Lab Experiment No.9

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Implement Heap sort to sort given set of values using max or min heap.

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#include<iostream>

using namespace std;

void heapify(int arr[], int n, int i) {

int temp;

int largest = i;

int l = 2 \* i + 1;

int r = 2 \* i + 2;

if (l < n && arr[l] > arr[largest])

largest = l;

if (r < n && arr[r] > arr[largest])

largest = r;

if (largest != i) {

temp = arr[i];

arr[i] = arr[largest];

arr[largest] = temp;

heapify(arr, n, largest);

}

}

void printarray(int arr[],int n)

{ int i;

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

cout<<arr[i]<<" ";

cout<<"\n";

}

void heapSort(int arr[], int n) {

int temp;

for (int i = n / 2 - 1; i >= 0; i--)

heapify(arr, n, i);

for (int i = n - 1; i >= 0; i--) {

temp = arr[0];

arr[0] = arr[i];

arr[i] = temp;

heapify(arr, i, 0);

printarray(arr,n);

}

}

int main() {

int arr[10] ,n,i;

cout<<"\n Enter number of elements to be sorted : ";

cin>>n;

cout<<"\n Enter elements :";

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

cin>>arr[i];

cout<<"\n\nGiven array is: "<<endl;

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

cout<<arr[i]<<" ";

cout<<endl;

heapSort(arr, n);

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

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

cout<<arr[i]<<" ";

cout<<endl; }

**OUTPUT:**

Enter number of elements to be sorted : 5

Enter elements :

69

45

67

78

12

Given array is:

69 45 67 78 12

69 45 67 12 78

67 45 12 69 78

45 12 67 69 78

12 45 67 69 78

12 45 67 69 78

Sorted array is:

12 45 67 69 78