1. **Write a program to build a max heap for sorting elements.**

#include<stdio.h>

void swap(int ar[],int value1,int value2)

{

int temp=ar[value1];

ar[value1]=ar[value2];

ar[value2]=temp;

}

void maxheapify(int ar[],int index,int n)

{

int highindex=index;

if((2\*index<=n)&&ar[2\*index]>ar[highindex])

highindex=2\*index;

if((2\*index+1<=n)&&ar[2\*index+1]>ar[highindex])

highindex=2\*index+1;

if(highindex!=index)

{

swap(ar,index,highindex);

maxheapify(ar,highindex,n);

}

}

void buildmaxheap(int ar[],int n)

{

if(n<1)

return ;

for(int i=n/2;i>=1;i--)

maxheapify(ar,i,n);

swap(ar,1,n);

buildmaxheap(ar,n-1);

}

void print(int ar[],int n)

{

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

{

printf("%d ",ar[i]);

}

}

main()

{

int n;

printf("\nHow many numbers you want to sort ");

scanf("%d",&n);

int ar[n+1];

printf("\nEnter the numbers in heap\n");

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

{

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

}

printf("\nNumbers after heap sort\n");

buildmaxheap(ar,n);

print(ar,n);

}

