**Write a program to implement Heap Sort algorithm.**

#include<stdio.h>

#include<conio.h>

#include<stdlib.h>

void max\_heapify(int a[], int i, int heapsize);

void build\_max\_heap(int a[], int heapsize);

void heap\_sort(int a[], int heapsize);

void main()

{

int i, heapsize,n, a[25];

clrscr();

printf("enter the size if the array:");

scanf("%d",& n);

printf("\nenter the elements of the array:\n");

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

{

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

}

heapsize=n-1;

heap\_sort(a, heapsize);

printf("sorted array using heap sort:\n");

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

{

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

}

getch();

}

void heap\_sort(int a[], int heapsize)

{

int i,temp;

build\_max\_heap(a, heapsize);

for (i= heapsize; i>0 ; i--)

{

temp= a[i];

a[i]= a[0];

a[0]= temp;

heapsize--;

max\_heapify(a,0, heapsize) ;

}

}

void build\_max\_heap(int a[], int heapsize)

{ int i;

for (i= heapsize/2; i>=0; i--)

{

max\_heapify(a, i, heapsize);

}

}

void max\_heapify(int a[], int i , int heapsize)

{ int temp, largest;

int l = (2\*i)+1 ;

int r= (2\*i)+2;

if ((l<=heapsize) && (a[l]> a[i]))

{

largest= 1;

}

else{

largest= i;

}

if((r<= heapsize)&&(a[r]> a[largest]))

{largest =r;

}

if (largest != i)

{

temp = a[i];

a[i]= a[largest] ;

a[largest]=temp;

max\_heapify(a, largest, heapsize);

}

}Output:

