# ContainerModel

5.3

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- file checkpointable.hh

  *Define the class JeodCheckpointable, the base class for checkpointing and restoring data that are opaque to the simulation engine.*
- file container.hh

  *Define the class JeodContainer, which adds checkpointability to an STL sequence container replacement.*
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- file jeod_sequence_container.hh

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- file object_set.hh

  *Define checkpointable replacements for STL associative containers.*
- file object_vector.hh

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- file pointer_list.hh

  *Define checkpointable replacements for STL sequence containers.*
- file pointer_set.hh

  *Define checkpointable replacements for STL associative containers.*
- file pointer_vector.hh

  *Define checkpointable replacements for STL sequence containers.*
- file primitive_container.hh

  *Define class template JeodPrimitiveContainer.*
- file primitive_list.hh

  *Define checkpointable replacements for STL sequence containers.*
- file primitive_serializer.hh

  *Define class template JeodPrimitiveSerializer.*
- file primitive_set.hh

  *Define checkpointable replacements for STL associative containers.*
- file primitive_vector.hh

  *Define checkpointable replacements for STL sequence containers.*
- file simple_checkpointable.hh

  *Define the class SimpleCheckpointable.*
- file primitive_serializer.cc

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## Namespaces

- jeod

  *Namespace jeod.*

## Macros

- #define __USE_ISOC99

## Functions

- template<typename ElemType , typename ContainerType >
  bool operator< (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is less than y.*
- template<typename ElemType , typename ContainerType >
  bool operator< (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is less than y.*
- template<typename ElemType , typename ContainerType >
  bool operator< (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is less than y.*
- template<typename ElemType , typename ContainerType >
  bool operator== (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator== (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator== (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator> (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is greater than y.*
- template<typename ElemType , typename ContainerType >
  bool operator> (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is greater than y.*
- template<typename ElemType , typename ContainerType >
  bool operator> (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is greater than y.*
- template<typename ElemType , typename ContainerType >
  bool operator>= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is greater than or equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator>= (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is greater than or equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator>= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is greater than or equal to y.*

- template<typename ElemType , typename ContainerType >
  bool operator!= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is not equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator!= (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is not equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator!= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is not equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator<= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is less than or equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator<= (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is less than or equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator<= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is less than or equal to y.*

### 6.3.1 Detailed Description

### 6.3.2 Macro Definition Documentation

#### 6.3.2.1 __USE_ISOC99

```
#define __USE_ISOC99
```

Definition at line 23 of file primitive_serializer.cc.

### 6.3.3 Function Documentation

#### 6.3.3.1 operator"!=() [1/3]

```
template<typename ElemType , typename ContainerType >
bool operator!= (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const ContainerType & y )  [inline]
```

Test if x is not equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x != y

Definition at line 329 of file jeod_container_compare.hh.

#### 6.3.3.2 operator"!=() [2/3]

```
template<typename ElemType , typename ContainerType >
bool operator!= (
            const ContainerType & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is not equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x != y

Definition at line 341 of file jeod_container_compare.hh.

#### 6.3.3.3 operator"!=() [3/3]

```
template<typename ElemType , typename ContainerType >
bool operator!= (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is not equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x != y

Definition at line 353 of file jeod_container_compare.hh.

#### 6.3.3.4 operator<() [1/3]

```
template<typename ElemType , typename ContainerType >
bool operator< (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const ContainerType & y )  [inline]
```

Test if x is less than y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x < y

Definition at line 181 of file jeod_container_compare.hh.

#### 6.3.3.5 operator<() [2/3]

```
template<typename ElemType , typename ContainerType >
bool operator< (
            const ContainerType & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is less than y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x < y

Definition at line 193 of file jeod_container_compare.hh.

#### 6.3.3.6 operator<() [3/3]

```
template<typename ElemType , typename ContainerType >
bool operator< (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is less than y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x < y

Definition at line 205 of file jeod_container_compare.hh.

#### 6.3.3.7 operator<=() [1/3]

```
template<typename ElemType , typename ContainerType >
bool operator<= (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const ContainerType & y )  [inline]
```

Test if x is less than or equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x <= y

Definition at line 366 of file jeod_container_compare.hh.

#### 6.3.3.8 operator<=() [2/3]

```
template<typename ElemType , typename ContainerType >
bool operator<= (
            const ContainerType & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is less than or equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x <= y

Definition at line 378 of file jeod_container_compare.hh.

#### 6.3.3.9 operator<=() [3/3]

```
template<typename ElemType , typename ContainerType >
bool operator<= (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is less than or equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x <= y

Definition at line 390 of file jeod_container_compare.hh.

#### 6.3.3.10 operator==() [1/3]

```
template<typename ElemType , typename ContainerType >
bool operator== (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const ContainerType & y )  [inline]
```

Test if x is equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x == y

Definition at line 218 of file jeod_container_compare.hh.

#### 6.3.3.11 operator==() [2/3]

```
template<typename ElemType , typename ContainerType >
bool operator== (
            const ContainerType & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x == y

Definition at line 230 of file jeod_container_compare.hh.

#### 6.3.3.12 operator==() [3/3]

```
template<typename ElemType , typename ContainerType >
bool operator== (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x == y

Definition at line 242 of file jeod_container_compare.hh.

#### 6.3.3.13 operator>() [1/3]

```
template<typename ElemType , typename ContainerType >
bool operator> (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const ContainerType & y )  [inline]
```

Test if x is greater than y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x > y

Definition at line 255 of file jeod_container_compare.hh.

#### 6.3.3.14 operator>() [2/3]

```
template<typename ElemType , typename ContainerType >
bool operator> (
            const ContainerType & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is greater than y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x > y

Definition at line 267 of file jeod_container_compare.hh.

#### 6.3.3.15 operator>() [3/3]

```
template<typename ElemType , typename ContainerType >
bool operator> (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is greater than y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x > y

Definition at line 279 of file jeod_container_compare.hh.

#### 6.3.3.16 operator>=() [1/3]

```
template<typename ElemType , typename ContainerType >
bool operator>= (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const ContainerType & y )  [inline]
```

Test if x is greater than or equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x >= y

Definition at line 292 of file jeod_container_compare.hh.

#### 6.3.3.17 operator>=() [2/3]

```
template<typename ElemType , typename ContainerType >
bool operator>= (
            const ContainerType & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is greater than or equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x >= y

Definition at line 304 of file jeod_container_compare.hh.

#### 6.3.3.18 operator>=() [3/3]

```
template<typename ElemType , typename ContainerType >
bool operator>= (
            const jeod::JeodSTLContainer< ElemType, ContainerType > & x,
            const jeod::JeodSTLContainer< ElemType, ContainerType > & y )  [inline]
```

Test if x is greater than or equal to y.

**Parameters**

| | |
|---|---|
| *x* | Comparand |
| *y* | Comparand |

**Returns**

x >= y

Definition at line 316 of file jeod_container_compare.hh.

# Chapter 7

# Namespace Documentation

## 7.1 jeod Namespace Reference

Namespace jeod.

### Data Structures

- class JeodAssociativeContainer

  *This is the base class for the JEOD replacements of the STL associative containers.*
- class JeodCheckpointable

  *A JeodCheckpointable is an object whose contents are opaque to Trick, and presumably other simulation engines, whose contents can nonetheless be checkpointed and restarted by using the methods defined herein.*
- class JeodContainer

  *A JeodContainer is a JEOD STL sequence container replacement whose contents are checkpointable and restorable.*
- class JeodList

  *The JEOD replacement for std::list.*
- class JeodObjectContainer

  *A JeodObjectContainer is a JeodContainer that contains objects of type ElemType.*
- class JeodObjectList

  *Defines a registry for defining a checkpointable list of objects.*
- class JeodObjectSet

  *Defines a registry for defining a checkpointable set of objects.*
- class JeodObjectVector

  *Defines a registry for defining a checkpointable vector of objects.*
- class JeodPointerContainer

  *A JeodPointerContainer is a JeodContainer that contains pointers to objects of type ElemType.*
- class JeodPointerList

  *Defines a registry for defining a checkpointable list of pointers.*
- class JeodPointerSet

  *Defines a registry for defining a checkpointable set of pointers.*
- class JeodPointerVector

  *Defines a registry for defining a checkpointable vector of pointers.*
- class JeodPrimitiveContainer

  *A JeodPrimitiveContainer is a JeodContainer that contains primitive data of type ElemType.*
- class JeodPrimitiveList

*Defines a registry for defining a checkpointable list of primitives.*

- class JeodPrimitiveSerializer

  *Serializer / deserializer for primitive data.*
- class JeodPrimitiveSerializerBase

  *Base class for serializing / deserializing primitive data.*
- class JeodPrimitiveSet

  *Defines a registry for defining a checkpointable set of primitives.*
- class JeodPrimitiveVector

  *Defines a registry for defining a checkpointable vector of primitives.*
- class JeodSequenceContainer

  *This is the base class for the JEOD replacements of the STL sequence containers.*
- class JeodSet

  *The JEOD replacement for std::set.*
- class JeodSTLContainer

  *This is the base class for the JEOD replacements of the STL containers.*
- class JeodVector

  *The JEOD replacement for std::vector.*
- class SimpleCheckpointable

  *The SimpleCheckpointable class provides a simple checkpoint/restart interface by which an object can complete the restart process.*

### 7.1.1 Detailed Description

Namespace jeod.

# Chapter 8

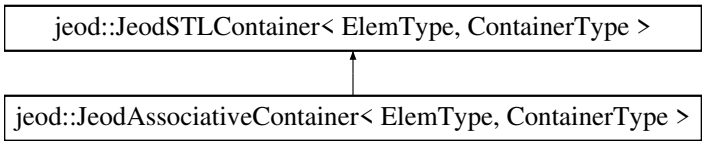
# Data Structure Documentation

## 8.1 jeod::JeodAssociativeContainer< ElemType, ContainerType > Class Template Reference

This is the base class for the JEOD replacements of the STL associative containers.

`#include <jeod_associative_container.hh>`

Inheritance diagram for jeod::JeodAssociativeContainer< ElemType, ContainerType >:




### Public Types

- using this_container_type = JeodAssociativeContainer< ElemType, ContainerType >

  *This type.*
- using base_container_type = JeodSTLContainer< ElemType, ContainerType >

  *The JeodSTLContainer.*
- using key_type = typename ContainerType::key_type

  *Import the ContainerType::key_type.*
- using key_compare = typename ContainerType::key_compare

  *Import the ContainerType::key_compare.*
- using value_compare = typename ContainerType::value_compare

  *Import the ContainerType::value_compare.*

## Public Member Functions

- virtual ~JeodAssociativeContainer ()=default

  *Destructor.*
- key_compare key_comp () const

  *Returns the key comparison object used to populate the contents.*
- value_compare value_comp () const

  *Returns the value comparison object used to populate the contents.*
- base_container_type::size_type count (const key_type &x) const

  *Find the number of occurrences of the specified element.*
- base_container_type::iterator find (const key_type &x)

  *Find the element specified by the given key.*
- base_container_type::const_iterator find (const key_type &x) const

  *Find the element specified by the given key.*
- base_container_type::iterator lower_bound (const key_type &x)

  *Find the start of a sequence specified by the given key.*
- base_container_type::const_iterator lower_bound (const key_type &x) const

  *Find the start of a sequence specified by the given key.*
- base_container_type::iterator upper_bound (const key_type &x)

  *Find the end of a sequence specified by the given key.*
- base_container_type::const_iterator upper_bound (const key_type &x) const

  *Find the end of a sequence specified by the given key.*
- std::pair< typename base_container_type::iterator, typename base_container_type::iterator > equal_range (const key_type &x)

  *Find the start and end of a sequence specified by the given key.*
- std::pair< typename base_container_type::const_iterator, typename base_container_type::const_iterator > equal_range (const key_type &x) const

  *Find the start and end of a sequence specified by the given key.*
- template<class InputIterator >
  void insert (InputIterator first, InputIterator last)

  *Insert elements, initializing the inserted elements from the values pointed to by an iterator.*
- std::pair< typename base_container_type::iterator, bool > insert (const typename base_container_type::value_type &new_elem)

  *Inserts the provided value into the associative list.*
- void erase (typename base_container_type::iterator position)

  *Erase one item.*
- void erase (typename base_container_type::iterator first, typename base_container_type::iterator last)

  *Erase a sequence of items.*
- base_container_type::size_type erase (const key_type &x)

  *Erases the item(s) specified by supplied key from the contents.*
- iterator insert (iterator position, const value_type &new_elem)

  *Insert a new element initialized with new_elem before the iterator position.*

## Protected Member Functions

- JeodAssociativeContainer ()=default

  *Default constructor.*
- JeodAssociativeContainer (const this_container_type &src)

  *Copy constructor.*
- JeodAssociativeContainer (const ContainerType &src)

  *Copy constructor from STL container.*

## Additional Inherited Members

### 8.1.1 Detailed Description

**template<typename ElemType, typename ContainerType>**
**class jeod::JeodAssociativeContainer< ElemType, ContainerType >**

This is the base class for the JEOD replacements of the STL associative containers.

The class derives from JeodSTLContainer, the base class for the JEOD replacements of the STL containers.

A key goal of the JEOD STL associative container replacement effort is to provide checkpointable replacements that transparently provide the full functionality of the ISO/IEC 14882:2003 STL associative containers. This class begins that effort by defining types and member functions common to the STL set and map class templates. Non-common methods are the responsibility of derived class templates specialized to a specific container types.

**Note**

Exceptions to full functionality goal: The above goal is not and never will be fully achieved. Exceptions are:

- The full set of STL associative container constructors is not supplied.

Definition at line 101 of file jeod_associative_container.hh.

### 8.1.2 Member Typedef Documentation

#### 8.1.2.1 base_container_type

```
template<typename ElemType, typename ContainerType>
using jeod::JeodAssociativeContainer< ElemType, ContainerType >::base_container_type = JeodSTLContainer<Elem↩
Type, ContainerType>
```

The JeodSTLContainer.

Definition at line 114 of file jeod_associative_container.hh.

#### 8.1.2.2 key_compare

```
template<typename ElemType, typename ContainerType>
using jeod::JeodAssociativeContainer< ElemType, ContainerType >::key_compare = typename Container↩
Type::key_compare
```

Import the ContainerType::key_compare.

Definition at line 124 of file jeod_associative_container.hh.

#### 8.1.2.3 key_type

```
template<typename ElemType, typename ContainerType>
using jeod::JeodAssociativeContainer< ElemType, ContainerType >::key_type = typename Container↩
Type::key_type
```

Import the ContainerType::key_type.

Definition at line 119 of file jeod_associative_container.hh.

#### 8.1.2.4 this_container_type

```
template<typename ElemType, typename ContainerType>
using jeod::JeodAssociativeContainer< ElemType, ContainerType >::this_container_type = JeodAssociativeContain
Type, ContainerType>
```

This type.

Definition at line 109 of file jeod_associative_container.hh.

#### 8.1.2.5 value_compare

```
template<typename ElemType, typename ContainerType>
using jeod::JeodAssociativeContainer< ElemType, ContainerType >::value_compare = typename
ContainerType::value_compare
```

Import the ContainerType::value_compare.

Definition at line 129 of file jeod_associative_container.hh.

### 8.1.3 Constructor & Destructor Documentation

#### 8.1.3.1 ~JeodAssociativeContainer()

```
template<typename ElemType, typename ContainerType>
virtual jeod::JeodAssociativeContainer< ElemType, ContainerType >::~JeodAssociativeContainer
( )  [virtual], [default]
```

Destructor.

#### 8.1.3.2 JeodAssociativeContainer() [1/3]

```
template<typename ElemType, typename ContainerType>
jeod::JeodAssociativeContainer< ElemType, ContainerType >::JeodAssociativeContainer ( )  [protected],
[default]
```

Default constructor.

Note: Making this protected precludes someone from declaring an object to be of type JEODSTLContainer. Access is via some other class that inherits from this class.

#### 8.1.3.3 JeodAssociativeContainer() [2/3]

```
template<typename ElemType, typename ContainerType>
jeod::JeodAssociativeContainer< ElemType, ContainerType >::JeodAssociativeContainer (
            const this_container_type & src )  [inline], [protected]
```

Copy constructor.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 318 of file jeod_associative_container.hh.

#### 8.1.3.4 JeodAssociativeContainer() [3/3]

```
template<typename ElemType, typename ContainerType>
jeod::JeodAssociativeContainer< ElemType, ContainerType >::JeodAssociativeContainer (
            const ContainerType & src )  [inline], [explicit], [protected]
```

Copy constructor from STL container.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 327 of file jeod_associative_container.hh.

### 8.1.4 Member Function Documentation

#### 8.1.4.1 count()

```
template<typename ElemType, typename ContainerType>
base_container_type::size_type jeod::JeodAssociativeContainer< ElemType, ContainerType >↩
::count (
            const key_type & x ) const  [inline]
```

Find the number of occurrences of the specified element.

Definition at line 175 of file jeod_associative_container.hh.

#### 8.1.4.2 equal_range() [1/2]

```
template<typename ElemType, typename ContainerType>
std::pair<typename base_container_type::iterator, typename base_container_type::iterator>
jeod::JeodAssociativeContainer< ElemType, ContainerType >::equal_range (
            const key_type & x )  [inline]
```

Find the start and end of a sequence specified by the given key.

Definition at line 231 of file jeod_associative_container.hh.

#### 8.1.4.3 equal_range() [2/2]

```
template<typename ElemType, typename ContainerType>
std::pair<typename base_container_type::const_iterator, typename base_container_type::const_iterator>
jeod::JeodAssociativeContainer< ElemType, ContainerType >::equal_range (
            const key_type & x ) const  [inline]
```

Find the start and end of a sequence specified by the given key.

Definition at line 240 of file jeod_associative_container.hh.

#### 8.1.4.4 erase() [1/3]

```
template<typename ElemType, typename ContainerType>
void jeod::JeodAssociativeContainer< ElemType, ContainerType >::erase (
            typename base_container_type::iterator position )  [inline]
```

Erase one item.

**Parameters**

| | |
|---|---|
| *position* | Position to be erased |

Definition at line 277 of file jeod_associative_container.hh.

#### 8.1.4.5 erase() [2/3]

```
template<typename ElemType, typename ContainerType>
void jeod::JeodAssociativeContainer< ElemType, ContainerType >::erase (
            typename base_container_type::iterator first,
            typename base_container_type::iterator last )  [inline]
```

Erase a sequence of items.

**Parameters**

| | |
|---|---|
| *first* | First element to be erased |
| *last* | One past last element to be erased |

Definition at line 287 of file jeod_associative_container.hh.

#### 8.1.4.6 erase() [3/3]

```
template<typename ElemType, typename ContainerType>
base_container_type::size_type jeod::JeodAssociativeContainer< ElemType, ContainerType >↩
::erase (
            const key_type & x )  [inline]
```

Erases the item(s) specified by supplied key from the contents.

**Parameters**

| | |
|---|---|
| *x* | Key of item(s) to be erased |

Definition at line 296 of file jeod_associative_container.hh.

#### 8.1.4.7 find() [1/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::iterator jeod::JeodAssociativeContainer< ElemType, ContainerType >::find
(
            const key_type & x )  [inline]
```

Find the element specified by the given key.

Definition at line 183 of file jeod_associative_container.hh.

#### 8.1.4.8 find() [2/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::const_iterator jeod::JeodAssociativeContainer< ElemType, ContainerType
>::find (
            const key_type & x ) const  [inline]
```

Find the element specified by the given key.

Definition at line 191 of file jeod_associative_container.hh.

#### 8.1.4.9 insert() [1/3]

```
template<typename ElemType, typename ContainerType>
iterator jeod::JeodSTLContainer< ElemType, ContainerType >::insert  [inline]
```

Insert a new element initialized with *new_elem* before the iterator *position*.

**Parameters**

| | |
|---|---|
| *position* | Insertion position |
| *new_elem* | Element value to be inserted |

**Returns**

Iterator that points to the newly-inserted element

Definition at line 340 of file jeod_stl_container.hh.

#### 8.1.4.10 insert() [2/3]

```
template<typename ElemType, typename ContainerType>
template<class InputIterator >
void jeod::JeodAssociativeContainer< ElemType, ContainerType >::insert (
            InputIterator first,
            InputIterator last )  [inline]
```

Insert elements, initializing the inserted elements from the values pointed to by an iterator.

**Parameters**

| | |
|---|---|
| *first* | Input iterator |
| *last* | Input iterator |

Definition at line 258 of file jeod_associative_container.hh.

#### 8.1.4.11 insert() [3/3]

```
template<typename ElemType, typename ContainerType>
std::pair<typename base_container_type::iterator, bool> jeod::JeodAssociativeContainer< Elem↩
Type, ContainerType >::insert (
            const typename base_container_type::value_type & new_elem )  [inline]
```

Inserts the provided value into the associative list.

**Parameters**

| | |
|---|---|
| *new_elem* | Element value to be inserted |

Definition at line 267 of file jeod_associative_container.hh.

#### 8.1.4.12 key_comp()

```
template<typename ElemType, typename ContainerType>
key_compare jeod::JeodAssociativeContainer< ElemType, ContainerType >::key_comp ( ) const
[inline]
```

Returns the key comparison object used to populate the contents.

Definition at line 151 of file jeod_associative_container.hh.

#### 8.1.4.13 lower_bound() [1/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::iterator jeod::JeodAssociativeContainer< ElemType, ContainerType >↩
::lower_bound (
            const key_type & x )  [inline]
```

Find the start of a sequence specified by the given key.

