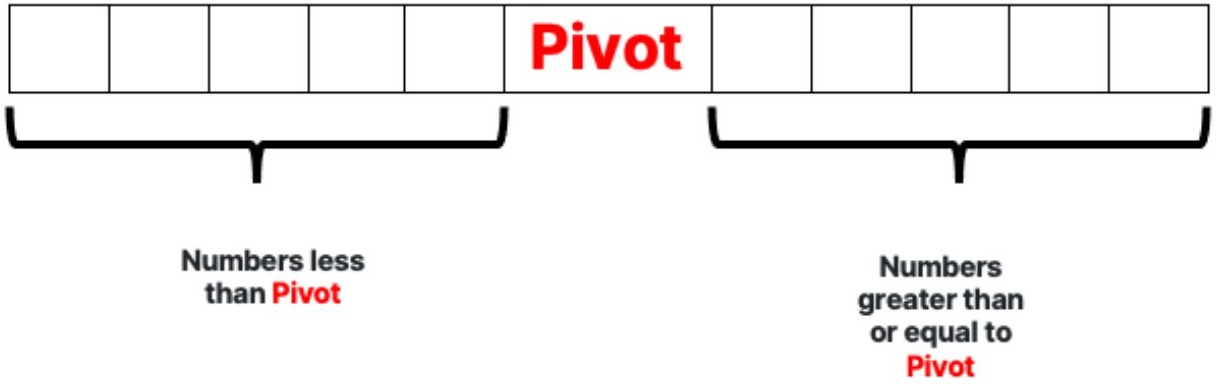
Introduction to Quicksort

What is quicksort?



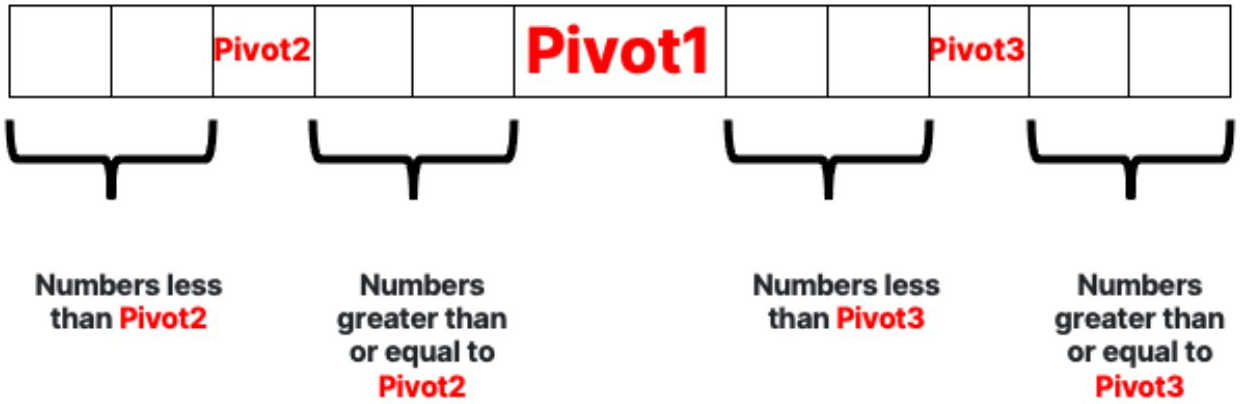
One of the most efficient ways to sort unordered list

Pivot is chosen for list

Numbers less than pivot go to left side (below pivot)

Numbers greater than or equal to pivot go to right side (above pivot)

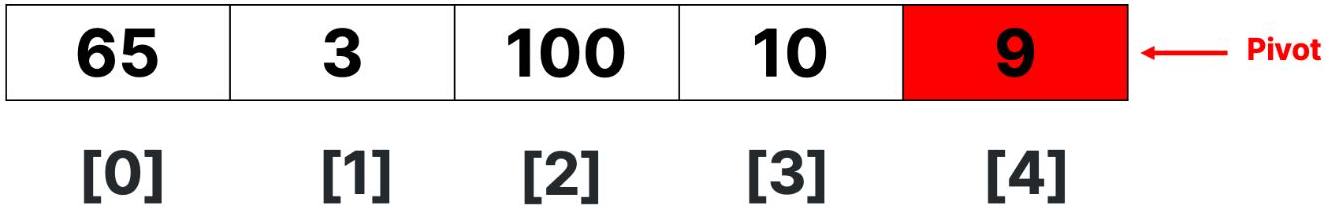
What is quicksort?



