Here we will be discussing about some common terminologies that are used while learning about sorting algorithms

Stable vs Unstable Sorting Algorithms

Stable → Relative order should be maintained after sorting algorithms.

Dictionary → (4,2) (5,7) (4,3) (6,8) (7,10)
(Hashing Data Structure)

↓ Sorting algorithm

Output

(4,2) (4,3) (5,7) (6,8) (7,10)

OR

(4,3) (4,2) (5,7) (6,8) (7,10)

→ Not stable sort

← Stable Sort

In Input dictionary (4,2) comes before (4,3). In case of ambiguity while sorting if the same order as defined in Input is maintained then it will be stable else unstable sort.
Please note that in dict here sorting is done based on key and in case of same key we are checking the input order to decide where the respective sort is stable or unstable

Stable sort

↑

$[4^a, 5, 7, 3, 4^b, 6, 10] \longrightarrow [3, 4^a, 4^b, 5, 6, 7, 10]$

OR

$[3, 4^b, 4^a, 5, 6, 7, 10]$

↓

Unstable sort

← QuickSort, Selection Sort, Heap Sort