Definition at line 199 of file jeod_associative_container.hh.

#### 8.1.4.14 lower_bound() [2/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::const_iterator jeod::JeodAssociativeContainer< ElemType, ContainerType
>::lower_bound (
            const key_type & x ) const  [inline]
```

Find the start of a sequence specified by the given key.

Definition at line 207 of file jeod_associative_container.hh.

#### 8.1.4.15 upper_bound() [1/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::iterator jeod::JeodAssociativeContainer< ElemType, ContainerType >↩
::upper_bound (
            const key_type & x )  [inline]
```

Find the end of a sequence specified by the given key.

Definition at line 215 of file jeod_associative_container.hh.

#### 8.1.4.16 upper_bound() [2/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::const_iterator jeod::JeodAssociativeContainer< ElemType, ContainerType
>::upper_bound (
            const key_type & x ) const  [inline]
```

Find the end of a sequence specified by the given key.

Definition at line 223 of file jeod_associative_container.hh.

#### 8.1.4.17 value_comp()

```
template<typename ElemType, typename ContainerType>
value_compare jeod::JeodAssociativeContainer< ElemType, ContainerType >::value_comp ( ) const
[inline]
```

Returns the value comparison object used to populate the contents.

Definition at line 159 of file jeod_associative_container.hh.

The documentation for this class was generated from the following file:

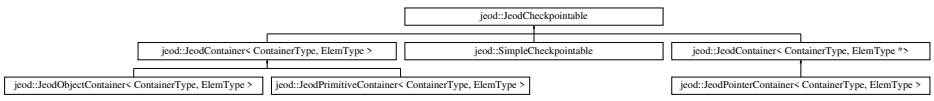
- jeod_associative_container.hh

## 8.2 jeod::JeodCheckpointable Class Reference

A JeodCheckpointable is an object whose contents are opaque to Trick, and presumably other simulation engines, whose contents can nonetheless be checkpointed and restarted by using the methods defined herein.

`#include <checkpointable.hh>`

Inheritance diagram for jeod::JeodCheckpointable:



## Public Member Functions

- JeodCheckpointable ()=default
- virtual ~JeodCheckpointable ()=default
- JeodCheckpointable (const JeodCheckpointable &)=delete
- JeodCheckpointable & operator= (const JeodCheckpointable &)=delete
- virtual void pre_checkpoint ()

  *In general, perform object-specific operations that need to be performed in anticipation of a checkpoint, typically allocating and populating memory.*
- virtual void post_checkpoint ()

  *In general, perform object-specific operations that need to be performed after checkpoint completion, typically freeing memory used for checkpointing.*
- virtual void pre_restart ()

  *In general, perform object-specific operations that need to be performed in anticipation of a restart, typically releasing resources.*
- virtual void post_restart ()

  *In general, perform object-specific operations that need to be performed after restart completion.*
- virtual void initialize_checkpointable (const void *container, const std::type_info &container_type, const std::string &elem_name)

  *In general, perform initialization actions such as obtaining requisite type information, registering Checkpointable objects contained within the object, etc.*
- virtual void undo_initialize_checkpointable (const void *container, const std::type_info &container_type, const std::string &elem_name)

  *In general, undo external actions performed by initialize_checkpointable.*
- virtual const std::string get_init_value ()

  *In general, return the value of the initialization action.*
- virtual const std::string get_final_name ()

  *In general, return the name of the finalization action.*
- virtual const std::string get_final_value ()

  *In general, return the value of the finalization action.*
- virtual void start_checkpoint ()=0

  *Prepare to checkpoint the object in question.*
- virtual void advance_checkpoint ()=0

  *Advance to the next item to be checkpointed.*
- virtual bool is_checkpoint_finished ()=0

  *Return true if all contents have been checkpointed, false otherwise.*
- virtual const std::string get_init_name ()=0

  *Return the name of the action, if any, that will be performed prior to performing the individual actions.*
- virtual const std::string get_item_name ()=0

  *Return the name of the action that will restore the value at the current checkpoint position.*
- virtual const std::string get_item_value ()=0

  *Return the value of the item to be written to the checkpoint file.*
- virtual int perform_restore_action (const std::string &action_name, const std::string &action_value)=0

  *Perform a checkpoint-restart action that will, in part, restore the object to its state at the time of the checkpoint.*

## Friends

- class InputProcessor
- void init_attrjeod__JeodCheckpointable ()

### 8.2.1 Detailed Description

A JeodCheckpointable is an object whose contents are opaque to Trick, and presumably other simulation engines, whose contents can nonetheless be checkpointed and restarted by using the methods defined herein.

Definition at line 78 of file checkpointable.hh.

### 8.2.2 Constructor & Destructor Documentation

#### 8.2.2.1 JeodCheckpointable() [1/2]

```
jeod::JeodCheckpointable::JeodCheckpointable ( )  [default]
```

#### 8.2.2.2 ~JeodCheckpointable()

```
virtual jeod::JeodCheckpointable::~JeodCheckpointable ( )  [virtual], [default]
```

#### 8.2.2.3 JeodCheckpointable() [2/2]

```
jeod::JeodCheckpointable::JeodCheckpointable (
            const JeodCheckpointable &  )  [delete]
```

### 8.2.3 Member Function Documentation

#### 8.2.3.1 advance_checkpoint()

```
virtual void jeod::JeodCheckpointable::advance_checkpoint ( )  [pure virtual]
```

Advance to the next item to be checkpointed.

Implemented in jeod::JeodContainer< ContainerType, ElemType >, jeod::JeodContainer< ContainerType, ElemType * >, jeod::JeodObjectContainer< ContainerType, ElemType >, and jeod::SimpleCheckpointable.

#### 8.2.3.2 get_final_name()

```
const std::string jeod::JeodCheckpointable::get_final_name ( )  [inline], [virtual]
```

In general, return the name of the finalization action.

The returned value is written to the checkpoint file as the name of the final action, but only if this name is not empty.

The default implementation is the empty string.

Reimplemented in jeod::JeodContainer< ContainerType, ElemType >, and jeod::JeodContainer< ContainerType, ElemType *>.

Definition at line 190 of file checkpointable.hh.

#### 8.2.3.3 get_final_value()

```
const std::string jeod::JeodCheckpointable::get_final_value ( )  [inline], [virtual]
```

In general, return the value of the finalization action.

The returned value is written to the checkpoint file as the argument of the final action, but only if the finalization action is not empty.

The default implementation is the empty string.

Reimplemented in jeod::JeodObjectContainer< ContainerType, ElemType >.

Definition at line 202 of file checkpointable.hh.

#### 8.2.3.4 get_init_name()

```
virtual const std::string jeod::JeodCheckpointable::get_init_name ( )  [pure virtual]
```

Return the name of the action, if any, that will be performed prior to performing the individual actions.

Note: The init name must be alphanumeric or empty.

Implemented in jeod::JeodContainer< ContainerType, ElemType >, jeod::JeodContainer< ContainerType, ElemType *>, and jeod::SimpleCheckpointable.

#### 8.2.3.5 get_init_value()

```
const std::string jeod::JeodCheckpointable::get_init_value ( )  [inline], [virtual]
```

In general, return the value of the initialization action.

The returned value is written to the checkpoint file as the argument of the init action, but only if the initialization action is not empty.

The default implementation is the empty string.

Definition at line 178 of file checkpointable.hh.

#### 8.2.3.6 get_item_name()

```
virtual const std::string jeod::JeodCheckpointable::get_item_name ( )  [pure virtual]
```

Return the name of the action that will restore the value at the current checkpoint position.

This action name and the corresponding value will be written to the checkpoint file in the form "owner.action(value);". Note: The item name must be alphanumeric.

Implemented in jeod::JeodContainer< ContainerType, ElemType >, jeod::JeodContainer< ContainerType, ElemType * >, and jeod::SimpleCheckpointable.

#### 8.2.3.7 get_item_value()

```
virtual const std::string jeod::JeodCheckpointable::get_item_value ( )  [pure virtual]
```

Return the value of the item to be written to the checkpoint file.

Translation of the true value to a string is up to the implementation. The string value must be something that the restore_perform_action method can translate back to the true value and should also be human-readable; people as well as the Memory Manager read checkpoint files.

Implemented in jeod::JeodObjectContainer< ContainerType, ElemType >, jeod::JeodPointerContainer< ContainerType, ElemType >, jeod::JeodPrimitiveContainer< ContainerType, ElemType >, and jeod::SimpleCheckpointable.

#### 8.2.3.8 initialize_checkpointable()

```
void jeod::JeodCheckpointable::initialize_checkpointable (
            const void * container,
            const std::type_info & container_type,
            const std::string & elem_name )  [inline], [virtual]
```

In general, perform initialization actions such as obtaining requisite type information, registering Checkpointable objects contained within the object, etc.

The default implementation is to do nothing.

**Parameters**

| | |
|---|---|
| *container* | The object that contains this object. |
| *container_type* | The type of the containing object. |
| *elem_name* | The name of the this object in the containing object. |

Reimplemented in jeod::JeodContainer< ContainerType, ElemType >, jeod::JeodContainer< ContainerType, ElemType * >, and jeod::JeodPointerContainer< ContainerType, ElemType >.

Definition at line 265 of file checkpointable.hh.

#### 8.2.3.9 is_checkpoint_finished()

```
virtual bool jeod::JeodCheckpointable::is_checkpoint_finished ( )  [pure virtual]
```

Return true if all contents have been checkpointed, false otherwise.

Implemented in jeod::JeodContainer< ContainerType, ElemType >, jeod::JeodContainer< ContainerType, ElemType *>, and jeod::SimpleCheckpointable.

#### 8.2.3.10 operator=()

```
JeodCheckpointable& jeod::JeodCheckpointable::operator= (
            const JeodCheckpointable &  )  [delete]
```

#### 8.2.3.11 perform_restore_action()

```
virtual int jeod::JeodCheckpointable::perform_restore_action (
            const std::string & action_name,
            const std::string & action_value )  [pure virtual]
```

Perform a checkpoint-restart action that will, in part, restore the object to its state at the time of the checkpoint.

The method is called for each entry in the checkpoint file that pertains to this object.

**Parameters**

| | |
|---|---|
| *action_name* | The name of the action. |
| *action_value* | The value of the action. |

**Returns**

Success (zero) / failure (non-zero).

Implemented in jeod::JeodContainer< ContainerType, ElemType >, jeod::JeodContainer< ContainerType, ElemType *>, and jeod::SimpleCheckpointable.

#### 8.2.3.12 post_checkpoint()

```
void jeod::JeodCheckpointable::post_checkpoint ( )  [inline], [virtual]
```

In general, perform object-specific operations that need to be performed after checkpoint completion, typically freeing memory used for checkpointing.

The simulation engine calls this method after checkpoint-proper completion.

The default implementation is to do nothing.

Reimplemented in jeod::JeodObjectContainer< ContainerType, ElemType >.

Definition at line 226 of file checkpointable.hh.

#### 8.2.3.13 post_restart()

```
void jeod::JeodCheckpointable::post_restart ( )  [inline], [virtual]
```

In general, perform object-specific operations that need to be performed after restart completion.

The default implementation is to do nothing.

Reimplemented in jeod::JeodObjectContainer< ContainerType, ElemType >.

Definition at line 249 of file checkpointable.hh.

#### 8.2.3.14 pre_checkpoint()

```
void jeod::JeodCheckpointable::pre_checkpoint ( )  [inline], [virtual]
```

In general, perform object-specific operations that need to be performed in anticipation of a checkpoint, typically allocating and populating memory.

The simulation engine calls this method prior to checkpointing allocations.

The default implementation is to do nothing.

Reimplemented in jeod::JeodObjectContainer< ContainerType, ElemType >.

Definition at line 214 of file checkpointable.hh.

#### 8.2.3.15 pre_restart()

```
void jeod::JeodCheckpointable::pre_restart ( )  [inline], [virtual]
```

In general, perform object-specific operations that need to be performed in anticipation of a restart, typically releasing resources.

The simulation engine calls this method prior to restoring allocated data.

The default implementation is to do nothing.

Definition at line 238 of file checkpointable.hh.

#### 8.2.3.16 start_checkpoint()

```
virtual void jeod::JeodCheckpointable::start_checkpoint ( )  [pure virtual]
```

Prepare to checkpoint the object in question.

Implemented in jeod::JeodContainer< ContainerType, ElemType >, jeod::JeodContainer< ContainerType, ElemType *>, jeod::JeodObjectContainer< ContainerType, ElemType >, and jeod::SimpleCheckpointable.

#### 8.2.3.17 undo_initialize_checkpointable()

```
void jeod::JeodCheckpointable::undo_initialize_checkpointable (
             const void * container,
             const std::type_info & container_type,
             const std::string & elem_name )  [inline], [virtual]
```

In general, undo external actions performed by initialize_checkpointable.

The default implementation is to do nothing.

**Parameters**

| | |
|---|---|
| *container* | The object that contains this object. |
| *container_type* | The type of the containing object. |
| *elem_name* | The name of the this object in the containing object. |

Definition at line 281 of file checkpointable.hh.

### 8.2.4 Friends And Related Function Documentation

#### 8.2.4.1 init_attrjeod__JeodCheckpointable

```
void init_attrjeod__JeodCheckpointable ( )  [friend]
```

#### 8.2.4.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 80 of file checkpointable.hh.

The documentation for this class was generated from the following file:

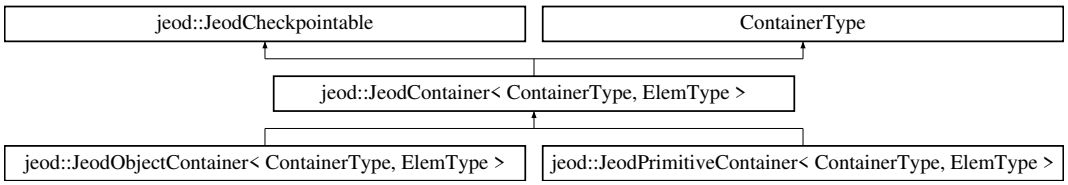
- checkpointable.hh

## 8.3 jeod::JeodContainer< ContainerType, ElemType > Class Template Reference

A JeodContainer is a JEOD STL sequence container replacement whose contents are checkpointable and restorable.

`#include <container.hh>`

Inheritance diagram for jeod::JeodContainer< ContainerType, ElemType >:




### Public Types

- using this_container_type = JeodContainer< ContainerType, ElemType >

  *This particular JeodContainer type.*
- using stl_container_type = typename ContainerType::stl_container_type

  *Import the ContainerType's container type.*

### Public Member Functions

- JeodContainer ()

  *Default constructor.*
- JeodContainer (const this_container_type &source)

  *Copy constructor.*
- JeodContainer (const stl_container_type &source)

  *Copy constructor.*
- JeodContainer & operator= (const this_container_type &source)

  *Assignment operator.*
- JeodContainer & operator= (const stl_container_type &source)

  *Assignment operator.*
- ~JeodContainer () override=default

  *Destructor.*
- void swap_contents (this_container_type &other)

  *Swap STL sequence container contents – but not the stuff related to checkpoint or restart.*
- void swap_contents (stl_container_type &other)

  *Swap STL sequence container contents – but not the stuff related to checkpoint or restart.*
- virtual void perform_insert_action (const std::string &value)=0

  *Push a value onto the end of the contents.*
- virtual void perform_cleanup_action (const std::string &value)

  *Cleanup detritus created during the restore process.*
- void initialize_checkpointable (const void *container, const std::type_info &container_type, const std::string &elem_name) override

  *Initialize a checkpointable object, called by the checkpoint manager.*
- void start_checkpoint () override

  *Prepare to checkpoint the object.*

- void advance_checkpoint () override

  *Advance to the next item to be checkpointed.*
- bool is_checkpoint_finished () override

  *Indicate whether the checkpoint dump of this object is finished.*
- const std::string get_init_name () override

  *Names the action to be performed prior to performing any of the restore actions.*
- const std::string get_item_name () override

  *Return the name of the action to be printed along with the current value.*
- const std::string get_final_name () override

  *Names the action to be performed after to performing any of the restore actions.*
- int perform_restore_action (const std::string &action_name, const std::string &action_value) override

  *Perform a checkpoint-restart action that will, in part, restore the object to its state at the time of the checkpoint.*

### Protected Attributes

- ContainerType::iterator checkpoint_iter

  *Iterator for walking through the container during checkpoint.*
- const JeodMemoryTypeDescriptor * elem_type_descriptor {}

  *Memory model descriptor of the type of data stored in the container.*

### Friends

- class InputProcessor
- void init_attrjeod__JeodContainer ()

## 8.3.1 Detailed Description

**template<typename ContainerType, typename ElemType>**
**class jeod::JeodContainer< ContainerType, ElemType >**

A JeodContainer is a JEOD STL sequence container replacement whose contents are checkpointable and restorable.

Definition at line 82 of file container.hh.

## 8.3.2 Member Typedef Documentation

### 8.3.2.1 stl_container_type

```
template<typename ContainerType, typename ElemType>
using jeod::JeodContainer< ContainerType, ElemType >::stl_container_type = typename Container↩
Type::stl_container_type
```

Import the ContainerType's container type.

Definition at line 96 of file container.hh.

#### 8.3.2.2 this_container_type

```
template<typename ContainerType, typename ElemType>
using jeod::JeodContainer< ContainerType, ElemType >::this_container_type = JeodContainer<Container↩
Type, ElemType>
```

This particular JeodContainer type.

Definition at line 91 of file container.hh.

### 8.3.3 Constructor & Destructor Documentation

#### 8.3.3.1 JeodContainer() [1/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodContainer< ContainerType, ElemType >::JeodContainer ( )  [inline]
```

Default constructor.

Definition at line 103 of file container.hh.

#### 8.3.3.2 JeodContainer() [2/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodContainer< ContainerType, ElemType >::JeodContainer (
            const this_container_type & source )  [inline]
```

Copy constructor.

**Note**

This copies the source's ContainerType contents only. The Checkpointable contents and the added checkpoint members are not copied.

**Parameters**

| | |
|---|---|
| *source* | Container to be copied. |

Definition at line 119 of file container.hh.

#### 8.3.3.3 JeodContainer() [3/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodContainer< ContainerType, ElemType >::JeodContainer (
            const stl_container_type & source )  [inline]
```

Copy constructor.

**Note**

This copies the source's ContainerType contents only. The Checkpointable contents and the added checkpoint members are not copied.

**Parameters**

| | |
|---|---|
| *source* | Container to be copied. |

Definition at line 135 of file container.hh.

#### 8.3.3.4 ~JeodContainer()

```
template<typename ContainerType, typename ElemType>
jeod::JeodContainer< ContainerType, ElemType >::~JeodContainer ( )  [override], [default]
```

Destructor.

