堆排序

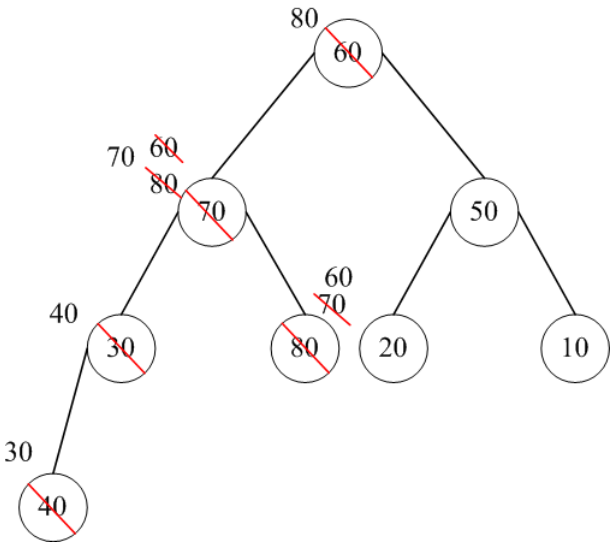
- 利用堆顶记录的关键字最小(或最大)的特点，我们可以从当前待排序的记录序列中依次取出关键字最小(或最大)的记录，这样便可以实现对记录序列的排序，这种排序方法称为堆排序。

- 堆排序的基本思想是：
- (1) 将待排序的n个记录建成大顶堆。
- (2) 将堆顶记录和最后一个记录交换位置，这样前n-1个记录是无序的，而最后1个记录是有序的。

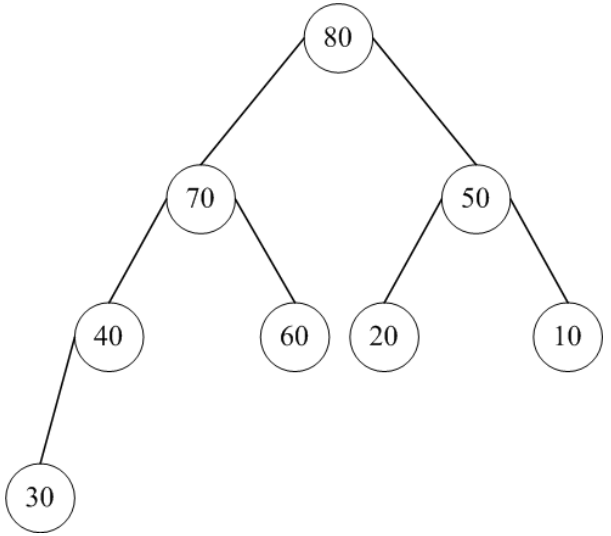
- (3) 堆顶记录被交换后，前n-1个记录不再是堆，需将前n-1个记录重新建成大顶堆，然后将堆顶记录和倒数第二个记录交换位置，这样前n-2个记录是无序的，而最后2个记录是有序的。
- (4) 重复上述步骤，直到全部记录排好序为止。

