Kotlin – Collections

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Collections

- Collections are a common concept for most programming languages.
- A collection usually contains a number of objects of the same type and Objects in a collection are called elements or items.
- The Kotlin Standard Library provides a comprehensive set of tools for managing collections.

Collections

- Kotlin List - List is an ordered collection with access to elements by indices. Elements can occur more than once in a list.
- Kotlin Set - Set is a collection of unique elements which means a group of objects without repetitions.
- Kotlin Map - Map (or dictionary) is a set of key-value pairs. Keys are unique, and each of them maps to exactly one value.

Collections : Types

- Kotlin provides the following types of collection:
  - Collection or Immutable Collection
  - Mutable Collection

Collections : Immutable

- Immutable Collection or simply calling a Collection interface provides read-only methods which means once a collection is created, we can not change it because there is no method available to change the object created.

Collections : Immutable

- List
  - listOf()
  - listOf<T>()
- Map
  - mapOf()
- Set
  - setOf()

Collections : Mutable

- List
  - ArrayList<T>()
  - arrayListOf()
  - mutableListOf()
- Map
  - HashMap
  - hashMapOf()
  - mutableMapOf()
- Set
  - hashSetOf()
  - mutableSetOf()

List

- Kotlin list is an ordered collection of items.
- A Kotlin list can be either mutable (mutableListOf) or read-only (listOf). The elements of list can be accessed using indices.
- Kotlin mutable or immutable lists can have duplicate elements.

List : Examples

- Using toString( ) method
- Using iterator
- Using for loop
- Using forEach
- Other: size, in, contains, isEmpty( ), indexOf( ), get( ),
- List addition, subtraction, slicing, filter, drop, grouping, mapping, chunking,
- Mutable List Operations

Set

- Kotlin set is an unordered collection of items.
- A Kotlin set can be either mutable (mutableSetOf) or read-only (setOf).
- Kotlin mutable or immutable sets do not allow to have duplicate elements.
- Example.

Set : Examples

- Using toString( ) method
- Using iterator
- Using for loop
- Using forEach
- Other: size, in, contains, isEmpty( ), indexOf( ), get( ),
- Set addition, subtraction, slicing, filter, drop, grouping, mapping, chunking,
- Mutable Set Operations

Map

- Kotlin map is a collection of key/value pairs, where each key is unique, and it can only be associated with one value.
- The same value can be associated with multiple keys though. We can declare the keys and values to be any type; there are no restrictions.
- A Kotlin map can be either mutable (mutableMapOf) or read-only (mapOf).
- Maps are also known as dictionaries or associative arrays in other programming languages.
- Example.

Creating Maps and Examples

- HashMap
- Using Pair
- Maps Properties
- toString( ), iterator, for loop, size, count(), containsKey( ), containsValue( ), isEmpty( )
- get, remove, sort, filter, map
- Mutable map

Summary

- List: A list is an ordered collection of elements where duplicates are allowed and each element has a specific index.
- Set: A set is a collection of unique elements that are not stored in any specific order.
- Map: A map is a collection of key-value pairs where each key is unique and maps to a single value.

Thank you

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