

# All Packages

Package Summary	
Package	Description
Unnamed Package	
MyInterface	
MySource	

# JavaDoc Help

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## Navigation

Starting from the [Overview](#) page, you can browse the documentation using the links in each page, and in the navigation bar at the top of each page. The [Index](#) and Search box allow you to navigate to specific declarations and summary pages, including: [All Packages](#), [All Classes and Interfaces](#)

## Search

You can search for definitions of modules, packages, types, fields, methods, system properties and other terms defined in the API. These items can be searched using part or all of the name, optionally using "camelCase" abbreviations, or multiple search terms separated by whitespace. Some examples:

- `"j.l.obj"` matches `"java.lang.Object"`
- `"InpStr"` matches `"java.io.InputStream"`
- `"math exact long"` matches `"java.lang.Math.absExact(long)"`

Refer to the [Javadoc Search Specification](#)<sup>↗</sup> for a full description of search features.

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## Kinds of Pages

The following sections describe the different kinds of pages in this collection.

### Overview

The [Overview](#) page is the front page of this API document and provides a list of all packages with a summary for each. This page can also contain an overall description of the set of packages.

### Package

Each package has a page that contains a list of its classes and interfaces, with a summary for each. These pages may contain the following categories:

- Interfaces

- [Classes](#)
- [Enum Classes](#)
- [Exception Classes](#)
- [Annotation Interfaces](#)

## Class or Interface

Each class, interface, nested class and nested interface has its own separate page. Each of these pages has three sections consisting of a declaration and description, member summary tables, and detailed member descriptions. Entries in each of these sections are omitted if they are empty or not applicable.

- [Class Inheritance Diagram](#)
- [Direct Subclasses](#)
- [All Known Subinterfaces](#)
- [All Known Implementing Classes](#)
- [Class or Interface Declaration](#)
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- [Nested Class Summary](#)
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- [Enum Constant Details](#)
- [Field Details](#)
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*Note:* Annotation interfaces have required and optional elements, but not methods. Only enum classes have enum constants. The components of a record class are displayed as part of the declaration of the record class. Properties are a feature of `JavaFX`.

The summary entries are alphabetical, while the detailed descriptions are in the order they appear in the source code. This preserves the logical groupings established by the programmer.

## Other Files

Packages and modules may contain pages with additional information related to the declarations nearby.

## Tree (Class Hierarchy)

There is a [Class Hierarchy](#) page for all packages, plus a hierarchy for each package. Each hierarchy page contains a list of classes and a list of interfaces. Classes are organized by inheritance structure starting with `java.lang.Object`. Interfaces do not inherit from `java.lang.Object`.

- When viewing the Overview page, clicking on TREE displays the hierarchy for all packages.
- When viewing a particular package, class or interface page, clicking on TREE displays the hierarchy for only that package.

## Constant Field Values

The [Constant Field Values](#) page lists the static final fields and their values.

## All Packages

The [All Packages](#) page contains an alphabetic index of all packages contained in the documentation.

## All Classes and Interfaces

The [All Classes and Interfaces](#) page contains an alphabetic index of all classes and interfaces contained in the documentation, including annotation interfaces, enum classes, and record classes.

## Index

The [Index](#) contains an alphabetic index of all classes, interfaces, constructors, methods, and fields in the documentation, as well as summary pages such as [All Packages](#), [All Classes and Interfaces](#).

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*This help file applies to API documentation generated by the standard doclet.*

# Hierarchy For Unnamed Package

## Package Hierarchies:

All Packages

## Class Hierarchy

- java.lang.**Object**[↗](#)
  - **Test**

# Constant Field Values

## Contents

Unnamed Package  
MyInterface.\*

## Unnamed Package

### Test

Modifier and Type	Constant Field	Value
public static final int	default_input_capacity	10
public static final int	number_of_test	5

## MyInterface.\*

### MyInterface.Javacontainer<E>

Modifier and Type	Constant Field	Value
public static final int	initial_capacity	10

# Index

A C D E F G H I J L M N R S T

All Classes and Interfaces | All Packages | Constant Field Values

## A

**add(E)** - Method in interface MyInterface.Javacontainer

Adds the specified element to the container.

**add(E)** - Method in class MySource.JavaSet

Add method adds element to the Setcontainer if it is not used before.

**add(E)** - Method in class MySource.JavaVector

Adds the specified element to the vector.

## C

**capacity()** - Method in interface MyInterface.Javacontainer

Returns the current capacity of the container // Getter.

