# XBinder

XML Schema Compiler
Version 2.5
C++ Runtime
Reference Manual

*Objective Systems, Inc. — February 2017*

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# Contents

# Chapter 1

# Main Page

## C++ Common Runtime Library Classes

The **OSRT C++ run-time classes** are wrapper classes that provide an object-oriented interface to the common C run-time library functions. The categories of classes provided are as follows:

- Context management classes manage the context structure (OSCTXT) used to keep track of the working variables required to encode or decode XML messages.
- Message buffer classes are used to manage message buffers for encoding or decoding XML messages.
- XSD type base classes are used as the base for compiler- generated C++ data structures.
- Stream classes are used to read and write messages to and from files, sockets, and memory buffers.

# Chapter 2

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## 2.1 Modules

Here is a list of all modules:

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## 3.1 Class Hierarchy

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Here is a list of all documented files with brief descriptions:

# Chapter 6

# Module Documentation

## 6.1 Generic Input Stream Classes

The C++ interface class definitions for operations with input streams.

### Classes

- class OSRTInputStream

  *This is the base class for input streams.*

### 6.1.1 Detailed Description

The C++ interface class definitions for operations with input streams. Classes that implement this interface are used to input data from the various stream types, not to decode ASN.1 messages.

## 6.2 Message Buffer Classes

These classes are used to manage message buffers.

### Classes

- class OSRTMessageBuffer

  *Abstract message buffer base class.*

- class OSRTMessageBufferIF

  *Abstract message buffer or stream interface class.*

### 6.2.1 Detailed Description

These classes are used to manage message buffers. During encoding, messages are constructed within these buffers. During decoding, the messages to be decoded are held in these buffers.

## 6.3 Generic Output Stream Classes

The interface class definition for operations with output streams.

### Classes

- class OSRTOutputStream

  *The base class definition for operations with output streams.*

### 6.3.1 Detailed Description

The interface class definition for operations with output streams. Classes that implement this interface are used for writing data to the various stream types, not to encode ASN.1 messages.

## 6.4 TCP/IP or UDP Socket Classes

These classes provide utility methods for doing socket I/O.

### Classes

- class OSRTSocket

  *Wrapper class for TCP/IP or UDP sockets.*

### 6.4.1 Detailed Description

These classes provide utility methods for doing socket I/O.

## 6.5 ASN.1 Stream Classes

Classes that read or write ASN.1 messages to files, sockets, memory buffers, et c., are derived from this class.

### Classes

- class OSRTStream

  *The default base class for using I/O streams.*

### 6.5.1 Detailed Description

Classes that read or write ASN.1 messages to files, sockets, memory buffers, et c., are derived from this class.

# Chapter 7

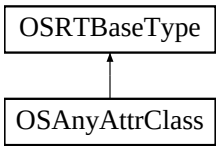
# Class Documentation

## 7.1 OSAnyAttrClass Class Reference

Any attribute.

`#include <rtxCppAnyAttr.h>`

Inheritance diagram for OSAnyAttrClass:




### Public Member Functions

- OSAnyAttrClass ()

  *The default constructor creates an empty attribute.*

- OSAnyAttrClass (const OSUTF8CHAR ∗pname, const OSUTF8CHAR ∗pvalue)

  *This constructor initializes the attribute to contain the given data values.*

- OSAnyAttrClass (const char ∗pname, const char ∗pvalue)

  *This constructor initializes the attribute to contain the given data values.*

- OSAnyAttrClass (OSUTF8CHAR ∗pname, OSUTF8CHAR ∗pvalue)

  *This constructor initializes the attribute to contain the given data values.*

- OSAnyAttrClass (OSAnyAttr &os)

  *This copy constructor initializes the attribute to contain the given data values from the C data structure.*

- OSAnyAttrClass (const OSAnyAttrClass &os)

  *This copy constructor initializes the attribute to contain the given data values from the C++ data object.*

- virtual ∼OSAnyAttrClass ()

*The destructor frees string memory.*

- OSRTBaseType * clone () const

  *Clone method.*

- void copyValue (const OSUTF8CHAR *pname, const OSUTF8CHAR *pvalue)

  *This method copies the given attribute value to the internal string storage variable.*

- void setValue (const OSUTF8CHAR *pname, const OSUTF8CHAR *pvalue)

  *This method sets the attribute value to the given name/value.*

- void setValue (const OSUTF8CHAR *pname, const OSUTF8CHAR *pvalue, size_t namebytes, size_t valuebytes=0)

  *This method sets the attribute value to the given name/value.*

- OSAnyAttrClass & operator= (const OSAnyAttrClass &original)

  *Assignment operator.*

### 7.1.1 Detailed Description

Any attribute. This is the base class for generated C++ data type classes for any attribute declarations (xsd:anyAttr).

Definition at line 40 of file rtxCppAnyAttr.h.

### 7.1.2 Constructor & Destructor Documentation

#### 7.1.2.1 OSAnyAttrClass::OSAnyAttrClass (const OSUTF8CHAR * *pname*, const OSUTF8CHAR * *pvalue*)

This constructor initializes the attribute to contain the given data values.

**Parameters**

***pname*** - attribute name

***pvalue*** - attribute contents

#### 7.1.2.2 OSAnyAttrClass::OSAnyAttrClass (const char * *pname*, const char * *pvalue*)

This constructor initializes the attribute to contain the given data values.

This version allows the name/value arguments to be passed as standard C character string literal values.

**Parameters**

***pname*** - attribute name

***pvalue*** - attribute contents

#### 7.1.2.3 OSAnyAttrClass::OSAnyAttrClass (OSUTF8CHAR * *pname*, OSUTF8CHAR * *pvalue*)

This constructor initializes the attribute to contain the given data values.

**Parameters**

***pname*** - Attribute name.

***pvalue*** - Attribute value.

#### 7.1.2.4 OSAnyAttrClass::OSAnyAttrClass (OSAnyAttr & *os*)

This copy constructor initializes the attribute to contain the given data values from the C data structure.

It performs a deep copy.

**Parameters**

***os*** - C binary string structure.

#### 7.1.2.5 OSAnyAttrClass::OSAnyAttrClass (const OSAnyAttrClass & *os*)

This copy constructor initializes the attribute to contain the given data values from the C++ data object.

It performs a deep copy.

**Parameters**

***os*** - C++ binary string object reference.

### 7.1.3 Member Function Documentation

#### 7.1.3.1 OSRTBaseType* OSAnyAttrClass::clone () const [inline, virtual]

Clone method.

Creates a copied instance and returns pointer to OSRTBaseType.

Reimplemented from OSRTBaseType.

Definition at line 107 of file rtxCppAnyAttr.h.

#### 7.1.3.2 void OSAnyAttrClass::copyValue (const OSUTF8CHAR * *pname*, const OSUTF8CHAR * *pvalue*)

This method copies the given attribute value to the internal string storage variable.

A deep-copy of the given value is done; the class will delete this memory when the object is deleted.

**Parameters**

***pname*** - Attribute name.

***pvalue*** - Attribute value.

#### 7.1.3.3 void OSAnyAttrClass::setValue (const OSUTF8CHAR * *pname*, const OSUTF8CHAR * *pvalue*, size_t *namebytes*, size_t *valuebytes* = 0)

This method sets the attribute value to the given name/value.

A deep-copy of the given value is not done; the pointer is stored directly in the class member variable.

**Parameters**

***pname*** - Attribute name.

***pvalue*** - Attribute value.

***namebytes*** - Attribute name length.

***valuebytes*** - Attribute value length.

#### 7.1.3.4 void OSAnyAttrClass::setValue (const OSUTF8CHAR * *pname*, const OSUTF8CHAR * *pvalue*)

This method sets the attribute value to the given name/value.

A deep-copy of the given value is not done; the pointer is stored directly in the class member variable.

**Parameters**

***pname*** - Attribute name.

***pvalue*** - Attribute value.

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

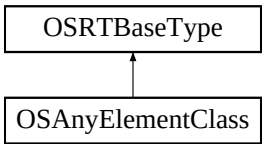
- rtxCppAnyAttr.h

## 7.2 OSAnyElementClass Class Reference

Any element.

`#include <rtxCppAnyElement.h>`

Inheritance diagram for OSAnyElementClass:




### Public Member Functions

- OSAnyElementClass ()

  *The default constructor creates an empty element.*

- OSAnyElementClass (const OSUTF8CHAR *pname, const OSUTF8CHAR *pvalue)

  *This constructor initializes the element to contain the given data values.*

- OSAnyElementClass (const char *pname, const char *pvalue)

  *This constructor initializes the element to contain the given data values.*

- OSAnyElementClass (OSAnyElement &os)

  *This copy constructor initializes the element to contain the given data values from the C data structure.*

- OSAnyElementClass (const OSAnyElementClass &os)

  *This copy constructor initializes the element to contain the given data values from the C++ data object.*

- virtual ~OSAnyElementClass ()

  *The destructor frees string memory.*

- void copyValue (const OSUTF8CHAR *pname, const OSUTF8CHAR *pvalue)

  *This method copies the given element value to the internal string storage variable.*

- void print (const char *pname)

  *This method prints the given element value to standard output.*

- void setValue (const OSUTF8CHAR *pname, const OSUTF8CHAR *pvalue)

  *This method copies the given element value to the internal string storage variable.*

### 7.2.1 Detailed Description

Any element. This is the base class for generated C++ data type classes for any element declarations (xsd:any).

Definition at line 41 of file rtxCppAnyElement.h.

### 7.2.2 Constructor & Destructor Documentation

#### 7.2.2.1 OSAnyElementClass::OSAnyElementClass (const OSUTF8CHAR * *pname*, const OSUTF8CHAR * *pvalue*)

This constructor initializes the element to contain the given data values.

**Parameters**

***pname*** - element name

***pvalue*** - element contents

#### 7.2.2.2 OSAnyElementClass::OSAnyElementClass (const char * *pname*, const char * *pvalue*)

This constructor initializes the element to contain the given data values.

This version allows the name/value arguments to be passed as standard C character string literal values.

**Parameters**

***pname*** - element name

***pvalue*** - element contents

#### 7.2.2.3 OSAnyElementClass::OSAnyElementClass (OSAnyElement & *os*)

This copy constructor initializes the element to contain the given data values from the C data structure.

A deep copy is performed.

**Parameters**

***os*** - C binary string structure.

#### 7.2.2.4 OSAnyElementClass::OSAnyElementClass (const OSAnyElementClass & *os*)

This copy constructor initializes the element to contain the given data values from the C++ data object.

A deep copy is performed.

**Parameters**

***os*** - C++ binary string object reference.

### 7.2.3 Member Function Documentation

#### 7.2.3.1 void OSAnyElementClass::copyValue (const OSUTF8CHAR * *pname*, const OSUTF8CHAR * *pvalue*)

This method copies the given element value to the internal string storage variable.

A deep-copy of the given value is done; the class will delete this memory when the object is deleted.

**Parameters**

***pname*** - Element name.

***pvalue*** - Element value.

#### 7.2.3.2 void OSAnyElementClass::print (const char * *pname*) [inline]

This method prints the given element value to standard output.

**Parameters**

***pname*** - Name of generated string variable.

Definition at line 109 of file rtxCppAnyElement.h.

#### 7.2.3.3 void OSAnyElementClass::setValue (const OSUTF8CHAR * *pname*, const OSUTF8CHAR * *pvalue*)

This method copies the given element value to the internal string storage variable.

A deep-copy of the given value is done; the class will delete this memory when the object is deleted.

**Parameters**

***pname*** - Element name.

***pvalue*** - Element value.

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

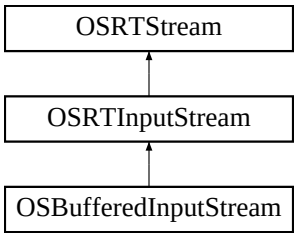
- rtxCppAnyElement.h

## 7.3 OSBufferedInputStream Class Reference

The buffered input stream class.

`#include <rtxCppBufferedInputStream.h>`

Inheritance diagram for OSBufferedInputStream:




### Public Member Functions

- OSBufferedInputStream (OSRTInputStream &in)

  *The default constructor.*

- virtual ~OSBufferedInputStream ()

  *Virtual destructor.*

### 7.3.1 Detailed Description

The buffered input stream class.

Definition at line 35 of file rtxCppBufferedInputStream.h.

### 7.3.2 Constructor & Destructor Documentation

#### 7.3.2.1 OSBufferedInputStream::OSBufferedInputStream (OSRTInputStream & *in*)

The default constructor.

It initializes a buffered stream. A buffered stream maintains data in memory before reading or writing to the device. This generally provides better performance than an unbuffered stream.

**Exceptions**

***OSStreamException*** Stream create or initialize failed.

#### 7.3.2.2 virtual OSBufferedInputStream::~OSBufferedInputStream () `[virtual]`

Virtual destructor.

Closes the stream if it was opened.

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

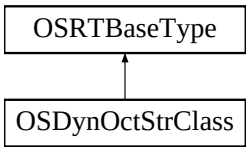
- rtxCppBufferedInputStream.h

## 7.4 OSDynOctStrClass Class Reference

Dynamic binary string.

`#include <rtxCppDynOctStr.h>`

Inheritance diagram for OSDynOctStrClass:




### Public Member Functions

- OSDynOctStrClass ()

  *The default constructor creates an empty binary string.*

- OSDynOctStrClass (OSUINT32 numocts_, const OSOCTET *data_)

  *This constructor initializes the binary string to contain the given data values.*

- OSDynOctStrClass (OSDynOctStr &os)

  *The copy constructor initializes the binary string to contain the given data values from the C data structure.*

- OSDynOctStrClass (const OSDynOctStrClass &os)

  *This copy constructor initializes the binary string to contain the given data values from the C++ data object.*

- virtual ~OSDynOctStrClass ()

  *The destructor frees string memory.*

- OSRTBaseType * clone () const

  *Clone method.*

- void copyValue (OSUINT32 numocts_, const OSOCTET *data_)

  *This method copies the given binary string value to the internal string storage variable.*

- const OSOCTET * getValue () const

  *This method returns a pointer to the binary data field.*

- size_t getLength () const

  *This method returns the length in octets of the binary data field.*

- size_t length () const

  *This method returns the length in octets of the binary data field.*

- void setValue (OSUINT32 numocts_, const OSOCTET *data_)

  *This method copies the given binary string value to the internal string storage variable.*

- int setValue (const char *hexstr, size_t nchars=0)

*This method converts hex characters into binary form and sets the value.*

- int setValueFromBase64 (const char *base64str, size_t nchars=0)

  *This method converts base64-encoded characters into binary form and sets the value.*

- OSDynOctStrClass & operator= (const OSDynOctStrClass &original)

  *Assignment operator.*

### 7.4.1 Detailed Description

Dynamic binary string. This is the base class for generated C++ data type classes for XSD binary types (hexBinary and base64Binary).

Definition at line 38 of file rtxCppDynOctStr.h.

### 7.4.2 Constructor & Destructor Documentation

#### 7.4.2.1 OSDynOctStrClass::OSDynOctStrClass (OSUINT32 *numocts_*, const OSOCTET * *data_*)

This constructor initializes the binary string to contain the given data values.

**Parameters**

***numocts_*** - Number of bytes in the binary string.

***data_*** - The binary string data values.

#### 7.4.2.2 OSDynOctStrClass::OSDynOctStrClass (OSDynOctStr & *os*)

The copy constructor initializes the binary string to contain the given data values from the C data structure.

**Parameters**

***os*** - C binary string structure.

#### 7.4.2.3 OSDynOctStrClass::OSDynOctStrClass (const OSDynOctStrClass & *os*)

This copy constructor initializes the binary string to contain the given data values from the C++ data object.

**Parameters**

***os*** - C++ binary string object reference.

### 7.4.3 Member Function Documentation

#### 7.4.3.1 OSRTBaseType* OSDynOctStrClass::clone () const [inline, virtual]

Clone method.

Creates a copied instance and returns pointer to OSRTBaseType.

Reimplemented from OSRTBaseType.

Definition at line 83 of file rtxCppDynOctStr.h.

