Package cse241.homeworks_3

package cse241.homeworks_3

- All Classes and Interfaces Interfaces Classes

  Class
  Description
  JavaContainer<E>
  The JavaContainer interface is a generic container that can hold elements of type E.
  JavaContainer.Iterator<E>
  Iterator interface that has hasNext method and next method This class generates a iterator.
  JavaSet<E>
  A generic set implementation in Java.
  JavaVector<E>
  A generic vector implementation in Java.

Hierarchy For Package cse241.homeworks_3

Class Hierarchy

- java.lang.Object
  - cse241.homeworks_3.JavaSet<E> (implements cse241.homeworks_3.JavaContainer<E>)
  - cse241.homeworks_3.JavaVector<E> (implements cse241.homeworks_3.JavaContainer<E>)

Interface Hierarchy

- cse241.homeworks_3.JavaContainer<E>
- cse241.homeworks_3.JavaContainer.Iterator<E>

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Package cse241.homeworks_3

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 is a generic container that can hold elements of type E. It defines methods for adding and removing elements, retrieving the size of the container, obtaining an iterator over its elements, and writing its contents to a file.

- ## Nested Class Summary

  Nested Classes
  Modifier and Type
  Interface
  Description
  `static interface`
  `JavaContainer.Iterator<E>`
  Iterator interface that has hasNext method and next method This class generates a iterator.

- ## Method Summary

  All Methods Instance Methods Abstract Methods
  Modifier and Type
  Method
  Description
  `void`
  `add(E element)`
  Adds the specified element to this container if it does not exist.
  `JavaContainer.Iterator<E>`
  `getIterator()`
  Returns an iterator over the elements in this container.
  `void`
  `remove(E element)`
  Removes the specified element from this container.
  `int`
  `size()`
  Returns the number of elements in this container.
  `void`
  `toFile()`
  Writes the string representation of this container to a file.

- ## Method Details

- ### add

  void add(E element)
  Adds the specified element to this container if it does not exist.

  Parameters:
  `element` - the element to be added to this container

- ### remove

  void remove(E element)
  Removes the specified element from this container.

  Parameters:
  `element` - the element to be removed from this container

- ### size

  int size()
  Returns the number of elements in this container.

  Returns:
  the number of elements in this container

- ### getIterator

  JavaContainer.Iterator<E> getIterator()
  Returns an iterator over the elements in this container.

  Returns:
  an iterator over the elements in this container

- ### toFile

  void toFile()
  Writes the string representation of this container to a file. This method may throw a runtime exception if any I/O error occurs.

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Package cse241.homeworks_3

Interface JavaContainer.Iterator<E>

Type Parameters:
`E` - the type of elements in the container

Enclosing interface:
JavaContainer<E>

---

public static interface JavaContainer.Iterator<E>
Iterator interface that has hasNext method and next method This class generates a iterator.

- ## Method Summary

  All Methods | Instance Methods | Abstract Methods

Modifier and Type	Method	Description
`boolean`	`hasNext()`	Returns true if the iteration has more elements.
`E`	`next()`	Iterates next element if exists, throw exception otherwise

- ## Method Details

  - ### hasNext

    boolean hasNext()
    Returns true if the iteration has more elements.

    Returns:
    true if the iteration has more elements, false otherwise

  - ### next

    E next()
    Iterates next element if exists, throw exception otherwise

    Returns:
    next element over the iterator

Package cse241.homeworks_3

Class JavaSet<E>

java.lang.Object
cse241.homeworks_3.JavaSet<E>

Type Parameters:
E - the type of elements in this set

All Implemented Interfaces:
JavaContainer<E>

---

public class JavaSet<E> extends Object implements JavaContainer<E>
A generic set implementation in Java.

- ## Nested Class Summary

  ### Nested classes/interfaces inherited from interface cse241.homeworks_3.JavaContainer

  `JavaContainer.Iterator<E>`

- ## Constructor Summary

  Constructors
  Constructor
  Description
  `JavaSet()`
  No parameter JavaSet constructor Calls the other JavaSet constructor with 10 which will be capacity of the set
  `JavaSet(int _capacity)`
  JavaSet Constructor with one parameter Constructs a set with taken capacity, then create some space for this set in the heap

- ## Method Summary

  All Methods | Instance Methods | Concrete Methods

  Modifier and Type
  Method
  Description
  `void`
  `add(E element)`
  Add method that adds element to this set.
  `boolean`
  `equals(Object obj)`
  equals method that checks if this object and taken object are equal or not
  `int`
  `getCapacity()`
  getCapacity method that returns capacity of the set

