source	· http://	/higoch	natcho	et com	1						
	_	bigoci	leatsile	et.com	<i>1</i>						
Search											
Algorithm	Data Structure	Time Complex	rity	Space Comple	exity						
		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	Graph with V vertices and E edges	V + E) log	' V + E) log	O(V)							
queue 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	Time Complex	titv	Worst Case A	uxiliary Space C	omplexity					
-	Structure	Best	Average	Worst	Worst						
0.11											
Quicksort	Array	O(n log(n))	O(n log(n))	O(n^2)	O(n)						
Mergesort	Array	O(n log(n))	O(n log(n))	O(n log(n))	O(n)						
Heapsort	Array	O(n log(n))	O(n log(n))	O(n log(n))	O(1)						
Bubble Sort	Array	O(n)	O(n^2)	O(n^2)	O(1)						
Insertion Sort	Array	O(n)	O(n^2)	O(n^2)	O(1)						
Select Sort	Array	O(n^2)	O(n^2)	O(n^2)	O(1)						
Bucket Sort	Array	O(n+k)	O(n+k)	O(n^2)	O(nk)						
Radix Sort	Array	O(nk)	O(nk)	O(nk)	O(n+k)						
Data St											
Data Structure	Time	-5							Sugar Comple	with	
Data Structure	Complexity	-						Space Comple		xity	
		Ave	rage			Wo	orst		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()					
Binary Search	O(log(n))	O(log(n))				O(n)	O(n)	O(n)	O(n)		
Tree Cartresian Tree	_		O(log(n))	O(log(n))							
B-Tree	-		O(log(n))	O(log(n))	O(n)	O(n)	O(n)	O(n)	O(n)		
		O(log(n))	O(log(n))	O(log(n))	O(n)	O(n)	O(n)	O(n)	O(n)		
Red-Rlack Troc	O(log(n))	O(log(n))	O(log(n)) O(log(n))	O(log(n))	O(n) - O(log(n))	O(n) O(n) O(log(n))	O(n) O(n) O(log(n))	O(n) O(n) O(log(n))	O(n) O(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(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n)		
Splay 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(log(n)) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) O(log(n)) -	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay 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(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n)		
Splay 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(log(n)) O(log(n)) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) O(log(n)) -	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay 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(log(n)) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) O(log(n)) -	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps	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(log(n)) O(log(n)) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) O(log(n)) -	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps	O(log(n)) O(log(n)) O(log(n)) Time Complexity	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(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(log(n)) O(log(n)) - O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps Heaps Linked List	O(log(n)) O(log(n)) O(log(n)) Time Complexity	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(log(n)) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) O(log(n)) - O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps Heaps Linked List (sorted) Linked List	O(log(n)) O(log(n)) O(log(n)) Time Complexity Heapify -	O(log(n)) O(log(n)) O(log(n)) O(log(n)) Find Max O(1)	O(log(n)) O(log(n)) O(log(n)) O(log(n)) Extract Max O(1)	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) - O(log(n)) - O(log(n)) Insert O(n)	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Delete O(1)	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps Heaps Linked List (sorted) Linked List (unsorted)	O(log(n)) - O(log(n)) Time Complexity Heapify	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Find Max O(1) O(n)	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Extract Max O(1) O(n)	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Increase Key O(n) O(1)	O(n) - O(log(n)) - O(log(n)) - O(log(n)) Insert O(n) O(1)	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps Heaps Linked List (sorted) Linked List (unsorted) Binary Heap Binomial Heap	O(log(n)) O(log(n)) Time Complexity Heapify - O(n)	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Find Max O(1) O(n) O(1)	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Extract Max O(1) O(n) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Increase Key O(n) O(1) O(log(n))	O(n) - O(log(n)) - O(log(n)) - O(log(n)) Insert O(n) O(1) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Merge O(m+n) O(1) O(m+n) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps Heaps Linked List (sorted) Linked List (unsorted) Binary Heap Binomial Heap	O(log(n)) O(log(n)) Time Complexity Heapify - O(n) -	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Find Max O(1) O(n)	O(log(n)) O(log(n)) O(log(n)) O(log(n)) Extract Max O(1) O(n)	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Increase Key O(n) O(1) O(log(n))	O(n) - O(log(n)) - O(log(n)) - O(log(n)) Insert O(n) O(1) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Delete O(1) O(1) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Merge O(m+n) O(1) O(m+n)	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps Linked List (sorted) Linked List (unsorted) Binary Heap Binomial Heap Fibonacci Heap	O(log(n)) O(log(n)) - O(log(n)) Time Complexity Heapify O(n) -	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Find Max O(1) O(n) O(1) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Extract Max O(1) O(n) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Increase Key O(n) O(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) - O(log(n)) - O(log(n)) Insert O(n) O(1) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Merge O(m+n) O(1) O(m+n) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps Linked List (sorted) Linked List (unsorted) Binary Heap Binomial Heap Fibonacci Heap Graphs Node / Edge Management	O(log(n)) O(log(n)) Time Complexity Heapify - O(n) - Storage	O(log(n)) O(log(n)) O(log(n)) O(log(n)) Find Max O(1) O(n) O(1) O(1) Add Vertex	O(log(n)) O(log(n)) O(log(n)) O(log(n)) Extract Max O(1) O(n) O(log(n)) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n)) Increase Key O(n) O(log(n)) O(log(n)) O(log(n)) Remove Verte	O(n) - O(log(n)) O(log(n)) - O(log(n)) Insert O(n) O(1) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Delete O(1) O(1) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Merge O(m+n) O(1) O(m+n) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps Heaps Linked List (sorted) Linked List (unsorted) Binary Heap Binomial Heap Fibonacci Heap Graphs Node / Edge	O(log(n)) O(log(n)) - O(log(n)) Time Complexity Heapify O(n) -	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Find Max O(1) O(n) O(1) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Extract Max O(1) O(n) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Increase Key O(n) O(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) - O(log(n)) - O(log(n)) Insert O(n) O(1) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Merge O(m+n) O(1) O(m+n) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps Heaps Linked List (sorted) Linked List (unsorted) Binary Heap Binomial Heap Fibonacci Heap Graphs Node / Edge Management	O(log(n)) O(log(n)) Time Complexity Heapify - O(n) - Storage	O(log(n)) O(log(n)) O(log(n)) O(log(n)) Find Max O(1) O(n) O(1) O(1) Add Vertex	O(log(n)) O(log(n)) O(log(n)) O(log(n)) Extract Max O(1) O(n) O(log(n)) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n)) Increase Key O(n) O(log(n)) O(log(n)) O(log(n)) Remove Verte	O(n) - O(log(n)) O(log(n)) - O(log(n)) Insert O(n) O(1) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Delete O(1) O(1) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Merge O(m+n) O(1) O(m+n) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		
Splay Tree AVL Tree Heaps Heaps Linked List (sorted) Linked List (unsorted) Binary Heap Binomial Heap Graphs Node / Edge Management Adjacency list	O(log(n)) O(log(n)) Time Complexity Heapify - O(n) - Storage O(V + E)	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Find Max O(1) O(n) O(1) O(log(n)) O(1) Add Vertex O(1)	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Extract Max O(1) O(n) O(log(n)) O(log(n))	O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Increase Key O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) - O(log(n)) - O(log(n)) - O(log(n)) Insert O(n) O(1) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) Delete O(1) O(log(n)) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n)) O(log(n)) Merge O(m+n) O(1) O(m+n) O(log(n))	O(n) O(n) O(log(n)) O(log(n)) O(log(n))	O(n) O(n) O(n) O(n) O(n)		