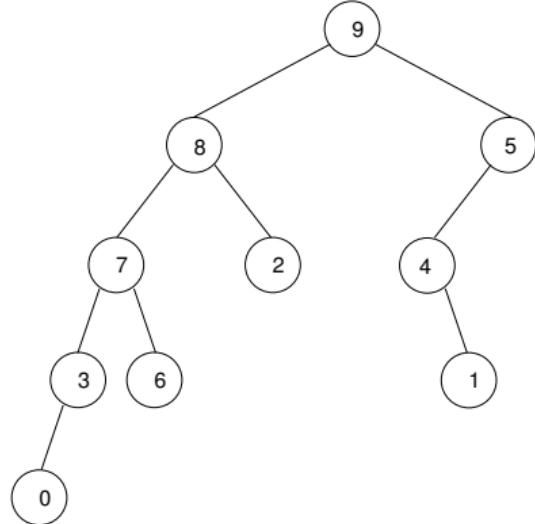
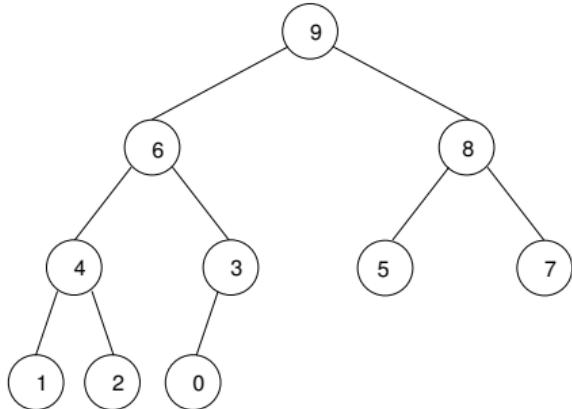
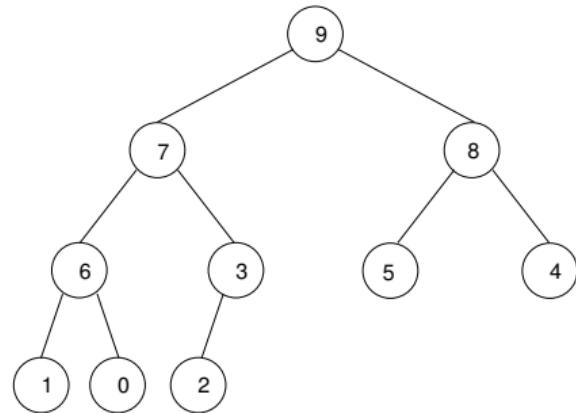
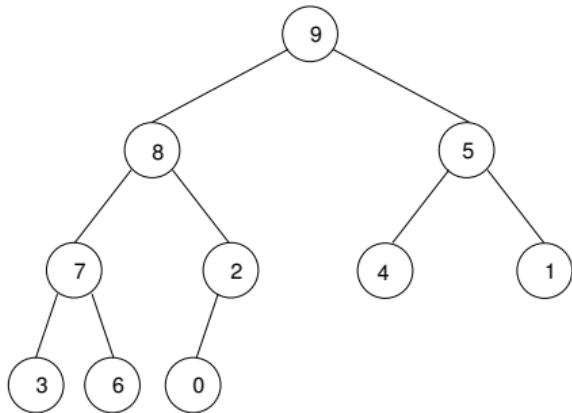
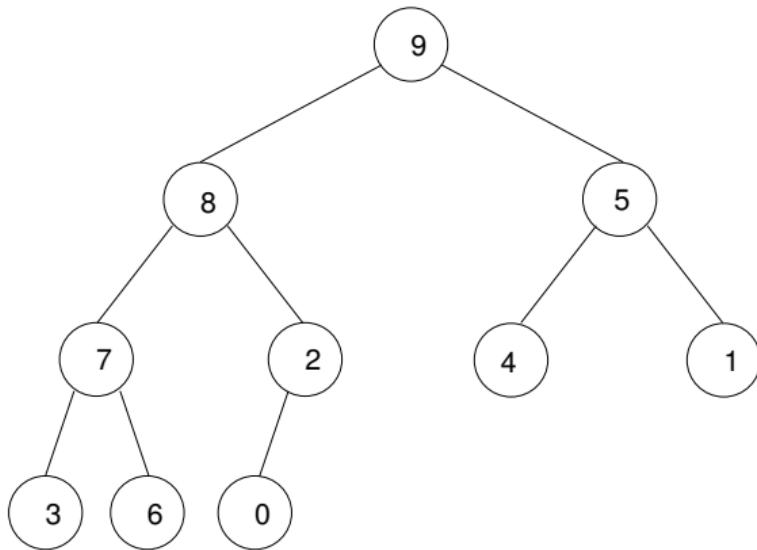


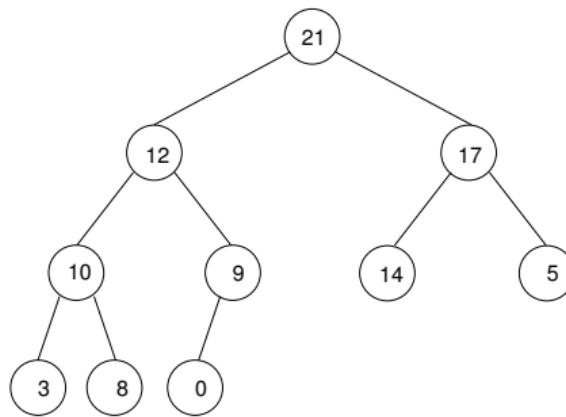
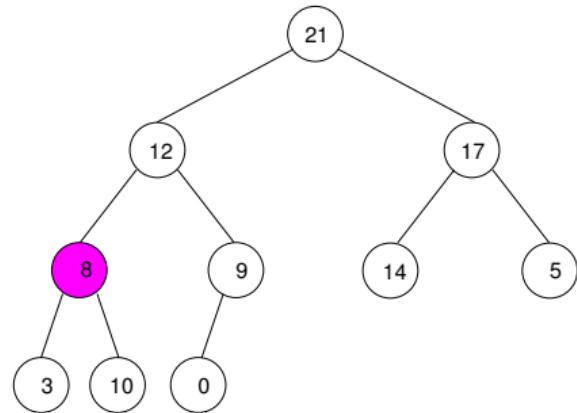
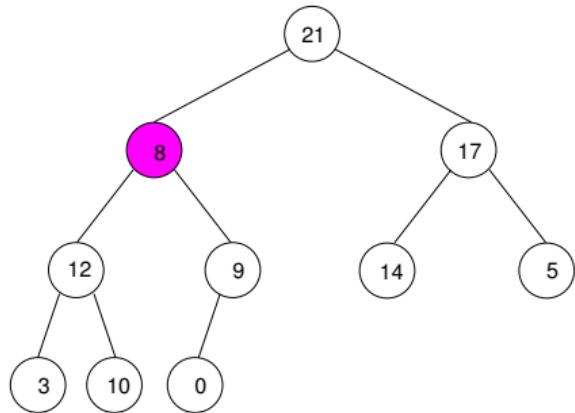
