

# CS2023 - Data Structures and Algorithms

## In-class Lab Exercise - 8

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### Question 1

Here is the implementation -

[https://github.com/isharadilshanra/Inclass\\_week\\_6/blob/main/wee6\\_final.cpp](https://github.com/isharadilshanra/Inclass_week_6/blob/main/wee6_final.cpp)

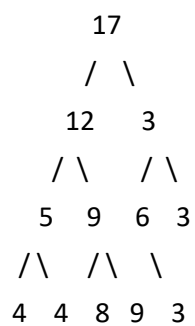
Sample run 01

```
/tmp/εv6Xεε0bAW.o
Input array
4 17 3 12 9 6
Sorted array
3 4 6 9 12 17
```

Sample run 02

```
Output Clear  
/tmp/tv6Xtt0bAW.o  
Input array  
4 17 3 12 9 6 3 4 5 8 9 7  
Sorted array  
3 3 4 4 5 6 7 8 9 9 12 17  
|
```

drawn heap



time complexity

for the creating max heap it take  $O(n)$  time complexity. Also for heapify, the time complexity is  $O(\log(n))$  and it calls  $n-1$  times. So the overall time complexity is  $O(n\log(n))$ .