`JavaContainer.Iterator<E>`
`getIterator()`
getIterator method that generates a new iterator via setIterator class
`boolean`
`hasElement(E element)`
hasElement method that checks if taken element is in this set or not
`void`
`remove(E element)`
Remove method that removes specific element from this set
`int`
`size()`
Size method that returns size of this set
`void`
`toFile()`
toFile method that writes this set to file named "sets.txt"
`String`
`toString()`
toString method that returns this set as a string

Methods inherited from class java.lang.Object

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

- ## Constructor Details

  - ### JavaSet

    public JavaSet()
    No parameter JavaSet constructor Calls the other JavaSet constructor with 10 which will be capacity of the set

  - ### JavaSet

    public JavaSet(int _capacity)
    JavaSet Constructor with one parameter Constructs a set with taken capacity, then create some space for this set in the heap

    Parameters:
    `_capacity` - : the capacity of the object of JavaSet class

- ## Method Details

  - ### add

    public void add(E element)
    Add method that adds element to this set.

    Specified by:
    `add` in interface `JavaContainer<E>`
    Parameters:
    `element` - : The element that will be added to this set

  - ### remove

    public void remove(E element)
    Remove method that removes specific element from this set

    Specified by:
    `remove` in interface `JavaContainer<E>`
    Parameters:
    `element` - : The element that will be removed from this set

  - ### size

    public int size()
    Size method that returns size of this set

    Specified by:
    `size` in interface `JavaContainer<E>`
    Returns:
    size of this set as an integer

  - ### getIterator

public JavaContainer.Iterator<E> getIterator()
getIterator method that generates a new iterator via setIterator class

Specified by:
    `getIterator` in interface `JavaContainer`<E>
Returns:
    object of SetIterator

- ### getCapacity

public int getCapacity()
getCapacity method that returns capacity of the set

Returns:
    capacity of this set

- ### hasElement

public boolean hasElement(E element)
hasElement method that checks if taken element is in this set or not

Parameters:
    `element` - : that is checked if it is already in this set
Returns:
    true if this set contains element, false otherwise

- ### toFile

public void toFile()
toFile method that writes this set to file named "sets.txt"

Specified by:
    `toFile` in interface `JavaContainer`<E>

- ### equals

public boolean equals(Object obj)
equals method that checks if this object and taken object are equal or not

Overrides:
    `equals` in class `Object`
Parameters:
    `obj` - : ıt is set that is taken from user to compare with this set
Returns:
    true if this two set are equal, false otherwise

- ### toString

public String toString()
toString method that returns this set as a string

Overrides:
    `toString` in class `Object`
Returns:
    this set as a string

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Package cse241.homeworks_3

Class JavaVector<E>

java.lang.Object
cse241.homeworks_3.JavaVector<E>

Type Parameters:
`E` - the type of elements in this vector

All Implemented Interfaces:
`JavaContainer<E>`

---

public class JavaVector<E> extends Object implements JavaContainer<E>
A generic vector implementation in Java.

- ## Nested Class Summary

  ### Nested classes/interfaces inherited from interface cse241.homeworks_3.JavaContainer

  `JavaContainer.Iterator<E>`

- ## Constructor Summary

  Constructors
  Constructor
  Description
  `JavaVector()`
  No parameter JavaVector constructor Calls the other JavaVector constructor with 10 which will be capacity of the set
  `JavaVector(int _capacity)`
  JavaVector Constructor with one parameter Constructs a vector with taken capacity, then create some space for this set in the heap

- ## Method Summary

  All Methods Instance Methods Concrete Methods

  Modifier and Type
  Method
  Description
  `void`
  `add(E element)`
  Add method that adds element to this vector.
  `boolean`
  `equals(Object obj)`
  equals method that checks if this object and taken object are equal or not
  `int`
  `getCapacity()`

getCapacity method that returns capacity of the vector

`JavaContainer.Iterator<E>`
`getIterator()`
getIterator method that generates a new iterator via setIterator class

`void`
`remove(E element)`
Remove method that removes specific element from this vector

`int`
`size()`
Size method that returns size of this vector

`void`
`toFile()`
toFile method that writes this vector to file named "vectors.txt"

`String`
`toString()`
toString method that returns this vector as a string

Methods inherited from class java.lang.Object

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

Constructor Details

JavaVector

public JavaVector()
No parameter JavaVector constructor Calls the other JavaVector constructor with 10 which will be capacity of the set

JavaVector

public JavaVector(int _capacity)
JavaVector Constructor with one parameter Constructs a vector with taken capacity, then create some space for this set in the heap

Parameters:
`_capacity` - : the capacity of the object of JavaVector class

Method Details

add

public void add(E element)
Add method that adds element to this vector.