#### 7.4.3.2 void OSDynOctStrClass::copyValue (OSUINT32 *numocts_*, const OSOCTET * *data_*)

This method copies the given binary string value to the internal string storage variable.

A deep-copy of the given value is done; the class will delete this memory when the object is deleted.

**Parameters**

***numocts_*** - Number of bytes in the binary string.
***data_*** - The binary string data values.

#### 7.4.3.3 int OSDynOctStrClass::setValue (const char * *hexstr*, size_t *nchars* = 0)

This method converts hex characters into binary form and sets the value.

**Parameters**

***hexstr*** - Hex char string value.
***nchars*** - Number of characters in string. If zero, characters are read up to null-terminator.

**Returns**

- Status of operation: zero if success or a negative status code on error.

#### 7.4.3.4 void OSDynOctStrClass::setValue (OSUINT32 *numocts_*, const OSOCTET * *data_*)

This method copies the given binary string value to the internal string storage variable.

A deep-copy of the given value is done; the class will delete this memory when the object is deleted.

**Parameters**

***numocts_*** - Number of bytes in the binary string.
***data_*** - The binary string data values.

#### 7.4.3.5 int OSDynOctStrClass::setValueFromBase64 (const char * *base64str*, size_t *nchars* = 0)

This method converts base64-encoded characters into binary form and sets the value.

**Parameters**

***base64str*** - Base64 char string value.
***nchars*** - Number of characters in string. If zero, characters are read up to null-terminator.

**Returns**

- Status of operation: zero if success or a negative status code on error.

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

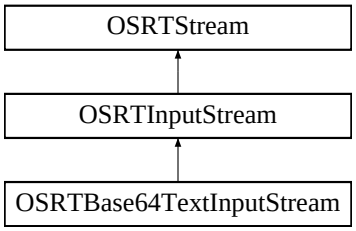
- rtxCppDynOctStr.h

## 7.5 OSRTBase64TextInputStream Class Reference

Hexadecimal text input stream filter class.

`#include <OSRTBase64TextInputStream.h>`

Inheritance diagram for OSRTBase64TextInputStream:




### Public Member Functions

- EXTRTMETHOD OSRTBase64TextInputStream (OSRTInputStream *pstream)

  *Initializes the input stream using the existing standard input stream.*

- EXTRTMETHOD ~OSRTBase64TextInputStream ()

  *The destructor deletes the underlying stream object.*

- virtual OSBOOL isA (StreamID id) const

  *This method is used to query a stream object in order to determine its actual type.*

- void setOwnUnderStream (OSBOOL value=TRUE)

  *This method is used to transfer ownership of the underlying stream to the class.*

- OSBOOL isCertificate ()

  *This method is used to determine if a certificate was parsed.*

### 7.5.1 Detailed Description

Hexadecimal text input stream filter class. This class is created on top of an existing stream class to provide conversion of hexadecimal text input into binary form.

Definition at line 39 of file OSRTBase64TextInputStream.h.

### 7.5.2 Constructor & Destructor Documentation

#### 7.5.2.1 EXTRTMETHOD OSRTBase64TextInputStream::OSRTBase64TextInputStream (OSRTInputStream * *pstream*)

Initializes the input stream using the existing standard input stream.

Only file and memory underlying stream types are supported.

**Parameters**

***pstream*** The underlying input stream object. Note that this class will take control of the underlying stream object and delete it upon destruction.

**See also**

rtxStreamHexTextAttach

#### 7.5.2.2 EXTRTMETHOD OSRTBase64TextInputStream::~OSRTBase64TextInputStream ()

The destructor deletes the underlying stream object.

That object should be used as nothing more to a surrogate to this object.

### 7.5.3 Member Function Documentation

#### 7.5.3.1 virtual OSBOOL OSRTBase64TextInputStream::isA (StreamID *id*) const `[inline, virtual]`

This method is used to query a stream object in order to determine its actual type.

**Parameters**

***id*** Enumerated stream identifier

**Returns**

True if the stream matches the identifier

Reimplemented from OSRTInputStream.

Definition at line 72 of file OSRTBase64TextInputStream.h.

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

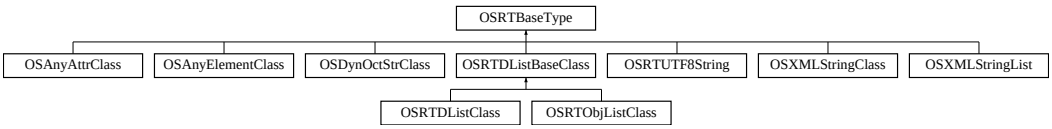
- OSRTBase64TextInputStream.h

## 7.6 OSRTBaseType Class Reference

C++ structured type base class.

`#include <OSRTBaseType.h>`

Inheritance diagram for OSRTBaseType:




### 7.6.1 Detailed Description

C++ structured type base class. This is the base class for all generated structured types.

Definition at line 37 of file OSRTBaseType.h.

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

- OSRTBaseType.h

## 7.7 OSRTContext Class Reference

Reference counted context class.

`#include <OSRTContext.h>`

### Public Member Functions

- EXTRTMETHOD OSRTContext ()

  *The default constructor initializes the mCtxt member variable and sets the reference count variable (mCount) to zero.*

- virtual EXTRTMETHOD ~OSRTContext ()

  *The destructor frees all memory held by the context.*

- OSCTXT * getPtr ()

  *The getPtr method returns a pointer to the mCtxt member variable.*

- EXTRTMETHOD OSUINT32 getRefCount ()

  *The getRefCount method returns the current reference count.*

- int getStatus () const

  *The getStatus method returns the runtime status code value.*

- OSBOOL isInitialized ()

  *Returns TRUE, if initialized correctly, FALSE otherwise.*

- EXTRTMETHOD void _ref ()

  *The _ref method increases the reference count by one.*

- EXTRTMETHOD void _unref ()

  *The _unref method decreases the reference count by one.*

- EXTRTMETHOD char * getErrorInfo ()

  *Returns error text in a dynamic memory buffer.*

- EXTRTMETHOD char * getErrorInfo (size_t *pBufSize)

  *Returns error text in a dynamic memory buffer.*

- EXTRTMETHOD char * getErrorInfo (char *pBuf, size_t &bufSize)

  *Returns error text in a memory buffer.*

- void * memAlloc (size_t numocts)

  *The memAlloc method allocates memory using the C runtime memory management functions.*

- void * memAllocZ (size_t numocts)

  *The memAllocZ method allocates and zeroes memory using the C runtime memory management functions.*

- void memFreeAll ()

  *The `memFreeAll` method will free all memory currently tracked within the context.*

- void memFreePtr (void *ptr)

  *The memFreePtr method frees the memory at a specific location.*

- void * memRealloc (void *ptr, size_t numocts)

  *The memRealloc method reallocates memory using the C runtime memory management functions.*

- void memReset ()

  *The memReset method resets dynamic memory using the C runtime memory management functions.*

- void printErrorInfo ()

  *The printErrorInfo method prints information on errors contained within the context.*

- void resetErrorInfo ()

  *The resetErrorInfo method resets information on errors contained within the context.*

- OSBOOL setDiag (OSBOOL value=TRUE)

  *The setDiag method will turn diagnostic tracing on or off.*

- virtual EXTRTMETHOD int setRunTimeKey (const OSOCTET *key, size_t keylen)

  *This method sets run-time key to the context.*

- int setStatus (int stat)

  *This method sets error status in the context.*

## Protected Attributes

- OSCTXT mCtxt

  *The mCtxt member variable is a standard C runtime context variable used in most C runtime function calls.*

- OSUINT32 mCount

  *The mCount member variable holds the reference count of this context.*

- OSBOOL mbInitialized

  *TRUE, if initialized correctly, FALSE otherwise.*

- int mStatus

  *The mStatus variable holds the return status from C run-time function calls.*

### 7.7.1 Detailed Description

Reference counted context class. This keeps track of all encode/decode function variables between function invocations. It is reference counted to allow a message buffer and type class to share access to it.

Definition at line 65 of file OSRTContext.h.

## 7.7.2 Member Function Documentation

### 7.7.2.1 EXTRTMETHOD char* OSRTContext::getErrorInfo (char * *pBuf*, size_t & *bufSize*)

Returns error text in a memory buffer.

If buffer pointer is specified in parameters (not NULL) then error text will be copied in the passed buffer. Otherwise, this method allocates memory using the 'operator new []' function. The calling routine is responsible to free the memory by using 'operator delete []'.

**Parameters**

***pBuf*** A pointer to a destination buffer to obtain the error text. If NULL, dynamic buffer will be allocated.

***bufSize*** A reference to buffer size. If pBuf is NULL it will receive the size of allocated dynamic buffer.

**Returns**

A pointer to a buffer with error text. If pBuf is not NULL, the return pointer will be equal to it. Otherwise, returns newly allocated buffer with error text. NULL, if error occurred.

### 7.7.2.2 EXTRTMETHOD char* OSRTContext::getErrorInfo (size_t * *pBufSize*)

Returns error text in a dynamic memory buffer.

Buffer will be allocated using 'operator new []'. The calling routine is responsible for freeing the memory by using 'operator delete []'.

**Parameters**

***pBufSize*** A pointer to buffer size. It will receive the size of allocated dynamic buffer, or (size_t)-1 if an error occurred.

**Returns**

A pointer to a newly allocated buffer with error text, or NULL if an error occurred.

### 7.7.2.3 EXTRTMETHOD char* OSRTContext::getErrorInfo ()

Returns error text in a dynamic memory buffer.

Buffer will be allocated using 'operator new []'. The calling routine is responsible for freeing the memory by using 'operator delete []'.

**Returns**

A pointer to a newly allocated buffer with error text, or NULL if an error occurred.

### 7.7.2.4 OSCTXT* OSRTContext::getPtr () `[inline]`

The getPtr method returns a pointer to the mCtxt member variable.

A user can use this function to get the the context pointer variable for use in a C runtime function call.

Definition at line 110 of file OSRTContext.h.

#### 7.7.2.5 int OSRTContext::getStatus () const [inline]

The getStatus method returns the runtime status code value.

**Returns**

Runtime status code:

- 0 (0) = success,
- negative return value is error.

Definition at line 125 of file OSRTContext.h.

#### 7.7.2.6 OSBOOL OSRTContext::isInitialized () [inline]

Returns TRUE, if initialized correctly, FALSE otherwise.

**Returns**

TRUE, if initialized correctly, FALSE otherwise.

Definition at line 133 of file OSRTContext.h.

#### 7.7.2.7 void* OSRTContext::memAlloc (size_t *numocts*) [inline]

The memAlloc method allocates memory using the C runtime memory management functions.

The memory is tracked in the underlying context structure. When both this OSXSDGlobalElement derived control class object and the message buffer object are destroyed, this memory will be freed.

**Parameters**

***numocts*** - Number of bytes of memory to allocate

Definition at line 196 of file OSRTContext.h.

#### 7.7.2.8 void* OSRTContext::memAllocZ (size_t *numocts*) [inline]

The memAllocZ method allocates and zeroes memory using the C runtime memory management functions.

The memory is tracked in the underlying context structure. When both this OSXSDGlobalElement derived control class object and the message buffer object are destroyed, this memory will be freed.

**Parameters**

***numocts*** - Number of bytes of memory to allocate

Definition at line 209 of file OSRTContext.h.

#### 7.7.2.9 void OSRTContext::memFreeAll () [inline]

The `memFreeAll` method will free all memory currently tracked within the context.

This includes all memory allocated with the memAlloc method as well as any memory allocated using the C `rtxMemAlloc` function with the context returned by the `getCtxtPtr` method.

Definition at line 219 of file OSRTContext.h.

#### 7.7.2.10 void OSRTContext::memFreePtr (void * *ptr*) [inline]

The memFreePtr method frees the memory at a specific location.

This memory must have been allocated using the memAlloc method described earlier.

**Parameters**

***ptr*** - Pointer to a block of memory allocated with `memAlloc`

Definition at line 231 of file OSRTContext.h.

#### 7.7.2.11 void* OSRTContext::memRealloc (void * *ptr*, size_t *numocts*) [inline]

The memRealloc method reallocates memory using the C runtime memory management functions.

**Parameters**

***ptr*** - Original pointer containing dynamic memory to be resized.

***numocts*** - Number of bytes of memory to allocate

**Returns**

Reallocated memory pointer

Definition at line 244 of file OSRTContext.h.

#### 7.7.2.12 OSBOOL OSRTContext::setDiag (OSBOOL *value* = TRUE) [inline]

The setDiag method will turn diagnostic tracing on or off.

**Parameters**

***value*** - Boolean value (default = TRUE = on)

**Returns**

- Previous state of the diagnostics enabled boolean

Definition at line 278 of file OSRTContext.h.

#### 7.7.2.13 virtual EXTRTMETHOD int OSRTContext::setRunTimeKey (const OSOCTET * *key*, size_t *keylen*) [virtual]

This method sets run-time key to the context.

This method does nothing for unlimited redistribution libraries.

**Parameters**

***key*** - array of octets with the key

***keylen*** - number of octets in key array.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

#### 7.7.2.14 int OSRTContext::setStatus (int *stat*) [inline]

This method sets error status in the context.

**Parameters**

***stat*** Status value.

**Returns**

Error status value being set.

Definition at line 300 of file OSRTContext.h.

### 7.7.3 Member Data Documentation

#### 7.7.3.1 int OSRTContext::mStatus [protected]

The mStatus variable holds the return status from C run-time function calls.

The getStatus method will either return this status or the last status on the context error list.

Definition at line 91 of file OSRTContext.h.

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

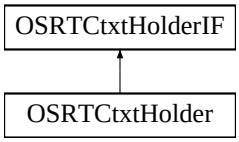
- OSRTContext.h

## 7.8 OSRTCtxtHolder Class Reference

Abstract message buffer or stream interface class.

`#include <OSRTCtxtHolder.h>`

Inheritance diagram for OSRTCtxtHolder:




### Public Member Functions

- EXTRTMETHOD OSRTCtxtHolder (OSRTContext *pContext=0)

  *The default constructor creates a new context and sets the buffer class type.*

- virtual EXTRTMETHOD OSRTCtxtPtr getContext ()

  *The getContext method returns the underlying context smart-pointer object.*

- virtual EXTRTMETHOD OSCTXT * getCtxtPtr ()

  *The getCtxtPtr method returns the underlying C runtime context.*

- virtual EXTRTMETHOD char * getErrorInfo ()

  *Returns error text in a dynamic memory buffer.*

- virtual EXTRTMETHOD char * getErrorInfo (char *pBuf, size_t &bufSize)

  *Returns error text in a memory buffer.*

- virtual EXTRTMETHOD int getStatus () const

  *This method returns the completion status of previous operation.*

- virtual EXTRTMETHOD void printErrorInfo ()

  *The printErrorInfo method prints information on errors contained within the context.*

- virtual EXTRTMETHOD void resetErrorInfo ()

  *The resetErrorInfo method resets information on errors contained within the context.*

### Protected Attributes

- OSRTCtxtPtr mpContext

  *The mpContext member variable holds a reference-counted C runtime variable.*

### 7.8.1 Detailed Description

Abstract message buffer or stream interface class. This is the base class for both the in-memory message buffer classes and the run-time stream classes.

Definition at line 38 of file OSRTCtxtHolder.h.

### 7.8.2 Constructor & Destructor Documentation

#### 7.8.2.1 EXTRTMETHOD OSRTCtxtHolder::OSRTCtxtHolder (OSRTContext * *pContext* = 0)

The default constructor creates a new context and sets the buffer class type.

**Parameters**

***pContext*** Pointer to a context to use. If NULL, new context will be allocated.

### 7.8.3 Member Function Documentation

#### 7.8.3.1 virtual EXTRTMETHOD OSRTCtxtPtr OSRTCtxtHolder::getContext () `[virtual]`

The getContext method returns the underlying context smart-pointer object.

**Returns**

Context smart pointer object.

Implements OSRTCtxtHolderIF.

#### 7.8.3.2 virtual EXTRTMETHOD OSCTXT* OSRTCtxtHolder::getCtxtPtr () `[virtual]`

The getCtxtPtr method returns the underlying C runtime context.

