Stable sort vs Unstable sort

- Array: [{A, 65}, {B, 90}, {C, 55}, {D, 85}, {E, 55}, {F, 65}]
- Stable sort:
  - Equal elements maintains their relative order as in original array -- Guaranteed.
  - [{C, 55}, {E, 55}, {A, 65}, {F, 65}, {D, 85}, {B, 90}]
  - e.g. Bubble, Insertion, ...
- UnStable sort:
  - Equal elements may not maintain their relative order as in original array.
  - [{C, 55}, {E, 55}, {F, 65}, {A, 65}, {D, 85}, {B, 90}]
  - e.g. Selection.

In-place sort vs Out-place sort

- In-place sort
  - No additional space requires for holding array element.
  - Aux Space complexity is O(1)
  - e.g. Selection, Bubble, Insertion, ...
- Out-place sort
  - Additional space requires for holding sorted array element.
  - Aux Space complexity is O(n) -- without stack space.
  - e.g. Merge.