Comparison sorts

Name	Best	Average	Worst	Memory	Stable	Method	Other notes
	$\Omega(\ )$		$O(\ )$				
Insertion sort	n	n^2	n^2	1	Yes	Insertion	$O(n+d)$, in the worst case over sequences that have *d* inversions.
Selection sort	n^2	n^2	n^2	1	No	Selection	Stable with $O(n)$ extra space, when using linked lists, or when made as a variant of Insertion Sort instead of swapping the two items.[10]
Bubble sort	n	n^2	n^2	1	Yes	Exchanging	Tiny code size.
Quicksort	$n \log n$	$n \log n$	n^2	$\log n$	No	Partitioning	Quicksort is usually done in-place with $O(\log n)$ stack space.[5][6]
Merge sort	$n \log n$	$n \log n$	$n \log n$	n	Yes	Merging	Highly parallelizable (up to $O(\log n)$ using the Three Hungarians' Algorithm).[7]
Heapsort	$n \log n$	$n \log n$	$n \log n$	1	No	Selection	

Non-comparison sorts

Sort ascending

Name	Best	Average	Worst	Memory	Stable	$n \ll 2^k$	Notes
	$\Omega(\ )$		$O(\ )$				
Bucket sort (uniform keys)	—	$n+k$	$n^2 \cdot k$	$n \cdot k$	Yes	No	Assumes uniform distribution of elements from the domain in the array.[14] Also cannot sort non-integers
Bucket sort (integer keys)	—	$n+r$	$n+r$	$n+r$	Yes	Yes	If *r* is $O(n)$, then average time complexity is $O(n)$.[15]
Counting sort	—	$n+r$	$n+r$	$n+r$	Yes	Yes	If *r* is $O(n)$, then average time complexity is $O(n)$.[14]
LSD Radix Sort	n	$n \cdot \frac{k}{d}$	$n \cdot \frac{k}{d}$	$n + 2^d$	Yes	No	$\frac{k}{d}$ recursion levels, 2^d for count array.[14][15] Unlike most distribution sorts, this can sort Floating point numbers, negative numbers and more.
MSD Radix Sort	—	$n \cdot \frac{k}{d}$	$n \cdot \frac{k}{d}$	$n + 2^d$	Yes	No	Stable version uses an external array of size n to hold all of the bins. Same as the LSD variant, it can sort non-integers.
MSD Radix Sort (in-place)	—	$n \cdot \frac{k}{1}$	$n \cdot \frac{k}{1}$	2^1	No	No	d=1 for in-place, $k/1$ recursion levels, no count array.