This context can be used in calls to C runtime functions.

**Returns**

The pointer to C runtime context.

Implements OSRTCtxtHolderIF.

#### 7.8.3.3 virtual EXTRTMETHOD char* OSRTCtxtHolder::getErrorInfo (char * *pBuf*, size_t & *bufSize*) `[virtual]`

Returns error text in a memory buffer.

If buffer pointer is specified in parameters (not NULL) then error text will be copied in the passed buffer. Otherwise, this method allocates memory using the 'operator new []' function. The calling routine is responsible to free the memory by using 'operator delete []'.

**Parameters**

***pBuf*** A pointer to a destination buffer to obtain the error text. If NULL, dynamic buffer will be allocated.

***bufSize*** A reference to buffer size. If pBuf is NULL it will receive the size of allocated dynamic buffer.

**Returns**

A pointer to a buffer with error text. If pBuf is not NULL, the return pointer will be equal to it. Otherwise, returns newly allocated buffer with error text. NULL, if error occurred.

Implements OSRTCtxtHolderIF.

#### 7.8.3.4 virtual EXTRTMETHOD char* OSRTCtxtHolder::getErrorInfo () [virtual]

Returns error text in a dynamic memory buffer.

Buffer will be allocated by 'operator new []'. The calling routine is responsible to free the memory by using 'operator delete []'.

**Returns**

A pointer to a newly allocated buffer with error text.

Implements OSRTCtxtHolderIF.

#### 7.8.3.5 virtual EXTRTMETHOD int OSRTCtxtHolder::getStatus () const [virtual]

This method returns the completion status of previous operation.

It can be used to check completion status of constructors or methods, which do not return completion status. If error occurs, use printErrorInfo method to print out the error's description and stack trace. Method resetError can be used to reset error to continue operations after recovering from the error.

**Returns**

Runtime status code:

- 0 (0) = success,
- negative return value is error.

Implements OSRTCtxtHolderIF.

### 7.8.4 Member Data Documentation

#### 7.8.4.1 OSRTCtxtPtr OSRTCtxtHolder::mpContext [protected]

The mpContext member variable holds a reference-counted C runtime variable.

This context is used in calls to all C run-time functions.

Definition at line 44 of file OSRTCtxtHolder.h.

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

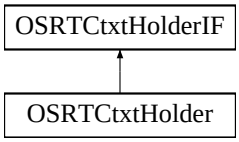
- OSRTCtxtHolder.h

## 7.9 OSRTCtxtHolderIF Class Reference

Abstract message buffer or stream interface class.

`#include <OSRTCtxtHolderIF.h>`

Inheritance diagram for OSRTCtxtHolderIF:




### Public Member Functions

- virtual OSRTCtxtPtr getContext ()=0

  *The getContext method returns the underlying context smart-pointer object.*

- virtual OSCTXT * getCtxtPtr ()=0

  *The getCtxtPtr method returns the underlying C runtime context.*

- virtual char * getErrorInfo ()=0

  *Returns error text in a dynamic memory buffer.*

- virtual char * getErrorInfo (char *pBuf, size_t &bufSize)=0

  *Returns error text in a memory buffer.*

- virtual int getStatus () const =0

  *This method returns the completion status of previous operation.*

- virtual void printErrorInfo ()=0

  *The printErrorInfo method prints information on errors contained within the context.*

- virtual void resetErrorInfo ()=0

  *The resetErrorInfo method resets information on errors contained within the context.*

### Protected Member Functions

- virtual ~OSRTCtxtHolderIF ()

  *The virtual destructor does nothing.*

### 7.9.1 Detailed Description

Abstract message buffer or stream interface class. This is the base class for both the in-memory message buffer classes and the run-time stream classes.

Definition at line 38 of file OSRTCtxtHolderIF.h.

### 7.9.2 Constructor & Destructor Documentation

#### 7.9.2.1 virtual OSRTCtxtHolderIF::~OSRTCtxtHolderIF () [inline, protected, virtual]

The virtual destructor does nothing.

It is overridden by derived versions of this class.

Definition at line 44 of file OSRTCtxtHolderIF.h.

### 7.9.3 Member Function Documentation

#### 7.9.3.1 virtual OSRTCtxtPtr OSRTCtxtHolderIF::getContext () [pure virtual]

The getContext method returns the underlying context smart-pointer object.

**Returns**

Context smart pointer object.

Implemented in OSRTCtxtHolder.

#### 7.9.3.2 virtual OSCTXT* OSRTCtxtHolderIF::getCtxtPtr () [pure virtual]

The getCtxtPtr method returns the underlying C runtime context.

This context can be used in calls to C runtime functions.

**Returns**

The pointer to C runtime context.

Implemented in OSRTCtxtHolder.

#### 7.9.3.3 virtual char* OSRTCtxtHolderIF::getErrorInfo (char * *pBuf*, size_t & *bufSize*) [pure virtual]

Returns error text in a memory buffer.

If buffer pointer is specified in parameters (not NULL) then error text will be copied in the passed buffer. Otherwise, this method allocates memory using the 'operator new []' function. The calling routine is responsible to free the memory by using 'operator delete []'.

**Parameters**

***pBuf*** A pointer to a destination buffer to obtain the error text. If NULL, dynamic buffer will be allocated.

***bufSize*** A reference to buffer size. If pBuf is NULL it will receive the size of allocated dynamic buffer.

**Returns**

A pointer to a buffer with error text. If pBuf is not NULL, the return pointer will be equal to it. Otherwise, returns newly allocated buffer with error text. NULL, if error occurred.

Implemented in OSRTCtxtHolder.

#### 7.9.3.4 virtual char* OSRTCtxtHolderIF::getErrorInfo () [pure virtual]

Returns error text in a dynamic memory buffer.

Buffer will be allocated by 'operator new []'. The calling routine is responsible to free the memory by using 'operator delete []'.

**Returns**

A pointer to a newly allocated buffer with error text.

Implemented in OSRTCtxtHolder.

#### 7.9.3.5 virtual int OSRTCtxtHolderIF::getStatus () const [pure virtual]

This method returns the completion status of previous operation.

It can be used to check completion status of constructors or methods, which do not return completion status. If error occurs, use printErrorInfo method to print out the error's description and stack trace. Method resetError can be used to reset error to continue operations after recovering from the error.

**Returns**

Runtime status code:

- 0 (0) = success,
- negative return value is error.

Implemented in OSRTCtxtHolder.

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

- OSRTCtxtHolderIF.h

## 7.10 OSRTCtxtPtr Class Reference

Context reference counted pointer class.

`#include <OSRTContext.h>`

### Public Member Functions

- OSRTCtxtPtr (OSRTContext *rf=0)

  *This constructor set the internal context pointer to the given value and, if it is non-zero, increases the reference count by one.*

- OSRTCtxtPtr (const OSRTCtxtPtr &o)

  *The copy constructor copies the pointer from the source pointer object and, if it is non-zero, increases the reference count by one.*

- virtual ~OSRTCtxtPtr ()

  *The destructor decrements the reference counter to the internal context pointer object.*

- OSRTCtxtPtr & operator= (const OSRTCtxtPtr &rf)

  *This assignment operator assigns this OSRTCtxtPtr to another.*

- OSRTCtxtPtr & operator= (OSRTContext *rf)

  *This assignment operator assigns does a direct assignment of an OSRTContext object to this OSRTCtxtPtr object.*

- operator OSRTContext * ()

  *The 'OSRTContext*' operator returns the context object pointer.*

- OSRTContext * operator-> ()

  *The '->' operator returns the context object pointer.*

- OSBOOL operator== (const OSRTContext *o) const

  *The '==' operator compares two OSRTContext pointer values.*

- OSBOOL isNull () const

  *The isNull method returns TRUE if the underlying context pointer is NULL.*

- OSCTXT * getCtxtPtr ()

  *This method returns the standard context pointer used in C function calls.*

### Protected Attributes

- OSRTContext * mPointer

  *The mPointer member variable is a pointer to a reference-counted ASN.1 context wrapper class object.*

### 7.10.1 Detailed Description

Context reference counted pointer class. This class allows a context object to automatically be released when its reference count goes to zero. It is very similar to the standard C++ library auto_ptr smart pointer class but only works with an OSRTContext object.

Definition at line 313 of file OSRTContext.h.

### 7.10.2 Constructor & Destructor Documentation

#### 7.10.2.1 OSRTCtxtPtr::OSRTCtxtPtr (OSRTContext * *rf* = 0) [inline]

This constructor set the internal context pointer to the given value and, if it is non-zero, increases the reference count by one.

**Parameters**

***rf*** - Pointer to OSRTContext object

Definition at line 328 of file OSRTContext.h.

#### 7.10.2.2 OSRTCtxtPtr::OSRTCtxtPtr (const OSRTCtxtPtr & *o*) [inline]

The copy constructor copies the pointer from the source pointer object and, if it is non-zero, increases the reference count by one.

**Parameters**

***o*** - Reference to OSRTCtxtPtr object to be copied

Definition at line 338 of file OSRTContext.h.

#### 7.10.2.3 virtual OSRTCtxtPtr::~OSRTCtxtPtr () [inline, virtual]

The destructor decrements the reference counter to the internal context pointer object.

The context object will delete itself if its reference count goes to zero.

Definition at line 347 of file OSRTContext.h.

### 7.10.3 Member Function Documentation

#### 7.10.3.1 OSRTCtxtPtr& OSRTCtxtPtr::operator= (const OSRTCtxtPtr & *rf*) [inline]

This assignment operator assigns this OSRTCtxtPtr to another.

The reference count of the context object managed by this object is first decremented. Then the new pointer is assigned and that object's reference count is incremented.

**Parameters**

***rf*** - Pointer to OSRTCtxtPtr smart-pointer object

Definition at line 357 of file OSRTContext.h.

References OSRTContext::_ref(), and mPointer.

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

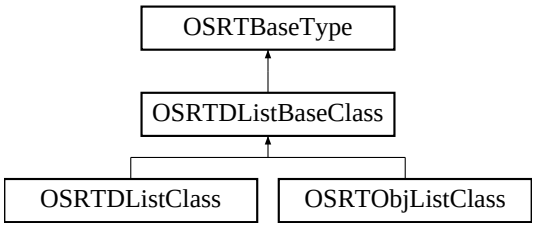
- OSRTContext.h

## 7.11 OSRTDListBaseClass Class Reference

This class is a base class for C++ representations of a doubly-linked list classes.

`#include <rtxCppDList.h>`

Inheritance diagram for OSRTDListBaseClass:




### Public Member Functions

- OSRTDListBaseClass ()

  *The default constructor initializes the list contents to empty.*

- virtual ~OSRTDListBaseClass ()

  *The destructor will delete all the nodes in the list.*

- OSSIZE getCount () const

  *This method returns count of items in the list.*

- OSRTDList * getList ()

  *This method returns a pointer to OSRTDList structure for the list instance.*

- const OSRTDList * getList () const

  *This method returns a const pointer to OSRTDList structure for the list instance.*

- void remove (int index)

  *The remove method removes the data item at the given index from the list.*

### 7.11.1 Detailed Description

This class is a base class for C++ representations of a doubly-linked list classes. It is derived from the OSRTBaseType class as well as the C OSRTDList structure. This class provides a basic functionality for C++ doubly-linked list.

Definition at line 179 of file rtxCppDList.h.

### 7.11.2 Member Function Documentation

#### 7.11.2.1 OSSIZE OSRTDListBaseClass::getCount () const [inline]

This method returns count of items in the list.

**Returns**

- Count of items in the list

Definition at line 202 of file rtxCppDList.h.

#### 7.11.2.2 const OSRTDList* OSRTDListBaseClass::getList () const [inline]

This method returns a const pointer to OSRTDList structure for the list instance.

**Returns**

- a const pointer to OSRTDList structure for the list instance.

Definition at line 220 of file rtxCppDList.h.

#### 7.11.2.3 OSRTDList* OSRTDListBaseClass::getList () [inline]

This method returns a pointer to OSRTDList structure for the list instance.

**Returns**

- a pointer to OSRTDList structure for the list instance.

Definition at line 211 of file rtxCppDList.h.

#### 7.11.2.4 void OSRTDListBaseClass::remove (int *index*)

The remove method removes the data item at the given index from the list.
The index is zero-based.

**Parameters**

***index*** - Zero-based index of item to be removed.

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

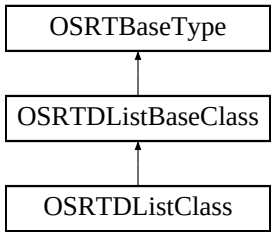
- rtxCppDList.h

## 7.12 OSRTDListClass Class Reference

This class represents a doubly-linked list structure.

`#include <rtxCppDList.h>`

Inheritance diagram for OSRTDListClass:




### Public Member Functions

- OSRTDListClass ()

  *The default constructor initializes the list contents to empty.*

- OSRTDListClass (const OSRTDListClass &o)

  *The copy constructor makes a copy of the list object.*

- void append (void *pdata)

  *The append method adds an item to the end of the list.*

- void appendCopy (void *pdata, size_t nbytes)

  *The appendCopy method adds a copy of an item to the end of the list.*

- OSRTDListNodeClass * getHead ()

  *This method returns a pointer to a head node of the list.*

- const OSRTDListNodeClass * getHead () const

  *This method returns a pointer to a head node of the list.*

- const void * getItem (int idx) const

  *The getItem method retrieves the data item from the list at the given index.*

- OSRTDListNodeClass * getTail ()

  *This method returns a pointer to a tail node of the list.*

- const OSRTDListNodeClass * getTail () const

  *This method returns a pointer to a tail node of the list.*

- void insert (int index, void *pdata)

  *The insert method inserts a data item into the list at the given indexed location.*

### 7.12.1 Detailed Description

This class represents a doubly-linked list structure. It extends the C++ `OSRTDListBaseClass` type. It provides methods for adding, retrieving, and removing items from linked lists. This list class is used to hold primitive types which are NOT derived from OSRTBaseType. See description of `OSRTObjListClass` for list of objects class.

Definition at line 240 of file rtxCppDList.h.

### 7.12.2 Member Function Documentation

#### 7.12.2.1 void OSRTDListClass::append (void * *pdata*)

The append method adds an item to the end of the list.

**Parameters**

***pdata*** - Pointer to data item to be appended to list. Note the pointer itself is appended - a copy is not made.

#### 7.12.2.2 void OSRTDListClass::appendCopy (void * *pdata*, size_t *nbytes*)

The appendCopy method adds a copy of an item to the end of the list.

**Parameters**

***pdata*** - Pointer to data item to be appended to list. Note that clone() is called on the data item, and the returned copy is stored in the list.

***nbytes*** - Size of the data pointed to in bytes.

#### 7.12.2.3 const OSRTDListNodeClass* OSRTDListClass::getHead () const `[inline]`

This method returns a pointer to a head node of the list.

**Returns**

- Pointer to head node.

Definition at line 284 of file rtxCppDList.h.

#### 7.12.2.4 OSRTDListNodeClass* OSRTDListClass::getHead () `[inline]`

This method returns a pointer to a head node of the list.

**Returns**

- Pointer to head node.

Definition at line 275 of file rtxCppDList.h.

#### 7.12.2.5 const void* OSRTDListClass::getItem (int *idx*) const [inline]

The getItem method retrieves the data item from the list at the given index.

The index is zero-based.

**Parameters**

***idx*** - Zero-based index of the node to retrieve.

**Returns**

- Pointer to node structure containing the indexed data item.

Definition at line 295 of file rtxCppDList.h.

References OSRTDListNodeClass::getData().

#### 7.12.2.6 const OSRTDListNodeClass* OSRTDListClass::getTail () const [inline]

This method returns a pointer to a tail node of the list.

**Returns**

- Pointer to tail node.

Definition at line 315 of file rtxCppDList.h.

#### 7.12.2.7 OSRTDListNodeClass* OSRTDListClass::getTail () [inline]

This method returns a pointer to a tail node of the list.

**Returns**

- Pointer to tail node.