**capacity()** - Method in class MySource.JavaSet

Returns the current capacity of the set.

**capacity()** - Method in class MySource.JavaVector

Returns the capacity of the vector.

**clear()** - Method in interface MyInterface.Javacontainer

Clears the container by removing all elements.

**clear()** - Method in class MySource.JavaSet

Clears the set , assigns size to 0.

**clear()** - Method in class MySource.JavaVector

Clears the vector by removing all elements.

**clone()** - Method in class MySource.JavaSet

Implement deep copy of the JavaSet Using Cloneable interface.

**clone()** - Method in class MySource.JavaVector

Implements the clone method for JavaVector.

## D

**default\_input\_capacity** - Static variable in class Test

My final variables that I used them in test code.

## E

**equals(Object)** - Method in interface MyInterface.Javacontainer

Checks if the container is equal to another object.

**equals(Object)** - Method in class MySource.JavaSet

Checks if the current set is equal to another JavaSet.

**equals(Object)** - Method in class MySource.JavaVector  
Checks if the current vector is equal to another JavaVector.

## F

**firstElement()** - Method in interface MyInterface.Javacontainer  
Returns the first element in the container.

**firstElement()** - Method in class MySource.JavaSet  
Returns the first element in the set.

**firstElement()** - Method in class MySource.JavaVector  
Returns the first element in the vector.

## G

**get(int)** - Method in interface MyInterface.Javacontainer  
Returns the element at the specified index in the container.

**get(int)** - Method in class MySource.JavaSet  
Returns the element at the specified index in the set.

**get(int)** - Method in class MySource.JavaVector  
Returns the element at the specified index in the vector.

**getIterator()** - Method in interface MyInterface.Javacontainer  
Returns an iterator for sequential access to the elements in the container.

**getIterator()** - Method in class MySource.JavaSet  
Return the iterator over the set elements.

**getIterator()** - Method in class MySource.JavaVector  
Returns an iterator over the elements in the vector.

## H

**hasNext()** - Method in class MySource.Myiterator  
-hasNext ( ) : checks if it is the last element of the container or still there are some other elements.

## I

**index\_of(E)** - Method in interface MyInterface.Javacontainer  
Returns the index of the specified element in the container.

**index\_of(E)** - Method in class MySource.JavaSet  
Returns the index of the specified element in the set.

**index\_of(E)** - Method in class MySource.JavaVector  
Returns the index of the specified element in the vector.

**initial\_capacity** - Static variable in interface MyInterface.Javacontainer  
The initial capacity for containers

**is\_find(E)** - Method in interface MyInterface.Javacontainer  
Checks if the specified element is present in the container.

**is\_find(E)** - Method in class MySource.JavaSet  
Checks if the specified element is exist in the set.



- is\_find(E)** - Method in class MySource.JavaVector  
Checks if the specified element is present in the vector.
- isEmpty()** - Method in interface MyInterface.Javacontainer  
Checks if the container is empty.
- isEmpty()** - Method in class MySource.JavaSet  
Checks if the set is empty.
- isEmpty()** - Method in class MySource.JavaVector  
Checks if the vector is empty.

## J

- Javacontainer<E>** - Interface in MyInterface  
The Javacontainer interface defines common methods shared by both set and vector implementations in Java. \* I have implement extra methods to make an improved and better homework , I hope it is not a problem.
- JavaSet<E>** - Class in MySource  
My JavaSet generic class represents a Set collection of Java with various helper methods.
- JavaSet()** - Constructor for class MySource.JavaSet  
Constructs an empty JavaSet with the default initial capacity which is defined in JavaContainer inteface.
- JavaSet(int)** - Constructor for class MySource.JavaSet  
Constructs an empty JavaSet with the specified initial capacity.
- JavaVector<E>** - Class in MySource  
My JavaVector generic class represents a vector collectionof Java with various helper methods.
- JavaVector()** - Constructor for class MySource.JavaVector  
Default constructor for JavaVector.
- JavaVector(int)** - Constructor for class MySource.JavaVector  
Constructor for JavaVector with a specified initial capacity.

## L

- lastElement()** - Method in interface MyInterface.Javacontainer  
Returns the last element in the container.
- lastElement()** - Method in class MySource.JavaSet  
Returns the last element in the set.
- lastElement()** - Method in class MySource.JavaVector  
Returns the last element in the vector.
- load\_file(String)** - Method in interface MyInterface.Javacontainer  
Loads the container from a file with the specified file name.
- load\_file(String)** - Method in class MySource.JavaSet  
Loads the set from the file with the specified file name as parameter..
- load\_file(String)** - Method in class MySource.JavaVector  
Loads the vector from a file specified by the given file name.

