

Collections in Java SE 21

What are collections and why use them?



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Collections in Java SE 21

Version Check



Version Check



This version was created by using:

- Java SE 21



Version Check



This course is 100% applicable to:

- Java SE 21 onwards

This course is mostly applicable to:

- Java SE 8 onwards



Relevant Notes



Sequenced Collections from Java SE 21

Collection Factories from Java SE 9





Project & Array Problem





Introduction & Course Outline



Implementing Data Structures Is Hard!



Data Structures Are Diverse



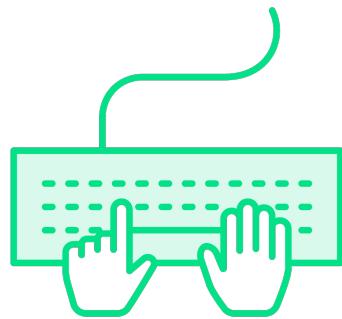
Ordering

Pairs

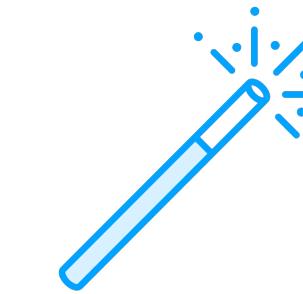
Uniqueness



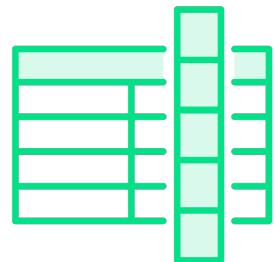
Course Outline



Introduction to Collections



Java Streams



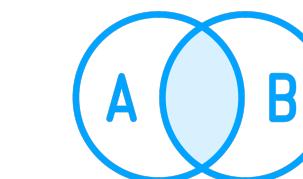
Lists: Collections with Iteration Order



Collection Operations & Factories



Maps: Collections of Pairs



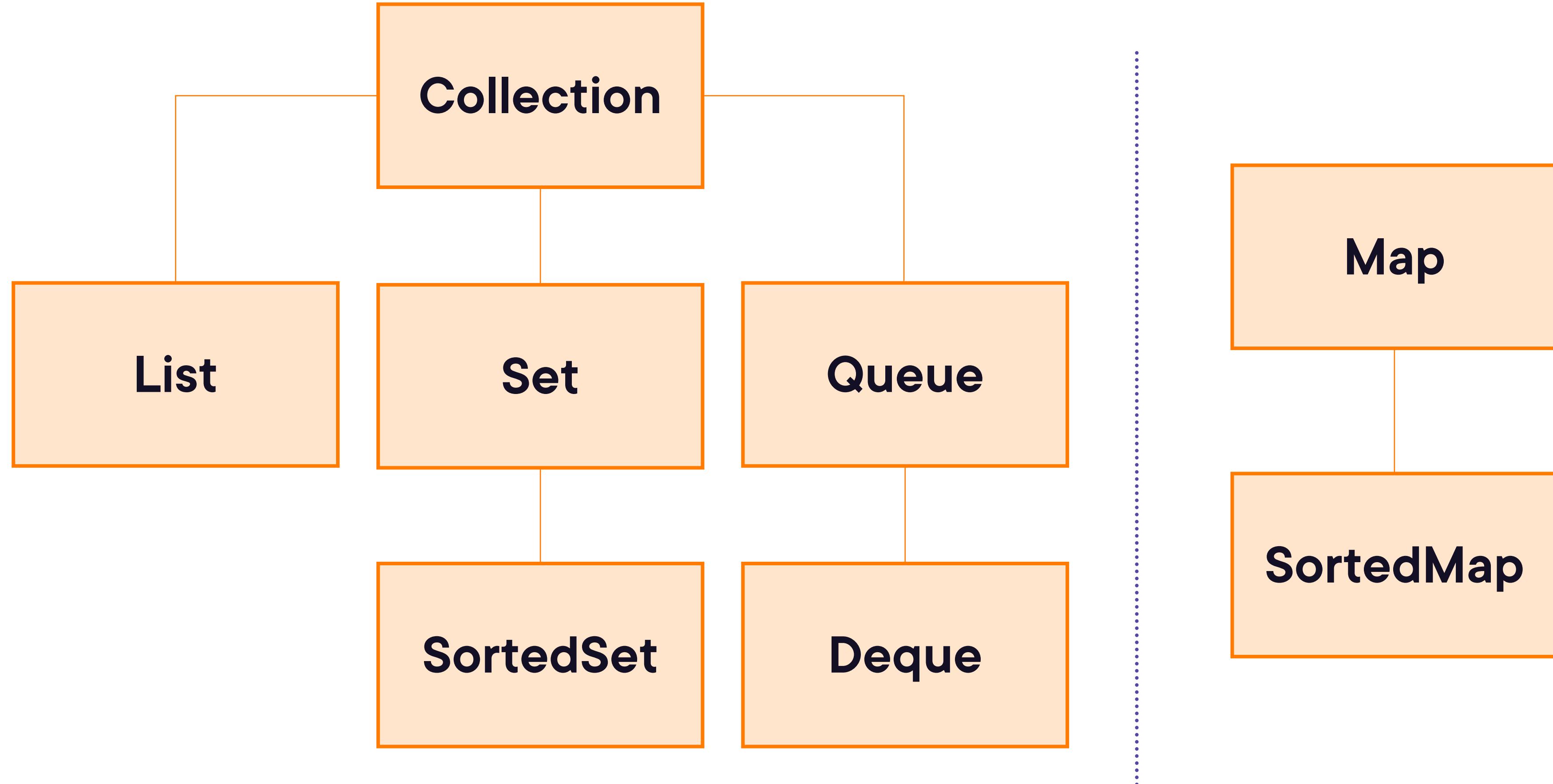
Sets: Collection with Uniqueness





Collection of Collections





Collection Design

Interfaces

VS.