Definition at line 306 of file rtxCppDList.h.

#### 7.12.2.8 void OSRTDListClass::insert (int *index*, void * *pdata*)

The insert method inserts a data item into the list at the given indexed location.

The index is zero-based.

**Parameters**

***index*** - Zero-based index of insertion point.

***pdata*** - Pointer to data item to be inserted into list. Note the pointer itself is inserted - a copy is not made.

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

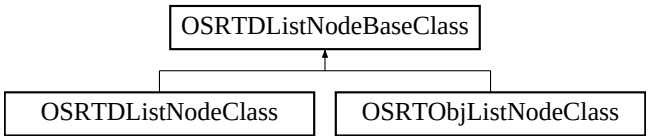
- rtxCppDList.h

## 7.13 OSRTDListNodeBaseClass Class Reference

This class is a base class for C++ representations of a node for the doubly-linked list structure.

`#include <rtxCppDList.h>`

Inheritance diagram for OSRTDListNodeBaseClass:




### Friends

- class OSRTDListBaseClass
- class OSRTDListClass
- class OSRTObjListClass

### 7.13.1 Detailed Description

This class is a base class for C++ representations of a node for the doubly-linked list structure. It extends the C OSRTDListNode type.

Definition at line 37 of file rtxCppDList.h.

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

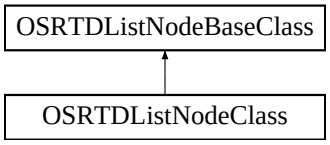
- rtxCppDList.h

## 7.14 OSRTDListNodeClass Class Reference

This class represents a doubly-linked list node structure.

`#include <rtxCppDList.h>`

Inheritance diagram for OSRTDListNodeClass:




### Public Member Functions

- void * getData ()
  *This method returns a pointer to a data associated with the node.*
- const void * getData () const
  *This method returns a pointer to a data associated with the node.*
- OSRTDListNodeClass * getNext ()
  *This method returns a pointer to a next node in the list.*
- const OSRTDListNodeClass * getNext () const
  *This method returns a pointer to a next node in the list.*
- OSRTDListNodeClass * getPrev ()
  *This method returns a pointer to a previous node in the list.*
- const OSRTDListNodeClass * getPrev () const
  *This method returns a pointer to a previous node in the list.*

### 7.14.1 Detailed Description

This class represents a doubly-linked list node structure. It extends the C++ `OSRTDListNodeBaseClass` type.

Definition at line 55 of file rtxCppDList.h.

### 7.14.2 Member Function Documentation

#### 7.14.2.1 const void* OSRTDListNodeClass::getData () const [inline]

This method returns a pointer to a data associated with the node.

**Returns**

Node data pointer.

Definition at line 73 of file rtxCppDList.h.

#### 7.14.2.2 void* OSRTDListNodeClass::getData () [inline]

This method returns a pointer to a data associated with the node.

**Returns**

Node data pointer.

Definition at line 66 of file rtxCppDList.h.

Referenced by OSRTDListClass::getItem().

#### 7.14.2.3 const OSRTDListNodeClass* OSRTDListNodeClass::getNext () const [inline]

This method returns a pointer to a next node in the list.

**Returns**

Pointer to the next node.

Definition at line 89 of file rtxCppDList.h.

#### 7.14.2.4 OSRTDListNodeClass* OSRTDListNodeClass::getNext () [inline]

This method returns a pointer to a next node in the list.

**Returns**

Pointer to the next node.

Definition at line 80 of file rtxCppDList.h.

#### 7.14.2.5 const OSRTDListNodeClass* OSRTDListNodeClass::getPrev () const [inline]

This method returns a pointer to a previous node in the list.

**Returns**

Pointer to the previous node.

Definition at line 107 of file rtxCppDList.h.

#### 7.14.2.6 OSRTDListNodeClass* OSRTDListNodeClass::getPrev () [inline]

This method returns a pointer to a previous node in the list.

**Returns**

Pointer to the previous node.

Definition at line 98 of file rtxCppDList.h.

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

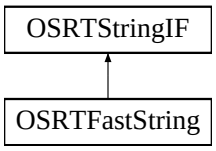
- rtxCppDList.h

## 7.15 OSRTFastString Class Reference

C++ fast string class definition.

`#include <OSRTFastString.h>`

Inheritance diagram for OSRTFastString:




### Public Member Functions

- OSRTFastString ()
  *The default constructor sets the internal string member variable pointer to null.*
- OSRTFastString (const char *strval)
  *This constructor initializes the string to contain the given standard ASCII string value.*
- OSRTFastString (const OSUTF8CHAR *strval)
  *This constructor initializes the string to contain the given UTF-8 string value.*
- OSRTFastString (const OSRTFastString &str)
  *Copy constructor.*
- virtual ~OSRTFastString ()
  *The destructor does nothing.*
- virtual OSRTStringIF * clone ()
  *This method creates a copy of the given string object.*
- virtual const char * getValue () const
  *This method returns the pointer to UTF-8 null terminated string as a standard ASCII string.*
- virtual const OSUTF8CHAR * getUTF8Value () const
  *This method returns the pointer to UTF-8 null terminated string as a UTF-8 string.*
- virtual void print (const char *name)
  *This method prints the string value to standard output.*
- virtual void setValue (const char *str)
  *This method sets the string value to the given string.*
- virtual void setValue (const OSUTF8CHAR *str)
  *This method sets the string value to the given UTF-8 string value.*
- OSRTFastString & operator= (const OSRTFastString &original)
  *Assignment operator.*

### 7.15.1 Detailed Description

C++ fast string class definition. This can be used to hold standard ASCII or UTF-8 strings. This string class implementations directly assigns any assigned pointers to internal member variables. It does no memory management.

Definition at line 43 of file OSRTFastString.h.

### 7.15.2 Constructor & Destructor Documentation

#### 7.15.2.1 OSRTFastString::OSRTFastString (const char * *strval*)

This constructor initializes the string to contain the given standard ASCII string value.

**Parameters**

***strval*** - Null-terminated C string value

#### 7.15.2.2 OSRTFastString::OSRTFastString (const OSUTF8CHAR * *strval*)

This constructor initializes the string to contain the given UTF-8 string value.

**Parameters**

***strval*** - Null-terminated C string value

#### 7.15.2.3 OSRTFastString::OSRTFastString (const OSRTFastString & *str*)

Copy constructor.

String data is not copied; the pointer is simply assigned to the target class member variable.

**Parameters**

***str*** - C++ string object to be copied.

### 7.15.3 Member Function Documentation

#### 7.15.3.1 virtual void OSRTFastString::print (const char * *name*) [inline, virtual]

This method prints the string value to standard output.

**Parameters**

***name*** - Name of generated string variable.

Implements OSRTStringIF.

Definition at line 109 of file OSRTFastString.h.

#### 7.15.3.2 virtual void OSRTFastString::setValue (const OSUTF8CHAR * *str*) [virtual]

This method sets the string value to the given UTF-8 string value.

**Parameters**

***str*** - C null-terminated UTF-8 string.

Implements OSRTStringIF.

#### 7.15.3.3 virtual void OSRTFastString::setValue (const char * *str*) [virtual]

This method sets the string value to the given string.

**Parameters**

***str*** - C null-terminated string.

Implements OSRTStringIF.

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

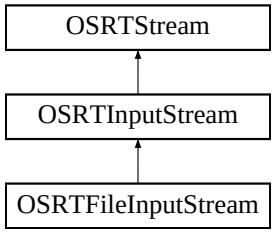
- OSRTFastString.h

## 7.16 OSRTFileInputStream Class Reference

Generic file input stream.

`#include <OSRTFileInputStream.h>`

Inheritance diagram for OSRTFileInputStream:




### Public Member Functions

- EXTRTMETHOD OSRTFileInputStream (const char *pFilename)
  *Creates and initializes a file input stream using the name of file.*
- EXTRTMETHOD OSRTFileInputStream (OSRTContext *pContext, const char *pFilename)
  *Creates and initializes a file input stream using the name of file.*
- EXTRTMETHOD OSRTFileInputStream (FILE *file)
  *Initializes the file input stream using the opened FILE structure descriptor.*
- EXTRTMETHOD OSRTFileInputStream (OSRTContext *pContext, FILE *file)
  *Initializes the file input stream using the opened FILE structure descriptor.*
- virtual OSBOOL isA (StreamID id) const
  *This method is used to query a stream object in order to determine its actual type.*

### 7.16.1 Detailed Description

Generic file input stream. This class opens an existing file for input in binary mode and reads data from it.

Definition at line 37 of file OSRTFileInputStream.h.

### 7.16.2 Constructor & Destructor Documentation

#### 7.16.2.1 EXTRTMETHOD OSRTFileInputStream::OSRTFileInputStream (const char * *pFilename*)

Creates and initializes a file input stream using the name of file.

**Parameters**

***pFilename*** Name of file.

**See also**

rtxStreamFileOpen

#### 7.16.2.2 EXTRTMETHOD OSRTFileInputStream::OSRTFileInputStream (OSRTContext * *pContext*, const char * *pFilename*)

Creates and initializes a file input stream using the name of file.

**Parameters**

***pContext*** Pointer to a context to use.

***pFilename*** Name of file.

**See also**

rtxStreamFileOpen

#### 7.16.2.3 EXTRTMETHOD OSRTFileInputStream::OSRTFileInputStream (FILE * *file*)

Initializes the file input stream using the opened FILE structure descriptor.

**Parameters**

***file*** Pointer to FILE structure.

**See also**

rtxStreamFileAttach

#### 7.16.2.4 EXTRTMETHOD OSRTFileInputStream::OSRTFileInputStream (OSRTContext * *pContext*, FILE * *file*)

Initializes the file input stream using the opened FILE structure descriptor.

**Parameters**

***pContext*** Pointer to a context to use.

***file*** Pointer to FILE structure.

**See also**

rtxStreamFileAttach

### 7.16.3 Member Function Documentation

#### 7.16.3.1 virtual OSBOOL OSRTFileInputStream::isA (StreamID *id*) const [inline, virtual]

This method is used to query a stream object in order to determine its actual type.

**Parameters**

***id*** Enumerated stream identifier

**Returns**

True if the stream matches the identifier

Reimplemented from OSRTInputStream.

Definition at line 82 of file OSRTFileInputStream.h.

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

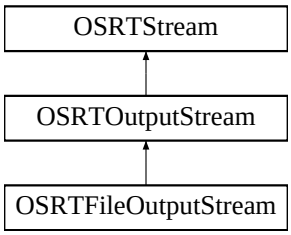
- OSRTFileInputStream.h

## 7.17 OSRTFileOutputStream Class Reference

Generic file output stream.

`#include <OSRTFileOutputStream.h>`

Inheritance diagram for OSRTFileOutputStream:




### Public Member Functions

- EXTRTMETHOD OSRTFileOutputStream (const char *pFilename)
  *Creates and initializes a file output stream using the name of file.*
- EXTRTMETHOD OSRTFileOutputStream (OSRTContext *pContext, const char *pFilename)
  *Creates and initializes a file output stream using the name of file.*
- EXTRTMETHOD OSRTFileOutputStream (FILE *file)
  *Initializes the file output stream using the opened FILE structure descriptor.*
- EXTRTMETHOD OSRTFileOutputStream (OSRTContext *pContext, FILE *file)
  *Initializes the file output stream using the opened FILE structure descriptor.*
- virtual OSBOOL isA (StreamID id) const
  *This method is used to query a stream object in order to determine its actual type.*

### 7.17.1 Detailed Description

Generic file output stream. This class opens an existing file for output in binary mode and reads data from it.

Definition at line 37 of file OSRTFileOutputStream.h.

### 7.17.2 Constructor & Destructor Documentation

#### 7.17.2.1 EXTRTMETHOD OSRTFileOutputStream::OSRTFileOutputStream (const char * *pFilename*)

Creates and initializes a file output stream using the name of file.

**Parameters**

***pFilename*** Name of file.

**Exceptions**

***OSStreamException*** Stream create or initialize failed.

**See also**

rtxStreamFileOpen

#### 7.17.2.2 EXTRTMETHOD OSRTFileOutputStream::OSRTFileOutputStream (OSRTContext * *pContext*, const char * *pFilename*)

Creates and initializes a file output stream using the name of file.

**Parameters**

***pContext*** Pointer to a context to use.

***pFilename*** Name of file.

**Exceptions**

***OSStreamException*** Stream create or initialize failed.

**See also**

rtxStreamFileOpen

#### 7.17.2.3 EXTRTMETHOD OSRTFileOutputStream::OSRTFileOutputStream (FILE * *file*)

Initializes the file output stream using the opened FILE structure descriptor.

**Parameters**

***file*** Pointer to FILE structure.

**Exceptions**

***OSStreamException*** Stream create or initialize failed.

**See also**

rtxStreamFileAttach

#### 7.17.2.4 EXTRTMETHOD OSRTFileOutputStream::OSRTFileOutputStream (OSRTContext * *pContext*, FILE * *file*)

Initializes the file output stream using the opened FILE structure descriptor.

**Parameters**

***pContext*** Pointer to a context to use.

***file*** Pointer to FILE structure.

**Exceptions**

***OSStreamException*** Stream create or initialize failed.

**See also**

rtxStreamFileAttach

### 7.17.3 Member Function Documentation

#### 7.17.3.1 virtual OSBOOL OSRTFileOutputStream::isA (StreamID *id*) const `[inline, virtual]`

This method is used to query a stream object in order to determine its actual type.

**Parameters**

***id*** Enumerated stream identifier

**Returns**

True if the stream matches the identifier

Reimplemented from OSRTOutputStream.

Definition at line 86 of file OSRTFileOutputStream.h.

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

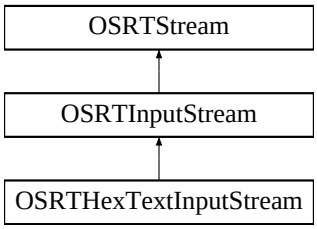
- OSRTFileOutputStream.h

## 7.18 OSRTHexTextInputStream Class Reference

Hexadecimal text input stream filter class.

`#include <OSRTHexTextInputStream.h>`

Inheritance diagram for OSRTHexTextInputStream:




### Public Member Functions

- EXTRTMETHOD OSRTHexTextInputStream (OSRTInputStream *pstream)

  *Initializes the input stream using the existing standard input stream.*

- EXTRTMETHOD ~OSRTHexTextInputStream ()

  *The destructor deletes the underlying stream object.*

- virtual OSBOOL isA (StreamID id) const

  *This method is used to query a stream object in order to determine its actual type.*

- void setOwnUnderStream (OSBOOL value=TRUE)

  *This method transfers ownership of the underlying stream to the class.*

### 7.18.1 Detailed Description

Hexadecimal text input stream filter class. This class is created on top of an existing stream class to provide conversion of hexadecimal text input into binary form.

Definition at line 38 of file OSRTHexTextInputStream.h.

### 7.18.2 Constructor & Destructor Documentation

#### 7.18.2.1 EXTRTMETHOD OSRTHexTextInputStream::OSRTHexTextInputStream (OSRTInputStream * *pstream*)

Initializes the input stream using the existing standard input stream.

Only file and memory underlying stream types are supported.

**Parameters**

***pstream*** The underlying input stream object. Note that this class will take control of the underlying stream object and delete it upon destruction.

**See also**

rtxStreamHexTextAttach

#### 7.18.2.2 EXTRTMETHOD OSRTHexTextInputStream::~OSRTHexTextInputStream ()

The destructor deletes the underlying stream object.

That object should be used as nothing more to a surrogate to this object.

### 7.18.3 Member Function Documentation

#### 7.18.3.1 virtual OSBOOL OSRTHexTextInputStream::isA (StreamID *id*) const [inline, virtual]

This method is used to query a stream object in order to determine its actual type.

**Parameters**

***id*** Enumerated stream identifier

**Returns**

True if the stream matches the identifier

Reimplemented from OSRTInputStream.

Definition at line 70 of file OSRTHexTextInputStream.h.

