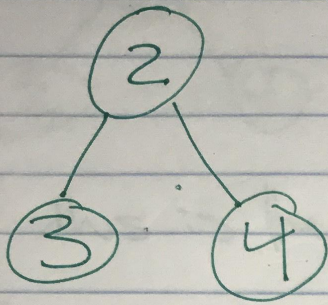
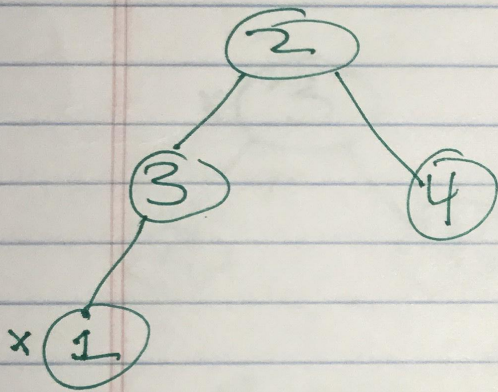


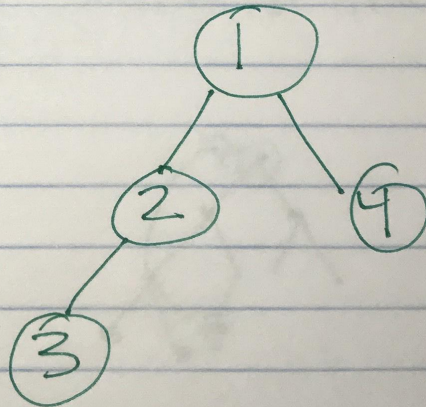
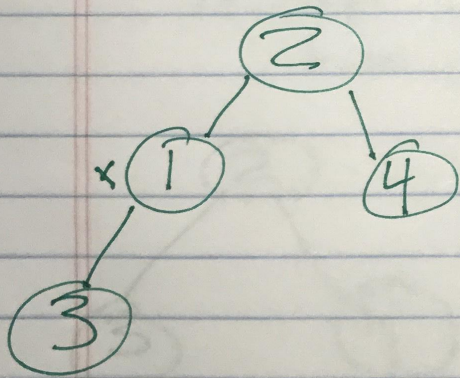
Heap



percolate up
(insert)

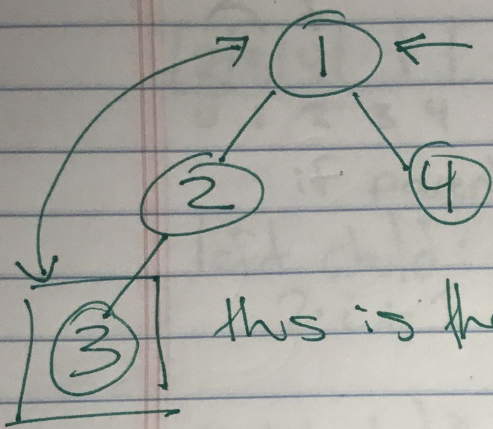


insert 1



2 steps

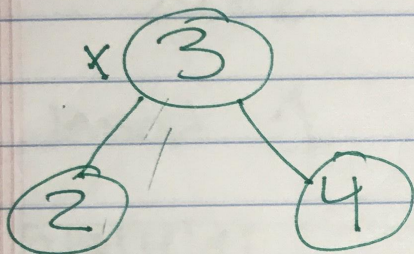
- 1.) insert node to maintain completeness (fill left to right) top to bottom
- 2.) Swap elements to enforce heap property



root is always the output

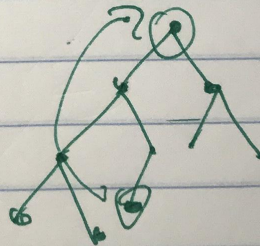
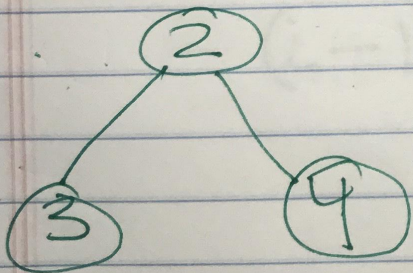
percolate down
dequeue/remote

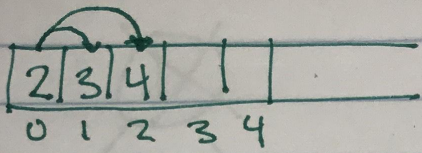
this is the node that needs to go



place 3 over 1 to preserve completeness

Swap with the smaller of the two children





if parent is at index i

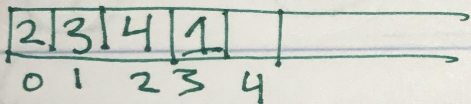
left child:

