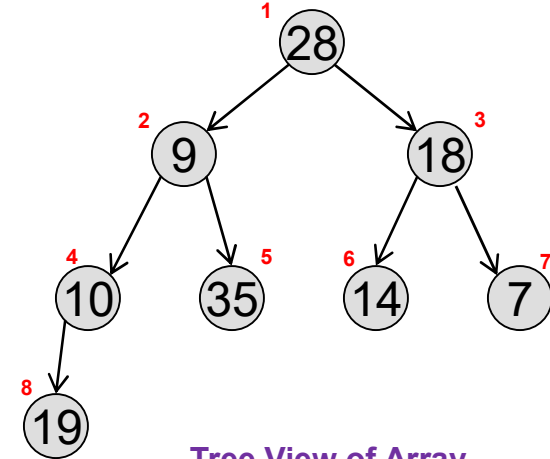# Converting An Array to a Heap

- To convert an array to a heap:

- Key idea: make heaps of subtrees and combine subtrees with new root node using heapify()

- Base case: All leaf nodes are valid heaps

- Begin combining heaps with first non-leaf node

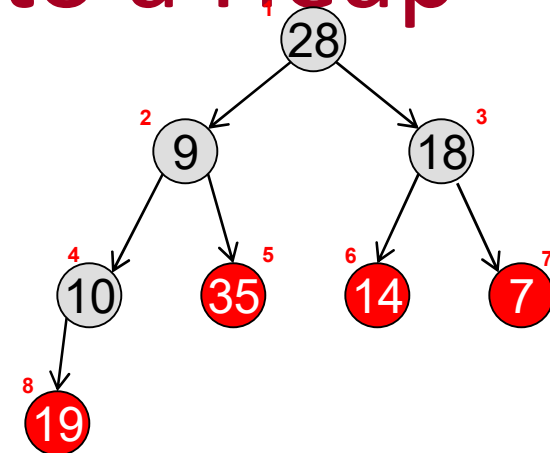| 0	1	2	3	4	5	6	7	8
em	28	9	18	10	35	14	7	19

Original Array

Tree View of Array
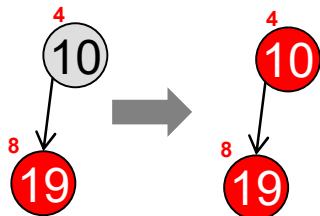
Converting An Array to a Heap

- All leaf nodes are valid heaps.
- Begin at first non-leaf node and continue to decrease location until the root, calling heapify at each location
  - Start: Heapify(Loc. 4)
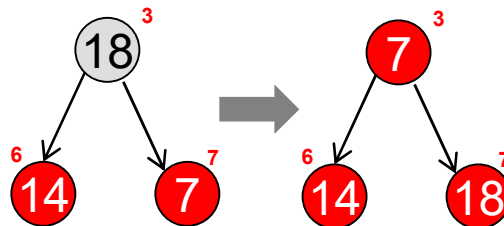

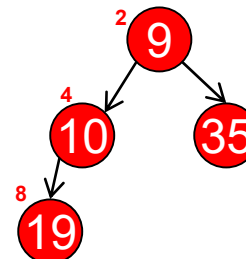
Leafs are valid heaps by definition

heapify(4)	heapify(3)	heapify(2)	heapify(1)

Already in the right order

Swap 18 & 7

Already a heap

Swap 28 <-> 7
Swap 28 <-> 14

Converting An Array to a Heap