ListPriorityQueue SortedPriorityQueue

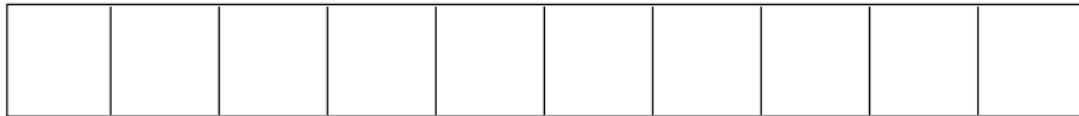
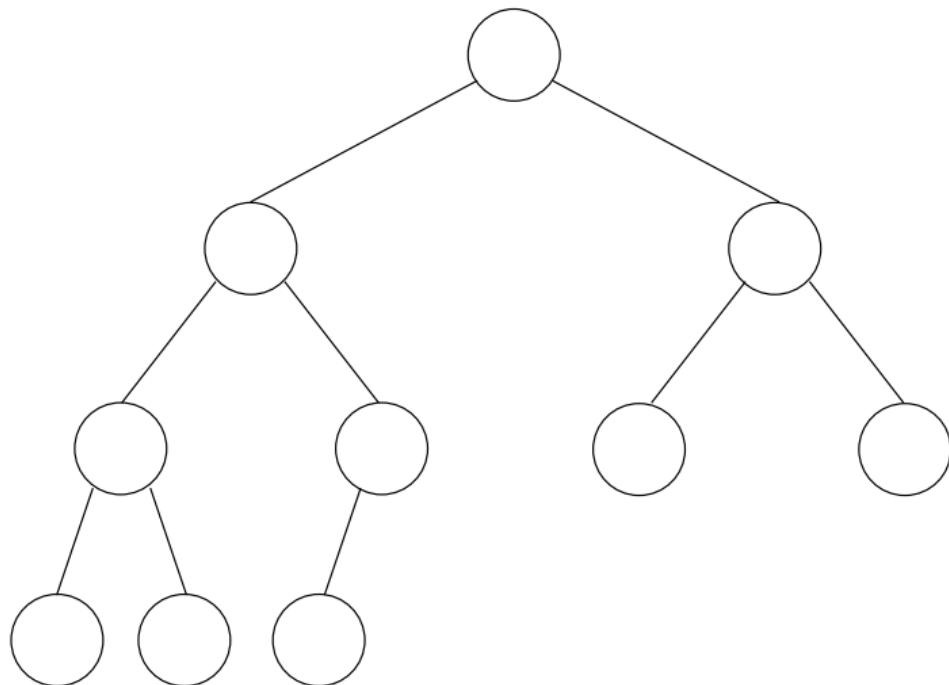
Initialize empty	$\Theta(1)$	$\Theta(1)$
Initialize populated	$\Theta(n)$	$\Theta(n^2)$
insert	$\Theta(1)$	$\Theta(n)$
max	$\Theta(n)$	$\Theta(1)$
extractMax	$\Theta(n)$	$\Theta(1)$
