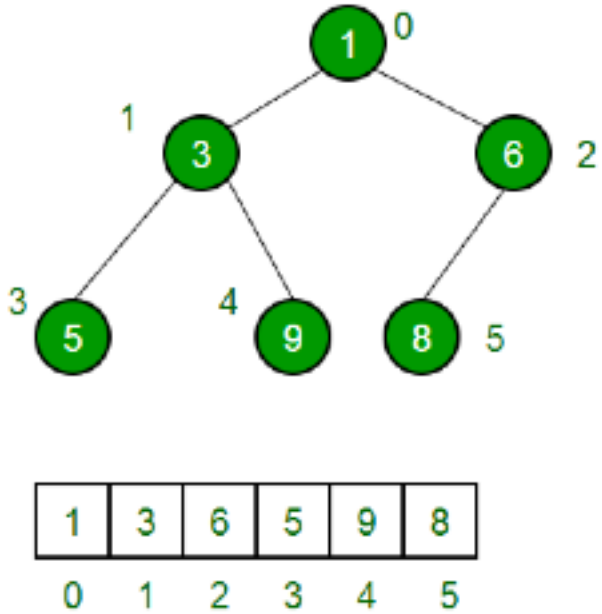
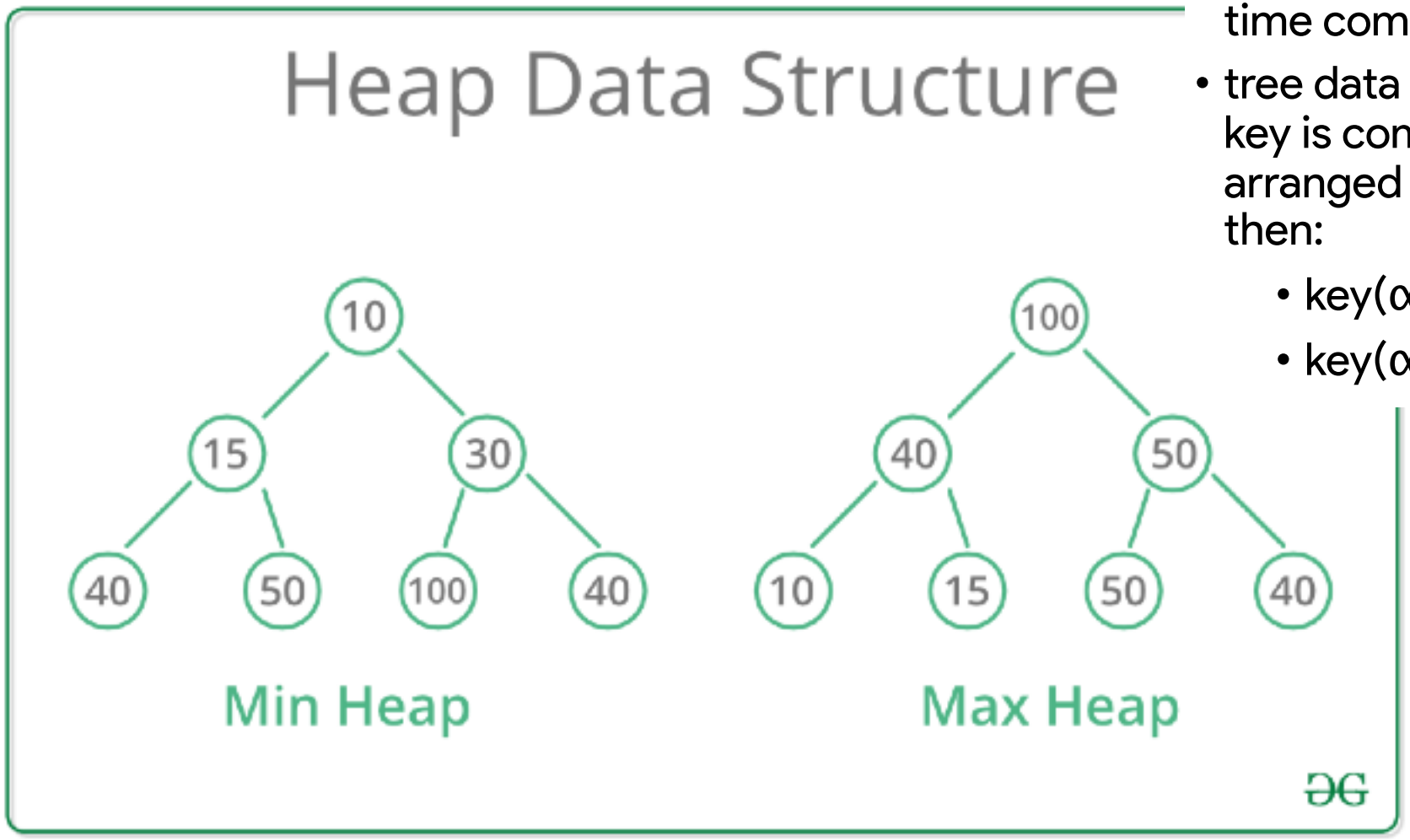
Heaps

- A Heap is a special Tree-based data structure in which the tree is a complete binary tree.
- Generally, Heaps can be of two types:
  - Max-Heap: In a Max-Heap the key present at the root node must be greatest among the keys present at all of it's children.
  - Min-Heap: In a Min-Heap the key present at the root node must be minimum among the keys present at all of it's children.
- The same property must be recursively true for all sub-trees in that binary tree.





- useful data structure for the heap sort algorithm that can sort elements in an unsorted array with at most O(n log n) time complexity
- tree data structure where the root-node key is compared with its children and arranged accordingly. If α has child node β then:
  - key(α) ≤ key(β)
  - key(α) ≥ key(β)