#include<iostream>

using namespace std;

int i,j,n,a[20],item,par,ptr,leftt,rightt,last,item1,m;

void insheap(int a[],int n,int item);

void delheap();

int main()

{

cout<<"enter the no of elements"<<endl;

cin>>n;

m=n;

cout<<"enter array"<<endl;

for(i=1;i<=n;i++)

{

cin>>a[i];

}

for(j=1;j<=n;j++)

{

insheap(a,j,a[j+1]);

}

cout<<"the sorted array is"<<endl;

for(i=1;i<=n;i++)

{

cout<<a[i]<<endl;

}

while(n>=1)

{

delheap();

a[n+1]=item1;

}

cout<<"the sorted array"<<endl;

for(i=1;i<=m;i++)

{

cout<<a[i]<<endl;

}

}

void insheap(int a[],int n,int item)

{

n=n+1;

ptr=n;

while(ptr>1)

{

par=ptr/2;

if(item<=a[par])

{

a[ptr]=item;

return;

}

a[ptr]=a[par];

ptr=par;

}

a[1]=item;

return;

}

void delheap()

{

item1=a[1];

last=a[n];

n=n-1;

ptr=1;

leftt=2;

rightt=3;

while(rightt<=n)

{

if(last>=a[leftt]&&last>=a[rightt])

{

a[ptr]=last;

return;

}

if (a[rightt]<=a[leftt])

{

a[ptr]=a[leftt];

ptr=leftt;

}

else

{

a[ptr]=a[rightt];

ptr=rightt;

}

leftt=2\*ptr;

rightt=leftt+1;

}

if(leftt==n&&last<a[leftt])

{

ptr=leftt;

}

a[ptr]=last;

return;

}