### 8.3.4 Member Function Documentation

#### 8.3.4.1 advance_checkpoint()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodContainer< ContainerType, ElemType >::advance_checkpoint ( )  [inline], [override],
[virtual]
```

Advance to the next item to be checkpointed.

In the case of a JeodContainer, this method simply advances the checkpoint iterator to point to the next item in the contents.

Implements jeod::JeodCheckpointable.

Reimplemented in jeod::JeodObjectContainer< ContainerType, ElemType >.

Definition at line 251 of file container.hh.

#### 8.3.4.2 get_final_name()

```
template<typename ContainerType, typename ElemType>
const std::string jeod::JeodContainer< ContainerType, ElemType >::get_final_name ( )  [inline],
[override], [virtual]
```

Names the action to be performed after to performing any of the restore actions.

In the case of a JeodContainer, the init name is always "cleanup".

Reimplemented from jeod::JeodCheckpointable.

Definition at line 293 of file container.hh.

#### 8.3.4.3 get_init_name()

```
template<typename ContainerType, typename ElemType>
const std::string jeod::JeodContainer< ContainerType, ElemType >::get_init_name ( )  [inline],
[override], [virtual]
```

Names the action to be performed prior to performing any of the restore actions.

In the case of a JeodContainer, the init name is always "clear".

Implements jeod::JeodCheckpointable.

Definition at line 272 of file container.hh.

#### 8.3.4.4 get_item_name()

```
template<typename ContainerType, typename ElemType>
const std::string jeod::JeodContainer< ContainerType, ElemType >::get_item_name ( )  [inline],
[override], [virtual]
```

Return the name of the action to be printed along with the current value.

In the case of a JeodContainer, the action name is always "insert".

Implements jeod::JeodCheckpointable.

Definition at line 282 of file container.hh.

#### 8.3.4.5 initialize_checkpointable()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodContainer< ContainerType, ElemType >::initialize_checkpointable (
            const void * container,
            const std::type_info & container_type,
            const std::string & elem_name )  [inline], [override], [virtual]
```

Initialize a checkpointable object, called by the checkpoint manager.

In the case of a JeodContainer, this method gets the descriptor for the type of data stored in the container.

Reimplemented from jeod::JeodCheckpointable.

Definition at line 224 of file container.hh.

Referenced by jeod::JeodPointerContainer< ContainerType, ElemType >::initialize_checkpointable().

#### 8.3.4.6 is_checkpoint_finished()

```
template<typename ContainerType, typename ElemType>
bool jeod::JeodContainer< ContainerType, ElemType >::is_checkpoint_finished ( )  [inline],
[override], [virtual]
```

Indicate whether the checkpoint dump of this object is finished.

In the case of a JeodContainer, the dump is finished when the internal checkpoint iterator points beyond the last item in the contents.

Implements jeod::JeodCheckpointable.

Definition at line 261 of file container.hh.

#### 8.3.4.7 operator=() [1/2]

```
template<typename ContainerType, typename ElemType>
JeodContainer& jeod::JeodContainer< ContainerType, ElemType >::operator= (
            const this_container_type & source )  [inline]
```

Assignment operator.

**Note**

This copies the source's ContainerType contents only. The Checkpointable contents and the added checkpoint members are not copied.

**Parameters**

| | |
|---|---|
| *source* | Container to be copied. |

Definition at line 151 of file container.hh.

Referenced by jeod::JeodPrimitiveContainer< ContainerType, ElemType >::operator=(), and jeod::JeodPointer↩ Container< ContainerType, ElemType >::operator=().

#### 8.3.4.8 operator=() [2/2]

```
template<typename ContainerType, typename ElemType>
JeodContainer& jeod::JeodContainer< ContainerType, ElemType >::operator= (
            const stl_container_type & source )  [inline]
```

Assignment operator.

**Note**

This copies the source's ContainerType contents only. The Checkpointable contents and the added checkpoint members are not copied.

**Parameters**

| | |
|---|---|
| *source* | Container to be copied. |

Definition at line 168 of file container.hh.

#### 8.3.4.9 perform_cleanup_action()

```
template<typename ContainerType, typename ElemType>
virtual void jeod::JeodContainer< ContainerType, ElemType >::perform_cleanup_action (
            const std::string & value )  [inline], [virtual]
```

Cleanup detritus created during the restore process.

The default action is to do nothing.

**Parameters**

| | |
|---|---|
| *value* | String name of cleanup target. This member should be protected or (even better) private. It is marked as public to avoid problems with Trick and SWIG. |

Reimplemented in jeod::JeodObjectContainer< ContainerType, ElemType >.

Definition at line 216 of file container.hh.

#### 8.3.4.10 perform_insert_action()

```
template<typename ContainerType, typename ElemType>
virtual void jeod::JeodContainer< ContainerType, ElemType >::perform_insert_action (
            const std::string & value )  [pure virtual]
```

Push a value onto the end of the contents.

This method is pure virtual because the value provided to the method is a string. Translating the input string to the appropriate element type is the responsibility of template instantiations.

**Parameters**

| | |
|---|---|
| *value* | Value, in string form, to be added to the contents. |

**Note**

This member should be protected or (even better) private. It is marked as public to avoid problems with Trick and SWIG.

Implemented in jeod::JeodObjectContainer< ContainerType, ElemType >, jeod::JeodPointerContainer< ContainerType, ElemType > and jeod::JeodPrimitiveContainer< ContainerType, ElemType >.

#### 8.3.4.11 perform_restore_action()

```
template<typename ContainerType, typename ElemType>
int jeod::JeodContainer< ContainerType, ElemType >::perform_restore_action (
            const std::string & action_name,
            const std::string & action_value )  [inline], [override], [virtual]
```

Perform a checkpoint-restart action that will, in part, restore the object to its state at the time of the checkpoint.

In the case of a JeodContainer, the actions are "clear", "insert", and "cleanup". The checkpoint writer automatically creates an initial "clear" entry as the first entry in the checkpoint file for a JeodCheckpointable object and a "cleanup" entry as the final entry. An "insert" entry is created for each element in the container's contents.

Implements jeod::JeodCheckpointable.

Definition at line 308 of file container.hh.

#### 8.3.4.12 start_checkpoint()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodContainer< ContainerType, ElemType >::start_checkpoint ( )  [inline], [override],
[virtual]
```

Prepare to checkpoint the object.

In the case of a JeodContainer, this method initializes a checkpoint iterator, data member checkpoint_iter, to the start of the contents.

Implements jeod::JeodCheckpointable.

Reimplemented in jeod::JeodObjectContainer< ContainerType, ElemType >.

Definition at line 240 of file container.hh.

#### 8.3.4.13 swap_contents() [1/2]

```
template<typename ContainerType, typename ElemType>
void jeod::JeodContainer< ContainerType, ElemType >::swap_contents (
            this_container_type & other )  [inline]
```

Swap STL sequence container contents – but not the stuff related to checkpoint or restart.

Definition at line 183 of file container.hh.

#### 8.3.4.14 swap_contents() [2/2]

```
template<typename ContainerType, typename ElemType>
void jeod::JeodContainer< ContainerType, ElemType >::swap_contents (
            stl_container_type & other )  [inline]
```

Swap STL sequence container contents – but not the stuff related to checkpoint or restart.

Definition at line 192 of file container.hh.

### 8.3.5 Friends And Related Function Documentation

#### 8.3.5.1 init_attrjeod__JeodContainer

```
template<typename ContainerType, typename ElemType>
void init_attrjeod__JeodContainer ( )  [friend]
```

#### 8.3.5.2 InputProcessor

```
template<typename ContainerType, typename ElemType>
friend class InputProcessor  [friend]
```

Definition at line 85 of file container.hh.

### 8.3.6 Field Documentation

#### 8.3.6.1 checkpoint_iter

```
template<typename ContainerType, typename ElemType>
ContainerType::iterator jeod::JeodContainer< ContainerType, ElemType >::checkpoint_iter  [protected]
```

Iterator for walking through the container during checkpoint.

trick_io(**)

Definition at line 346 of file container.hh.

Referenced by jeod::JeodPrimitiveContainer< ContainerType, ElemType >::get_item_value().

#### 8.3.6.2 elem_type_descriptor

```
template<typename ContainerType, typename ElemType>
const JeodMemoryTypeDescriptor* jeod::JeodContainer< ContainerType, ElemType >::elem_type_↩
descriptor {}  [protected]
```

Memory model descriptor of the type of data stored in the container.

trick_io(**)

Definition at line 351 of file container.hh.

The documentation for this class was generated from the following file:

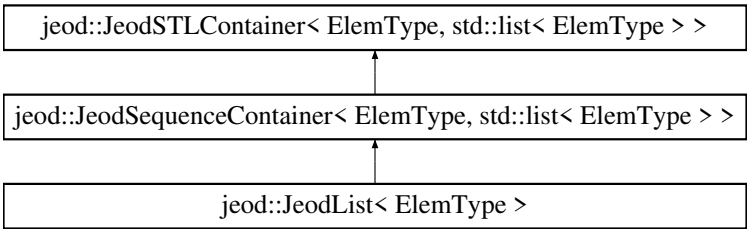
- container.hh

## 8.4 jeod::JeodList< ElemType > Class Template Reference

The JEOD replacement for std::list.

`#include <jeod_list.hh>`

Inheritance diagram for jeod::JeodList< ElemType >:




### Public Types

- using this_container_type = JeodList< ElemType >

  *This particular JeodList type.*
- using jeod_sequence_container_type = JeodSequenceContainer< ElemType, std::list< ElemType > >

  *The JeodSequenceContainer type.*
- using jeod_stl_container_type = JeodSTLContainer< ElemType, std::list< ElemType > >

  *The JeodSTLContainer type.*
- using stl_container_type = std::list< ElemType >

  *The std::list itself.*

### Public Member Functions

- virtual ~JeodList ()=default

  *Destructor.*
- JeodList & operator= (const this_container_type &src)

  *Copy contents from the given source.*
- JeodList & operator= (const stl_container_type &src)

  *Copy contents from the given source.*
- void merge (stl_container_type &other)

  *Merge the contents of some other list into this list, emptying the other list.*
- template<typename Compare >
  void merge (stl_container_type &other, Compare comp)

  *Merge the contents of some other list into this list using the provided comparator to guide the merge.*
- void push_front (const ElemType &elem)

  *Add an element to the head of the list.*
- void pop_front ()

  *Deletes the element at the head of the list.*
- void remove (const ElemType &value)

  *Remove elements from the list that are equal to the provided value.*
- template<typename Predicate >
  void remove_if (Predicate pred)

  *Remove elements from the list that pass the provided test.*
- void reverse ()

*Reverse the list.*

- void splice (typename jeod_stl_container_type::iterator position, stl_container_type &other)

  *Inserts the contents of other before position, emptying other.*
- void splice (typename jeod_stl_container_type::iterator position, stl_container_type &other, typename jeod_stl_container_type::iterator other_pos)

  *Inserts the element other_pos of other before position, deleting that element from other.*
- void splice (typename jeod_stl_container_type::iterator position, stl_container_type &other, typename jeod_stl_container_type::iterator first, typename jeod_stl_container_type::iterator last)

  *Inserts elements in other from first up to but not including last before position, deleting those element from other.*
- void sort ()

  *Sort using the default comparison operator.*
- template<typename Compare >
  void sort (Compare comp)

  *Sort using the provided comparator.*
- void unique ()

  *Remove duplicates using the default equality operator.*
- template<typename BinaryPredicate >
  void unique (BinaryPredicate comp)

  *Remove duplicates using the provided comparator.*

### Protected Member Functions

- JeodList ()=default

  *Default constructor.*
- JeodList (const this_container_type &src)

  *Copy constructor.*
- JeodList (const stl_container_type &src)

  *Copy constructor from STL container.*

### Additional Inherited Members

## 8.4.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodList< ElemType >**

The JEOD replacement for std::list.

Definition at line 91 of file jeod_list.hh.

## 8.4.2 Member Typedef Documentation

#### 8.4.2.1 jeod_sequence_container_type

```
template<typename ElemType >
using jeod::JeodList< ElemType >::jeod_sequence_container_type = JeodSequenceContainer<Elem↩
Type, std::list<ElemType> >
```

The JeodSequenceContainer type.

Definition at line 104 of file jeod_list.hh.

#### 8.4.2.2 jeod_stl_container_type

```
template<typename ElemType >
using jeod::JeodList< ElemType >::jeod_stl_container_type = JeodSTLContainer<ElemType, std↩
::list<ElemType> >
```

The JeodSTLContainer type.

Definition at line 109 of file jeod_list.hh.

#### 8.4.2.3 stl_container_type

```
template<typename ElemType >
using jeod::JeodList< ElemType >::stl_container_type = std::list<ElemType>
```

The std::list itself.

Definition at line 114 of file jeod_list.hh.

#### 8.4.2.4 this_container_type

```
template<typename ElemType >
using jeod::JeodList< ElemType >::this_container_type = JeodList<ElemType>
```

This particular JeodList type.

Definition at line 99 of file jeod_list.hh.

### 8.4.3 Constructor & Destructor Documentation

#### 8.4.3.1 ~JeodList()

```
template<typename ElemType >
virtual jeod::JeodList< ElemType >::~JeodList ( )  [virtual], [default]
```

Destructor.

#### 8.4.3.2 JeodList() [1/3]

```
template<typename ElemType >
jeod::JeodList< ElemType >::JeodList ( )  [protected], [default]
```

Default constructor.

#### 8.4.3.3 JeodList() [2/3]

```
template<typename ElemType >
jeod::JeodList< ElemType >::JeodList (
            const this_container_type & src )  [inline], [explicit], [protected]
```

Copy constructor.

Definition at line 288 of file jeod_list.hh.

#### 8.4.3.4 JeodList() [3/3]

```
template<typename ElemType >
jeod::JeodList< ElemType >::JeodList (
            const stl_container_type & src )  [inline], [explicit], [protected]
```

Copy constructor from STL container.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 297 of file jeod_list.hh.

### 8.4.4 Member Function Documentation

#### 8.4.4.1 merge() [1/2]

```
template<typename ElemType >
void jeod::JeodList< ElemType >::merge (
             stl_container_type & other )  [inline]
```

Merge the contents of some other list into this list, emptying the other list.

**Parameters**

| | |
|---|---|
| *other* | Other list to be merged into this list. |

Definition at line 153 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.2 merge() [2/2]

```
template<typename ElemType >
template<typename Compare >
void jeod::JeodList< ElemType >::merge (
             stl_container_type & other,
             Compare comp )  [inline]
```

Merge the contents of some other list into this list using the provided comparator to guide the merge.

The other list is emptied.

**Parameters**

| | |
|---|---|
| *other* | Other list to be merged into this list. |
| *comp* | Comparison function. |

Definition at line 164 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.3 operator=() [1/2]

```
template<typename ElemType >
JeodList& jeod::JeodList< ElemType >::operator= (
             const this_container_type & src )  [inline]
```

Copy contents from the given source.

Definition at line 131 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::operator=().

#### 8.4.4.4 operator=() [2/2]

```
template<typename ElemType >
JeodList& jeod::JeodList< ElemType >::operator= (
            const stl_container_type & src )  [inline]
```

Copy contents from the given source.

Definition at line 140 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::operator=().

#### 8.4.4.5 pop_front()

```
template<typename ElemType >
void jeod::JeodList< ElemType >::pop_front ( )  [inline]
```

Deletes the element at the head of the list.

Definition at line 181 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.6 push_front()

```
template<typename ElemType >
void jeod::JeodList< ElemType >::push_front (
            const ElemType & elem )  [inline]
```

Add an element to the head of the list.

**Parameters**

| | |
|---|---|
| *elem* | Element to be added. |

Definition at line 173 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.7 remove()

```
template<typename ElemType >
void jeod::JeodList< ElemType >::remove (
            const ElemType & value )  [inline]
```

Remove elements from the list that are equal to the provided value.

Definition at line 189 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.8 remove_if()

```
template<typename ElemType >
template<typename Predicate >
void jeod::JeodList< ElemType >::remove_if (
             Predicate pred )  [inline]
```

Remove elements from the list that pass the provided test.

**Parameters**

| | |
|---|---|
| *pred* | Predicate function, which must be able to take a const ref to ElemType as an argument and must return a bool. |

Definition at line 199 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.9 reverse()

```
template<typename ElemType >
void jeod::JeodList< ElemType >::reverse ( )  [inline]
```

Reverse the list.

Definition at line 207 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.10 sort() [1/2]

```
template<typename ElemType >
void jeod::JeodList< ElemType >::sort ( )  [inline]
```

Sort using the default comparison operator.

Definition at line 246 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.11 sort() [2/2]

```
template<typename ElemType >
template<typename Compare >
void jeod::JeodList< ElemType >::sort (
            Compare comp )  [inline]
```

Sort using the provided comparator.

**Parameters**

| | |
|---|---|
| *comp* | Comparison function, which must be able to take a pair of ElemType as arguments and must return a bool. |

Definition at line 256 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.12 splice() [1/3]

```
template<typename ElemType >
void jeod::JeodList< ElemType >::splice (
            typename jeod_stl_container_type::iterator position,
            stl_container_type & other )  [inline]
```

Inserts the contents of *other* before *position*, emptying *other*.

Definition at line 215 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.13 splice() [2/3]

```
template<typename ElemType >
void jeod::JeodList< ElemType >::splice (
            typename jeod_stl_container_type::iterator position,
            stl_container_type & other,
            typename jeod_stl_container_type::iterator other_pos )  [inline]
```

Inserts the element *other_pos* of *other* before *position*, deleting that element from *other*.

Definition at line 224 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.14 splice() [3/3]

```
template<typename ElemType >
void jeod::JeodList< ElemType >::splice (
             typename jeod_stl_container_type::iterator position,
             stl_container_type & other,
             typename jeod_stl_container_type::iterator first,
             typename jeod_stl_container_type::iterator last )  [inline]
```

Inserts elements in *other* from *first* up to but not including *last* before *position*, deleting those element from *other*.

Definition at line 235 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.15 unique() [1/2]

```
template<typename ElemType >
void jeod::JeodList< ElemType >::unique ( )  [inline]
```

Remove duplicates using the default equality operator.

Definition at line 264 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

#### 8.4.4.16 unique() [2/2]

```
template<typename ElemType >
template<typename BinaryPredicate >
void jeod::JeodList< ElemType >::unique (
             BinaryPredicate comp )  [inline]
```

Remove duplicates using the provided comparator.

**Parameters**

| | |
|---|---|
| *comp* | Comparison function, which must be able to take a pair of ElemType as arguments and must return a bool. |

Definition at line 274 of file jeod_list.hh.

References jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::contents.

The documentation for this class was generated from the following file:

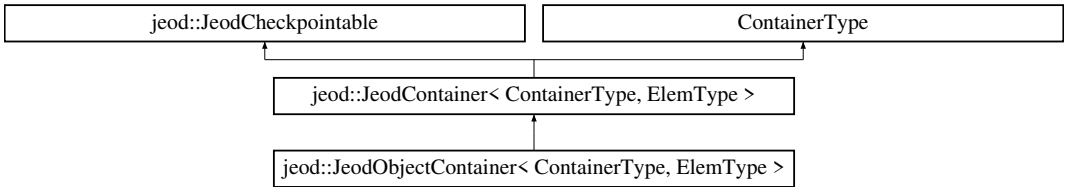
- jeod_list.hh

# 8.5 jeod::JeodObjectContainer< ContainerType, ElemType > Class Template Reference

A JeodObjectContainer is a JeodContainer that contains objects of type ElemType.

`#include <object_container.hh>`

Inheritance diagram for jeod::JeodObjectContainer< ContainerType, ElemType >:




## Public Member Functions

- JeodObjectContainer ()

  *Construct a JeodObjectContainer.*
- JeodObjectContainer (const JeodObjectContainer &source)

  *Copy-construct a JeodObjectContainer.*
- JeodObjectContainer (const typename ContainerType::stl_container_type &source)

  *Copy-construct a JeodObjectContainer.*
- JeodObjectContainer & operator= (const JeodObjectContainer &source)

  *Copy from a JeodObjectContainer.*
- JeodObjectContainer & operator= (const typename ContainerType::stl_container_type &source)

  *Copy from an STL container.*
- virtual ~JeodObjectContainer ()

  *Destruct a JeodObjectContainer.*
- void pre_checkpoint () override

  *Prepare to checkpoint a JeodObjectContainer.*
- void post_checkpoint () override

  *Cleanup after performing a checkpoint.*
- void post_restart () override

  *Cleanup after performing a restart.*
- void start_checkpoint () override

  *Prepare to checkpoint the object in question.*
- void advance_checkpoint () override

  *Advance to the next item to be checkpointed.*
- const std::string get_item_value () override

  *Return the value of the item to be written to the checkpoint file.*
- void perform_insert_action (const std::string &value) override

  *Interpret the provided value and add it to the list.*
- const std::string get_final_value () override

  *Return the value of the item to be written to the checkpoint file.*
- void perform_cleanup_action (const std::string &value) override

  *Cleanup detritus created during the restore process.*

### Protected Attributes

- size_t index

  *Index number into the copy; used during checkpoint process.*
- ElemType * copy

  *C-style array copy of the object; used during checkpoint process.*

### Friends

- class InputProcessor
- void init_attrjeod__JeodObjectContainer ()

### Additional Inherited Members

## 8.5.1 Detailed Description

**template<typename ContainerType, typename ElemType>**
**class jeod::JeodObjectContainer< ContainerType, ElemType >**

A JeodObjectContainer is a JeodContainer that contains objects of type ElemType.

Definition at line 83 of file object_container.hh.

## 8.5.2 Constructor & Destructor Documentation

### 8.5.2.1 JeodObjectContainer() [1/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodObjectContainer< ContainerType, ElemType >::JeodObjectContainer ( )  [inline]
```

Construct a JeodObjectContainer.

