comisie recunoscută de Ministerul Educației. În consecință nimeni nu își asumă răspunderea pentru eventualele greșeli și / sau perderi survenite în urma folosirii lor!

Folosește rezolvările pe riscul tău !!!

Dacă găsești greșeli sau ai nelămuriri în legătură cu o anumită rezolvare trimite-mi un e-mail pe adresa raducu@trei.ro și voi încerca să lămuresc / corectez problema.

Varianta 1:

1. c **2.** d

3.
```
c.x:=(a.x+b.x) / 2;
c.y:=(a.y+b.y) / 2;
```

4. Înălțimea arborelui: 3;
Frunze: 1, 2, 3, 8

5.
```
var i, j, n, m:integer;
    a:array[1..10,1..10]of integer;
begin
  write(' n= '); read(n);
  write(' m= '); read(m);
  for i:=1 to n do
    for j:=1 to m do
      if i<j
        then a[i,j]:=i
        else a[i,j]:=j;
  for i:=1 to n do
    begin
      for j:=1 to m do
        write(a[i,j]:3);
      writeln;
    end;
end.
```

Varianta 2:

1. a **2.** c **3.** 5 si 2

4.
```
if  a[k,j] mod 2 =1
   then s:=s+a[k,j];
if a[k,n div 2 +j] mod 2 =1
   then s:=s+a[k,n div 2 +j];
```

5.
```
var i:integer;
    cuv:string[21];
begin
  write(' cuvantul: '); readln(cuv);
  for i:=1 to length(cuv) do
    if (cuv[i]='a') or (cuv[i]='e') or (cuv[i]='i') or (cuv[i]='o') or (cuv[i]='u')
      then cuv[i]:=upcase(cuv[i]);
  write(cuv);
end.
```

Varianta 3:

1. b **2.** c **4.** ideale

3.
```
f.x:=f1.x*f2.y+f1.y*f2.x;
f.y:=f1.y*f2.y;
```

5.
```
var n,i,j:integer;
    a:array[1..10,1..10]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        a[i,j]:=n-j+1;
        if (i=j)
          then a[i,j]:=0;
      end;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 4:

1. b **2.** a **3.**

2
1

4.
```
if (s[i]>='a') and (s[i]<='z')
   then delete(s,i,1)
   else i:=i+1;
```

5.
```
var n,i,j:integer;
    a:array[1..10,1..10]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        a[i,j]:=n-i+1;
        if (i+j=n+1)
          then a[i,j]:=0;
      end;
  for i:=1 to n do
    begin
      for j:=1 to n do
```

```
          write(a[i,j]:4);
        writeln;
      end;
  end.
```

Varianta 5:

1. b **2.** d **3.** 14 frunze

4.
```
c:=s[i];  s[i]:=s[j];  s[j]:=c;
i:=i+1;
j:=j-1;
```

5.
```
var n,m,i,j:integer;
    a:array[1..10,1..10]of integer;
begin
  write(' n= '); read(n);
  write(' m= '); read(m);
  for i:=1 to n do
    for j:=1 to m do
      begin
        if (i<j)
           then a[i,j]:=j
           else a[i,j]:=i;
      end;
  for i:=1 to n do
    begin
      for j:=1 to m do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 6:

1. c **2.** a **3.** 12 noduri **4.** 8

5.
```
var i:integer;
    s:string;
begin
  write(' textul: '); readln(s);
  for i:=2 to length(s) do
     if (s[i-1]=' ') and (s[i]<>' ')
        then s[i]:=upcase(s[i]);
  if s[1]<>' ' then s[1]:=upcase(s[1]);
  write(s);
end.
```

Varianta 7:

1. a **2.** b **3.** 2 **4.** 128

5.
```
var i,ic:integer;
    c:char;
    s:string;
begin
  write(' textul: '); readln(s);
  for i:=1 to length(s) do
     if (s[i]<>'a') and (s[i]<>'e') and (s[i]<>'i') and (s[i]<>'o') and (s[i]<>'u')
        then ic:=i;
  delete(s,ic,1);
  write(' s: ',s);
end.
```

Varianta 8:

1. b **2.** c **3.** abefgh

4.
```
s:=p^.info;
p^.urm<>nil
```

5.
```
var n, p, i, j, k:integer;
    a:array[1..10,1..10] of integer;
begin
  write(' n= '); read(n);
  write(' p= '); read(p);
  k:=-1;
  for i:=1 to n do
    for j:=1 to p do
      begin
        k:=k+2;
        a[i,j]:=k*k;
      end;
  for i:=1 to n do
    begin
      for j:=1 to p do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 9:

1. a **2.** a **3.** 4 **4.** abcd123efg

5.
```
var n,i,j,s:integer;
    a:array[1..10,1..10]of integer;
```

```
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  s:=0;
  for i:=1 to n do
    write(a[1,i],' ');
  for i:=2 to n-1 do
    write(a[i,n],' ');
  for i:=n downto 1 do
    write(a[n,i],' ');
  for i:=n-1 downto 2 do
    write(a[i,1],' ');
end.
```

Varianta 10:

1. a **2.** d **3.** 3481 **4.** abcde

5.
```
var n,p,i,j,k:integer;
    a:array[1..10,1..10] of integer;
begin
  write(' n= '); read(n);
  write(' p= '); read(p);
  k:=-2;
  for i:=1 to n do
    for j:=1 to p do
      begin
        k:=k+2;
        a[i,j]:=k*k;
      end;
  for i:=1 to n do
    begin
      for j:=1 to p do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 11:

1. a **2.** d **3.** 11 brcdbr

4. `p^.nr + p^.urm^.nr + p^.urm^.urm^.nr`

5.
```
var n,m,i,j,min,max:integer;
    a:array[1..10,1..10] of integer;
begin
  write(' m= '); read(m);
  write(' n= '); read(n);
  for i:=1 to m do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  max:=0;
  for i:=1 to m do
    begin
      min:=a[i,1];
      for j:=2 to n do
        if min>a[i,j]
          then min:=a[i,j];
      if min>max
         then max:=min;
    end;
  write(' max= ',max);
end.
```

Varianta 12:

1. b **2.** a **4.** 11 AbcdEfghOId

3.
```
var e:record
         nume:string[30];
         nota1, nota2, nota3:integer;
       end;
```

5.
```
var n,i,j:integer;
    a:array[1..10,1..10]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      if i+j=n+1
        then a[i,j]:=0
        else if i+j<n+1
               then a[i,j]:=i
               else a[i,j]:=n-j+1;
  for i:=1 to n do
    begin
      for j:=1 to n do   write(a[i,j]:4);
      writeln;
    end;
```

```
end.
```

Varianta 13:

1. c **2.** b **4.** 11 bcdfghd

3.

```
1: 2, 3
2: 1, 4
3: 1, 4
4: 2, 3, 5, 6
5: 4, 6
6: 4, 5
```

5.
```
var n,i,j:integer;
    a:array[1..10,1..10]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      if i+j=n+1
        then a[i,j]:=0
        else if i+j<n+1
               then a[i,j]:=j
               else a[i,j]:=i;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 14:

1. b **2.** b **4.** 2 3 4 6

3. Radacina 2; Descendentii directi: 4, 6, 9

5.
```
var n,i,j:integer;
    a:array[1..4,1..4]of integer;
begin
  write(' n= '); read(n);
  for j:=1 to 4 do
    begin
      for i:=1 to 4 do
        a[i,j]:=n mod 10;
      n:=n div 10;
    end;
  for i:=1 to 4 do
    begin
```

```
        for j:=1 to 4 do
          write(a[i,j]:2);
        writeln;
      end;
  end.
```

Varianta 15:

1. c **2.** c **3.** bemeut

4. Gradul minim este: 2
Nodurile cu gradul minim sunt: 5 7 8

5.
```
var n,i,j,n1:longint;
    a:array[1..6,1..6]of integer;
begin
  write(' n= '); read(n);
  n1:=n;
  for i:=1 to 6 do
    begin
      for j:=i to 6 do
        if i = j
          then a[i,j]:=0
          else a[i,j]:=n1 mod 10;
      n1:=n1 div 10;
    end;
  n1:=n;
  for j:=1 to 5 do
    begin
      for i:=j+1 to 6 do
        a[i,j]:=n1 mod 10;
      n1:=n1 div 10;
    end;
  for i:=1 to 6 do
    begin
      for j:=1 to 6 do
        write(a[i,j]:3);
      writeln;
    end;
end.
```

Varianta 16:

1. b **2.** a

3. `(x3.nr+x^.urm^.mr)/2 <= 4.75`

4. CLASA A-XII-A A

5.
```
var n,i,j,n1:longint;
    a:array[1..16,1..16]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        if (i=j) or (i+j=n+1)
          then a[i,j]:=0
          else if (i<j) and (i<n+1-j)
                 then a[i,j]:=1
                 else if (i>j) and (i>n+1-j)
                        then a[i,j]:=2
                        else a[i,j]:=3;
      end;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:3);
      writeln;
    end;
end.
```

Varianta 17:

1. a **2.** b **3.** Maxim n-1 şi minim 1

4.
```
11
******
```

5.
```
var n,i,j:longint;
    a:array[1..20,1..20]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      a[i,j]:=i+j-1;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:3);
      writeln;
    end;
end.
```

Varianta 18:

---

1. c **2.** a **3.** Înălțimea minimă: 3; Frunze 4

4.
```
a:='informatica';
for i:=1 to length(a) do
  if (s[i]='a') or (s[i]= 'e') or (s[i]='i') or (s[i]='o') or (s[i]='u')
    then
      write('*')
    else
      write(a[i]);
```

5.
```
var n,i,j:longint;
    a:array[1..20,1..20]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      if i mod 2=1
        then a[i,j]:=i
        else a[i,j]:=j;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:3);
      writeln;
    end;
end.
```

Varianta 19:

1. a **2.** c **3.** bac2008 bac **4.** 5 şi 4

5.
```
var n,i,j:longint;
    a:array[1..20,0..20]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      if i mod 2=1
        then a[i,j]:=i+j
        else begin
               min:=a[i-1,j];
               if (min>a[i-1,j-1]) and (j>1)
                 then min:=a[i-1,j-1];
               if (min>a[i-1,j+1]) and (j<n)
                 then min:=a[i-1,j+1];
               a[i,j]:=min;
             end;
  for i:=1 to n do
    begin
```

```
        for j:=1 to n do
          write(a[i,j]:3);
        writeln;
      end;
  end.
```

Varianta 20:

1. a **2.** d **3.** 5 4 (fiecare val pe o linie)

4. ((a[i]>='a')and(a[i]<='z'))or((a[i]>='A')and(a[i]<='Z'))

5.
```
var n,i,j:longint;
    a:array[1..20,1..20]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      if (i=1) or (j=1)
        then a[i,j]:=i+j
        else a[i,j]:=a[i-1,j-1]+a[i-1,j]+a[i-1,j+1];
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 21:

1. d **2.** c **3.** ev.data_nasterii.an **4.** 4

5.
```
var s:string[250];
    i:integer;
begin
  write(' Textul: '); read(s);
  for i:=1 to length(s)-1 do
    if s[i]=s[i+1]
      then writeln(s[i],s[i+1]);
end.
```

Varianta 22:

1. b **2.** a **3.** 5 **4.** 4

5.
```
var m,n,i,j,k:integer;
    a:array[1..100,1..100]of integer;
```

```
begin
  write(' m= '); read(m);
  write(' n= '); read(n);
  k:=m*n;
  for i:=1 to m do
    for j:= 1 to n do
      begin
        a[i,j]:=k;
        k:=k-1;
      end;
  for i:=1 to m do
    begin
      for j:=1 to n do
        write(a[i,j]:3);
      writeln;
    end;
end.
```

Varianta 23:

1. b **2.** d **3.** lantul maxim are 3 muchii **4.** 300

5.
```
var m,n,i,j:integer;
    a:array[1..100,1..100]of integer;
begin
  write(' m= '); read(m);
  write(' n= '); read(n);
  for i:=1 to m do
    for j:= 1 to n do
      if (i=1) or(j=1)
        then a[i,j]:=i+j-1
        else a[i,j]:=a[i-1,j]+a[i,j-1];
  write('Elementul solicitat este: ',a[m,n]);
end.
```

Varianta 24:

1. a **2.** c **3.** `delete(s,2,1);`

4.
```
for i:=1 to n do
    for j:= 1 to n do
      begin
        a[i,j]:=(i+j-1) mod n;
        if (a[i,j]=0)
          then a[i,j]:=n
      end;
```

5.
```
var s1,s2,s:string[100];
```

```
    i,j:integer;
begin
  write(' Cuvantul 1: '); readln(s1);
  write(' Cuvantul 2: '); readln(s2);
  i:=length(s1);
  j:=length(s2);
  while (i>0) and (j>0) and (s1[i]=s2[j]) do
      begin
             i:=i-1;
             j:=j-1;
          end;
  s:=copy(s1,i+1,length(s1)-i+1);
  write(' sufixul: ',s);
end.
```

Varianta 25:

1. c **2.** d **3.** `y:= sqrt(x)+1/x+abs(x);`

4.
```
ok:=true;
for i:=1 to length(s) div 2 do
  if (s[i]<>s[n-i+1])
    then ok:=false;
if ok
  then write(' CORECT')
  else write(' INCORECT');
```

5.
```
var m,n,i,j,p,max:integer;
    a:array[1..100,1..100]of integer;
begin
  write(' m= '); read(m);
  write(' n= '); read(n);
  for i:=1 to m do
    for j:= 1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  for j:=1 to n do
    begin
      p:=a[1,j];
      for i:= 2 to m do
        p:=p*a[i,j];
      if p> max
        then max:=p;
    end;
  for j:=1 to n do
    begin
      p:=a[1,j];
```

```
        for i:= 2 to m do
          p:=p*a[i,j];
        if p = max
          then write(j,' ');
      end;
  end.
```

Varianta 26:

1. d **2.** c **3.** roton **4.** 4 elem.

