

Exemplu

$H(3,a,b,c) = H(2,a,c,b) \text{ ab } H(2,c,b,a) = H(1,a,b,c) \text{ ac } H(1,b,c,a) \text{ ab } H(1,c,a,b) \text{ cb } H(1,a,b,c) =$
 $= \text{ab ac bc ab ca cb ab}$

2527)

```
#include<fstream>
using namespace std;
ifstream f("hanoi.in");
ofstream g("hanoi.out");
int nr, n;

void Hanoi_nr(int n, char A, char B, char C)
{
    if(n==1) nr++;
    else
    {
        Hanoi_nr(n-1,A,C,B);
        nr++;
        Hanoi_nr(n-1,C,B,A);
    }
}

void Hanoi(int n, char A, char B, char C)
{
    if(n==1) g << A <<"-"<< B << "\n";
    else
    {
        Hanoi(n-1,A,C,B);
        g <<A<<"-"<<B<<"\n";
        Hanoi(n-1,C,B,A);
    }
}

int main()
{
    f >> n;
    char a='A', b='B', c='C';
    Hanoi_nr(n,a,c,b);
    g<<nr<<endl; // nr = 2^n -1
    Hanoi(n,a,c,b);
    return 0;
}
```

1155)

```
int x[25001],y,i,m,n;
int cautare(int i,int j,int y)
{
    int mij;
    if(i>j) return 0;
    else
    {
        mij=(i+j)/2;
        if (y==x[mij]) return 1;
```

```

        else if(y<x[mij]) return cautare(i,mij-1,y);
        else return cautare(mij+1,j,y);
    }
}

```

```

int main()
{
    cin>>n;
    for(i=1;i<=n;i++)
        cin>>x[i];
    cin>>m;
    for(i=1;i<=m;i++)
    {
        cin>>y;
        cout<<cautare(1,n,y)<<" ";
    }

    return 0;
}

```

1809)

```

int putere(int a, int b)
{
    if(b==0) return 1;
    else
    {
        if(b%2==0) return putere(a,b/2)*putere(a,b/2);
        else return putere(a,b/2)*putere(a,b/2)*a;
    }
}

```

```

int main()
{
    int a,b;
    cin >> a >> b;
    cout << putere(a,b);
    return 0;
}

```

1020)

```

int n,v[1001],i;

```

```

int prim(int n)
{
    if(n<2)return 0;
    for(int i=2;i*i<=n;i++)
        if(n%i==0)return 0;
    return 1;
}

```

```

int maxi(int i,int j)
{
    int a,b,m;
    if(i==j)
        if (prim(v[i])) return v[i];
        else return 0;
    else
    {
        m=(i+j)/2;
        a=maxi(i,m);
        b=maxi(m+1,j);
        return max(a,b);
    }
}

```

```

int main()
{
    cin>>n;
    for(i=1;i<=n;i++)
        cin>>v[i];
    cout<<maxi(1,n);
    return 0;
}

```

1150)

Sol 1 – cu numarare

```

int n,v[101],i;

```

```

int pare(int i,int j)
{
    int a,b,m;
    if(i==j)
        if(v[i]%2==0) return 1;
        else return 0;
    else
    {
        m=(i+j)/2;
        a=pare(i,m);
        b=pare(m+1,j);
        return a+b;
    }
}

```

```

int main()
{
    cin>>n;
    for(i=1;i<=n;i++)
        cin>>v[i];
    if(pare(1,n)==n)cout<<"DA";
    else cout<<"NU";
    return 0;
}

```

Sol 2 – cu functie logica

```
int divide(int i,int j)
{
    int m;
    if (j==i)
        if (x[i]%2==0) return 1;
        else return 0;
    else
    {
        m=(i+j)/2;
        return divide(i,m) && divide(m+1,j);
    }
}

int main()
{
    cin>>n;
    for (i=1;i<=n;i++)
        cin>>x[i];

    if(divide(1,n))cout<<"DA";
    else cout<<"NU";
    return 0;
}
```

[//https://www.pbinfo.ro/probleme/1025/mergesort](https://www.pbinfo.ro/probleme/1025/mergesort)

```
#include<iostream>
using namespace std;
int n,a[100001];

//sorteaza subsirul (a[ls],a[ld]) format din maxim 2 elemente alaturate
void sort2(int ls, int ld)
{
    if (a[ls]>a[ld]) swap(a[ls], a[ld]);
}

//interclaseaza subsirurile sortate (a[ls]...a[m]) si (a[m+1]...a[ld])
void interclasare(int ls, int ld, int m)
{
    int i=ls, j=m+1, k=0, b[100001];
    while(i<=m && j<=ld)
        if(a[i]<a[j]) b[++k]=a[i++];
        else b[++k]=a[j++];

    while(i<=m) b[++k]=a[i++];
    while(j<=ld) b[++k]=a[j++];
    // copiezi b[1]...b[k] in a[ls]...a[ld]
    for(int i=ls; i<=ld; ++i) a[i]=b[i-ls+1];
    /* sau
    int l=1;
    for(int i=ls; i<=ld; ++i) a[i]=b[l++];
    */
}
```

```

void sortare(int ls, int ld)
{
    if(ld-ls<=1) sort2(ls,ld);
    else
    {
        int m=(ls+ld)/2;
        sortare(ls,m);
        sortare(m+1,ld);
        interclasare(ls,ld,m); // combinarea rezultatelor
    }
}

```

```

int main()
{
    int m;
    cin >> n;
    for(int i=1;i<=n;++i)
        cin >> a[i];
    sortare(1,n);
    for(int i=1;i<=n;++i)
        cout << a[i] <<" ";
}

```

<https://www.pbinfo.ro/probleme/1024/quicksort>

```

#include<iostream>
using namespace std;
int n,a[100001];

```

```

void qsort(int l, int r)           //   a[l]   a[i] > x > a[j]   a[r]
{int i,j, x, aux;                 //   a[l]   a[j]           a[i]   a[r]
i=l; j=r;
x=a[(l+r)/2];
while (i<j)
{ while (a[i]<x) i++;
  while (a[j]>x) j--;
  if (i<=j)
  {aux=a[i]; a[i]=a[j]; a[j]=aux;
   i++; j--;
  }
}
if (l<j) qsort(l,j);
if (i<r) qsort(i,r);
}

```

```

int main()
{ int m;
  cin >> n;
  for(int i=1;i<=n;++i)
      cin >> a[i];
  qsort(1,n);
  for(int i=1;i<=n;++i) cout << a[i] <<" ";
}

```