 **!!! 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 greşeli şi / sau perderi survenite în urma folosirii lor!

Foloseşte rezolvările pe riscul tău !!!

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

Varianta 1:

1. d.

2. **a.** 963 **b.** 61, 65, 67

c.
```
citeşte n
z←0
p←1
dacă n>0 atunci
   |         repeta
   |          | c←n%10
   |          | n←[n/10]
   |          | dacă c%3=0 atunci
   |          |    |           z←z+p*(9-c)
   |          |    |           p←p*10
   |          |    └──────■
   |          |
   |         până când n<=0
   └──────────────■
scrie z
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

long n,z,p,c;

int main(int argc, char *argv[])
{
    cout<<"n= "; cin>>n;
    z=0;
    p=1;
    while (n>0)
      {
          c=n % 10;
          n/=10;
          if (c % 3 == 0)
            {
                z+=p*(9-c;
                p*=10;
            }
      }
    cout<<" z= "<<z<<endl;
    system("PAUSE");
    return 0;
}
```

Varianta 2:

1. a.

2. a. 2 2 1 1 7 7 5 **b.** 19 18 17 7 0

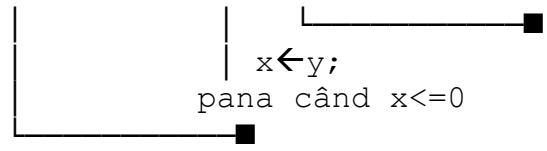
c.
```
citeşte x
daca x>0 atunci
   |          repeta
   |            |citeste y
   |            |daca x>y atunci
   |            |   |           scrie x%10
   |            |   |       altfel
   |            |   |           scrie y%10
   |            |   |_____________■
   |            |
   |            | x←y
   |          până când x<=0
   |_____________■
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int x,y;

int main(int argc, char *argv[])
{
    cout<<"x= "; cin>>x;
    while (x>0)
      {
          cout<<"y= "; cin>>y;
          if (x>y)
             cout<<x%10<<" ";
            else cout<<y%10<<" ";
          x=y;
      }
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 3:
1. b

2. a. 5 9 9 3 5 0 **b.** 1 7 9 3 1 0

c.
```
citeste z,x
dacă x>0 atunci
   |          repeta
   |            | citeste y
   |            | daca z<y-x atunci
   |            |   |           scrie x%10
   |            |   |         altfel
   |            |   |           scrie y%10
```



d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int x,y,z;

int main(int argc, char *argv[])
{
    cout<<"z= "; cin>>z;
    cout<<"x= "; cin>>x;
    while (x>0)
      {
          cout<<"y= "; cin>>y;
          if (z<y-x)
             cout<<x%10<<" ";
            else cout<<y%10<<" ";
          x=y;
      }
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 4:

1. d

2. **a.** 16 14 12 10 8 6

b. (0,-10), (1,-10), (1,-11), (0,-11), (-10,0), (-10,1), (-11,1), (-11,0)

c.
```
citeste a,b
daca a<b atunci
   |          s←a; a←b; b←s
   |__________
x←a
cat timp x>=b executa
  |  daca x%2=0 atunci
  |   |            scrie x," "
  |   |____________
  |  x←x-1
  |____
```

d.
```
#include <cstdlib>
#include <iostream>
```

```
using namespace std;
int a,b,x,s;
int main(int argc, char *argv[])
{
    cout<<"a= "; cin>>a;
    cout<<"b= "; cin>>b;
    if (a<b)
      {
         s=a;   a=b;   b=s;
      }
    for(x=a; x>=b; x--)
      if(x % 2 ==0)
        cout<<x<<" ";
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 5:

1. c

2. **a.** 1 **b.** 890

c.
```
invers(x)
daca x!=0 atunci
   |          y←y*10+x%10
   |          invers( [x/100] )
   |_____■

citeşte x,z
y←0
invers(x)
cat timp y*z>0 şi y%10=z%10 executa
   |    y←[y/10]
   |    z←[z/10]
   |_____■
dacă y+z=0 atunci
   |           scrie 1
   |         altfel
   |           scrie 0
   |_____________■
```

d.
```
#include <cstdlib>
#include <iostream>
using namespace std;
long x,y,z;
```

```
int main(int argc, char *argv[])
{
    cout<<"x= "; cin>>x;
    cout<<"z= "; cin>>z;
    y=0;
   {
        y=y * 10 + x % 10;
        x=x / 100;
    }while(x);
    while ( (y+z>0) && (y %10 == z % 10) )
       {
          y=y / 10;
          z=z / 10;
       }
    if (y + z ==0)
        cout<<1;
       else cout<<0;
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 6:

1. a

2. **a.** 9 **b.** 39 (orice nr. care nu are toate cifrele in ordine descresc)

c.

```
citeste n
s← -1
dacă n>0 atunci
   |          repeta
   |            | dacă n%10>s atunci
   |            |    |             s←n%10
   |            |    |           altfel
   |            |    |             s←11
   |            |    └──────────■
   |            | n ←[n/10]
   |          până când n<=0
   └──────────■
 scrie s
```

d.

```
#include <cstdlib>
#include <iostream>

using namespace std;

long n,s;

int main(int argc, char *argv[])
{
```

```
        cout<<"n= "; cin>>n;
        s=-1;
        while (n>0)
           {
              if (n % 10 > s)
                  s=n % 10;
                 else s=11;
              n=n / 10;
           }
        cout<<" S= "<<s<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

Varianta 7:

1. d

2. **a.** 9432 **b.** 69645 şi 55946

c.

```
citeste n
nr←0
a←9
repeta
  | m←n
  | cat timp m≠0 si m%10≠a execută
  |    | m←[m/10]
  |    └──■
  | dacă m≠0 atunci
  |    |       nr←nr*10+m%10
  |    └─────────■
  | a←a-1
până când a<=0
scrie nr
```

d.

```
#include <cstdlib>
#include <iostream>

using namespace std;

long n, nr, m, a;

int main(int argc, char *argv[])
{
    cout<<"n= "; cin>>n;
    nr=0;
    for(a=9; a>=0; a--)
      {
         m=n;
         while ( m && (m % 10 != a) )
            m=m / 10;
```

```
            if (m)
               nr=nr*10+m % 10;
          }
        cout<<" nr= "<<nr<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

Varianta 8:

1. a

2. **a.** 22 **b.** 7935 şi orice k (orice număr cu toate cifrele impare)

c.

```
citeste n, k
nr←0
p←1
daca n≠0 şi k≠0
   | atunci repeta
   |          | dacă n%2=0 atunci
   |          |    |          nr←nr+n%10*p
   |          |    |          p←p*10
   |          |    |        altfel
   |          |    |          k←k-1
   |          |    |_________■
   |          | n←[n/10]
   |        până când n=0 sau k=0
   |_________■
scrie nr
```

d.

```
#include <cstdlib>
#include <iostream>
using namespace std;
long n, k, nr, p;
int main(int argc, char *argv[])
{
    cout<<"n= "; cin>>n;
    cout<<"k= "; cin>>k;
    nr=0;
    p=1;
    while ( n && k)
      {
         if ( n % 2 == 0)
            {
               nr+=n % 10 * p;
               p*=10;
            }
            else k--;
         n= n / 10;
```

```
        }
    cout<<" nr= "<<nr<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 9:

1. b

2. **a.** 1 **b.** 2317 (orice număr care nu are cifrele in ordine cresc.)

c.

```
citeşte n
s←10
daca n>0 atunci
   |         repeta
   |          | dacă n%10<s
   |          |    |  atunci s←n%10
   |          |    |  altfel s← -1
   |          |    └──────────■
   |          | n←[n/10]
   |         până când n<=0
   └─────────■
scrie s
```

d.

```
#include <cstdlib>
#include <iostream>
using namespace std;
long n, s;
int main(int argc, char *argv[])
{
    cout<<"n= "; cin>>n;
    s=10;
    while (n>0)
      {
         if (n % 10 < s)
             s= n % 10;
           else s= -1;
         n=n / 10;
      }
    cout<<" s= "<<s<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 10:

1. a

2. a. 24 **b.** 23145

c.
```
citeste n, k
nr←0
p←1
daca n≠0 şi k≠0
   | atunci repeta
   |          | dacă n%2=0 atunci
   |          |    |          nr←nr+n/10%10*p
   |          |    |          p←p*10
   |          |    |        altfel
   |          |    |          k←k-1
   |          |    └──────────■
   |          | n←[n/10]
   |         până când n=0 sau k=0
   └─────────■
scrie nr
```

d.
```
#include <cstdlib>
#include <iostream>
using namespace std;
long n, k, nr, p;
int main(int argc, char *argv[])
{
    cout<<"n= "; cin>>n;
    cout<<"k= "; cin>>k;
    nr=0;
    p=1;
    while ( n && k )
      {
         if ( n % 2 != 0)
            {
               nr+=n / 10 % 10 * p;
               p*=10;
            }
            else k--;
         n= n / 10;
      }
    cout<<" nr= "<<nr<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 11:

1. c

2. a. 15 **b.** 54628 (orice nr. cu ultimele 4 cif pare)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

long n, k, c, p;

int main(int argc, char *argv[])
{
    cout<<"n= "; cin>>n;
    cout<<"k= "; cin>>k;
    p=1;
    while ( (n>0) && (k>0) )
      {
         c=n % 10;
         if (c % 2==1)
            p*=c;
         n=n / 10;
         k--;
      }
    cout<<" p= "<<p<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeste n,k
p←1
pentru i←k,1,-1 executa
  | dacă n>0
  |   |  atunci c←n%10
  |   |         dacă c%2=0
  |   |           | atunci p←p*c
  |   |           └──■
  |   |         n←[n/10]
  |   └──────────■
  └──────────■
scrie p
```

Varianta 12:

1. d

2. **a.** 17396 **b.** 370 29 17 0

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

long x,y;
```

```
int main(int argc, char *argv[])
{
    cout<<"x= "; cin>>x;
    y=0;
    while (x)
      {
         while (x>9)
           x= x / 10;
         y=y*10+x;
         cout<<"x= "; cin>>x;
      }
    cout<<" y= "<<y<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeste x
y←0
daca x≠0 atunci
   |          repeta
   |            | daca x>9 atunci
   |            |    |          repeta
   |            |    |           | x←[x/10]
   |            |    |          până când x<=9
   |            |    └──────────■
   |            | y←y*10+x
   |            | citeste x
   |          până când x=0
   └──────────■
scrie y
```

Varianta 13:

1. b

2. **a.** 7 **b.** 61, 62

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int a, b, i, k, c, n;

int main(int argc, char *argv[])
{
    cout<<"a= "; cin>>a;
    cout<<"b= "; cin>>b;
    k=0;
    for(i=a; i<=b; i++)
      {
```

```
            n=i; c=0;
            while (n>0)
              {
                 if (n % 2 ==1)
                   c++;
                 n/=10;
              }
            if (c>0)
              k++;
          }
        cout<<" k= "<<k<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

d.

```
citeste a,b
k←0
i←a
cât timp i<=b executa
  |  n←i; c←0
  |  cât timp n>0 executa
  |    | dacă n%2=1 atunci
  |    |   |           c←c+1
  |    |   └──────────■
  |    |
  |    |  n←[n/10]
  |    └─────■
  |  dacă c>0
  |    | atunci k←k+1
  |    └──────────■
  |  i←i+1
  └─────■
scrie k
```

Varianta 14:

1. a

2. a. 27596 **b.** 3<u>7</u>1 3<u>5</u> <u>2</u>11 0 (oricare 3 nr. cu cifra maxima subliniata)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int x, y , c, n;

int main(int argc, char *argv[])
{
    cout<<"x= "; cin>>x;
    n=0;
```

```
        while (x)
          {
            y=x;  c=0;
            while (y>0)
              {
                if (y % 10 >c)
                  c=y % 10;
                y= y / 10;
              }
            n=n*10+c;
            cout<<"x= "; cin>>x;
          }
        cout<<" n= "<<n<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

d.

```
citeşte x
n←0
dacă x≠0 atunci
    repeta
        y←x;  c←0
        daca y>0 atunci
            repeta
                dacă y%10>c atunci
                    c←y%10
                y←[y/10]
            până când y<=0
        n←n*10+c
        citeşte x
    până când x=0
scrie n
```

Varianta 15:

1. d

2. **a.** 4 **c.** `n = 4` **d.** `a ← a-(i-1)*(i-1)`

b.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int a, n, i;

int main(int argc, char *argv[])
{
```

```
        cout<<"a= "; cin>>a;
        cout<<"n= "; cin>>n;
        for(i=1; i<=n; i++)
          if (i % 2 == 0)
             a-=i*i;
            else a+=i*i;
        cout<<" a= "<<a<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

Varianta 16:

1. a

2. a. `***#***`

b. 12

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n, i, j, cont;

int main(int argc, char *argv[])
{
    cout<<"n= "; cin>>n;
    for(i=1; i<=n-1; i++)
      {
        if (i % 2==0)
           cout<<"#";
        for(j=i+1; j<=n; j++)
           cout<<"*";
      }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeste n
i←1
cât timp i<=n-1 executa
  | dacă i%2=0
  |    | atunci scrie "#"
  |    └──■
  | j←i+1
  | cât timp j<=n executa
  |   | scrie "*"
  |   | j←j+1
  |   └──■
  | i←i+1
```

```
└──■
```

Varianta 17:

1. a

2. **a.** ABABABAB **b.** 6 perechi

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int x,y;

int main(int argc, char *argv[])
{
    cout<<"x= "; cin>>x;
    cout<<"y= "; cin>>y;
    if (x<y)
       {
           x=x-y;
           y=x+y;
           x=y-x;
       }
    while (x>=y)
      {
        cout<<"A";
        x-=y;
        cout<<"B";
      }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeste x,y
dacă x<y atunci
   | x←x-y
   | y←x+y
   | x←y-x
   └─■
dacă x≥y atunci
   |         repeta
   |            | scrie "A"
   |            | x←x-y
   |            | scrie "B"
   |         până când x<y
   └──────────■
```

Varianta 18:

1. a

2. a. **** **b.** 0 şi 1

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int x,y,aux;

int main(int argc, char *argv[])
{
    cout<<"x= "; cin>>x;
    cout<<"y= "; cin>>y;
    if (x>y)
       {
          aux=y;
          y=x;
          x=aux;
       }
    if (x % 2==0)
      x++;
    while (x<=y)
      {
        x+=2;
        cout<<"*";
      }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeste x,y
dacă x>y atunci
   |  y←→x
   └──■
daca x%2=0 atunci
   |  x←x+1
   └──■
dacă x≤y atunci
   |         repeta
   |           | x←x+2
   |           | scrie "*"
   |         până când x>y
   └─────────■
```

Varianta 19:

---

1. b

2. **a.** 234 **b.** 3<u>12</u> şi 3<u>35</u> (in intervalul format de cifrele subliniate sa existe numai 2 numere multiplu de 11)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int a, b, i;

int main(int argc, char *argv[])
{
    cout<<"a= "; cin>>a;
    cout<<"b= "; cin>>b;
    a=a / 10 % 10 * 10 + a % 10;
    b=b / 10 % 10 * 10 + b % 10;
    for(i=a; i<=b; i++)
      if (i / 10 == i % 10)
         cout<<i % 10;
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeste a,b
a←[a/10]%10*10+a%10
b←[b/10]%10*10+b%10
i←a
cât timp i<=b execută
  │ dacă[i/10]=i%10
  │   │ atunci scrie i%10
  │   └──■
  │ i←i+1
  └──────■
```

Varianta 20:

1. c

2. **a.** 9831 **b.** 3210

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n, a, m, b;

int main(int argc, char *argv[])
{
    cout<<"n= "; cin>>n;
    a = n % 10;
```

```
        m = a;
        while (n>9)
          {
            n=n / 10;
            b=n % 10;
            if (a>b)
               {
                  m = m * 10 + b;
                  a = b;
               }
          }
        cout<<" m= "<<m<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

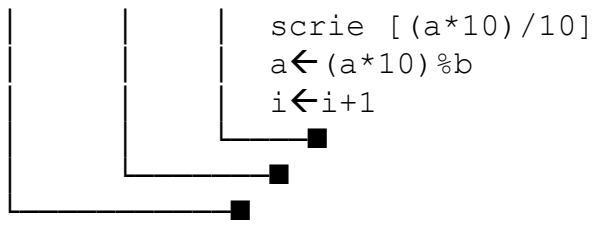
d.
```
citeşte n
a←n%10
m←a
dacă n>9 atunci
   |         repetă
   |           | n←[n/10]
   |           | b←n%10
   |           | daca a>b atunci
   |           |    |          m←m*10+b
   |           |    |          a←b
   |           |    └──────────■
   |         până când n<=9
   └─────────■
scrie m
```

Varianta 21:

1. c

2. a. 2, 8333

b.
```
citeste a,b,n
daca b=0
   | atunci scrie "GRESIT"
   | altfel
   |   scrie [a/b]
   |   dacă n>0 şi a%b≠0 atunci
   |      |  scrie ","
   |      |  a←a%b;  i←0
   |      |  scrie [(a*10)/10]
   |      |  a←(a*10)%b
   |      |  i←i+1
   |      |  cât timp i≠n şi a≠0 executa
```



c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n, a, i, b;

int main(int argc, char *argv[])
{
    cout<<"a= "; cin>>a;
    cout<<"b= "; cin>>b;
    cout<<"n= "; cin>>n;
    if (b==0)
       cout<<" GRESIT ";
      else{
           cout<< a / b;
           if ( (n>0) && (a % b !=0) )
             {
                cout<<",";
                a=a % b; i=0;
                do{
                    cout<<(a*10) / b;
                    a=(a*10) % b;
                    i++;
                }while ( (i!=n) && a );
              }
           }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d. **a**=29, b=4 şi n=4 (oricare 2 nr. care împărţite sa aibă numai n-2 zecimale)

Varianta 22:

1. b

2. **a.** 15 **b.** 10, 15, 25

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;
```

```
int n, d, i;
int main(int argc, char *argv[])
{
    cout<<"n= "; cin>>n;
    if (n<0)
     n=-n;
    d=1;
    for( i=2; i<=n / 2; i++)
      if (n % i == 0)
         d=i;
    cout<<" d= "<<d<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d. 25 (orice număr cu un singur divizor in intervalul [2,n/2])

Varianta 23:

1. a

2. **a.** 4 **b.** 4, 9 şi 14

c.
```
#include <cstdlib>
#include <iostream>
using namespace std;
int a, b, p;
int main(int argc, char *argv[])
{
    cout<<"a= "; cin>>a;
    cout<<"b= "; cin>>b;
    p=0;
    while (a!=b)
      {
        p++;
        if (a<b)
           a=a+2;
          else b=b+3;
      }
    cout<<" p= "<<p<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeste a,b
p←0
dacă a≠b atunci
  |        repetă
  |         | p←p+1
```

```
        |          | dacă a<b
        |          |    |  atunci a←a+2
        |          |    |  altfel b←b+3
        |          |    └──■
        |         până când a=b
        └──────────┘
    scrie p
```

