Exp 5

**INPUT::**

/\*heap sort program where first node is stored at index 0\*/

#include <iostream>

using namespace std;

class heap1{

public:

void MAX\_HEAPIFY(int a[], int i, int n)     //reheapdown- deleting element from top location

{

    int l,r,largest,loc;

    l=2\*i+1;

    r=(2\*i+2);

    largest=i;

    if((l<n)&&a[l]>a[largest])

       largest=l;

    /\*else

       largest=i;\*/

    if((r<n)&&(a[r]>a[largest]))

       largest=r;

   if(largest!=i)

    {

         loc=a[i];              //delet

         a[i]=a[largest];

         a[largest]=loc;

         MAX\_HEAPIFY(a, largest,n);

    }

}

void BUILD\_MAX\_HEAP(int a[], int n)

{

    for(int k = n/2-1; k >= 0; k--)

    {

        MAX\_HEAPIFY(a, k, n);

    }

}

void HEAPSORT(int a[], int n)

{

    BUILD\_MAX\_HEAP(a,n);

       int i, temp;

    for (i = n-1; i >= 0; i--)

    {

        temp = a[i];                //delete maximum element from the root.

        a[i] = a[0];

        a[0] = temp;

        MAX\_HEAPIFY(a, 0, i);

    }

}

void accept(){

        int n;

        cout<<"Enter the number of students"<<endl;

        cin>>n;

        int a[n];

        cout<<"Enter the marks of the students "<<endl;

        for (int i = 0; i < n; i++)

        {

            cin>>a[i];

        }

        HEAPSORT(a, n);

        display(a,n);

}

void display(int a[],int n){

      cout<<":::::::SORTED MARKS::::::"<<endl;

        for (int i = 0; i < n; i++)

        {

            cout<<a[i]<<endl;

        }

    cout<<"Minimum marks obtained are:"<<a[0];

    cout<<"\nMaximum marks obtained are:"<<a[n-1];

}

};

int main()

{

    heap1 h;

    h.accept();

    return 0;

}

**OUTPUT::**

Enter the number of students

3

Enter the marks of the students

35

99

98

:::::::SORTED MARKS::::::

35

98

99

Minimum marks obtained are:35

Maximum marks obtained are:99