5.
```
var n,i,j,p,k:integer;
    a:array[1..100,1..100]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:= 1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  for i:=1 to n do
    for j:= 1 to n do
      begin
        p:=1;
        for k:=1 to n do
          if k<>i then p:=p*a[k,j];
        if p=a[i,j]
          then write(p,' ');
      end;
end.
```

Varianta 27:

1. a **2.** b **4.** 120

3.
```
H.x:=F.x*G.y+F.y*G.x;
H.y:=F.y*G.y;
```

5.
```
var n,i,j:integer;
    a:array[1..100,1..100]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:= 1 to n do
      if (i=1) or (j=1) or (j=n)
        then a[i,j]:=1
        else a[i,j]:=a[i-1,j-1]+a[i-1,j]+a[i-1,j+1];
```

```
    for i:=1 to n do
      begin
        for j:= 1 to n do
          write(a[i,j]:4);
        writeln;
      end;
  end.
```

Varianta 28:

1. b **2.** c **3.** 0 **4.** 2, 3, 4, 5, 1

5.
```
var s1,s2:string[10];
    i:integer;
begin
  write(' s1= '); readln(s1);
  s2:=s1;
  for i:=1 to length(s2) do
    if s2[i]='a'
      then delete(s2,i,1);
  if s1<>s2 then writeln(s2);
  s2:=s1;
  for i:=1 to length(s2) do
    if s2[i]='e'
      then delete(s2,i,1);
  if s1<>s2 then writeln(s2);
  s2:=s1;
  for i:=1 to length(s2) do
    if s2[i]='i'
      then delete(s2,i,1);
  if s1<>s2 then writeln(s2);
  s2:=s1;
  for i:=1 to length(s2) do
    if s2[i]='o'
      then delete(s2,i,1);
  if s1<>s2 then writeln(s2);
  s2:=s1;
  for i:=1 to length(s2) do
    if s2[i]='u'
      then delete(s2,i,1);
  if s1<>s2 then writeln(s2);
end.
```

Varianta 29:

1. a **2.** d **3.** `atac` **4.** 7

5.
```
var n,i,j:integer; pp,p:real;
    ok:boolean;
    a:array[1..100,1..100]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:= 1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  pp:=1;
  for j:=1 to n do
    begin
      p:=a[1,j] / a[1,1];

      ok:=true;
      for i:=2 to n do
        if a[i,j]/a[i,1]<>p
          then ok:=false;
      if (ok) and (frac(p)=0)
        then pp:=pp*p;
    end;
  write(pp:5:0,' ');
end.
```

Varianta 30:

1. b **2.** a **3.** 2 3 4 5 **4.** a treia poziție

5.
```
var n,i,j:integer;
    a:array[1..20,1..20] of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      if (i=1) or (j=1)
        then a[i,j]:=1
        else a[i,j]:=a[i,j-1]+a[i-1,j];
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 31:

---

1. c **2.** b **4.** 5, 7, 9, 11

3.
```
type masina=record
              marca:string[20];
              anul_fabricatiei:integer;
            end;
```

5.
```
type lista=^nod;
     nod=record
           info:string;
           urm:lista;
         end;
var varf,p:lista;
    n,i:integer;
    cuv:string;

begin
  varf:=nil;
  write(' n= '); readln(n);
  for i:=1 to n do
    begin
      write(' Cuv: ');
      readln(cuv);
      if cuv[1]=cuv[length(cuv)]
        then begin
               new(p);
               p^.info:=cuv;
               p^.urm:=varf;
               varf:=p;
             end;
    end;
  p:=varf;
  while p<>nil do
    begin
      write(p^.info,' ');
      p:=p^.urm;
    end;
end.
```

Varianta 32:

1. b **2.** d **3.** 8

4. 3, 4, 5, 6, 7, 8

5.
```
var c1,c2:char;
    s:string;
    i:integer;
begin
```

```
    write(' c1= '); readln(c1);
    write(' c2= '); readln(c2);
    write(' s= '); readln(s);
    writeln(s);
    for i:=1 to length(s) do
      begin
        if s[i]=c1
          then s[i]:=c2
          else if s[i]=c2
                 then s[i]:=c1;
      end;
    writeln(s);
  end.
```

Varianta 33:

1. a **2.** c

3.
```
type cerc=record
            x,y:integer;
            raza:real
          end;
var x:cerc;
```

4.
```
 2  3  4
 5  6  7
 8  9 10
11 12 13
14 15 16
```

5.
```
type lista=^nod;
     nod=record
           info:real;
           urm,prec:lista;
         end;
var prim,p,q:lista;

p:=prim;
while p<>nil do
  begin
    if p^.info<0
      then begin
             new(q);
             q^.info:=0;
             q^.prec:=p;
             q^.urm:=p^.urm;
             p^.urm:=q;
           end;
    p:=p^.urm;
```

```
    end;
  p:=prim;
  while p<>nil do
    begin
      write(p^.info,' ');
      p:=p^.urm;
    end;
```

Varianta 34:

1. b **2.** b **3.** 9 **4.** 222

5.
```
var n,i,j,k:integer;
    a:array[1..20,1..20]of integer;
begin
  write(' n= '); read(n);
  k:=0;
  for i:=1 to n do
    for j:=1 to n do
      begin
        if k mod 3=0
          then k:=k+2;
        a[i,j]:=k;
        k:=k+2;
      end;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 35:

1. d **2.** c **3.** r

4. Graful are 5 componente conexe.
Trebuie adaugate 4 muchii ca graful sa devina conex.

5.
```
var n,i,j,min:integer;
    a:array[1..100,1..100]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
```

```
          read(a[i,j]);
        end;

    for j:=1 to n do
      begin
        min:=a[1,j];
        for i:=1 to n do
          if a[i,j]<min
            then min:=a[i,j];
        write(min,' ');
      end;
  end.
```

Varianta 36:

1. b **2.** c **3.** 3 **4.** 171

5.
```
var n,m,i,j,min:integer;
    a:array[1..100,1..100]of integer;
begin
  write(' n= '); read(n);
  write(' m= '); read(m);
  for i:=1 to n do
    for j:=1 to m do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  for j:=1 to m do
    begin
      min:=a[1,j];
      for i:=1 to n do
        if a[i,j]<min
          then min:=a[i,j];
      write(min,' ');
    end;
end.
```

Varianta 37:

1. d **2.** b **4.** $d^-(1)=3$; $d^+(5)=2$

3.
```
0 1 0 1 1
1 0 1 0 0
0 0 0 1 0
0 0 0 0 1
1 0 0 0 0
```

5.
```
var s:string[255];
    lit:array[0..40]of byte;
    i,cuv:integer;
    c:char;
begin
  write(' s= '); readln(s);
  if s[1]<>' '
    then s[1]:=upcase(s[1]);
  for i:=2 to length(s) do
    begin
      if (s[i-1]=' ') and (s[i]<>' ')
        then s[i]:=upcase(s[i]);
      if (s[i-1]<>' ') and (s[i]=' ')
        then s[i-1]:=upcase(s[i-1]);
    end;
  if s[length(s)]<>' '
    then s[length(s)]:=upcase(s[length(s)]);
  writeln(' s= ',s);

end.
```

Varianta 38:

1. c **2.** d **3.** 2 muchii **4.** 6 cicluri

5.
```
var n,i,j,p,imin:integer;
    a:array[1..30,1..30]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  p:=1;
  for j:=1 to n do
    begin
      imin:=1;
      for i:=1 to n do
        if a[i,j]<a[imin,j]
          then imin:=i;
      if a[imin,j]=a[n+1-j,j]
        then p:=p*a[imin,j];
    end;
  write(' p= ',p);
end.
```

Varianta 39:

1. b **2.** c **3.** 144

4.
```
234
345
456
```

5.
```
var s:string[255];
    i,j,i1:integer;
    aux:char;
begin
  write(' s= '); read(s);
  if ( s[1]='a' ) or ( s[1]='e' ) or ( s[1]='i' ) or ( s[1]='o' ) or ( s[1]='u' )
    then begin
           j:=i;
           while (s[j+1]<>' ')and (j<length(s)) do
                j:=j+1;
           i1:=1;
           while i1<j do
             begin
               aux:=s[i1];
               s[i1]:=s[j];
               s[j]:=aux;
               i1:=i1+1; j:=j-1;
             end;
         end;
  for i:=0 to length(s) do
    if (s[i-1]=' ')and (s[i]<>' ')
      then if (s[i]='a') or (s[i]='e') or (s[i]='i') or (s[i]='o') or (s[i]='u')
             then begin
                    j:=i;
                    while ( s[j+1]<>' ' ) and ( j<length(s) ) do
                        j:=j+1;
                    i1:=i;
                    while i1<j do
                      begin
                        aux:=s[i1];
                        s[i1]:=s[j];
                        s[j]:=aux;
                        i1:=i1+1; j:=j-1;
                      end;
                  end;
  write(' s= ',s);
end.
```

