

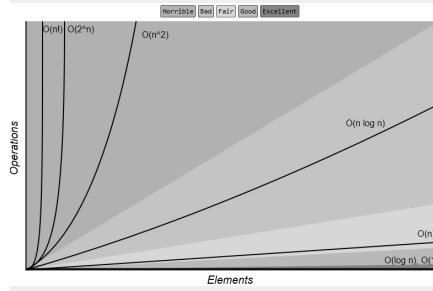
Growth Rate

Constant $O(1)$ Resource does not grow. Processing 1 piece of data takes the same amount of resource as 1 million piece of data.

Logarithmic $O(\log n)$ Resource needs grows by 1 unit each time data is doubled.

Linear $O(n)$ Resource needs and amount of data is directly proportional to each other

Big-O Complexity Chart



Array Sorting Algorithms

Algorithm	Time Complexity			Space Complexity
	Best	Average	Worst	Worst
Quicksort	$O(n \log(n))$	$O(n \log(n))$	$O(n^2)$	$O(\log(n))$
Mergesort	$O(n \log(n))$	$O(n \log(n))$	$O(n \log(n))$	$O(n)$
Timsort	$O(n)$	$O(n \log(n))$	$O(n \log(n))$	$O(n)$
Heapsort	$O(n \log(n))$	$O(n \log(n))$	$O(n \log(n))$	$O(1)$
Bubble Sort	$O(n)$	$O(n^2)$	$O(n^2)$	$O(1)$
Insertion Sort	$O(n^2)$	$O(n^2)$	$O(n^2)$	$O(1)$
Selection Sort	$O(n^2)$	$O(n^2)$	$O(n^2)$	$O(1)$



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