

Radix sort

Sorting types

Comparative

- Bubble sort
- Insertion sort
- Selection sort
- Quick sort
- Merge sort
- Heap sort

Non-comparative

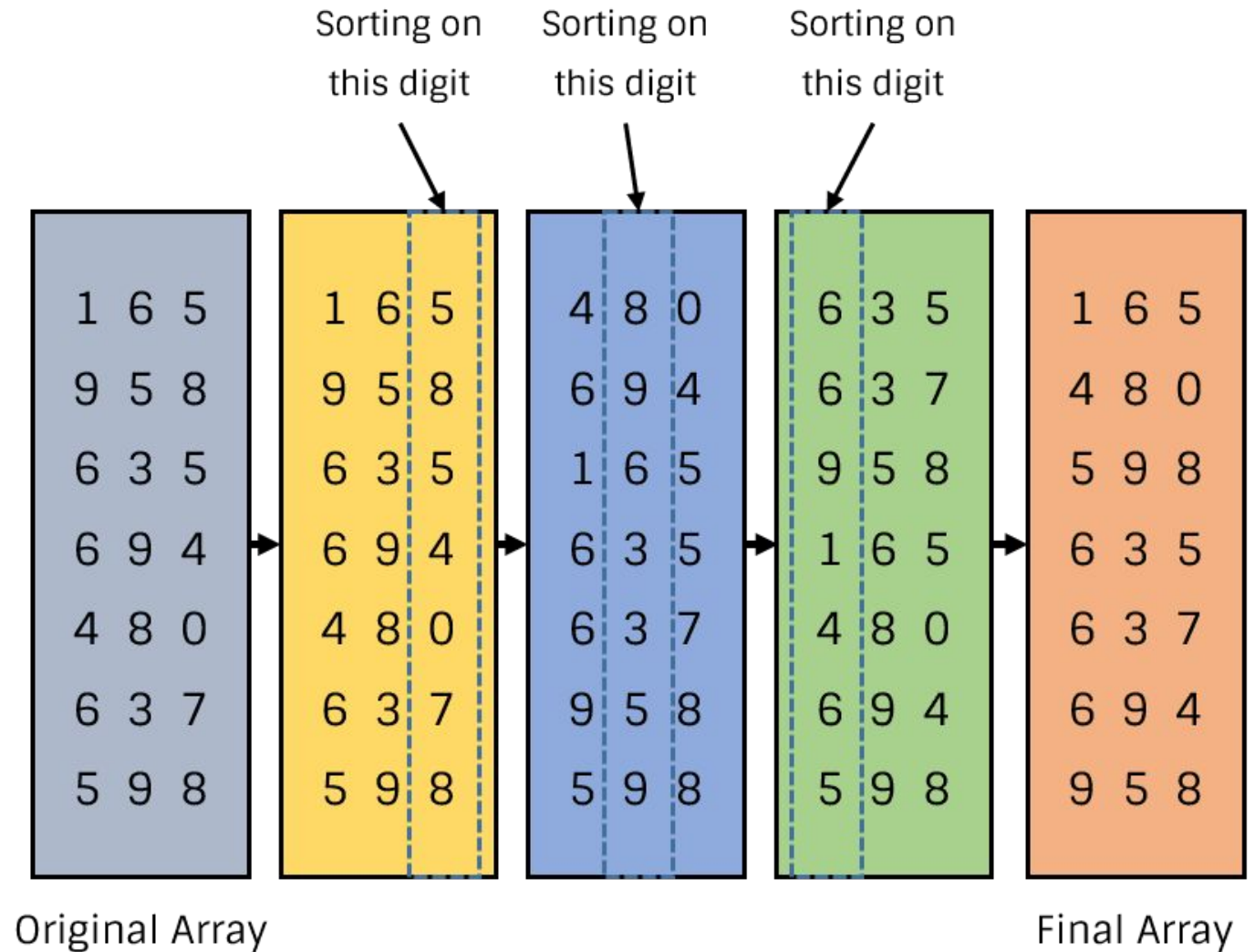
- Counting sort
- Radix sort

What is it?

Radix sort can be applied to data that can be sorted **lexicographically**, such as words and integers.

