**Sort a given set of elements using the Heap sort method and determine the time taken to sort the elements. Repeat the experiment for different values of n, the number of elements in the list to be sorted and plot a graph of the time taken versus n.**

#include<stdio.h>

#include<conio.h>

#include<time.h>

void heapcom(int a[],int n)

{

int i,j,k,item;

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

{

item=a[i];

j=i;

k=j/2;

while(k!=0 && item>a[k])

{

a[j]=a[k];

j=k;

k=j/2;

}

a[j]=item;

}

}

void adjust(int a[],int n)

{

int item,i,j;

j=1;

item=a[j];

i=2\*j;

while(i<n)

{

if((i+1)<n)

{

if(a[i]<a[i+1])

i++;

}

if(item<a[i])

{

a[j]=a[i];

j=i;

i=2\*j;

}

else

break;

}

a[j]=item;

}

void heapsort(int a[],int n)

{

int i,temp;

delay(1000);

heapcom(a,n);

for(i=n;i>=1;i--)

{

temp=a[1];

a[1]=a[i];

a[i]=temp;

adjust(a,i);

}

}

void main()

{

  int i,n,a[20],ch=1;

  clock\_t start,end;

  clrscr();

  while(ch)

    {

printf("\n enter the number of elements to sort\n");

scanf("%d",&n);

printf("\n enter the elements to sort\n");

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

    scanf("%d",&a[i]);

start=clock();

heapsort(a,n);

end=clock();

printf("\n the sorted list of elemnts is\n");

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

    printf("%d\n",a[i]);

printf("\n Time taken is %lf CPU cycles\n",(end-start)/CLK\_TCK);

printf("do u wish to run again (0/1)\n");

scanf("%d",&ch);

}

getch();

}

Output:

