

## Heap Sort

- data can be sorted in ascending / descending order using heap tree.

Step 1: Build a heap tree with the given set of data.

Step 2:

- a) Delete the root node from the heap.
- b) Rebuild the heap after the deletion.
- c) Place the deleted node in the output.

Step 3: continue step 2 until the heap tree is empty.

### NOTE:

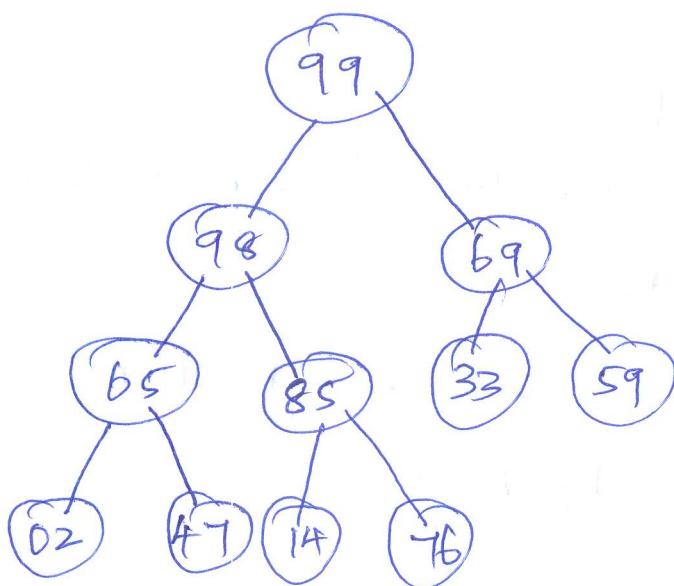
To sort data in ascending order, build maxheap in Step 1.

To sort data in descending order, build minheap in Step 1.

Ex: To sort the following in ascending order:-

33 14 65 02 76 69 59 85 47  
99 98.

i) Build the max heap tree:



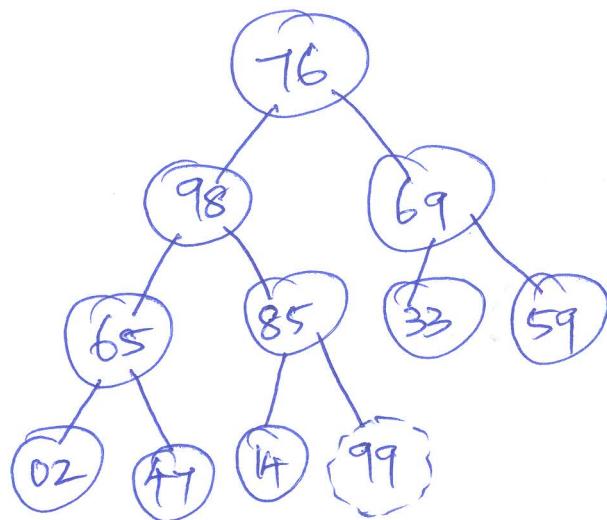
99	98	69	65	85	33	59	02	47	14	76
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2) Delete root node. It is replaced by 76. Place the deleted node at the posn of 76.

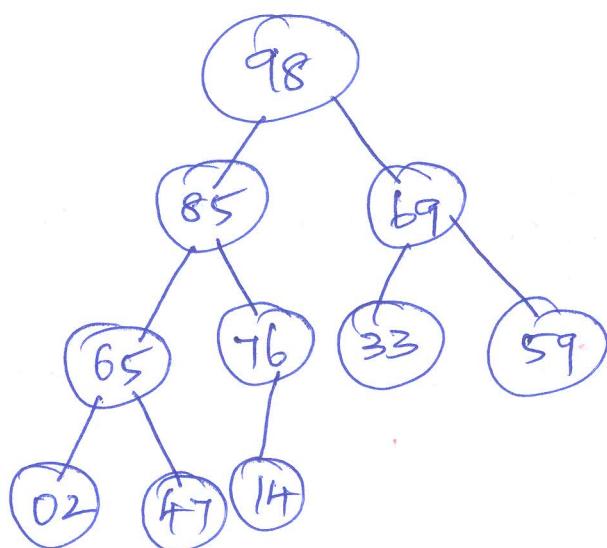
Swap the root node & the last node.  
Shift ptr to the last node just one towards the left.

Swapping the root node and last node

76	98	69	65	85	33	59	02	47	14	99
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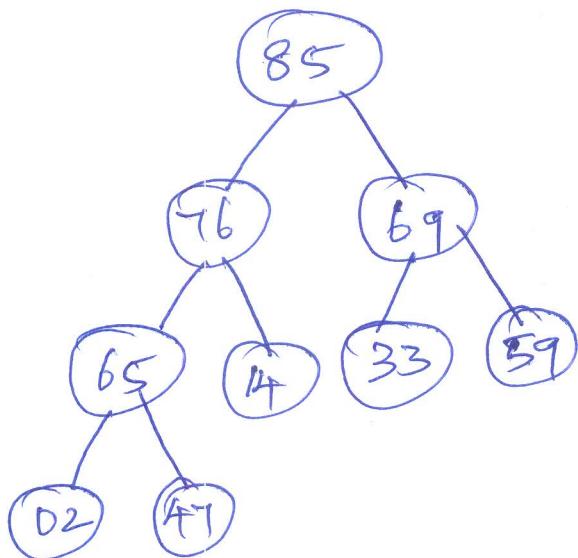
Rebuild the heap



98	85	69	65	76	33	59	02	47	14	99
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Continuation of step 2 after  
deleting 98



85	76	69	65	14	33	59	02	47	98	99
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Sorted list when the heap is empty

02	14	33	47	59	65	69	76	85	98	99
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