- 设记录序列为60,70,50,30,80,20,10,40。

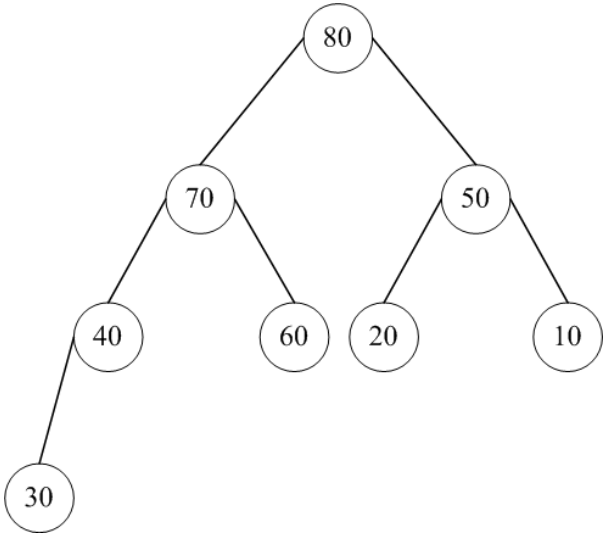
- 建大顶堆



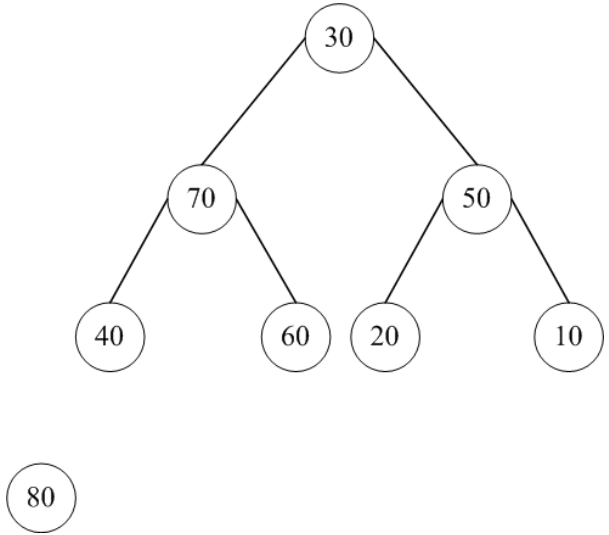
- 变成



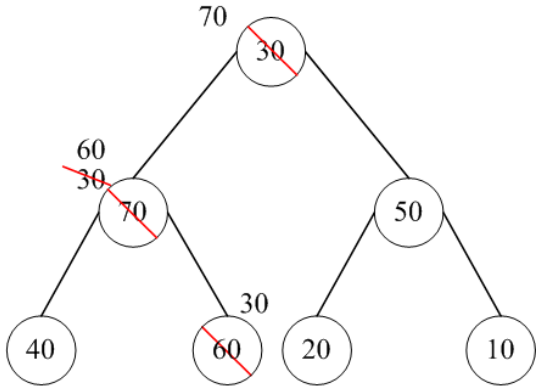
- 交换80,30



- 变成



- 重建大顶堆



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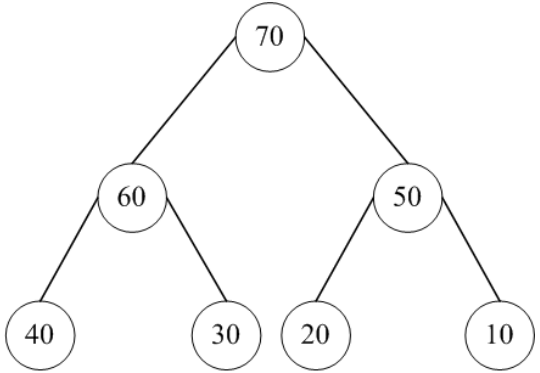
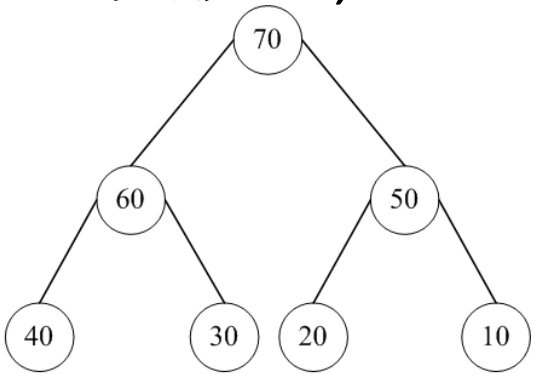
- 变成



80

- 交换70,10



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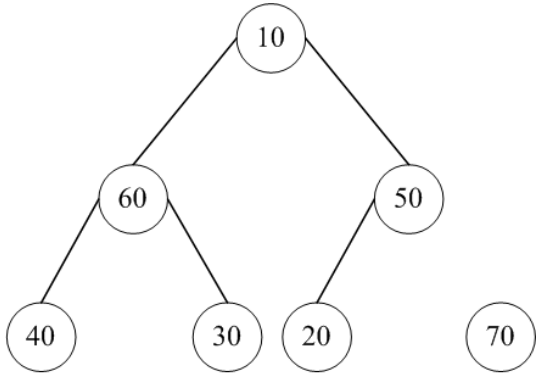
- 变成