Pivot chosen for each of the sides (sublists)

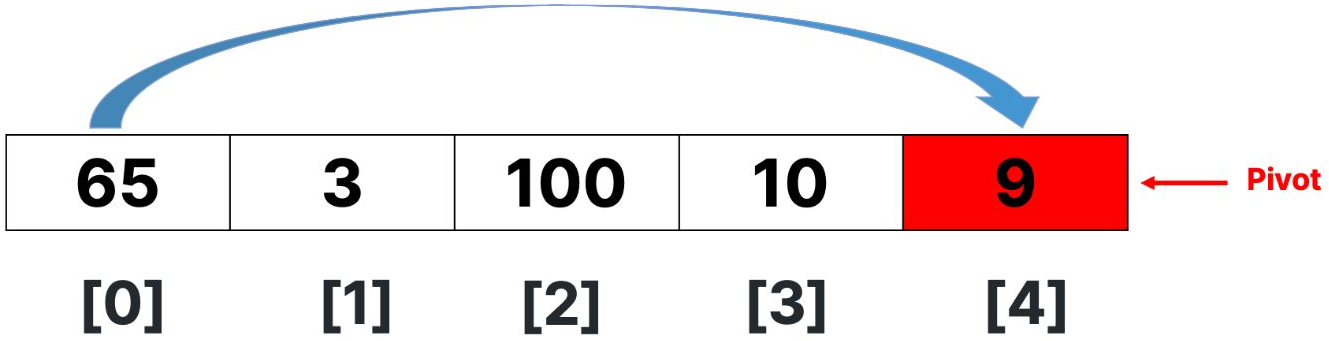
Repeat recursively until list is sorted

Quicksort



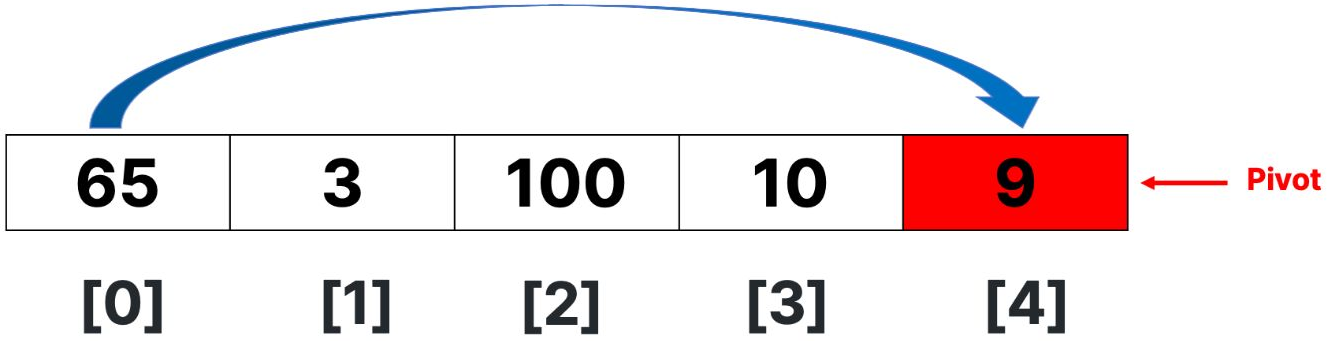
Pick a pivot (last index)

Quicksort



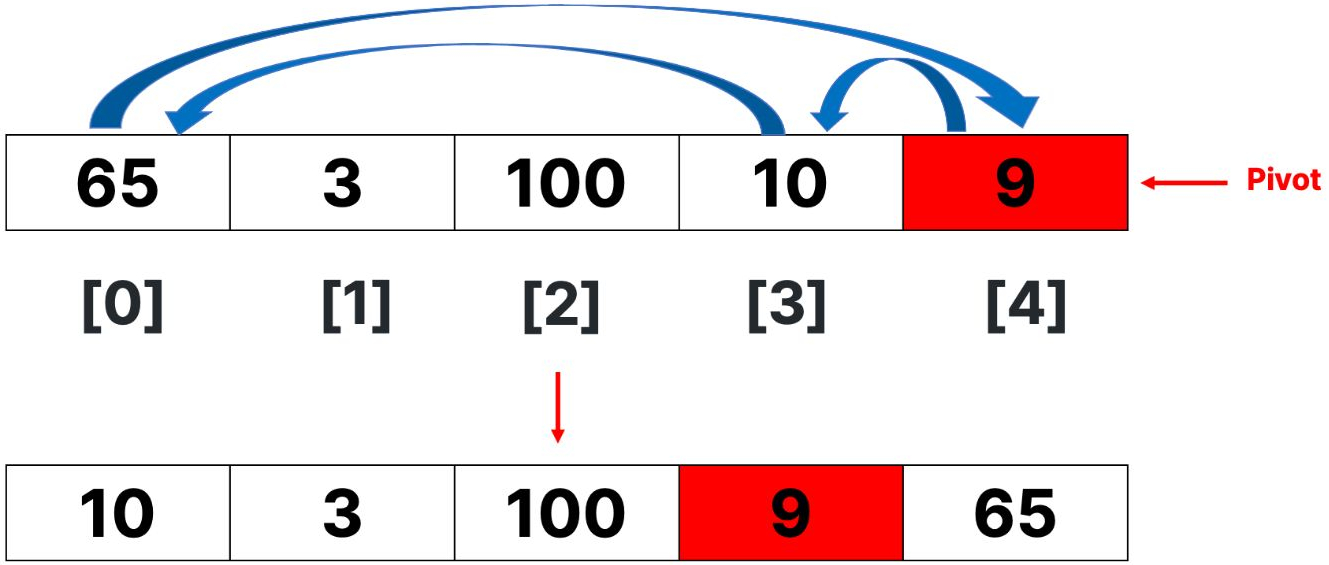
Compare value at zero-th index with pivot value