## M

**main(String[])** - Static method in class **Test**

The main method that initiates the testing of **JavaVector** and **JavaSet** classes.

**MyInterface** - package **MyInterface**

**Myiterator<E>** - Class in **MySource**

This inner iterator class is utilized for iterating over elements within the **JavaSet** and **JavaVector** classes.

**Myiterator(Object[])** - Constructor for class **MySource.Myiterator**

**MySource** - package **MySource**

## N

**next()** - Method in class **MySource.Myiterator**

**number\_of\_test** - Static variable in class **Test**

## R

**remove(E)** - Method in interface **MyInterface.Javacontainer**

Removes the specified element from the container.

**remove(E)** - Method in class **MySource.JavaSet**

It removes the element which is send as parameter of the function.

**remove(E)** - Method in class **MySource.JavaVector**

Removes the specified element from the vector.

**removeElementAt(int)** - Method in interface **MyInterface.Javacontainer**

Removes the element at the specified index from the container.

**removeElementAt(int)** - Method in class **MySource.JavaSet**

Removes the element at the specified index from the set.

**removeElementAt(int)** - Method in class **MySource.JavaVector**

Removes the element at the specified index from the vector.

## S

**save\_file()** - Method in interface **MyInterface.Javacontainer**

Saves the current container to a file.

**save\_file()** - Method in class **MySource.JavaSet**

Saves set to the file.

**save\_file()** - Method in class **MySource.JavaVector**

Saves the vector to a file.

**set\_capacity(int)** - Method in interface **MyInterface.Javacontainer**

Setter for capacity

**set\_capacity(int)** - Method in class MySource.JavaSet  
Setter for capacity

**set\_capacity(int)** - Method in class MySource.JavaVector  
Setter for capacity

**size()** - Method in interface MyInterface.Javacontainer  
Returns the current size (number of elements) of the container / Getter.

**size()** - Method in class MySource.JavaSet  
Returns the current size of the set.

**size()** - Method in class MySource.JavaVector  
Returns the size of the vector.

## T

**Test** - Class in [Unnamed Package](#)  
This is the test code of the containers that I implemented for JavaSet and JavaVector , Note that not every extra implemented functions are used in testing , but you can try them whichever you want.

**Test()** - Constructor for class [Test](#)

**toString()** - Method in interface MyInterface.Javacontainer  
Returns a string representation of the container.

**toString()** - Method in class MySource.JavaSet  
It converts set to String format.

**toString()** - Method in class MySource.JavaVector  
Returns a string representation of the vector.

Package [MyInterface](#)

# Interface **Javacontainer<E>**

Type Parameters:

E - the type of elements in the container

All Known Implementing Classes:

[JavaSet](#), [JavaVector](#)

```
public interface Javacontainer<E>
```

The Javacontainer interface defines common methods shared by both set and vector implementations in Java. \* I have implement extra methods to make an improved and better homework , I hope it is not a problem. King regards.

Since:

January 18, 2024


## Field Summary

Fields		
Modifier and Type	Field	Description
static final int	<b>initial_capacity</b>	The initial capacity for containers

## Method Summary

All Methods			Instance Methods	Abstract Methods
Modifier and Type	Method		Description	
void	<b>add(E element)</b>		Adds the specified element to the container.	
int	<b>capacity()</b>		Returns the current capacity of the container // Getter	

		// Getter.
void	<b>clear()</b>	Clears the container by removing all elements.
boolean	<b>equals</b> ( <a href="#">Object</a> obj)	Checks if the container is equal to another object.
<b>E</b>	<b>firstElement()</b>	Returns the first element in the container.
<b>E</b>	<b>get</b> (int index)	Returns the element at the specified index in the container.
<b>MyIterator&lt;E&gt;</b>	<b>getIterator()</b>	Returns an iterator for sequential access to the elements in the container.
int	<b>index_of</b> ( <b>E</b> element)	Returns the index of the specified element in the container.
boolean	<b>is_find</b> ( <b>E</b> element)	Checks if the specified element is present in the container.
boolean	<b>isEmpty()</b>	Checks if the container is empty.
<b>E</b>	<b>lastElement()</b>	Returns the last element in the container.
void	<b>load_file</b> ( <a href="#">String</a> fileName)	Loads the container from a file with the specified file name.
void	<b>remove</b> ( <b>E</b> element)	Removes the specified element from the container.
void	<b>removeElementAt</b> (int index)	Removes the element at the specified index from the container.
void	<b>save_file()</b>	Saves the current

		container to a file.
void	<b>set_capacity</b> (int _capacity)	Setter for capacity
int	<b>size()</b>	Returns the current size (number of elements) of the container / Getter.
<b>String</b> 	<b>toString()</b>	Returns a string representation of the container.