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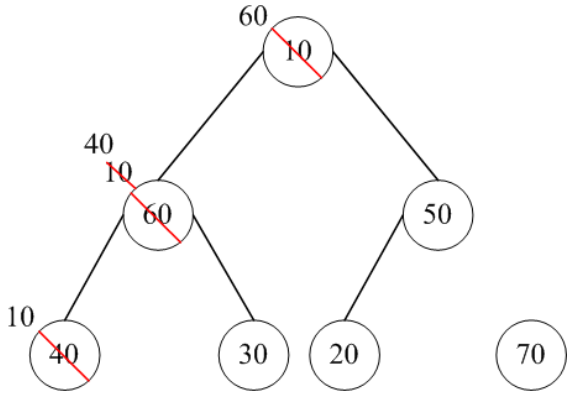
- 重建大顶堆



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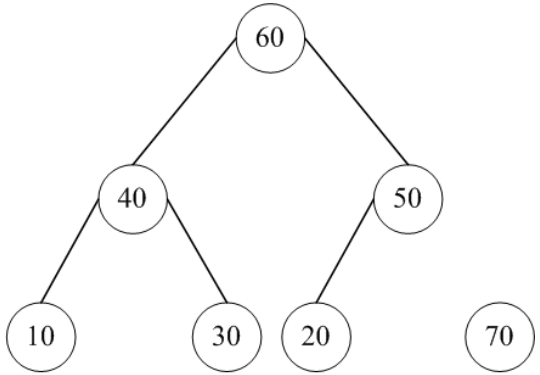
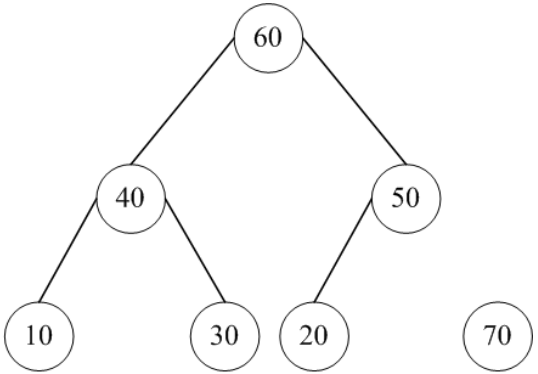
- 变成