In Radix sort, there is digit by digit sorting is performed that is started from the least significant digit to the most significant digit. For this reason, **radix sort** has also been called **bucketed sort** and **digital sort**.

Radix sort can be applied to data that can be sorted **lexicographically**, be they integers, words, punch cards, playing cards, or the mail.



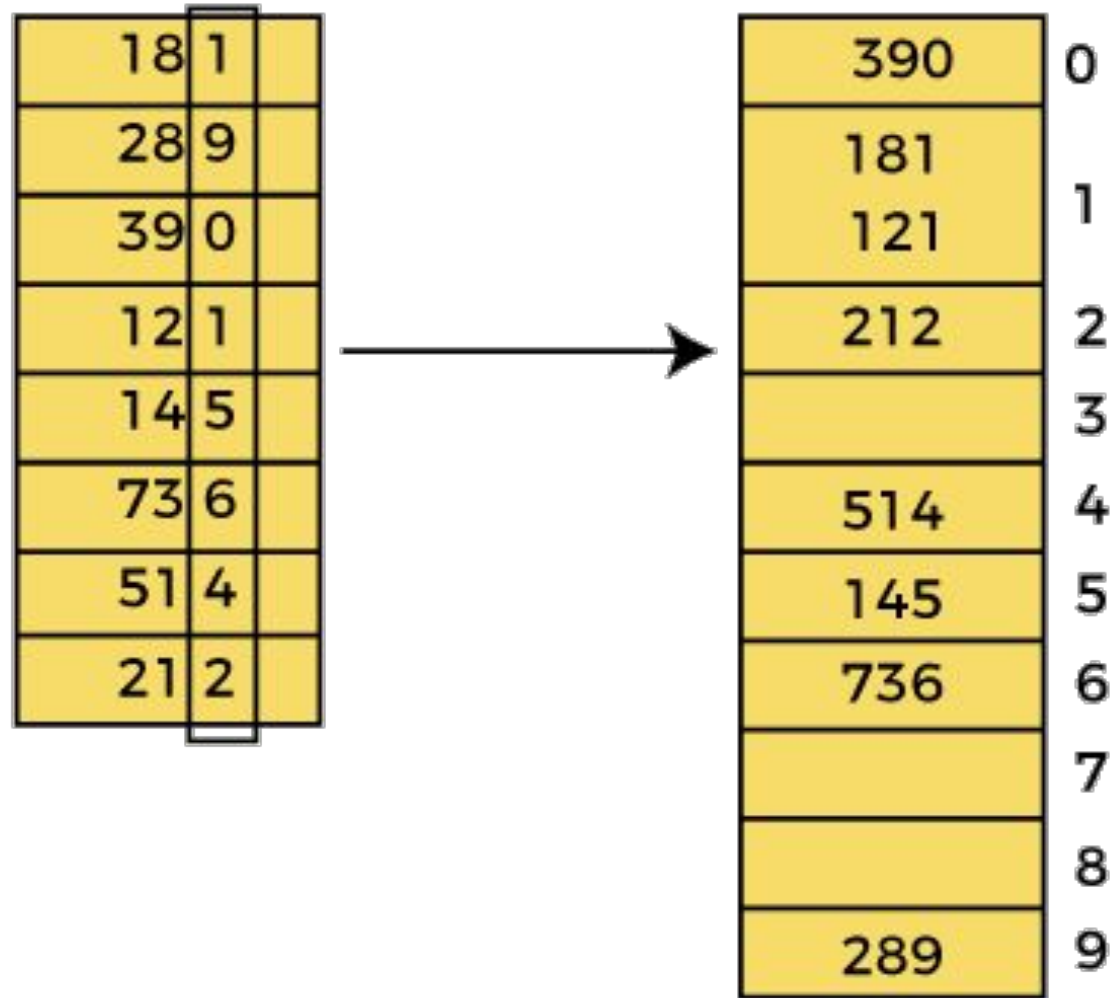
Phases

Now, first sort the elements on the basis of unit place digits (i.e., $x = 0$). Here, we are using the **counting sort algorithm** to sort the elements.

