//MERGE SORT

#include<stdio.h>

void merge(int a[],int low,int middle,int high)

{

int h,i,j,b[50],k;

h=low,i=low,j=middle+1;

while((h<=middle)&&(j<=high))

{

if(a[h]<=a[j])

{

b[i]=a[h];

h++;

i++;

}

else

{

b[i]=a[j];

j++;

i++;

}

}

if(h>middle)

{

for(k=j;k<=high;k++)

{

b[i]=a[k];

i++;

}

}

else

{

for(k=h;k<=middle;k++)

{

b[i]=a[k];

i++;

}

}

for(k=low;k<=high;k++)

{

a[k]=b[k];

}

}

void mergesort(int a[],int low,int high)

{

int middle,i;

if(low<high)

{ middle=(low+high)/2;

mergesort(a,low,middle);;

mergesort(a,middle+1,high);

merge(a,low,middle,high);

}

}

void main()

{

int n,i;

printf("Enter the size of the array ");

scanf("%d",&n);

int a[n];

printf("Enter the elements\n");

for(i=0;i<n;i++)

{

scanf("%d",&a[i]);

}

mergesort(a,0,n-1);

printf("\nThe sorted array is");

for(i=0;i<=n-1;i++)

{

printf("%d\n",a[i]);

}

printf("\n");

}