Quicksort



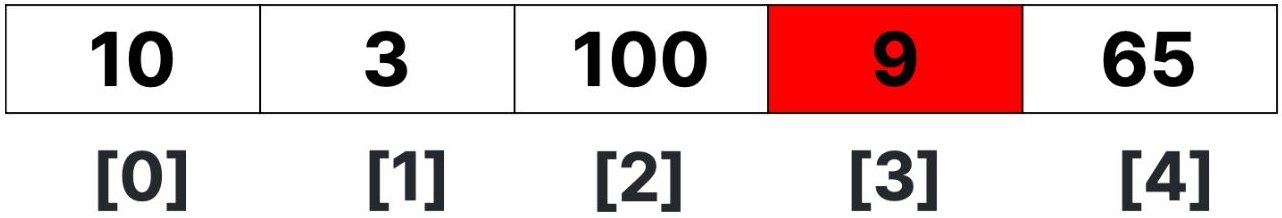
If greater, move above pivot

Quicksort



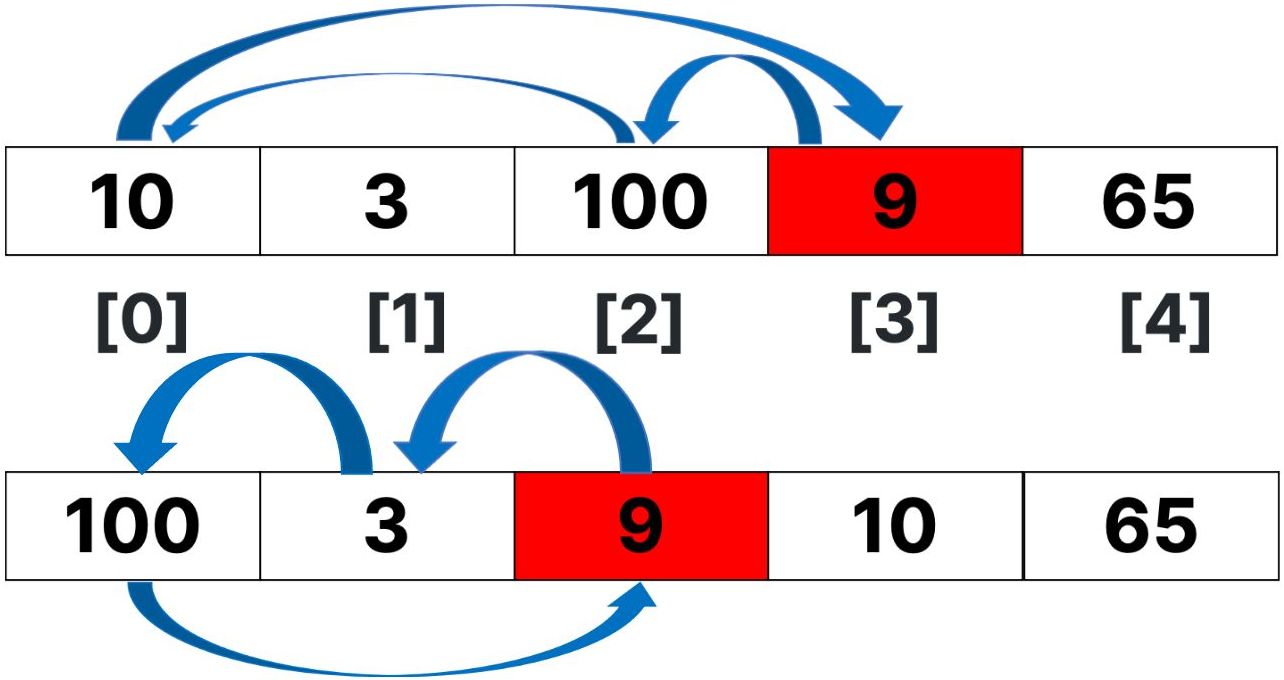
In-place sorting algorithm, sorts within existing memory