Definition at line 89 of file object_container.hh.

### 8.5.2.2 JeodObjectContainer() [2/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodObjectContainer< ContainerType, ElemType >::JeodObjectContainer (
            const JeodObjectContainer< ContainerType, ElemType > & source )  [inline]
```

Copy-construct a JeodObjectContainer.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Object container to be copied. |

Definition at line 101 of file object_container.hh.

#### 8.5.2.3 JeodObjectContainer() [3/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodObjectContainer< ContainerType, ElemType >::JeodObjectContainer (
            const typename ContainerType::stl_container_type & source )  [inline], [explicit]
```

Copy-construct a JeodObjectContainer.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Object container to be copied. |

Definition at line 114 of file object_container.hh.

#### 8.5.2.4 ~JeodObjectContainer()

```
template<typename ContainerType, typename ElemType>
virtual jeod::JeodObjectContainer< ContainerType, ElemType >::~JeodObjectContainer ( )  [inline],
[virtual]
```

Destruct a JeodObjectContainer.

Definition at line 148 of file object_container.hh.

### 8.5.3 Member Function Documentation

#### 8.5.3.1 advance_checkpoint()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodObjectContainer< ContainerType, ElemType >::advance_checkpoint ( )  [inline],
[override], [virtual]
```

Advance to the next item to be checkpointed.

The local checkpoint index is advanced to keep in sync with the parent class' checkpoint iterator.

Reimplemented from jeod::JeodContainer< ContainerType, ElemType >.

Definition at line 211 of file object_container.hh.

#### 8.5.3.2 get_final_value()

```
template<typename ContainerType, typename ElemType>
const std::string jeod::JeodObjectContainer< ContainerType, ElemType >::get_final_value ( )
[inline], [override], [virtual]
```

Return the value of the item to be written to the checkpoint file.

For a JeodObjectContainer, the value is the name of the corresponding object in the C-style copy of the object's contents.

Reimplemented from jeod::JeodCheckpointable.

Definition at line 246 of file object_container.hh.

#### 8.5.3.3 get_item_value()

```
template<typename ContainerType, typename ElemType>
const std::string jeod::JeodObjectContainer< ContainerType, ElemType >::get_item_value ( )
[inline], [override], [virtual]
```

Return the value of the item to be written to the checkpoint file.

For a JeodObjectContainer, the value is the name of the corresponding object in the C-style copy of the object's contents.

Implements jeod::JeodCheckpointable.

Definition at line 222 of file object_container.hh.

#### 8.5.3.4 operator=() [1/2]

```
template<typename ContainerType, typename ElemType>
JeodObjectContainer& jeod::JeodObjectContainer< ContainerType, ElemType >::operator= (
            const JeodObjectContainer< ContainerType, ElemType > & source )  [inline]
```

Copy from a JeodObjectContainer.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Object container to be copied. |

Definition at line 127 of file object_container.hh.

#### 8.5.3.5 operator=() [2/2]

```
template<typename ContainerType, typename ElemType>
JeodObjectContainer& jeod::JeodObjectContainer< ContainerType, ElemType >::operator= (
            const typename ContainerType::stl_container_type & source )  [inline]
```

Copy from an STL container.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Object container to be copied. |

Definition at line 139 of file object_container.hh.

#### 8.5.3.6 perform_cleanup_action()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodObjectContainer< ContainerType, ElemType >::perform_cleanup_action (
            const std::string & value )  [inline], [override], [virtual]
```

Cleanup detritus created during the restore process.

Here we delete the temporary array created during checkpoint.

**Parameters**

| | |
|---|---|
| *value* | String name of cleanup target. |

Reimplemented from jeod::JeodContainer< ContainerType, ElemType >.

Definition at line 256 of file object_container.hh.

#### 8.5.3.7 perform_insert_action()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodObjectContainer< ContainerType, ElemType >::perform_insert_action (
            const std::string & value )  [inline], [override], [virtual]
```

Interpret the provided value and add it to the list.

For a JeodObjectContainer, the value should name an element of the C-style copy of the object's contents.

Implements jeod::JeodContainer< ContainerType, ElemType >.

Definition at line 233 of file object_container.hh.

#### 8.5.3.8 post_checkpoint()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodObjectContainer< ContainerType, ElemType >::post_checkpoint ( )  [inline],
[override], [virtual]
```

Cleanup after performing a checkpoint.

Reimplemented from jeod::JeodCheckpointable.

Definition at line 178 of file object_container.hh.

#### 8.5.3.9 post_restart()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodObjectContainer< ContainerType, ElemType >::post_restart ( )  [inline], [override],
[virtual]
```

Cleanup after performing a restart.

Reimplemented from jeod::JeodCheckpointable.

Definition at line 190 of file object_container.hh.

#### 8.5.3.10 pre_checkpoint()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodObjectContainer< ContainerType, ElemType >::pre_checkpoint ( )  [inline], [override],
[virtual]
```

Prepare to checkpoint a JeodObjectContainer.

The contents of an object container is checkpointed by allocating a C-style array of the same size as the container and populating the array with copies of the container contents. The existing checkpoint capabilities will checkpoint this array, so all that remains to be done is to associate the array elements with the container.

Reimplemented from jeod::JeodCheckpointable.

Definition at line 161 of file object_container.hh.

#### 8.5.3.11 start_checkpoint()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodObjectContainer< ContainerType, ElemType >::start_checkpoint ( )  [inline],
[override], [virtual]
```

Prepare to checkpoint the object in question.

The local checkpoint index is initialized to zero to reflect that the parent class' checkpoint iterator starts at the zeroth element.

Reimplemented from jeod::JeodContainer< ContainerType, ElemType >.

Definition at line 200 of file object_container.hh.

### 8.5.4 Friends And Related Function Documentation

#### 8.5.4.1 init_attrjeod__JeodObjectContainer

```
template<typename ContainerType, typename ElemType>
void init_attrjeod__JeodObjectContainer ( )  [friend]
```

#### 8.5.4.2 InputProcessor

```
template<typename ContainerType, typename ElemType>
friend class InputProcessor  [friend]
```

Definition at line 85 of file object_container.hh.

### 8.5.5 Field Documentation

#### 8.5.5.1 copy

```
template<typename ContainerType, typename ElemType>
ElemType* jeod::JeodObjectContainer< ContainerType, ElemType >::copy  [protected]
```

C-style array copy of the object; used during checkpoint process.

trick_io(**)

Definition at line 274 of file object_container.hh.

#### 8.5.5.2 index

```
template<typename ContainerType, typename ElemType>
size_t jeod::JeodObjectContainer< ContainerType, ElemType >::index  [protected]
```

Index number into the copy; used during checkpoint process.

trick_io(**)

Definition at line 269 of file object_container.hh.

The documentation for this class was generated from the following file:

- object_container.hh

## 8.6 jeod::JeodObjectList< ElemType > Class Template Reference

Defines a registry for defining a checkpointable list of objects.

```
#include <object_list.hh>
```

### Public Types

- using type = JeodObjectContainer< JeodList< ElemType >, ElemType >

  *Template typedef for a checkpointable list of objects.*

### 8.6.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodObjectList< ElemType >**

Defines a registry for defining a checkpointable list of objects.

Usage: JeodObjectList<type>::type variable_name

Definition at line 76 of file object_list.hh.

### 8.6.2 Member Typedef Documentation

#### 8.6.2.1 type

```
template<typename ElemType >
using jeod::JeodObjectList< ElemType >::type = JeodObjectContainer<JeodList<ElemType>, Elem↩
Type>
```

Template typedef for a checkpointable list of objects.

Definition at line 82 of file object_list.hh.

The documentation for this class was generated from the following file:

- object_list.hh

## 8.7 jeod::JeodObjectSet< ElemType > Class Template Reference

Defines a registry for defining a checkpointable set of objects.

```
#include <object_set.hh>
```

### Public Types

- using type = JeodObjectContainer< JeodSet< ElemType >, ElemType >
  *Template typedef for a checkpointable set of objects.*

### 8.7.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodObjectSet< ElemType >**

Defines a registry for defining a checkpointable set of objects.

Usage: JeodObjectSet<type>::type variable_name

Definition at line 76 of file object_set.hh.

### 8.7.2 Member Typedef Documentation

#### 8.7.2.1 type

```
template<typename ElemType >
using jeod::JeodObjectSet< ElemType >::type = JeodObjectContainer<JeodSet<ElemType>, Elem↩
Type>
```

Template typedef for a checkpointable set of objects.

Definition at line 82 of file object_set.hh.

The documentation for this class was generated from the following file:

- object_set.hh

## 8.8 jeod::JeodObjectVector< ElemType > Class Template Reference

Defines a registry for defining a checkpointable vector of objects.

`#include <object_vector.hh>`

### Public Types

- using type = JeodObjectContainer< JeodVector< ElemType >, ElemType >

  *Template typedef for a checkpointable vector of objects.*

### 8.8.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodObjectVector< ElemType >**

Defines a registry for defining a checkpointable vector of objects.

Usage: JeodObjectVector<type>::type variable_name

Definition at line 76 of file object_vector.hh.

### 8.8.2 Member Typedef Documentation

#### 8.8.2.1 type

```
template<typename ElemType >
using jeod::JeodObjectVector< ElemType >::type = JeodObjectContainer<JeodVector<ElemType>,
ElemType>
```

Template typedef for a checkpointable vector of objects.

Definition at line 82 of file object_vector.hh.

The documentation for this class was generated from the following file:

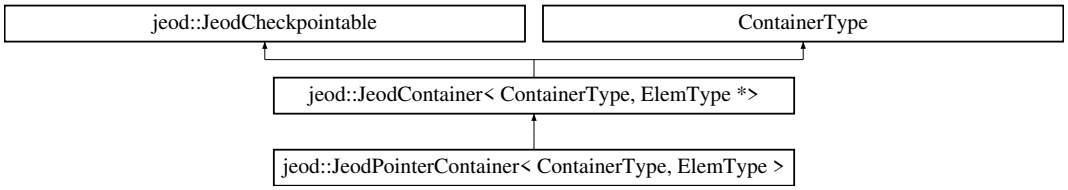
- object_vector.hh

## 8.9 jeod::JeodPointerContainer< ContainerType, ElemType > Class Template Reference

A JeodPointerContainer is a JeodContainer that contains pointers to objects of type ElemType.

`#include <pointer_container.hh>`

Inheritance diagram for jeod::JeodPointerContainer< ContainerType, ElemType >:




### Public Member Functions

- JeodPointerContainer ()

  *Construct a JeodPointerContainer.*
- JeodPointerContainer (const JeodPointerContainer &source)

  *Copy-construct a JeodPointerContainer.*
- JeodPointerContainer (const typename ContainerType::stl_container_type &source)

  *Copy-construct a JeodPointerContainer.*
- JeodPointerContainer & operator= (const JeodPointerContainer &source)

  *Copy from a JeodPointerContainer.*
- JeodPointerContainer & operator= (const typename ContainerType::stl_container_type &source)

  *Copy from an STL container.*
- virtual ~JeodPointerContainer ()=default

  *Destruct a JeodPointerContainer.*
- void initialize_checkpointable (const void *container, const std::type_info &container_type, const std::string &elem_name) override

  *Initialize a checkpointable object, called by the checkpoint manager.*
- const std::string get_item_value () override

  *Return the value of the item to be written to the checkpoint file.*
- void perform_insert_action (const std::string &value) override

  *Interpret the provided value and add it to the list.*

### Protected Attributes

- const JeodMemoryTypeDescriptor * base_type_descriptor {}

  *Memory model descriptor of the type of data stored in the container.*

### Additional Inherited Members

### 8.9.1 Detailed Description

**template<typename ContainerType, typename ElemType>**
**class jeod::JeodPointerContainer< ContainerType, ElemType >**

A JeodPointerContainer is a JeodContainer that contains pointers to objects of type ElemType.

Definition at line 80 of file pointer_container.hh.

### 8.9.2 Constructor & Destructor Documentation

#### 8.9.2.1 JeodPointerContainer() [1/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodPointerContainer< ContainerType, ElemType >::JeodPointerContainer ( )  [inline]
```

Construct a JeodPointerContainer.

Definition at line 86 of file pointer_container.hh.

#### 8.9.2.2 JeodPointerContainer() [2/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodPointerContainer< ContainerType, ElemType >::JeodPointerContainer (
            const JeodPointerContainer< ContainerType, ElemType > & source )  [inline]
```

Copy-construct a JeodPointerContainer.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Pointer container to be copied. |

Definition at line 98 of file pointer_container.hh.

#### 8.9.2.3 JeodPointerContainer() [3/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodPointerContainer< ContainerType, ElemType >::JeodPointerContainer (
            const typename ContainerType::stl_container_type & source )  [inline], [explicit]
```

Copy-construct a JeodPointerContainer.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Pointer container to be copied. |

Definition at line 110 of file pointer_container.hh.

#### 8.9.2.4 ~JeodPointerContainer()

```
template<typename ContainerType, typename ElemType>
virtual jeod::JeodPointerContainer< ContainerType, ElemType >::~JeodPointerContainer ( )
[virtual], [default]
```

Destruct a JeodPointerContainer.

### 8.9.3 Member Function Documentation

#### 8.9.3.1 get_item_value()

```
template<typename ContainerType, typename ElemType>
const std::string jeod::JeodPointerContainer< ContainerType, ElemType >::get_item_value ( )
[inline], [override], [virtual]
```

Return the value of the item to be written to the checkpoint file.

For a JeodPointerContainer, the value names the pointed-to object.

Implements jeod::JeodCheckpointable.

Definition at line 168 of file pointer_container.hh.

References jeod::JeodPointerContainer< ContainerType, ElemType >::base_type_descriptor, and jeod::JeodContainer< ContainerType, ElemType *>::checkpoint_iter.

#### 8.9.3.2 initialize_checkpointable()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodPointerContainer< ContainerType, ElemType >::initialize_checkpointable (
            const void * container,
            const std::type_info & container_type,
            const std::string & elem_name )  [inline], [override], [virtual]
```

Initialize a checkpointable object, called by the checkpoint manager.

In the case of a JeodPointerContainer, this method gets the descriptor for the type of data pointed to members of the container.

Reimplemented from jeod::JeodCheckpointable.

Definition at line 151 of file pointer_container.hh.

References jeod::JeodPointerContainer< ContainerType, ElemType >::base_type_descriptor, and jeod::JeodContainer< ContainerType, ElemType >::initialize_checkpointable().

#### 8.9.3.3 operator=() [1/2]

```
template<typename ContainerType, typename ElemType>
JeodPointerContainer& jeod::JeodPointerContainer< ContainerType, ElemType >::operator= (
            const JeodPointerContainer< ContainerType, ElemType > & source )  [inline]
```

Copy from a JeodPointerContainer.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Pointer container to be copied. |

Definition at line 122 of file pointer_container.hh.

References jeod::JeodContainer< ContainerType, ElemType >::operator=().

#### 8.9.3.4 operator=() [2/2]

```
template<typename ContainerType, typename ElemType>
JeodPointerContainer& jeod::JeodPointerContainer< ContainerType, ElemType >::operator= (
            const typename ContainerType::stl_container_type & source )  [inline]
```

Copy from an STL container.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Pointer container to be copied. |

Definition at line 134 of file pointer_container.hh.

References jeod::JeodContainer< ContainerType, ElemType >::operator=().

#### 8.9.3.5 perform_insert_action()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodPointerContainer< ContainerType, ElemType >::perform_insert_action (
            const std::string & value )  [inline], [override], [virtual]
```

Interpret the provided value and add it to the list.

For a JeodPointerContainer, the value should specify (in string form) the address of some object in active memory.

Implements jeod::JeodContainer< ContainerType, ElemType *>.

Definition at line 179 of file pointer_container.hh.

### 8.9.4 Field Documentation

#### 8.9.4.1 base_type_descriptor

```
template<typename ContainerType, typename ElemType>
const JeodMemoryTypeDescriptor* jeod::JeodPointerContainer< ContainerType, ElemType >::base_↩
type_descriptor {}  [protected]
```

Memory model descriptor of the type of data stored in the container.

trick_io(**)

Definition at line 188 of file pointer_container.hh.

Referenced by jeod::JeodPointerContainer< ContainerType, ElemType >::get_item_value(), and jeod::Jeod↩ PointerContainer< ContainerType, ElemType >::initialize_checkpointable().

The documentation for this class was generated from the following file:

- pointer_container.hh

## 8.10 jeod::JeodPointerList< ElemType > Class Template Reference

Defines a registry for defining a checkpointable list of pointers.

```
#include <pointer_list.hh>
```

### Public Types

- using type = JeodPointerContainer< JeodList< ElemType * >, ElemType >
  *Template typedef for a checkpointable list of pointers.*

### 8.10.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodPointerList< ElemType >**

Defines a registry for defining a checkpointable list of pointers.

Usage: JeodPointerList<type>::type variable_name

Definition at line 76 of file pointer_list.hh.

### 8.10.2 Member Typedef Documentation

#### 8.10.2.1 type

```
template<typename ElemType >
using jeod::JeodPointerList< ElemType >::type = JeodPointerContainer<JeodList<ElemType *>,
ElemType>
```

Template typedef for a checkpointable list of pointers.

Definition at line 82 of file pointer_list.hh.

The documentation for this class was generated from the following file:

- pointer_list.hh

## 8.11 jeod::JeodPointerSet< ElemType > Class Template Reference

Defines a registry for defining a checkpointable set of pointers.

```
#include <pointer_set.hh>
```

### Public Types

- using type = JeodPointerContainer< JeodSet< ElemType * >, ElemType >
  *Template typedef for a checkpointable set of pointers.*

### 8.11.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodPointerSet< ElemType >**

Defines a registry for defining a checkpointable set of pointers.

Usage: JeodPointerSet<type>::type variable_name

Definition at line 76 of file pointer_set.hh.

### 8.11.2 Member Typedef Documentation

#### 8.11.2.1 type

```
template<typename ElemType >
using jeod::JeodPointerSet< ElemType >::type = JeodPointerContainer<JeodSet<ElemType *>,
ElemType>
```

Template typedef for a checkpointable set of pointers.

Definition at line 82 of file pointer_set.hh.

The documentation for this class was generated from the following file:

- pointer_set.hh

## 8.12 jeod::JeodPointerVector< ElemType > Class Template Reference

Defines a registry for defining a checkpointable vector of pointers.

```
#include <pointer_vector.hh>
```

### Public Types

- using type = JeodPointerContainer< JeodVector< ElemType * >, ElemType >
  *Template typedef for a checkpointable vector of pointers.*

### 8.12.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodPointerVector< ElemType >**

Defines a registry for defining a checkpointable vector of pointers.

Usage: JeodPointerVector<type>::type variable_name

Definition at line 76 of file pointer_vector.hh.

### 8.12.2 Member Typedef Documentation

#### 8.12.2.1 type

```
template<typename ElemType >
using jeod::JeodPointerVector< ElemType >::type = JeodPointerContainer<JeodVector<ElemType
*>, ElemType>
```

Template typedef for a checkpointable vector of pointers.

Definition at line 82 of file pointer_vector.hh.

The documentation for this class was generated from the following file:

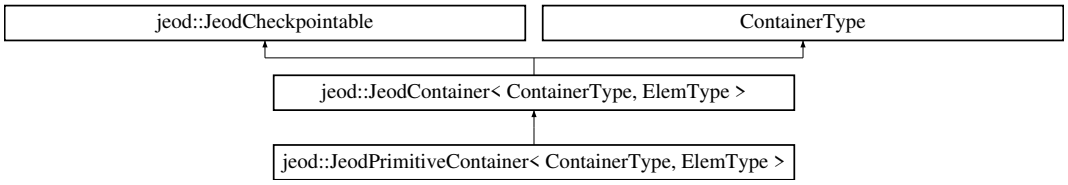
- pointer_vector.hh

## 8.13 jeod::JeodPrimitiveContainer< ContainerType, ElemType > Class Template Reference

A JeodPrimitiveContainer is a JeodContainer that contains primitive data of type ElemType.

`#include <primitive_container.hh>`

Inheritance diagram for jeod::JeodPrimitiveContainer< ContainerType, ElemType >:




### Public Member Functions

- JeodPrimitiveContainer ()=default

  *Construct a JeodPrimitiveContainer.*
- JeodPrimitiveContainer (const JeodPrimitiveContainer &source)

  *Copy-construct a JeodPrimitiveContainer.*
- JeodPrimitiveContainer (const typename ContainerType::stl_container_type &source)

  *Copy-construct a JeodPrimitiveContainer.*
- JeodPrimitiveContainer & operator= (const JeodPrimitiveContainer &source)

  *Copy from a JeodPrimitiveContainer.*
- JeodPrimitiveContainer & operator= (const typename ContainerType::stl_container_type &source)

  *Copy from an STL container.*
- virtual ~JeodPrimitiveContainer ()=default

  *Destruct a JeodPrimitiveContainer.*
- const std::string get_item_value () override

  *Return the value of the item to be written to the checkpoint file.*
- void perform_insert_action (const std::string &value) override

  *Interpret the provided value and insert it at the end of the object.*

### Protected Attributes

- JeodPrimitiveSerializer< ElemType > serializer

  *Serializer / deserializer.*

### Additional Inherited Members

### 8.13.1 Detailed Description

**template<typename ContainerType, typename ElemType>**
**class jeod::JeodPrimitiveContainer< ContainerType, ElemType >**

A JeodPrimitiveContainer is a JeodContainer that contains primitive data of type ElemType.

Definition at line 80 of file primitive_container.hh.

### 8.13.2 Constructor & Destructor Documentation

#### 8.13.2.1 JeodPrimitiveContainer() [1/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodPrimitiveContainer< ContainerType, ElemType >::JeodPrimitiveContainer ( )  [default]
```

Construct a JeodPrimitiveContainer.

#### 8.13.2.2 JeodPrimitiveContainer() [2/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodPrimitiveContainer< ContainerType, ElemType >::JeodPrimitiveContainer (
            const JeodPrimitiveContainer< ContainerType, ElemType > & source )  [inline]
```

Copy-construct a JeodPrimitiveContainer.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Primitive container to be copied. |

Definition at line 94 of file primitive_container.hh.

#### 8.13.2.3 JeodPrimitiveContainer() [3/3]

```
template<typename ContainerType, typename ElemType>
jeod::JeodPrimitiveContainer< ContainerType, ElemType >::JeodPrimitiveContainer (
            const typename ContainerType::stl_container_type & source )  [inline], [explicit]
```

Copy-construct a JeodPrimitiveContainer.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Primitive container to be copied. |

Definition at line 105 of file primitive_container.hh.

#### 8.13.2.4 ~JeodPrimitiveContainer()

```
template<typename ContainerType, typename ElemType>
virtual jeod::JeodPrimitiveContainer< ContainerType, ElemType >::~JeodPrimitiveContainer ( )
[virtual], [default]
```

Destruct a JeodPrimitiveContainer.

### 8.13.3 Member Function Documentation

#### 8.13.3.1 get_item_value()

```
template<typename ContainerType, typename ElemType>
const std::string jeod::JeodPrimitiveContainer< ContainerType, ElemType >::get_item_value ( )
[inline], [override], [virtual]
```

Return the value of the item to be written to the checkpoint file.

JeodPrimitiveContainer use the serializer to translate values to strings.

Implements jeod::JeodCheckpointable.

Definition at line 143 of file primitive_container.hh.

References jeod::JeodContainer< ContainerType, ElemType >::checkpoint_iter, jeod::JeodPrimitiveContainer< ContainerType, ElemType >::serializer, and jeod::JeodPrimitiveSerializer< Type >::to_string().

#### 8.13.3.2 operator=() [1/2]

```
template<typename ContainerType, typename ElemType>
JeodPrimitiveContainer& jeod::JeodPrimitiveContainer< ContainerType, ElemType >::operator= (
            const JeodPrimitiveContainer< ContainerType, ElemType > & source )  [inline]
```

Copy from a JeodPrimitiveContainer.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Primitive container to be copied. |

Definition at line 116 of file primitive_container.hh.

References jeod::JeodContainer< ContainerType, ElemType >::operator=().

#### 8.13.3.3 operator=() [2/2]

```
template<typename ContainerType, typename ElemType>
JeodPrimitiveContainer& jeod::JeodPrimitiveContainer< ContainerType, ElemType >::operator= (
            const typename ContainerType::stl_container_type & source )  [inline]
```

Copy from an STL container.

**Note**

This copies the Container contents, but not the Checkpointable contents.

**Parameters**

| | |
|---|---|
| *source* | Primitive container to be copied. |

Definition at line 128 of file primitive_container.hh.

References jeod::JeodContainer< ContainerType, ElemType >::operator=().

#### 8.13.3.4 perform_insert_action()

```
template<typename ContainerType, typename ElemType>
void jeod::JeodPrimitiveContainer< ContainerType, ElemType >::perform_insert_action (
            const std::string & value )  [inline], [override], [virtual]
```

Interpret the provided value and insert it at the end of the object.

JeodPrimitiveContainer use the serializer to interpret the input value.

Implements jeod::JeodContainer< ContainerType, ElemType >.

Definition at line 152 of file primitive_container.hh.

References jeod::JeodPrimitiveSerializer< Type >::from_string(), and jeod::JeodPrimitiveContainer< Container↩ Type, ElemType >::serializer.

### 8.13.4 Field Documentation

#### 8.13.4.1 serializer

```
template<typename ContainerType, typename ElemType>
JeodPrimitiveSerializer<ElemType> jeod::JeodPrimitiveContainer< ContainerType, ElemType >↩
::serializer [protected]
```

Serializer / deserializer.

trick_io(**)

Definition at line 163 of file primitive_container.hh.

Referenced by jeod::JeodPrimitiveContainer< ContainerType, ElemType >::get_item_value(), and jeod::Jeod↩PrimitiveContainer< ContainerType, ElemType >::perform_insert_action().

The documentation for this class was generated from the following file:

- primitive_container.hh

## 8.14 jeod::JeodPrimitiveList< ElemType > Class Template Reference

Defines a registry for defining a checkpointable list of primitives.

```
#include <primitive_list.hh>
```

### Public Types

- using type = JeodPrimitiveContainer< JeodList< ElemType >, ElemType >
  *Template typedef for a checkpointable list of primitives.*

### 8.14.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodPrimitiveList< ElemType >**

Defines a registry for defining a checkpointable list of primitives.

Usage: JeodPrimitiveList<type>::type variable_name

Definition at line 76 of file primitive_list.hh.

### 8.14.2 Member Typedef Documentation

#### 8.14.2.1 type

```
template<typename ElemType >
using jeod::JeodPrimitiveList< ElemType >::type = JeodPrimitiveContainer<JeodList<ElemType>,
ElemType>
```

Template typedef for a checkpointable list of primitives.

Definition at line 82 of file primitive_list.hh.

The documentation for this class was generated from the following file:

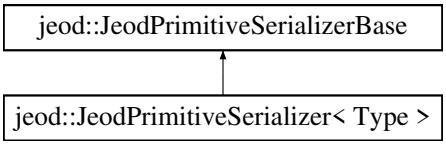
- primitive_list.hh

## 8.15 jeod::JeodPrimitiveSerializer< Type > Class Template Reference

Serializer / deserializer for primitive data.

`#include <primitive_serializer.hh>`

Inheritance diagram for jeod::JeodPrimitiveSerializer< Type >:




### Public Member Functions

- JeodPrimitiveSerializer ()=default
  *Construct a JeodPrimitiveSerializer.*
- ~JeodPrimitiveSerializer () override=default
  *Destruct a JeodPrimitiveSerializer.*
- const std::string to_string (const Type &val)
  *Convert a primitive value to its string-equivalent.*
- Type from_string (const std::string &val)
  *Convert a string to its corresponding primitive value.*
- JeodPrimitiveSerializer (const JeodPrimitiveSerializer &)=delete
- JeodPrimitiveSerializer & operator= (const JeodPrimitiveSerializer &)=delete
- template<>
  const std::string to_string (const std::string &val)
  *Convert a string to a string suitable for output: Backslash-escape backslashes and double quotes.*
- template<>
  std::string from_string (const std::string &val)
  *Convert a string as recorded in the checkpoint file to its original form.*
- template<>
  const std::string to_string (const float &val)
  *Convert a float to a string.*

- template<>
  float from_string (const std::string &val)
  *Convert a string to a float.*
- template<>
  const std::string to_string (const double &val)
  *Convert a double to a string.*
- template<>
  double from_string (const std::string &val)
  *Convert a string to a double.*
- template<>
  const std::string to_string (const long double &val)
  *Convert a long double to a string.*
- template<>
  long double from_string (const std::string &val)
  *Convert a string to a long double.*

### Additional Inherited Members

## 8.15.1 Detailed Description

**template<typename Type>**
**class jeod::JeodPrimitiveSerializer< Type >**

Serializer / deserializer for primitive data.

Definition at line 104 of file primitive_serializer.hh.

## 8.15.2 Constructor & Destructor Documentation

### 8.15.2.1 JeodPrimitiveSerializer() [1/2]

```
template<typename Type>
jeod::JeodPrimitiveSerializer< Type >::JeodPrimitiveSerializer ( )  [default]
```

Construct a JeodPrimitiveSerializer.

### 8.15.2.2 ~JeodPrimitiveSerializer()

```
template<typename Type>
jeod::JeodPrimitiveSerializer< Type >::~JeodPrimitiveSerializer ( )  [override], [default]
```

Destruct a JeodPrimitiveSerializer.

#### 8.15.2.3 JeodPrimitiveSerializer() [2/2]

```
template<typename Type>
jeod::JeodPrimitiveSerializer< Type >::JeodPrimitiveSerializer (
            const JeodPrimitiveSerializer< Type > & ) [delete]
```

### 8.15.3 Member Function Documentation

#### 8.15.3.1 from_string() [1/5]

```
template<typename Type>
Type jeod::JeodPrimitiveSerializer< Type >::from_string (
            const std::string & val ) [inline]
```

Convert a string to its corresponding primitive value.

Definition at line 130 of file primitive_serializer.hh.

Referenced by jeod::JeodPrimitiveContainer< ContainerType, ElemType >::perform_insert_action().

#### 8.15.3.2 from_string() [2/5]

```
template<>
std::string jeod::JeodPrimitiveSerializer< std::string >::from_string (
            const std::string & val ) [inline]
```

Convert a string as recorded in the checkpoint file to its original form.

Definition at line 154 of file primitive_serializer.hh.

#### 8.15.3.3 from_string() [3/5]

```
template<>
float jeod::JeodPrimitiveSerializer< float >::from_string (
            const std::string & val ) [inline]
```

Convert a string to a float.

Definition at line 170 of file primitive_serializer.hh.

#### 8.15.3.4 from_string() [4/5]

```
template<>
double jeod::JeodPrimitiveSerializer< double >::from_string (
            const std::string & val )  [inline]
```

Convert a string to a double.

Definition at line 186 of file primitive_serializer.hh.

#### 8.15.3.5 from_string() [5/5]

```
template<>
long double jeod::JeodPrimitiveSerializer< long double >::from_string (
            const std::string & val )  [inline]
```

Convert a string to a long double.

Definition at line 202 of file primitive_serializer.hh.

#### 8.15.3.6 operator=()

```
template<typename Type>
JeodPrimitiveSerializer& jeod::JeodPrimitiveSerializer< Type >::operator= (
            const JeodPrimitiveSerializer< Type > &  )  [delete]
```

#### 8.15.3.7 to_string() [1/5]

```
template<typename Type>
const std::string jeod::JeodPrimitiveSerializer< Type >::to_string (
            const Type & val )  [inline]
```

Convert a primitive value to its string-equivalent.

Definition at line 120 of file primitive_serializer.hh.

Referenced by jeod::JeodPrimitiveContainer< ContainerType, ElemType >::get_item_value().

#### 8.15.3.8 to_string() [2/5]

```
template<>
const std::string jeod::JeodPrimitiveSerializer< std::string >::to_string (
            const std::string & val )  [inline]
```

Convert a string to a string suitable for output: Backslash-escape backslashes and double quotes.

Definition at line 146 of file primitive_serializer.hh.

#### 8.15.3.9 to_string() [3/5]

```
template<>
const std::string jeod::JeodPrimitiveSerializer< float >::to_string (
            const float & val )  [inline]
```

Convert a float to a string.

Definition at line 162 of file primitive_serializer.hh.

#### 8.15.3.10 to_string() [4/5]

```
template<>
const std::string jeod::JeodPrimitiveSerializer< double >::to_string (
            const double & val )  [inline]
```

Convert a double to a string.

Definition at line 178 of file primitive_serializer.hh.

#### 8.15.3.11 to_string() [5/5]

```
template<>
const std::string jeod::JeodPrimitiveSerializer< long double >::to_string (
            const long double & val )  [inline]
```

Convert a long double to a string.

Definition at line 194 of file primitive_serializer.hh.

The documentation for this class was generated from the following file:

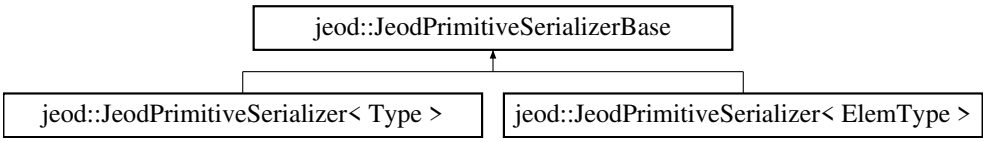
- primitive_serializer.hh

## 8.16 jeod::JeodPrimitiveSerializerBase Class Reference

Base class for serializing / deserializing primitive data.

`#include <primitive_serializer.hh>`

Inheritance diagram for jeod::JeodPrimitiveSerializerBase:




### Public Member Functions

- JeodPrimitiveSerializerBase ()=default
  *Construct a JeodPrimitiveSerializerBase.*
- virtual ~JeodPrimitiveSerializerBase ()=default
  *Destruct a JeodPrimitiveSerializerBase.*

### Static Protected Member Functions

- static const std::string serialize_string (const std::string &val)
  *Convert a string to a string suitable for output.*
- static const std::string deserialize_string (const std::string &val)
  *Convert a serialized string to its internal representation.*
- static const std::string serialize_float (const float &val)
  *Convert a float to a string suitable for output.*
- static float deserialize_float (const std::string &val)
  *Convert a serialized float to its internal representation.*
- static const std::string serialize_double (const double &val)
  *Convert a double to a string suitable for output.*
- static double deserialize_double (const std::string &val)
  *Convert a serialized double to its internal representation.*
- static const std::string serialize_long_double (const long double &val)
  *Convert a long double to a string suitable for output.*
- static long double deserialize_long_double (const std::string &val)
  *Convert a serialized double to its internal representation.*

### 8.16.1 Detailed Description

Base class for serializing / deserializing primitive data.

Definition at line 77 of file primitive_serializer.hh.

### 8.16.2 Constructor & Destructor Documentation

#### 8.16.2.1 JeodPrimitiveSerializerBase()

```
jeod::JeodPrimitiveSerializerBase::JeodPrimitiveSerializerBase ( )  [default]
```

Construct a JeodPrimitiveSerializerBase.

#### 8.16.2.2 ~JeodPrimitiveSerializerBase()

```
virtual jeod::JeodPrimitiveSerializerBase::~JeodPrimitiveSerializerBase ( )  [virtual], [default]
```

Destruct a JeodPrimitiveSerializerBase.

### 8.16.3 Member Function Documentation

#### 8.16.3.1 deserialize_double()

```
double jeod::JeodPrimitiveSerializerBase::deserialize_double (
            const std::string & val )  [static], [protected]
```

Convert a serialized double to its internal representation.

**Returns**

Deserialized double

**Parameters**

| | | |
|---|---|---|
| in | *val* | Serialized string |

Definition at line 227 of file primitive_serializer.cc.

#### 8.16.3.2 deserialize_float()

```
float jeod::JeodPrimitiveSerializerBase::deserialize_float (
            const std::string & val )  [static], [protected]
```

Convert a serialized float to its internal representation.

**Returns**

Deserialized float

**Parameters**

| | | |
|---|---|---|
| in | *val* | Serialized string |

Definition at line 163 of file primitive_serializer.cc.

#### 8.16.3.3 deserialize_long_double()

```
long double jeod::JeodPrimitiveSerializerBase::deserialize_long_double (
             const std::string & val )  [static], [protected]
```

Convert a serialized double to its internal representation.

**Returns**

Deserialized long double

**Parameters**

| | | |
|---|---|---|
| in | *val* | Serialized string |

Definition at line 291 of file primitive_serializer.cc.

#### 8.16.3.4 deserialize_string()

```
const std::string jeod::JeodPrimitiveSerializerBase::deserialize_string (
             const std::string & val )  [static], [protected]
```

Convert a serialized string to its internal representation.

Backslash-escaped characters are converted to special characters.

**Returns**

Deserialized string

**Parameters**

| | | |
|---|---|---|
| in | *val* | Serialized string |

Definition at line 89 of file primitive_serializer.cc.

#### 8.16.3.5 serialize_double()

```
const std::string jeod::JeodPrimitiveSerializerBase::serialize_double (
            const double & val )  [static], [protected]
```

Convert a double to a string suitable for output.

NaNs and Infs get special treatment. Everything is serialized via c++ I/O.

**Returns**

Serialized number

**Parameters**

| | | |
|---|---|---|
| in | *val* | Number to serialize |

Definition at line 195 of file primitive_serializer.cc.

#### 8.16.3.6 serialize_float()

```
const std::string jeod::JeodPrimitiveSerializerBase::serialize_float (
            const float & val )  [static], [protected]
```

Convert a float to a string suitable for output.

NaNs and Infs get special treatment. Everything is serialized via c++ I/O.

**Returns**

Serialized number

**Parameters**

| | | |
|---|---|---|
| in | *val* | Number to serialize |

Definition at line 131 of file primitive_serializer.cc.

#### 8.16.3.7 serialize_long_double()

```
const std::string jeod::JeodPrimitiveSerializerBase::serialize_long_double (
            const long double & val )  [static], [protected]
```

Convert a long double to a string suitable for output.

NaNs and Infs get special treatment. Everything is serialized via c++ I/O.

**Returns**

Serialized number

**Parameters**

| | | |
|---|---|---|
| in | *val* | Number to serialize |

Definition at line 259 of file primitive_serializer.cc.

#### 8.16.3.8 serialize_string()

```
const std::string jeod::JeodPrimitiveSerializerBase::serialize_string (
            const std::string & val )  [static], [protected]
```

Convert a string to a string suitable for output.

Special characters are backslash-escaped.

**Returns**

Serialized string

**Parameters**

| | | |
|---|---|---|
| in | *val* | String to serialize |

Definition at line 45 of file primitive_serializer.cc.

The documentation for this class was generated from the following files:

- primitive_serializer.hh
- primitive_serializer.cc

## 8.17 jeod::JeodPrimitiveSet< ElemType > Class Template Reference

Defines a registry for defining a checkpointable set of primitives.

```
#include <primitive_set.hh>
```

### Public Types

- using type = JeodPrimitiveContainer< JeodSet< ElemType >, ElemType >

  *Template typedef for a checkpointable set of primitives.*

### 8.17.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodPrimitiveSet< ElemType >**

Defines a registry for defining a checkpointable set of primitives.

Usage: JeodPrimitiveSet<type>::type variable_name

Definition at line 75 of file primitive_set.hh.

### 8.17.2 Member Typedef Documentation

#### 8.17.2.1 type

```
template<typename ElemType >
using jeod::JeodPrimitiveSet< ElemType >::type = JeodPrimitiveContainer<JeodSet<ElemType>,
ElemType>
```

Template typedef for a checkpointable set of primitives.

Definition at line 81 of file primitive_set.hh.

The documentation for this class was generated from the following file:

- primitive_set.hh

## 8.18 jeod::JeodPrimitiveVector< ElemType > Class Template Reference

Defines a registry for defining a checkpointable vector of primitives.

```
#include <primitive_vector.hh>
```

### Public Types

- using type = JeodPrimitiveContainer< JeodVector< ElemType >, ElemType >
  *Template typedef for a checkpointable vector of primitives.*

### 8.18.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodPrimitiveVector< ElemType >**

Defines a registry for defining a checkpointable vector of primitives.

Usage: JeodPrimitiveVector<type>::type variable_name

Definition at line 76 of file primitive_vector.hh.

### 8.18.2 Member Typedef Documentation

#### 8.18.2.1 type

```
template<typename ElemType >
using jeod::JeodPrimitiveVector< ElemType >::type = JeodPrimitiveContainer<JeodVector<Elem↩
Type>, ElemType>
```

Template typedef for a checkpointable vector of primitives.

Definition at line 82 of file primitive_vector.hh.

