Insertion sort

Algorithm

The simple steps of achieving the insertion sort are listed as follows -

Step 1 - If the element is the first element, assume that it is already sorted. Return 1.

Step2 - Pick the next element, and store it separately in a **key.**

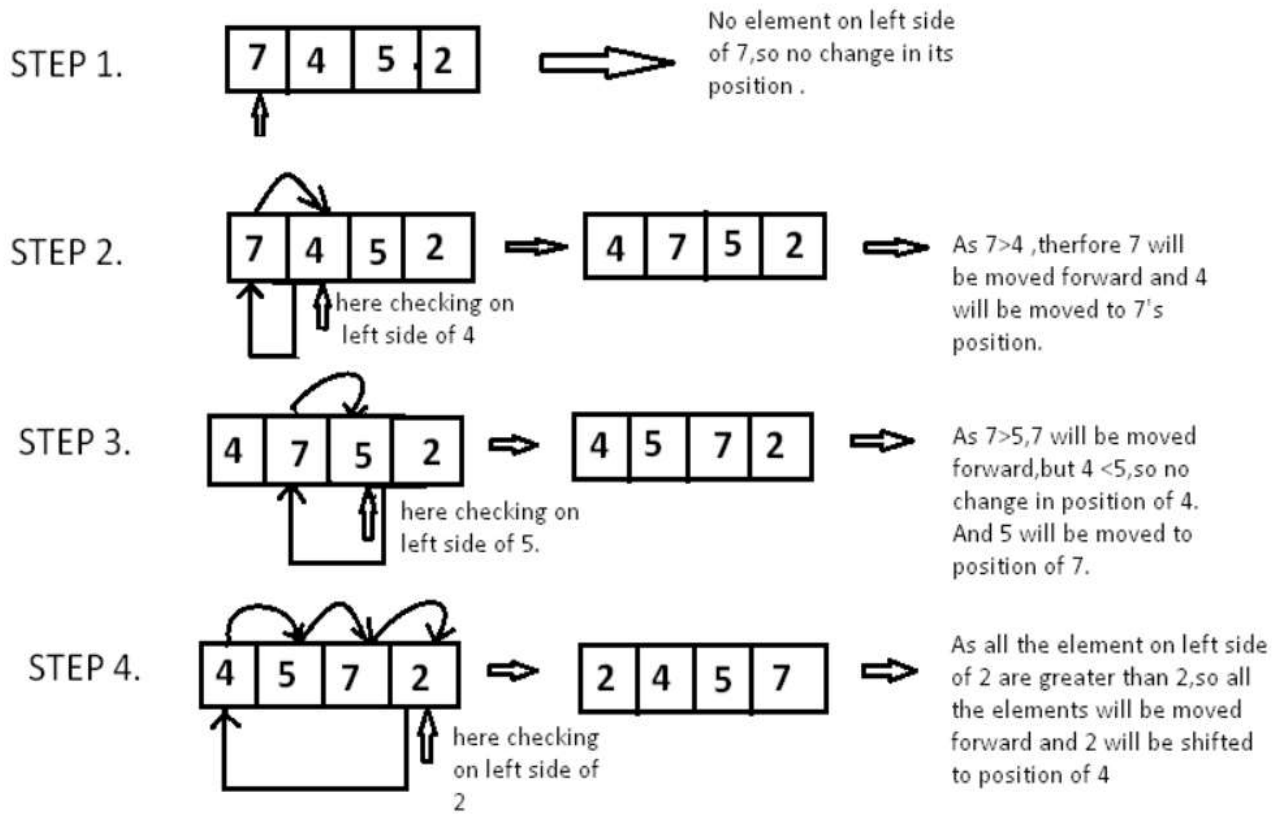
Step3 - Now, compare the **key** with all elements in the sorted array.

Step 4 - If the element in the sorted array is smaller than the current element, then move to the next element. Else, shift greater elements in the array towards the right.

Step 5 - Insert the value.

Step 6 - Repeat until the array is sorted.

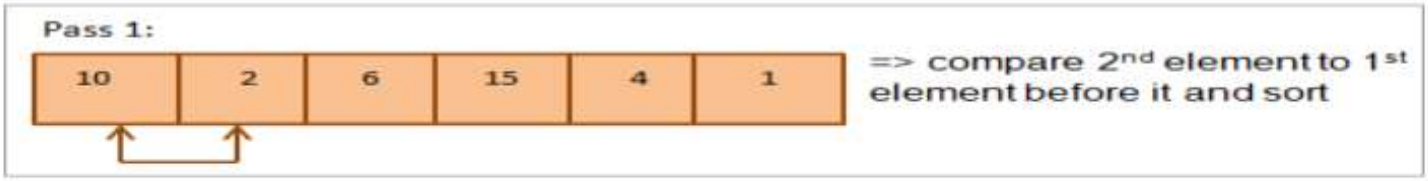
Take array $A[] = [7, 4, 5, 2]$.