contains	$\Theta(n)$	$\Theta(n)$
increaseKey	$\Theta(1)$	$\Theta(n)$
decreaseKey	$\Theta(1)$	$\Theta(n)$



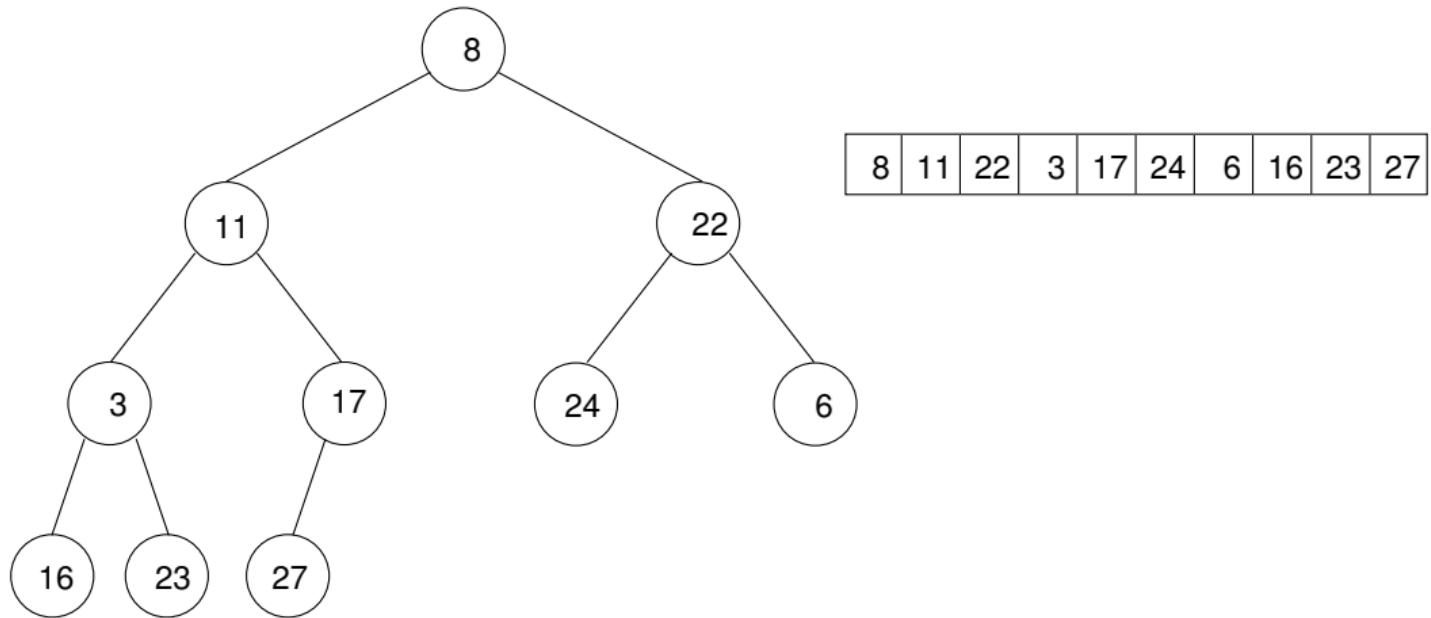


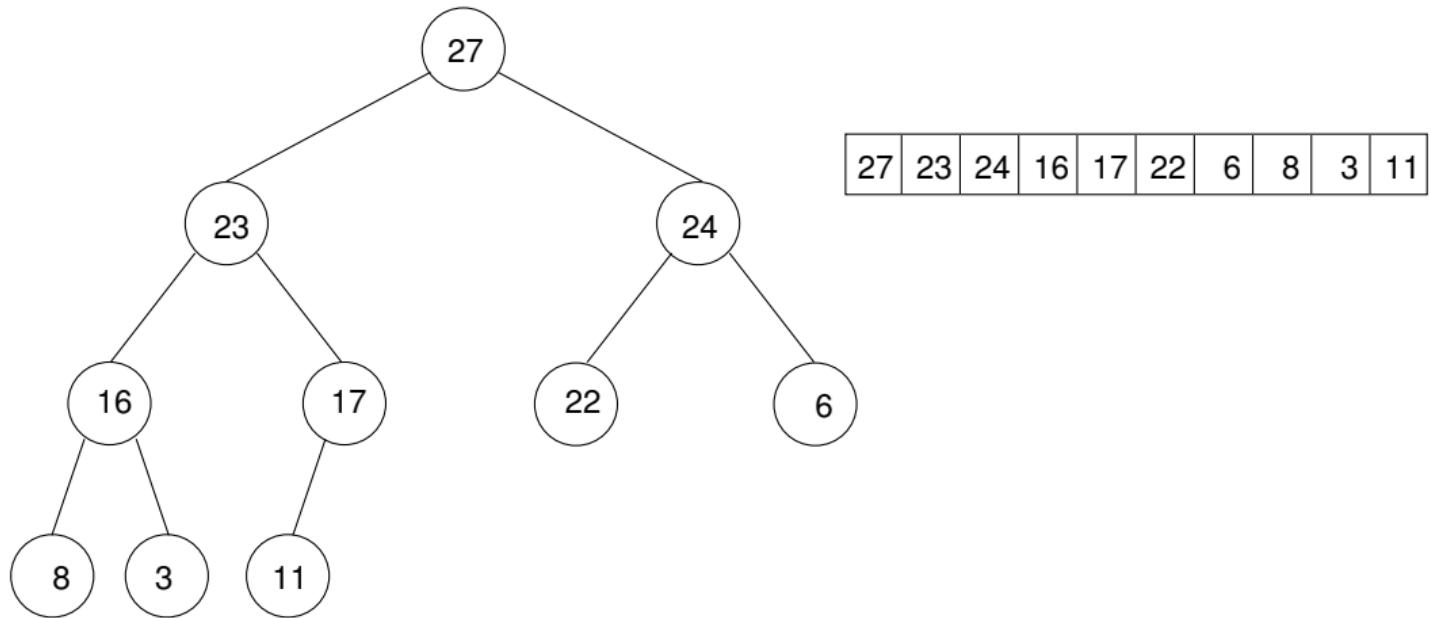
9	8	5	7	2	4	1	3	6	0
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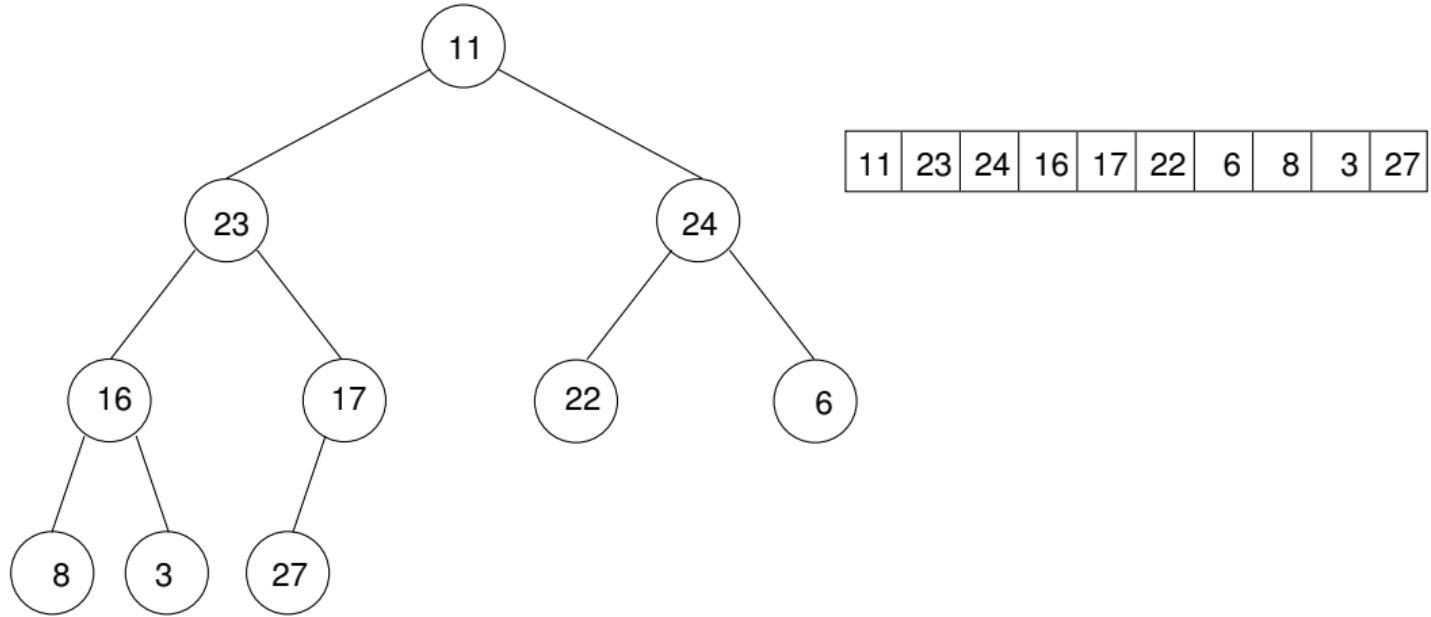


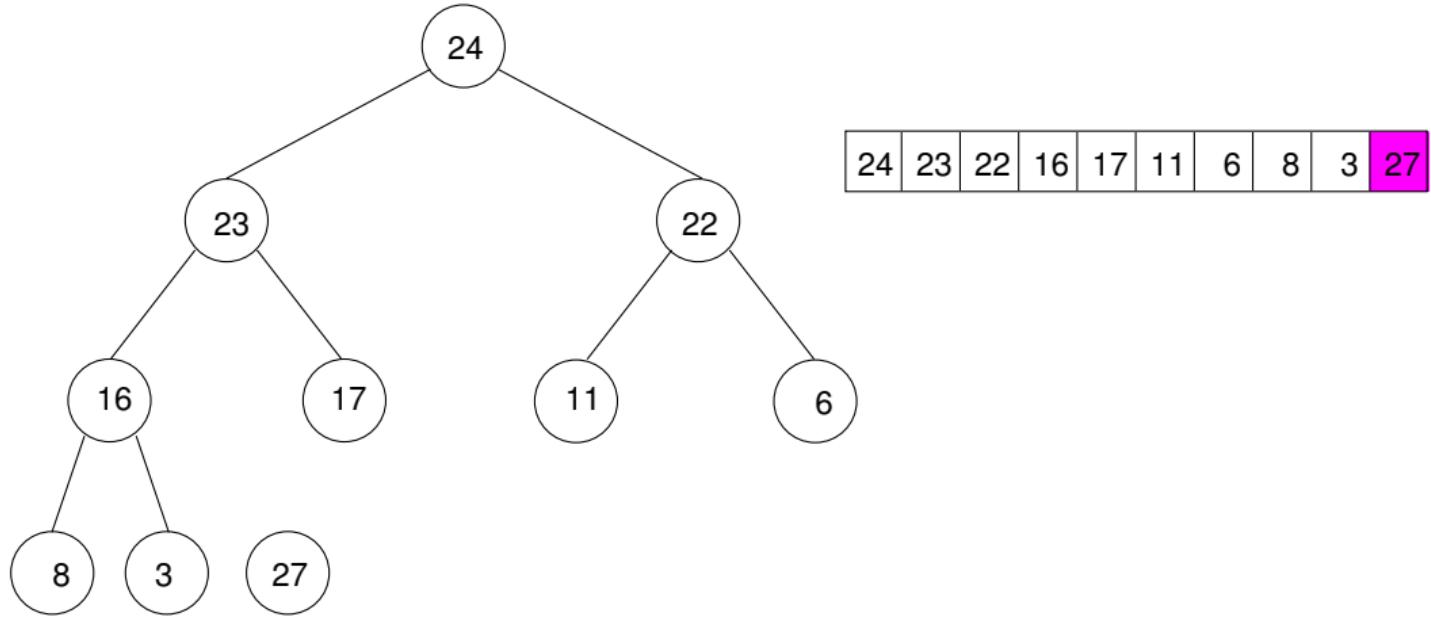