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

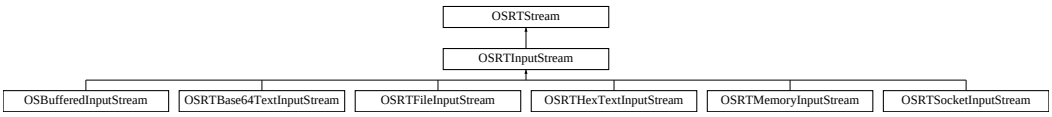
- OSRTHexTextInputStream.h

## 7.19 OSRTInputStream Class Reference

This is the base class for input streams.

`#include <OSRTInputStream.h>`

Inheritance diagram for OSRTInputStream:




### Public Member Functions

- EXTRTMETHOD OSRTInputStream ()

  *The default constructor.*

- virtual EXTRTMETHOD ~OSRTInputStream ()

  *Virtual destructor.*

- virtual EXTRTMETHOD int close ()

  *Closes the input or output stream and releases any system resources associated with the stream.*

- virtual EXTRTMETHOD size_t currentPos ()

  *This method returns the current position in the stream (in octets).*

- virtual EXTRTMETHOD int flush ()

  *Flushes the buffered data to the stream.*

- virtual OSBOOL isA (StreamID id) const

  *This method is used to query a stream object in order to determine its actual type.*

- virtual OSRTCtxtPtr getContext ()

  *This method returns a pointer to the underlying OSRTContext object.*

- virtual OSCTXT * getCtxtPtr ()

  *This method returns a pointer to the underlying OSCTXT object.*

- virtual char * getErrorInfo ()

  *Returns error text in a dynamic memory buffer.*

- virtual char * getErrorInfo (char *pBuf, size_t &bufSize)

  *Returns error text in a memory buffer.*

- virtual int getPosition (size_t *ppos)

  *Returns the current stream position.*

- virtual int getStatus () const

  *This method returns the completion status of previous operation.*

- virtual EXTRTMETHOD OSBOOL isOpened ()

  *Checks, is the stream opened or not.*

- virtual EXTRTMETHOD OSBOOL markSupported ()

  *Tests if this input stream supports the mark and reset methods.*

- virtual EXTRTMETHOD int mark (size_t readAheadLimit)

  *This method marks the current position in this input stream.*

- void printErrorInfo ()

  *The printErrorInfo method prints information on errors contained within the context.*

- void resetErrorInfo ()

  *The resetErrorInfo method resets information on errors contained within the context.*

- virtual EXTRTMETHOD long read (OSOCTET *pDestBuf, size_t maxToRead)

  *Read data from the stream.*

- virtual EXTRTMETHOD long readBlocking (OSOCTET *pDestBuf, size_t toReadBytes)

  *Read data from the stream.*

- virtual EXTRTMETHOD int reset ()

  *Repositions this stream to the position at the time the mark method was last called on this input stream.*

- virtual int setPosition (size_t pos)

  *Sets the current stream position to the given offset.*

- virtual EXTRTMETHOD int skip (size_t n)

  *Skips over and discards the specified amount of data octets from this input stream.*

### 7.19.1 Detailed Description

This is the base class for input streams. These streams are buffered (I/O is stored in memory prior to being written) to provide higher performance.

Definition at line 41 of file OSRTInputStream.h.

### 7.19.2 Constructor & Destructor Documentation

#### 7.19.2.1 EXTRTMETHOD OSRTInputStream::OSRTInputStream ()

The default constructor.

It initializes a buffered stream. A buffered stream maintains data in memory before reading or writing to the device. This generally provides better performance than an unbuffered stream.

**Exceptions**

***OSRTStreamException*** Stream create or initialize failed.

#### 7.19.2.2 virtual EXTRTMETHOD OSRTInputStream::~OSRTInputStream () [virtual]

Virtual destructor.

Closes the stream if it was opened.

### 7.19.3 Member Function Documentation

#### 7.19.3.1 virtual EXTRTMETHOD int OSRTInputStream::close () [virtual]

Closes the input or output stream and releases any system resources associated with the stream.

For output streams this function also flushes all internal buffers to the stream.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxStreamClose

Reimplemented from OSRTStream.

#### 7.19.3.2 virtual EXTRTMETHOD size_t OSRTInputStream::currentPos () [virtual]

This method returns the current position in the stream (in octets).

**Returns**

The number of octets already read from the stream.

#### 7.19.3.3 virtual EXTRTMETHOD int OSRTInputStream::flush () [virtual]

Flushes the buffered data to the stream.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxStreamFlush

Reimplemented from OSRTStream.

#### 7.19.3.4 virtual OSRTCtxtPtr OSRTInputStream::getContext () [inline, virtual]

This method returns a pointer to the underlying OSRTContext object.

**Returns**

A reference-counted pointer to an OSRTContext object. The OSRTContext object will not be released until all referenced-counted pointer variables go out of scope. This allows safe sharing of the context between different run-time classes.

Reimplemented from OSRTStream.

Definition at line 110 of file OSRTInputStream.h.

References OSRTStream::getContext().

#### 7.19.3.5 virtual OSCTXT* OSRTInputStream::getCtxtPtr () [inline, virtual]

This method returns a pointer to the underlying OSCTXT object.

This is the structure used in calls to low-level C encode/decode functions.

**Returns**

Pointer to a context (OSCTXT) structure.

Reimplemented from OSRTStream.

Definition at line 120 of file OSRTInputStream.h.

References OSRTStream::getCtxtPtr().

Referenced by OSRTBase64TextInputStream::isCertificate().

#### 7.19.3.6 virtual char* OSRTInputStream::getErrorInfo (char * *pBuf*, size_t & *bufSize*) [inline, virtual]

Returns error text in a memory buffer.

If buffer pointer is specified in parameters (not NULL) then error text will be copied in the passed buffer. Otherwise, this method allocates memory using the 'operator new []' function. The calling routine is responsible to free the memory by using 'operator delete []'.

**Parameters**

***pBuf*** A pointer to a destination buffer to obtain the error text. If NULL, dynamic buffer will be allocated.

***bufSize*** A reference to buffer size. If pBuf is NULL it will receive the size of allocated dynamic buffer.

**Returns**

A pointer to a buffer with error text. If pBuf is not NULL, the return pointer will be equal to it. Otherwise, returns newly allocated buffer with error text. NULL, if error occurred.

Reimplemented from OSRTStream.

Definition at line 151 of file OSRTInputStream.h.

References OSRTStream::getErrorInfo().

#### 7.19.3.7 virtual char* OSRTInputStream::getErrorInfo () [inline, virtual]

Returns error text in a dynamic memory buffer.

Buffer will be allocated by 'operator new []'. The calling routine is responsible to free the memory by using 'operator delete []'.

**Returns**

A pointer to a newly allocated buffer with error text.

Reimplemented from OSRTStream.

Definition at line 131 of file OSRTInputStream.h.

References OSRTStream::getErrorInfo().

#### 7.19.3.8 virtual int OSRTInputStream::getPosition (size_t * *ppos*) [virtual]

Returns the current stream position.

This may be used with the `setPosition` method to reset back to an arbitrary point in the input stream.

**Parameters**

***ppos*** Pointer to a variable to receive position.

**Returns**

Completion status of operation: 0 = success, negative return value is error.

#### 7.19.3.9 virtual int OSRTInputStream::getStatus () const [inline, virtual]

This method returns the completion status of previous operation.

It can be used to check completion status of constructors or methods, which do not return completion status.

**Returns**

Runtime status code:

- 0 = success,
- negative return value is error.

Reimplemented from OSRTStream.

Definition at line 175 of file OSRTInputStream.h.

References OSRTStream::getStatus().

#### 7.19.3.10 virtual OSBOOL OSRTInputStream::isA (StreamID *id*) const [inline, virtual]

This method is used to query a stream object in order to determine its actual type.

**Parameters**

***id*** Enumerated stream identifier

**Returns**

True if the stream matches the identifier

Reimplemented in OSRTBase64TextInputStream, OSRTFileInputStream, OSRTHexTextInputStream, OSRTMemoryInputStream, and OSRTSocketInputStream.

Definition at line 97 of file OSRTInputStream.h.

#### 7.19.3.11 virtual EXTRTMETHOD OSBOOL OSRTInputStream::isOpened () [virtual]

Checks, is the stream opened or not.

**Returns**

s TRUE, if the stream is opened, FALSE otherwise.

**See also**

rtxStreamIsOpened

Reimplemented from OSRTStream.

#### 7.19.3.12 virtual EXTRTMETHOD int OSRTInputStream::mark (size_t *readAheadLimit*) [virtual]

This method marks the current position in this input stream.

A subsequent call to the reset method repositions this stream at the last marked position so that subsequent reads re-read the same bytes. The readAheadLimit argument tells this input stream to allow that many bytes to be read before the mark position gets invalidated.

**Parameters**

***readAheadLimit*** the maximum limit of bytes that can be read before the mark position becomes invalid.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxStreamMark, rtxStreamReset

#### 7.19.3.13 virtual EXTRTMETHOD OSBOOL OSRTInputStream::markSupported () [virtual]

Tests if this input stream supports the mark and reset methods.

Whether or not mark and reset are supported is an invariant property of a particular input stream instance. By default, it returns FALSE.

**Returns**

TRUE if this stream instance supports the mark and reset methods; FALSE otherwise.

**See also**

rtxStreamMarkSupported

#### 7.19.3.14 virtual EXTRTMETHOD long OSRTInputStream::read (OSOCTET * *pDestBuf*, size_t *maxToRead*) [virtual]

Read data from the stream.

This method reads up to `maxToRead` bytes from the stream. It may return a value less then this if the mamimum number of bytes is not available.

**Parameters**

***pDestBuf*** Pointer to a buffer to receive a data.

***maxToRead*** Size of the buffer.

**See also**

rtxStreamRead

#### 7.19.3.15 virtual EXTRTMETHOD long OSRTInputStream::readBlocking (OSOCTET * *pDestBuf*, size_t *toReadBytes*) [virtual]

Read data from the stream.

This method reads up to `maxToRead` bytes from the stream. It may return a value less then this if the mamimum number of bytes is not available.

**Parameters**

***pDestBuf*** Pointer to a buffer to receive a data.

***toReadBytes*** Number of bytes to be read.

**See also**

rtxStreamRead

#### 7.19.3.16 virtual EXTRTMETHOD int OSRTInputStream::reset () [virtual]

Repositions this stream to the position at the time the mark method was last called on this input stream.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxStreamMark, rtxStreamReset

#### 7.19.3.17 virtual int OSRTInputStream::setPosition (size_t *pos*) [virtual]

Sets the current stream position to the given offset.

**Parameters**

***pos*** Position stream is to be reset to. This is normally obtained via a call to `getPosition`, although in most cases it is a zero-based offset.

**Returns**

Completion status of operation: 0 = success, negative return value is error.

#### 7.19.3.18 virtual EXTRTMETHOD int OSRTInputStream::skip (size_t *n*) [virtual]

Skips over and discards the specified amount of data octets from this input stream.

**Parameters**

***n*** The number of octets to be skipped.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxStreamSkip

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

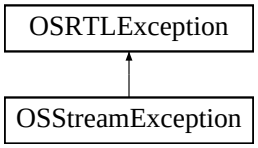
- OSRTInputStream.h

## 7.20 OSRTLException Class Reference

The base exception class for the C++ run-time.

`#include <rtxCppException.h>`

Inheritance diagram for OSRTLException:




### Public Member Functions

- OSRTLException (int stat)

  *This constructor sets the status member variable value.*

- OSRTLException (OSRTContext *pContext, int stat)

  *This constructor sets the status member variable value.*

- OSRTLException (const OSRTLException &o)

  *This is a copy constructor.*

- ~OSRTLException ()

  *The virtual destructor does nothing.*

- int getStatus () const

  *The getStatus method returns the runtime status code value.*

- void printErrorInfo ()

  *Prints error information, if context is set.*

### Protected Attributes

- int mStatus

  *The mStatus member variable holds the status value which caused the exception to be thrown.*

### 7.20.1 Detailed Description

The base exception class for the C++ run-time.

Definition at line 88 of file rtxCppException.h.

### 7.20.2 Constructor & Destructor Documentation

#### 7.20.2.1 OSRTLException::OSRTLException (int *stat*) [inline]

This constructor sets the status member variable value.

**Parameters**

***stat*** - The status value that caused the exception to be thrown.

Definition at line 107 of file rtxCppException.h.

#### 7.20.2.2 OSRTLException::OSRTLException (OSRTContext * *pContext*, int *stat*) [inline]

This constructor sets the status member variable value.

**Parameters**

***pContext*** - The pointer to context to retrieve error information.

***stat*** - The status value that caused the exception to be thrown.

Definition at line 116 of file rtxCppException.h.

#### 7.20.2.3 OSRTLException::OSRTLException (const OSRTLException & *o*) [inline]

This is a copy constructor.

**Parameters**

***o*** - Exception object to be copied.

Definition at line 124 of file rtxCppException.h.

#### 7.20.2.4 OSRTLException::~OSRTLException () [inline]

The virtual destructor does nothing.

It is overridden by derived versions of this class.

Definition at line 131 of file rtxCppException.h.

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

- rtxCppException.h

## 7.21 OSRTMemBuf Class Reference

Memory Buffer class.

`#include <OSRTMemBuf.h>`

### 7.21.1 Detailed Description

Memory Buffer class. This is the base class for generated C++ data type classes for XSD string types (string, token, NMTOKEN, etc.).

Definition at line 44 of file OSRTMemBuf.h.

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

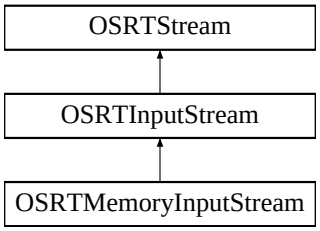
- OSRTMemBuf.h

## 7.22 OSRTMemoryInputStream Class Reference

Generic memory input stream.

`#include <OSRTMemoryInputStream.h>`

Inheritance diagram for OSRTMemoryInputStream:




### Public Member Functions

- EXTRTMETHOD OSRTMemoryInputStream (const OSOCTET *pMemBuf, size_t bufSize)

  *Initializes the memory input stream using the specified memory buffer.*

- EXTRTMETHOD OSRTMemoryInputStream (OSRTContext *pContext, const OSOCTET *pMemBuf, size_t bufSize)

  *Initializes the memory input stream using the specified memory buffer.*

- virtual OSBOOL isA (StreamID id) const

  *This method is used to query a stream object in order to determine its actual type.*

### 7.22.1 Detailed Description

Generic memory input stream. This class provides methods for streaming data from an input memory buffer.

Definition at line 37 of file OSRTMemoryInputStream.h.

### 7.22.2 Constructor & Destructor Documentation

#### 7.22.2.1 EXTRTMETHOD OSRTMemoryInputStream::OSRTMemoryInputStream (const OSOCTET * *pMemBuf*, size_t *bufSize*)

Initializes the memory input stream using the specified memory buffer.

**Parameters**

***pMemBuf*** The pointer to the buffer.

***bufSize*** The size of the buffer.

**See also**

rtxStreamMemoryAttach

#### 7.22.2.2 EXTRTMETHOD OSRTMemoryInputStream::OSRTMemoryInputStream (OSRTContext * *pContext*, const OSOCTET * *pMemBuf*, size_t *bufSize*)

Initializes the memory input stream using the specified memory buffer.

**Parameters**

***pContext*** Pointer to a context to use.

***pMemBuf*** The pointer to the buffer.

***bufSize*** The size of the buffer.

**See also**

rtxStreamMemoryAttach

### 7.22.3 Member Function Documentation

#### 7.22.3.1 virtual OSBOOL OSRTMemoryInputStream::isA (StreamID *id*) const [inline, virtual]

This method is used to query a stream object in order to determine its actual type.

**Parameters**

***id*** Enumerated stream identifier

**Returns**

True if the stream matches the identifier

Reimplemented from OSRTInputStream.

Definition at line 66 of file OSRTMemoryInputStream.h.