Varianta 24:

1. d

2. **a.** 75 **b.** 12 şi 60

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int a, b, p, q;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    cout<<" b= "; cin>>b;
    p=a;  q=b;
    if ( (p==0) || (q==0) )
       {
          p*=q;
          q*=p;
       }
    while (p!=q)
    if (p<q)
       p+=a;
      else q+=b;
    cout<<" p= "<<p<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeste a,b
p←a;  q←b
dacă p=0 sau q=0 atunci
   | p←p*q;  q←p*q
   └──■
dacă p≠q atunci
   |          repeta
   |            | dacă p<q
   |            |   | atunci p←p+a
   |            |   | altfel q←q+b
   |            |   └──■
```

```
        până când p=q
scrie p
```

Varianta 25:

1. c

2. **a.** 12 şi 18

b.
```
citeste a,b,c
dacă a>b atunci
  t←a; a←b; b←t
pentru i←a,b executa
  dacă c|i atunci
    scrie a
```

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int a, b, c,t;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    cout<<" b= "; cin>>b;
    cout<<" c= "; cin>>c;
    if (a>b)
      {
         t=a;  a=b;  b=t;
      }
    while (a<=b)
      {
        if (a % c ==0)
           cout<<a<<" ";
        a++;
      }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d. `[(b-a+a%c)/c]`

Varianta 26:

1. c

2. a. 1 2 3 4 5 6 7 8 9 0 1

b.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n, i, c;

int main(int argc, char *argv[])
{
  cout<<" n= "; cin>>n;
  c=0;
  for(i=1; i<n; i++)
    {
       c=(c+1) % 10;
       cout<<c<<" ";
    }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

c.
```
citste n
c←0
i←1
cât timp i<=n executa
  | c←(c+1)%10
  | scrie c
  | i←i+1
  └──■
```

d. 10 valori (21, 22, 23, 24, 25, 26, 27, 28, 29, 30)

Varianta 27:

1. a

2. a. 2329

b.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int a, b, c, p, d;

int main(int argc, char *argv[])
{
```

```
        cout<<" a= "; cin>>a;
        cout<<" b= "; cin>>b;
        c=0;
        d=0;
        p=1;
        while (a+b+c>0)
          {
            c=a % 10+b % 10 + c;
            d+=(c % 10) *p;
            p*=10;
            a/=10;
            b/=10;
            c/=10;
          };
        cout<<" d= "<<d<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

c.
```
citeste a,b
c←0
d←0
p←1
dacă a+b+c>0 atunci
   |              repeta
   |                | c←a%10+b%10+c
   |                | d←d+(c%10)*p
   |                | p←p*10
   |                | a←[a/10]
   |                | b←[b/10]
   |                | c←[c/10]
   |              până când a+b+c<=0
   └──────────────■
scrie d
```

d.
```
citeste a,b
d←a+b
scrie d
```

Varianta 28:

1. b

2. **a.** 2

b.
```
#include <cstdlib>
#include <iostream>
```

```
#include <math.h>
using namespace std;
double x, y;
int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    y=int(x);
    x-=y;
    while ( x!=round(x) )
     x*=10;
    if ( x==y )
       cout<<1;
      else cout<<2;
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

c.
```
citeşte x
y←[x]
x←x-y
dacă x≠[x] atunci
   |            repeta
   |             | x←x*10
   |            până când x=[x];
   |_____________■
dacă x=y atunci
   |   scrie 1
   | altfel
   |   scrie 2
   |_■
```

d. 12.12 (orice număr in care partea întrega este egala cu partea fractionala)

Varianta 29:

1. a

2. a. 9

b.
```
#include <cstdlib>
#include <iostream>
using namespace std;
int m, n;
int main(int argc, char *argv[])
```

```
{
    cout<<" n= "; cin>>n;
    cout<<" m= "; cin>>m;
    while (n<=m)
      {
        n++;
        m--;
      }
    while (m<n)
      {
      m++;
      n--;
      }
    cout<<" n= "<<n<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

c. 9 şi 11 (oricare 2 numere egal depărtate de 10)

d.
```
citeste n,m
scrie [(n+m)/2]
```

Varianta 30:

1. d

2. **a.** 4061

b.

```
#include <cstdlib>
   #include <iostream>
   using namespace std;
   int m, n, p, c;
   int main(int argc, char *argv[])
   {
       cout<<" n= "; cin>>n;
       m=0;
       p=1;
       while (n>0)
         {
           c=n % 10;
           if (c>0)
              c=c-1;
           m+=c*p;
```

```
            p*=10;
            n/=10;
          }
        cout<<" m= "<<m<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

c.
```
citeste n
m←0
p←1
dacă n>0 atunci
   |          repeta
   |            | c←n%10
   |            | dacă c>0 atunci
   |            |   | c←c-1
   |            |   └──■
   |            | m←m+c*p;
   |            | p←p*10
   |            | n←[n/10]
   |          până când n≤0
   └──────────────■
scrie m
```

d. 3119 şi 3009

Varianta 31:

1. b

2. **a.** b=1 k=6 **b.** 2 valori (3 şi 5)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int a, k, b;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    k=0;
    b=(a+1)*(a+2) / 2;
    while (b>=a)
      {
         b-=a;
         k++;
      }
    cout<<" b= "<<b<<"     k= "<<k<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
```

```
}
```

d.
```
citeşte a
b←[(a+1)*(a+2)/2]
k←[b/a]
b←b%a
scrie b,k
```

Varianta 32:

1. d

2. **a.** 9 18 36 72 144 288 **b.** 1199

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int a, c, b;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    cout<<" b= "; cin>>b;
    if (a>b)
       {
           c=b;  b=a;  a=c;
       }
    while (a<=b)
      {
        cout<<a<<" ";
        a*=2;
      }
    cout<<a<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeste a,b
dacă a>b atunci
   | c←b;  b←a;  a←c
   └──■
dacă a<=b atunci
   |          repeta
   |            | scrie a;
```

```
|              | a←a*2
|             până când a>b
|______________■
scrie a
```

Varianta 33:

1. c

2. **a.** 135 **b.** (1,1), (2,4), (3,9), (4,16)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int x, y, p;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    cout<<" y= "; cin>>y;
    p=0;
    do{
      if (y % 2 !=0)
         p+=x;
      y /= 2;
      x *= 2;
    }while (y>=1);
    cout<<" p= "<<p<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte x,y
p←x*y
scrie p
```

Varianta 34:

1. a

2. **a.** 38 47 56

b. 5<u>0</u> şi 13<u>9</u> (oricareua numere terminate in 0 şi 9 sau 1 şi 9)

c.

```
#include <cstdlib>
#include <iostream>
```

```
using namespace std;
int x, y, aux;
int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    cout<<" y= "; cin>>y;
    x %= 10;
    y %= 10;
    if (y<x)
       {
          aux=y;
          y=x;
          x=aux;
       }
    while (x<=y)
      {
        cout<<x*10+y<<" ";
        x++;
        y--;
      }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte x,y
x←x%10
y←y%10
dacă y<x atunci
   |  aux←y
   |  y←x
   |  x←aux
   |___■
pentru i←x,[(x+y)/2] executa
  | dacă x≤y atunci
  |    | scrie x*10+y
  |    |___■
  | x←x+1
  | y←y-1
  |___■
```

Varianta 35:

1. c

2. **a.** s=4 **b.** 64 (suma puterilor factorilor primi sa fie =6)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int x, s, f, p;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    s=0;
    f=2;
    while (x>1)
      {
        p=0;
        while (x % f == 0)
          {
            x /=f;
            p++;
          }
        if (p!=0)
           s+=p;
        f++;
      }
    cout<<" s= "<<s<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d. 7 11 13 17 19 23

Varianta 36:

1. b

2. **a.** 249 **b.** 4950

c.
```
s←0
citeşte v
dacă v≠0 atunci
   |          repeta
   |            | a←v%10
   |            | b←[v/10]%10
   |            | s←s+a*10+b
   |            | citeşte v
   |          până când v=0
   └──────────■
scrie s
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int s, v, a, b;

int main(int argc, char *argv[])
{
    s=0;
    cout<<" v= "; cin>>v;
    while (v!=0)
      {
        a = v % 10;
        b = v / 10 % 10;
        s = s + a * 10 + b;
       cout<<" v= "; cin>>v;
      }
    cout<<" s= "<<s<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 37:

1. c

2. **a.** 122322 **b.** n=123 şi k=5 (n –orice nr. iar k o cifra care nu este in n)

c.
```
citeşte n,k
nr←0;  p←1
dacă n≠0 atunci
   |          repeta
   |            | c←n%10
   |            | nr←nr+c*p
   |            | p←p*10
   |            | dacă c=k atunci
   |            |    |  nr←nr+c*p
   |            |    |  p←p*10
   |            |    └──■
   |            | n←[n/10]
   |          până când n=0
   └──────────■
n←nr
scrie n
```

d.
```
#include <cstdlib>
```

```
#include <iostream>
using namespace std;
long n, k, c, p, nr;
int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    cout<<" k= "; cin>>k;
    nr=0;  p=1;
    while (n!=0)
      {
        c = n % 10;
        nr +=c*p;
        p *=10;
        if (c=k)
           {
              nr +=c*p;
              p *=10;
           }
         n /= 10;
      }
    n=nr;
    cout<<" n= "<<n<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 38:

1. d

2. **a.** 4 **b.** n=52931, k=2 (se afişează a k+1 cifra)

c.
```
citeste n,k
pentru i←k,1,-1 executa
 |  n←[n/10]
 └────■
z←n%10
scrie z
```

d.
```
#include <cstdlib>
#include <iostream>
using namespace std;
int n, k, i, z;
int main(int argc, char *argv[])
{
```

