

	Time	Space	
Insertion	n^2	1	Stable
Merge	$n \log n$	n	Stable
Quick	$n \log n / n^2$	1	unstable
Heap	$n \log n$	1	unstable

Counting/Bucket/Radix $n+k$ $n+k$ Stable

Hashmap Functions $\Theta(1)$

Buildheap $\Theta(n)$

Heapsort $\Theta(n \log n)$ $O(1)$ unstable

BST Functions $1/\log n / n$

Adjacency Matrix	n^2	List
Memory	$\text{more}(n^2)$	# of edges
search edges	Fast (1)	Slow (k)
iterate edges	Slow	Fast
add/delete node	slow (n^2)	Fast
Add edge	Fast (1)	Fast (1)

Edge search

If edges/nodes² > 1/62 use matrix

BFS/DFS $O(V+E)$ $O(V)$

Prim's $m = V^2$ $V \log V$ V

Kruskal's $E \log E$

	Time	Space
Kahn	$O(V+E)$	$O(V)$
Prim with Matrix	$O(V^2)$	
Prim with List	$O(V \log V + E \log V)$	
Kruskals	$O(E \log E)$	
Dijkstras	$\theta(V^2)$	$O(V)$
Dijkstra's w/ Fibonacci Heap	$\theta(E + V \log V)$	$O(V)$
Floyd - Warshall	$\theta(n^3)$	$O(V^2)$

Memoization: Storing value of previously stored result

Tabulation: Solve each subproblem optimally to arrive at optimal solution

1st property of DP: Overlapping subproblems

2nd property: Optimal substructure.