The documentation for this class was generated from the following file:

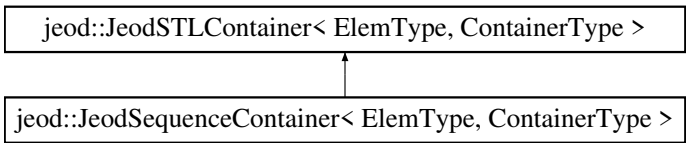
- primitive_vector.hh

## 8.19 jeod::JeodSequenceContainer< ElemType, ContainerType > Class Template Reference

This is the base class for the JEOD replacements of the STL sequence containers.

```
#include <jeod_sequence_container.hh>
```

Inheritance diagram for jeod::JeodSequenceContainer< ElemType, ContainerType >:




### Public Types

- using this_container_type = JeodSequenceContainer< ElemType, ContainerType >

  *This type.*
- using base_container_type = JeodSTLContainer< ElemType, ContainerType >

  *The JeodSTLContainer.*

## Public Member Functions

- virtual ~JeodSequenceContainer ()=default

  *Destructor.*
- base_container_type::reference back ()

  *Get the element at the tail of the contents.*
- base_container_type::const_reference back () const

  *Get the element at the tail of the contents.*
- base_container_type::reference front ()

  *Get the element at the head of the contents.*
- base_container_type::const_reference front () const

  *Get the element at the head of the contents.*
- template<class InputIterator >
  void assign (InputIterator first, InputIterator last)

  *Replace the container's contents with that specified by the iterators.*
- void assign (typename base_container_type::size_type new_size, const ElemType &new_elem)

  *Replace the container's contents with new_size copies of new_elem.*
- base_container_type::iterator erase (typename base_container_type::iterator position)

  *Erase one item.*
- base_container_type::iterator erase (typename base_container_type::iterator first, typename base_container_type::iterator last)

  *Erase a sequence of items.*
- template<class InputIterator >
  void insert (typename base_container_type::iterator position, InputIterator first, InputIterator last)

  *Insert elements before iterator position, initializing the inserted elements from the values pointed to by an iterator.*
- void insert (typename base_container_type::iterator position, typename base_container_type::size_type ncopies, const ElemType &new_elem)

  *Extends the list by ncopies elements before the iterator position, initializing each newly created element with new_elem.*
- void resize (typename base_container_type::size_type new_size, ElemType new_elem=ElemType())

  *Resizes the container, adding or deleting items as needed.*
- void push_back (const ElemType &elem)

  *Add an element to the end of the contents.*
- void pop_back ()

  *Deletes the element at the end of the contents.*
- iterator insert (iterator position, const value_type &new_elem)

  *Insert a new element initialized with new_elem before the iterator position.*

## Protected Member Functions

- JeodSequenceContainer ()=default

  *Default constructor.*
- JeodSequenceContainer (const this_container_type &src)

  *Copy constructor.*
- JeodSequenceContainer (const ContainerType &src)

  *Copy constructor from STL container.*

### Additional Inherited Members

## 8.19.1 Detailed Description

**template<typename ElemType, typename ContainerType>**
**class jeod::JeodSequenceContainer< ElemType, ContainerType >**

This is the base class for the JEOD replacements of the STL sequence containers.

The class derives from JeodSTLContainer, the base class for the JEOD replacements of the STL containers.

A key goal of the JEOD STL sequence container replacement effort is to provide checkpointable replacements that transparently provide the full functionality of the ISO/IEC 14882:2003 STL sequence containers. This class begins that effort by defining types and member functions common to the STL deque, list, and vector class templates. Non-common methods are the responsibility of derived class templates specialized to a specific container types.

**Note**

Exceptions to full functionality goal: The above goal is not and never will be fully achieved. Exceptions are:

- JEOD doesn't supply a replacement for std::deque. JEOD doesn't use deques.
- The full panoply of STL sequence container constructors is not supplied.

Definition at line 100 of file jeod_sequence_container.hh.

## 8.19.2 Member Typedef Documentation

### 8.19.2.1 base_container_type

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSequenceContainer< ElemType, ContainerType >::base_container_type = JeodSTLContainer<Elem↩
Type, ContainerType>
```

The JeodSTLContainer.

Definition at line 113 of file jeod_sequence_container.hh.

### 8.19.2.2 this_container_type

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSequenceContainer< ElemType, ContainerType >::this_container_type = JeodSequenceContainer<Ele
Type, ContainerType>
```

This type.

Definition at line 108 of file jeod_sequence_container.hh.

### 8.19.3 Constructor & Destructor Documentation

#### 8.19.3.1 ~JeodSequenceContainer()

```
template<typename ElemType, typename ContainerType>
virtual jeod::JeodSequenceContainer< ElemType, ContainerType >::~JeodSequenceContainer ( )
[virtual], [default]
```

Destructor.

#### 8.19.3.2 JeodSequenceContainer() [1/3]

```
template<typename ElemType, typename ContainerType>
jeod::JeodSequenceContainer< ElemType, ContainerType >::JeodSequenceContainer ( )  [protected],
[default]
```

Default constructor.

Note: Making this protected precludes someone from declaring an object to be of type JEODSTLContainer. Access is via some other class that inherits from this class.

#### 8.19.3.3 JeodSequenceContainer() [2/3]

```
template<typename ElemType, typename ContainerType>
jeod::JeodSequenceContainer< ElemType, ContainerType >::JeodSequenceContainer (
            const this_container_type & src )  [inline], [explicit], [protected]
```

Copy constructor.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 281 of file jeod_sequence_container.hh.

#### 8.19.3.4 JeodSequenceContainer() [3/3]

```
template<typename ElemType, typename ContainerType>
jeod::JeodSequenceContainer< ElemType, ContainerType >::JeodSequenceContainer (
            const ContainerType & src )  [inline], [explicit], [protected]
```

Copy constructor from STL container.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 290 of file jeod_sequence_container.hh.

### 8.19.4 Member Function Documentation

#### 8.19.4.1 assign() [1/2]

```
template<typename ElemType, typename ContainerType>
template<class InputIterator >
void jeod::JeodSequenceContainer< ElemType, ContainerType >::assign (
             InputIterator first,
             InputIterator last )  [inline]
```

Replace the container's contents with that specified by the iterators.

**Parameters**

| | |
|---|---|
| *first* | Input iterator. |
| *last* | Input iterator. |

Definition at line 171 of file jeod_sequence_container.hh.

#### 8.19.4.2 assign() [2/2]

```
template<typename ElemType, typename ContainerType>
void jeod::JeodSequenceContainer< ElemType, ContainerType >::assign (
             typename base_container_type::size_type new_size,
             const ElemType & new_elem )  [inline]
```

Replace the container's contents with *new_size* copies of *new_elem*.

**Parameters**

| | |
|---|---|
| *new_size* | New size of the container. |
| *new_elem* | Element to be replicated to fill the container. |

Definition at line 181 of file jeod_sequence_container.hh.

#### 8.19.4.3 back() [1/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::reference jeod::JeodSequenceContainer< ElemType, ContainerType >::back (
) [inline]
```

Get the element at the tail of the contents.

Definition at line 135 of file jeod_sequence_container.hh.

#### 8.19.4.4 back() [2/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::const_reference jeod::JeodSequenceContainer< ElemType, ContainerType >↩
::back ( ) const [inline]
```

Get the element at the tail of the contents.

Definition at line 143 of file jeod_sequence_container.hh.

#### 8.19.4.5 erase() [1/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::iterator jeod::JeodSequenceContainer< ElemType, ContainerType >::erase (
            typename base_container_type::iterator position ) [inline]
```

Erase one item.

**Parameters**

| | |
|---|---|
| *position* | Position to be erased |

Definition at line 190 of file jeod_sequence_container.hh.

#### 8.19.4.6 erase() [2/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::iterator jeod::JeodSequenceContainer< ElemType, ContainerType >::erase (
            typename base_container_type::iterator first,
            typename base_container_type::iterator last ) [inline]
```

Erase a sequence of items.

**Parameters**

| | |
|---|---|
| *first* | First element to be erased |
| *last* | One past last element to be erased |

Definition at line 200 of file jeod_sequence_container.hh.

#### 8.19.4.7 front() [1/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::reference jeod::JeodSequenceContainer< ElemType, ContainerType >::front (
) [inline]
```

Get the element at the head of the contents.

Definition at line 151 of file jeod_sequence_container.hh.

#### 8.19.4.8 front() [2/2]

```
template<typename ElemType, typename ContainerType>
base_container_type::const_reference jeod::JeodSequenceContainer< ElemType, ContainerType >↩
::front ( ) const [inline]
```

Get the element at the head of the contents.

Definition at line 159 of file jeod_sequence_container.hh.

#### 8.19.4.9 insert() [1/3]

```
template<typename ElemType, typename ContainerType>
iterator jeod::JeodSTLContainer< ElemType, ContainerType >::insert [inline]
```

Insert a new element initialized with *new_elem* before the iterator *position*.

**Parameters**

| | |
|---|---|
| *position* | Insertion position |
| *new_elem* | Element value to be inserted |

**Returns**

Iterator that points to the newly-inserted element

Definition at line 340 of file jeod_stl_container.hh.

#### 8.19.4.10 insert() [2/3]

```
template<typename ElemType, typename ContainerType>
template<class InputIterator >
void jeod::JeodSequenceContainer< ElemType, ContainerType >::insert (
             typename base_container_type::iterator position,
             InputIterator first,
             InputIterator last )  [inline]
```

Insert elements before iterator *position*, initializing the inserted elements from the values pointed to by an iterator.

**Parameters**

| | |
|---|---|
| *position* | Insertion position |
| *first* | Input iterator |
| *last* | Input iterator |

Definition at line 218 of file jeod_sequence_container.hh.

#### 8.19.4.11 insert() [3/3]

```
template<typename ElemType, typename ContainerType>
void jeod::JeodSequenceContainer< ElemType, ContainerType >::insert (
             typename base_container_type::iterator position,
             typename base_container_type::size_type ncopies,
             const ElemType & new_elem )  [inline]
```

Extends the list by *ncopies* elements before the iterator *position*, initializing each newly created element with *new_elem*.

**Parameters**

| | |
|---|---|
| *position* | Insertion position |
| *ncopies* | Number of elements to be inserted |
| *new_elem* | Element value to be inserted |

Definition at line 230 of file jeod_sequence_container.hh.

#### 8.19.4.12 pop_back()

```
template<typename ElemType, typename ContainerType>
void jeod::JeodSequenceContainer< ElemType, ContainerType >::pop_back ( )  [inline]
```

Deletes the element at the end of the contents.

Definition at line 259 of file jeod_sequence_container.hh.

#### 8.19.4.13 push_back()

```
template<typename ElemType, typename ContainerType>
void jeod::JeodSequenceContainer< ElemType, ContainerType >::push_back (
            const ElemType & elem )  [inline]
```

Add an element to the end of the contents.

**Parameters**

| | |
|---|---|
| *elem* | Element to be added. |

Definition at line 251 of file jeod_sequence_container.hh.

#### 8.19.4.14 resize()

```
template<typename ElemType, typename ContainerType>
void jeod::JeodSequenceContainer< ElemType, ContainerType >::resize (
            typename base_container_type::size_type new_size,
            ElemType new_elem = ElemType() )  [inline]
```

Resizes the container, adding or deleting items as needed.

**Parameters**

| | |
|---|---|
| *new_size* | New size |
| *new_elem* | Element to be added repetively if object is to grow. |

Definition at line 242 of file jeod_sequence_container.hh.

The documentation for this class was generated from the following file:

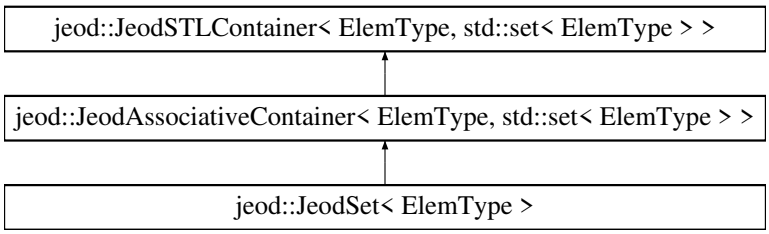
- jeod_sequence_container.hh

## 8.20 jeod::JeodSet< ElemType > Class Template Reference

The JEOD replacement for std::set.

```
#include <jeod_set.hh>
```

Inheritance diagram for jeod::JeodSet< ElemType >:




## Public Types

- using this_container_type = JeodSet< ElemType >

  *This particular JeodSet type.*
- using jeod_associative_container_type = JeodAssociativeContainer< ElemType, std::set< ElemType > >

  *The JeodAssociativeContainer type.*
- using jeod_stl_container_type = JeodSTLContainer< ElemType, std::set< ElemType > >

  *The JeodSTLContainer type.*
- using stl_container_type = std::set< ElemType >

  *The std::set itself.*

## Public Member Functions

- virtual ~JeodSet ()=default

  *Destructor.*
- JeodSet & operator= (const this_container_type &src)

  *Copy contents from the given source.*
- JeodSet & operator= (const stl_container_type &src)

  *Copy contents from the given source.*

## Protected Member Functions

- JeodSet ()=default

  *Default constructor.*
- JeodSet (const this_container_type &src)

  *Copy constructor.*
- JeodSet (const stl_container_type &src)

  *Copy constructor from STL container.*

## Additional Inherited Members

### 8.20.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodSet< ElemType >**

The JEOD replacement for std::set.

Definition at line 81 of file jeod_set.hh.

### 8.20.2 Member Typedef Documentation

#### 8.20.2.1 jeod_associative_container_type

```
template<typename ElemType >
using jeod::JeodSet< ElemType >::jeod_associative_container_type = JeodAssociativeContainer<Elem↩
Type, std::set<ElemType> >
```

The JeodAssociativeContainer type.

Definition at line 94 of file jeod_set.hh.

#### 8.20.2.2 jeod_stl_container_type

```
template<typename ElemType >
using jeod::JeodSet< ElemType >::jeod_stl_container_type = JeodSTLContainer<ElemType, std↩
::set<ElemType> >
```

The JeodSTLContainer type.

Definition at line 99 of file jeod_set.hh.

#### 8.20.2.3 stl_container_type

```
template<typename ElemType >
using jeod::JeodSet< ElemType >::stl_container_type = std::set<ElemType>
```

The std::set itself.

Definition at line 104 of file jeod_set.hh.

#### 8.20.2.4 this_container_type

```
template<typename ElemType >
using jeod::JeodSet< ElemType >::this_container_type = JeodSet<ElemType>
```

This particular JeodSet type.

Definition at line 89 of file jeod_set.hh.

### 8.20.3 Constructor & Destructor Documentation

#### 8.20.3.1 ~JeodSet()

```
template<typename ElemType >
virtual jeod::JeodSet< ElemType >::~JeodSet ( )  [virtual], [default]
```

Destructor.

#### 8.20.3.2 JeodSet() [1/3]

```
template<typename ElemType >
jeod::JeodSet< ElemType >::JeodSet ( )  [protected], [default]
```

Default constructor.

#### 8.20.3.3 JeodSet() [2/3]

```
template<typename ElemType >
jeod::JeodSet< ElemType >::JeodSet (
            const this_container_type & src )  [inline], [protected]
```

Copy constructor.

Definition at line 145 of file jeod_set.hh.

#### 8.20.3.4 JeodSet() [3/3]

```
template<typename ElemType >
jeod::JeodSet< ElemType >::JeodSet (
            const stl_container_type & src )  [inline], [explicit], [protected]
```

Copy constructor from STL container.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 154 of file jeod_set.hh.

### 8.20.4 Member Function Documentation

#### 8.20.4.1 operator=() [1/2]

```
template<typename ElemType >
JeodSet& jeod::JeodSet< ElemType >::operator= (
            const this_container_type & src )  [inline]
```

Copy contents from the given source.

Definition at line 121 of file jeod_set.hh.

References jeod::JeodSTLContainer< ElemType, std::set< ElemType > >::operator=().

#### 8.20.4.2 operator=() [2/2]

```
template<typename ElemType >
JeodSet& jeod::JeodSet< ElemType >::operator= (
            const stl_container_type & src )  [inline]
```

Copy contents from the given source.

Definition at line 130 of file jeod_set.hh.

References jeod::JeodSTLContainer< ElemType, std::set< ElemType > >::operator=().

The documentation for this class was generated from the following file:

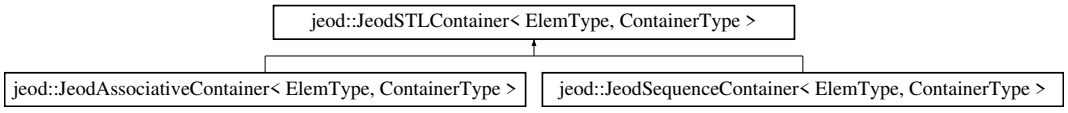
- jeod_set.hh

## 8.21 jeod::JeodSTLContainer< ElemType, ContainerType > Class Template Reference

This is the base class for the JEOD replacements of the STL containers.

```
#include <jeod_stl_container.hh>
```

Inheritance diagram for jeod::JeodSTLContainer< ElemType, ContainerType >:



## Public Types

- using this_container_type = JeodSTLContainer< ElemType, ContainerType >

  *This particular JeodSTLContainer type.*
- using allocator_type = typename ContainerType::allocator_type

  *Import the ContainerType::allocator_type.*
- using reference = typename ContainerType::reference

  *Import the ContainerType::reference.*
- using const_reference = typename ContainerType::const_reference

  *Import the ContainerType::const_reference.*
- using iterator = typename ContainerType::iterator

  *Import the ContainerType::iterator.*
- using const_iterator = typename ContainerType::const_iterator

  *Import the ContainerType::const_iterator.*
- using reverse_iterator = typename ContainerType::reverse_iterator

  *Import the ContainerType::reverse_iterator.*
- using const_reverse_iterator = typename ContainerType::const_reverse_iterator

  *Import the ContainerType::const_reverse_iterator.*
- using difference_type = typename ContainerType::difference_type

  *Import the ContainerType::difference_type.*
- using size_type = typename ContainerType::size_type

  *Import the ContainerType::size_type.*
- using value_type = typename ContainerType::value_type

  *Import the ContainerType::value_type.*

## Public Member Functions

- virtual ~JeodSTLContainer ()=default

  *Destructor.*
- operator ContainerType & ()

  *Returns the contents as an lvalue.*
- operator const ContainerType & () const

  *Returns the contents as a const rvalue.*
- this_container_type & operator= (const this_container_type &src)

  *Assignment operator.*
- this_container_type & operator= (const ContainerType &src)

  *Assignment operator.*
- allocator_type get_allocator () const

  *Returns the allocator object used to construct the contents.*
- iterator begin ()

  *Returns an iterator that points to the first element.*
- const_iterator begin () const

  *Returns a const iterator that points to the first element.*
- iterator end ()

  *Returns an iterator that points past the last element.*
- const_iterator end () const

  *Returns a const iterator that points past the last element.*
- reverse_iterator rbegin ()

  *Returns a reverse iterator that points to the last element.*
- const_reverse_iterator rbegin () const

*Returns a const reverse iterator that points to the last element.*

- reverse_iterator rend ()

  *Returns a reverse iterator that points before the first element.*

- const_reverse_iterator rend () const

  *Returns a const reverse iterator that points before the first element.*

- bool empty () const

  *Returns true if the contents are empty, false otherwise.*

- size_type max_size () const

  *Returns the implementation's limit on the number of elements.*

- size_type size () const

  *Returns the number of elements.*

- void clear ()

  *Clear the contents.*

- iterator insert (iterator position, const value_type &new_elem)

  *Insert a new element initialized with new_elem before the iterator position.*

### Protected Member Functions

- JeodSTLContainer ()=default

  *Default constructor.*

- JeodSTLContainer (const this_container_type &src)

  *Copy constructor.*

- JeodSTLContainer (const ContainerType &src)

  *Copy constructor from STL container.*

- void swap (this_container_type &other)

  *Swap contents.*

- void swap (ContainerType &other)

  *Swap contents.*

### Protected Attributes

- ContainerType contents

  *The STL container.*

## 8.21.1 Detailed Description

**template<typename ElemType, typename ContainerType>**
**class jeod::JeodSTLContainer< ElemType, ContainerType >**

This is the base class for the JEOD replacements of the STL containers.

A key goal of the JEOD STL container replacement effort is to provide checkpointable replacements that transparently provide the full functionality of the ISO/IEC 14882:2003 STL containers. This class begins that effort by defining types and member functions common to the STL deque, list, map, set, and vector class templates. Non-common methods are the responsibility of derived class templates specialized to a specific container types.

**Note**

Exceptions to full functionality goal: The above goal is not and never will be fully achieved. Exceptions are:

- JEOD doesn't supply a replacement for std::deque or std::map. JEOD doesn't use deques at all and its maps are not checkpointable.
- The full panoply of STL container constructors is not supplied.
- The swap method is supplied but it is protected. The intent is that this class be further derived to create a checkpointable class. Swapping the checkpointable content is a dubious concept. The swap method is eventually exposed as the swap_stl_contents method to make it clear that that method is not a true swap.

Definition at line 98 of file jeod_stl_container.hh.

### 8.21.2 Member Typedef Documentation

#### 8.21.2.1 allocator_type

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::allocator_type = typename Container↩
Type::allocator_type
```

Import the ContainerType::allocator_type.