Quicksort



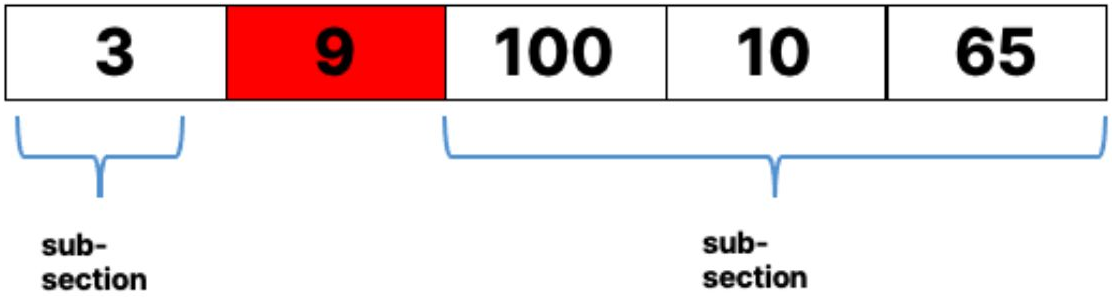
Pivot stays the same, compare new 0th value with it

Quicksort



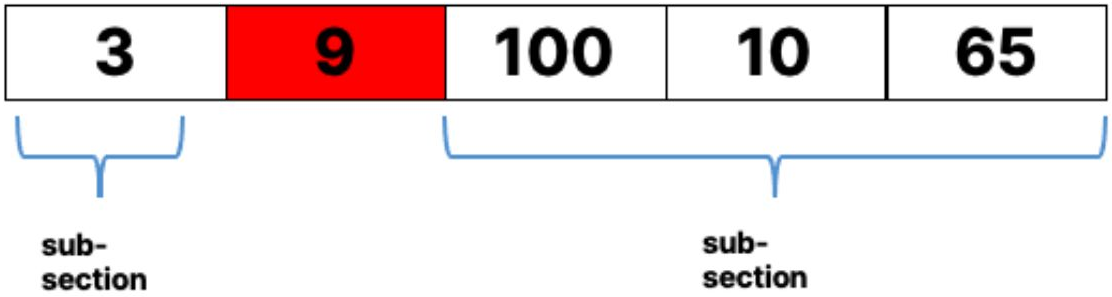
Repeat until all values < 9 are below 9, all values >= 9 are above 9

Quicksort



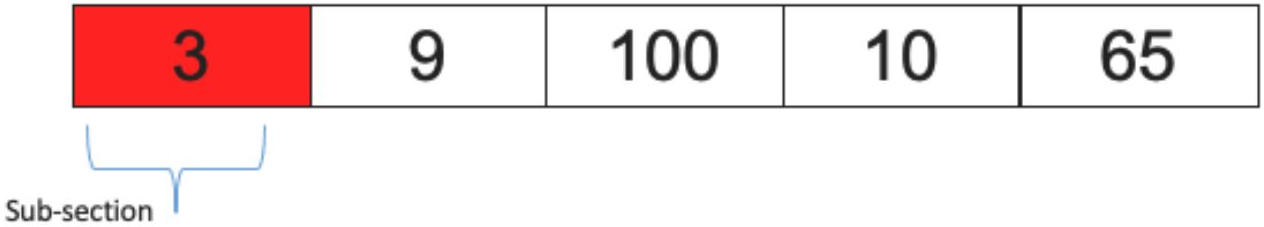
Last item comparison marks the end of the first iteration

Quicksort



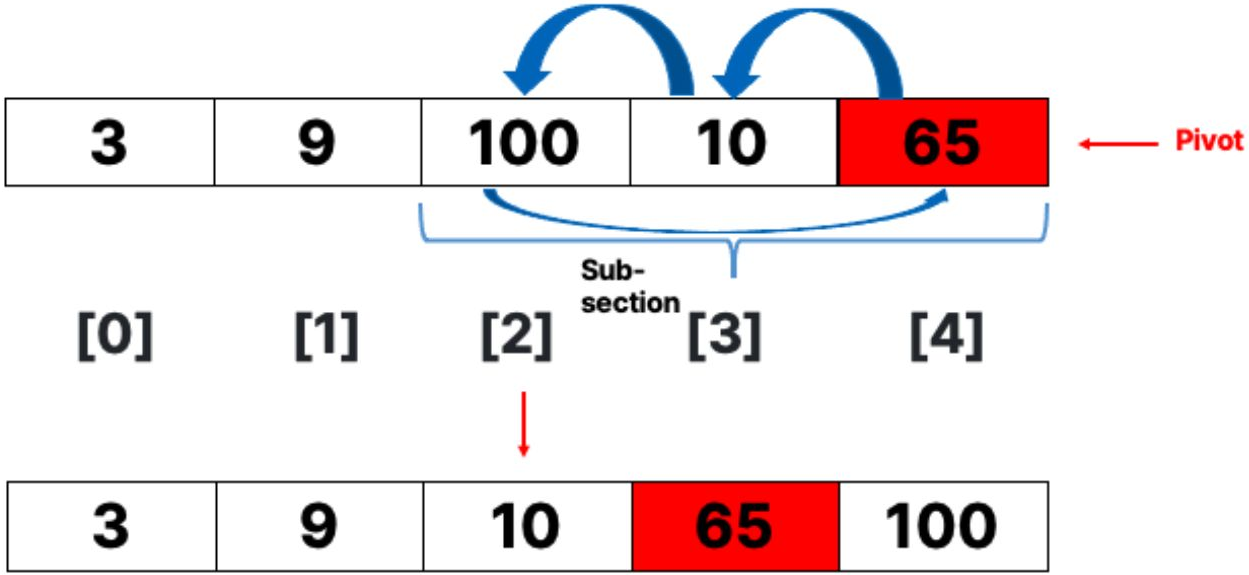
Perform quicksort on sub-sections

Quicksort: Sub-section with one item



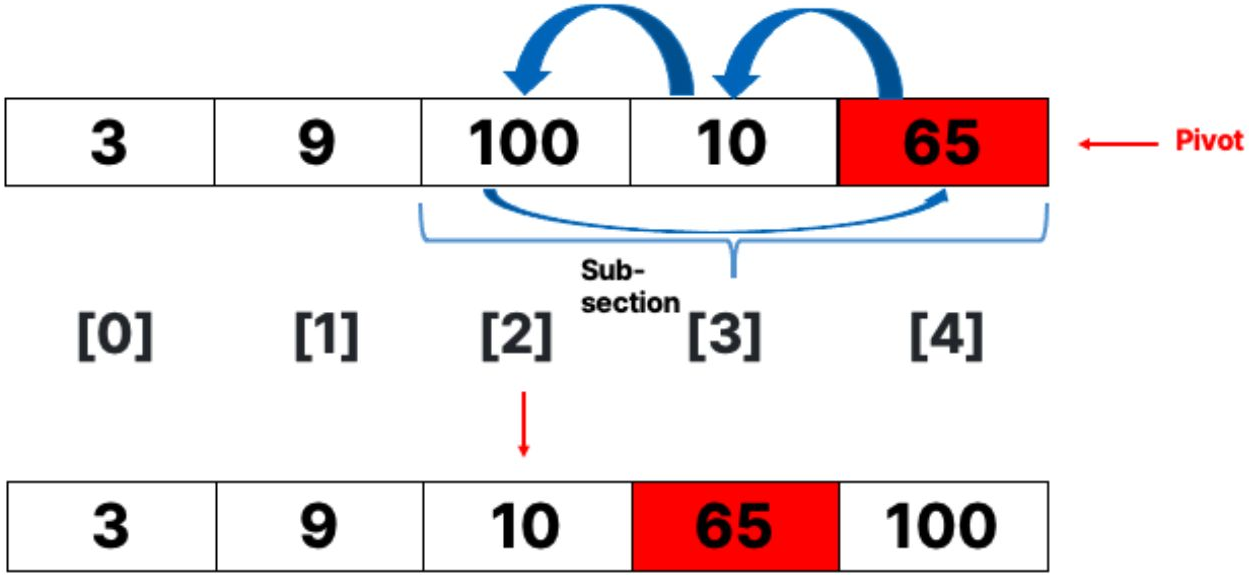
If sub-section contains one or less items, no further sorting is needed

Quicksort: Sub-section >= pivot



Pick pivot for this sub-section (65)

Quicksort: Sub-section >= pivot



Quicksort again using this pivot

Quicksort: Finished sort