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

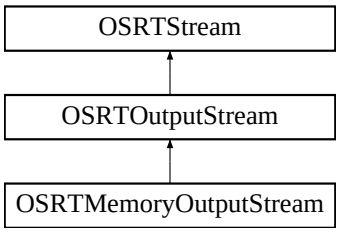
- OSRTMemoryInputStream.h

## 7.23 OSRTMemoryOutputStream Class Reference

Generic memory output stream.

`#include <OSRTMemoryOutputStream.h>`

Inheritance diagram for OSRTMemoryOutputStream:




### Public Member Functions

- EXTRTMETHOD OSRTMemoryOutputStream ()

  *The default constructor initializes the memory output stream to use a dynamic memory output buffer.*

- EXTRTMETHOD OSRTMemoryOutputStream (OSOCTET *pMemBuf, size_t bufSize)

  *Initializes the memory output stream using the specified memory buffer.*

- EXTRTMETHOD OSRTMemoryOutputStream (OSRTContext *pContext, OSOCTET *pMemBuf, size_t bufSize)

  *Initializes the memory output stream using the specified memory buffer.*

- EXTRTMETHOD OSOCTET * getBuffer (size_t *pSize=0)

  *This method returns the address of the memory buffer to which data was written.*

- virtual OSBOOL isA (StreamID id) const

  *This method is used to query a stream object in order to determine its actual type.*

- int reset ()

  *This method resets the output memory stream internal buffer to allow it to be overwritten with new data.*

### 7.23.1 Detailed Description

Generic memory output stream. This class provides methods for streaming data to an output memory buffer.

Definition at line 37 of file OSRTMemoryOutputStream.h.

### 7.23.2 Constructor & Destructor Documentation

#### 7.23.2.1 EXTRTMETHOD OSRTMemoryOutputStream::OSRTMemoryOutputStream ()

The default constructor initializes the memory output stream to use a dynamic memory output buffer.

The status of the construction can be obtained by calling the `getStatus` method.

**See also**

rtxStreamMemoryCreate

#### 7.23.2.2 EXTRTMETHOD OSRTMemoryOutputStream::OSRTMemoryOutputStream (OSOCTET * *pMemBuf*, size_t *bufSize*)

Initializes the memory output stream using the specified memory buffer.

The status of the construction can be obtained by calling the `getStatus` method.

**Parameters**

***pMemBuf*** The pointer to the buffer.

***bufSize*** The size of the buffer.

**See also**

rtxStreamMemoryAttach

#### 7.23.2.3 EXTRTMETHOD OSRTMemoryOutputStream::OSRTMemoryOutputStream (OSRTContext * *pContext*, OSOCTET * *pMemBuf*, size_t *bufSize*)

Initializes the memory output stream using the specified memory buffer.

The status of the construction can be obtained by calling the `getStatus` method.

**Parameters**

***pContext*** Pointer to a context to use.

***pMemBuf*** The pointer to the buffer.

***bufSize*** The size of the buffer.

**See also**

rtxStreamMemoryAttach

### 7.23.3 Member Function Documentation

#### 7.23.3.1 EXTRTMETHOD OSOCTET* OSRTMemoryOutputStream::getBuffer (size_t * *pSize* = 0)

This method returns the address of the memory buffer to which data was written.

If the buffer memory is dynamic, it may be freed using the rtxMemFreePtr function or it will be freed when the stream object is destroyed.

**Parameters**

***pSize*** Pointer to a size variable to receive the number of bytes written to the stream. This is an optional parameter, if a null pointer is passed, size is not returned.

**Returns**

Pointer to memory buffer.

#### 7.23.3.2 virtual OSBOOL OSRTMemoryOutputStream::isA (StreamID *id*) const [inline, virtual]

This method is used to query a stream object in order to determine its actual type.

**Parameters**

***id*** Enumerated stream identifier

**Returns**

True if the stream matches the identifier

Reimplemented from OSRTOutputStream.

Definition at line 92 of file OSRTMemoryOutputStream.h.

#### 7.23.3.3 int OSRTMemoryOutputStream::reset ()

This method resets the output memory stream internal buffer to allow it to be overwritten with new data.

Memory for the buffer is not freed.

**Returns**

Completion status of operation: 0 = success, negative return value is error.

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

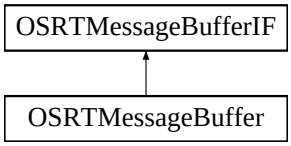
- OSRTMemoryOutputStream.h

## 7.24 OSRTMessageBuffer Class Reference

Abstract message buffer base class.

`#include <OSRTMsgBuf.h>`

Inheritance diagram for OSRTMessageBuffer:




### Public Member Functions

- virtual ~OSRTMessageBuffer ()

  *The virtual destructor does nothing.*

- virtual void * getAppInfo ()

  *Returns a pointer to application-specific information block.*

- virtual size_t getByteIndex ()

  *The getByteIndex method is used to fetch the current byte offset within the current working buffer.*

- virtual OSRTCtxtPtr getContext ()

  *The getContext method returns the underlying context smart-pointer object.*

- virtual OSCTXT * getCtxtPtr ()

  *The getCtxtPtr method returns the underlying C runtime context.*

- virtual char * getErrorInfo ()

  *Returns error text in a dynamic memory buffer.*

- virtual char * getErrorInfo (char *pBuf, size_t &bufSize)

  *Returns error text in a memory buffer.*

- virtual OSOCTET * getMsgCopy ()

  *The getMsgCopy method will return a copy of the encoded message managed by the object.*

- virtual const OSOCTET * getMsgPtr ()

  *The getMsgPtr method will return a const pointer to the encoded message managed by the object.*

- int getStatus () const

  *This method returns the completion status of previous operation.*

- virtual int init ()

  *Initializes message buffer.*

- virtual EXTRTMETHOD int initBuffer (OSOCTET *pMsgBuf, size_t msgBufLen)

*This version of the overloaded initBuffer method initializes the message buffer to point at the given null-terminated character string.*

- virtual void printErrorInfo ()

  *The printErrorInfo method prints information on errors contained within the context.*

- virtual void resetErrorInfo ()

  *The resetErrorInfo method resets information on errors contained within the context.*

- virtual void setAppInfo (void *)

  *Sets the application-specific information block.*

- virtual EXTRTMETHOD void setDiag (OSBOOL value=TRUE)

  *The setDiag method will turn diagnostic tracing on or off.*

## Protected Member Functions

- EXTRTMETHOD OSRTMessageBuffer (Type bufferType, OSRTContext *pContext=0)

  *The protected constructor creates a new context and sets the buffer class type.*

## Protected Attributes

- Type mBufferType

  *The mBufferType member variable holds information on the derived message buffer class type (for example, XMLEncode).*

### 7.24.1 Detailed Description

Abstract message buffer base class. This class is used to manage an encode or decode message buffer. For encoding, this is the buffer into which the message is being built. For decoding, it describes a message that was read into memory to be decoded. Further classes are derived from this to handle encoding and decoding of messages for different encoding rules types.

Definition at line 46 of file OSRTMsgBuf.h.

### 7.24.2 Constructor & Destructor Documentation

#### 7.24.2.1 EXTRTMETHOD OSRTMessageBuffer::OSRTMessageBuffer (Type *bufferType*, OSRTContext * *pContext* = 0) [protected]

The protected constructor creates a new context and sets the buffer class type.

**Parameters**

***bufferType*** Type of message buffer that is being created (for example, XMLEncode).

***pContext*** Pointer to a context to use. If NULL, new context will be allocated.

#### 7.24.2.2 virtual OSRTMessageBuffer::~OSRTMessageBuffer () [inline, virtual]

The virtual destructor does nothing.

It is overridden by derived versions of this class.

Definition at line 73 of file OSRTMsgBuf.h.

### 7.24.3 Member Function Documentation

#### 7.24.3.1 virtual size_t OSRTMessageBuffer::getByteIndex () [inline, virtual]

The getByteIndex method is used to fetch the current byte offset within the current working buffer.

For encoding, this is the next location that will be written to. For decoding, this is the next byte the parser will read.

Implements OSRTMessageBufferIF.

Definition at line 86 of file OSRTMsgBuf.h.

#### 7.24.3.2 virtual OSCTXT* OSRTMessageBuffer::getCtxtPtr () [inline, virtual]

The getCtxtPtr method returns the underlying C runtime context.

This context can be used in calls to C runtime functions.

Implements OSRTMessageBufferIF.

Definition at line 102 of file OSRTMsgBuf.h.

#### 7.24.3.3 virtual char* OSRTMessageBuffer::getErrorInfo (char * *pBuf*, size_t & *bufSize*) [inline, virtual]

Returns error text in a memory buffer.

If buffer pointer is specified in parameters (not NULL) then error text will be copied in the passed buffer. Otherwise, this method allocates memory using the 'operator new []' function. The calling routine is responsible to free the memory by using 'operator delete []'.

**Parameters**

***pBuf*** A pointer to a destination buffer to obtain the error text. If NULL, dynamic buffer will be allocated.

***bufSize*** A reference to buffer size. If pBuf is NULL it will receive the size of allocated dynamic buffer.

**Returns**

A pointer to a buffer with error text. If pBuf is not NULL, the return pointer will be equal to it. Otherwise, returns newly allocated buffer with error text. NULL, if error occurred.

Definition at line 133 of file OSRTMsgBuf.h.

#### 7.24.3.4 virtual char* OSRTMessageBuffer::getErrorInfo () [inline, virtual]

Returns error text in a dynamic memory buffer.

The buffer is allocated using 'operator new []'. The calling routine is responsible to free the memory by using 'operator delete []'.

**Returns**

A pointer to a newly allocated buffer with error text.

Definition at line 113 of file OSRTMsgBuf.h.

#### 7.24.3.5 int OSRTMessageBuffer::getStatus () const [inline]

This method returns the completion status of previous operation.

It can be used to check completion status of constructors or methods, which do not return completion status.

**Returns**

Runtime status code:

- 0 = success,
- negative return value is error.

Definition at line 162 of file OSRTMsgBuf.h.

#### 7.24.3.6 virtual int OSRTMessageBuffer::init () [inline, virtual]

Initializes message buffer.

**Returns**

Completion status of operation:

- 0 (0) = success,
- negative return value is error.

Implements OSRTMessageBufferIF.

Definition at line 173 of file OSRTMsgBuf.h.

#### 7.24.3.7 virtual EXTRTMETHOD int OSRTMessageBuffer::initBuffer (OSOCTET * *pMsgBuf*, size_t *msgBufLen*) [virtual]

This version of the overloaded initBuffer method initializes the message buffer to point at the given null-terminated character string.

**Parameters**

***pMsgBuf*** Pointer to message buffer.

***msgBufLen*** Length of message buffer in bytes.

**Returns**

Completion status of operation:

- 0 (0) = success,
- negative return value is error.

Implements OSRTMessageBufferIF.

#### 7.24.3.8 virtual EXTRTMETHOD void OSRTMessageBuffer::setDiag (OSBOOL *value* = `TRUE`) `[virtual]`

The setDiag method will turn diagnostic tracing on or off.

**Parameters**

***value*** - Boolean value (default = TRUE = on)

Implements OSRTMessageBufferIF.

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

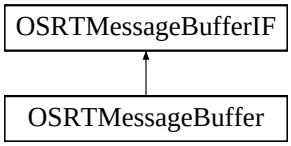
- OSRTMsgBuf.h

## 7.25 OSRTMessageBufferIF Class Reference

Abstract message buffer or stream interface class.

`#include <OSRTMsgBufIF.h>`

Inheritance diagram for OSRTMessageBufferIF:




### Public Member Functions

- virtual void * getAppInfo ()=0

  *Returns a pointer to application-specific information block.*

- virtual size_t getByteIndex ()=0

  *The getByteIndex method is used to fetch the current byte offset within the current working buffer.*

- virtual OSOCTET * getMsgCopy ()=0

  *The getMsgCopy method will return a copy of the encoded ASN.1 message managed by the object.*

- virtual const OSOCTET * getMsgPtr ()=0

  *The getMsgPtr method will return a const pointer to the encoded ASN.1 message managed by the object.*

- virtual int init ()=0

  *Initializes message buffer.*

- virtual int initBuffer (OSOCTET *pMsgBuf, size_t msgBufLen)=0

  *This version of the overloaded initBuffer method initializes the message buffer to point at the given null-terminated character string.*

- virtual OSBOOL isA (Type bufferType)=0

  *This method checks the type of the message buffer.*

- virtual void setAppInfo (void *pAppInfo)=0

  *Sets the application-specific information block.*

- virtual void setNamespace (const OSUTF8CHAR *, const OSUTF8CHAR *, OSRTDList *=0)

  *Sets the namespace information.*

- virtual void setDiag (OSBOOL value=TRUE)=0

  *The setDiag method will turn diagnostic tracing on or off.*

## Protected Member Functions

- virtual ~OSRTMessageBufferIF ()

  *The virtual destructor does nothing.*

### 7.25.1 Detailed Description

Abstract message buffer or stream interface class. This is the base class for both the in-memory message buffer classes and the run-time stream classes.

Definition at line 47 of file OSRTMsgBufIF.h.

### 7.25.2 Constructor & Destructor Documentation

#### 7.25.2.1 virtual OSRTMessageBufferIF::~OSRTMessageBufferIF () [inline, protected, virtual]

The virtual destructor does nothing.

It is overridden by derived versions of this class.

Definition at line 58 of file OSRTMsgBufIF.h.

### 7.25.3 Member Function Documentation

#### 7.25.3.1 virtual size_t OSRTMessageBufferIF::getByteIndex () [pure virtual]

The getByteIndex method is used to fetch the current byte offset within the current working buffer.

For encoding, this is the next location that will be written to. For decoding, this is the next byte the parser will read.

Implemented in OSRTMessageBuffer.

#### 7.25.3.2 virtual OSOCTET* OSRTMessageBufferIF::getMsgCopy () [pure virtual]

The getMsgCopy method will return a copy of the encoded ASN.1 message managed by the object.

The memory for the copy is allocated by new [] operator, user is responsible to free it by delete [] operator.

**Returns**

The pointer to copied encoded ASN.1 message. NULL, if error occurred.

Implemented in OSRTMessageBuffer.

#### 7.25.3.3 virtual const OSOCTET* OSRTMessageBufferIF::getMsgPtr () [pure virtual]

The getMsgPtr method will return a const pointer to the encoded ASN.1 message managed by the object.

**Returns**

The pointer to the encoded ASN.1 message.

Implemented in OSRTMessageBuffer.

#### 7.25.3.4 virtual int OSRTMessageBufferIF::init () [pure virtual]

Initializes message buffer.

**Returns**

Completion status of operation:

- 0 (0) = success,
- negative return value is error.

Implemented in OSRTMessageBuffer.

#### 7.25.3.5 virtual int OSRTMessageBufferIF::initBuffer (OSOCTET * *pMsgBuf*, size_t *msgBufLen*) [pure virtual]

This version of the overloaded initBuffer method initializes the message buffer to point at the given null-terminated character string.

**Parameters**

***pMsgBuf*** Pointer to message buffer.

***msgBufLen*** Length of message buffer in bytes. string.

**Returns**

Completion status of operation:

- 0 (0) = success,
- negative return value is error.

Implemented in OSRTMessageBuffer.

#### 7.25.3.6 virtual OSBOOL OSRTMessageBufferIF::isA (Type *bufferType*) [pure virtual]

This method checks the type of the message buffer.

**Parameters**

***bufferType*** Enumerated identifier specifying a derived class. Possible values are: BEREncode, BERDecode, PEREncode, PERDecode, XEREncode, XERDecode, XMLEncode, XMLDecode, Stream.

**Returns**

Boolean result of the match operation. True if this is the class corresponding to the identifier argument.

#### 7.25.3.7 virtual void OSRTMessageBufferIF::setDiag (OSBOOL *value* = TRUE) [pure virtual]

The setDiag method will turn diagnostic tracing on or off.

**Parameters**

***value*** - Boolean value (default = TRUE = on)

Implemented in OSRTMessageBuffer.

