```cpp
#include <iostream>

using namespace std;


void heapify(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]);

        heapify(arr, n, largest);

    }

}


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

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

        heapify(arr, n, i);


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

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

        heapify(arr, i, 0);

    }

}
```

```cpp
int main() {

    int arr[] = {10, 20, 15, 30, 40};

    int n = sizeof(arr)/sizeof(arr[0]);

    heapSort(arr, n);

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

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

    return 0;

}
```