```cpp
// A
#include <bits/stdc++.h>

using namespace std;

int main()
{
    int G[4][5]={
        {-1,1,-1,-1,-1},
        {2,2,3,4,-1},
        {2,2,3,-1,-1},
        {-1,-1,3,4,-1}
    },i,m,K,N;
    string S;
    cin>>S;
    N=S.size();
    for(i=m=0;m>-1 && i<=N;++i,m=G[m][K])
        if(i==N)K=3;
        else if(S[i]=='0')K=0;
        else if(S[i]=='2' || S[i]=='4')K=1;
        else if(S[i]=='1' || S[i]=='3')K=2;
        else K=4;
    if(m==4)cout<<"OK";
    else cout<<"Error in pos: "<<i;
}

// B
#include <bits/stdc++.h>
using namespace std;
int main()
{
    string S;
    cin>>S;
    int M=1000000007,i,Q;
    set<char>D(S.begin(),S.end());
    vector<char>V(D.begin(),D.end());
    map<char,int>R;
    for(i=0;i<V.size();++i)
        R[V[i]]=i;
    long long P=0;Q=D.size();
    for(i=0;i<S.size();++i)
        {
            P=P*Q+R[S[i]];
            P%=M;
```

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      }
   ++P;
   if(P==M)P=0;
   cout<<P;
}

// C
#include <iostream>

using namespace std;

int main()
{
   unsigned long long N; int P=1;
   cin>>N;
   N^=N>>1;
   while(N)
   {
      N&=N<<1;
      ++P;
   }
   cout<<P;
}

// D
#include <bits/stdc++.h>

using namespace std;

int mas[100001],d[100001];

int main(int argc, char** argv) {
   int N,M=1000007,i,j,g,ans=0;
   cin>>N;
   for(i=0;i<N;i++)
   {cin>>mas[i];
      for(g=1,j=0;j<i;j++)
      {
         if(mas[j]<mas[i])
         {
            g+=d[j];
            g%=M;
         }
      }
```

```
      d[i]=g;
      ans+=g;
      ans%=M;
    }
    cout<<ans;
}

// E
#include <iostream>

using namespace std;

int main()
{
    unsigned long long N;
    cin>>N;
    cout<<2-(N==2)*3;
}

// F
#include <bits/stdc++.h>

using namespace std;

int Z[1000000];

int main()
{
    string S;
    cin>>S;
    int i,N=S.size(),L,R;
    for(i=1,L=R=0;i<N;i++)
    {if(i<=R)
    Z[i]=min(R-i+1,Z[i-L]);
    while(i+Z[i]<N && S[Z[i]]==S[i+Z[i]])
    Z[i]++;
    if(i+Z[i]==N && !(N%i))break;
    if(Z[i] && i+Z[i]-1>R)
    L=i, R=i+Z[i]-1;
    }
    S=S.substr(0,i);
    cout<<S;
}
```

```cpp
// G
#include <bits/stdc++.h>

using namespace std;

int M=1000000009;

int BP(int a,int N)
{
   long long A=a,P=1;
   while(N>1)
   {
      if(N&1)P*=A,P%=M;
      A*=A; A%=M;
      N>>=1;
   }
   return (P*A)%M;
}

int MC(int N)
{
   long long P=2,Q=1;
   int i;
   for(i=2;i<=N;++i)
   {
      P*=(4*i-2)*2;
      Q*=i+1;
      P%=M;
      Q%=M;
   }
   if(P%Q==0)return P/Q;
   else {Q=BP(Q,M-2); P*=Q; return P%M;}
}

int main()
{
   int N;
   cin>>N;
   if(N&1)cout<<0;
   else cout<<MC(N>>1);
}

// H
#include <bits/stdc++.h>
```

```cpp
using namespace std;
string LtoS(long long N)
{
    stringstream SS;
    SS<<N;
    return SS.str();
}
string GP(long long N,char M)
{
    string ans="";
    if(N>1)ans=LtoS(N);
    return ans+M;
}
int main()
{
    long long A,B,C,D,K;
    string S="";
    cin>>A>>B>>C>>D;
    while(A<C && B<D)
        if(C>D)S=GP(C/D,'L')+S,C%=D;
        else S=GP(D/C,'R')+S,D%=C;
    if(C<A || D<B)cout<<"NO";
    else
    {
        if(C==A)
            if((D-B)%C)cout<<"NO";
            else S=GP((D-B)/C,'R')+S,D=B;
        else if((C-A)%D)cout<<"NO";
            else S=GP((C-A)/D,'L')+S,C=A;
        if(A==C && B==D)cout<<"YES"<<endl<<S;
    }
}

