

Sorting Algorithms

Computing

The classic sorts, their costs, and which one your language actually uses.

n is the number of items. Stable means equal items keep their original order.

Algorithm	Average	Stable
Bubble	$O(n^2)$	yes
Insertion	$O(n^2)$	yes
Merge	$O(n \log n)$	yes
Quick	$O(n \log n)$	no
Heap	$O(n \log n)$	no
Counting	$O(n + k)$	yes
Timsort	$O(n \log n)$	yes

Python, Java and JavaScript use Timsort or a variant: merge sort plus insertion sort, tuned for partly-sorted data.