## Field Details

### initial\_capacity

```
static final int initial_capacity
```

The initial capacity for containers

**See Also:**

[Constant Field Values](#)

## Method Details

### add

```
void add(E element)
```

Adds the specified element to the container.

**Parameters:**

`element` - the element to be added to the container

### remove

```
void remove(E element)
```

Removes the specified element from the container.

**Parameters:**

`element` - the element which will be removed from container.

## size

```
int size()
```

Returns the current size (number of elements) of the container / Getter.

**Returns:**

the size of the container

## getIterator

```
MyIterator<E> getIterator()
```

Returns an iterator for sequential access to the elements in the container. The iterator follows the Iterator design pattern, patterns were explained before the implementation which are : (`hasNext()`) and (`next()`).

**Returns:**

an iterator for the elements in the container

## equals

```
boolean equals(Object obj)
```

Checks if the container is equal to another object.

**Overrides:**

`equals` in class [Object](#)

**Parameters:**

`obj` - the object to compare

**Returns:**

true if the containers are equal, false otherwise

## toString

`String` [↗](#) `toString()`

Returns a string representation of the container.

**Overrides:**

`toString` [↗](#) in class `Object` [↗](#)

**Returns:**

a string representation of the container

## removeElementAt

```
void removeElementAt(int index)
```

Removes the element at the specified index from the container.

**Parameters:**

`index` - the index of the element to be removed

## clear

```
void clear()
```

Clears the container by removing all elements.

## capacity

```
int capacity()
```

Returns the current capacity of the container // Getter.

**Returns:**

the capacity of the container

## index\_of

```
int index_of(E element)
```

Returns the index of the specified element in the container.

**Parameters:**



`element` - the element to find the index of

**Returns:**

the index of the element, or -1 if not found

## `is_find`

```
boolean is_find(E element)
```

Checks if the specified element is present in the container.

**Parameters:**

`element` - the element to search for

**Returns:**

true if the element is found, false otherwise

## `isEmpty`

```
boolean isEmpty()
```

Checks if the container is empty.

**Returns:**

true if the container is empty, false otherwise

## `firstElement`

```
E firstElement()
```

Returns the first element in the container.

**Returns:**

the first element

## `lastElement`

```
E lastElement()
```

Returns the last element in the container.

**Returns:**

the last element

## get

```
E get(int index)
```

Returns the element at the specified index in the container.

**Parameters:**

index - the index of the element to be retrieved

**Returns:**

the element at the specified index

## load\_file

```
void load_file(String↗ fileName)
```

Loads the container from a file with the specified file name.

**Parameters:**

fileName - the name of the file to load the container from

## save\_file

```
void save_file()
```

Saves the current container to a file.

## set\_capacity

```
void set_capacity(int _capacity)
```

Setter for capacity

**Parameters:**

\_capacity - the specified capacity that is determined by user.



Package [MySource](#)

# Class `JavaSet<E>`

[java.lang.Object](#)  
[MySource.JavaSet<E>](#)

**Type Parameters:**

E - the type of elements in the set

**All Implemented Interfaces:**

[Cloneable](#), [Javacontainer<E>](#)

```
public class JavaSet<E>
extends Object
implements Javacontainer<E>, Cloneable
```

My `JavaSet` generic class represents a Set collection of Java with various helper methods. Each method is documented with a Javadoc comment describing its functionality. Please read the Javadoc comments for details of any function.  
Generic type parameter:

**Since:**  
Java 10.0, January 18, 2024

## Field Summary

Fields inherited from interface [MyInterface.Javacontainer](#)

`initial_capacity`

## Constructor Summary

### Constructors

Constructor	Description
<code><a href="#">JavaSet()</a></code>	Constructs an empty <code>JavaSet</code> with the default initial capacity which is defined in <code>JavaContainer.int.f</code>

JavaContainer interface.