Varianta 40:

1. d **2.** b **3.** 3 componente conexe

4.
```
111
122
123
```

5.
```
var s,s1:string[255];
    p,i:integer;
begin
  write(' s= '); read(s);
  i:=1;
  while s[i]<>'*' do
    begin
      s1:=s1+s[i];
      i:=i+1;
  end;
  write(s1,'  ');
  repeat
    p:=pos(s1,s);
    if p>0
      then delete(s,p,length(s1));
  until p=0;
  write(' s= ',s);
end.
```

Varianta 41:

1. a **2.** a **3.** Nodurile 1,3,5,7,9 sunt frunze **4.** info

5.
```
var n,i,j:integer;
    a:array[1..30,1..30]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      a[i,j]:=i+j;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j],' ');
      writeln;
    end;
end.
```

Varianta 42:

1. a **2.** a **3.** 3 noduri **4.** elementul a[4,5]=5

5.
```
var s:string[40];
    i:integer;
begin
```

```
    write(' s= '); read(s);
    for i:=1 to length(s) do
      if ( s[i]='a' ) or ( s[i]='e' ) or ( s[i]='i' ) or ( s[i]='o' ) or ( s[i]='u' )
        then write(s[i],' ');
  end.
```

Varianta 43:

1. a **2.** a **4.** inmatica

3. Nodul 4 – radăcină / 5 noduri frunză (1, 3, 5, 7, 9)

5.
```
var i,j,n:integer;
    a:array[1..32,1..23]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      if i=j
        then a[i,j]:=2
        else if i<j
               then a[i,j]:=1
               else a[i,j]:=3;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j],' ');
      writeln;
    end;
end.
```

Varianta 44:

1. a **2.** a **3.** 2, 6, 7 **4.** jogp

5.
```
var a:array[1..23,1..23]of integer;
    n,i,j,k:integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    begin
      k:=i;
      for j:=n downto 1 do
        if k>1
          then begin
                 a[i,j]:=k;
                 k:=k-1;
               end
          else a[i,j]:=1;
```

```
      end;
    for i:=1 to n do
      begin
        for j:=1 to n do
          write(a[i,j],' ');
        writeln;
      end;
  end.
```

Varianta 45:

1. a **2.** a **4.** `a[2,5]=-3`

3. Decendenții radăcinii: 1, 7 / Frunze 5, 6, 8, 9

5.
```
var s:string[40];
    i,j:integer;
begin
  write(' s= '); read(s);
  for i:=1 to length(s) do
    begin
      for j:=1 to length(s) do
        if i<>j
          then write(s[j]);
      writeln;

    end;
end.
```

Varianta 46:

1. c **2.** a **3.** 6 frunze **4.** 13

5.
```
var s:string[100];
    i:integer;
begin
  write(' s= '); read(s);
  for i:=1 to length(s) do
    if ( s[i]='a' ) or ( s[i]='e' ) or ( s[i]='i' ) or ( s[i]='o' ) or ( s[i]='u' )
      then s[i]:=chr( ord(s[i])+1 );
  write(' s= ',s);
end.
```

Varianta 47:

1. c **2.** b **3.** `1`

4. `f.a mod k =0 and f.b mod k =0`

5.
```
var a,b:array[1..10,1..10]of integer;
    n,m,i,j:integer;
begin
  write(' m= '); read(m);
  write(' n= '); read(n);
  for i:=1 to m do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  for i:=1 to m do
    for j:=1 to n do
      b[n-j+1,i]:=a[i,j];
  for i:=1 to n do
    begin
      for j:=1 to m do
        write(b[i,j],' ');
      writeln;
    end;
end.
```

Varianta 48:

1. d **2.** a **3.** 1→ 2 → 5

4. `sqrt(a.x*a.x+a.y*a.y)`

5.
```
var n,k,i,j:integer;
    a,b:array[1..100,1..100]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        k:=k+2;
        a[i,j]:=k;
      end;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j],' ');
      writeln;
    end;
end.
```

Varianta 49:

1. d **2.** c **3.** (x.med1 + x.med2) / 2 **4.** 1, 2, 3, 5, 4, 2

5.
```
var s,s1:string[20];
    i:integer;
begin
  write(' s= '); read(s);
  s1:='';
  for i:=1 to length(s) do
    if ( s[i]='a' ) or ( s[i]='e' ) or ( s[i]='i' ) or ( s[i]='o' ) or ( s[i]='u' )
      then s1:=s1+s[i];
  write(' s1= ',s1);
end.
```

Varianta 50:

1. a **2.** c **3.** 6 noduri **4.** 5

5.
```
var s,s1:string[100];
    i:integer;
function vocala(c:char):boolean;
begin
  if ( c='a' ) or ( c='e' ) or ( c='i' ) or ( c='o' ) or ( c='u' )
    then vocala:=true
    else vocala:=false;
end;

begin
  write(' s1= '); read(s1);
  s:=s1;
  i:=1;
  while ( not vocala(s[i]) ) and (i<=length(s)) do
    i:=i+1;
  if i<length(s)+1 then delete(s,i,1);
  i:=length(s);
  while ( not vocala(s[i]) ) and (i>=1) do
    i:=i-1;
  if i>0 then delete(s,i,1);
  write(' s= ',s);
end.
```

Varianta 51:

1. b **2.** d **3.** 12 **4.** 6

5.
```
var s,sn:string[52];
    i,j :integer;
begin
```

```
    write(' s= '); readln(s);
    sn:='';
    for i:=1 to length(s) div 2 do
      for j:=1 to ord(s[2*i])-ord('0') do
        sn:=sn+s[2*i-1];
    write(' sn= ',sn);
  end.
```

Varianta 52:

1. a **2.** b **3.** 20

4. Se elimina primul element al listei

5.
```
  var i,n,j,c:integer;
      s:string;
      ok:boolean;
  begin
    c:=0;
    write(' n= '); readln(n);
    for i:=1 to n do
      begin
        write(' s= '); readln(s);
        ok:=true;
        for j:=1 to length(s) do
          if (s[j]<>'a') and (s[j]<>'e') and (s[j]<>'i')
  and (s[j]<>'o') and (s[j]<>'u')
           then ok:=false;
        if ok then c:=c+1;
      end;
    write(' c= ',c);
  end.
```

Varianta 53:

1. c **2.** a **3.** 2 **4.** 2

5.
```
  type lista=^element;
       element=record
                 info:integer;
                 urm:lista;
               end;
  var prim,ultim,p:lista;
      n,a,r,i:byte;

  begin
    write(' n= '); read(n);
    write(' a= '); read(a);
    write(' r= '); read(r);
```

```
    prim:=nil;
    for i:=1 to n do
      begin
        new(p);
        p^.info:=a+r*(i-1);
        p^.urm:=nil;
        if prim=nil
          then prim:=p
          else ultim^.urm:=p;
        ultim:=p;
      end;
    p:=prim;
    while p<>nil do
      begin
        write(p^.info,' ');
        p:=p^.urm;
      end;
  end.
```

Varianta 54:

1. d **2.** b **3.** k1=7; k2=4 **4.** 2 4

5.

```
var  n, i, j, x:integer;
     a:array[1..10,1..10]of integer;
begin
  write(' n= '); read(n);
  write(' x= '); read(x);
  for i:=1 to n do
    for j:=1 to n do
      if i=j
        then a[i,j]:=x div 100
        else if i+j=n+1
               then a[i,j]:=x mod 10
               else a[i,j]:=x div 10 mod 10;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j],' ');
      writeln;
    end;
end.
```

