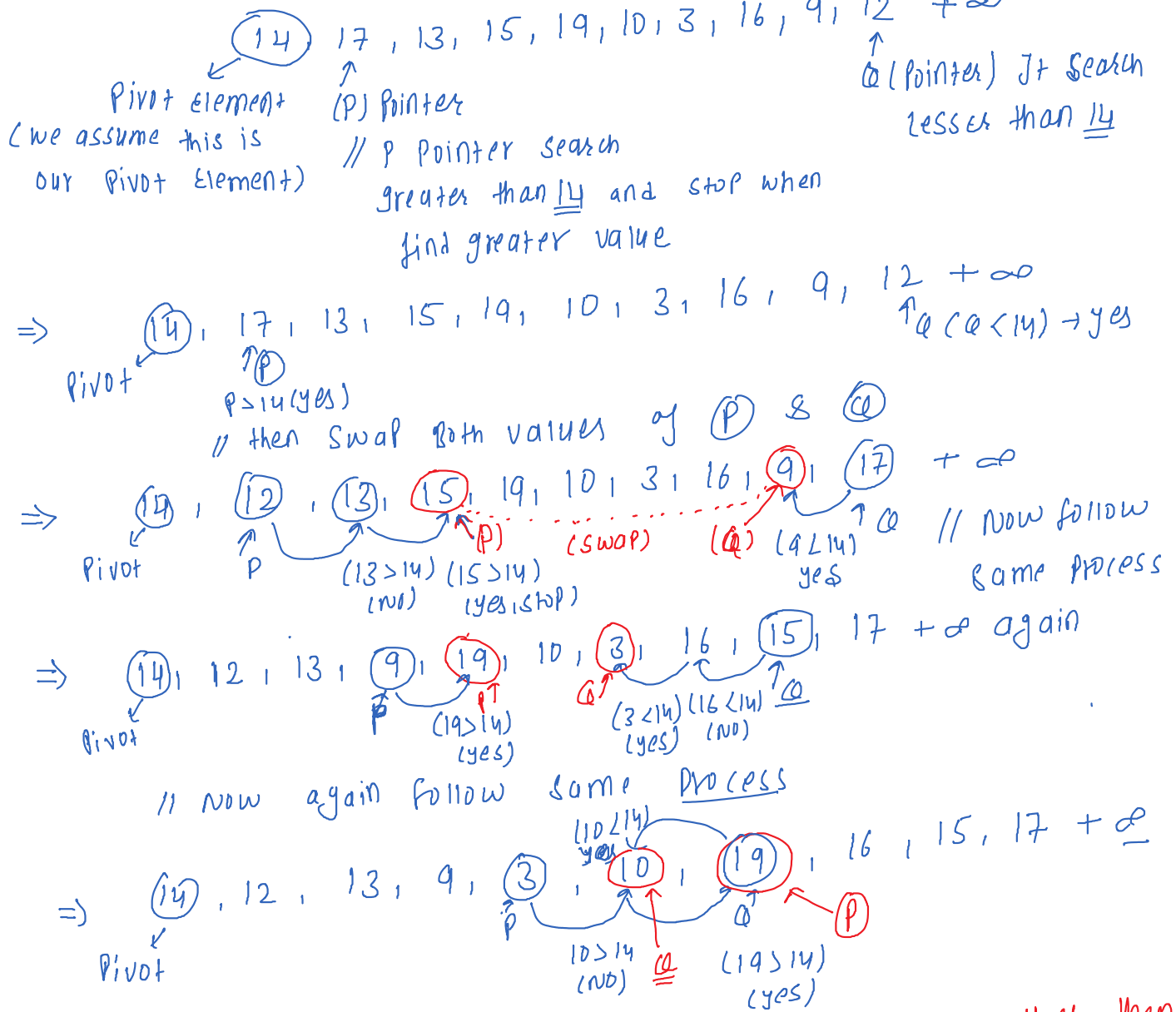
Q1(a)

Tuesday, October 12, 2021 11:45 AM

Ans: we have given [14, 17, 13, 15, 19, 10, 3, 16, 9, 12]

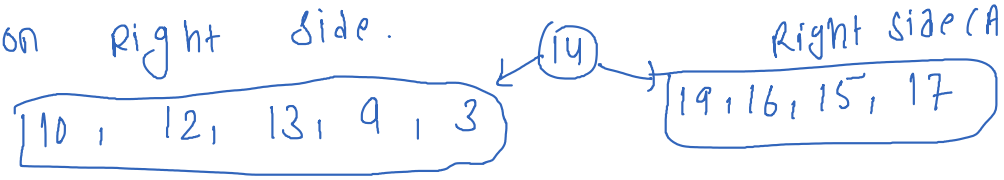
- Apply Quicksort Algorithm:



Do Partition means Replace the Pivot element with Pointer element like:

(10), 12, 13, 9, 3, (14), 19, 16, 15, 17, $+\infty$

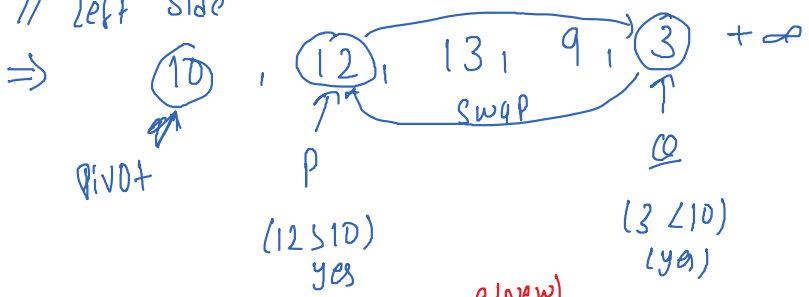
// look here this is our first Partition where all smaller element from (14) is on left side and all greater values from (14) is on Right side.

