

Indicații și răspunsuri

1.1. Șir de caractere

Secțiunea 1.1.1

1. c) d)	8. d)	15. b)	22. d)
2. a) b)	9. d)	16. b)	23. c)
3. a)	10. b)	17. c)	24. a)
4. b)	11. d)	18. c)	25. c)
5. a) c)	12. a) b) e)	19. c)	26. c)
6. c)	13. a)	20. a)	27. b)
7. d)	14. a)	21. b)	28. c)

Secțiunea 1.1.3

2.

```
1 var s:string;
2   x:char;
3 begin
4   readln(s); x:=s[1];
5   while pos(x,s)>0 do
6     delete(s,pos(x,s),1);
7   writeln(s);
8 end.
```

```
#include <string.h>
#include <iostream.h>
char s[256],x; int p;
void main() {
  cin>>s; x=s[0];
  while ((p=strchr(s,x)-s)>=0)
    strcpy(s+p,s+p+1);
  cout<<s<<endl;}
```

3.

```
1 var s:string;
2 begin
3   readln(s);
4   while length(s)>1 do begin
5     delete(s,1,1);
6     delete(s,length(s),1);
7     writeln(s);
8   end;
9 end.
```

```
#include <string.h>
#include <iostream.h>
char s[256];
void main() {
  cin>>s;
  while (strlen(s)>1) {
    strcpy(s,s+1);
    s[strlen(s)-1]=0;
    cout<<s<<endl; } }
```

7.

```
1 var x,m1,m2:string;
2   n,i:integer;
3 begin
4   readln(n);readln(m1);readln(m2);
5   if m2<m1 then begin
6     x:=m2;m2:=m1;m1:=x;
7   end;
8   for i:=3 to n do begin
9     readln(x);
```

```
#include <iostream.h>
#include <string.h>
char x[256],m1[256],m2[256];
int n,i;
void main() {
  cin>>n;cin>>m1;cin>>m2;
  if (strcmp(m1,m2)>0) {
    strcpy(x,m2);strcpy(m2,m1);
    strcpy(m1,x); }
```

```

10  if x<m1 then begin
11      m2:=m1;m1:=x; end
12  else if x<m2 then
13      m2:=x;
14  end;
15  writeln(m1+m2);
16  end.

```

```

for (i=3;i<=n;i++) {
    cin>>x;
    if (strcmp(x,m1)<0) {
        strcpy(m2,m1); strcpy(m1,x);}
    else if (strcmp(x,m2)<0)
        strcpy(m2,x);}
cout<<strcat(m1,m2)<<endl;}

```

10.

```

1  var s,x,y,s1,s2:string;
2      n,i:integer;
3  begin
4      readln(x); readln(y);
5      i:=length(x)+1; s1:='';
6      s:='aeiouAEIOU';
7      repeat
8          dec(i);
9          s1:=x[i]+s1;
10         until (i=1)or(pos(x[i],s)>0);
11         i:=length(y)+1;s2:='';
12         repeat
13             dec(i);
14             s2:=y[i]+s2;
15         until (i=1)or(pos(y[i],s)>0);
16         writeln(s1+s2);
17     end.

```

```

#include <iostream.h>
#include <string.h>
char s[256],x[256],y[256],
s1[256],s2[256]; int i,n;
void main() {
    cin>>x;cin>>y; i=strlen(x);
    strcpy(s,"aeiouAEIOU");
    do { if (strlen(s1))
        memmove(s1+1,s1,strlen(s1)-1);
        s1[0]=x[--i];
    } while(i>0&&!strchr(s,x[i]));
    i=strlen(y);
    do { if (strlen(s2))
        memmove(s2+1,s2,strlen(s2)-1);
        s2[0]=y[--i];
    } while(i>0&&!strchr(s,y[i]));
    cout<<!strcmp(s1,s2)<<endl; }

```

11.

```

1  var s:string;
2      i,j,er,cifra:integer;
3  begin
4      readln(s);
5      for i:=1 to length(s) do
6          begin
7              if s[i] in ['0'..'9'] then
8                  val(s[i],cifra,er)
9              else
10                 for j:=1 to cifra do
11                     write(s[i]);
12             end;
13         end.