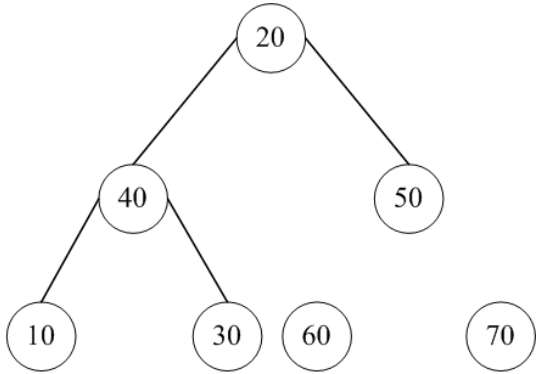


80

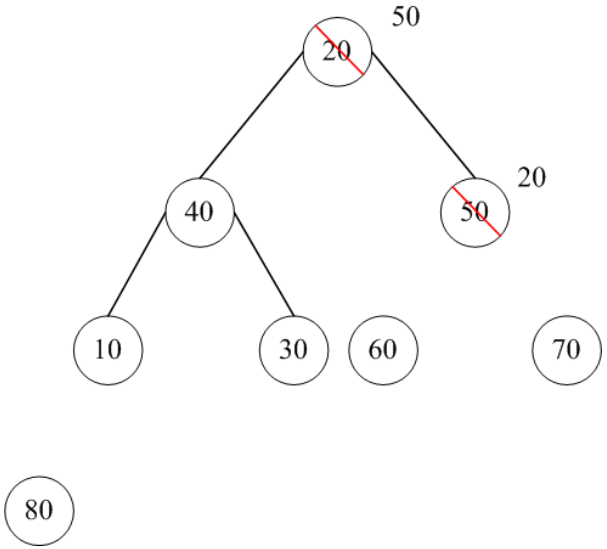
- 交换60,20



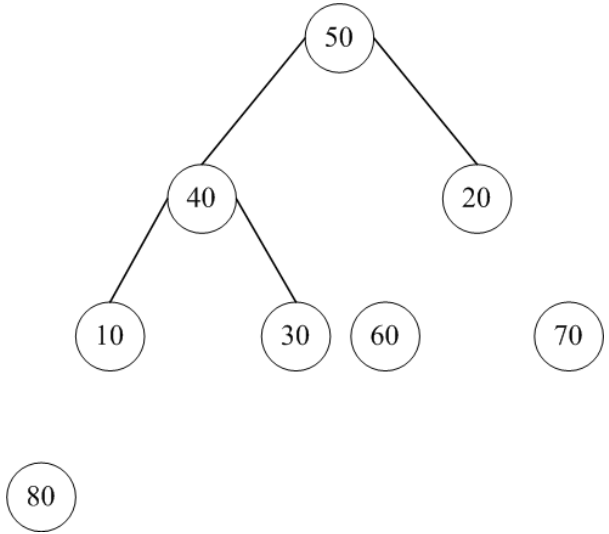
- 变成



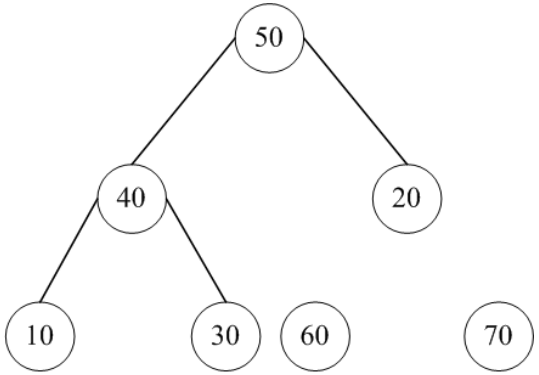
- 重建大顶堆



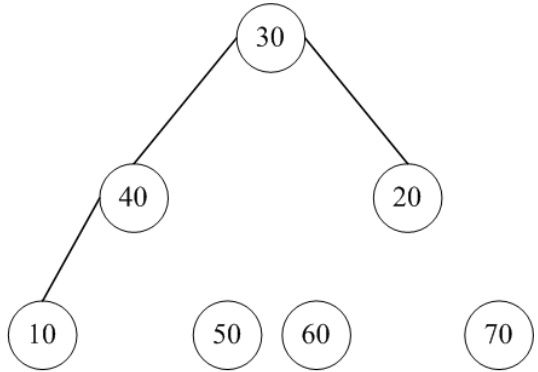
- 变成



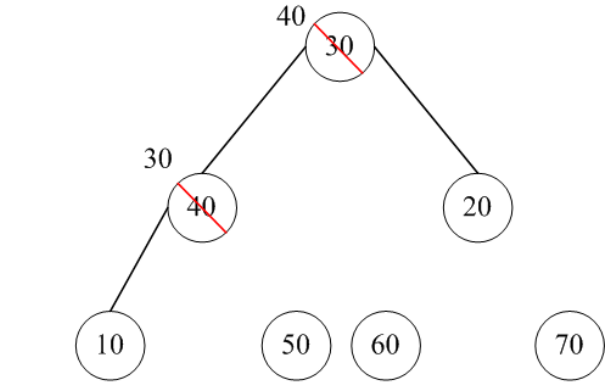
- 交换50,30



