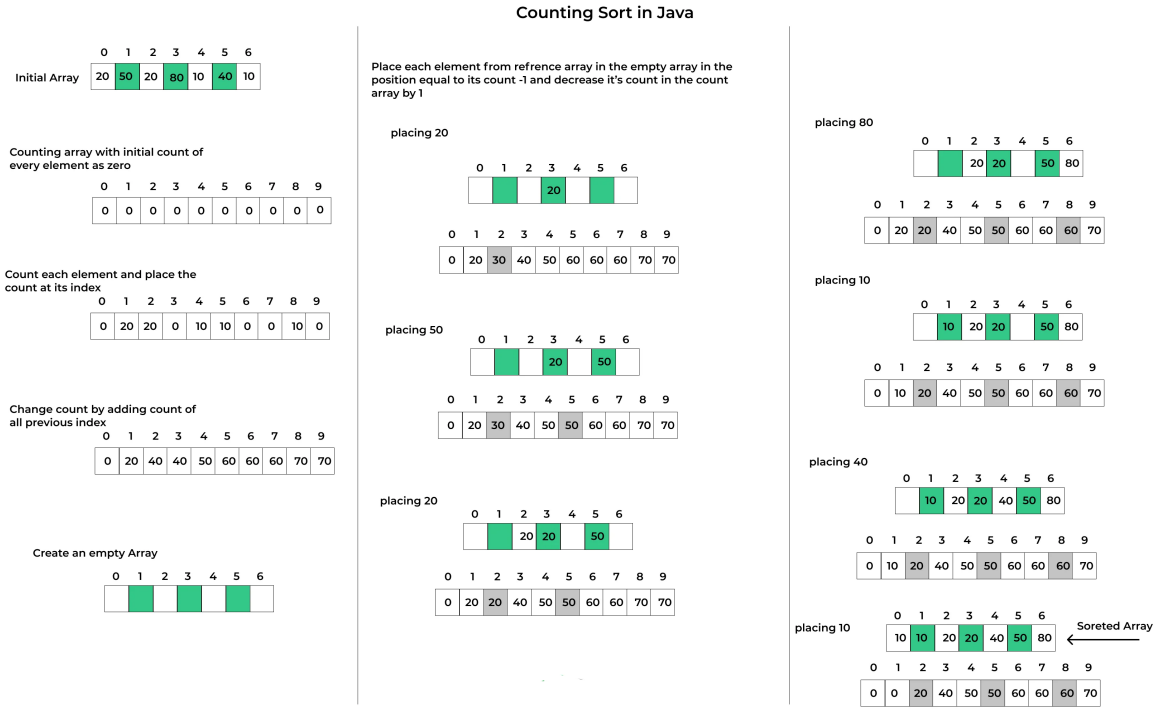
Counting Sort

Counting Sort is a Integer-Sorting Algorithm, it is a bit-different and complicated from other comparison based sorting algorithms.

Counting sort works efficiently on only positive integers, where it consider a *Key* element for various input values which are smaller than the key values, and falls in the range of 0-*Key*.

Counting Sort in Java

- The strength of counting sort is that it is comparatively faster than other comparison-based algorithms.
- It is reliable if the variation in keys is not significantly greater than the no. of elements.
- It is generally used as a sub-routine in radix sort and bucket sort to increase the productivity of those algorithms, as they work on comparatively larger data sets.
- Counting sort has a restriction of inputs when the ranges of the inputs are not known beforehand



Algorithm for counting sort in JAVA

- Counting Sort (array P, array Q, int k)
- For i ← 1 to k
- do C [i] ← 0 [θ(k) times]
- for j ← 1 to length [A]
- do C[A[j]] ← C [A [j]]+1 [θ(n) times] // C [i] now contain the number of elements equal to i
- for i ← 2 to k
- do C [i] ← C [i] + C[i-1] [θ(k) times] //C[i] now contain the number of elements ≤ i
- for j ← length [A] down to 1 [θ(n) times]
- do B[C[A[j] ← A [j]
- C[A[j] ← C[A[j]-1