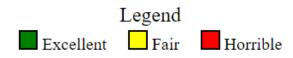
Popular Asysmtotic Analysis



DATA STRUCTURES									
	Time Complexity							Space Complexity	
DS Name	Average			Worst				Worst	
	Indexing	Search	Insertion	Deletion	Indexing	Search	Insertion	Deletion	worst
Array	9(1)	Θ(n)	0(n)	Θ(n)	0(1)	0(n)	0(n)	0(n)	<mark>0(n)</mark>
Stack	<mark>Θ(n)</mark>	Θ(n)	0(1)	0(1)	0(n)	0(n)	0(1)	0(1)	<mark>0(n)</mark>
Queue	<mark>Θ(n)</mark>	Θ(n)	0(1)	0(1)	0(n)	0(n)	0(1)	0(1)	<mark>0(n)</mark>
SinglyLinked List	<mark>Θ(n)</mark>	0(n)	0(1)	0(1)	0(n)	0(n)	0(1)	0(1)	<mark>0(n)</mark>
DoublyLinked List	<mark>Θ(n)</mark>	Θ(n)	0(1)	0(1)	0(n)	0(n)	0(1)	0(1)	<mark>0(n)</mark>
Skip List	<mark>Θ(log(n))</mark>	Θ(log(n))	Θ(log(n))	Θ(log(n))	0(n)	0(n)	0(n)	0(n)	$O(n \log(n))$
Hash Table	-	9(1)	0(1)	0(1)	-	0(n)	0(n)	0(n)	<mark>0(n)</mark>
Binary Search tree	Θ(log(n))	Θ(log(n))	Θ(log(n))	0(log(n))	0(n)	0(n)	0(n)	0(n)	0(n)
RedBlack tree	<mark>Θ(log(n))</mark>	Θ(log(n))	Θ(log(n))	0(log(n))	0(log(n))	0(log(n))	0(log(n))	0(log(n))	<mark>0(n)</mark>
AVL tree	Θ(log(n))	Θ(log(n))	Θ(log(n))	Θ(log(n))	0(log(n))	0(log(n))	0(log(n))	0(log(n))	<mark>0(n)</mark>
KD tree	<mark>Θ(log(n))</mark>	0(log(n))	Θ(log(n))	Θ(log(n))	0(n)	0(n)	0(n)	0(n)	0(n)
*Ref: hackerearth.com, bigocheatsheet.com									

SEARCHING ALGORITHMS							
Algorithm	Data Structure	Time Co	Space Complexity				
Algorithm	Data Structure	Average	Worst	Worst			
Depth First Search (DFS)	Graph of V verices and E edges	-	O(E + V)	0([V])			
Breadth First Search (BFS)	Graph of V verices and E edges	-	O(E + V)	0([V])			
Binary Search	Sorted Array of n elements	0(log(n))	0(log(n))	0(1)			
Linear(Brute Force)	Array	0(n)	0(n)	0(1)			
Shortest path by Dijkstra using a min-heap as priority queue	Graph of V verices and E edges	O((E + V)log V)	O((E + V)log V)	<mark>0(v)</mark>			
Shortest path by Dijkstra using an unsorted array as priority queue	Graph of V verices and E edges	<mark>0(v ^2)</mark>	<mark>0(v ^2)</mark>	<mark>0(v)</mark>			
Shortest path by bellman-ford	Graph of V verices and E edges	0(V E)	0(V E)	o(v)			
*Ref: hackerearth.com							

SORTING ALGORITHMS								
Algorithm	Data Stanistuna	Ti	me Complex	Space Complexity				
	Data Structure	Best	Average	Worst	Worst			
Quicksort	Array	O(n log(n))	O(n log(n))	0(n^2)	<mark>0(n)</mark>			
Mergesort	Array	O(n log(n))	O(n log(n))	O(n log(n))	0(n)			
Heapsort	Array	O(n log(n))	O(n log(n))	O(n log(n))	0(1)			
Bubble sort	Array	0(n)	0(n^2)	0(n^2)	0(1)			
Insertion sort	Array	0(n)	0(n^2)	0(n^2)	0(1)			
Select sort	Array	0(n^2)	0(n^2)	0(n^2)	0(1)			
Bucket sort	Array	0(n+k)	0(n+k)	0(n^2)	0(nk)			
Radix sort	Array	0(nk)	0(nk)	0(nk)	0(n+k)			
*Ref: hackerearth.com								