

Big-Oh Cheat Sheet

Runtimes of Common Data Structures									
Name	Time Complexity								Space Complexity
	Worst Case Runtime				Average Case Runtime				Worst Case
	Access	Insertion	Deletion	Search	Access	Insertion	Deletion	Search	
Array	O(1)	O(n)	O(n)	O(n)	O(1)	O(n)	O(n)	O(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)
Binary Heap	O(log n)	O(log n)	O(log n)	O(n)	O(log n)	O(log n)	O(log n)	O(log n)	O(n)
Binary Search Tree	O(n)	O(n)	O(n)	O(n)	O(log n)	O(log n)	O(log n)	O(log n)	O(n)
Hashtable	N/A	O(n)	O(n)	O(n)	N/A	O(1)	O(1)	O(1)	O(n)
Queue	O(n)	O(1) when adding to front	O(1) when removing from front	O(n)	O(n)	O(1) when adding to front	O(1) when removing from front	O(1)	O(n)
Singly Linked List	O(n)	O(1) when adding to front	O(1) when removing from front	O(n)	O(n)	O(1) when adding to front	O(1) when removing from front	O(n)	O(n)
Stack	O(n)	O(1) when adding to top	O(1), when removing from top	O(n)	O(n)	O(1) when adding to top	O(1) when removing from top	O(n)	O(n)

Runtimes of Common Algorithms				
Name	Time Complexity			Space Complexity
	Best Case Runtime	Worst Case Runtime	Average Case Runtime	Worst Case
Binary Search	O(1)	O(log n)	O(log n)	O(1)
Breadth-First-Search	N/A	O(V + E)	N/A	O(V + E)
Bubble Sort	O(1)	O(n^2)	O(n)	O(1)
Depth-First-Search	N/A	O(V + E)	N/A	O(V + E)
Dijkstra Shortest Path	N/A	O(V ^2)	O(E log V)	O(V + E)
Heap Sort	O(n log n)	O(n log n)	O(n log n)	O(1)
Insertion Sort	O(n)	O(n^2)	O(n^2)	O(1)
Merge Sort	O(n log n)	O(n log n)	O(n log n)	O(n)
Quick Sort	O(n log n)	O(n^2)	O(n log n)	O(log n)
Selection Sort	O(n^2)	O(n^2)	O(n^2)	O(1)