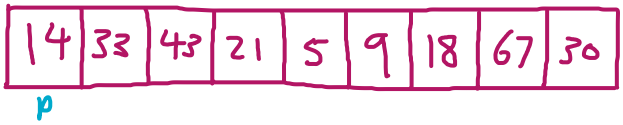
QuicKsort

(1) Choose a "pivot"

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



(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.