- 变成



- 重建大顶堆



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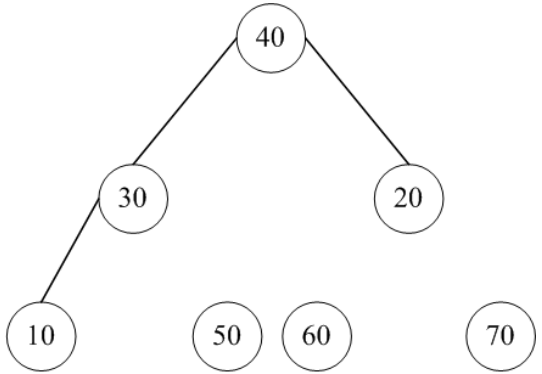
- 变成



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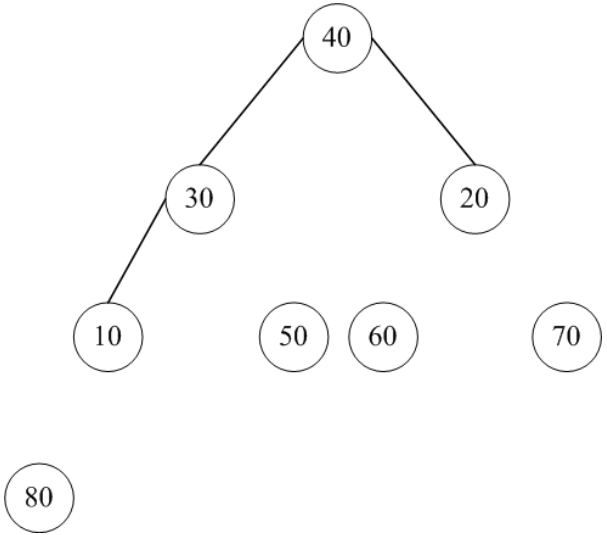
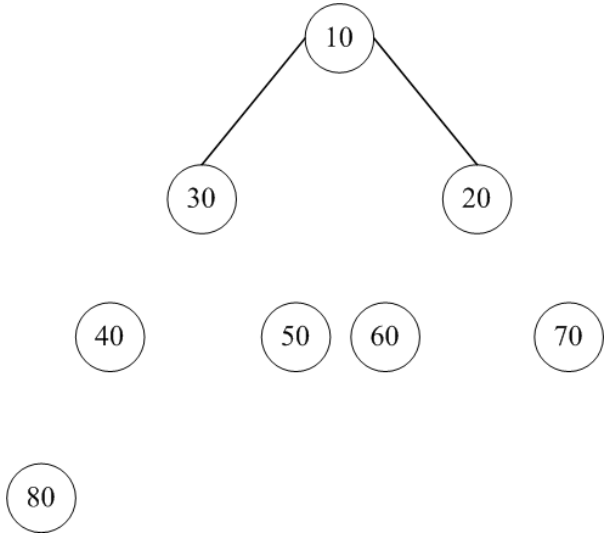
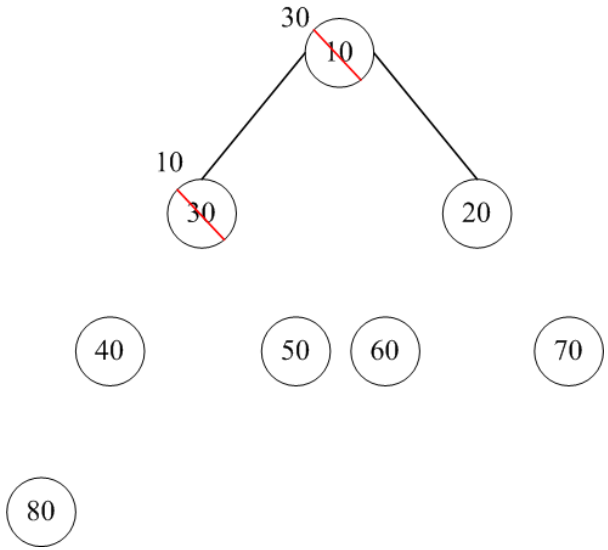
- 交换40,10



