

Java Collections Framework - Cheat Sheet

Hierarchy:

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Collection (interface)
|-- List (ArrayList, LinkedList, Vector, Stack)
|-- Set (HashSet, LinkedHashSet, TreeSet)
|-- Queue (PriorityQueue, LinkedList, ArrayDeque)
    |-- Deque (ArrayDeque, LinkedList)
Map (interface)
|-- HashMap, LinkedHashMap, TreeMap, Hashtable
```

Common Collection Methods:

add(), addAll(), remove(), removeAll(), retainAll(), clear(), size(), isEmpty(), contains(), containsAll(), iterator(), toArray()

Unique Methods:

List: get(), set(), add(index, e), remove(index), indexOf(), lastIndexOf(), listIterator(), subList()

Set (TreeSet): first(), last(), headSet(), tailSet(), subSet(), ceiling(), floor(), higher(), lower()

Queue: offer(), poll(), peek(), remove(), element()

Deque: offerFirst(), offerLast(), pollFirst(), pollLast(), peekFirst(), peekLast(), addFirst(), addLast(), removeFirst(), removeLast()

Map: put(), get(), remove(), containsKey(), containsValue(), keySet(), values(), entrySet(), replace(), getOrDefault(), compute(), merge()

Time Complexity (Common Ops)

| Collection | Access | Insert/Delete | Search |
|-----------------|----------|---------------------|-------------|
| ArrayList | O(1) | O(n) (middle) | O(n) |
| LinkedList | O(n) | O(1) (if ref known) | O(n) |
| HashSet/HashMap | O(1) avg | O(1) avg | O(1) avg |
| TreeSet/TreeMap | O(log n) | O(log n) | O(log n) |
| PriorityQueue | - | O(log n) | O(1) (peek) |