

Quicksort

① Choose a "pivot."

In this note, our pivot-picking strategy chooses first element as pivot.

14	33	43	21	5	9	18	67	30
p								

② Partition: run Tony Hoare's In-place Partitioning scheme

- Partition = place all items less than or equal to the pivot to the left and all items greater than pivot to the right.
- Tony Hoare: accomplishes this in $\Theta(N)$ time and $\Theta(1)$ space.

a) Put pivot to front of subarray.

b) Place L pointer at index 1.

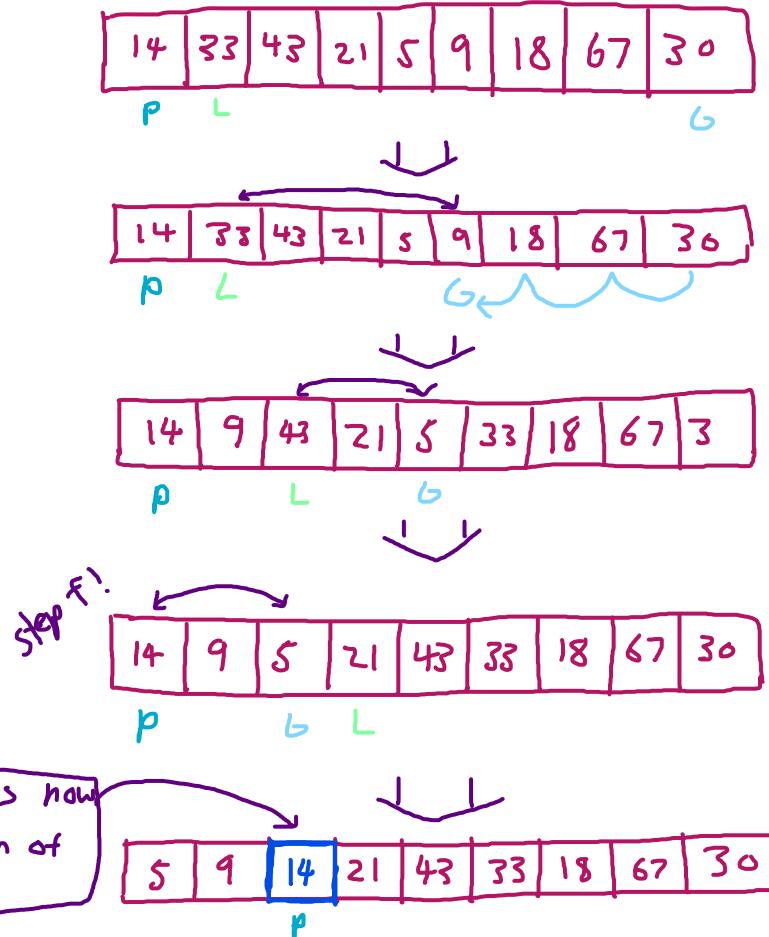
c) Place G pointer at end.

d) Move pointers towards each other until L lands on an item that is greater than pivot and when G lands on an item less than or equal to pivot.

Swap items L and G are pointing to.

e) Repeat (d) until L is on right side of G.

f) Swap pivot and item at G.



③ Recursion: repeat steps 1 and 2 on left and right subarrays of pivot.