181	289	390	121	145	736	514	212
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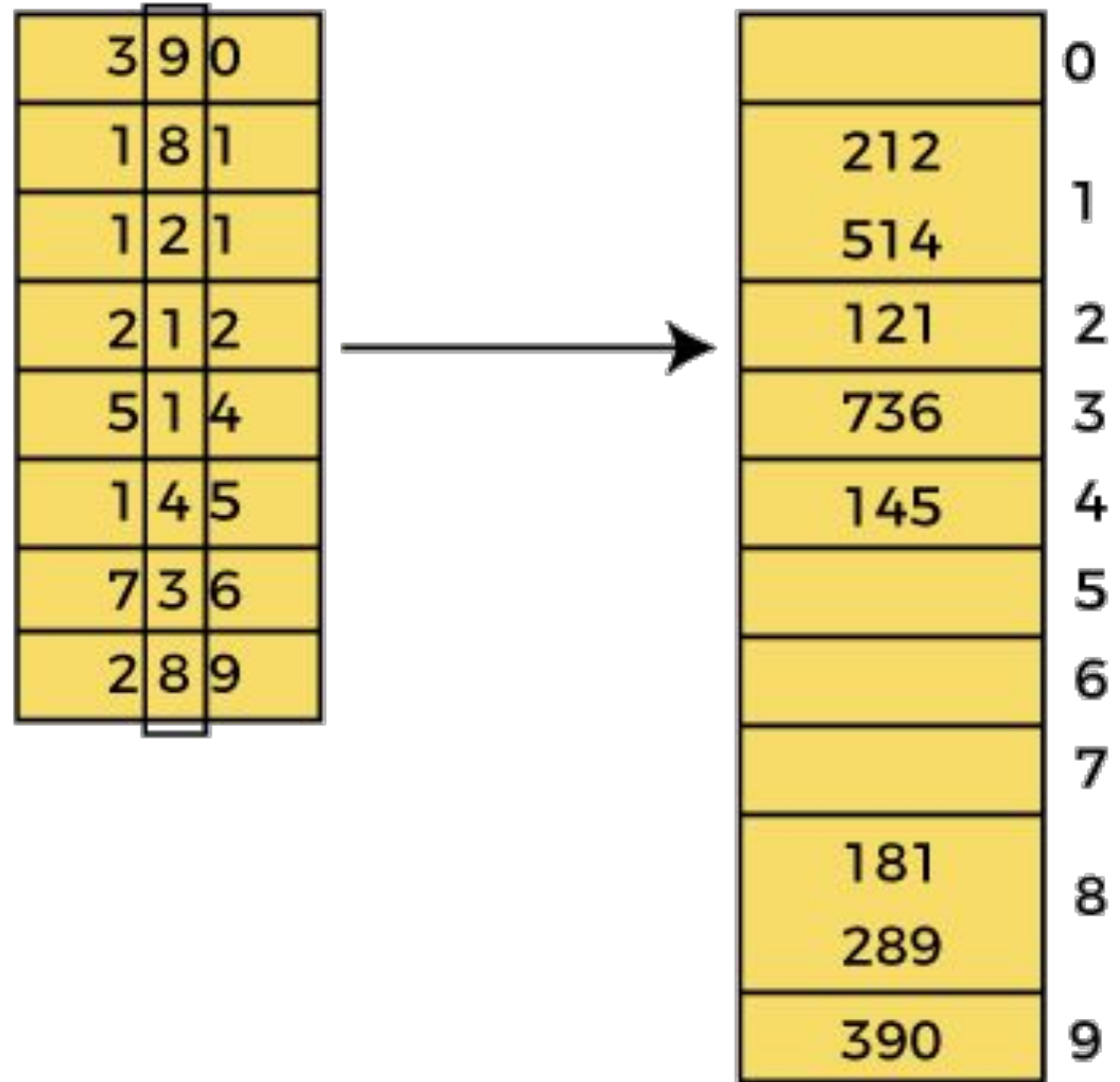
First pass

In the first pass, the list is sorted on the basis of the digits at 0's place.