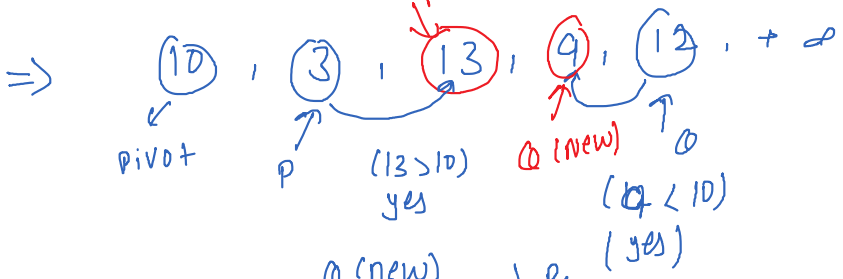


Right side (Apply quick sort)

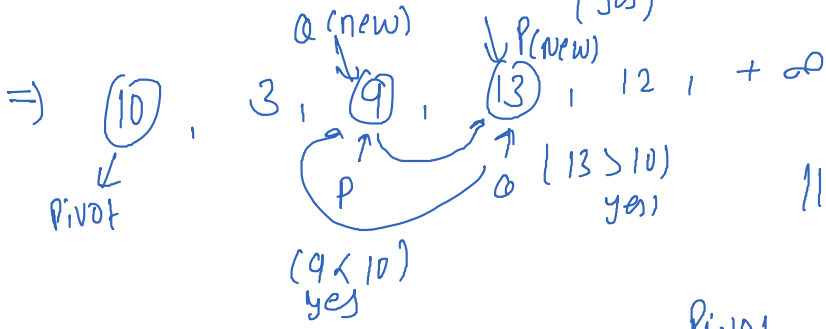
Left side (Apply Quick sort again)

// Left Side



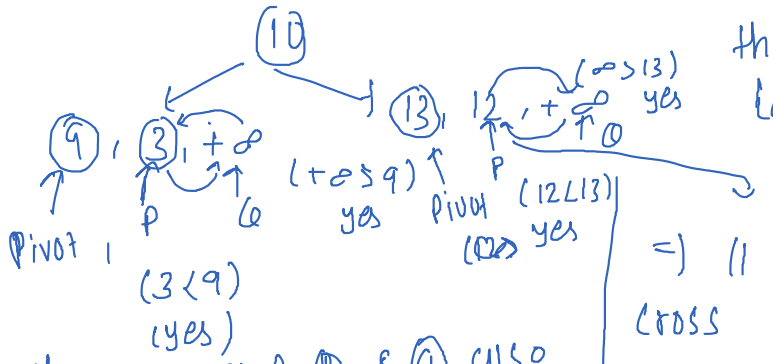


// swap again P & Q



// Now (P) & (Q) cross Each other so Replace Pivot element with Q

// Again we see a Partition here all elements smaller than (10) is on left & (13) is on Right



than (10) is on left & Larger than (10) is on Right

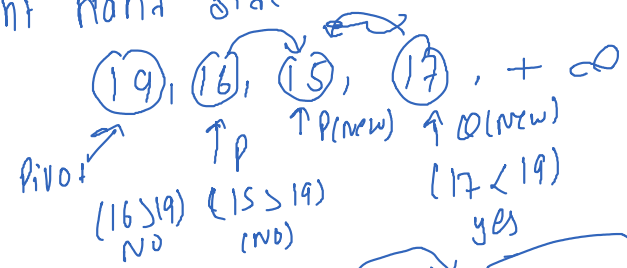
// Here after this step (P) & (Q) also cross each other so Replace Pivot with (Q)

3 9 +∞

=) // Here again (P) & (Q) cross each other so again Replace Pivot with (Q)

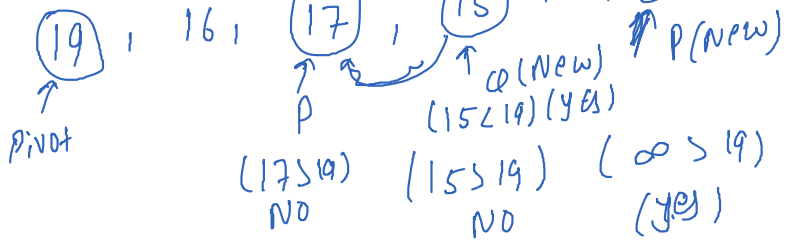
12 13 . +∞

// Right Hand side



// Swap (P) & (Q)

=) 19 , 16 , 17 , 15 , +∞



// Here (P) and (Q) cross each other so ~~change~~ Replace Pivot with Q

=) 15 , 16 , 17 , 19 , +∞ // Now we can see that the array of R.H.S is sorted

* Now take complete array (Both L.H.S & R.H.S) Together we see that our array is sorted

L.H.S R.H.S

3 9 12 13 14 15 16 17 19 // Now our array is sorted

L.H.S R.H.S

3, 9, 12, 13, 14 , 15, 16, 17, 19 // now our array is sorted