



# Quick Sort

ALGORITHM

# Description :

The **Quick Sort** is a in-place 'Divide and Conquer' sorting algorithm.

First we pick a pivot to partition the array into two halves - one half containing all the elements less than the pivot and the other half containing the elements greater than the pivot. (The equal ones can remain in either side).

Repeat the same process with each half of the array recursively to eventually obtain a sorted array.

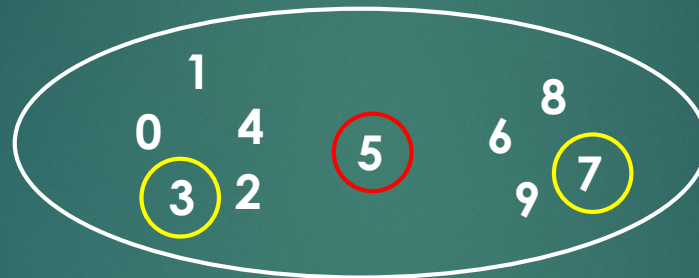
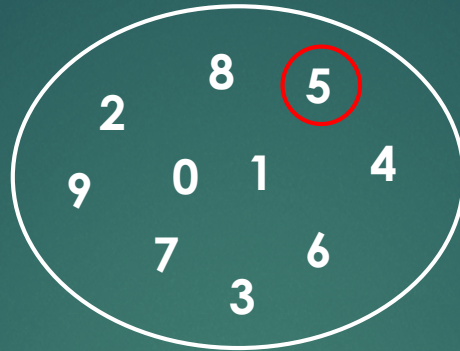


# Unplugged Activity



1. Start with a stack of 10 cards showing all the numbers.
2. Pick a pivot and shift all the cards with smaller numbers on the left and larger numbers on the right of the pivot.
3. Repeat Step 2 for the left and the right halves.
4. Keep repeating until the cards are sorted.

# Unplugged Activity







The algorithm for **Quick Sort** is to repeatedly pick a pivot to partition the list.

# Java

# QuickSort

**Joe James**

Math & Computer Science Tutorials  
from Silicon Valley

Watch the video clip “[QuickSort Explained](#)”

extracted from <https://www.youtube.com/watch?v=Fiot5yuwPAg>

# Quick Sort

## Order of Growth

Worst Case :  $O(n^2)$

~ where every pivot picked is either the largest or the smallest element the list.

Best Case :  $O(n \log n)$

~ about equal trees after each partition

Average Case :  $O(n \log n)$