Implementation

Multiple data structures

Functional characteristics

Prefer as variable type

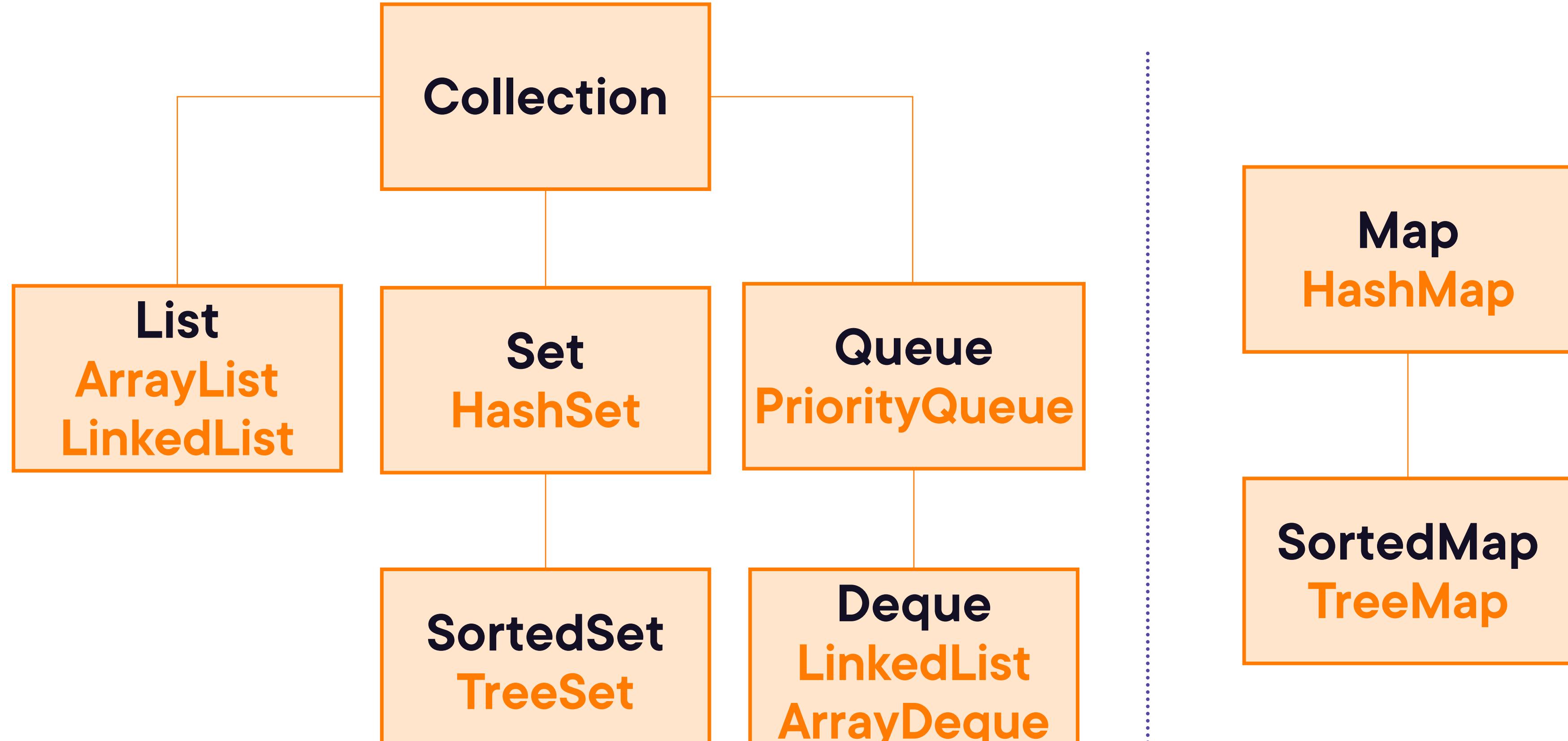
Often has a popular implementation

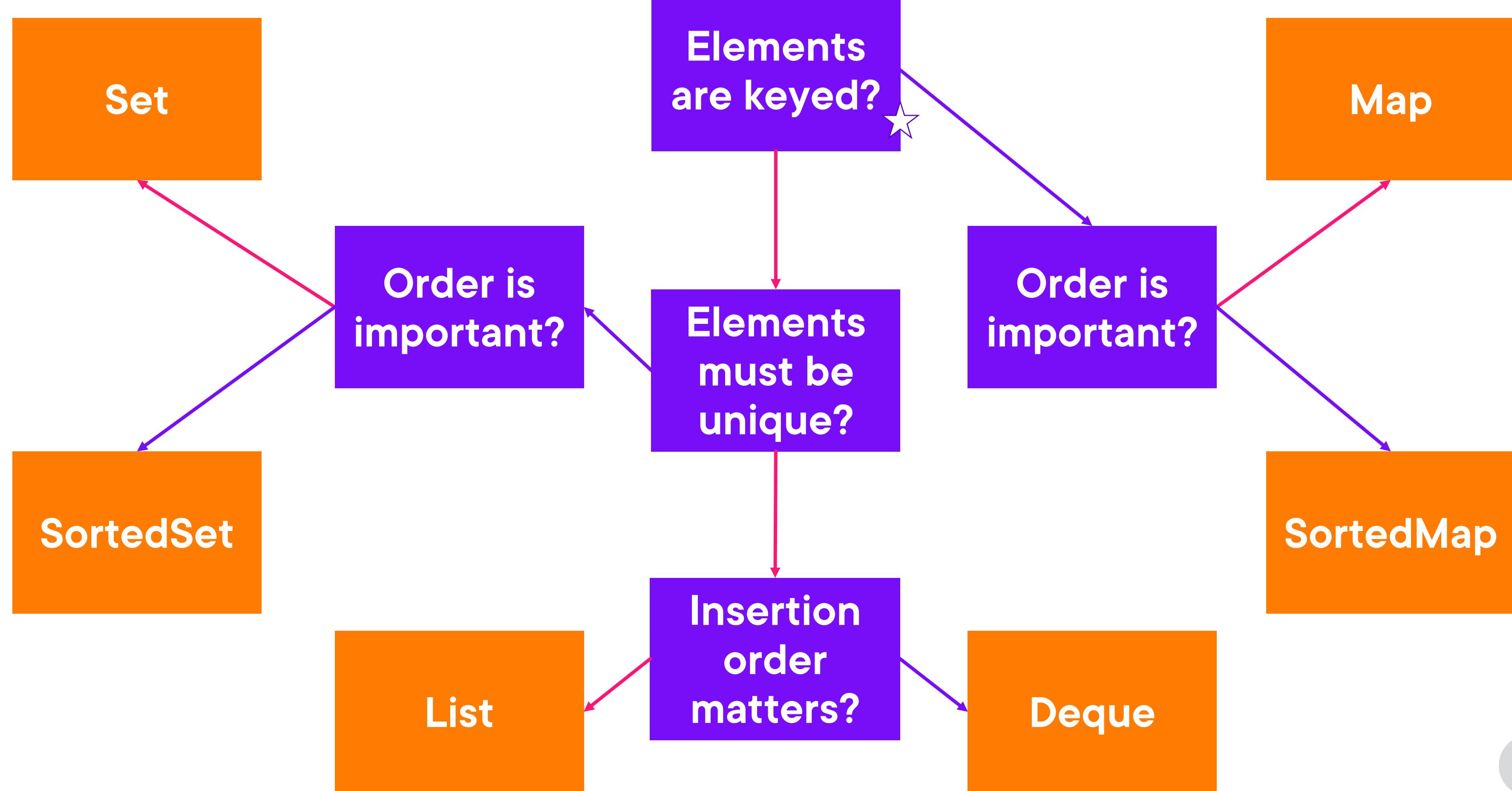
Specific data structures

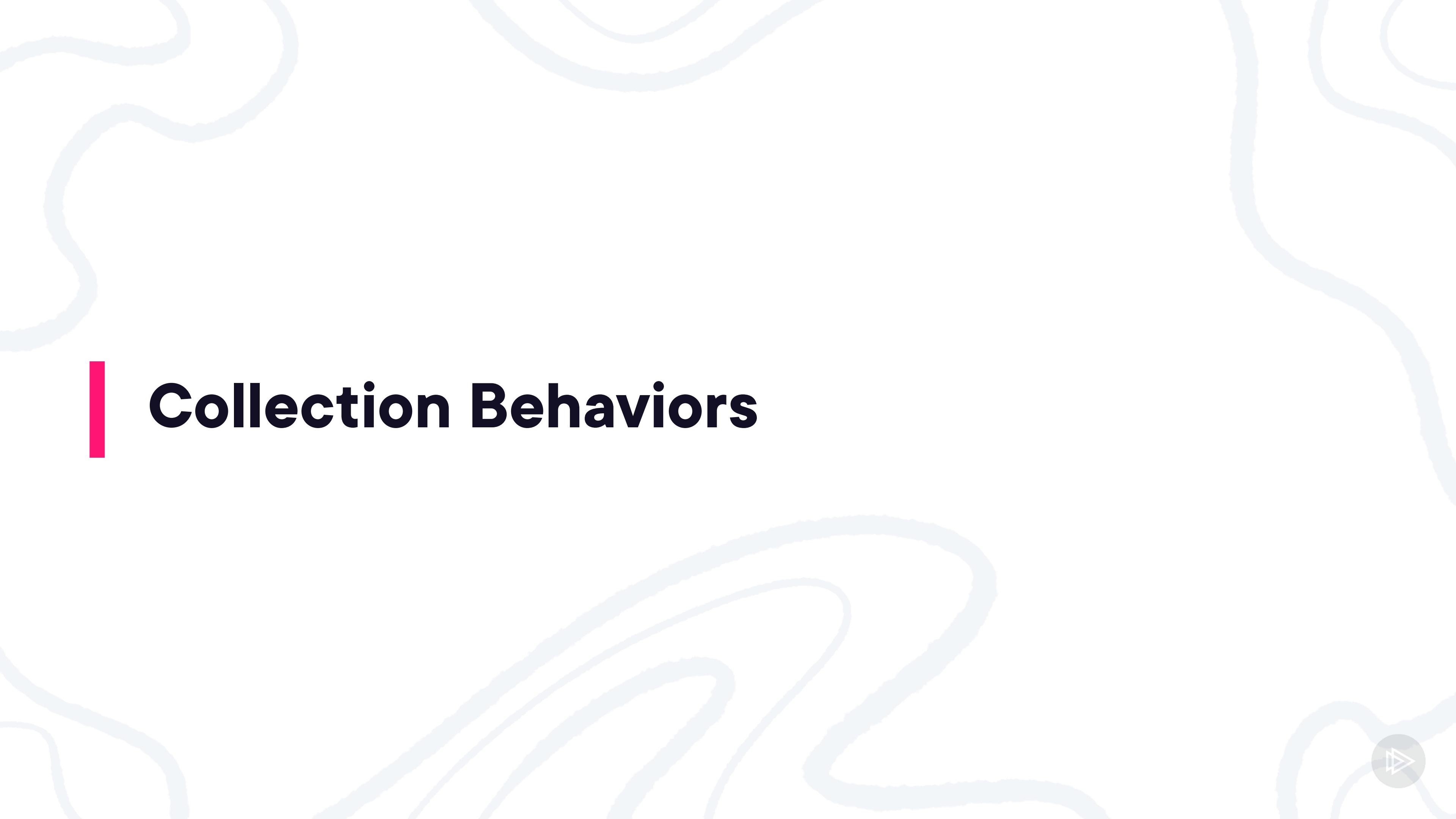
Performance characteristics

Concrete and instantiable









Collection Behaviors



Iterable

Iterator

Collection



`size()`

`isEmpty()`

`add()`

`addAll()`

◀ Get the number of elements in the collection

◀ True if `size() == 0`, false otherwise

◀ Ensure that an element is in the collection

◀ Add all the elements of the argument collection to this collection



`remove(element)`

◀ Remove the element from this collection

`removeAll(collection)`

◀ Remove all the elements of the argument collection to this collection

`retainAll(collection)`

◀ Remove all the elements of this collection not in the argument collection



`contains(element)`

`containsAll(collection)`

`clear()`

- ◀ **True if the element is in this collection, false otherwise**
- ◀ **True if all the elements of the argument collection are in this collection**
- ◀ **Remove all elements from this collection**



Summary

Java Collections are useful and versatile

There's a collection of collections

When to use specific collections

Common collection features