```
        cout<<" n= "; cin>>n;
        cout<<" k= "; cin>>k;
        i=k;
        while (i>0)
          {
            n /= 10;
            i--;
          }
        z = n % 10;
        cout<<" z= "<<z<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

Varianta 39:

1. b

2. **a.** 23949 **b.** 999 (orice nr cu toate cifrele 9)

c.

```
citeşte n
nr←0;  p←1
dacă n≠0 atunci
   |         repeta
   |          | c←n%10
   |          | dacă c<9 atunci
   |          |    |  c←c+1
   |          |    └──■
   |          | nr←nr+c*p
   |          | p←p*10
   |          | n←[n/10]
   |         până când n=0
   └──────────■
n←nr
scrie n
```

d.

```
#include <cstdlib>
#include <iostream>

using namespace std;

long n, nr, p, c;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    nr=0;  p=1;
    while (n!=0)
      {
```

```
            c = n % 10;
            if (c<9)
               c++;
            nr += c*p;
            p *=10;
            n /= 10;
          };
        n=nr;
        cout<<" n= "<<n<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

Varianta 40:

1. c

2. **a.** **2 şi 7** **b.** 169 (oricie nr. prim la pătrat)

c.

```
citeste x
d←2;  y←0;  z←0
dacă x≠1 atunci
   |          repeta
   |            | p←0
   |            | dacă x%d=0 atunci
   |            |    |           repeta
   |            |    |             | p←p+1
   |            |    |             | x←[x/d]
   |            |    |           până când x%d≠0
   |            |    └──────────────■
   |            | dacă p≠0 atunci
   |            |    |         daca y=0 atunci y←d
   |            |    |           └──■
   |            |    |         z←d
   |            |    └──────────■
   |            | d←d+1
   |          până când x=1
   └──────────────■
scrie y
scrie z
```

d.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int x, d, y, z, p;

int main(int argc, char *argv[])
```

```
{
    cout<<" x= "; cin>>x;
    d=2;  y=0;  z=0;
    while (x!=1)
      {
        p=0;
        while (x % d==0)
          {
            p++;
            x /= d;
          }
        if (p!=0)
           {
               if (y==0)
                  y=d;
               z=d;
           }
        d++;
      }
    cout<<" y= "<<y<<"    z= "<<z<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 41:

1. c

2. **a.** 100 50 25 5 1 **b.** 97

c. **diviz(x,d)**

```
dacă x%d=0 atunci
   |            x←[x/d]
   |            scrie x
   |            diviz(x,d)
   └──────────■
```

```
citeste x
d←2
scrie x
cat timp x≥d executa
  | diviz(x,d)
  | d←d+1
  └────■
```

d.

```
#include <cstdlib>
#include <iostream>
```

```
using namespace std;
int x, d;
int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    d=2;
    cout<<x<<" ";
    while (x>=d)
      {
        while (x % d == 0)
          {
            x /= d;
            cout<<x<<" ";
          }
        d++;
      }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 42:

1. a

2. **a.** 5 (cmmdc) **b.** 80

c.
```
citeste x,y
dacă y>0 atunci
   |         repeta
   |          | z←x%y
   |          | x←y
   |          | y←z
   |         până când y<=0
   └──■
scrie x
```

d.
```
#include <cstdlib>
#include <iostream>
using namespace std;
int x, y, z;
int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    cout<<" y= "; cin>>y;
```

```
        while (y>0)
          {
            z=x % y;
            x=y;
            y=z;
          }
        cout<<" x= "<<x<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

Varianta 43:

1. a

2. **a.** 5 **b.** 13 39 65 91

c.

```
citeşte x,y
dacă x*y≠0 atunci
   |            repeta
   |              | dacă x>y
   |              |   | atunci x←x%y
   |              |   | altfel y←y%x
   |              |   └──■
   |            până când x*y=0
   └──────────────■
scrie x+y
```

d.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int x, y;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    cout<<" y= "; cin>>y;
    while (x*y != 0)
      if (x>y)
         x %= y;
        else y %= x;
    cout<<" x+y= "<<x+y<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 44:

1. a

2. **a.** 555 **b.** 338 (orice nr de forma xy8 cu x,y din intervalul [1,9])

c.
```
citeşte x
y←0
dacă x>y atunci
  |          repetă
  |           | y←y*10+9-x%10
  |          până când x<=y
  |_________■
scrie y
```

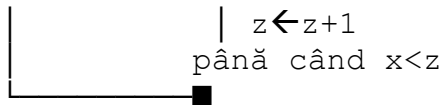
d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int x, y;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    y=0;
    while (x>y)
      y = y*10+9-x % 10;
    cout<<" y= "<<y<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 45:

1. a

2. **a.** 9 **b.** 38

c.
```
citeşte x,y
z←1
t←0
dacă x≥z atunci
  |          repeta
  |           | dacă x%z=y atunci
  |           |   |   t←z
  |           |   |___■
```




```
scrie t
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int x, y, z, t;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    cout<<" y= "; cin>>y;
    z=1;
    t=0;
    while (x>=z)
      {
        if (x % z == y)
           t=z;
        z++;
      }
    cout<<" t= "<<t<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 46:

1. c

2. a. 1 **b.** 75

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

long n, s, nr;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    s=0;
    nr=0;
    while (n!=0)
      {
        if (n % 2 == 0)
           s=s*10+n % 10;
```

```
            n /= 10;
          }
        if (s!=0)
           nr=1;
        cout<<" nr= "<< nr <<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

d.
```
citeşte n
s←0
nr←0
dacă n≠0 atunci
  repeta
    dacă n%2=0 atunci
      s←s*10+n%10
    n←[n/10]
  până când n=0
dacă s≠0 atunci
  nr←1
scrie nr
```

Varianta 47:

1. d

2. **a.** 7 **b.** 70

c.
```
citeste n
max←0
n←[n/10]
dacă max<n%10 atunci
  max←n%10
cat timp n≠0 execută
  n←[n/10]
  dacă max<n%10 atunci
    max←n%10
scrie max
```

d.
```
#include <cstdlib>
#include <iostream>
```

```
using namespace std;
int n;
int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    int max=0;
    do{
      n /= 10;
      if (max<n % 10)
         max = n % 10;
    }while (n!=0);
    cout<<" max= "<<max<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 48:

1. a

2. **a.** 8 905 707 801 10001 105

b. 105 506 904 303 (oricare 4 numere cu cifra zecilor 0)

c.
```
citeste n
i←1
repeta
  | citeste x
  | nr←0
  | cat timp x>0 executa
  |   | nr←nr*100+x%10
  |   | x←[x/100]
  |   └────■
  | cat timp nr>0 executa
  |   | x←x*10+nr%10
  |   | nr←[nr/10]
  |   └────■
  | i←i+1
  | scrie x
pana cand i>n
```

d.
```
#include <cstdlib>
#include <iostream>
using namespace std;
long n, i, nr, x;
```

```
int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    for (i=1; i<=n; i++)
      {
        cout<<" x= "; cin>>x;
        nr=0;
        while (x>0)
          {
            nr=nr*100+x % 10;
            x /= 100;
          }
        while (nr>0)
          {
            x=x*10+nr % 10;
            nr /= 10;
          }
        cout<<" x= "<<x;
      }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 49:

1. b

2. **a.** 204 **b.** 92837 (in loc de 2 si 3 pot fi orice cifre)

c.

```
citeste x
k←0
daca x≠0 atunci
   |         repeta
   |          | k←k*10+x%10
   |          | x←[x/10]
   |         pana cand x=0
   └──────────■
daca k≠0 atunci
   |         repeta
   |          | x←x*10+k%10
   |          | k←[k/100]
   |         pana cand k=0
   └──────────■
scrie x
```

d.

```
#include <cstdlib>
```

```
#include <iostream>
using namespace std;
long x, k;
int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    k=0;
    while (x!=0)
      {
        k=k*10+x % 10;
        x /= 10;
      }
    while (k!=0)
      {
        x=x*10+k % 10;
        k /= 100;
      }
    cout<<" x= "<< x <<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 50:

1. b

2. **a.** 2 **b.** 90 196 5293 95 (oricare 4 nr. Care au cifra zecilor 9)

c.
```
citeste n
k←9
i←1
repeta
 | citeste x
 | c←[x/10]%10
 | daca c<k atunci
 |    |  k←c
 |    └──■
 | i←i+1
pana cand i>n
scrie k
```

d.
```
#include <cstdlib>
#include <iostream>
using namespace std;
int n, i, k, c, x;
```

```
int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    k=9;
    for(i=1; i<=n; i++)
      {
        cout<<" x= "; cin>>x;
        c = x / 10 % 10;
        if (c<k)
           k=c;
      }
    cout<<" k= "<<k<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 51:

1. d

2. **a.** 4220 **b.** 2468 (orice nr. cu toate cifrle pare)

c.
```
citeşte x
z←0
cat timp x≠0 executa
 | c←x%10
 | daca c%2≠0 atunci
 |  |   z←z*10+c-1
 |  | altfel
 |  |   z←z*10+c
 |  └────■
 | x←[x/10]
 └──■
scrie z
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int x, z, c;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    z=0;
    do{
       c = x % 10;
       if (c % 2 !=0)
```

```
            z = z*10+c-1;
          else z=z*10+c;
        x=x / 10;
      }while (x!=0);
      cout<<" z= "<<z<<endl;
      system("PAUSE");
      return EXIT_SUCCESS;
  }
```

