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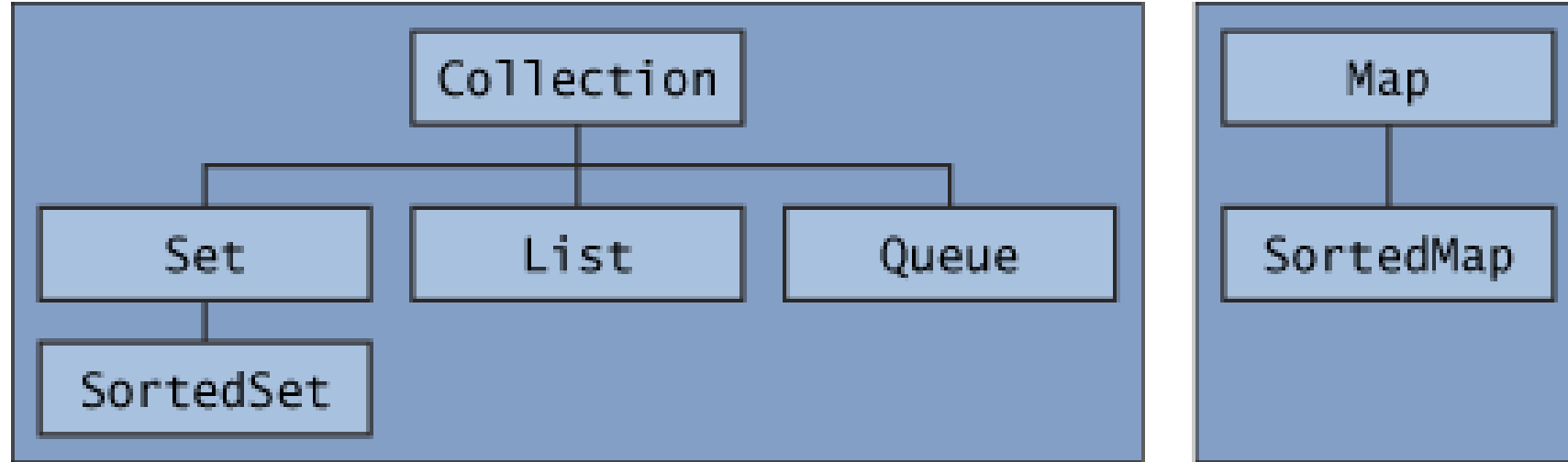
Collections

Collections Interface & Implementation

Pemrograman Berorientasi Objek

Interfaces

- Core collection interface mengenkapsulasi tipe berbeda collections



The core collection interfaces.

Interfaces

- Collection, root dari collections hirarki merepresentasikan group of object (elemen)
- Set, collections yang tidak boleh ada duplikasi elemen
- List (sequence), collections yang elemennya terurut, boleh duplikasi

Interfaces

- Queue, mengurutkan elemen berdasarkan FIFO
- Map (hashtable), memetakan key ke value, tidak boleh duplikasi
- SortedSet, Set yang terurut
- SortedMap, Map yang terurut

Collection Interface

```
public interface Collection<E> extends Iterable<E> {  
    // basic operations  
    int size();  
    boolean isEmpty();  
    boolean contains(Object element);  
    boolean add(E element);  
    boolean remove(Object element);  
    Iterator<E> iterator();  
  
    // bulk operations  
    boolean containsAll(Collection<?> c);  
    boolean addAll(Collection<? extends E> c);  
    boolean removeAll(Collection<?> c);  
    boolean retainAll(Collection<?> c);  
    void clear();  
  
    // array operations  
    Object[] toArray();  
    <T> T[] toArray(T[] a);  
}
```

Traversing Collections

- Konstruksi for-each

```
for (Object o : collection)
    System.out.println(o);
```

- Iterator

```
public interface Iterator<E> {
    boolean hasNext();
    E next();
    void remove(); //optional
}

static void filter(Collection<?> c) {
    for (Iterator<?> it = c.iterator(); it.hasNext(); )
        if (!cond(it.next()))
            it.remove();
}
```

Implementations

- Data objek yang digunakan untuk menyimpan collections
- Mengimplementasikan interface yang dibahas sebelumnya
- Ada beberapa macam implementation: general purpose, special purpose, concurrent, wrapper, convenience, abstract

General Purpose

General-purpose Implementations

Interfaces	Implementations				
	Hash table	Resizable array	Tree	Linked list	Hash table + Linked list
Set	HashSet		TreeSet		LinkedHashSet
List		ArrayList		LinkedList	
Queue					
Map	HashMap		TreeMap		LinkedHashMap



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