**JavaSet**(int \_capacity) Constructs an empty JavaSet with the specified initial capacity.

Method Summary

All Methods	Instance Methods	Concrete Methods
Modifier and Type	Method	Description
void	<b>add</b> (E element)	Add method adds element to the Setcontainer if it is not used before.
int	<b>capacity</b> ()	Returns the current capacity of the set.
void	<b>clear</b> ()	Clears the set , assigns size to 0.
protected <b>Object</b> 	<b>clone</b> ()	Implement deep copy of the JavaSet Using Cloneable interface.
boolean	<b>equals</b> ( <b>Object</b>  obj)	Checks if the current set is equal to another JavaSet.
<b>E</b>	<b>firstElement</b> ()	Returns the first element in the set.
<b>E</b>	<b>get</b> (int index)	Returns the element at the specified index in the set.
<b>Myiterator</b> <E>	<b>getIterator</b> ()	Return the iterator over the set elements.
int	<b>index_of</b> (E element)	Returns the index of the specified element in the set.

boolean	<b>is_find(E element)</b>	Checks if the specified element is exist in the set.
boolean	<b>isEmpty()</b>	Checks if the set is empty.
<b>E</b>	<b>lastElement()</b>	Returns the last element in the set.
void	<b>load_file(String<sup>↗</sup> fileName)</b>	Loads the set from the file with the specified file name as parameter..
void	<b>remove(E element)</b>	It removes the element which is send as parameter of the function.
void	<b>removeElementAt(int index)</b>	Removes the element at the specified index from the set.
void	<b>save_file()</b>	Saves set to the file.
void	<b>set_capacity(int _capacity)</b>	Setter for capacityi
int	<b>size()</b>	Returns the current size of the set.
<b>String<sup>↗</sup></b>	<b>toString()</b>	It converts set to String format.

**Methods inherited from class java.lang.Object<sup>↗</sup>**

`finalize↗, getClass↗, hashCode↗, notify↗, notifyAll↗, wait↗, wait↗, wait↗`

**Constructor Details**

**JavaSet**

```
public JavaSet()
```

Constructs an empty JavaSet with the default initial capacity which is defined in JavaContainer interface.

## JavaSet

```
public JavaSet(int _capacity)
```

Constructs an empty JavaSet with the specified initial capacity.

**Parameters:**

`_capacity` - the initial capacity of the set that user determines.

**Throws:**

`IllegalArgumentException` [↗](#) - if the specified initial capacity is less than 1 which is invalid.

## Method Details

### getIterator

```
public Myiterator<E> getIterator()
```

Return the iterator over the set elements.

**Specified by:**

`getIterator` in interface `Javacontainer<E>`

**Returns:**

an iterator for javaset.

### set\_capacity

```
public void set_capacity(int _capacity)
```

Setter for capacity

**Specified by:**

`set_capacity` in interface `Javacontainer<E>`

**Parameters:**

`_capacity` - the specified value for capacity

## add

```
public void add(E element)
```

Add method adds element to the Setcontainer if it is not used before. Using `isfind` method before add to check if it is already valid.

**Specified by:**

`add` in interface `Javacontainer<E>`

**Parameters:**

`element` - the element to be added to the set

## remove

```
public void remove(E element)
```

It removes the element which is send as parameter of the function.

**Specified by:**

`remove` in interface `Javacontainer<E>`

**Parameters:**

`element` - element to be removed from set.

## removeElementAt

```
public void removeElementAt(int index)
```

Removes the element at the specified index from the set.

**Specified by:**

`removeElementAt` in interface `Javacontainer<E>`

**Parameters:**

`index` - the index of the element which will be removed

**Throws:**



[IndexOutOfBoundsException](#) - if the index is out of range

[NoSuchElementException](#) - if the set is already empty

## firstElement

```
public E firstElement()
```

Returns the first element in the set.

**Specified by:**

[firstElement](#) in interface [Javacontainer<E>](#)

**Returns:**

the first element

**Throws:**

[NoSuchElementException](#) - if the set is empty

## lastElement

```
public E lastElement()
```

Returns the last element in the set.

**Specified by:**

[lastElement](#) in interface [Javacontainer<E>](#)

**Returns:**

the last element

**Throws:**

[NoSuchElementException](#) - if the set is empty

## get

```
public E get(int index)
```

Returns the element at the specified index in the set.

**Specified by:**

[get](#) in interface [Javacontainer<E>](#)

**Parameters:**

index - the index of the element to be retrieved

**Returns:**

the element at the specified index

**Throws:**

[IndexOutOfBoundsException](#) - if the index is invalid value.