Varianta 52:

1. a

2. **a.** 2

b. 13 48 625 19

c.
```
citeşte n
d←0
c←0
i←1
repeta
 | citeşte x
 | cat timp x%2=0 executa
 |  | x←[x/2];  d←d+1
 |  └────■
 | cat timp x%5=0 executa
 |  | x←[x/5];  c←c+1
 |  └────■
 | i←i+1
pana când i>n
daca c<d
 | atunci scrie c
 | altfel d
 └────■
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,d,c,i,x;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    d=0;
    c=0;
    for(i=1; i<=n; i++)
```

```
        {
          cout<<" x="; cin>>x;
          while (x % 2 == 0)
            {
              x /= 2;
              d++;
            }
          while (x % 5 == 0)
            {
              x /= 5;
              c++;
            }
        }
      if (c<d)
         cout<<c;
        else cout<<d;
      cout<<endl;
      system("PAUSE");
      return EXIT_SUCCESS;
  }
```

Varianta 53:

1. c

2. **a.** 13 **b.** 2462 (orice nr. cu toate cifrele pare)

c.

```
citeşte x
z←0
p←1
cat timp x≠0 executa
 | c←x%10
 | daca c%2≠0
 |  | atunci z←z+c*p
 |  |        p←p*10
 |  └──────■
 | x←[x/10]
 └─────────■
scrie z
```

d.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int x,z,p,c;

int main(int argc, char *argv[])
{
```

```
        cout<<" x= "; cin>>x;
        z=0;
        p=1;
        do{
           c=x % 10;
           if (c % 2 !=0)
              {
                 z=z+c*p;
                 p *= 10;
              }
           x=x / 10;
        }while (x!=0);
        cout<<" z= "<<z<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

Varianta 54:

1. d

2. **a.** 26 **b.** 1353 (orice nr cu toate cifrele impare)

c.
```
citeste n
s←0
cât timp n>0 execută
| c←n%10
| dacă c%2=0 atunci
| | p←1
| | i←2
| | repeta
| | | p←p*i
| | | i←i+1
| | pana cand i>c
| | s←s+p
| └■
| n←[n/10]
└■
scrie s
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,s,c,p,i;

int main(int argc, char *argv[])
{
```

```
        cout<<" n= "; cin>>n;
        s=0;
        while (n>0)
          {
            c = n % 10;
            if (c % 2 == 0)
               {
                   p=1;
                   for(i=2; i<=c; i++)
                     p *= i;
                   s += p;
                   };
            n /= 10;
          }
        cout<<" s= "<<s<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

Varianta 55:

1. a

2. **a.** k=3 **b.** 5 85 935 15 5 75

c.
```
citeşte n
citeşte a
k←0
i←2
repeta
│ citeşte b
│ dacă a%10=b%10 atunci
│ │ k←k+1
│ └■
│ a←b
│ i←i+1
pana cand i>n
scrie k
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,a,k,i,b;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
```

```
        cout<<" a= "; cin>>a;
        k=0;
        for (i=2; i<=n; i++)
          {
            cout<<" b= "; cin>>b;
            if (a % 10 == b % 10)
               k=k+1;
            a=b;
          }
        cout<<" k= "<<k<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

Varianta 56:

1. b

2. **a.** 1020 **b.** 1817 (orice nr de forma x8y7)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

long n,r;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    r=0;
    do{
       r=(r*10+n % 10)*10;
       n /= 100;
    }while (n>=10);
    cout<<" r= "<<r<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte n
r←(n%10)*10
n←[n/100]
cat timp n>=10 executa
 | r←(r*10+n%10)*10
 | n←[n/100]
 ■
```

```
scrie r
```

Varianta 57:

1. d

2. **a.** 3 **b.** 63 70 77 91 98 (unul dintre ele)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,q,i;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    q=1;
    i=1;
    while (i < n / i)
      {
        if (n % i == 0)
           q=q+i;
        i=i+3;
      }
    cout<<" q= "<<q<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte n
q←1
i←1
daca i<[n/i] atunci
  |              repeta
  |               | dacă n%i=0 atunci
  |               |   | q←q+i
  |               |   |■
  |               | i←i+3
  |              pana cand i>=[n/i]
  |■
scrie q
```

Varianta 58:

1. c

2. a. 1101 **b.** 50

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n, q;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    q=1;
    while (n>0)
      {
        if (n % 5 == 0)
           q *=10;
          else q=q*10+1;
        n /= 5;
      }
    cout<<" q= "<<q<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte n (număr natural)
q←1
daca n>0 atunci
           repeta
             | dacă n%5=0 atunci
             | | q←q*10
             | |altfel
             | | q←q*10+1
             | |■
             | n←[n/5]
           pana cand n=0
scrie q
```

Varianta 59:

1. b

2. a. 2 **b.** orice nr intre 30 si 39

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;
```

```
int n, i;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    do{
      n = n % 100 / 10 + n / 10;
    }while (n>=10);
    cout<<" n= "<<n<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte n
n←[(n%100)/10]+[n/10]
cat timp n>=0 executa
  n←[(n%100)/10]+[n/10]
scrie n
```

Varianta 60:

1. a

2. **a.** 7 **b.** 24531 (orice nr care in fata lui 5 are numai cifre pare)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n, c;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    c=10;
    while (n % 2 == 1)
      {
        c=n % 10;
        n /= 10;
      }
    cout<<" c= "<<c<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte n (număr natural)
c←10
daca n%2=1 atunci
   |            repeta
   |             | c←n%10
   |             | n←[n/10]
   |            pana cand n%2≠1
   └────────────■
scrie c
```

Varianta 61:

1. d

2. **a.** 1303 **b.** 36

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int a,b,n,x,y;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    cout<<" b= "; cin>>b;
    n=0;
    while (a!=b)
      {
        x = a % 10;
        y = b % 10;
        if (x<y)
           n = n * 10 + x;
          else n = n * 10 + y;
        a /= 10;
        b /= 10;
      }
    cout<<" n= "<<n<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte a,b
n←0
daca a≠b atunci
            repeta
             | x←a%10
             | y←b%10
```

```
                  | dacă x<y atunci
                  |   |    n←n*10+x
                  |   | altfel
                  |   |    n←n*10+y
                  |   |_■
                  | a←[a/10]
                  | b←[b/10]
                pana cand a=b
    scrie n
```

Varianta 62:

1. b

2. **a.** 8162 2816 6281 1628 **b.** 1000 (orice $p*10^k$, $p \in [1,9]$; $k>3$)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int x,aux,c,t;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    aux=x;
    do{
      c = x % 10;
      x /= 10;
      t = x;
      if (c == 0)
         aux=x;
      while (t!=0)
        {
          c *=10;
          t /= 10;
        }
      x += c;
      cout<<"  "<<x;
    }while ( (x!=aux) || (c==0) );
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte x
aux←x
```

```
┌repetă
│ c←x%10
│ x←[x/10]
│ t←x
│ dacă c=0 atunci
│   │ aux←x
│   └■
│ daca t≠0 atunci
│   │           repeta
│   │            │ c←c*10
│   │            │ t←[t/10]
│   │           pana cand t=0
│   └──────────■
│ x←c+x
│ scrie x
└până când x=aux şi c≠0
```

Varianta 63:

1. a

2. **a.** 40 3 **b.** 5 9 13 (oricare 3 nr nediviz cu 2)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int i, n, d, b, v, x, aux, a;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    cout<<" d= "; cin>>d;
    b=0;
    v=0;
    for(i=1; i<=n; i++)
      {
        cout<<" x= "; cin>>x;
        a=0;
        aux=x;
        while (x % d == 0)
          {
            a++;
            x /= d;
          }
        if (a>b)
           {
               b=a;
               v=aux;
           }
```

```
        }
    cout<<v<<" "<<b<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte n, d
b←0
v←0
pentru i←1,n execută
| citeşte x
| a←0
| aux←x
| daca x%d=0 atunci
|   |            repeta
|   |             | a←a+1
|   |             | x←[x/d]
|   |            pana cand x%d≠0
|   └──────■
| dacă a>b atunci
|   | b←a
|   | v←aux
|   └──■
└──■
scrie v," ",b
```

Varianta 64:

1. c

2. **a.** 2 3 4 4 5 6 5 6 7 8 10 **b.** 15

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n, k, i, j;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    k=0;
    for(i=1; i<=n; i++)
      for(j=1; j<=i; j++)
        {
          cout<<i+j<<" ";
          k=k+1;
        }
```

```
        cout<<k<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

d.
```
citeşte n
k←0
i←1
cat timp i<=n executa
  | j←1
  | cat timp j<=i executa
  |   | scrie i+j
  |   | k←k+1
  |   | j←j+1
  |   └──■
  | i←i+1
  └────■
scrie k
```

Varianta 65:

1. b

2. **a.** 13277321 1 **b.** 5555 si 7777 (orice nr cu 4 cifre identice)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int m,n,v,u,c;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    m=0;  v=n;
    u=n % 10;
    do{
      c = n % 10;
      v = v*10+c;
      if (c=u)
         m++;
      n /= 10;
    }while (n!=0);
    cout<<v<<"  "<<m<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte n
m←0;  v←n
u←n%10
c←n%10
v←v*10+c
dacă c=u atunci
  | m←m+1
  ■
n←[n/10]
cat timp n≠0 executa
  | c←n%10
  | v←v*10+c
  | dacă c=u atunci
  |   | m←m+1
  |   ■
  | n←[n/10]
  ■
scrie v, m
```

Varianta 66:

1. b

2. **a.** NU **b.** 25 13 50 69 0 (cite nr / cu 5 atatea nr nediv cu 5)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,x;

int main(int argc, char *argv[])
{
    n=0;
    do{
      cout<<" x= "; cin>>x;
      if (x!=0)
        if (x % 5 == 0)
            n++;
          else n--;
    }while (x!=0);
    if (n==0)
       cout<<"DA";
      else cout<<"NU";
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
n←0
citeste x
cat timp x≠0 executa
| dacă x%5=0 atunci
|   |   n←n+1
|   | altfel
|   |   n←n-1
|   └──■
| citeşte x
└────■
dacă n=0 atunci
|   scrie „DA”
| altfel
|   scrie „NU”
└────■
```

Varianta 67:

1. c

2. **a.** 264 **b.** 7986 (orice nr cu toate cifrele mari de 5)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,z,c;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    z=0;
    while (n>0)
      {
        c = n % 10;
        n /= 10;
        if (c<5)
           z=z*10+2*c;
      }
    cout<<" z= "<<z<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d. citeşte n (număr natural)

```
z←0
daca n>0 atunci
  |          repeta
  |            | c←n%10
  |            | n←[n/10]
  |            | dacă c<5 atunci
  |            |   | z←z*10+2*c
  |            |   ■
  |            pana cand n<=0
  ■
scrie z
```

Varianta 68:

1. a

2. **a.** 2 **b.** 5 15 20 25 30 (5 nr. Nediviz cu 7)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int x,i,nr,n;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    nr=0;
    for (i=1; i<=5; i++)
      {
        cout<<" n= "; cin>>n;
        if (n % x == 0)
          nr++;
      }
    cout<<" nr= "<<nr<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte x
nr←0
i←1
cat timp i<=5 executa
  | citeşte n
  | dacă n%x=0 atunci
  |   | nr←nr+1
  |   ■
  | i←i+1
```

```
      ┗■
    scrie nr
```

Varianta 69:

1. d

2. **a.** 4789 **b.** 200 si 200 sau 200 si 100 sau 200 si 0

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int x,y,t,u,z;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    cout<<" y= "; cin>>y;
    t=0;
    u=1;
    do{
      if (x % 10 > y % 10)
          z = x % 10;
        else  z = y % 10;
      t +=z*u;
      u *=10;
      x /= 10;
      y /= 10;
    }while ((x!=0) || (y!=0) );
    cout<<" t= "<<t<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte x,y
t←0
u←1
cat timp x≠0 sau y≠0 executa
│ dacă x%10 > y%10 atunci
│ │   z ← x%10
│ │ altfel
│ │   z ← y%10
│ ┗━━■
│ t←t+z*u
│ u←u*10
│ x←[x/10]
│ y←[y/10]
```

```
└──■
scrie t
```

Varianta 70:

1. a

2. **a.** 4 3 **b.** n=5 x=2 (oricare 2 nr astfel incat n=2*x+1)

c.
```
#include <cstdlib>
#include <iostream>
using namespace std;
int x,y,n;
int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    cout<<" y= "; cin>>y;
    n=0;
    while (x>=y)
      {
        x=x-y;
        n=n+1;
      }
    cout<<" n= "<<n<<"   x= "<<x<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte x,y
n←0
daca x>=y atunci
  │          repeta
  │           │ x←x-y
  │           │ n←n+1
  │          pana cand x<y
  └──────────■
scrie n, x
```

Varianta 71:

1. c

2. **a.** 84345

b. 42 35 296 1 (oricare 4 numere care au prima cifra 4 3 2 1 – in aceasta ordine)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int s,i,x,n,j;

int main(int argc, char *argv[])
{
    s=0;
    cout<<" n= "; cin>>n;
    for(i=1; i<=n; i++)
      {
        cout<<" x= "; cin>>x;
        while (x>9)
          x /= 10;
        for(j=1; j<=i-1; j++)
          x *= 10;
        s +=x;
      }
    cout<<" s= "<<s<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
s←0
citeşte n (număr natural)
pentru i←1,n execută
  | citeşte x
  | daca x>9 atunci
  |   |          repeta
  |   |           | x←[x/10]
  |   |          până când x<=9
  |   └──■
  | pentru j←1,i-1 execută
  |   | x←x*10
  |   └──■
  | s ← s + x
  └──■
scrie s
```

Varianta 72:

1. d

2. a.
```
*****
****
***
```

```
**
*
**
***
****
*****
```

b.
```
citeşte n
pentru i←1,2*n-1 execută
  | b ← 0
  | j←4
  | cât timp j-[i/2]>0 şi i%2=1 execută
  |   | scrie „*”
  |   | j←j-1
  |   | b←1
  |   └──■
  | dacă b != 0 atunci
  |   |  salt la rând nou (sfârşit de rând)
  |   └──■
  └────■
```

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,i,b,j;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    for(i=1; i<=2*n-1; i++)
      {
        b=0;
        if (n-i<0)
           j=i-n;
          else j=n-i;
        while (j>=0)
          {
            cout<<"*";
            j--;
            b=1;
          };
        if (b!=0)
          cout<<endl;
      }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte n
pentru i←1,2*n-1 execută
  | b ← 0
  | j← |n-i|
  | cât timp j ≥ 0 execută
  |   | scrie „*”
  |   | j←j-1
  |   | b←1
  |   └──■
  | dacă b = 0 atunci
  |   |  salt la rând nou (sfârşit de rând)
  |   └──■
  └──■
```

Varianta 73:

1. c

2. **a.** 12 **b.** 125

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int a,b,p,nr,x,i;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    cout<<" b= "; cin>>b;
    cout<<" p= "; cin>>p;
    nr=0;
    for(i=a; i<=b; i++)
      {
        x=i;
        while ( (x!=0) && (x % p !=0) )
          x /= 10;
        if (x!=0)
           nr++;
      }
    cout<<" nr= "<<nr<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte a, b, p
```

```
nr←0
┌ pentru i←a,b execută
│ x ← i
│ daca x≠0 şi x%p≠0 atunci
│   │                    repeta
│   │                    │ x←[x/10]
│   │                    până când x=0 sau x%p=0
│   └──────────■
│ dacă x ≠ 0 atunci
│   │ nr←nr+1
│   └──■
└──■
scrie nr
```

Varianta 74:

1. a

2. **a.** c=15 p=322

b. b=17335 (orice nr cu cifrele nesubliniate ca in exemplu)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

long a,b,c,p;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    cout<<" b= "; cin>>b;
    c=0;
    p=0;
    while (a+b>10)
      {
        if ( (a % 10 == b % 10) && (a % 10 % 2 == 1)
)
            c=c*10 + b % 10;
          else p=p*10 + a % 10;
        a /= 10;
        b /= 10;
      }
    cout<<" c= "<<c<<"     p= "<<p<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte a,b (numere naturale)
c ← 0
p ← 0
cât timp a + b > 10 execută
  | dacă (a%10 = b%10) şi (a%10%2=1)
  |   | atunci c ← c + 1
  |   | altfel p ← p*10 + a%10
  |   ┗■
  | a ← [a/10]
  | b ← [b/10]
  ┗■
scrie c, p
```

Varianta 75:

1. d

2. **a.** 62255661 **b.** 1253 3452 5602 7802

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

long a,k,x;

int main(int argc, char *argv[])
{
    a=0;
    k=0;
    do{
      cout<<" x= "; cin>>x;
      while (x>99)
        x /= 10;
      if (x>9)
        {
           a=a*100+x;
           k++;
        }
    }while (k!=4);
    cout<<" a= "<<a<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
a←0
k←0
cat timp k<4 executa
```

```
    | citeşte x (număr natural)
    | cât timp x > 99 execută
    |   | x ← [x/10]
    |   └■
    | dacă x > 9 atunci
    |   | a←a*100 + x
    |   | k←k+1
    |   └■
    └■
  scrie a
```

Varianta 76:

1. c

2. **a.** 35 **b.** 6 (orice cifra pară)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int a,x,p,c;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    x=2;
    p=1;
    while (a>1)
      {
        c=0;
        while (a % x == 0)
          {
            c=x;
            a /= x;
          }
        if (c!=0)
           p *= c;
        x++;
      }
    cout<<" p= "<<p<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte a (număr natural)
x←2
p←1
```

```
dacă a>1 atunci repeta
  |                 | c←0
  |                 | dacă x|a atunci repeta
  |                 |   |                 | c←x
  |                 |   |                 | a←[a/x]
  |                 |   |                pana cand not (x|a)
  |                 |   |
  |                 | dacă c≠0 atunci
  |                 |   | p←p*c
  |                 |   |
  |                 | x←x+1
  |               pana când a<=1
  |
scrie p
```

Varianta 77:

1. b

2. **a.** 4

b. 9 7 5 3 0 (orice şir de numere in ordine descrescatoare apoi 0)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int a,k,b;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    k=0;
    while (a!=0)
      {
        cout<<" b= "; cin>>b;
        if (a<b)
           k++;
        a=b;
      }
    cout<<" k= "<<k<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte a
k←0
daca a≠0 atunci
```

