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)	O(n^2)	O(n^2)	O(1)
Selection Sort	O(n^2)	O(n^2)	O(n^2)	O(1)
Shell Sort	O(n)	O((nlog(n))^2)	O((nlog(n))^2)	O(1)
Bucket Sort	O(n+k)	O(n+k)	O(n^2)	O(n)
Radix Sort	O(nk)	O(nk)	O(nk)	O(n+k)

Graph Operations

Node / Edge Management	Storage	Add Vertex	Add Edge	Remove Vertex	Remove Edge	Query
Adjacency list	$O(|V|+|E|)$	$O(1)$	$O(1)$	$O(|V| + |E|)$	$O(|E|)$	$O(|V|)$
Incidence list	$O(|V|+|E|)$	$O(1)$	$O(1)$	$O(|E|)$	$O(|E|)$	$O(|E|)$
Adjacency matrix	$O(|V|^2)$	$O(|V|^2)$	$O(1)$	$O(|V|^2)$	$O(1)$	$O(1)$
Incidence matrix	$O(|V| \cdot |E|)$	$O(|V| \cdot |E|)$	$O(|V| \cdot |E|)$	$O(|V| \cdot |E|)$	$O(|V| \cdot |E|)$	$O(|E|)$

JOIN

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