// I
#include <bits/stdc++.h>

using namespace std;

int M=1000000007;

long long Mop(long long N)
{
 int n=M-2;
 long long P=1,D=N;
```

```cpp
 while(n>1)
 {
 if(n&1)P*=D,P%=M;
 D*=D;
 n>>=1;
 D%=M;
 }
 P*=D;
 return P%M;
}

long long VR(map<char,int>&D)
{
 long long Mr,Mn,Z,Q,R;
 map<char,int>::iterator p;
 for(Z=Q=Mr=Mn=1,p=D.begin();p!=D.end();p++,Q=1)
 {
 R=p->second;
 while(R--)
 {
  Mr*=Z++;
  Mn*=Q++;
  Mr%=M;
  Mn%=M;
 }
 }
 if(Mr%Mn==0)return Mr/Mn;
 return (Mr*Mop(Mn))%M;
}

int main()
{
   map<char,int>V,D;
   string S;
   cin>>S;
   int i;
   long long P=1;
   for(i=0;i<S.size();i++)
      V[S[i]]++;
   map<char,int>::iterator x;
   for(i=0;i<S.size()-1;i++)
   {
    for(x=V.begin();x->first!=S[i];x++)
    {
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      D=V; D[x->first]--; // x->second--;
      P+=VR(D);
      P%=M;
     }
     V[S[i]]--; if(V[S[i]]==0)V.erase(x);
    }
   cout<<P;
}

// J
#include <bits/stdc++.h>

using namespace std;

int main()
{long long x; int m,M,t,N=0;
 multiset<long long>Ms;
 while(cin>>x){Ms.insert(x);N++;}
 m=M=0;
 if(N)
  {set<long long>D(Ms.begin(),Ms.end());
   m=D.size()-1;
   set<long long>::iterator p;
   for(p=D.begin();p!=D.end();p++)
   if((t=Ms.count(*p))>M)M=t;
   t=N-M;
   if(M<=t+1)M=N-1;
   else M=2*t;
  }
  cout<<m<<' '<<M;
 }

 // K
 #include <bits/stdc++.h>
using namespace std;
int M=1000000009;
long long BP(long long a,int N)
{
   long long P=1;
   while(N>1)
   {
      if(N&1){P*=a; P%=M;}
      a*=a;
      a%=M;
```

```cpp
            N>>=1;
        }
        return (P*a)%M;
}
int C[10],i;
int main()
{
    string S;
    long long Mr,Mn,p,q;
    Mr=Mn=p=q=1;
    while(cin>>S)
    {
        for(i=0;i<S.size();++i)
            ++C[S[i]-'0'];
    }
    for(i=0;i<10;++i,q=1)
        while(C[i]--)
            {
                Mr*=p++;
                Mn*=q++;
                Mr%=M;
                Mn%=M;
            }
    if(Mr%Mn==0)Mr/=Mn;
    else {Mr*=BP(Mn,M-2); Mr%=M;}
    cout<<Mr;
}
 // L
#include <bits/stdc++.h>
using namespace std;
int main()
{
    double D,B,P,R;
    int i;
    cin>>D>>B;
    if(B>=D)P=D;
    else
    {
        for(P=i=1;;++i)
        {
            P+=1./(2*i+1);
            if(P*B>=D)break;
        }
        if(P*B==D)P=(i+1)*B;
```

```cpp
        else {
          P-=1./(2*i+1);
          R=D-P*B;
          P=R*(2*i+1)+i*B;
        }
    }
    cout<<fixed<<setprecision(6)<<P;
}
```