Java Collection Framework - Interfaces, Classes & Versions

The Java Collection Framework is a unified architecture for storing and manipulating collections. It includes interfaces, implementations (classes), and algorithms. This document outlines the core interfaces and classes within the Java Collection Framework along with the Java version in which they were introduced.

## Core Interfaces

|  |  |  |
| --- | --- | --- |
| Type | Name | Introduced In |
| Interface | Collection | Java 1.2 |
| Interface | List | Java 1.2 |
| Interface | Set | Java 1.2 |
| Interface | SortedSet | Java 1.2 |
| Interface | NavigableSet | Java 6 |
| Interface | Queue | Java 1.5 |
| Interface | Deque | Java 6 |
| Interface | Map | Java 1.2 |
| Interface | SortedMap | Java 1.2 |
| Interface | NavigableMap | Java 6 |

## Classes Implementing List Interface

|  |  |  |
| --- | --- | --- |
| Class | Description | Introduced In |
| ArrayList | Resizable-array implementation | Java 1.2 |
| LinkedList | Doubly-linked list implementation | Java 1.2 |
| Vector | Synchronized list | Java 1.0 |
| Stack | Subclass of Vector (LIFO) | Java 1.0 |
| CopyOnWriteArrayList | Thread-safe list | Java 1.5 |

## Classes Implementing Set Interface

|  |  |  |
| --- | --- | --- |
| Class | Description | Introduced In |
| HashSet | Unordered set backed by HashMap | Java 1.2 |
| LinkedHashSet | Maintains insertion order | Java 1.4 |
| TreeSet | Sorted set | Java 1.2 |
| EnumSet | Set for enums | Java 1.5 |
| CopyOnWriteArraySet | Thread-safe set | Java 1.5 |

## Classes Implementing Queue/Deque Interface

|  |  |  |
| --- | --- | --- |
| Class | Description | Introduced In |
| PriorityQueue | Priority-based queue | Java 1.5 |
| ArrayDeque | Resizable array deque | Java 1.6 |
| LinkedList | Implements List and Deque | Java 1.2 |
| ConcurrentLinkedQueue | Thread-safe queue | Java 1.5 |
| LinkedBlockingQueue | Blocking queue | Java 1.5 |

## Classes Implementing Map Interface

|  |  |  |
| --- | --- | --- |
| Class | Description | Introduced In |
| HashMap | Unordered key-value pairs | Java 1.2 |
| LinkedHashMap | Maintains insertion order | Java 1.4 |
| TreeMap | Sorted map | Java 1.2 |
| Hashtable | Synchronized map | Java 1.0 |
| Properties | Subclass of Hashtable for configs | Java 1.0 |
| IdentityHashMap | Compares keys using == | Java 1.4 |
| EnumMap | Map for enum keys | Java 1.5 |
| WeakHashMap | Garbage-collected keys | Java 1.2 |
| ConcurrentHashMap | Thread-safe map | Java 1.5 |

## Utility Classes

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| --- | --- | --- |
| Class | Description | Introduced In |
| Collections | Utility methods for collections | Java 1.2 |
| Arrays | Utility methods for arrays | Java 1.2 |