```

```

#include <stdio.h>
#include <string.h>
#include <ctype.h>
char s[256]; int i,j,cifra;
void main() {
    gets(s);
    for (i=0;i<strlen(s);i++)
        if (isdigit(s[i]))
            cifra=s[i]-'0';
    else
        for (j=0;j<cifra;j++)
            printf("%c",s[i]);
}

```

14.

```

1  var s,c,s1,s2:string; x:byte;
2  begin
3      readln(s);c:='';
4      readln(s1);readln(s2);
5      while(pos(s1,s)>0)do begin
6          x:=pos(s1,s);
7          c:=c+copy(s,1,x-1)+s2;
8          delete(s,1,x+length(s1)-1);
9      end;
10     writeln(c+s);
11 end.

```

```

#include <stdio.h>
#include <string.h>
char s[256],c[256],s1[256],
s2[256]; int p;
void main() {
    gets(s);gets(s1);gets(s2);
    while((p=strstr(s,s1)-s)>=0){
        strncat(c,s,p);
        strcpy(s+p,s+p+strlen(s1));
        strcpy(s,s+p);strcat(c,s2);}
    puts(strcat(c,s)); }

```

16.

```

1  var s:string;
2      i:byte; ok:boolean;
3  begin
4      readln(s);
5      for i:=1 to length(s)do
6          if ((uppercase(s[i])>='A')and
7              (uppercase(s[i])<='Z'))then
8              begin
9                  write(s[i]); ok:=true;
10             end
11         else
12             if ok then begin
13                 writeln(ok:=false;
14             end;
15 end.

```

```

#include <stdio.h>
#include <string.h>
char s[256]; int i,ok;
void main() {
    gets(s);
    for (i=0;s[i];i++)
        if ((s[i]>='a'&& s[i]<='z')||
            (s[i]>='A'&& s[i]<='Z'))
            { putchar(s[i]); ok=1; }
        else
            if (ok){
                putchar('\n'); ok=0;
            }
}

```

20.

```

1  var s,cuv,t:string;
2      i:byte;
3  begin
4      readln(s);t:=''; cuv:='';
5      for i:=1 to length(s)do
6          if ((uppercase(s[i])>='A')and
7              (uppercase(s[i])<='Z'))then
8              cuv:=s[i]+cuv
9          else
10             begin
11                 t:=t+cuv+s[i];
12                 cuv:='';
13             end;
14         writeln(t);
15 end.
16

```

```

#include <stdio.h>
#include <string.h>
char s[256],cuv[256],t[256];
int i;
void main() { gets(s);
    for (i=0;i<=strlen(s);i++)
        if ((s[i]>='a'&& s[i]<='z')||
            (s[i]>='A'&& s[i]<='Z')){
            if(strlen(cuv))
                memmove(cuv+1,cuv,strlen(cuv));
            cuv[0]=s[i]; }
        else {
            strcat(t,cuv);
            t[strlen(t)]=s[i];
            memset(cuv,0,sizeof(cuv)); }
        puts(t);
}

```

22.

```

1  var s:string; x:real;
2      er,i:integer;
3  begin
4      readln(s); val(s,x,er);
5      x:=length(s)-3;
6      if (er=0)and(pos('.',s)=x)
7          then write('Da')
8      else write('Nu');
9  end.