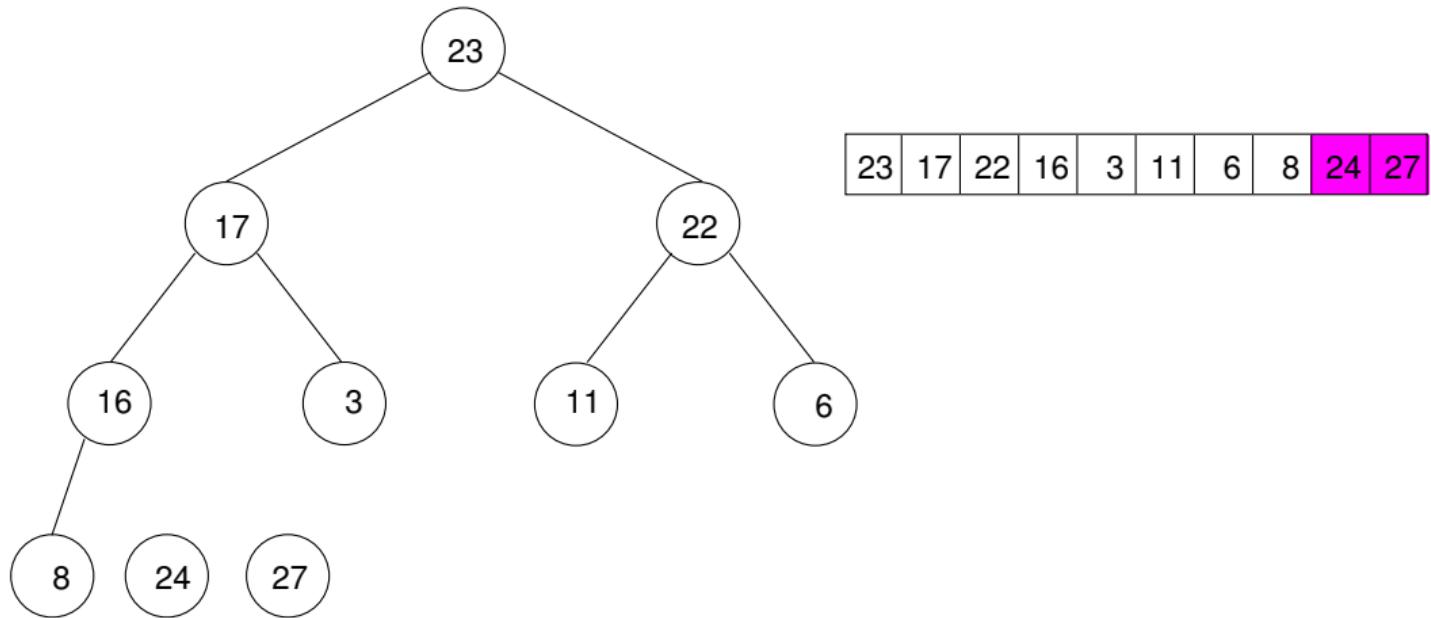
$$\begin{aligned}
\sum_{i=0}^{h-1} 2^i(h-1-i) &= (h-1) \sum_{i=0}^{h-1} 2^i - \sum_{i=0}^{h-1} i2^i \\
&= (h-1)(2^h - 1) - 2 - (h-2)2^h \\
&= h2^h - 2^h - h + 1 - 2 - h2^h + 2 \cdot 2^h \\
&= 2^h - h - 1 \\
&= 2^{\lg(n+1)} - \lg(n+1) - 1 \\
&= n + 1 - \lg(n+1) - 1 \\
&= n - \lg(n+1)
\end{aligned}$$

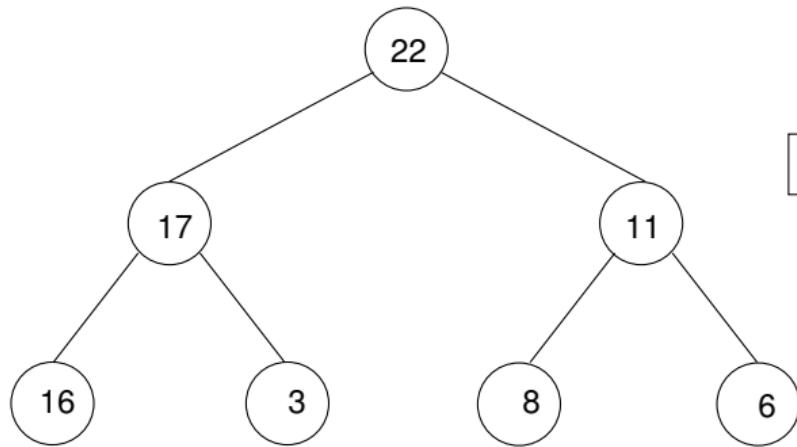




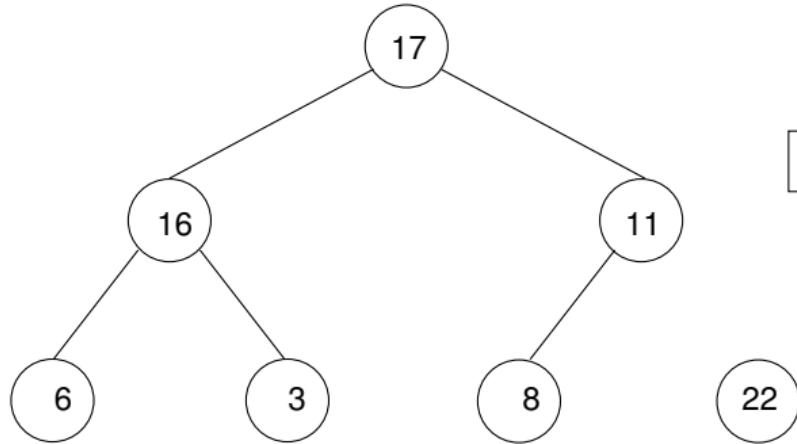






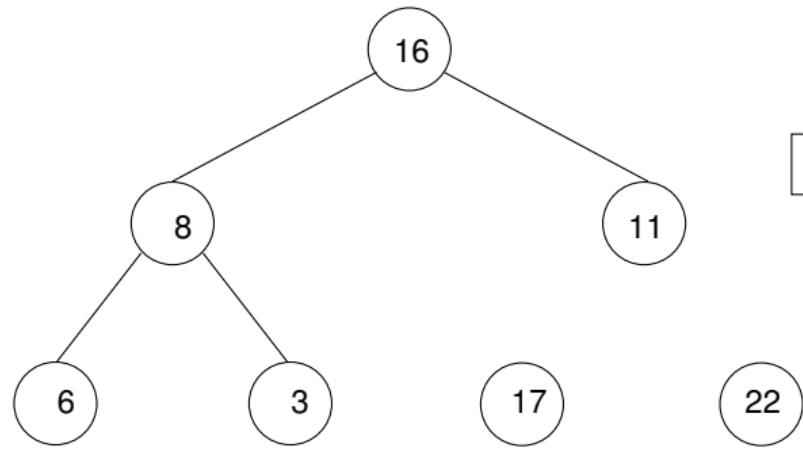


22	17	11	16	3	8	6	23	24	27
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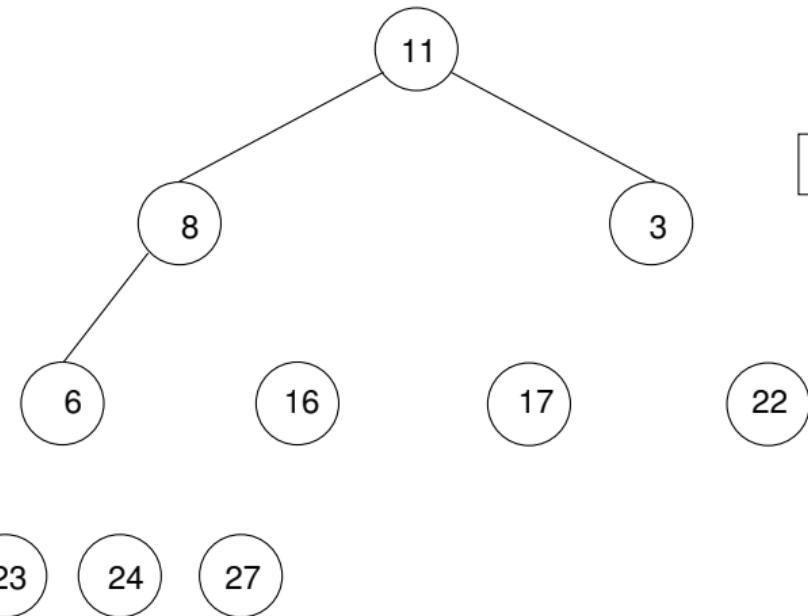
17	16	11	6	3	8	22	23	24	27
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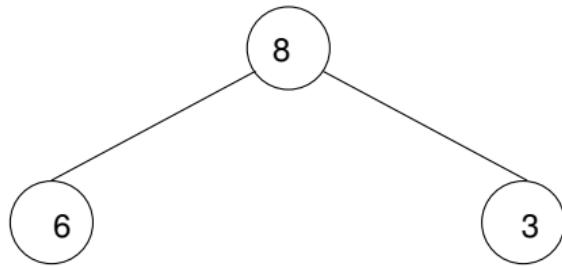


16	8	11	6	3	17	22	23	24	27
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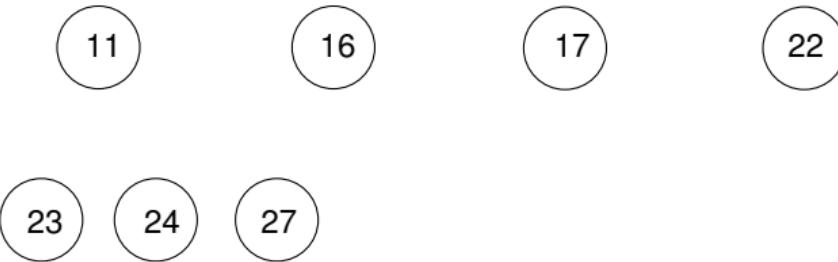
23 24 27

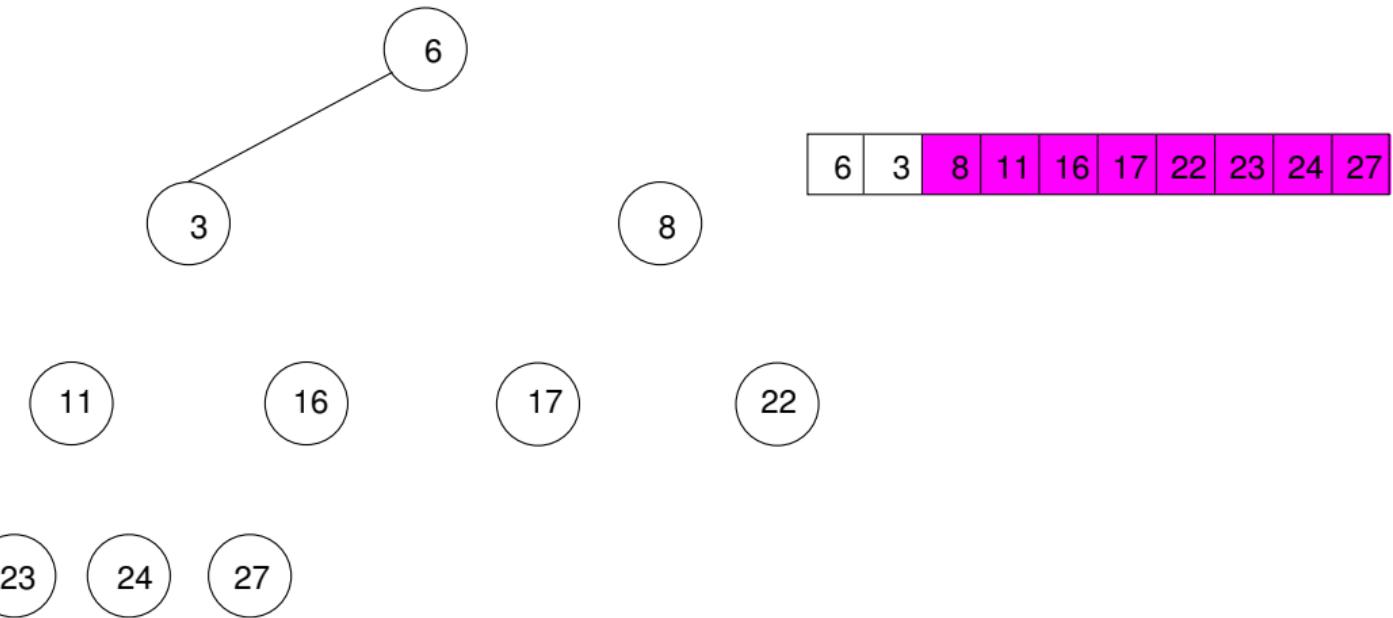


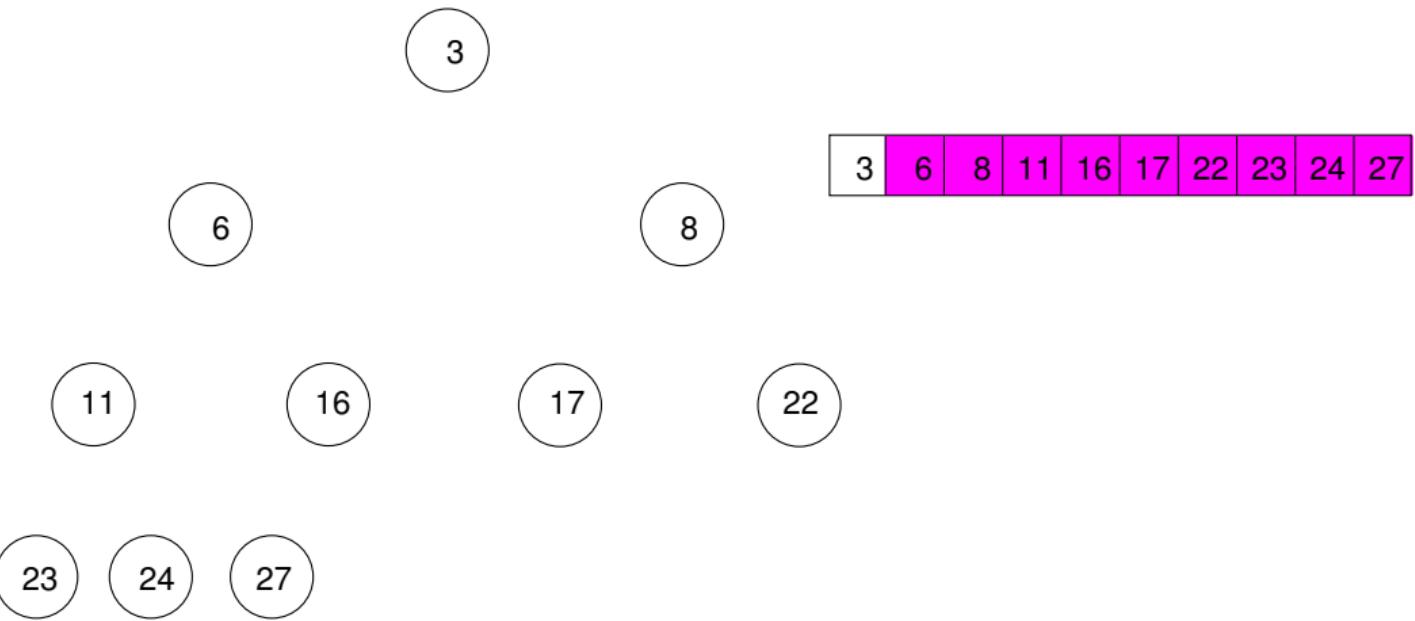
11	8	3	6	16	17	22	23	24	27
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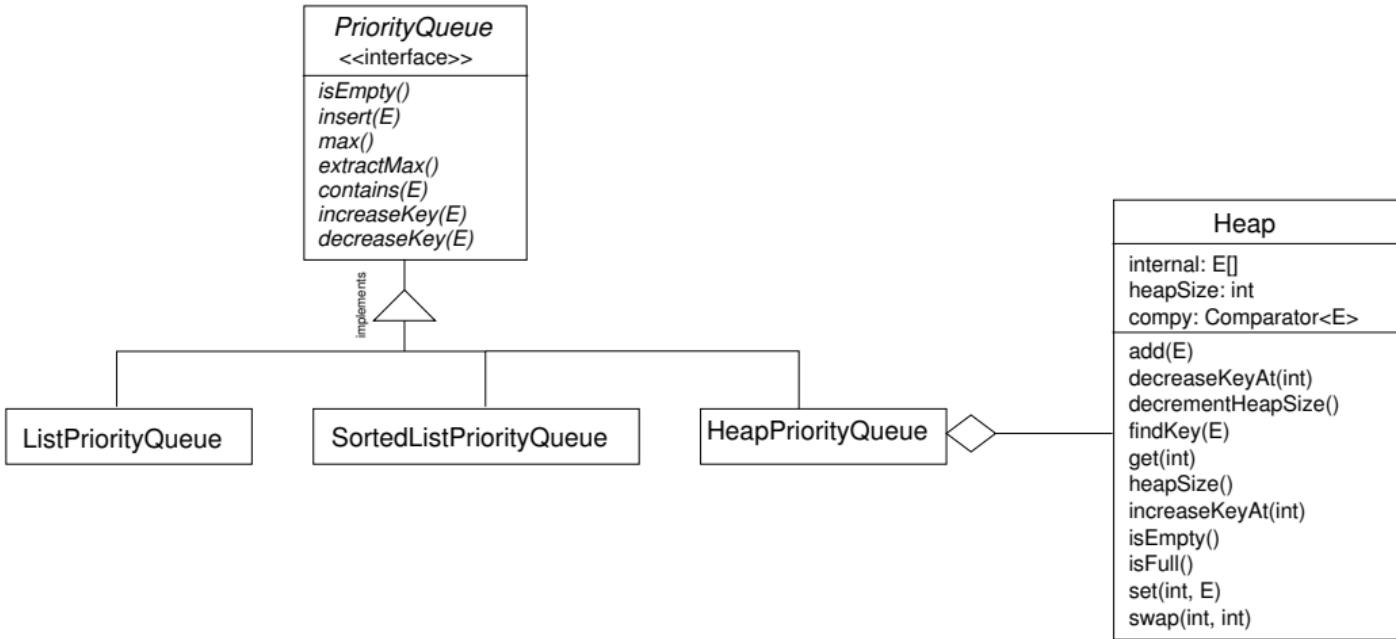


8	6	3	11	16	17	22	23	24	27
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	ListPriorityQueue	SortedPriorityQueue	HeapPriorityQueue
Initialize empty	$\Theta(1)$	$\Theta(1)$	$\Theta(1)$
Initialize populated	$\Theta(n)$	$\Theta(n^2)$	$\Theta(n)$
insert	$\Theta(1)$	$\Theta(n)$	$\Theta(\lg n)$
max	$\Theta(n)$	$\Theta(1)$	$\Theta(1)$
extractMax	$\Theta(n)$	$\Theta(1)$	$\Theta(\lg n)$
contains	$\Theta(n)$	$\Theta(n)$	$\Theta(n)$
increaseKey	$\Theta(1)$	$\Theta(n)$	$\Theta(n)$
decreaseKey	$\Theta(1)$	$\Theta(n)$	$\Theta(n)$