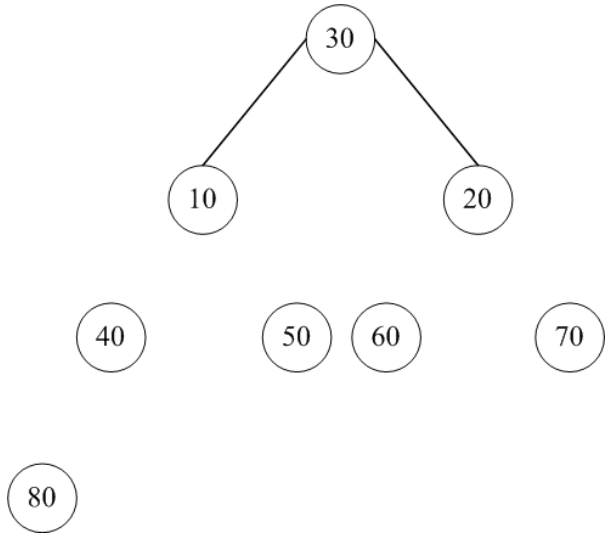
- 变成



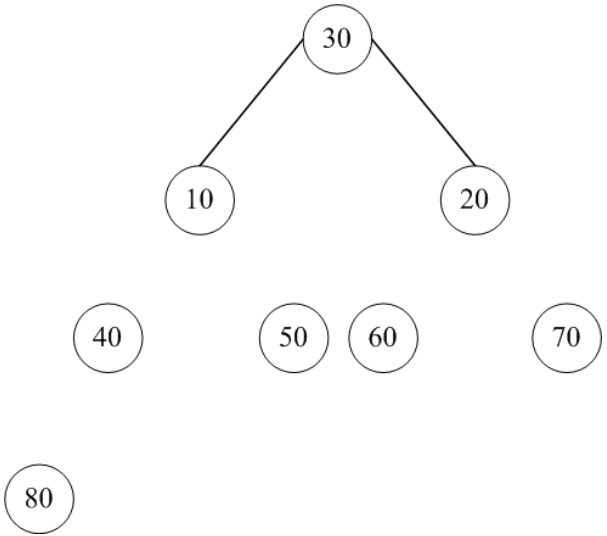
- 重建大顶堆



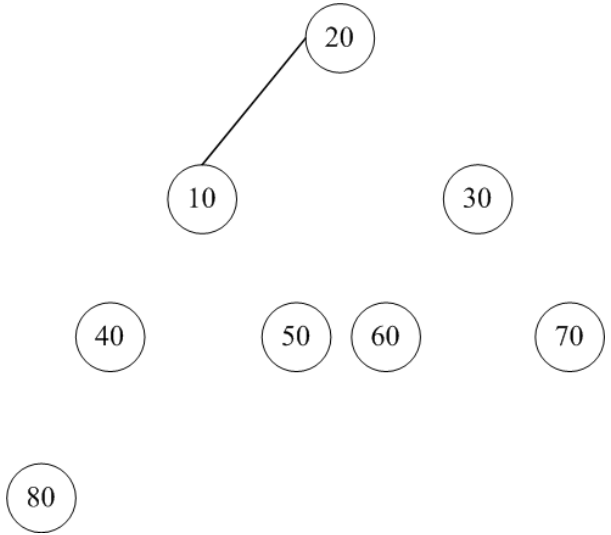
- 变成



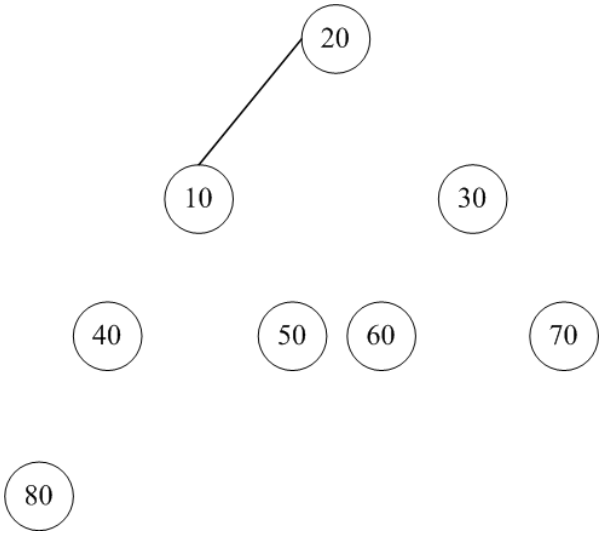
- 交换30,20



