Sorting

Items with $\leq$ relation

1) If we always keep order in unsorted list → Stable
   otherwise → unstable

2) Inplace / not inplace
   if we need extra space (temp)

3) Internal/external
   if data is larger you have to do partial sorting

4) Comparison based or Linear sort
   - Comparison → $\Omega(n \log n)$
   - Linear sort → Bucket $O(n)$ sort, Radix sort, Counting sort

Selection → Brute force, # swaps is limited to $O(n)$, inplace

$$\sum_{i=0}^{n-2} \sum_{j=i+1}^{n-1} 1 \in \Theta(n^2)$$

Bubble Sort → Brute force, in place

Insertion Sort → Brute force, in place

Merge sort, Quicksort > Divide & conquer, not in place