**Programs**

**Insertion Sort:**

#include<stdio.h>

#include<stdlib.h>

void insertion(int[], int);

void main(){

int \*arr, i, n;

printf("Enter the number of elements in the array :");

scanf("%d",&n);

arr = (int\*) malloc(sizeof(int));

printf("Enter the elements to be sorted: ");

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

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

insertion(arr, n);

printf("The sorted elements are : ");

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

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

}

void insertion(int array[], int size){

int i, j, temp;

for(i = 1;i < size; i++){

temp = array[i];

for(j = i-1 ;j >= 0; j--){

if(array[j] > temp){

array[j+1] = array[j];

}else{

break;

}

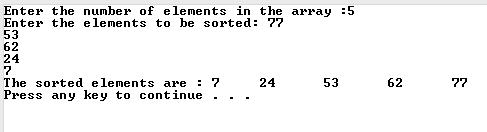
}

array[j+1] = temp;

}

}

**Output:**



**Heap Sort:**

#include <stdio.h>

#include <conio.h>

void create(int[]);

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

int main()

{

int heap[50], n, i, lastElem, temp;

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

scanf("%d", &n);

printf("\nEnter the elements: ");

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

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

heap[0] = n;

create(heap);

while (heap[0] > 1)

{

lastElem = heap[0];

temp = heap[1];

heap[1] = heap[lastElem];

heap[lastElem] = temp;

heap[0]--;

down\_adjust(heap, 1);

}

printf("\nSorted array: \n");

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

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

getch();

return 0;

}

void create(int heap[])

{

int i, n;

n = heap[0];

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;

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;

}

}

}

**Output:**