```
|          repeta
|            | citeşte b
|            | dacă a < b atunci
|            |   | k←k+1
|            |   ■
|            | a←b
|          până când a=0
|    ■
scrie k
```

Varianta 78:

1. a

2. a. 3

b. 15 53 59 42 0 (orice şir de numere in care ultima cifra a fiecarei perechi de numere consecutive este distincta)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int a,k,b;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    k=0;
    while (a!=0)
      {
        cout<<" b= "; cin>>b;
        if (a % 10 == b % 10)
           k++;
        a=b;
      }
    cout<<" k= "<<k<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte a
k←0
daca a≠0 atunci
|          repeta
|            | citeşte b
|            | dacă a%10 = b%10 atunci
|            |   | k←k+1
```

```
|           |  ↳■
|           | a←b
|          până când a=0
|_____■
scrie k
```

Varianta 79:

1. d

2. **a.** 12

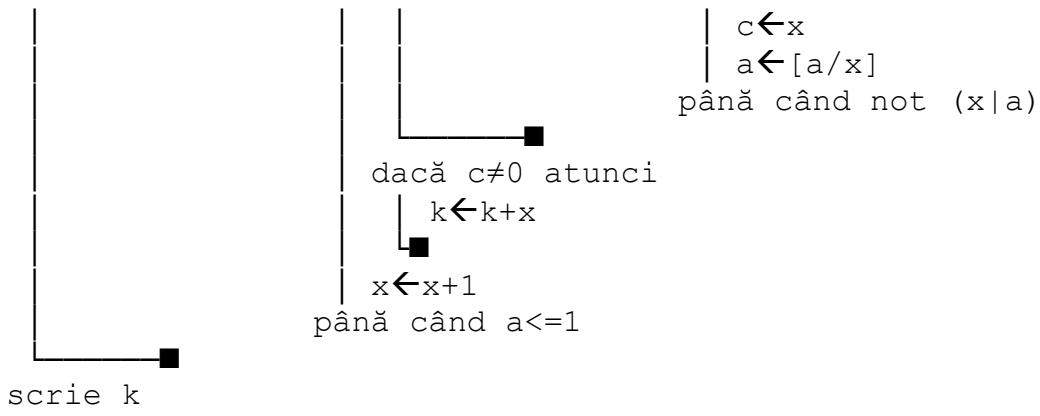
b. 13 (orice valoare la care suma divizorilor primi este egală cu numarul initial)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int a,x,k,c;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    x=2;
    k=0;
    while (a>1)
      {
        c=0;
        while (a % x == 0)
          {
            c=x;
            a /= x;
          }
        if (c!=0)
           k += x;
        x++;
      }
    cout<<" k= "<<k<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte a
x←2
k←0
dacă a>1 atunci repetă
|               | c←0
|               | dacă x|a atunci repetă
```



Varianta 80:

1. a

2. **a.** 593 **b.** 5319 (oricenumar cu toate cifrele impare)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int a,b,p,c;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    b=0;
    p=1;
    while (a>0)
      {
        c = a % 10;
        if (c % 2 != 0)
           {
              b += p * c;
              p *= 10;
           };
        a /= 10;
      }
    cout<<" b= "<<b<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte a
b←0
p←1
daca a>0 atunci
```

```
      repetă
        | c←a%10
        | ┌dacă c%2≠0 atunci
        | | b←b+p*c
        | | p←p*10
        | └■
        | a←[a/10]
      până când a<=0
  └──────■
scrie b
```

Varianta 81:

1. b

2. **a.** aux=5 ok=0

b. 53827 (orice numar cu toate cifrele distincte şi cea mai mare cifra 8)

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

long n,ok,aux;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    ok=1;
    aux=0;
    while (n>0)
      {
        if (aux<=n % 10)
          if (aux=n % 10)
              ok=0;
             else aux = n % 10;
        n /= 10;
      }
    cout<<" aux= "<<aux<<"     ok= "<<ok<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte n
ok←1
aux←0
daca n>0 atunci
 |         repeta
```

```
        |           | dacă aux≤n%10 atunci
        |           |   | dacă aux=n%10 atunci
        |           |   |   |    ok←0
        |           |   |   | altfel
        |           |   |   |   aux←n%10
        |           |   |   |_______■
        |           |   |_______■
        |           | n←[n/10]
        |         până când n≤0
        |_____■
      scrie aux," ",ok
```

Varianta 82:

1. d

2. **a.** 25 15 **b.** 7

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

long m,n,i,aux,ok,x;

int main(int argc, char *argv[])
{
    cout<<" m= "; cin>>m;
    cout<<" n= "; cin>>n;
    for(i=1; i<=n; i++)
      {
        cout<<" x= "; cin>>x;
        aux=x;
        ok=0;
        while (x>0)
          {
            if (x % 10 == m)
               ok=1;
            x /= 10;
          }
        if (ok == 1)
           cout<<" aux= "<<aux;
      }
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte m
```

```
citeşte n
pentru i←1,n execută
  | citeşte x
  | aux←x
  | ok←0
  | daca x>0 atunci
  |   |          repeta
  |   |           | dacă x%10=m atunci
  |   |           |   | ok←1
  |   |           |   ┕■
  |   |           | x←[x/10]
  |   |           pana cand x<=0
  |   ┕━━━━━━━━━■
  | dacă ok=1 atunci
  |   | scrie aux
  |   ┕■
  ┕■
```

Varianta 83:

1. a

2. **a.** NU **b.** 899

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

long x,aux,ok1;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    aux=x;
    ok1=1;
    while (x>=10)
      {
        if (x % 10 > x / 10 % 10)
           ok1=0;
        x /= 10;
      }
    if (ok1 == 1)
       cout<<aux;
      else cout<<"NU";
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte x
aux←x
ok1←1
daca x≥10 atunci
  repeta
    dacă x%10>[x/10]%10 atunci
      ok1←0
    x←[x/10]
  pana cand x<0
dacă ok1=1 atunci
   scrie aux
 altfel
   scrie ”nu”
```

Varianta 84:

1. c

2. **a.** 6 NU **b.** 698

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,ok1,c;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    ok1=0;
    while (n>0)
      {
        c = n % 10;
        if ( (c>5) && (c % 2 == 0) )
           ok1=1;
          else ok1=0;
        if (ok1 == 1)
           {
               cout<<c<<" ";
               ok1=1;
           }
        n /= 10;
      }
    if (ok1 == 0)
       cout<<"NU";
    cout<<endl;
```

```
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

d.
```
citeşte n
ok1←0
daca n>0 atunci
  |          repeta
  |            | c←n%10
  |            | dacă c>5 şi c%2=0 atunci
  |            |   |   ok1←1
  |            |   | altfel
  |            |   |   ok1←0
  |            |   └■
  |            | dacă ok1=1 atunci
  |            |   | scrie c, " "
  |            |   | ok1←1
  |            |   └■
  |            | n←[n/10]
  |          pana cand n≤0
  └──────────■
dacă ok1=0 atunci
  | scrie ”nu”
  └──■
```

Varianta 85:

1. a

2. **a.** 5 9 **b.** 879

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,ok1,ok,c;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    ok=0;
    while (n>0)
      {
        c=n % 10;
        if (c % 2 == 1)
           ok1=1;
          else ok1=0;
        if (ok1 == 1)
```

```
                {
                    cout<<c<<" ";
                    ok=1;
                }
             n /= 10;
          };
        if (ok == 0)
           cout<<"NU";
        cout<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

d.
```
citeşte n
ok←0
daca n>0 atunci
  |          repeta
  |            | c←n%10
  |            | dacă c%2=1 atunci
  |            |   |   ok1←1
  |            |   | altfel
  |            |   |   ok1←0
  |            |   ┗■
  |            | dacă ok1=1 atunci
  |            |   | scrie c
  |            |   | ok←1
  |            |   ┗■
  |            | n←[n/10]
  |          pana cand n≤0
  ┗━━━━━━━━━━━■
dacă ok=0 atunci
  | scrie ”nu”
  ┗■
```

Varianta 86:

1. c

2. a. 1 2 3 4 0 1 2 **b.** 25 (orice nr mai mare ca 20)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,k,i;

int main(int argc, char *argv[])
{
```

```
        cout<<" n= "; cin>>n;
        cout<<" k= "; cin>>k;
        for(i=1; i<=n; i++)
          if (i / k == 0)
             cout<<i<<" ";
            else cout<< i % k <<" ";
        cout<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

d.

```
citeşte n, k
i←1
daca i<=n atunci
  |           repeta
  |             | dacă [i/k]=0 atunci
  |             |   | scrie i
  |             |   |altfel
  |             |   | scrie i%k
  |             |   |
  |             | i←i+1
  |           pana cand i>n
  |_____________|
```

Varianta 87:

1. d

2. a. 2 **b.** 98 91 84

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int a,b,c,x;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    cout<<" b= "; cin>>b;
    cout<<" c= "; cin>>c;
    while ( (a!=b) || (a!=c) )
      {
        x=a;
        if (x>b)
           x = b;
        if (x>c)
```

```
            x = c;
         if (x!=a)
            a -= x;
         if (x!=b)
            b -= x;
         if (x!=c)
            c -= x;
       };
    cout<<" a= "<<a<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte a,b,c
daca a≠b sau a≠c atunci
    repeta
        x←a
        dacă x>b atunci
            x←b
        dacă x>c atunci
            x←c
        dacă x≠a atunci
            a←a-x
        dacă x≠b atunci
            b←b-x
        dacă x≠c atunci
            c←c-x
    pana cand a=b si a=c
scrie a
```

Varianta 88:

1. b

2. **a.** 246531 **b.** 11262

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int a,p,b,c;
```

```
int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    p=1;
    b=0;
    while (a!=0)
      {
        c=a % 10;
        if (a % 2 == 0)
           b += c*p;
          else b=b*10+c;
        a /= 10;
        p *= 10;
      }
    cout<<" b= "<<b<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte a
p←1
b←0
daca a≠0 atunci
  |          repeta
  |            | c←a%10
  |            | dacă a%2=0 atunci
  |            |   |  b←b+c*p
  |            |   |altfel
  |            |   |  b←b*10+c
  |            |   |■
  |            | a←[a/10]
  |            | p←p*10
  |          pana cand a=0
  |■
scrie b
```

Varianta 89:

1. a

2. **a.** 1012141 **b.** 12468

c.

