**[Splay树的基本操作](http://www.cppblog.com/rakerichard/archive/2010/03/12/109577.html)**

最近对树型数据结构特别感兴趣！  
以下是我的Splay树代码：

#include<stdio.h>  
#define maxn 10007  
typedef struct  
{  
    long data,fa,ls,rs;  
}Node;  
Node splay[maxn];  
long m,root;  
long n;  
void Zig(long node)  
{  
    long t=splay[node].fa;  
    splay[t].rs=splay[node].ls;  
    if(splay[node].ls)  
      splay[splay[node].ls].fa=t;  
    splay[node].fa=splay[t].fa;  
    splay[node].ls=t;  
    if(splay[t].fa)  
    {  
       if(t==splay[splay[t].fa].ls) splay[splay[t].fa].ls=node;  
       else splay[splay[t].fa].rs=node;  
    }  
    splay[t].fa=node;  
}  
void Zag(long node)  
{  
    long t=splay[node].fa;  
    splay[t].ls=splay[node].rs;  
    if(splay[node].rs)  
      splay[splay[node].rs].fa=t;  
    splay[node].fa=splay[t].fa;  
    splay[node].rs=t;  
    if(splay[t].fa)  
    {  
       if(t==splay[splay[t].fa].ls) splay[splay[t].fa].ls=node;  
       else splay[splay[t].fa].rs=node;  
    }  
    splay[t].fa=node;  
}  
void Splay(long node)  
{  
    long t;  
    while(splay[node].fa)  
    {  
       t=splay[node].fa;  
       if(splay[t].fa==0)  
       {  
          if(node==splay[t].ls) Zag(node);  
          else Zig(node);  
          break;  
       }  
       if(t==splay[splay[t].fa].ls)  
       {  
          if(node==splay[t].ls)  
          {Zag(t);Zag(node);}  
          else {Zig(node);Zag(node);}  
       }  
       else  
       {  
          if(node==splay[t].ls)  
          {Zag(node);Zig(node);}  
          else {Zig(t);Zig(node);}  
       }  
    }  
    root=node;  
}  
void Insert(long x)  
{  
    long p,q;  
    m++;  
    splay[m].data=x;  
    splay[m].fa=splay[m].ls=splay[m].rs=0;  
    if(root==0)  
    {  
       root=m;return;  
    }  
    for(p=root;p; )  
    {  
       q=p;  
       if(x<=splay[p].data) p=splay[p].ls;  
       else p=splay[p].rs;  
    }  
    splay[m].fa=q;  
    if(x<=splay[q].data) splay[q].ls=m;  
    else splay[q].rs=m;  
    Splay(m);  
}  
int main()  
{  
    freopen("data.in","r",stdin);  
    freopen("data.out","w",stdout);  
    scanf("%ld",&n);  
    m=root=0;  
    for(long i=1;i<=n;i++)  
      splay[i].data=splay[i].fa=splay[i].ls=splay[i].rs=0;  
    for(long i=1;i<=n;i++)  
    {  
       long t;  
       scanf("%ld",&t);  
       Insert(t);  
    }  
    Splay(1);  
    for(long i=1;i<=n;i++)  
    printf("No.%ld data.%ld fa.%ld ls.%ld rs.%ld\n",i,splay[i].data,splay[i].fa,splay[i].ls,splay[i].rs);  
return 0;  
}