## capacity

```
public int capacity()
```

Returns the current capacity of the set.

**Specified by:**

[capacity](#) in interface [Javacontainer<E>](#)

**Returns:**

current capacity of the set.

## size

```
public int size()
```

Returns the current size of the set.

**Specified by:**

[size](#) in interface [Javacontainer<E>](#)

**Returns:**

current size of the set.

## clear

```
public void clear()
```

Clears the set , assigns size to 0.

**Specified by:**

[clear](#) in interface [Javacontainer<E>](#)

**Throws:**

[NoSuchElementException](#) - if the set is already empty.

## is\_find

```
public boolean is_find(E element)
```

Checks if the specified element is exist in the set.

**Specified by:**

[is\\_find](#) in interface [Javacontainer<E>](#)

**Parameters:**

`element` - the element to be checked if it is already exist.

**Returns:**

true if the element is found, false if it is not found.

## index\_of

```
public int index_of(E element)
```

Returns the index of the specified element in the set.

**Specified by:**

[index\\_of](#) in interface [Javacontainer<E>](#)

**Parameters:**

`element` - the element to find the index of

**Returns:**

the index of the element, or -1 if not found

## isEmpty

```
public boolean isEmpty()
```

Checks if the set is empty.

**Specified by:**

[isEmpty](#) in interface [Javacontainer<E>](#)

**Returns:**

true if the set is empty, false otherwise

## save\_file

```
public void save_file()
```

Saves set to the file.

**Specified by:**

`save_file` in interface `Javacontainer<E>`

## load\_file

```
public void load_file(String↗ fileName)
```

Loads the set from the file with the specified file name as parameter..

**Specified by:**

`load_file` in interface `Javacontainer<E>`

**Parameters:**

`fileName` - the name of the file to load the set from

## equals

```
public boolean equals(Object↗ obj)
```

Checks if the current set is equal to another `JavaSet`.

**Specified by:**

`equals` in interface `Javacontainer<E>`

**Overrides:**

`equals`<sup>↗</sup> in class `Object`<sup>↗</sup>

**Parameters:**

`obj` - the object to compare

**Returns:**

true if the sets are equal, false otherwise

## clone

protected [Object](#) clone()  
throws [CloneNotSupportedException](#)

Implement deep copy of the JavaSet Using Cloneable interface.

**Overrides:**

[clone](#) in class [Object](#)

**Returns:**

the cloned JavaSet object.

**Throws:**

[CloneNotSupportedException](#) - if cloning is not supported

## toString

public [String](#) toString()

It converts set to String format.

**Specified by:**

[toString](#) in interface [Javacontainer<E>](#)

**Overrides:**

[toString](#) in class [Object](#)

**Returns:**

a string representation of the set

Package [MySource](#)

# Class `JavaVector<E>`

`java.lang.Object`  
`MySource.JavaVector<E>`

## Type Parameters:

E - the type of elements in the set

## All Implemented Interfaces:

`Cloneable`, `Javacontainer<E>`

```
public class JavaVector<E>
extends Object
implements Javacontainer<E>, Cloneable
```

My `JavaVector` generic class represents a vector collectionof Java with various helper methods. Each method is documented with a Javadoc comment describing its functionality Please read the javadoc comments for details of any function. \*

Generic type parameter:

Since:  
Java 10.0 , January 18, 2024

## Field Summary

Fields inherited from interface `MyInterface.Javacontainer`

`initial_capacity`

## Constructor Summary

### Constructors

Constructor	Description
<code>JavaVector()</code>	Default constructor for <code>JavaVector</code> .
<code>JavaVector(int capacity)</code>	Constructor for <code>JavaVector</code> with a

**JavaVector (int capacity\_)** Constructor for JavaVector with a specified initial capacity.

## Method Summary

All Methods	Instance Methods	Concrete Methods
Modifier and Type	Method	Description
void	<b>add</b> (E element)	Adds the specified element to the vector.
int	<b>capacity</b> ()	Returns the capacity of the vector.
void	<b>clear</b> ()	Clears the vector by removing all elements.
protected <b>Object</b> <a href="#">↗</a>	<b>clone</b> ()	Implements the clone method for JavaVector.
boolean	<b>equals</b> ( <b>Object</b> <a href="#">↗</a> obj)	Checks if the current vector is equal to another JavaVector.
<b>E</b>	<b>firstElement</b> ()	Returns the first element in the vector.
<b>E</b>	<b>get</b> (int index)	Returns the element at the specified index in the vector.
<b>Myiterator</b> <E>	<b>getIterator</b> ()	Returns an iterator over the elements in the vector.
int	<b>index_of</b> (E element)	Returns the index of the specified element in the vector.
boolean	<b>is_find</b> (E element)	Checks if the specified element is present in the vector.