$$2 \cdot i + 1$$

right child

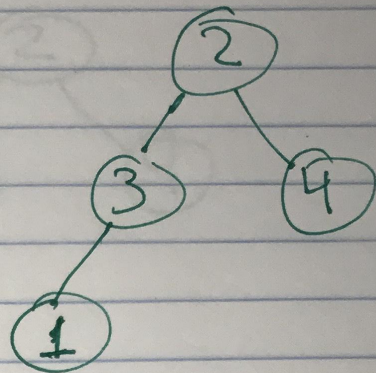
$$2 \cdot i + 2$$

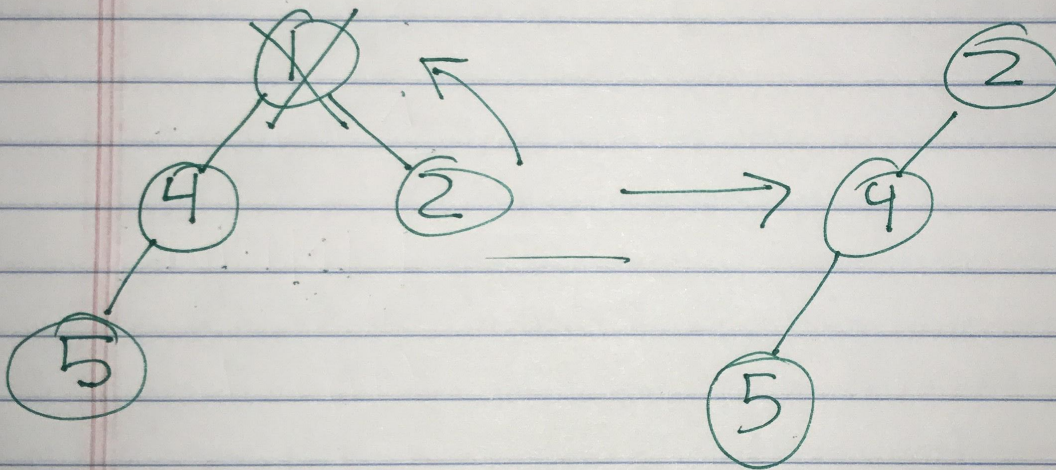
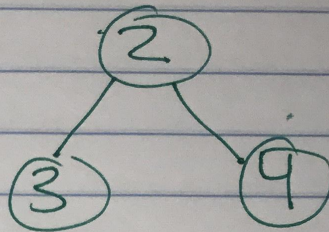
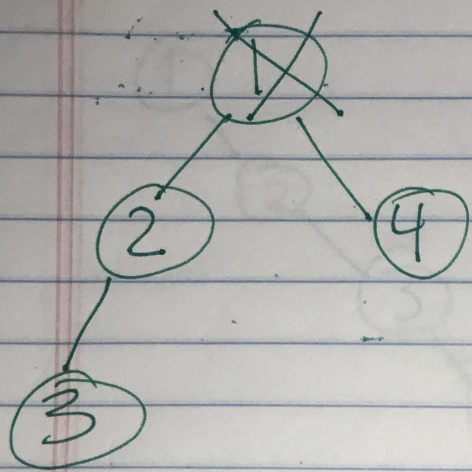
insert 1



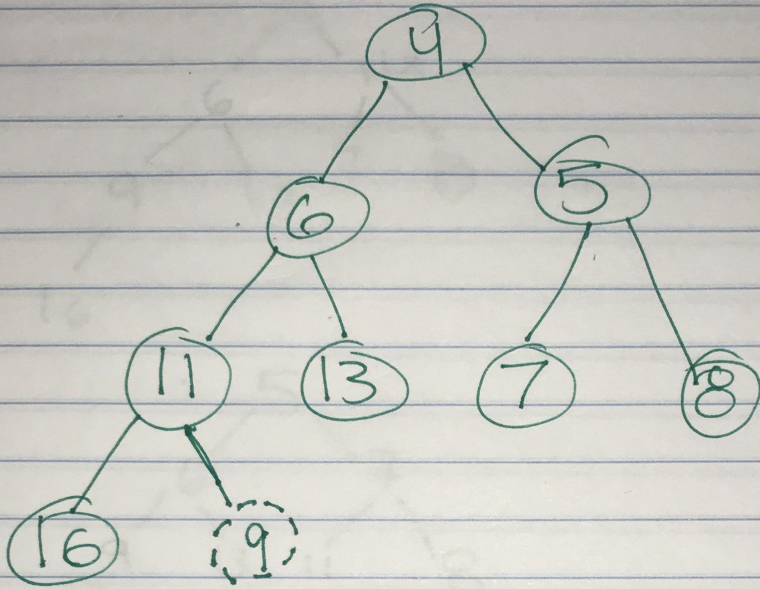
if child is at index i
the parent is at:

$$(i - 1) / 2$$

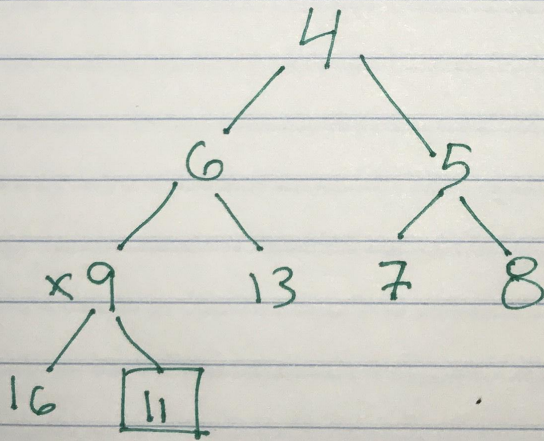




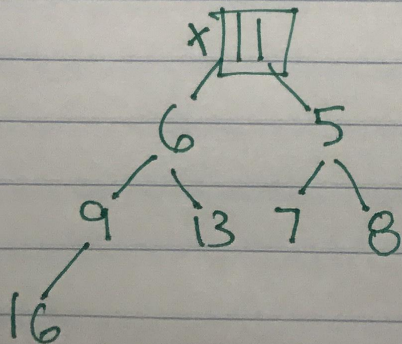
insert 9



1.) completeness



dequeue



output: 4

