Complexity: *O(N*Log(N))*

3   RANDOMIZED-QUICKSORT $(A, p, q - 1)$
4   RANDOMIZED-QUICKSORT $(A, q + 1, r)$

RANDOMIZED-PARTITION (A, p, r)
1 i = Random (p, r)
2 exchange $A[r]$ with $A[i]$
3 **return** PARTITION (A, p, r)

PARTITION (A, p, r)
1 $x = A[r]$
2 $i = p - 1$
3 **for** $j = p$ to $r - 1$
4   **if** $A[j] \leq x$
5         $i = i + 1$
6   exchange $A[i]$ with $A[j]$
7 exchange $A[i+1]$ with $A[r]$
8 **return** $i + 1$

3   RANDOMIZED-QUICKSORT $(A, p, q - 1)$
4   RANDOMIZED-QUICKSORT $(A, q + 1, r)$

RANDOMIZED-PARTITION (A, p, r)
1 $i = $ Random (p, r)
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PARTITION (A, p, r)