```

```

#include <string.h>
#include <stdio.h>
char s[256]; long x,y;
void main() {
    gets(s);
    if(sscanf(s,"%d.%d",&x,&y)==2&&
        (y>=100&&y<1000)) printf("Da\n");
    else printf("Nu\n");
}

```

28.

```

1  var s,c,t:string;f,g:text;
2      sm,i,x,er:integer;
3  begin
4      assign(f,'virus.txt');reset(f);
5      assign(g,'sum.txt');rewrite(g);
6      c:='';

```

```

#include <stdio.h>
#include <string.h>
char s[256];FILE *f,*g;
int sm,i,c;
void main() {
    f=fopen("virus.txt","r");

```

```

7 while not eof(f)do begin
8   readln(f,s); sm:=0;
9   for i:=1 to length(s)do
10    if (s[i]>='0')and(s[i]<='9')
11     then c:=c+s[i]
12    else begin
13     val(c,x,er);
14     sm:=sm+x;c:='';
15    end;
16    val(c,x,er);c:='';
17    writeln(g,sm+x);
18 end;
19 close(g); close(f);
20 end.

```

```

g=fopen("sum.txt","w");
while (fscanf(f,"%s\n",s)==1){
  sm:=0;
  for(i:=0;i<=strlen(s);i++)
    if(s[i]>='0'&&s[i]<='9')
      c:=c*10+s[i]-'0';
    else { sm:=c; c:=0; }
  fprintf(g,"%d\n",sm);
}
fclose(f);fclose(g);
}

```

29.

```

1 var s,c,t:string;
2   i,p:integer;
3 begin
4   readln(s); readln(p);c:='';
5   for i:=1 to length(s)do
6     if (uppercase(s[i])>='A')and
7       (uppercase(s[i])<='Z')
8     then c:=c+s[i]
9     else begin
10      if length(c)<>p then
11       t:=t+c;
12      t:=t+s[i]; c:='';
13    end;
14    writeln(t);
15 end.
16

```

```

#include <string.h>
#include <stdio.h>
char s[256],c[256],t[256];
int i,p;
void main() {
  gets(s); scanf("%d",&p);
  for (i:=0;i<=strlen(s);i++)
    if ((s[i]>='a'&&s[i]<='z')||
        (s[i]>='A'&&s[i]<='Z'))
      c[strlen(c)]=s[i];
    else {
      if (strlen(c)!=p) strcat(t,c);
      t[strlen(t)]=s[i];
      memset(c,0,sizeof(c));
      puts(t);
    }
}

```

30.

```

1 var s,c,y:string;
2   i,n,p:integer;
3 begin
4   readln(s); readln(p);
5   n:=length(s); c:='';
6   for i:=1 to n-p+1 do begin
7     y:=s; delete(y,i,p);
8     if pos(y,c)=0 then
9       c:=c+y+' ';
10    end;
11    writeln(c);
12 end.

```

```

#include <iostream.h>
#include <string.h>
char s[256],c[256],y[256];int i,n,p;
void main() {
  cin>>s>>p; n:=strlen(s);
  for(i:=0;i<=n-p;i++) {
    memset(y,0,sizeof(y));
    strncpy(y,s,i);
    strcat(y,s+i+p,n-i-p);
    if (!strstr(c,y))
      strcat(c,strcat(y," ")); }
  cout<<c<<endl; }

```

33.

```

1 var s,c,y:string;
2   i,n,p,m:integer;
3 begin
4   readln(s); n:=length(s);
5   p:=1;
6   while p*(p+1)<=2*n do inc(p);
7   dec(p); m:=n-p*(p+1)div 2;

```

```

#include <iostream.h>
#include <string.h>
char s[256],c[256]; int i,n,p,m;
void main() {
  cin>>s; n:=strlen(s);
  for(p:=1;p*(p+1)<=2*n;p++); p--;
  m:=n-p*(p+1)/2;

```

```

8  writeln(copy(s,1,m));
9  delete(s,1,m);
10 while s<>' ' do begin
11   writeln(copy(s,1,p));
12   delete(s,1,p);
13   dec(p);
14 end;
15 end.