```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,t,r;
```

```
int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    t=n; r=0;
    while (t>0)
      {
        if (t % 10 % 2 == 1)
           r = r*10+1;
          else r=r*10+t % 10;
        t /= 10;
      }
    n=0;
    while (r>0)
      {
        n=n*10+r % 10;
        r /= 10;
      }
    cout<<" n= "<<n<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
citeşte n
t←n; r←0
daca t>0 atunci
  |          repeta
  |           |┌dacă (t%10)%2=1 atunci
  |           ||  r←r*10+1
  |           ||altfel
  |           ||  r←r*10+t%10
  |           |└■
  |           |  t←[t/10]
  |          pana cand t<=0\
  └──────────■
n←0
daca r>0 atunci
  |          repeta
  |           |  n←n*10+r%10
  |           |  r←[r/10]
  |          pana cand r<=0
  └──────────■
scrie n
```

Varianta 90:

1. c

2. a. 107 117

b. 25 29 2 si 451 457 9 (orice numere astfel incat nici un numar din intervalul[a,b] sa nu aiba ultima cifra k)

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int a,b,k,t,p;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    cout<<" b= "; cin>>b;
    cout<<" k= "; cin>>k;
    t=a;
    p=0;
    while (t<=b)
      {
        if (k == t % 10)
           {
               cout<<t<<" ";
               p=1;
           }
        t++;
      }
    if (p == 0)
       cout<<-1;
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte a, b, k
t ← a
p ← 0
daca t≤b atunci
|          repeta
|            | dacă k=t%10 atunci
|            |   | scrie t
|            |   | p←1
|            |   ■
|            | t←t+1
|          pana cand t>b
■
dacă p=0 atunci
| scrie -1
■
```

Varianta 91:

1. d

2. a. 7

b.
```
citeşte z
z←|z|
x←1
y←x
x←[(x+z/x)/2]
cat timp x≠y executa
 | y←x
 | x←[(x+z/x)/2]
 └──■
scrie x
```

c.
```
#include <cstdlib>
#include <iostream>
#include <math.h>

using namespace std;

int z,x,y;

int main(int argc, char *argv[])
{
    cout<<" z= "; cin>>z;
    z= abs(z);
    x=1;
    do{
      y = x;
      x = (x+z / x) / 2;
    }while (x!=y);
    cout<<" x= "<<x<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d. o singura data

Varianta 92:

1. a

2. a. 9 9 **b.** 5 9 2 (oricare 3 numere din intervalul [1,10])

c.
```
#include <cstdlib>
#include <iostream>
#include <math.h>

using namespace std;

int n,nr,y,i,x;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    nr=0;
    y=0;
    for(i=1; i<=n; i++)
      {
        do{
          cout<<" x= "; cin>>x;
          nr++;
        }while ( (x<1) || (x>10) );
        y += x;
      }
    cout<<y / n<<" "<<nr<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.
```
citeşte n
nr←0
y←0
pentru i←1,n execută
  | citeşte x (număr real)
  | nr←nr+1
  | cat timp x<1 sau x>10 executa
  |   | citeşte x (număr real)
  |   | nr←nr+1
  |   └──■
  | y←y+x
  └────■
scrie [y/n]
scrie nr
```

Varianta 93:

1. b

2. **a.** 26

b.
```
#include <cstdlib>
```

```
#include <iostream>
using namespace std;
int n,m,s;
int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    cout<<" m= "; cin>>m;
    s=0;
    while (n<m)
      {
        s += n;
        n += 3;
      }
    if (n=m)
       cout<<s+n;
      else cout<<0;
    cout<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

c. 7 valori (m= 0 2 3 5 6 8 9)

d.

```
k←[(m-n)/3]
daca (m-n)%3 ≠ 0
  atunci scrie 0
  altfel scrie n+n*[(m-n)/3]+[k*(k+1)/2]*3
```

Varianta 94:

1. a

2. **a.** 621131 **b.** 0

c.

```
citeşte n
n1 ← 0
n2 ← 0
k1 ← 0
p ← 1
cât timp n ≠ 0 execută
  dacă (n%10)%2=0 atunci
     n2 ← n2 * 10 + n%10
  altfel
     n1 ← n1 * 10 + n%10
```

```
    p ← p*10
  n ← [n/10]
x ← n2*p + n1
scrie x
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

long n,n1,n2,k1,p,x,i;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    n1=0;
    n2=0;
    k1=0;
    while (n!=0)
      {
        if ( (n % 10) % 2 == 0 )
           n2= n2*10+n % 10;
          else{
               n1 = n1*10+n % 10;
               k1++;
              }
        n /= 10;
      }
    p=1;
    for(i=1; i<=k1; i++)
      p *= 10;
    x = n2*p+n1;
    cout<<" x= "<<x<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 95:

1. d

2. a. 125 **b.** 98002, 89002, 80902, 80092, 80029, 80020

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;
```

```
long x,n,k;
int main(int argc, char *argv[])
{
    x=0;
    cout<<" n= "; cin>>n;
    cout<<" k= "; cin>>k;
    while (n!=0)
      {
        if (n % 10 < k)
           x = x*10+n % 10;
        n /= 10;
      }
    cout<<" x= "<<x<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

d.

```
x ← 0
citeşte n,k
daca n≠0 atunci
|          repeta
|           | dacă n % 10<k atunci
|           |  | x ← x*10 + n % 10
|           |  ┗■
|           | n ← [n/10]
|          pana cand n=0
┗━━━━━━━━■
scrie x
```

Varianta 96:

1. c

2. **a.** (1, 2, 7; (1, 3, 6; (1, 4, 5; (2, 3 ,5)

b. 30 (orice nr multiplu de 3)

c.

```
#include <cstdlib>
#include <iostream>
using namespace std;
int n,i,j,k;
int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    for (i=1; i<=n; i++)
      for (j=1; j<=n; j++)
```

```
            for (k=1; k<=n; k++)
              if ( (i<j) && (j<k) )
                 if (i+j+k == n)
                      cout<<i<<" "<<j<<" "<<k<<endl;;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

d.
```
citeşte n
pentru i←1,n execută
  | pentru j←1,n execută
  |   | k←n-(i+j)
  |   | dacă i<j<k atunci
  |   |   | scrie i," ",j," ",k
  |   |   | salt la rând nou
  |   |   └──■
  |   └──■
  └──■
```

Varianta 97:

1. b

2. a. 3 10 24

b. 2<u>7</u> 4<u>4</u> 12<u>3</u> (ultima cifra, de la primul nr, ultima cifra, de la alilea nr, *2 şi ultima cifra, de la ultimu nr, *3 sa fie consecutive)

c.
```
citeşte x
s ← x % 10
scrie s
citeşte x
s ← (x % 10)*2
scrie s
citeşte x
s ← (x % 10)*3
scrie s
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int i,s,x,j;

int main(int argc, char *argv[])
{
    for(i=1;i<=3; i++)
```

```
            {
              cout<<" x= "; cin>>x;
              s=0;
              for(j=1; j<=i; j++)
                 s=s+x % 10;
              cout<<s;
            }
          cout<<endl;
          system("PAUSE");
          return EXIT_SUCCESS;
      }
```

Varianta 98:

1. d

2. **a.** 3 **b.** 16 17 18 19 20 21 22 23 24

c.
```
citeşte n
i ← [√n]
scrie i
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int n,i;

int main(int argc, char *argv[])
{
    cout<<" n= "; cin>>n;
    i=1;
    while (i*i<=n)
      i++;
    cout<< i-1 <<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 99:

1. d

2. **a.** 6 **b.** 1 3 5 7 9

c. **`putere(p,x)`**

```
daca x>0
  | atunci
  |    putere(p,x-1;
  |    p←(4*p)%10;
  | altfel p←1;
  └──■
```

Sau secvența:

```
citeste x
daca x % 2 =0
  | atunci p←6
  | altfel p←4
  └──■
scrie p;
```

```
citeşte x
p ← 1
putere(p,x)
scrie p
```

d.
```
#include <cstdlib>
#include <iostream>

using namespace std;

int x,p,i;

int main(int argc, char *argv[])
{
    cout<<" x= "; cin>>x;
    p=1;
    for(i=1; i<=x; i++)
      p = (p*4) % 10;
    cout<<" p= "<<p<<endl;
    system("PAUSE");
    return EXIT_SUCCESS;
}
```

Varianta 100:

1. a

2. a. 1 **b.** 106 115 124

c.
```
#include <cstdlib>
#include <iostream>

using namespace std;

long a,b;

int main(int argc, char *argv[])
{
    cout<<" a= "; cin>>a;
    do{
       b=0;
       while (a!=0)
```

```
            {
              b += a % 10;    a /= 10;
            }
          a=b;
        }while  (a>=10);
        cout<<" b= "<<b<<endl;
        system("PAUSE");
        return EXIT_SUCCESS;
    }
```

d.
```
citeşte a
repetă
 | a←[a/10]+ a%10
până când a<10
scrie a
```

==========