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[Home](#)[About](#)[Learning](#)[Interview](#) ▾[Big O Cheat Sheet](#) ▾

Java Collections

List: A list is an ordered collection of elements.

	Add	Remove	Get	Contains	Data Structure
ArrayList	O (1)	O (n)	O (1)	O (n)	Array
LinkedList	O (1)	O (1)	O (n)	O (n)	Linked List
CopyonWriteArrayList	O (n)	O (n)	O (1)	O (n)	Array

Set: A collection that contains no duplicate elements.

	Add	Contains	Next	Data Structure
HashSet	O(1)	O(1)	O(h/n)	Hash Table
LinkedHashSet	O(1)	O(1)	O(1)	Hash Table + Linked List
EnumSet	O(1)	O(1)	O(1)	Bit Vector
TreeSet	O(log n)	O(log n)	O(log n)	Red-black tree
CopyonWriteArraySet	O(n)	O(n)	O(1)	Array
ConcurrentSkipList	O(log n)	O(log n)	O(1)	Skip List

Queue: A collection designed for holding elements prior to processing.

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[Home](#)
[About](#)
[Learning](#)
[Interview](#)
[Big O Cheat Sheet](#)

ConcurrentLinkedQueue	$O(1)$	$O(1)$	$O(1)$	$O(1)$	Linked List
ArrayBlockingQueue	$O(1)$	$O(1)$	$O(1)$	$O(1)$	Array
PriorirityBlockingQueue	$O(\log n)$	$O(1)$	$O(\log n)$	$O(1)$	Priority Heap
SynchronousQueue	$O(1)$	$O(1)$	$O(1)$	$O(1)$	None
DelayQueue	$O(\log n)$	$O(1)$	$O(\log n)$	$O(1)$	Priority Heap
LinkedBlockingQueue	$O(1)$	$O(1)$	$O(1)$	$O(1)$	Linked List

Map: An object that maps keys to values.

A map cannot duplicate keys; each key can map to at most one value

	Get	ContainsKey	Next	Data Structure
HashMap	$O(1)$	$O(1)$	$O(h / n)$	Hash Table
LinkedHashMap	$O(1)$	$O(1)$	$O(1)$	Hash Table + Linked List
IdentityHashMap	$O(1)$	$O(1)$	$O(h / n)$	Array
WeakHashMap	$O(1)$	$O(1)$	$O(h / n)$	Hash Table
EnumMap	$O(1)$	$O(1)$	$O(1)$	Array
TreeMap	$O(\log n)$	$O(\log n)$	$O(\log n)$	Red-black tree
ConcurrentHashMap	$O(1)$	$O(1)$	$O(h / n)$	Hash Tables
ConcurrentSkipListMap	$O(\log n)$	$O(\log n)$	$O(1)$	Skip List

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