```

```

cout<<strncat(c,s,m)<<endl;
strcpy(s,s+m);
while (strlen(s)) {
  memset(c,0,sizeof(c));
  cout<<strncat(c,s,p)<<endl;
  strcpy(s,s+p);p--;
}
}

```

34.

```

1  var a,b,c:string;
2      i,n,p,m:integer;
3  begin
4    readln(n); a:='a'; b:='b';
5    for i:=3 to n do begin
6      if odd(i) then c:=b+a
7      else c:=a+b;
8      a:=b;
9      b:=c;
10   end;
11   writeln(c);
12 end.
13

```

```

#include <iostream.h>
#include <string.h>
char a[256]="a",b[256]="b",
c[256]; int n,i;
void main() {
  cin>>n;
  for (i=3;i<=n;i++){
    if (i%2==1){strcat(c,b);strcat(c,a);}
    else {strcat(c,a);strcat(c,b);}
    strcpy(a,b); strcpy(b,c);
    memset(c,0,sizeof(c));}
  cout<<b<<endl;
}

```

35.

```

1  var a:array[1..10]of string;
2      t:string;
3      i,n,j,max:integer;
4  begin
5    readln(n); max:=0;
6    for i:=1 to n do begin
7      readln(a[i]);
8      if length(a[i])>max then
9        max:=length(a[i]);
10   end;
11   for i:=1 to n-1 do
12     for j:=i+1 to n do
13       if a[i]>a[j] then begin
14         t:=a[i];a[i]:=a[j];a[j]:=t;
15       end;
16   for i:=1 to max do begin
17     for j:=1 to n do
18       if length(a[j])>=i then
19         write(a[j][i],' ');
20     else write(' ');
21   writeln; end; end.

```

```

#include <iostream.h>
#include <string.h>
char a[10][256],t[256];
int n,i,j,max;
void main() {
  cin>>n; max=0;
  for (i=0;i<n;i++) {
    cin>>a[i];
    if (max<strlen(a[i]))
      max=strlen(a[i]);
  }
  for (i=0;i<n;i++)
    for (j=i+1;j<n;j++)
      if (strcmp(a[i],a[j])>0)
        {strcpy(t,a[i]);
         strcpy(a[i],a[j]);
         strcpy(a[j],t);}
  for (i=0;i<max;i++){
    for (j=0;j<n;j++)
      cout<<(i<strlen(a[j])?a[j][i]:' ')
      <<' '; cout<<endl;} }

```

38.

```

1  var i,j:byte;c,s:string;
2  begin
3    readln(s);
4    i:=2;
5    while i<length(s) do begin
6      if (s[i]+s[i+1]='at')and
7        (s[i-1]<>' ' and (s[i+2]<>' '))

```

```

#include <iostream.h>
#include <string.h>
int i,j,p;
char c[256],s[256];
void main()
{
  cin>>s;

```

```

8   then begin
9     c:='';
10    for j:=1 to i-1 do c:=c+s[j];
11    c:=c+'@';
12    for j:=i+2 to length(s) do
13      c:=c+s[j];
14    writeln(c);
15    delete(c,pos('cod',c),3);
16    writeln(c);
17    end;
18    inc(i);
19  end;
20 end.

```

```

for (i=1;i+1<strlen(s);i++){
  if (s[i]=='a'&&s[i+1]=='t'&&
      s[i-1]!='.'&&s[i+2]!='.') {
    memset(c,0,sizeof(c));
    strncpy(c,s,i);strcat(c,"@");
    strcat(c,s+i+2,strlen(s)-i-2);
    cout<<c<<endl;
    p=strstr(c,"cod")-c;
    strcpy(c+p,c+p+3);
    cout<<c<<endl;
  }
}
}
}

```

39.

```

1  var i,j:byte;c,s,p:string;
2  begin
3    readln(s); i:=1; p:='';
4    while i<=length(s) do
5      if (s[i]='(') then begin
6        c:='';inc(i);
7        while s[i]<>')'do begin
8          c:=c+s[i]; inc(i);
9        end;
10       for j:=1 to ord(s[i+1])-48 do
11         p:=p+c; inc(i,2);
12       end
13       else begin
14         p:=p+s[i]; inc(i)
15       end;
16       writeln(p);
17     end.

