

source: <http://bigocheatsheet.com/>

Searching

Algorithm	Data Structure	Time Complexity		Space Complexity
		Average	Worst	Worst
Depth First Search (DFS)	Graph of $ V $ vertices and $ E $ edges	-	$O(E + V)$	$O(V)$
Breadth First Search (BFS)	Graph of $ V $ vertices and $ E $ edges	-	$O(E + V)$	$O(V)$
Binary search	Sorted array of n elements	$O(\log(n))$	$O(\log(n))$	$O(1)$
Linear (Brute Force)	Array	$O(n)$	$O(n)$	$O(1)$
Shortest path by Dijkstra, using a Min-heap as priority queue	Graph with $ V $ vertices and $ E $ edges	$ V + E \log V $	$ V + E \log V $	$O(V)$
Shortest path by Dijkstra, using an unsorted array as priority queue	Graph with $ V $ vertices and $ E $ edges	$O(V ^2)$	$O(V ^2)$	$O(V)$
Shortest path by Bellman-Ford	Graph with $ V $ vertices and $ E $ edges	$O(V E)$	$O(V E)$	$O(V)$

Sorting

Algorithm	Data Structure	Time Complexity			Worst Case Auxiliary Space Complexity	
		Best	Average	Worst	Worst	Worst
Quicksort	Array	$O(n \log(n))$	$O(n \log(n))$	$O(n^2)$	$O(n)$	$O(n)$
Mergesort	Array	$O(n \log(n))$	$O(n \log(n))$	$O(n \log(n))$	$O(n)$	$O(n)$
Heapsort	Array	$O(n \log(n))$	$O(n \log(n))$	$O(n \log(n))$	$O(1)$	$O(1)$
Bubble Sort	Array	$O(n)$	$O(n^2)$	$O(n^2)$	$O(1)$	$O(1)$
Insertion Sort	Array	$O(n)$	$O(n^2)$	$O(n^2)$	$O(1)$	$O(1)$
Select Sort	Array	$O(n^2)$	$O(n^2)$	$O(n^2)$	$O(1)$	$O(1)$
Bucket Sort	Array	$O(n+k)$	$O(n+k)$	$O(n^2)$	$O(nk)$	$O(nk)$
Radix Sort	Array	$O(nk)$	$O(nk)$	$O(nk)$	$O(n+k)$	$O(n+k)$

Data Structures

Data Structure	Time Complexity	Space Complexity							
		Average				Worst			
		Indexing	Search	Insertion	Deletion	Indexing	Search	Insertion	Deletion
Basic Array	$O(1)$	$O(n)$	-	-	$O(1)$	$O(n)$	-	-	$O(n)$
Dynamic Array	$O(1)$	$O(n)$	$O(n)$	$O(n)$	$O(1)$	$O(n)$	$O(n)$	$O(n)$	$O(n)$
Singly-Linked List	$O(n)$	$O(n)$	$O(1)$	$O(1)$	$O(n)$	$O(n)$	$O(1)$	$O(1)$	$O(n)$
Doubly-Linked List	$O(n)$	$O(n)$	$O(1)$	$O(1)$	$O(n)$	$O(n)$	$O(1)$	$O(1)$	$O(n)$
Skip List	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(n)$	$O(n)$	$O(n)$	$O(n)$	$O(n \log(n))$
Hash Table	-	$O(1)$	$O(1)$	$O(1)$	-	$O(n)$	$O(n)$	$O(n)$	$O(n)$
Binary Search Tree	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(n)$	$O(n)$	$O(n)$	$O(n)$	$O(n)$
Cartesian Tree	-	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	-	$O(n)$	$O(n)$	$O(n)$	$O(n)$
B-Tree	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(n)$
Red-Black Tree	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(n)$
Splay Tree	-	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	-	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(n)$
AVL Tree	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(n)$

Heaps

Heaps	Time Complexity

	Heapify	Find Max	Extract Max	Increase Key	Insert	Delete	Merge					
Linked List (sorted)	-	$O(1)$	$O(1)$	$O(n)$	$O(n)$	$O(1)$	$O(m+n)$					
Linked List (unsorted)	-	$O(n)$	$O(n)$	$O(1)$	$O(1)$	$O(1)$	$O(1)$					
Binary Heap	$O(n)$	$O(1)$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(m+n)$					
Binomial Heap	-	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$	$O(\log(n))$					
Fibonacci Heap	-	$O(1)$	$O(\log(n))^*$	$O(1)^*$	$O(1)$	$O(\log(n))^*$	$O(1)$					

Graphs

Node / Edge Management	Storage	Add Vertex	Remove Vertex									
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	$O(V \cdot E)$	$O(V \cdot E)$	$O(V \cdot E)$	$O(V \cdot E)$	$O(V \cdot E)$	$O(E)$						