Specified by:
`add` in interface `JavaContainer<E>`
Parameters:
`element` - : The element that will be added to this vector

remove

public void remove(E element)
Remove method that removes specific element from this vector

Specified by:
`remove` in interface `JavaContainer<E>`
Parameters:
`element` - : The element that will be removed from this vector

size

public int size()
Size method that returns size of this vector

Specified by:
`size` in interface `JavaContainer<E>`
Returns:
size of this vector as an integer

getIterator

public JavaContainer.Iterator<E> getIterator()

getIterator method that generates a new iterator via setIterator class

Specified by:
    `getIterator` in interface `JavaContainer`<`E`>
Returns:
    object of SetIterator

- ### getCapacity

  public int getCapacity()
  getCapacity method that returns capacity of the vector

  Returns:
      capacity of this vector

- ### toFile

  public void toFile()
  toFile method that writes this vector to file named "vectors.txt"

  Specified by:
      `toFile` in interface `JavaContainer`<`E`>

- ### equals

  public boolean equals(Object obj)
  equals method that checks if this object and taken object are equal or not

  Overrides:
      `equals` in class `Object`
  Parameters:
      `obj` - : ıt is vector that is taken from user to compare with this vector
  Returns:
      true if this two vector are equal, false otherwise

- ### toString

  public String toString()
  toString method that returns this vector as a string

  Overrides:
      `toString` in class `Object`
  Returns:
      this vector as a string

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Class JavaTest

java.lang.Object
JavaTest

---

public class JavaTest extends Object
The JavaTest class provides a simple interactive console-based interface for testing the JavaSet and JavaVector classes. It allows users to add, remove, and display elements in either a set or a vector, and writes the output to files.

- ## Constructor Summary

  Constructors
  Constructor
  Description
  `JavaTest()`

- ## Method Summary

  All Methods Static Methods Concrete Methods
  Modifier and Type
  Method
  Description
  `static void`
  `addToSetOrVector(cse241.homeworks_3.JavaSet<Object> set, cse241.homeworks_3.JavaVector<Object> vector, String[] elements, char typeOfVariableInput, char containerType)`
  Adds user input elements to either a set or a vector based on the specified type of variable and container type.
  `static void`
  `display(cse241.homeworks_3.JavaSet<Object> set, cse241.homeworks_3.JavaVector<Object> vector, char containerType)`
  Displays the contents of either a set or a vector and writes the output to a file.
  `static void`
  `emptyFile(String fileName)`
  Empties the contents of a file by truncating it.
  `static void`
  `main(String[] args)`
  The main method that serves as the entry point for the JavaTest application.
  `static void`
  `removeFromSetOrVector(cse241.homeworks_3.JavaSet<Object> set, cse241.homeworks_3.JavaVector<Object> vector, String removeInput, char typeOfVariableInput, char containerType)`
  Removes user input element from either a set or a vector based on the specified type of variable and container type.
  `static void`
  `testSetAndVector()`
  Tests some methods of the JavaSet and JavaVector classes by performing various operations such as adding, removing, and comparing elements.

  ### Methods inherited from class java.lang.Object

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

Constructor Details

JavaTest

public JavaTest()

Method Details

main

public static void main(String[] args)
The main method that serves as the entry point for the JavaTest application. It has an interactive console interface for testing the JavaSet and JavaVector classes.

Parameters:
`args` - command-line arguments (not used)

testSetAndVector

public static void testSetAndVector()
Tests some methods of the JavaSet and JavaVector classes by performing various operations such as adding, removing, and comparing elements.

addToSetOrVector

public static void addToSetOrVector(cse241.homeworks_3.JavaSet<Object> set, cse241.homeworks_3.JavaVector<Object> vector, String[] elements, char typeOfVariableInput, char containerType)
Adds user input elements to either a set or a vector based on the specified type of variable and container type.

Parameters:
`set` - the JavaSet object to add elements to
`vector` - the JavaVector object to add elements to
`elements` - the elements to be added
`typeOfVariableInput` - the type of variable input (int, double, String)
`containerType` - the type of container (set or vector)

removeFromSetOrVector

public static void removeFromSetOrVector(cse241.homeworks_3.JavaSet<Object> set, cse241.homeworks_3.JavaVector<Object> vector, String removeInput, char typeOfVariableInput, char containerType)
Removes user input element from either a set or a vector based on the specified type of variable and container type.

Parameters:
`set` - the JavaSet object to remove element from
`vector` - the JavaVector object to remove element from
`removeInput` - the element to be removed
`typeOfVariableInput` - the type of variable input (int, double, String)
`containerType` - the type of container (set or vector)

display

public static void display(cse241.homeworks_3.JavaSet<Object> set, cse241.homeworks_3.JavaVector<Object> vector, char containerType)
Displays the contents of either a set or a vector and writes the output to a file.

Parameters:
`set` - the JavaSet object to display
`vector` - the JavaVector object to display
`containerType` - the type of container (set or vector)

emptyFile

public static void emptyFile(String fileName)
Empties the contents of a file by truncating it.

Parameters:
`fileName` - the name of the file to be emptied