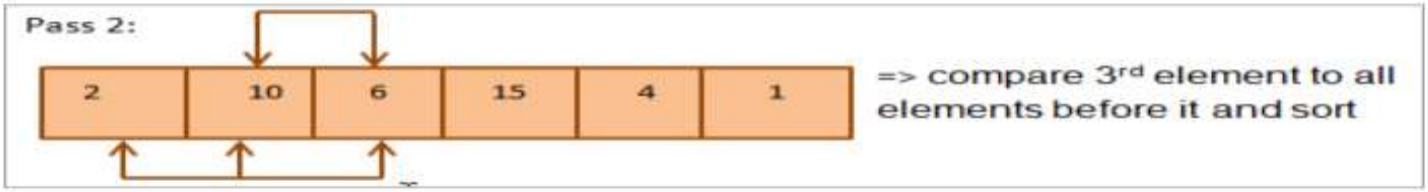


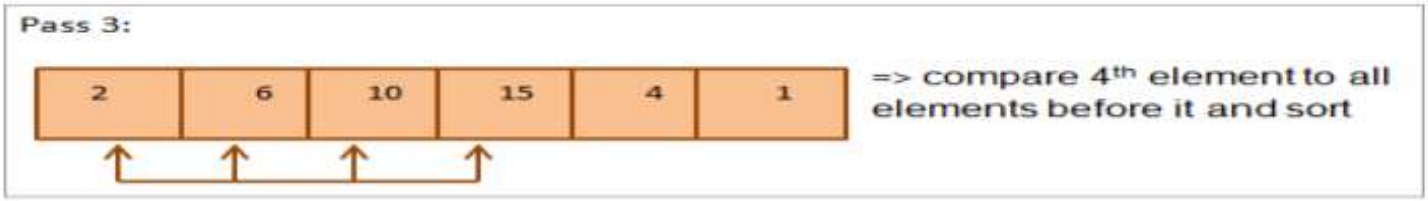
Example 2

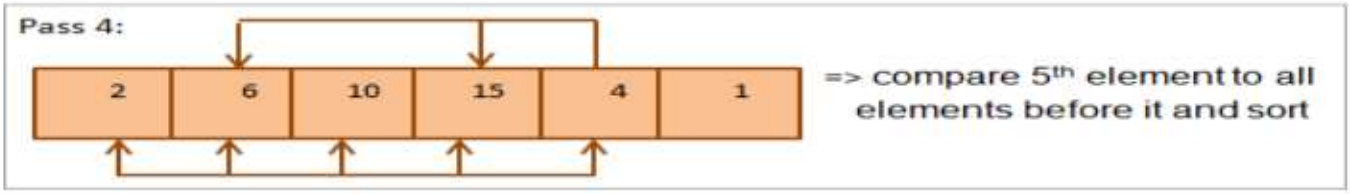
The array to be sorted is as follows:

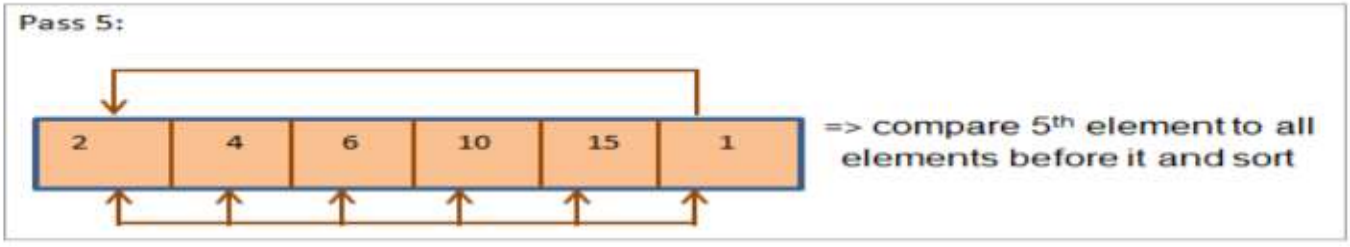
Now for each pass, we compare the current element to all its previous elements. So in the first pass, we start with the second element.

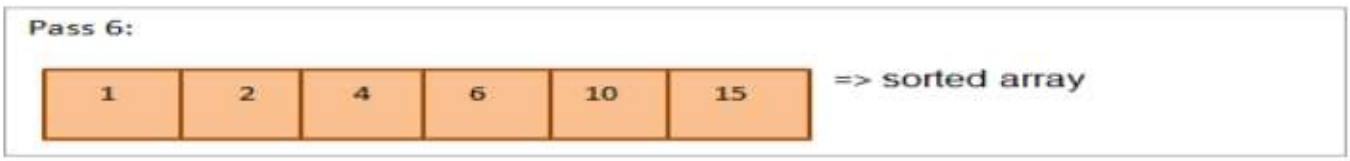












Thus, we require N number of passes to completely sort an array containing N number of elements.

As shown in the illustration above, at the end of each pass, one element goes in its proper place.