Algorithms.

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-Content:

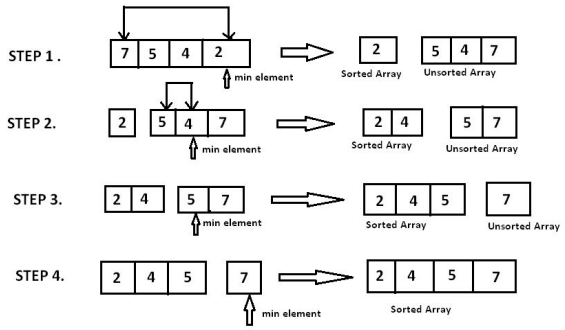
An algorithm is a list of rules to follow in order to solve a problem.

Algorithms need to have their steps in the right order. Think about an algorithm for getting dressed in the morning. What if you put on your coat before your jumper? Your jumper would be on top of your coat and that would be silly! When you write an algorithm the order of the instructions is very important.

a. Sorting Algorithms:

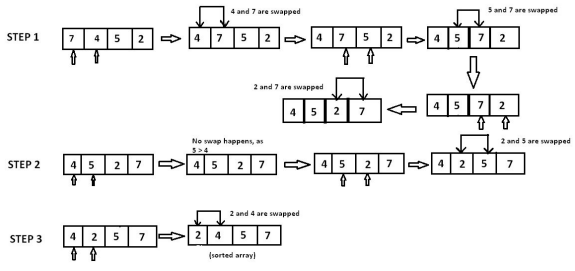
1. Selection Sort:

Find minor / major element and insert it in a list at the end. Remove the item from the original list. Repeat the cycle until the original list is empty.



2. Bubble Sort:

Starts in the lower position, compares only adjacent elements, if the left element is greater / smaller than the right makes swap. Advance one position until the end, on the first pass the last element will be the major / minor.

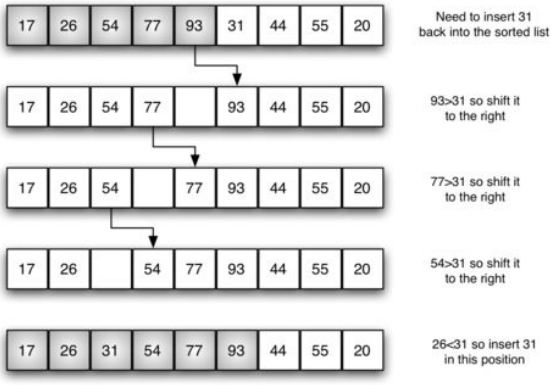


3. Insertion Sort:

Logically divide the list into two parts: ordered and unordered.

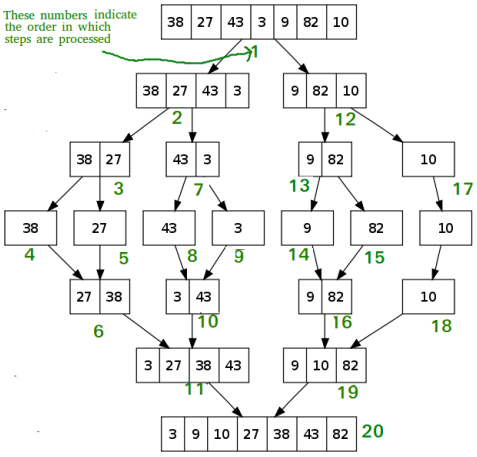
Initially compare the first two elements, and swap between them to sort them.

These two members will be the initial members of the ordered sublist.
The elements of the unordered list are processed. Each element is removed from the unordered list and inserted into the ordered list. The larger elements are "run" to insert the element.
At no time are two separate lists used, the process ends when there are no elements in the unordered list.



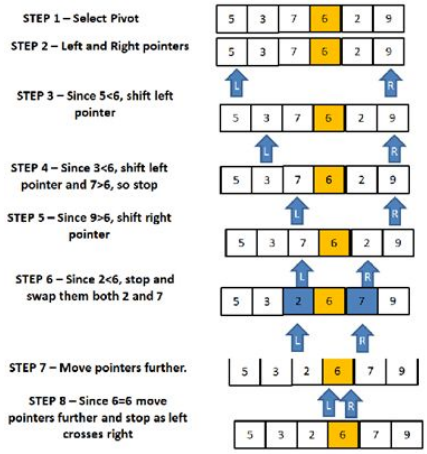
4. Merge Sort:

Divide the array in half recursively until create subarrays of 1 element. At this point, join the sub-arrays in order until the initial array is progressively armed.



5. Quick Sort:

It is the most popular algorithm, very efficient except if the array is previously ordered. Partition the array from a pivot.



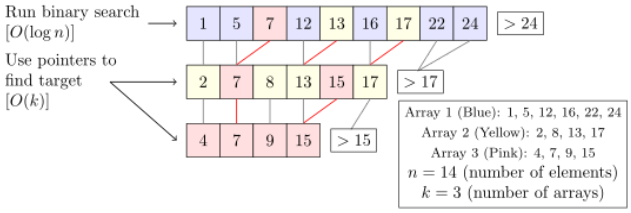
b. Searching Algorithms:

1. Binary Search:

Search for items in ordered arrangements. Compare the wanted element against the central element. If the central element is not the one sought:

a. If element> central -> runs in upper half.

b. If element <central -> runs in the lower half.



2. Linear Search:

Linear search is a very basic and simple search algorithm. In Linear search, we search an element or value in a given array by traversing the array from the starting, till the desired element or value is found.