TITLE 17

Write a C program to sort an array in descending order using Heapsort

OBJECTIVE:

To implement heapsort program in C language.

PROBLEM STATEMENT:

Using heapsort to arrange numbers in ascending order.

ALGORITHM:

START

Define variables: n,i,last,temp

INPUT: Read input from user

COMPUTATION: An array is formed from the elements entered by the user

DISPLAY: Sorted array of elements in descending order

STOP

PROGRAM:

#include<stdio.h>

 void create(int []);

void down\_adjust(int [],int);

 void main()

{

int heap[100],n,i,last,temp;

printf("Enter no. of elements:\n");

scanf("%d",&n);

printf("Enter elements:\n");

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

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

heap[0]=n;

create(heap);

while(heap[0] > 1)

{

last=heap[0];

temp=heap[1];

heap[1]=heap[last];

heap[last]=temp;

heap[0]--;

down\_adjust(heap,1);

}

printf("Array after sorting:\n");

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

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

}

 void create(int heap[])

{

int i,n;

n=heap[0]; //no. of elements

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

down\_adjust(heap,i);

}

void down\_adjust(int heap[],int i)

{

int j,temp,n,flag=1;

n=heap[0];

while(2\*i<=n && flag==1)

{

j=2\*i; //j points to left child

if(j+1<=n && heap[j+1] > heap[j])

j=j+1;

if(heap[i] > heap[j])

flag=0;

else

{

temp=heap[i];

heap[i]=heap[j];

heap[j]=temp;

i=j;

}

}

}

CONCLUSION:

Simple algorithm to find the element using heap sort helps me to understand the algorithms and their implementation.

OUTPUT:

Enter no. of elements:

4

Enter the elements:

1

4

3

2

Array after sorting:

1

2

3

4