Varianta 55:

1. c **2.** a **3.** 2 1

4. Elimina al doilea element al listei

5.
```
var s,s1,s2:string[10];
    ns,n1,n2,c:integer;

begin
  write(' s= '); readln(s);
  s1:=copy(s,1,pos('.',s)-1);
  s2:=copy(s,pos('.',s)+1,length(s));
  c:=length(s2);
  while s2[c]='0' do begin s2[c]:=' '; c:=c-1; end;
  s2:=copy(s2,1,pos(' ',s2)-1);
  val(s1,n1,c);
  val(s2,n2,c);
  ns:=n1+n2;
  write(' Suma este: ',ns);
end.
```

Varianta 56:

1. c **2.** d **3.** 2, 3, 5, 8 **4.** `(c>='a' and (c<='z')`

5.
```
var n,k,i,j:integer;
    a:array[1..25,1..25]of integer;
begin
  write(' n= '); read(n);
  write(' k= '); read(k);
  for i:=1 to n do
    for j:=1 to n do
      if (j<=k) and (i<=k)
        then a[i,j]:=1
        else if (j>k) and (i<=k)
               then a[i,j]:=2
               else if (j<=k) and (i>k)
                      then a[i,j]:=3
                      else a[i,j]:=4;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:3);
      writeln;
    end
end.
```

Varianta 57:

1. c **2.** a **3.** 5

4. `(c='a') or (c='e') or (c='i') or (c='o') or (c='u')`

5.
```
var n,a,b, i,j:integer;
    mat:array[1..25,1..25]of integer;

begin
  write(' n= '); read(n);
  write(' a= '); read(a);
  write(' b= '); read(b);
  for i:=1 to n do
    for j:=1 to n do
      if (i=a) or (j=b)
        then mat[i,j]:=0
        else if (j<=b) and (i<=a)
               then mat[i,j]:=1
               else if (j>b) and (i<=a)
                      then mat[i,j]:=2
                      else if (j<=b) and (i>a)
                             then mat[i,j]:=3
                             else mat[i,j]:=4;

  for i:=1 to n do
    begin
      for j:=1 to n do
        write(mat[i,j]:3);
      writeln;
    end
end.
```

Varianta 58:

1. b **2.** b **3.** 2 **4.** i<>j

5.
```
var s:string[50];
    i,c:integer;
begin
  write(' s= '); readln(s);
  for i:=1 to length(s) do
    if ((s[i]<'a')or(s[i]>'z'))and((s[i]<'A')or(s[i]>'Z'))
      then delete(s,i,1);
  write(' s= ',s);
end.
```

Varianta 59:

1. a **2.** c **3.** 1, 2, 6, 7, 8 **4.** i+j=11

5.
```
var s:string[50];
    i,max:integer;
    a:array[0..9] of integer;
```

```
begin
  write(' s= '); readln(s);
  for i:=1 to length(s) do
    if (s[i]>='0') and (s[i]<='9')
      then a[ord(s[i])-ord('0')]:=a[ord(s[i])-ord('0')]
+1;
  max:=a[0];
  for i:=1 to 9 do
    if max<a[i]
      then max:=a[i];
  i:=0;
  while a[i]<max do
    i:=i+1;
  write(i);
end.
```

Varianta 60:

1. d **2.** c **3.** 1 **4.** 65

5.
```
var s:string[50];
    i,max:integer;
    a:array[0..40] of integer;
begin
  write(' s= '); readln(s);
  for i:=1 to length(s) do
    if (s[i]>='a') and (s[i]<='z')
      then a[ord(s[i])-ord('a')]:=a[ord(s[i])-ord('a')]
+1;
  max:=0;
  for i:=0 to 40 do
    if max<a[i]
      then max:=a[i];
  i:=0;
  if max<>0
    then begin
           while a[i]<max do
              i:=i+1;
           write(chr( i+ord('a') ) );
         end
    else write(' NU ');
end.
```

Varianta 61:

1. d **2.** c **3.** 15 **4.** 4

5.
```
var n,i,j:integer;
    a:array[1..100,0..100]of integer;
```

```
begin
  write(' n= '); read(n);
  for j:=1 to n do
    a[n,j]:=j;
  for i:=n-1 downto 1 do
    for j:=1 to i do
      a[i,j]:=a[i+1,j-1]+a[i+1,j]+a[i+1,j+1];
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:3);
      writeln;
    end;
end.
```

Varianta 62:

1. a **2.** b

3.
```
0 1 1 0 0 1
0 0 1 0 0 0
0 0 0 0 0 0
0 0 1 0 0 0
0 0 1 1 0 1
0 0 1 0 0 0
```

4. 6

5.
```
var s:string[255];
    i:integer;
    a:array[0..255]of integer;
begin
  write(' s= '); read(s);
  for i:=1 to length(s) do
    if (s[i]>='a') and (s[i]<='z') and (a[ord(s[i])]=0)
      then begin
             write(s[i],' ');
             a[ord(s[i])]:=1;
           end;
end.
```

Varianta 63:

1. b **2.** b **3.** 2

4.
```
if s1<s2
   then write(s1,' ',s2)
   else write(s2,' ',s1);
```

5.
```
var n,m,i,j,k:integer;
    a:array[1..50,1..50] of integer;
begin
  write(' n= '); read(n);
  write(' m= '); read(m);
  k:=1;
  for j:=1 to m do
    for i:=1 to n do
      begin
        a[i,j]:=k;
        k:=k+1;
      end;
  for i:=1 to n do
    begin
      for j:=1 to m do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 64:

1. d **2.** a **4.** 3 **3.** 3

5.
```
var s:string[100];
    i,j,c:integer;
function vocala(c:char):boolean;
begin
  vocala:=false;
  if (c='a')or(c='A')or(c='e')or(c='E')or(c='i')or(c='I')or(c='o')or(c='O')or(c='u')or(c='U')
    then vocala:=true;
end;

begin
  write(' s= '); readln(s);
  s:=' '+s;   c:=0;
  for i:=2 to length(s) do
    if (s[i-1]=' ') and (s[i]<>' ')
      then begin
             j:=i;
             while (s[j+1]<>' ') and (j<=n) do j:=j+1;
             if vocala(s[i]) and vocala(s[j])
               then c:=c+1;
           end;
  write(c);
end.
```

Varianta 65:
1. c **2.** d **3.** 4 **4.** 101

5.
```
var n,m,i,j,k:integer;
    a:array[1..50,1..50] of integer;
begin
  write(' n= '); read(n);
  write(' m= '); read(m);
  k:=1;
  for i:=1 to n do
    if i mod 2 =1
      then for j:=1 to m do
             begin
               a[i,j]:=k;
               k:=k+1;
             end
      else for j:=m downto 1 do
             begin
               a[i,j]:=k;
               k:=k+1;
             end;
  for i:=1 to n do
    begin
      for j:=1 to m do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 66:
1. c **2.** b **3.** 3, 5

4. Afişeaza valoarea ultimului element al listei

5.
```
var s:string[50];
    k:integer;
begin
  write(' s= '); read(s);
  for k:=1 to length(s) do
    writeln(copy(s,1,k));
end.
```

Varianta 67:
1. a **2.** c **3.** 2 descendenti **4.** 222

5.
```
var s:string[50];
    k:integer;

begin
  write(' s= '); read(s);
  for k:=length(s) downto 1 do
    writeln(copy(s,k,length(s)-k+1));
end.
```

Varianta 68:

1. d **2.** a **3.** T=(0, 1, 1, 2, 2, 5, 5)

4.
```
z^.next:=y;   x^.next:=z;
```

5.
```
var n,m,i,j:integer;  p:longint;
    a:array[1..50,1..50] of integer;
begin
  write(' m= '); read(m);
  write(' n= '); read(n);
  for i:=1 to m do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  p:=1;
  for i:=1 to m do
    for j:=1 to n do
      if (i mod 2 =0) and (j mod 2= 1) and (a[i,j]>0)
         then p:=p*a[i,j];
  write(' p= ',p);
end.
```

Varianta 69:

1. b **2.** c **3.** T=(0, 1, 1, 3, 3, 4, 4)

4.
```
u^.next:=v; v^.next:=nill; u:=v;
```

5.
```
var n,i,j:integer; ok:boolean;
    a:array[1..50,1..50] of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
```

```
          read(a[i,j]);
        end;
    ok:=true;
    for i:=2 to n do
      for j:=1 to i-1 do
        if (a[i,j]>0)
           then ok:=false;
    if ok
      then write(' Este triunghiulara superior')
      else write(' Nu este trunghiulara superior');
  end.
```

Varianta 70:

1. a **2.** d **3.** T=(2, 0, 2, 5, 2) **4.** `u1^.next:=p1;`

5.
```
var n,m,i,j,x:integer;
    a:array[1..50,1..50] of integer;
begin
  write(' m= '); read(m);
  write(' n= '); read(n);
  write(' x= '); read(x);

  for i:=1 to m do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  for i:=x+1 to m do
    for j:=1 to n do
      a[i-1,j]:=a[i,j];
  m:=m-1;
  for i:=1 to m do
    begin
      for j:=1 to n do
        write(a[i,j]:6);
      writeln;
    end;
end.
```

Varianta 71:

1. a **2.** d

3.
```
s1:=s1+a[i,i];
s2:=s2+a[i,n-i+1];
```

4.
```
readln(e1.nume); readln(e1.nota);
readln(e2.nume); readln(e2.nota);
if e1.nota>=e2.nota
   then write(e1.nota)
   else write(e2.nota);
```

5.
```
var s:string[255];
    c:string[20];
    p,i:integer;

begin
  write(' S= '); readln(s);
  write(' C= '); readln(c);
  if pos(c,s)=0
    then write(' NU APARE ')
    else begin
           p:=pos(c,s);
           while p>0 do
             begin
               for i:=0 to length(c)-1 do
                 s[p+i]:='*';
               p:=pos(c,s);
             end;
           write(' S= ',s);
         end;
end.
```

Varianta 72:

1. d **2.** d

3. 1 comp. conexe; trebuie eliminat nodul 1

4.
```
u^.urm:=p^.urm;
p^.urm^.urm:=p;
p^.urm:=nill;
```

5.
```
var n,i,j,k:integer;
    a:array[1..100,1..100]of integer;
begin
  write(' n= '); read(n);
  k:=0;
  for i:=1 to n do
    for j:=1 to i do
      begin
        k:=k+1;
        a[i-j+1,j]:=k;
      end;
  k:=0;
```

```
    for i:=n downto 2 do
      for j:=i to n do

        begin
          k:=k+1;
          a[i+n-j,j]:=k;
        end;
    for i:=1 to n do
      begin
        for j:=1 to n do
          write(a[i,j]:3);
        writeln;
      end;
  end.
```

Varianta 73:

1. b **2.** c **3.** 2 arce; C=(1,2,3,4,1)

4.
```
j,aux:integer;
for j:=1 to n do
  begin
    aux:=a[p,j];
    a[p,j]:=a[q,j];
    a[q,j]:=aux;
  end;
```

5.
```
var s:array[1..100]of string[255];
    nv:array[1..100]of integer;
    n,i,j,imin:integer;
begin
  write(' N= '); readln(n);
  for i:=1 to n do
    readln(s[i]);
  for i:=1 to n do
    begin
      nv[i]:=0;
      for j:=1 to length(s[i]) do
        if (s[i,j]='a') or (s[i,j]='e') or (s[i,j]='i')
or (s[i,j]='o') or (s[i,j]='u')
          then nv[i]:=nv[i]+1;
    end;
  imin:=1;
  for i:=2 to n do
    if nv[i]<=nv[imin]
      then imin:=i;
  write(s[imin]);
end.
```

Varianta 74:

1. a **2.** c

3. a) 4, 6, 9 b) 5 noduri (1, 3, 4, 5, 7)

4. a) 2 muchii b) o muchie

5.
```
var n,i,j,f0,f1,f2:integer;
    a:array[1..100,1..100]of integer;
begin
  write(' n= '); read(n);
  f0:=0;
  f1:=1;
  for i:=1 to n do
    for j:=1 to n do
      begin
        a[i,j]:=f2 mod 10;
        f2:=f0+f1;
        f0:=f1;
        f1:=f2;
      end;
  a[1,1]:=1;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j]:4);
      writeln;
    end;
end.
```

Varianta 75:

1. a **2.** d

3.
```
q^.urm:=p;
p:=q;
```

4. 2 arce (arcul (2, 3) şi (4, 1))

5.
```
var n,m,i,j:integer;
    a:array[1..100,1..100]of integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      a[i,j]:=(i+j)*(i+j);
  for i:=1 to n do
    begin
```

```
        for j:=1 to n do
          write(a[i,j]:3);
        writeln;
      end;
  end.
```

Varianta 76:
1. b **2.** a **3.** 2 **4.** T=(5, 3, 6, 6, 7, 0, 6, 3)

5.
```
var s:string[20];
    i,j:integer;
begin
  write(' S= '); readln(s);
  for i:=0 to length(s) div 2 do
    begin
      for j:=i+1 to length(s)-i do
        write(s[j]);
      writeln;
    end;
end.
```

Varianta 77:
1. a **2.** c **3.** 2 **4.** 20

5.
```
var s:string[51];
    i:integer;
begin
  write(' S= '); readln(s);
  s[1]:=upcase(s[1]);
  for i:=2 to length(s)-1 do
    if ( (s[i-1]=' ') and (s[i]<>' ') ) or ( (s[i+1]=' ') and (s[i]<>' ') )
      then s[i]:=upcase(s[i]);
  s[length(s)]:=upcase(s[length(s)]);
  write(' s= ',s);
end.
```

Varianta 78:
1. c **2.** b **3.** 2 **4.** 99
5.
```
var t,x:string[100];
    c:string[15];     p:integer;
function gasire(s,c:string; ind:integer):integer;
var i,j:integer;
    ok:boolean;
begin
```

```
    for i:=ind to length(s) do
      if (s[i]=c[1])
        then begin
               ok:=true;
               j:=1;
               while (j<length(c)) and (ok) do
                 begin
                   if c[j]<>s[i+j-1]
                     then ok:=false;
                   j:=j+1;
                 end;
               if ok
                 then begin gasire:=i; exit; end;
             end;
    gasire:=0;
  end;

  begin
    write(' textul: '); readln(t);
    write(' cuvantul: '); readln(c);
    p:=1;
    repeat
      p:=gasire(t,c,p);
      if p<>0
        then begin
               while (t[p]<>' ') and ( p<length(t) ) do
                 p:=p+1;
               t:=copy(t,1,p-1)+'?'+copy(t,p,length(t));
             end;
    until p=0;
    write(' t= ',t);
  end.
```

Varianta 79:

1. a **2.** a **4.** 3 muchii

3. T=(1, 0, 6, 9, 2, 5, 4, 3, 2, 6, 4, 6, 2)

5.

```
var s:string;
    i:integer;
function vocala(c:char):boolean;
begin
  if (c='A') or (c='E') or (c='I') or (c='O') or (c='U')
    then vocala:=true
    else vocala:=false;
end;

begin
  write(' s= '); readln(s);
```

```
    i:=1;
    while i<length(s) do
      begin
        if vocala(upcase(s[i]))
          then s:=copy(s,1,i)+'*'+copy(s,i+1,length(s));
        i:=i+1;
      end;
    write(s);
  end.
```

Varianta 80:

1. d **2.** d **3.** 6 **4.** 2

5.
```
var s:string;
    i,j:integer;
    aux:char;
begin
  write(' s= '); readln(s);
  for i:=1 to length(s) div 2 do
    begin
      j:=length(s) div 2 + length(s) mod 2 + i;
      aux:=s[i];
      s[i]:=s[j];
      s[j]:=aux;
    end;
  write(' s= ',s);
end.
```

Varianta 81:

1. c **2.** a

3.
```
a:=a+b;
b:=a-b;
a:=a-b;
```

4.
```
if (p^.info mod 7=0)
  then write(p^.info);
```

5.
```
var n,m,i,j,s,k:integer;
    a:array[1..100,1..100]of integer;
    gasit:boolean;
begin
  write(' k= '); read(k);
  write(' n= '); read(n);
  write(' m= '); read(m);
  for i:=1 to n do
```

```
      for j:=1 to m do
        begin
          write(' A[',i,',',j,']= ');
          read(a[i,j]);
        end;
    s:=0;
    for j:=1 to m do
      begin
        gasit:=false;
        for i:=1 to n do
          if a[i,j]=k
            then gasit:=true;
        if gasit
          then s:=s+j;
      end;
    write(' s= ',s);
  end.
```

Varianta 82:

1. c **2.** a **3.** tarta

4.
```
if (p^.info mod 10=0)
  then write(p^.info);
```

5.
```
var n,m,i,j,s,k:integer;
    a:array[1..100,1..100]of integer;
    gasit:boolean;
begin
  write(' k= '); read(k);
  write(' n= '); read(n);
  write(' m= '); read(m);
  for i:=1 to n do
    for j:=1 to m do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  s:=1;
  for j:=1 to m do
    begin
      gasit:=false;
      for i:=1 to n do
        if a[i,j]=k
          then gasit:=true;
      if gasit
        then s:=s*j;
    end;
  write(' s= ',s);
end.
```

Varianta 83:

1. c **2.** b

3.
```
0 0 0 0 1 1
0 0 1 1 0 0
0 1 0 1 0 0
0 1 1 0 0 0
1 0 0 0 0 1
1 0 0 0 1 0
```

4.
```
for i:=1 to m do
  if a[k,i] mod 2 <> 0
    then write(a[k,i]);
```

5.
```
type lista=^nod;
     nod=record
           info:char;
           ant, urm:lista;
         end;
var ultim, prim ,p, u:lista;

p:=prim;
u:=ultim;
while p^.urm<>u do
  begin
    c:=p^.info;
    p^.info:=u^.info;
    u^.info:=c;
    p:=p^.urm;
    u:=u^.ant;
  end;
```

Varianta 84:

1. d **2.** a **3.** `write(chr(ord(c)+1);`

4.
```
write(a[1,4]*a[2,3]*a[3,2]*a[4,1]);
```

5.
```
type lista=^nod;
     nod=record
           info:char;
           adr:lista;
         end;
var prim ,p:lista;

p:=prim;
while p^.urm<>nil do
```

```
    p:=p^.urm;
  write(prim^.info*p^.info);
```

Varianta 85:

1. a **2.** b

3.
```
write(s[1],' ',s[length(s)]);
```

4.
```
write(a[1,1]*a[2,2]*a[3,3]*a[4,4]);
```

5.
```
type lista=^nod;
     nod=record
           info:char;
           adr:lista;
         end;
var prim ,p:lista;

p:=prim;
while p<>nil do
  begin
    if sqrt(p^.info)=trunc(sqrt(p^.info))
      then write(p^.info);
    p:=p^.urm;
  end;
```

Varianta 86:

1. a **2.** a **4.** a=2; b=14

3.
```
0 1 1 1 0 0
1 0 0 0 0 0
1 0 0 0 1 1
1 0 0 0 0 0
0 0 1 0 0 0
0 0 1 0 0 0
```

5.
```
var n,i,j,i1,i2:integer;
    a:array[1..20,1..20]of integer;
begin
  write(' n= '); read(n);
  i1:=1;
  for i:=1 to 2*n do
      if i mod 2 =1
        then for j:=1 to 2*n do
               begin
                 a[i,j]:=i1;
                 i1:=i1+2;
```

```
                end
          else begin
                i2:=i1-4*n+1;
                for j:=2*n downto 1 do
                  begin
                    a[i,j]:=i2;
                    i2:=i2+2;
                  end;
              end;
    for i:=1 to 2*n do
      begin
        for j:=1 to 2*n do
          write(a[i,j]:4);
        writeln;
      end;
  end.
```

Varianta 87:

1. a **2.** b **3.** 1, 2 **4.** `a=2; b=-1`

5.
```
var a:array[1..20,1..20] of integer;
    i,j,n,s,nr:integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  s:=0; nr:=0;
  for i:=2 to n do
    for j:=1 to i-1 do
       if a[i,j]>0
         then begin
                s:=s+a[i,j];
                nr:=nr+1;
              end;
  write(' MA= ',(s/nr):5:2);
end.
```

Varianta 88:

1. a **2.** b **3.** 3, 4, 5, 6 **4.** `a=2; b=1`

5.
```
var a:array[1..20,1..20] of integer;
    i,j,n,s,nr:integer;
```

```
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  s:=0; nr:=0;
  for i:=1 to n-1 do
    for j:=i+1 to n do
       if a[i,j]>0
         then begin
                s:=s+a[i,j];
                nr:=nr+1;
              end;
  write(' MA= ',(s/nr):5:2);
end.
```

Varianta 89:

1. a **2.** a **4.** `a=2; b=23`

3.
```
0 1 1 0 0 0 0
1 0 0 1 0 0 1
1 0 0 0 1 1 0
0 1 0 0 0 0 0
0 0 1 0 0 0 0
0 0 1 0 0 0 0
0 1 0 0 0 0 0
```

5.
```
var T:array[1..6,1..6] of integer;
    i,j,n,a,c,b:integer;
begin
  write(' n= '); read(n);

  a:=1; b:=0;
  for i:=1 to n do
    if i mod 2=1
      then for j:=1 to n do
             begin
               T[i,j]:=b;
               c:=a+b;
               a:=b;
               b:=c;
             end
      else for j:=n downto 1 do
             begin
               T[i,j]:=b;
```

```
                c:=a+b;
                a:=b;
                b:=c;
              end;
    for i:=1 to n do
      begin
        for j:=1 to n do
          write(T[i,j]:4);
        writeln;
      end;
  end.
```

Varianta 90:

1. a **2.** b **3.** 2, 1 **4.** a=2; b=16

5.

```
var a:array[1..20,1..20] of integer;
    i,j,n,s,nr,s2,nr2:integer;
    m1,m2:real;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  s:=0; nr:=0;
  for i:=1 to n-1 do
    for j:=i+1 to n do
       if a[i,j]>0
         then begin
                s:=s+a[i,j];
                nr:=nr+1;
              end;
  m1:= s / nr;
  s2:=0; nr2:=0;
  for i:=2 to n do
    for j:=1 to i-1 do
       if a[i,j]>0
         then begin
                s2:=s2+a[i,j];
                nr2:=nr2+1;
              end;
  m2:= s2 / nr2;
  write(' M1-M2= ',m1-m2:5:2);
end.
```

Varianta 91:

1. d **2.** a

3.
```
for j:=1 to 10 do
   a[j,3]:=100;
```

4.
```
da
dacarba
```

5.
```
type lista=^nod;
     nod=record
           info:char;
           prec,urm:lista;
         end;
var prim, ultim, p:lista;
    s:string[20];
    i:integer;

begin
  write(' Introdu numele'); readln(s);
  prim:=nil;
  for i:=1 to length(s) do
    begin
      new(p);
      p^.info:=s[i];
      p^.urm:=nil;
      if prim=nil
        then begin
               p^.prec:=nil;
               prim:=p;
             end
        else begin
               p^.prec:=ultim;
               ultim^.urm:=p;
             end;
      ultim:=p;
    end;
  p:=ultim;
  while (p<>nil) do
    begin
      write(p^.info);
      p:=p^.prec;
    end;
end.
```

Varianta 92:

1. b **2.** b **3.** (3, 6, 0, 1, 8, 1, 1, 3)

4. (v.origine.x = v.extremitate.x) and (v.origine.y = v.extremitate.y)

5.
```
var a:array[1..50,1..50] of integer;
    i, j, n, m, imin, jmin, max:integer;
begin
  write(' m= '); read(m);
  write(' n= '); read(n);
  for i:=1 to m do
    for j:=1 to n do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  imin:=1; jmin:=1;
  for i:=1 to m do
    for j:=1 to n do
      if a[i,j]<a[imin,jmin]
         then begin
                imin:=i;
                jmin:=j;
              end;
  for i:=1 to m do
    for j:=jmin+1 to  n do
      a[i,j-1]:=a[i,j];
  n:=n-1;
  for j:=1 to n do
    for i:=imin+1 to  m do
      a[i-1,j]:=a[i,j];
  m:=m-1;
  for i:=1 to m do
    begin
      for j:=1 to n do
        write(a[i,j],' ');
      writeln;
    end;
end.
```

Varianta 93:

1. d **2.** b **3.** 1 **4.** 1

5.
```
var sa1,sa2,s1,s2:string[200];
    i:integer;

function sablon(x:string):string;
var s:string;
begin
  s:='';
  for i:=1 to length(x) do
```

```
    if (x[i]='a') or (x[i]='e') or (x[i]='i') or
(x[i]='o') or (x[i]='u')
      then s:=s+'*'
      else s:=s+'#';
  sablon:=s;
end;

begin
  write(' s1= '); readln(s1);
  write(' s2= '); readln(s2);
  sa1:=sablon(s1);
  sa2:=sablon(s2);
  for i:=1 to length(sa1) do
    if sa1[i]=sa2[i]
      then write(sa1[i])
      else write('?');
end.
```

Varianta 94:

1. b **2.** (3, 5, 5, 5, 0)

3.
```
1: 2
2: 3, 5
3: 1, 5
4: 3
5: 4
```

4.
```
var s:string[20];
    i,j:integer;
begin
  write(' s= '); readln(s);
  i:=pos(' ',s);j:=i;
  while s[i]=' ' do i:=i+1;
  s:=copy(s,i,length(s))+' '+copy(s,1,j-1);
  write(' s= ',s);
end.
```

5.
```
var aux:char;

aux:=ultim^.lit;
ultim^.lit:=prim^.next^.lit;
prim^.next^.lit:=aux;
```

Varianta 95:

1. b **2.** a

3. 1: 2, 3, 4

```
2: 1, 3, 4, 5
3: 1, 2, 4, 5
4: 1, 2, 3, 5
5: 2, 3, 4
```

4. lungime:5 arcele: (1, 2); (2, 4); (4, 3); (3, 2); (2 ,5)

5.
```
var s:string[20];
    i,j:integer;
begin
  write(' s= '); readln(s);
  i:=pos(' ',s);j:=i;
  while s[i]=' ' do i:=i+1;
  s:=copy(s,i,1)+'. '+copy(s,1,j-1);
  write(' s= ',s);
end.
```

Varianta 96:

1. d **2.** a

3.
```
1: 2, 5
2: 1, 3, 5
3: 2, 4
4: 3, 5
5: 1, 4
```

4. (1,2), (2,4), (4,3), (3,2), (2,5)

5.
```
var n,p:string[20];
    s:string[40];
begin
  write(' nume= '); readln(n);
  write(' prenume= '); readln(p);
  s:=p+' '+n;
  write(' s= ',s);
end.
```

Varianta 97:

1. c **2.** a **3.** TITA

4.
```
type lista=^nod;
     nod=record
           info:integer;
           adr:lista;
         end;
writeln(p^.adr^.adr^.info);
```

5.
```
var a:array[1..50,1..50]of integer;
    n,m,i,j,aux:integer;
begin
  write(' n= '); read(n);
  write(' m= '); read(m);
  for i:=1 to n do
    for j:=1 to m do
      begin
        write(' A[',i,',',j,']= ');
        read(a[i,j]);
      end;
  for j:=1 to m do
    for i:=1 to n div 2 do
      begin
        aux:=a[i,j];
        a[i,j]:=a[n-i+1,j];
        a[n-i+1,j]:=aux;
      end;
  for i:=1 to n do
    begin
      for j:=1 to m do
        write(a[i,j],' ');
      writeln;
    end;
end.
```

Varianta 98:

1. b **2.** a **3.** (0, 1, 1, 2)

4.
```
type COLET=record
             pret, greutate:real;
             nume_oras:string[30];
           end;
var x:COLET;
readln(x.pret); readln(x.greutate);  readln(x.nume_oras);
```

5.
```
var a:array[1..50,1..50]of integer;
    n,i,j,k:integer;
begin
  write(' n= '); read(n);
  k:=0;
  for i:=1 to n do
    for j:=1 to n do
      begin
        a[i,j]:=k;
        k:=k+2;
      end;
```

```
    for i:=1 to n do
      begin
        for j:=1 to n do
          write(a[i,j],' ');
        writeln;
      end;
  end.
```

Varianta 99:

1. d **2.** a

3.
```
0 0 0 0 1
0 0 1 0 0
0 1 0 1 0
0 0 1 0 0
1 0 0 0 0
```

4.

3	5

3	5	4

3	5	4	6

5.
```
var a:array[1..50,1..50]of integer;
    n,i,j:integer;
begin
  write(' n= '); read(n);
  for i:=1 to n do
    for j:=1 to n do
      if i>j
        then a[i,j]:=i
        else a[i,j]:=j;
  for i:=1 to n do
    begin
      for j:=1 to n do
        write(a[i,j],' ');
      writeln;
    end;
end.
```

Varianta 100:

1. d **2.** a **3.** 2, 4, 6 **4.** 3

5.
```
var a:array[1..102,1..102]of longint;
```

```
-------------------------------------------------------------

      n,m,i,j,aux:integer;
  begin
    write(' n= '); read(n);
    for i:=2 to n+1 do
      for j:=2 to n+1 do
        begin
          write(' A[',i-1,',',j-1,']= ');
          read(a[i,j]);
        end;
    for i:=1 to n+2 do
        begin
          a[1,i]:=maxlongint;;
          a[n+2,i]:=maxlongint;;
          a[i,1]:=maxlongint;;
          a[i,n+2]:=maxlongint;;
        end;
    for i:=2 to n+1 do
      for j:=2 to n+1 do
        if (a[i,j]<a[i-1,j]) and (a[i,j]<a[i+1,j]) and
                (a[i,j]<a[i,j-1]) and (a[i,j]<a[i,j+1])
           then write(a[i,j],' ');
  end.

=============================================================
```