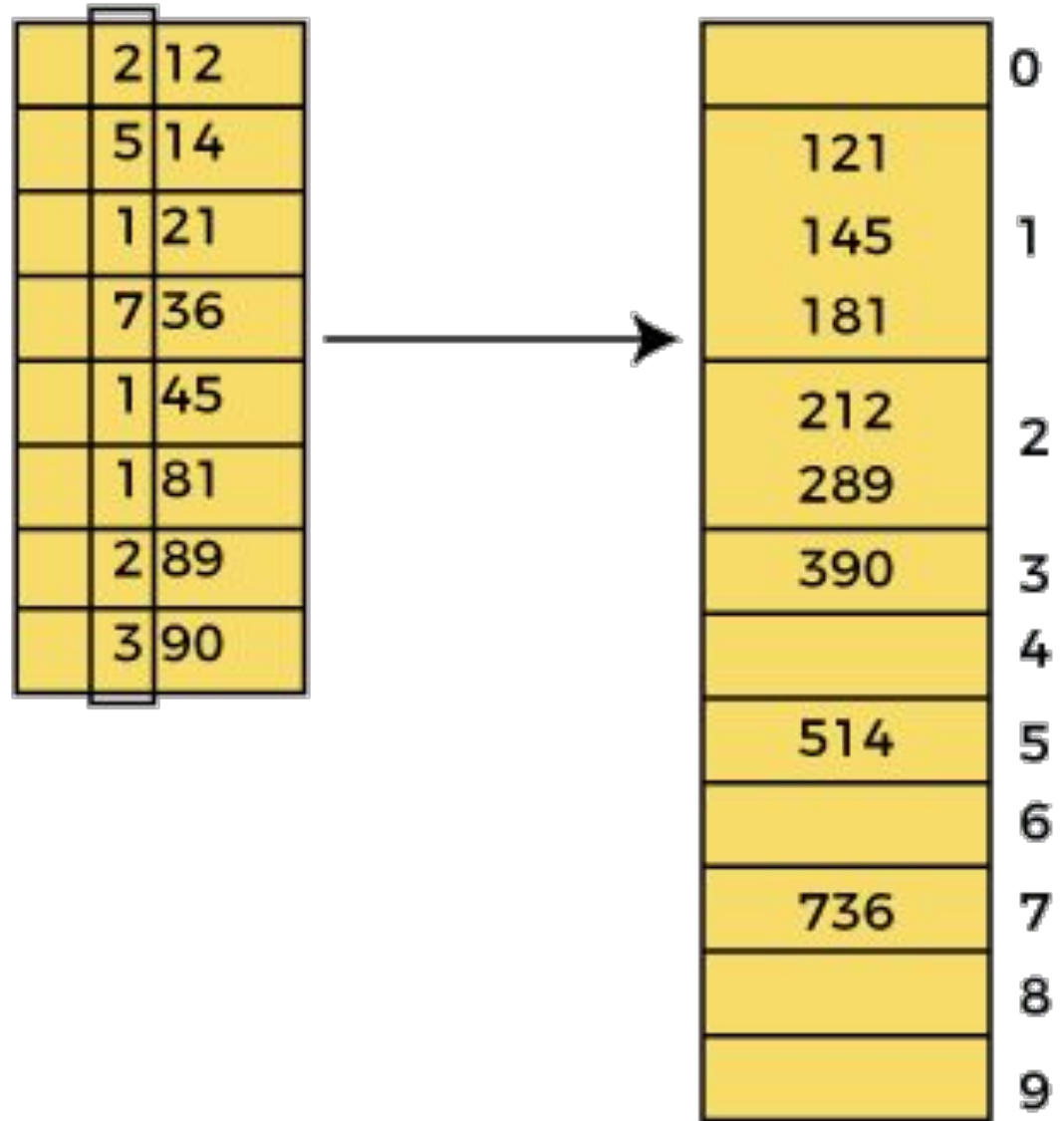
Second pass

In this pass, the list is sorted on the basis of the next significant digits (i.e., digits at 10^{th} place).



Last pass

In this pass, the list is sorted on the basis of the next significant digits (i.e., digits at 100th place).



Result

Now, the array is sorted in ascending order.

121	145	181	212	289	390	514	736
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Also

It is also used for stably sorting strings. It is a good option when the algorithm runs on parallel machines, making the sorting faster.

In the modern era, radix sorts are most commonly applied to collections of binary strings and integers.