Exp (19): write a c program to implement Heap sort.

Aim: To write a c program to implement Heap sort.

Algorithm:

*. start
*. input the size and elements of the array.
*. build a max heap.
*. swap the first and last element, reduce heap size, and heapify.
*. repeat until sorted.
*. print the sorted array.
*. stop.

program:

```
#include <stdio.h>
void heapify(int a[], int n, int i) {
 int largest = i, l = 2*i+1, r = 2*i+2;
 if (l<n && a[l] > a[largest]) largest = l;
 if (r<n && a[r] > a[largest]) largest = r;
 if (largest != i) {
    int t = a[i]; a[i] = a[largest]; a[largest] = t;
    heapify(a, n, largest);
   }
 }
 void heapsort(int a[], int n) {
    for (int i=n/2-1; i>=0; i--) heapify(a, n, i);
    for (int i=n-1; i>0; i--) {
        int t = a[0]; a[0] = a[i]; a[i] = t;
        heapify(a, i, 0);
    }
 }
 int main() {
    int a[] = {12, 11, 13, 5, 6, 7};
    int n = 6;
    heapsort(a, n);
    for (int i=0; i<n; i++) printf("%d", a[i]);
 }
```

output: 5 6 7 11 12 13

Result: Thus, the program executed successfully