boolean	<b>isEmpty()</b>	Checks if the vector is empty.
<b>E</b>	<b>lastElement()</b>	Returns the last element in the vector.
void	<b>load_file(String</b> <sup>↗</sup> fileName)	Loads the vector from a file specified by the given file name.
void	<b>remove(E</b> element)	Removes the specified element from the vector.
void	<b>removeElementAt</b> (int index)	Removes the element at the specified index from the vector.
void	<b>save_file()</b>	Saves the vector to a file.
void	<b>set_capacity</b> (int _capacity)	Setter for capacity
int	<b>size()</b>	Returns the size of the vector.
<b>String</b> <sup>↗</sup>	<b>toString()</b>	Returns a string representation of the vector.

**Methods inherited from class java.lang.Object**<sup>↗</sup>

`finalize`<sup>↗</sup>, `getClass`<sup>↗</sup>, `hashCode`<sup>↗</sup>, `notify`<sup>↗</sup>, `notifyAll`<sup>↗</sup>, `wait`<sup>↗</sup>, `wait`<sup>↗</sup>, `wait`<sup>↗</sup>

**Constructor Details**

**JavaVector**

`public JavaVector()`

Default constructor for JavaVector. Initializes an empty vector with the



default capacity.

## JavaVector

```
public JavaVector(int capacity_)
```

Constructor for JavaVector with a specified initial capacity.

**Parameters:**

`capacity_` - the initial capacity of the vector

**Throws:**

[IllegalArgumentException](#) - if the specified initial capacity is less than 1

## Method Details

### getIterator

```
public Myiterator<E> getIterator()
```

Returns an iterator over the elements in the vector.

**Specified by:**

[getIterator](#) in interface [Javacontainer<E>](#)

**Returns:**

an iterator for JavaVector

### set\_capacity

```
public void set_capacity(int _capacity)
```

Setter for capacity

**Specified by:**

[set\\_capacity](#) in interface [Javacontainer<E>](#)

**Parameters:**

`_capacity` - the specified value for capacity

## add

```
public void add(E element)
```

Adds the specified element to the vector.

**Specified by:**

`add` in interface `Javacontainer<E>`

**Parameters:**

`element` - the element to be added

## remove

```
public void remove(E element)
```

Removes the specified element from the vector.

**Specified by:**

`remove` in interface `Javacontainer<E>`

**Parameters:**

`element` - the element to be removed

**Throws:**

`NoSuchElementException` <sup>↗</sup> - with proper warning message if there is no such an element.

## removeElementAt

```
public void removeElementAt(int index)
```

Removes the element at the specified index from the vector.

**Specified by:**

`removeElementAt` in interface `Javacontainer<E>`

**Parameters:**

`index` - the index of the element to be removed

**Throws:**

`IllegalArgumentException` <sup>↗</sup> - if the index is invalid

## clear

```
public void clear()
```

Clears the vector by removing all elements.

**Specified by:**

`clear` in interface `Javacontainer<E>`

## firstElement

```
public E firstElement()
```

Returns the first element in the vector.

**Specified by:**

`firstElement` in interface `Javacontainer<E>`

**Returns:**

the first element

**Throws:**

`NoSuchElementException` - if the vector is empty

## lastElement

```
public E lastElement()
```

Returns the last element in the vector.

**Specified by:**

`lastElement` in interface `Javacontainer<E>`

**Returns:**

the last element

**Throws:**

`NoSuchElementException` - if the vector is empty

## get

```
public E get(int index)
```

Returns the element at the specified index in the vector.

**Specified by:**

`get` in interface `Javacontainer<E>`

**Parameters:**

`index` - the index of the element to be retrieved

**Returns:**

the element at the specified index

**Throws:**

`IndexOutOfBoundsException`<sup>↗</sup> - if the index is invalid

## size

```
public int size()
```

Returns the size of the vector.

**Specified by:**

`size` in interface `Javacontainer<E>`

**Returns:**

the size of the vector

## capacity

```
public int capacity()
```

Returns the capacity of the vector.

**Specified by:**

`capacity` in interface `Javacontainer<E>`

**Returns:**

the capacity of the vector

## is\_find

```
public boolean is_find(E element)
```

Checks if the specified element is present in the vector.