```

```

#include <iostream.h>
#include <string.h>
int i,j;
char s[256],p[256],c[256];
void main() {
  cin>>s;
  for(i=0;i<strlen(s);i++){
    if(s[i]=='('){
      memset(c,0,sizeof(c));
      for (i++;s[i]!='')i++;
      c[strlen(c)]=s[i];
      for (j=0;j<s[i+1]-'0';j++)
        strcat(p,c); i++;
    }
    else p[strlen(p)]=s[i];
    cout<<p<<endl;}
}

```

47.

```

1  var s,n,j,i,p,pr:integer;
2    x:string;ok:boolean;
3    a:array[1..10]of string;
4  begin
5    readln(n); i:=1; ok:=true;
6    while i<=n do begin
7      readln(x); p:=1;
8      for j:=1 to length(x)do
9        if x[j]>x[p] then p:=j;
10     delete(x,1,p-1);
11     for j:=1 to i-1 do
12       if a[j]=x then p:=0;
13     if p=0 then a[i]:=''
14     else begin
15       if ok then begin
16         pr:=i; ok:=false;
17       end;
18       a[i]:=x;
19     end;
20     inc(i)
21   end;

```

```

#include <iostream.h>
#include <string.h>
int s,n,i,j,p,pr,ok;
char x[256],a[11][256];
void main() {
  cin>>n;
  ok=1;
  for (i=0;i<n;i++){
    cin>>x;
    for (p=j=0;j<strlen(x);j++)
      if (x[j]>x[p]) p=j;
    strcpy(x,x+p);
    for (p=1,j=0;j<i;j++)
      if (!strcmp(a[j],x)) p=0;
    if (p==0)
      memset(a[i],0,sizeof(a[i]));
    else {
      if (ok) { pr=i; ok=0; }
      strcpy(a[i],x);
    }
  }
}

```

```

22 for i:=1 to length(a[pr]) do
23   s:=s+ord(a[pr][i]);
24 for i:=1 to n do
25   if (a[i]='') or (i=pr) then
26     writeln(s+i)
27   else writeln(a[i])
28 end.

```

```

for (i=0;i<strlen(a[pr]);i++)
  s+=a[pr][i];
for (i=0;i<n;i++)
  if (!strlen(a[i]) || i==pr)
    cout<<s+i+1<<endl;
  else cout<<a[i]<<endl;
}

```

1.2. Tipul înregistrare – structură

Secțiunea 1.2.1

1. a) c)	5. b) d)	9. a) c)	13. b)
2. d)	6. a) c)	10. d)	14. b)
3. a) d)	7. a) d)	11. c)	
4. c)	8. a) b)	12. c)	

Secțiunea 1.2.3

1.

```

1 type e=record
2   np:string; m:real;
3   end;
4 var a:array[1..50] of e;
5 x:e;
6 nt,j,n,i:integer;
7 mo,mx,s:real;
8 nm,pr:string;
9 begin
10  readln(n);
11  for i:=1 to n do begin
12    readln(nm);
13    readln(pr);
14    readln(mo,nt);
15    with a[i] do begin
16      np:=nm+' '+pr;
17      m:=(mo*3+nt)/4;
18      s:=s+m;
19      if m>mx then mx:=m;
20    end;
21  end;
22  writeln(s/n:0:2);
23  for i:=1 to n do
24    if a[i].m=mx then
25      writeln(a[i].np);
26 end.

```

```

#include <stdio.h>
#include <string.h>
typedef struct {
  char np[256];
  float m;
} e;
e a[50];
int n,i;
float mo,mx,nt,s;
char nm[256],pr[256];
void main() {
  scanf("%d",&n);
  for (i=0;i<n;i++) {
    scanf("%s%s%f",nm,pr,&mo,&nt);
    strcpy(a[i].np,nm);
    strcat(a[i].np," ");
    strcat(a[i].np,pr);
    a[i].m=(mo*3.0+nt)/4.0;s+=a[i].m;
    if (mx<a[i].m) mx=a[i].m;
  }
  printf("%.2f\n",s/n);
  for(i=0;i<n;i++)
    if (a[i].m==mx)
      printf("%s\n",a[i].np);
}

```