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

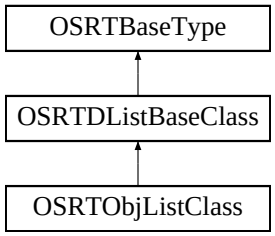
- OSRTMsgBufIF.h

## 7.26 OSRTObjListClass Class Reference

This class represents a doubly-linked list structure for objects.

`#include <rtxCppDList.h>`

Inheritance diagram for OSRTObjListClass:




### Public Member Functions

- OSRTObjListClass ()

  *The default constructor initializes the list contents to empty.*

- void append (OSRTBaseType *pdata)

  *The append method adds an item to the end of the list.*

- void appendCopy (const OSRTBaseType *pdata)

  *The appendCopy method adds a copy of an item to the end of the list.*

- OSRTObjListNodeClass * getHead ()

  *This method returns a pointer to a head node of the list.*

- const OSRTObjListNodeClass * getHead () const

  *This method returns a pointer to a head node of the list.*

- const OSRTBaseType * getItem (int idx) const

  *The getItem method retrieves the data item from the list at the given index.*

- OSRTObjListNodeClass * getTail ()

  *This method returns a pointer to a tail node of the list.*

- const OSRTObjListNodeClass * getTail () const

  *This method returns a pointer to a tail node of the list.*

- void insert (int index, OSRTBaseType *pdata)

  *The insert method inserts a data item into the list at the given indexed location.*

- OSRTObjListClass & operator= (const OSRTObjListClass &)

  *Assignment operator.*

### 7.26.1 Detailed Description

This class represents a doubly-linked list structure for objects. It extends the C++ `OSRTDListBaseClass` type. It is similar to the `OSRTDListClass` described above except that the base type for items in the list is `OSRTBaseType`. This allows items in the list to be properly destructed when memory ownership for the items is transferred to the list object.

Definition at line 339 of file rtxCppDList.h.

### 7.26.2 Member Function Documentation

#### 7.26.2.1 void OSRTObjListClass::append (OSRTBaseType * *pdata*)

The append method adds an item to the end of the list.

**Parameters**

***pdata*** - Pointer to data item to be appended to list. Note the pointer itself is appended - a copy is not made.

#### 7.26.2.2 void OSRTObjListClass::appendCopy (const OSRTBaseType * *pdata*)

The appendCopy method adds a copy of an item to the end of the list.

**Parameters**

***pdata*** - Pointer to data item to be appended to list. Note that clone() is called on the data item, and the returned copy is stored in the list.

#### 7.26.2.3 const OSRTObjListNodeClass* OSRTObjListClass::getHead () const [inline]

This method returns a pointer to a head node of the list.

**Returns**

- Pointer to head node.

Definition at line 384 of file rtxCppDList.h.

#### 7.26.2.4 OSRTObjListNodeClass* OSRTObjListClass::getHead () [inline]

This method returns a pointer to a head node of the list.

**Returns**

- Pointer to head node.

Definition at line 375 of file rtxCppDList.h.

#### 7.26.2.5 const OSRTBaseType* OSRTObjListClass::getItem (int *idx*) const [inline]

The getItem method retrieves the data item from the list at the given index.

The index is zero-based.

**Parameters**

***idx*** - Zero-based index of the node to retrieve.

**Returns**

- Pointer to node structure containing the indexed data item.

Definition at line 395 of file rtxCppDList.h.

References OSRTObjListNodeClass::getData().

#### 7.26.2.6 const OSRTObjListNodeClass* OSRTObjListClass::getTail () const [inline]

This method returns a pointer to a tail node of the list.

**Returns**

- Pointer to tail node.

Definition at line 415 of file rtxCppDList.h.

#### 7.26.2.7 OSRTObjListNodeClass* OSRTObjListClass::getTail () [inline]

This method returns a pointer to a tail node of the list.

**Returns**

- Pointer to tail node.

Definition at line 406 of file rtxCppDList.h.

#### 7.26.2.8 void OSRTObjListClass::insert (int *index*, OSRTBaseType * *pdata*)

The insert method inserts a data item into the list at the given indexed location.

The index is zero-based.

**Parameters**

***index*** - Zero-based index of insertion point.

***pdata*** - Pointer to data item to be inserted into list. Note the pointer itself is inserted - a copy is not made.

#### 7.26.2.9 OSRTObjListClass& OSRTObjListClass::operator= (const OSRTObjListClass &)

Assignment operator.

Sets the list's value to the value of the given list. Note that a copy of each object in the given list is made.

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

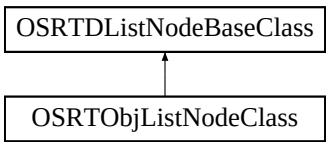
- rtxCppDList.h

## 7.27 OSRTObjListNodeClass Class Reference

This class represents a doubly-linked list node structure for `OSRTBaseType` instances.

`#include <rtxCppDList.h>`

Inheritance diagram for OSRTObjListNodeClass:




### Public Member Functions

- OSRTBaseType * getData ()
  *This method returns a pointer to a data associated with the node.*
- const OSRTBaseType * getData () const
  *This method returns a pointer to a data associated with the node.*
- OSRTObjListNodeClass * getNext ()
  *This method returns a pointer to a next node in the list.*
- const OSRTObjListNodeClass * getNext () const
  *This method returns a pointer to a next node in the list.*
- OSRTObjListNodeClass * getPrev ()
  *This method returns a pointer to a previous node in the list.*
- const OSRTObjListNodeClass * getPrev () const
  *This method returns a pointer to a previous node in the list.*

### 7.27.1 Detailed Description

This class represents a doubly-linked list node structure for `OSRTBaseType` instances. It extends the C++ `OSRTDListNodeBaseClass` type.

Definition at line 116 of file rtxCppDList.h.

### 7.27.2 Member Function Documentation

#### 7.27.2.1 const OSRTBaseType* OSRTObjListNodeClass::getData () const [inline]

This method returns a pointer to a data associated with the node.

**Returns**

Node data pointer.

Definition at line 134 of file rtxCppDList.h.

#### 7.27.2.2 OSRTBaseType* OSRTObjListNodeClass::getData () [inline]

This method returns a pointer to a data associated with the node.

**Returns**

Node data pointer.

Definition at line 127 of file rtxCppDList.h.

Referenced by OSRTObjListClass::getItem().

#### 7.27.2.3 const OSRTObjListNodeClass* OSRTObjListNodeClass::getNext () const [inline]

This method returns a pointer to a next node in the list.

**Returns**

Pointer to the next node.

Definition at line 150 of file rtxCppDList.h.

#### 7.27.2.4 OSRTObjListNodeClass* OSRTObjListNodeClass::getNext () [inline]

This method returns a pointer to a next node in the list.

**Returns**

Pointer to the next node.

Definition at line 141 of file rtxCppDList.h.

#### 7.27.2.5 const OSRTObjListNodeClass* OSRTObjListNodeClass::getPrev () const [inline]

This method returns a pointer to a previous node in the list.

**Returns**

Pointer to the previous node.

Definition at line 168 of file rtxCppDList.h.

#### 7.27.2.6 OSRTObjListNodeClass* OSRTObjListNodeClass::getPrev () [inline]

This method returns a pointer to a previous node in the list.

**Returns**

Pointer to the previous node.

Definition at line 159 of file rtxCppDList.h.

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

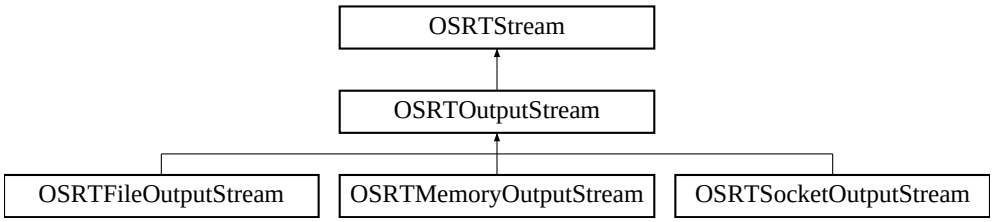
- rtxCppDList.h

## 7.28 OSRTOutputStream Class Reference

The base class definition for operations with output streams.

`#include <OSRTOutputStream.h>`

Inheritance diagram for OSRTOutputStream:




### Public Member Functions

- EXTRTMETHOD OSRTOutputStream ()

  *The default constructor.*

- virtual EXTRTMETHOD ~OSRTOutputStream ()

  *Virtual destructor.*

- virtual EXTRTMETHOD int close ()

  *Closes the output or output stream and releases any system resources associated with the stream.*

- virtual EXTRTMETHOD int flush ()

  *Flushes the buffered data to the stream.*

- virtual OSRTCtxtPtr getContext ()

  *This method returns a pointer to the underlying OSRTContext object.*

- virtual OSCTXT * getCtxtPtr ()

  *This method returns a pointer to the underlying OSCTXT object.*

- virtual char * getErrorInfo ()

  *Returns error text in a dynamic memory buffer.*

- virtual char * getErrorInfo (char *pBuf, size_t &bufSize)

  *Returns error text in a memory buffer.*

- virtual int getStatus () const

  *This method returns the completion status of previous operation.*

- virtual OSBOOL isA (StreamID id) const

  *This method is used to query a stream object in order to determine its actual type.*

- virtual EXTRTMETHOD OSBOOL isOpened ()

  *Checks if the stream open or not.*

- void printErrorInfo ()

  *The printErrorInfo method prints information on errors contained within the context.*

- void resetErrorInfo ()

  *The resetErrorInfo method resets information on errors contained within the context.*

- virtual EXTRTMETHOD long write (const OSOCTET *pdata, size_t size)

  *Write data to the stream.*

- virtual EXTRTMETHOD long write (const char *pdata)

  *Write data to the stream.*

### 7.28.1 Detailed Description

The base class definition for operations with output streams. As with the input stream, this implementation is backed by memory buffers to improve I/O performance.

Definition at line 43 of file OSRTOutputStream.h.

### 7.28.2 Constructor & Destructor Documentation

#### 7.28.2.1 EXTRTMETHOD OSRTOutputStream::OSRTOutputStream ()

The default constructor.

It initializes a buffered stream. A buffered stream maintains data in memory before reading or writing to the device. This generally provides better performance than an unbuffered stream.

#### 7.28.2.2 virtual EXTRTMETHOD OSRTOutputStream::~OSRTOutputStream () `[virtual]`

Virtual destructor.

Closes the stream if it was opened.

### 7.28.3 Member Function Documentation

#### 7.28.3.1 virtual EXTRTMETHOD int OSRTOutputStream::close () `[virtual]`

Closes the output or output stream and releases any system resources associated with the stream.

For output streams this function also flushes all internal buffers to the stream.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxStreamClose

Reimplemented from OSRTStream.

#### 7.28.3.2 virtual EXTRTMETHOD int OSRTOutputStream::flush () [virtual]

Flushes the buffered data to the stream.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxStreamFlush

Reimplemented from OSRTStream.

#### 7.28.3.3 virtual OSRTCtxtPtr OSRTOutputStream::getContext () [inline, virtual]

This method returns a pointer to the underlying OSRTContext object.

**Returns**

A reference-counted pointer to an OSRTContext object. The OSRTContext object will not be released until all referenced-counted pointer variables go out of scope. This allows safe sharing of the context between different run-time classes.

Reimplemented from OSRTStream.

Definition at line 94 of file OSRTOutputStream.h.

References OSRTStream::getContext().

#### 7.28.3.4 virtual OSCTXT* OSRTOutputStream::getCtxtPtr () [inline, virtual]

This method returns a pointer to the underlying OSCTXT object.

This is the structure used in calls to low-level C encode/decode functions.

**Returns**

Pointer to a context (OSCTXT) structure.

Reimplemented from OSRTStream.

Definition at line 104 of file OSRTOutputStream.h.

References OSRTStream::getCtxtPtr().

#### 7.28.3.5 virtual char* OSRTOutputStream::getErrorInfo (char * *pBuf*, size_t & *bufSize*) [inline, virtual]

Returns error text in a memory buffer.

If buffer pointer is specified in parameters (not NULL) then error text will be copied in the passed buffer. Otherwise, this method allocates memory using the 'operator new []' function. The calling routine is responsible to free the memory by using 'operator delete []'.

**Parameters**

***pBuf*** A pointer to a destination buffer to obtain the error text. If NULL, dynamic buffer will be allocated.

***bufSize*** A reference to buffer size. If pBuf is NULL it will receive the size of allocated dynamic buffer.

**Returns**

A pointer to a buffer with error text. If pBuf is not NULL, the return pointer will be equal to it. Otherwise, returns newly allocated buffer with error text. NULL, if error occurred.

Reimplemented from OSRTStream.

Definition at line 135 of file OSRTOutputStream.h.

References OSRTStream::getErrorInfo().

#### 7.28.3.6 virtual char* OSRTOutputStream::getErrorInfo () [inline, virtual]

Returns error text in a dynamic memory buffer.

Buffer will be allocated by 'operator new []'. The calling routine is responsible to free the memory by using 'operator delete []'.

**Returns**

A pointer to a newly allocated buffer with error text.

Reimplemented from OSRTStream.

Definition at line 115 of file OSRTOutputStream.h.

References OSRTStream::getErrorInfo().

#### 7.28.3.7 virtual int OSRTOutputStream::getStatus () const [inline, virtual]

This method returns the completion status of previous operation.

It can be used to check completion status of constructors or methods, which do not return completion status.

**Returns**

Runtime status code:

- 0 = success,
- negative return value is error.

Reimplemented from OSRTStream.

Definition at line 148 of file OSRTOutputStream.h.

References OSRTStream::getStatus().

#### 7.28.3.8 virtual OSBOOL OSRTOutputStream::isA (StreamID *id*) const [inline, virtual]

This method is used to query a stream object in order to determine its actual type.

**Parameters**

***id*** Enumerated stream identifier

**Returns**

True if the stream matches the identifier

Reimplemented in OSRTFileOutputStream, OSRTMemoryOutputStream, and OSRTSocketOutputStream.

Definition at line 159 of file OSRTOutputStream.h.

#### 7.28.3.9 virtual EXTRTMETHOD OSBOOL OSRTOutputStream::isOpened () [virtual]

Checks if the stream open or not.

**Returns**

s TRUE, if the stream is opened, FALSE otherwise.

**See also**

rtxStreamIsOpened

Reimplemented from OSRTStream.

#### 7.28.3.10 virtual EXTRTMETHOD long OSRTOutputStream::write (const char * *pdata*) [virtual]

Write data to the stream.

This method writes data from a null-terminated character string to the output stream.

**Parameters**

***pdata*** The pointer to the data to be written.

**Returns**

The total number of octets written into the stream, or negative value with error code if any error is occurred.

**See also**

rtxStreamWrite

#### 7.28.3.11 virtual EXTRTMETHOD long OSRTOutputStream::write (const OSOCTET * *pdata*, size_t *size*) [virtual]

Write data to the stream.

This method writes the given number of octets from the given array to the output stream.

**Parameters**

***pdata*** The pointer to the data to be written.

***size*** The number of octets to write.

**Returns**

The total number of octets written into the stream, or negative value with error code if any error is occurred.

**See also**

rtxStreamWrite

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

- OSRTOutputStream.h

## 7.29 OSRTSocket Class Reference

Wrapper class for TCP/IP or UDP sockets.