Definition at line 111 of file jeod_stl_container.hh.

#### 8.21.2.2 const_iterator

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::const_iterator = typename Container↩
Type::const_iterator
```

Import the ContainerType::const_iterator.

Definition at line 131 of file jeod_stl_container.hh.

#### 8.21.2.3 const_reference

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::const_reference = typename Container↩
Type::const_reference
```

Import the ContainerType::const_reference.

Definition at line 121 of file jeod_stl_container.hh.

#### 8.21.2.4 const_reverse_iterator

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::const_reverse_iterator = typename
ContainerType::const_reverse_iterator
```

Import the ContainerType::const_reverse_iterator.

Definition at line 141 of file jeod_stl_container.hh.

#### 8.21.2.5 difference_type

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::difference_type = typename Container↩
Type::difference_type
```

Import the ContainerType::difference_type.

Definition at line 146 of file jeod_stl_container.hh.

#### 8.21.2.6 iterator

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::iterator = typename ContainerType↩
::iterator
```

Import the ContainerType::iterator.

Definition at line 126 of file jeod_stl_container.hh.

#### 8.21.2.7 reference

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::reference = typename ContainerType↩
::reference
```

Import the ContainerType::reference.

Definition at line 116 of file jeod_stl_container.hh.

#### 8.21.2.8 reverse_iterator

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::reverse_iterator = typename Container↩
Type::reverse_iterator
```

Import the ContainerType::reverse_iterator.

Definition at line 136 of file jeod_stl_container.hh.

#### 8.21.2.9 size_type

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::size_type = typename ContainerType↩
::size_type
```

Import the ContainerType::size_type.

Definition at line 151 of file jeod_stl_container.hh.

#### 8.21.2.10 this_container_type

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::this_container_type = JeodSTLContainer<Elem↩
Type, ContainerType>
```

This particular JeodSTLContainer type.

Definition at line 106 of file jeod_stl_container.hh.

#### 8.21.2.11 value_type

```
template<typename ElemType, typename ContainerType>
using jeod::JeodSTLContainer< ElemType, ContainerType >::value_type = typename ContainerType↩
::value_type
```

Import the ContainerType::value_type.

Definition at line 156 of file jeod_stl_container.hh.

### 8.21.3 Constructor & Destructor Documentation

#### 8.21.3.1 ~JeodSTLContainer()

```
template<typename ElemType, typename ContainerType>
virtual jeod::JeodSTLContainer< ElemType, ContainerType >::~JeodSTLContainer ( )  [virtual],
[default]
```

Destructor.

#### 8.21.3.2 JeodSTLContainer() [1/3]

```
template<typename ElemType, typename ContainerType>
jeod::JeodSTLContainer< ElemType, ContainerType >::JeodSTLContainer ( )  [protected], [default]
```

Default constructor.

Note: Making this protected precludes someone from declaring an object to be of type JEODSTLContainer. Access is via some other class that inherits from this class.

#### 8.21.3.3 JeodSTLContainer() [2/3]

```
template<typename ElemType, typename ContainerType>
jeod::JeodSTLContainer< ElemType, ContainerType >::JeodSTLContainer (
            const this_container_type & src )  [inline], [explicit], [protected]
```

Copy constructor.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 362 of file jeod_stl_container.hh.

#### 8.21.3.4 JeodSTLContainer() [3/3]

```
template<typename ElemType, typename ContainerType>
jeod::JeodSTLContainer< ElemType, ContainerType >::JeodSTLContainer (
            const ContainerType & src )  [inline], [explicit], [protected]
```

Copy constructor from STL container.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 371 of file jeod_stl_container.hh.

## 8.21.4 Member Function Documentation

### 8.21.4.1 begin() [1/2]

```
template<typename ElemType, typename ContainerType>
iterator jeod::JeodSTLContainer< ElemType, ContainerType >::begin ( )  [inline]
```

Returns an iterator that points to the first element.

Definition at line 236 of file jeod_stl_container.hh.

### 8.21.4.2 begin() [2/2]

```
template<typename ElemType, typename ContainerType>
const_iterator jeod::JeodSTLContainer< ElemType, ContainerType >::begin ( ) const  [inline]
```

Returns a const iterator that points to the first element.

Definition at line 244 of file jeod_stl_container.hh.

### 8.21.4.3 clear()

```
template<typename ElemType, typename ContainerType>
void jeod::JeodSTLContainer< ElemType, ContainerType >::clear ( )  [inline]
```

Clear the contents.

Definition at line 328 of file jeod_stl_container.hh.

Referenced by jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::operator=().

### 8.21.4.4 empty()

```
template<typename ElemType, typename ContainerType>
bool jeod::JeodSTLContainer< ElemType, ContainerType >::empty ( ) const  [inline]
```

Returns true if the contents are empty, false otherwise.

Definition at line 302 of file jeod_stl_container.hh.

#### 8.21.4.5 end() [1/2]

```
template<typename ElemType, typename ContainerType>
iterator jeod::JeodSTLContainer< ElemType, ContainerType >::end ( )  [inline]
```

Returns an iterator that points past the last element.

Definition at line 252 of file jeod_stl_container.hh.

#### 8.21.4.6 end() [2/2]

```
template<typename ElemType, typename ContainerType>
const_iterator jeod::JeodSTLContainer< ElemType, ContainerType >::end ( ) const  [inline]
```

Returns a const iterator that points past the last element.

Definition at line 260 of file jeod_stl_container.hh.

#### 8.21.4.7 get_allocator()

```
template<typename ElemType, typename ContainerType>
allocator_type jeod::JeodSTLContainer< ElemType, ContainerType >::get_allocator ( ) const
[inline]
```

Returns the allocator object used to construct the contents.

Definition at line 226 of file jeod_stl_container.hh.

#### 8.21.4.8 insert()

```
template<typename ElemType, typename ContainerType>
iterator jeod::JeodSTLContainer< ElemType, ContainerType >::insert (
            iterator position,
            const value_type & new_elem )  [inline]
```

Insert a new element initialized with *new_elem* before the iterator *position*.

**Parameters**

| | |
|---|---|
| *position* | Insertion position |
| *new_elem* | Element value to be inserted |

**Returns**

Iterator that points to the newly-inserted element

Definition at line 340 of file jeod_stl_container.hh.

#### 8.21.4.9 max_size()

```
template<typename ElemType, typename ContainerType>
size_type jeod::JeodSTLContainer< ElemType, ContainerType >::max_size ( ) const  [inline]
```

Returns the implementation's limit on the number of elements.

Definition at line 310 of file jeod_stl_container.hh.

#### 8.21.4.10 operator const ContainerType &()

```
template<typename ElemType, typename ContainerType>
jeod::JeodSTLContainer< ElemType, ContainerType >::operator const ContainerType & ( ) const
[inline]
```

Returns the contents as a const rvalue.

Definition at line 186 of file jeod_stl_container.hh.

#### 8.21.4.11 operator ContainerType &()

```
template<typename ElemType, typename ContainerType>
jeod::JeodSTLContainer< ElemType, ContainerType >::operator ContainerType & ( )  [inline]
```

Returns the contents as an lvalue.

Definition at line 178 of file jeod_stl_container.hh.

#### 8.21.4.12 operator=() [1/2]

```
template<typename ElemType, typename ContainerType>
this_container_type& jeod::JeodSTLContainer< ElemType, ContainerType >::operator= (
            const this_container_type & src )  [inline]
```

Assignment operator.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 197 of file jeod_stl_container.hh.

#### 8.21.4.13 operator=() [2/2]

```
template<typename ElemType, typename ContainerType>
this_container_type& jeod::JeodSTLContainer< ElemType, ContainerType >::operator= (
            const ContainerType & src )  [inline]
```

Assignment operator.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 211 of file jeod_stl_container.hh.

#### 8.21.4.14 rbegin() [1/2]

```
template<typename ElemType, typename ContainerType>
reverse_iterator jeod::JeodSTLContainer< ElemType, ContainerType >::rbegin ( )  [inline]
```

Returns a reverse iterator that points to the last element.

Definition at line 268 of file jeod_stl_container.hh.

#### 8.21.4.15 rbegin() [2/2]

```
template<typename ElemType, typename ContainerType>
const_reverse_iterator jeod::JeodSTLContainer< ElemType, ContainerType >::rbegin ( ) const
[inline]
```

Returns a const reverse iterator that points to the last element.

Definition at line 276 of file jeod_stl_container.hh.

#### 8.21.4.16 rend() [1/2]

```
template<typename ElemType, typename ContainerType>
reverse_iterator jeod::JeodSTLContainer< ElemType, ContainerType >::rend ( )  [inline]
```

Returns a reverse iterator that points before the first element.

Definition at line 284 of file jeod_stl_container.hh.

#### 8.21.4.17 rend() [2/2]

```
template<typename ElemType, typename ContainerType>
const_reverse_iterator jeod::JeodSTLContainer< ElemType, ContainerType >::rend ( ) const
[inline]
```

Returns a const reverse iterator that points before the first element.

Definition at line 292 of file jeod_stl_container.hh.

#### 8.21.4.18 size()

```
template<typename ElemType, typename ContainerType>
size_type jeod::JeodSTLContainer< ElemType, ContainerType >::size ( ) const  [inline]
```

Returns the number of elements.

Definition at line 318 of file jeod_stl_container.hh.

#### 8.21.4.19 swap() [1/2]

```
template<typename ElemType, typename ContainerType>
void jeod::JeodSTLContainer< ElemType, ContainerType >::swap (
            this_container_type & other )  [inline], [protected]
```

Swap contents.

**Parameters**

| | |
|---|---|
| *other* | Other JEOD container with contents are to be swapped. |

Definition at line 384 of file jeod_stl_container.hh.

#### 8.21.4.20 swap() [2/2]

```
template<typename ElemType, typename ContainerType>
void jeod::JeodSTLContainer< ElemType, ContainerType >::swap (
             ContainerType & other )  [inline], [protected]
```

Swap contents.

**Parameters**

| | |
|---|---|
| *other* | Other STL container with contents are to be swapped. |

Definition at line 393 of file jeod_stl_container.hh.

### 8.21.5 Field Documentation

#### 8.21.5.1 contents

```
template<typename ElemType, typename ContainerType>
ContainerType jeod::JeodSTLContainer< ElemType, ContainerType >::contents  [protected]
```

The STL container.

trick_io(**)

Definition at line 403 of file jeod_stl_container.hh.

Referenced by jeod::JeodSequenceContainer< ElemType, std::list< ElemType > >::assign(), jeod::JeodSequenceContainer< ElemType, std::list< ElemType > >::back(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::begin(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::clear(), jeod::JeodAssociativeContainer< ElemType, std::set< ElemType > >::count(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::empty(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::end(), jeod::JeodAssociativeContainer< ElemType, std::set< ElemType > >::equal_range(), jeod::JeodSequenceContainer< ElemType, std::list< ElemType > >::erase(), jeod::JeodAssociativeContainer< ElemType, std::set< ElemType > >::erase(), jeod::JeodAssociativeContainer< ElemType, std::set< ElemType > >::find(), jeod::JeodSequenceContainer< ElemType, std::list< ElemType > >::front(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::get_allocator(), jeod::JeodSequenceContainer< ElemType, std::list< ElemType > >::insert(), jeod::JeodAssociativeContainer< ElemType, std::set< ElemType > >::insert(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::insert(), jeod::JeodAssociativeContainer< ElemType, std::set< ElemType > >::key_comp(), jeod::JeodAssociativeContainer< ElemType, std::set< ElemType > >::lower_bound(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::max_size(), jeod::JeodSTLContainer< ElemType, std::vector< ElemType > >::operator const std::vector< ElemType > &(), jeod::JeodSTLContainer< ElemType, std::vector< ElemType > >::operator std::vector< ElemType > &(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::operator=(), jeod::JeodSequenceContainer< ElemType, std::list< ElemType > >::pop_back(), jeod::JeodSequenceContainer< ElemType, std::list< ElemType > >::push_back(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::rbegin(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::rend(), jeod::JeodSequenceContainer< ElemType, std::list< ElemType > >::resize(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::size(), jeod::JeodSTLContainer< ElemType, std::list< ElemType > >::swap(), jeod::JeodAssociativeContainer< ElemType, std::set< ElemType > >::upper_bound(), and jeod::JeodAssociativeContainer< ElemType, std::set< ElemType > >::value_comp().

The documentation for this class was generated from the following file:

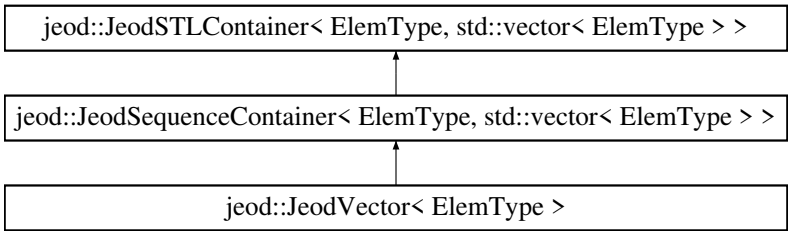
- jeod_stl_container.hh

## 8.22 jeod::JeodVector< ElemType > Class Template Reference

The JEOD replacement for std::vector.

`#include <jeod_vector.hh>`

Inheritance diagram for jeod::JeodVector< ElemType >:




### Public Types

- using this_container_type = JeodVector< ElemType >

  *This particular JeodVector type.*
- using jeod_sequence_container_type = JeodSequenceContainer< ElemType, std::vector< ElemType > >

  *The JeodSequenceContainer type.*
- using jeod_stl_container_type = JeodSTLContainer< ElemType, std::vector< ElemType > >

  *The JeodSTLContainer type.*
- using stl_container_type = std::vector< ElemType >

  *The std::vector itself.*

### Public Member Functions

- virtual ~JeodVector ()=default

  *Destructor.*
- JeodVector & operator= (const this_container_type &src)

  *Copy contents from the given source.*
- JeodVector & operator= (const stl_container_type &src)

  *Copy contents from the given source.*
- jeod_stl_container_type::size_type capacity () const

  *Returns the size of the allocated storage space for the vector.*
- void reserve (typename jeod_stl_container_type::size_type n)

  *Requests that the capacity of the allocated storage space be made large enough to hold at least n elements.*
- stl_container_type::reference operator[ ] (std::size_t n)

  *Get the nth element of the vector.*
- stl_container_type::const_reference operator[ ] (std::size_t n) const

  *Get the nth element of the vector.*
- stl_container_type::reference at (std::size_t n)

  *Get the nth element of the vector, throwing exception if out of range.*
- stl_container_type::const_reference at (std::size_t n) const

  *Get the nth element of the vector, throwing exception if out of range.*

### Protected Member Functions

- JeodVector ()=default

  *Default constructor.*
- JeodVector (const this_container_type &src)

  *Copy constructor.*
- JeodVector (const stl_container_type &src)

  *Copy constructor from STL container.*

### Additional Inherited Members

## 8.22.1 Detailed Description

**template<typename ElemType>**
**class jeod::JeodVector< ElemType >**

The JEOD replacement for std::vector.

Definition at line 87 of file jeod_vector.hh.

## 8.22.2 Member Typedef Documentation

### 8.22.2.1 jeod_sequence_container_type

```
template<typename ElemType >
using jeod::JeodVector< ElemType >::jeod_sequence_container_type = JeodSequenceContainer<Elem↩
Type, std::vector<ElemType> >
```

The JeodSequenceContainer type.

Definition at line 100 of file jeod_vector.hh.

### 8.22.2.2 jeod_stl_container_type

```
template<typename ElemType >
using jeod::JeodVector< ElemType >::jeod_stl_container_type = JeodSTLContainer<ElemType,
std::vector<ElemType> >
```

The JeodSTLContainer type.

Definition at line 105 of file jeod_vector.hh.

#### 8.22.2.3 stl_container_type

```
template<typename ElemType >
using jeod::JeodVector< ElemType >::stl_container_type = std::vector<ElemType>
```

The std::vector itself.

Definition at line 110 of file jeod_vector.hh.

#### 8.22.2.4 this_container_type

```
template<typename ElemType >
using jeod::JeodVector< ElemType >::this_container_type = JeodVector<ElemType>
```

This particular JeodVector type.

Definition at line 95 of file jeod_vector.hh.

### 8.22.3 Constructor & Destructor Documentation

#### 8.22.3.1 ~JeodVector()

```
template<typename ElemType >
virtual jeod::JeodVector< ElemType >::~JeodVector ( )  [virtual], [default]
```

Destructor.

#### 8.22.3.2 JeodVector() [1/3]

```
template<typename ElemType >
jeod::JeodVector< ElemType >::JeodVector ( )  [protected], [default]
```

Default constructor.

#### 8.22.3.3 JeodVector() [2/3]

```
template<typename ElemType >
jeod::JeodVector< ElemType >::JeodVector (
            const this_container_type & src )  [inline], [explicit], [protected]
```

Copy constructor.

Definition at line 208 of file jeod_vector.hh.

#### 8.22.3.4 JeodVector() [3/3]

```
template<typename ElemType >
jeod::JeodVector< ElemType >::JeodVector (
            const stl_container_type & src )  [inline], [explicit], [protected]
```

Copy constructor from STL container.

**Parameters**

| | |
|---|---|
| *src* | Source container to be copied |

Definition at line 217 of file jeod_vector.hh.

### 8.22.4 Member Function Documentation

#### 8.22.4.1 at() [1/2]

```
template<typename ElemType >
stl_container_type::reference jeod::JeodVector< ElemType >::at (
            std::size_t n )  [inline]
```

Get the nth element of the vector, throwing exception if out of range.

**Returns**

Nth element of the vector.

Definition at line 185 of file jeod_vector.hh.

References jeod::JeodSTLContainer< ElemType, std::vector< ElemType > >::contents.

#### 8.22.4.2 at() [2/2]

```
template<typename ElemType >
stl_container_type::const_reference jeod::JeodVector< ElemType >::at (
            std::size_t n ) const  [inline]
```

Get the nth element of the vector, throwing exception if out of range.

**Returns**

Nth element of the vector.

Definition at line 194 of file jeod_vector.hh.

References jeod::JeodSTLContainer< ElemType, std::vector< ElemType > >::contents.

#### 8.22.4.3 capacity()

```
template<typename ElemType >
jeod_stl_container_type::size_type jeod::JeodVector< ElemType >::capacity ( ) const  [inline]
```

Returns the size of the allocated storage space for the vector.

Definition at line 147 of file jeod_vector.hh.

References jeod::JeodSTLContainer< ElemType, std::vector< ElemType > >::contents.

#### 8.22.4.4 operator=() [1/2]

```
template<typename ElemType >
JeodVector& jeod::JeodVector< ElemType >::operator= (
             const this_container_type & src )  [inline]
```

Copy contents from the given source.

Definition at line 127 of file jeod_vector.hh.

References jeod::JeodSTLContainer< ElemType, std::vector< ElemType > >::operator=().

#### 8.22.4.5 operator=() [2/2]

```
template<typename ElemType >
JeodVector& jeod::JeodVector< ElemType >::operator= (
             const stl_container_type & src )  [inline]
```

Copy contents from the given source.

Definition at line 136 of file jeod_vector.hh.

References jeod::JeodSTLContainer< ElemType, std::vector< ElemType > >::operator=().

#### 8.22.4.6 operator[]() [1/2]

```
template<typename ElemType >
stl_container_type::reference jeod::JeodVector< ElemType >::operator[] (
             std::size_t n )  [inline]
```

Get the nth element of the vector.

**Returns**

Nth element of the vector.

Definition at line 167 of file jeod_vector.hh.

References jeod::JeodSTLContainer< ElemType, std::vector< ElemType > >::contents.

#### 8.22.4.7 operator[]() [2/2]

```
template<typename ElemType >
stl_container_type::const_reference jeod::JeodVector< ElemType >::operator[] (
            std::size_t n ) const  [inline]
```

Get the nth element of the vector.

**Returns**

Nth element of the vector.

Definition at line 176 of file jeod_vector.hh.

References jeod::JeodSTLContainer< ElemType, std::vector< ElemType > >::contents.

#### 8.22.4.8 reserve()

```
template<typename ElemType >
void jeod::JeodVector< ElemType >::reserve (
            typename jeod_stl_container_type::size_type n )  [inline]
```

Requests that the capacity of the allocated storage space be made large enough to hold at least *n* elements.

Definition at line 156 of file jeod_vector.hh.

References jeod::JeodSTLContainer< ElemType, std::vector< ElemType > >::contents.

The documentation for this class was generated from the following file:

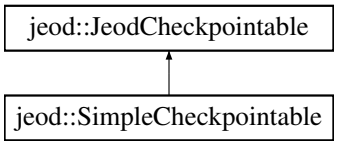
- jeod_vector.hh

## 8.23 jeod::SimpleCheckpointable Class Reference

The SimpleCheckpointable class provides a simple checkpoint/restart interface by which an object can complete the restart process.

`#include <simple_checkpointable.hh>`

Inheritance diagram for jeod::SimpleCheckpointable:



### Public Member Functions

- SimpleCheckpointable ()=default

  *Construct a SimpleCheckpointable object.*
- ~SimpleCheckpointable () override=default

  *Destruct a SimpleCheckpointable object.*
- const std::string get_init_name () override

  *Return the name of the initial restart action, in this case "restore".*
- const std::string get_item_name () override

  *Return the name of the current restart action, in this case "".*
- const std::string get_item_value () override

  *Return the value of the current restart action, in this case "".*
- void start_checkpoint () override

  *In general, start the checkpoint process.*
- void advance_checkpoint () override

  *In general, advance to the next checkpoint item; in this case, do nothing.*
- bool is_checkpoint_finished () override

  *In general, indicate when checkpointing is complete.*
- int perform_restore_action (const std::string &action_name, const std::string &action_value) override

  *In general, respond to the actions recorded in the checkpoint file.*
- SimpleCheckpointable (const SimpleCheckpointable &)=delete
- SimpleCheckpointable & operator= (const SimpleCheckpointable &)=delete

### Protected Member Functions

- virtual void simple_restore ()=0

  *Perform the sole restore action.*

### Friends

- class InputProcessor
- void init_attrjeod__SimpleCheckpointable ()

### 8.23.1 Detailed Description

The SimpleCheckpointable class provides a simple checkpoint/restart interface by which an object can complete the restart process.

Typical use of the class is to restore inherently uncheckpointable data such as file streams and function pointers.

The SimpleCheckpointable is an incomplete class. Derived classes must define a simple_restore() method to make the derived class complete. This method will be called as a part of the container restart process. Those derived classes should not override the overrides provided by this class. Derived classes can override the pre_ and post_ checkpoint and restart methods.

Definition at line 85 of file simple_checkpointable.hh.

### 8.23.2 Constructor & Destructor Documentation

#### 8.23.2.1 SimpleCheckpointable() [1/2]

```
jeod::SimpleCheckpointable::SimpleCheckpointable ( )  [default]
```

Construct a SimpleCheckpointable object.

#### 8.23.2.2 ~SimpleCheckpointable()

```
jeod::SimpleCheckpointable::~SimpleCheckpointable ( )  [override], [default]
```

Destruct a SimpleCheckpointable object.

#### 8.23.2.3 SimpleCheckpointable() [2/2]

```
jeod::SimpleCheckpointable::SimpleCheckpointable (
            const SimpleCheckpointable &  )  [delete]
```

### 8.23.3 Member Function Documentation

#### 8.23.3.1 advance_checkpoint()

```
void jeod::SimpleCheckpointable::advance_checkpoint ( )  [inline], [override], [virtual]
```

In general, advance to the next checkpoint item; in this case, do nothing.

This method is not called because the class immediately designates the checkpoint to be finished.

Implements jeod::JeodCheckpointable.

Definition at line 138 of file simple_checkpointable.hh.

#### 8.23.3.2 get_init_name()

```
const std::string jeod::SimpleCheckpointable::get_init_name ( )  [inline], [override], [virtual]
```

Return the name of the initial restart action, in this case "restore".

A derived class can of course override this.

Implements jeod::JeodCheckpointable.

Definition at line 102 of file simple_checkpointable.hh.

#### 8.23.3.3 get_item_name()

```
const std::string jeod::SimpleCheckpointable::get_item_name ( )  [inline], [override], [virtual]
```

Return the name of the current restart action, in this case "".

This method is not called because the class immediately designates the checkpoint to be finished.

Implements jeod::JeodCheckpointable.

Definition at line 112 of file simple_checkpointable.hh.

#### 8.23.3.4 get_item_value()

```
const std::string jeod::SimpleCheckpointable::get_item_value ( )  [inline], [override], [virtual]
```

Return the value of the current restart action, in this case "".

This method is not called because the class immediately designates the checkpoint to be finished.

Implements jeod::JeodCheckpointable.

Definition at line 122 of file simple_checkpointable.hh.

#### 8.23.3.5 is_checkpoint_finished()

```
bool jeod::SimpleCheckpointable::is_checkpoint_finished ( )  [inline], [override], [virtual]
```

In general, indicate when checkpointing is complete.

For this class, always return true.

Implements jeod::JeodCheckpointable.

Definition at line 144 of file simple_checkpointable.hh.

#### 8.23.3.6 operator=()

```
SimpleCheckpointable& jeod::SimpleCheckpointable::operator= (
            const SimpleCheckpointable &  )  [delete]
```

#### 8.23.3.7 perform_restore_action()

```
int jeod::SimpleCheckpointable::perform_restore_action (
            const std::string & action_name,
            const std::string & action_value )  [inline], [override], [virtual]
```

In general, respond to the actions recorded in the checkpoint file.

For this class, the only recorded action is "restore", and the response is to invoke the (undefined) simple_restore method.

**Parameters**

| | |
|---|---|
| *action_name* | The name of the action; here just "restore". |
| *action_value* | The value of the action; here ignored. |

**Returns**

Success (zero) / failure (non-zero).

Implements jeod::JeodCheckpointable.

Definition at line 157 of file simple_checkpointable.hh.

#### 8.23.3.8 simple_restore()

```
virtual void jeod::SimpleCheckpointable::simple_restore ( )  [protected], [pure virtual]
```

Perform the sole restore action.

#### 8.23.3.9 start_checkpoint()

```
void jeod::SimpleCheckpointable::start_checkpoint ( )  [inline], [override], [virtual]
```

In general, start the checkpoint process.

For this class, do nothing.

Implements jeod::JeodCheckpointable.

Definition at line 131 of file simple_checkpointable.hh.

### 8.23.4 Friends And Related Function Documentation

#### 8.23.4.1 init_attrjeod__SimpleCheckpointable

```
void init_attrjeod__SimpleCheckpointable ( )  [friend]
```

#### 8.23.4.2 InputProcessor

```
friend class InputProcessor  [friend]
```

Definition at line 87 of file simple_checkpointable.hh.

The documentation for this class was generated from the following file:

- simple_checkpointable.hh

# Chapter 9

# File Documentation

## 9.1 checkpointable.hh File Reference

Define the class JeodCheckpointable, the base class for checkpointing and restoring data that are opaque to the simulation engine.

```
#include <string>
#include <typeinfo>
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodCheckpointable

  *A JeodCheckpointable is an object whose contents are opaque to Trick, and presumably other simulation engines, whose contents can nonetheless be checkpointed and restarted by using the methods defined herein.*

### Namespaces

- jeod

  *Namespace jeod.*

### 9.1.1 Detailed Description

Define the class JeodCheckpointable, the base class for checkpointing and restoring data that are opaque to the simulation engine.

## 9.2 container.hh File Reference

Define the class JeodContainer, which adds checkpointability to an STL sequence container replacement.

```
#include "checkpointable.hh"
#include "utils/memory/include/memory_manager.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include <cstring>
#include <string>
#include <typeinfo>
```

### Data Structures

- class jeod::JeodContainer< ContainerType, ElemType >

  *A JeodContainer is a JEOD STL sequence container replacement whose contents are checkpointable and restorable.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.2.1 Detailed Description

Define the class JeodContainer, which adds checkpointability to an STL sequence container replacement.

## 9.3 jeod_associative_container.hh File Reference

Define checkpointable replacements for STL associative containers.

```
#include "jeod_stl_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include <utility>
```

### Data Structures

- class jeod::JeodAssociativeContainer< ElemType, ContainerType >

  *This is the base class for the JEOD replacements of the STL associative containers.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.3.1 Detailed Description

Define checkpointable replacements for STL associative containers.

This file defines class template JeodAssociativeContainer, the basis for the concept. The ultimate goal is to provide the full functionality of the ISO/IEC 14882:2003 STL associative containers as transparently as possible in the form of checkpointable class templates.

## 9.4 jeod_container_compare.hh File Reference

Define comparison operators for JEOD STL container.

```
#include "jeod_stl_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

## Functions

- template<typename ElemType , typename ContainerType >
  bool operator< (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is less than y.*
- template<typename ElemType , typename ContainerType >
  bool operator< (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is less than y.*
- template<typename ElemType , typename ContainerType >
  bool operator< (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is less than y.*
- template<typename ElemType , typename ContainerType >
  bool operator== (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator== (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator== (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator> (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is greater than y.*
- template<typename ElemType , typename ContainerType >
  bool operator> (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is greater than y.*
- template<typename ElemType , typename ContainerType >
  bool operator> (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is greater than y.*
- template<typename ElemType , typename ContainerType >
  bool operator>= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is greater than or equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator>= (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is greater than or equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator>= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is greater than or equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator!= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

  *Test if x is not equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator!= (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is not equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator!= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is not equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator<= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const ContainerType &y)

*Test if x is less than or equal to y.*

- template<typename ElemType , typename ContainerType >
  bool operator<= (const ContainerType &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is less than or equal to y.*
- template<typename ElemType , typename ContainerType >
  bool operator<= (const jeod::JeodSTLContainer< ElemType, ContainerType > &x, const jeod::JeodSTLContainer< ElemType, ContainerType > &y)

  *Test if x is less than or equal to y.*

### 9.4.1 Detailed Description

Define comparison operators for JEOD STL container.

The comparisons are the same as those for the underlying STL containers and are implemented using the underlying STL container comparison operators. There are three template functions to define for each comparison operator:

- JEOD container to STL container
- STL container to JEOD container
- JEOD container to JEOD container. With 6 comparison operators this means 18 function templates need to be defined.

## 9.5 jeod_list.hh File Reference

Define the class template JeodList.

```
#include "jeod_sequence_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include <list>
```

### Data Structures

- class jeod::JeodList< ElemType >

  *The JEOD replacement for std::list.*

### Namespaces

- jeod

  *Namespace jeod.*

### 9.5.1 Detailed Description

Define the class template JeodList.

## 9.6 jeod_sequence_container.hh File Reference

Define checkpointable replacements for STL sequence containers.

```
#include "jeod_stl_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodSequenceContainer< ElemType, ContainerType >

  *This is the base class for the JEOD replacements of the STL sequence containers.*

### Namespaces

- jeod

  *Namespace jeod.*

### 9.6.1 Detailed Description

Define checkpointable replacements for STL sequence containers.

This file defines class template JeodSequenceContainer, the basis for the concept. The ultimate goal is to provide the full functionality of the ISO/IEC 14882:2003 STL sequence containers as transparently as possible in the form of checkpointable class templates.

## 9.7 jeod_set.hh File Reference

Define the class template JeodSet.

```
#include "jeod_associative_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include <set>
```

### Data Structures

- class jeod::JeodSet< ElemType >

  *The JEOD replacement for std::set.*

### Namespaces

- jeod

  *Namespace jeod.*

### 9.7.1 Detailed Description

Define the class template JeodSet.

## 9.8 jeod_stl_container.hh File Reference

Define checkpointable replacements for STL containers.

```
#include "utils/sim_interface/include/jeod_class.hh"
#include "jeod_container_compare.hh"
```

### Data Structures

- class jeod::JeodSTLContainer< ElemType, ContainerType >

  *This is the base class for the JEOD replacements of the STL containers.*

### Namespaces

- jeod

  *Namespace jeod.*

### 9.8.1 Detailed Description

Define checkpointable replacements for STL containers.

This file defines class template JeodSTLContainer, the starting point of this concept. The ultimate goal is to provide the full functionality of the ISO/IEC 14882:2003 STL containers as transparently as possible in the form of checkpointable class templates.

## 9.9 jeod_vector.hh File Reference

Define class template JeodVector.

```
#include "jeod_sequence_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include <cstddef>
#include <vector>
```

### Data Structures

- class jeod::JeodVector< ElemType >

  *The JEOD replacement for std::vector.*

### Namespaces

- jeod

  *Namespace jeod.*

### 9.9.1 Detailed Description

Define class template JeodVector.

## 9.10 object_container.hh File Reference

Define class template JeodObjectContainer.

```
#include "container.hh"
#include "utils/memory/include/jeod_alloc.hh"
#include "utils/sim_interface/include/config.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include "utils/sim_interface/include/simulation_interface.hh"
#include <cstddef>
#include <string>
```

### Data Structures

- class jeod::JeodObjectContainer< ContainerType, ElemType >

  *A JeodObjectContainer is a JeodContainer that contains objects of type ElemType.*

### Namespaces

- jeod

  *Namespace jeod.*

### Macros

- #define JEOD_OBJECT_CONTAINER(container_type, elem_type) JeodObjectContainer<Jeod##container↩ _type<elem_type>, elem_type>

### 9.10.1 Detailed Description

Define class template JeodObjectContainer.

### 9.10.2 Macro Definition Documentation

#### 9.10.2.1 JEOD_OBJECT_CONTAINER

```
#define JEOD_OBJECT_CONTAINER(
              container_type,
              elem_type ) JeodObjectContainer<Jeod##container_type<elem_type>, elem_type>
```

Definition at line 280 of file object_container.hh.

## 9.11 object_list.hh File Reference

Define checkpointable replacements for STL sequence containers.

```
#include "jeod_list.hh"
#include "object_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodObjectList< ElemType >

  *Defines a registry for defining a checkpointable list of objects.*

### Namespaces

- jeod

  *Namespace jeod.*

### 9.11.1 Detailed Description

Define checkpointable replacements for STL sequence containers.

## 9.12 object_set.hh File Reference

Define checkpointable replacements for STL associative containers.

```
#include "jeod_set.hh"
#include "object_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodObjectSet< ElemType >

  *Defines a registry for defining a checkpointable set of objects.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.12.1 Detailed Description

Define checkpointable replacements for STL associative containers.

## 9.13 object_vector.hh File Reference

Define checkpointable replacements for STL sequence containers.

```
#include "jeod_vector.hh"
#include "object_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodObjectVector< ElemType >

  *Defines a registry for defining a checkpointable vector of objects.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.13.1 Detailed Description

Define checkpointable replacements for STL sequence containers.

## 9.14 pointer_container.hh File Reference

Define class template JeodPointerContainer.

```
#include "container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include "utils/sim_interface/include/simulation_interface.hh"
#include <string>
```

### Data Structures

- class jeod::JeodPointerContainer< ContainerType, ElemType >

  *A JeodPointerContainer is a JeodContainer that contains pointers to objects of type ElemType.*

### Namespaces

- jeod

  *Namespace jeod.*

### Macros

- #define JEOD_POINTER_CONTAINER(container_type, elem_type) JeodPointerContainer<Jeod##container_type<elem_type *>, elem_type>

### 9.14.1 Detailed Description

Define class template JeodPointerContainer.

### 9.14.2 Macro Definition Documentation

#### 9.14.2.1 JEOD_POINTER_CONTAINER

```
#define JEOD_POINTER_CONTAINER(
              container_type,
              elem_type ) JeodPointerContainer<Jeod##container_type<elem_type *>, elem_type>
```

Definition at line 194 of file pointer_container.hh.

## 9.15 pointer_list.hh File Reference

Define checkpointable replacements for STL sequence containers.

```
#include "jeod_list.hh"
#include "pointer_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodPointerList< ElemType >

  *Defines a registry for defining a checkpointable list of pointers.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.15.1 Detailed Description

Define checkpointable replacements for STL sequence containers.

## 9.16 pointer_set.hh File Reference

Define checkpointable replacements for STL associative containers.

```
#include "jeod_set.hh"
#include "pointer_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodPointerSet< ElemType >

  *Defines a registry for defining a checkpointable set of pointers.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.16.1 Detailed Description

Define checkpointable replacements for STL associative containers.

## 9.17 pointer_vector.hh File Reference

Define checkpointable replacements for STL sequence containers.

```
#include "jeod_vector.hh"
#include "pointer_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodPointerVector< ElemType >

  *Defines a registry for defining a checkpointable vector of pointers.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.17.1 Detailed Description

Define checkpointable replacements for STL sequence containers.

## 9.18 primitive_container.hh File Reference

Define class template JeodPrimitiveContainer.

```
#include "container.hh"
#include "primitive_serializer.hh"
#include "utils/sim_interface/include/jeod_class.hh"
#include <string>
```

### Data Structures

- class jeod::JeodPrimitiveContainer< ContainerType, ElemType >

  *A JeodPrimitiveContainer is a JeodContainer that contains primitive data of type ElemType.*

### Namespaces

- jeod

  *Namespace jeod.*

### Macros

- #define JEOD_PRIMITIVE_CONTAINER(container_type, elem_type) JeodPrimitiveContainer<Jeod##container_type<elem_type>, elem_type>

#### 9.18.1 Detailed Description

Define class template JeodPrimitiveContainer.

#### 9.18.2 Macro Definition Documentation

#### 9.18.2.1 JEOD_PRIMITIVE_CONTAINER

```
#define JEOD_PRIMITIVE_CONTAINER(
              container_type,
              elem_type ) JeodPrimitiveContainer<Jeod##container_type<elem_type>, elem_type>
```

Definition at line 169 of file primitive_container.hh.

## 9.19 primitive_list.hh File Reference

Define checkpointable replacements for STL sequence containers.

```
#include "jeod_list.hh"
#include "primitive_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodPrimitiveList< ElemType >
  *Defines a registry for defining a checkpointable list of primitives.*

### Namespaces

- jeod
  *Namespace jeod.*

### 9.19.1 Detailed Description

Define checkpointable replacements for STL sequence containers.

## 9.20 primitive_serializer.cc File Reference

Define class JeodPrimitiveSerializerBase static methods.

```
#include <cmath>
#include <cstddef>
#include <limits>
#include <sstream>
#include <string>
#include "../include/primitive_serializer.hh"
```

### Namespaces

- jeod
  *Namespace jeod.*

### Macros

- #define __USE_ISOC99

#### 9.20.1 Detailed Description

Define class JeodPrimitiveSerializerBase static methods.

## 9.21 primitive_serializer.hh File Reference

Define class template JeodPrimitiveSerializer.

```
#include "utils/sim_interface/include/jeod_class.hh"
#include <cmath>
#include <limits>
#include <sstream>
#include <string>
```

### Data Structures

- class jeod::JeodPrimitiveSerializerBase

  *Base class for serializing / deserializing primitive data.*
- class jeod::JeodPrimitiveSerializer< Type >

  *Serializer / deserializer for primitive data.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.21.1 Detailed Description

Define class template JeodPrimitiveSerializer.

## 9.22 primitive_set.hh File Reference

Define checkpointable replacements for STL associative containers.

```
#include "jeod_set.hh"
#include "primitive_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodPrimitiveSet< ElemType >

  *Defines a registry for defining a checkpointable set of primitives.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.22.1 Detailed Description

Define checkpointable replacements for STL associative containers.

## 9.23 primitive_vector.hh File Reference

Define checkpointable replacements for STL sequence containers.

```
#include "jeod_vector.hh"
#include "primitive_container.hh"
#include "utils/sim_interface/include/jeod_class.hh"
```

### Data Structures

- class jeod::JeodPrimitiveVector< ElemType >

  *Defines a registry for defining a checkpointable vector of primitives.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.23.1 Detailed Description

Define checkpointable replacements for STL sequence containers.

## 9.24 simple_checkpointable.hh File Reference

Define the class SimpleCheckpointable.

```
#include "utils/sim_interface/include/jeod_class.hh"
#include "checkpointable.hh"
```

### Data Structures

- class jeod::SimpleCheckpointable

  *The SimpleCheckpointable class provides a simple checkpoint/restart interface by which an object can complete the restart process.*

### Namespaces

- jeod

  *Namespace jeod.*

#### 9.24.1 Detailed Description

Define the class SimpleCheckpointable.

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