**Specified by:**

`is_find` in interface `Javacontainer<E>`

**Parameters:**

`element` - the element to search for

**Returns:**

true if the element is found, false otherwise

## **isEmpty**

```
public boolean isEmpty()
```

Checks if the vector is empty.

**Specified by:**

`isEmpty` in interface `Javacontainer<E>`

**Returns:**

true if the vector is empty, false otherwise

## **index\_of**

```
public int index_of(E element)
```

Returns the index of the specified element in the vector.

**Specified by:**

`index_of` in interface `Javacontainer<E>`

**Parameters:**

`element` - the element to find the index of

**Returns:**

the index of the element, or -1 if not found

## **save\_file**

```
public void save_file()
```

Saves the vector to a file.

**Specified by:**

`save_file` in interface `Javacontainer<E>`

## load\_file

```
public void load_file(String fileName)
```

Loads the vector from a file specified by the given file name.

**Specified by:**

`load_file` in interface `Javacontainer<E>`

**Parameters:**

`fileName` - the name of the file from which to load the vector

## clone

```
protected Object clone()  
            throws CloneNotSupportedException
```

Implements the clone method for `JavaVector`.

**Overrides:**

`clone` in class `Object`

**Returns:**

the cloned `JavaVector` object

**Throws:**

`CloneNotSupportedException` - if cloning is not supported

## equals

```
public boolean equals(Object obj)
```

Checks if the current vector is equal to another `JavaVector`.

**Specified by:**

`equals` in interface `Javacontainer<E>`

**Overrides:**

`equals` in class `Object`

**Parameters:**

obj - the object to compare

**Returns:**

true if the vectors are equal, false otherwise

## toString

```
public String↗ toString()
```

Returns a string representation of the vector.

**Specified by:**

[toString](#) in interface [Javacontainer<E>](#)

**Overrides:**

[toString](#)<sup>↗</sup> in class [Object](#)<sup>↗</sup>

**Returns:**

a string representation of the vector

# Package MySource

package MySource

## Classes

Class	Description
JavaSet<E>	My JavaSet generic class represents a Set collection of Java with various helper methods.
JavaVector<E>	My JavaVector generic class represents a vector collectionof Java with various helper methods.
Myiterator<E>	This inner iterator class is utilized for iterating over elements within the JavaSet and JavaVector classes.



# Class Test

java.lang.Object<sup>↗</sup>  
Test

```
public class Test
extends Object↗
```

This is the test code of the containers that I implemented for JavaSet and JavaVector , Note that not every extra implemented functions are used in testing , but you can try them whichever you want. I used some helper functions to make my test implementation clearer and more readable.

## Field Summary

Fields		
Modifier and Type	Field	Description
static final int	<code>default_input_capaci</code>	My final variables that I used them in test code.
static final int	<code>number_of_test</code>	

## Constructor Summary

Constructors	
Constructor	Description
<code>Test()</code>	

## Method Summary

All Methods		
Static Methods		
Concrete Methods		
Modifier and Type	Method	Description
static void	<code>main(String<sup>↗</sup>[] args)</code>	The main method that

static void `main(String[] args)` The main method that

initiates the testing of  
JavaVector and JavaSet  
classes.

## Methods inherited from class java.lang.Object<sup>↗</sup>

`clone↗`, `equals↗`, `finalize↗`, `getClass↗`, `hashCode↗`, `notify↗`, `notifyAll↗`, `toString↗`, `wait↗`, `wait↗`, `wait↗`

## Field Details

### default\_input\_capacity

```
public static final int default_input_capacity
```

My final variables that I used them in test code.

`default_input_capacity` In any case of invalid capacity input of user,  
default will be used. ▶ `invalid @code`

**See Also:**

[Constant Field Values](#)

### number\_of\_test

```
public static final int number_of_test
```

**See Also:**

[Constant Field Values](#)

## Constructor Details

### Test

```
public Test()
```

## ***Method Details***

### **main**

```
public static void main(String[] args)
```

The main method that initiates the testing of `JavaVector` and `JavaSet` classes.

**Parameters:**

`args` - Command-line arguments (not used).

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java.lang.Object<sup>↗</sup>  
Test

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**See Also:**

[Constant Field Values](#)

### number\_of\_test

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public static final int number_of_test
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**See Also:**

[Constant Field Values](#)

## Constructor Details

### Test

```
public Test()
```

## ***Method Details***

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