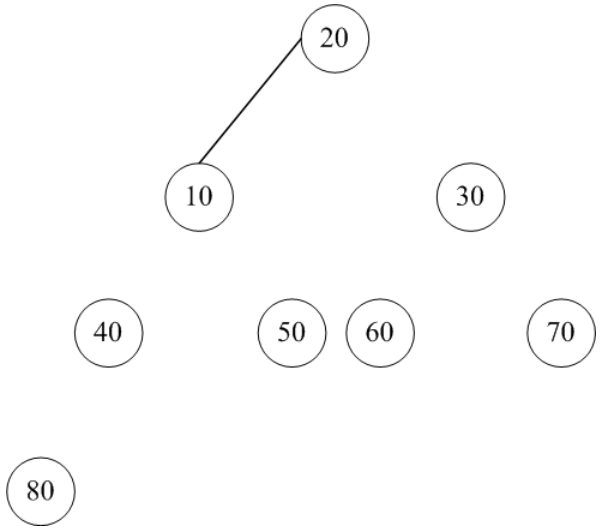
- 变成



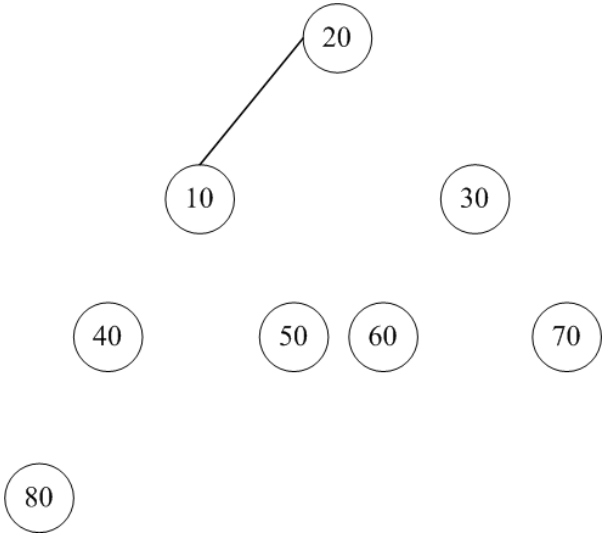
- 重建大顶堆



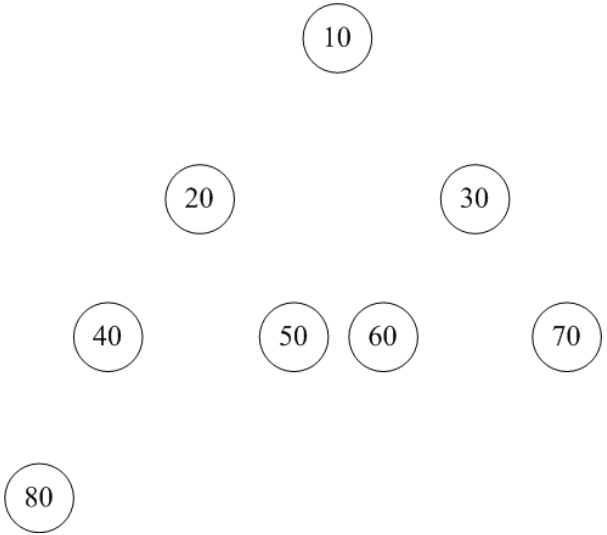
- 不变



- 交换20,10



- 变成



思考

- 为什么将记录序列按关键字从小到大排序时用的是大顶堆而不是小顶堆？