**Practical No.9**

**Heap Sort**

**Program Code:-**

#include <iostream>

using namespace std;

void Maxheapify(int Arr[], int n, int i)

{

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)

{

swap(Arr[i], Arr[largest]);

Maxheapify(Arr, n, largest);

}

}

void Maxheapsort(int Arr[], int n)

{

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

{

Maxheapify(Arr, n, i);

}

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

{

swap(Arr[0], Arr[i]);

Maxheapify(Arr, i, 0);

}

}

void Display(int Arr[], int n)

{

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

{

cout << Arr[i] << " ";

}

cout << "\n";

}

int main()

{

int n,Arr[n];

cout<<"How many elements you want to sort?: ";

cin>>n;

cout<<"Enter "<<n<<" Elements: \n";

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

{

cin>>Arr[i];

}

Maxheapsort(Arr, n);

cout << "\nSorted array is: \n";

Display(Arr, n);

return 0;

}