`#include <OSRTSocket.h>`

### Public Member Functions

- EXTRTMETHOD OSRTSocket ()

  *This is the default constructor.*

- EXTRTMETHOD OSRTSocket (OSRTSOCKET socket, OSBOOL ownership=FALSE)

  *This constructor initializes an instance by using an existing socket.*

- EXTRTMETHOD OSRTSocket (const OSRTSocket &socket)

  *The copy constructor.*

- EXTRTMETHOD ~OSRTSocket ()

  *The destructor.*

- EXTRTMETHOD OSRTSocket * accept (OSIPADDR *destIP=0, int *port=0)

  *This method permits an incoming connection attempt on a socket.*

- EXTRTMETHOD int bind (OSIPADDR addr, int port)

  *This method associates a local address with a socket.*

- EXTRTMETHOD int bindUrl (const char *url)

  *This method associates a local address with a socket.*

- EXTRTMETHOD int bind (const char *pAddrStr, int port)

  *This method associates a local address with a socket.*

- int bind (int port)

  *This method associates only a local port with a socket.*

- EXTRTMETHOD int blockingRead (OSOCTET *pbuf, size_t readBytes)

  *This method receives data from the connected socket.*

- EXTRTMETHOD int close ()

  *This method closes this socket.*

- EXTRTMETHOD int connect (const char *host, int port)

  *This method establishes a connection to this socket.*

- EXTRTMETHOD int connectUrl (const char *url)

  *This method establishes a connection to this socket.*

- OSBOOL getOwnership ()

  *Returns the ownership of underlying O/S socket.*

- OSRTSOCKET getSocket () const
  *This method returns the handle of the socket.*
- int getStatus ()
  *Returns a completion status of last operation.*
- EXTRTMETHOD int listen (int maxConnections)
  *This method places a socket into a state where it is listening for an incoming connection.*
- EXTRTMETHOD int recv (OSOCTET *pbuf, size_t bufsize)
  *This method receives data from a connected socket.*
- void setOwnership (OSBOOL ownership)
  *Transfers an ownership of the underlying O/S socket to or from the socket object.*
- EXTRTMETHOD int send (const OSOCTET *pdata, size_t size)
  *This method sends data on a connected socket.*

## Static Public Member Functions

- static EXTRTMETHOD const char * addrToString (OSIPADDR ipAddr, char *pAddrStr, size_t bufsize)
  *This method converts an IP address to its string representation.*
- static EXTRTMETHOD OSIPADDR stringToAddr (const char *pAddrStr)
  *This method converts a string containing an Internet Protocol dotted address into a proper OSIPADDR address.*

## Protected Attributes

- OSRTSOCKET mSocket
  *handle of the socket*
- OSBOOL mOwner
  *indicates this class owns the socket*

### 7.29.1 Detailed Description

Wrapper class for TCP/IP or UDP sockets.

Definition at line 50 of file OSRTSocket.h.

### 7.29.2 Constructor & Destructor Documentation

#### 7.29.2.1 EXTRTMETHOD OSRTSocket::OSRTSocket ()

This is the default constructor.

It initializes all internal members with default values and creates a new socket structure. Use getStatus() method to determine has error occurred during the initialization or not.

#### 7.29.2.2 EXTRTMETHOD OSRTSocket::OSRTSocket (OSRTSOCKET *socket*, OSBOOL *ownership* = FALSE)

This constructor initializes an instance by using an existing socket.

**Parameters**

***socket*** An existing socket handle.

***ownership*** Boolean flag that specifies who is the owner of the socket. If it is TRUE then the socket will be destroyed in the destructor. Otherwise, the user is responsible to close and destroy the socket.

#### 7.29.2.3 EXTRTMETHOD OSRTSocket::OSRTSocket (const OSRTSocket & *socket*)

The copy constructor.

The copied instance will have the same socket handle as the original one, but will not be the owner of the handle.

#### 7.29.2.4 EXTRTMETHOD OSRTSocket::~OSRTSocket ()

The destructor.

This closes socket if the instance is the owner of the socket.

### 7.29.3 Member Function Documentation

#### 7.29.3.1 EXTRTMETHOD OSRTSocket* OSRTSocket::accept (OSIPADDR * *destIP* = 0, int * *port* = 0)

This method permits an incoming connection attempt on a socket.

It extracts the first connection on the queue of pending connections on the socket. It then creates a new socket and returns an instance of the new socket. The newly created socket will handle the actual connection and has the same properties as the original socket.

**Parameters**

***destIP*** Optional pointer to a buffer that receives the IP address of the connecting entity. It may be NULL.

***port*** Optional pointer to a buffer that receives the port of the connecting entity. It may be NULL.

**Returns**

An instance of the new socket class. NULL, if error occur. Use OSRTSocket::getStatus method to obtain error code.

**See also**

rtxSocketAccept

#### 7.29.3.2 static EXTRTMETHOD const char* OSRTSocket::addrToString (OSIPADDR *ipAddr*, char * *pAddrStr*, size_t *bufsize*) [static]

This method converts an IP address to its string representation.

**Parameters**

***ipAddr*** The IP address to be converted.

***pAddrStr*** Pointer to the buffer to receive a string with the IP address.

***bufsize*** Size of the buffer.

**Returns**

Pointer to a string with IP-address. NULL, if error occur.

#### 7.29.3.3 int OSRTSocket::bind (int *port*) [inline]

This method associates only a local port with a socket.

It is used on an unconnected socket before subsequent calls to the OSRTSocket::connect or OSRTSocket::listen methods.

**Parameters**

***port*** The local port number to assign to the socket.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxSocketBind
bind ()

Definition at line 183 of file OSRTSocket.h.

#### 7.29.3.4 EXTRTMETHOD int OSRTSocket::bind (const char * *pAddrStr*, int *port*)

This method associates a local address with a socket.

It is used on an unconnected socket before subsequent calls to the OSRTSocket::connect or OSRTSocket::listen methods.

**Parameters**

***pAddrStr*** Null-terminated character string representing a number expressed in the Internet standard "." (dotted) notation.

***port*** The local port number to assign to the socket.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxSocketBind

#### 7.29.3.5 EXTRTMETHOD int OSRTSocket::bind (OSIPADDR *addr*, int *port*)

This method associates a local address with a socket.

It is used on an unconnected socket before subsequent calls to the OSRTSocket::connect or OSRTSocket::listen methods.

**Parameters**

***addr*** The local IP address to assign to the socket.

***port*** The local port number to assign to the socket.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxSocketBind

#### 7.29.3.6 EXTRTMETHOD int OSRTSocket::bindUrl (const char * *url*)

This method associates a local address with a socket.

It is used on an unconnected socket before subsequent calls to the OSRTSocket::connect or OSRTSocket::listen methods. This version of the method allows a URL to be used instead of address and port number.

**Parameters**

***url*** Univeral resource locator (URL) string.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxSocketBind

#### 7.29.3.7 EXTRTMETHOD int OSRTSocket::blockingRead (OSOCTET * *pbuf*, size_t *readBytes*)

This method receives data from the connected socket.

In this case, the connection is blocked until either the requested number of bytes is received or the socket is closed or an error occurs.

**Parameters**

***pbuf*** Pointer to the buffer for the incoming data.

***readBytes*** Number of bytes to receive.

**Returns**

If no error occurs, returns the number of bytes received. Otherwise, the negative value is error code.

#### 7.29.3.8 EXTRTMETHOD int OSRTSocket::close ()

This method closes this socket.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxSocketClose

#### 7.29.3.9 EXTRTMETHOD int OSRTSocket::connect (const char * *host*, int *port*)

This method establishes a connection to this socket.

It is used to create a connection to the specified destination. When the socket call completes successfully, the socket is ready to send and receive data.

**Parameters**

***host*** Null-terminated character string representing a number expressed in the Internet standard "." (dotted) notation.

***port*** The destination port to connect.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxSocketConnect

#### 7.29.3.10 EXTRTMETHOD int OSRTSocket::connectUrl (const char * *url*)

This method establishes a connection to this socket.

It is used to create a connection to the specified destination. In this version, destination is specified using a URL.

**Parameters**

***url*** Univeral resource locator (URL) string.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxSocketConnect

#### 7.29.3.11 OSBOOL OSRTSocket::getOwnership () [inline]

Returns the ownership of underlying O/S socket.

**Returns**

TRUE, if the socket object has the ownership of underlying O/S socket.

Definition at line 246 of file OSRTSocket.h.

#### 7.29.3.12 OSRTSOCKET OSRTSocket::getSocket () const [inline]

This method returns the handle of the socket.

**Returns**

The handle of the socket.

Definition at line 253 of file OSRTSocket.h.

#### 7.29.3.13 int OSRTSocket::getStatus () [inline]

Returns a completion status of last operation.

**Returns**

Completion status of last operation:

- 0 = success,
- negative return value is error.

Definition at line 262 of file OSRTSocket.h.

#### 7.29.3.14 EXTRTMETHOD int OSRTSocket::listen (int *maxConnections*)

This method places a socket into a state where it is listening for an incoming connection.

**Parameters**

***maxConnections*** Maximum length of the queue of pending connections.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxSocketListen

#### 7.29.3.15 EXTRTMETHOD int OSRTSocket::recv (OSOCTET * *pbuf*, size_t *bufsize*)

This method receives data from a connected socket.

It is used to read incoming data on sockets. The socket must be connected before calling this function.

**Parameters**

***pbuf*** Pointer to the buffer for the incoming data.

***bufsize*** Length of the buffer.

**Returns**

If no error occurs, returns the number of bytes received. Negative error code if error occurred.

**See also**

rtxSocketRecv

#### 7.29.3.16 EXTRTMETHOD int OSRTSocket::send (const OSOCTET * *pdata*, size_t *size*)

This method sends data on a connected socket.

It is used to write outgoing data on a connected socket.

**Parameters**

***pdata*** Buffer containing the data to be transmitted.

***size*** Length of the data in pdata.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxSocketSend

#### 7.29.3.17 void OSRTSocket::setOwnership (OSBOOL *ownership*) `[inline]`

Transfers an ownership of the underlying O/S socket to or from the socket object.

If the socket object has the ownership of the underlying O/S socket it will close the O/S socket when the socket object is being closed or destroyed.

**Parameters**

***ownership*** TRUE, if socket object should have ownership of the underlying O/S socket; FALSE, otherwise.

Definition at line 301 of file OSRTSocket.h.

#### 7.29.3.18 static EXTRTMETHOD OSIPADDR OSRTSocket::stringToAddr (const char * *pAddrStr*) [static]

This method converts a string containing an Internet Protocol dotted address into a proper OSIPADDR address.

**Parameters**

***pAddrStr*** Null-terminated character string representing a number expressed in the Internet standard "." (dotted) notation.

**Returns**

If no error occurs, returns OSIPADDR. OSIPADDR_INVALID, if error occurred.

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

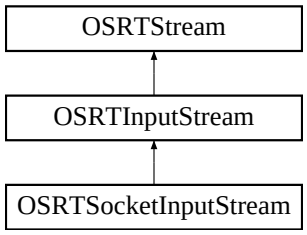
- OSRTSocket.h

## 7.30 OSRTSocketInputStream Class Reference

Generic socket input stream.

`#include <OSRTSocketInputStream.h>`

Inheritance diagram for OSRTSocketInputStream:




### Public Member Functions

- EXTRTMETHOD OSRTSocketInputStream (OSRTSocket &socket)
  *Creates and initializes a socket input stream using the OSRTSocket instance of socket.*
- EXTRTMETHOD OSRTSocketInputStream (OSRTContext *pContext, OSRTSocket &socket)
  *Creates and initializes a socket input stream using the OSRTSocket instance of socket.*
- EXTRTMETHOD OSRTSocketInputStream (OSRTSOCKET socket, OSBOOL ownership=FALSE)
  *Creates and initializes the socket input stream using the socket handle.*
- OSRTSocketInputStream (OSRTContext *pContext, OSRTSOCKET socket, OSBOOL ownership=FALSE)
  *Creates and initializes the socket input stream using the socket handle.*
- virtual OSBOOL isA (StreamID id) const
  *This method is used to query a stream object in order to determine its actual type.*

### Protected Attributes

- OSRTSocket mSocket
  *a socket*

### 7.30.1 Detailed Description

Generic socket input stream. This class opens an existing socket for input in binary mode and reads data from it.

Definition at line 40 of file OSRTSocketInputStream.h.

### 7.30.2 Constructor & Destructor Documentation

#### 7.30.2.1 EXTRTMETHOD OSRTSocketInputStream::OSRTSocketInputStream (OSRTSocket & *socket*)

Creates and initializes a socket input stream using the OSRTSocket instance of socket.

**Parameters**

***socket*** Reference to OSRTSocket instance.

**See also**

rtxStreamSocketAttach

#### 7.30.2.2 EXTRTMETHOD OSRTSocketInputStream::OSRTSocketInputStream (OSRTContext * *pContext*, OSRTSocket & *socket*)

Creates and initializes a socket input stream using the OSRTSocket instance of socket.

**Parameters**

***pContext*** Pointer to a context to use.

***socket*** Reference to OSRTSocket instance.

**See also**

rtxStreamSocketAttach

#### 7.30.2.3 EXTRTMETHOD OSRTSocketInputStream::OSRTSocketInputStream (OSRTSOCKET *socket*, OSBOOL *ownership* = `FALSE`)

Creates and initializes the socket input stream using the socket handle.

**Parameters**

***socket*** Handle of the socket.

***ownership*** Indicates ownership of the socket. Set to TRUE to pass ownership to this object instance. The socket will be closed when this object instance is deleted or goes out of scope.

**See also**

rtxStreamSocketAttach

#### 7.30.2.4 OSRTSocketInputStream::OSRTSocketInputStream (OSRTContext * *pContext*, OSRTSOCKET *socket*, OSBOOL *ownership* = `FALSE`)

Creates and initializes the socket input stream using the socket handle.

**Parameters**

***pContext*** Pointer to a context to use.

***socket*** Handle of the socket.

***ownership*** Indicates ownership of the socket. Set to TRUE to pass ownership to this object instance. The socket will be closed when this object instance is deleted or goes out of scope.

**See also**

rtxStreamSocketAttach

### 7.30.3 Member Function Documentation

#### 7.30.3.1 virtual OSBOOL OSRTSocketInputStream::isA (StreamID *id*) const [inline, virtual]

This method is used to query a stream object in order to determine its actual type.

**Parameters**

***id*** Enumerated stream identifier

**Returns**

True if the stream matches the identifier

Reimplemented from OSRTInputStream.

Definition at line 105 of file OSRTSocketInputStream.h.

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

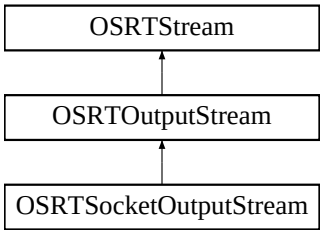
- OSRTSocketInputStream.h

## 7.31 OSRTSocketOutputStream Class Reference

Generic socket output stream.

`#include <OSRTSocketOutputStream.h>`

Inheritance diagram for OSRTSocketOutputStream:




### Public Member Functions

- EXTRTMETHOD OSRTSocketOutputStream (OSRTSocket &socket)
  *Creates and initializes a socket output stream using the OSRTSocket instance of socket.*
- EXTRTMETHOD OSRTSocketOutputStream (OSRTContext *pContext, OSRTSocket &socket)
  *Creates and initializes a socket output stream using the OSRTSocket instance of socket.*
- EXTRTMETHOD OSRTSocketOutputStream (OSRTSOCKET socket, OSBOOL ownership=FALSE)
  *Initializes the socket output stream using the socket handle.*
- OSRTSocketOutputStream (OSRTContext *pContext, OSRTSOCKET socket, OSBOOL ownership=FALSE)
  *Initializes the socket output stream using the socket handle.*
- virtual OSBOOL isA (StreamID id) const
  *This method is used to query a stream object in order to determine its actual type.*

### Protected Attributes

- OSRTSocket mSocket
  *a socket*

### 7.31.1 Detailed Description

Generic socket output stream. This class opens an existing socket for output in binary mode and reads data from it.

Definition at line 40 of file OSRTSocketOutputStream.h.

### 7.31.2 Constructor & Destructor Documentation

#### 7.31.2.1 EXTRTMETHOD OSRTSocketOutputStream::OSRTSocketOutputStream (OSRTSocket & *socket*)

Creates and initializes a socket output stream using the OSRTSocket instance of socket.

**Parameters**

***socket*** Reference to OSRTSocket instance.

**See also**

rtxStreamSocketAttach

#### 7.31.2.2 EXTRTMETHOD OSRTSocketOutputStream::OSRTSocketOutputStream (OSRTContext * *pContext*, OSRTSocket & *socket*)

Creates and initializes a socket output stream using the OSRTSocket instance of socket.

**Parameters**

***pContext*** Pointer to a context to use.

***socket*** Reference to OSRTSocket instance.

**See also**

rtxStreamSocketAttach

#### 7.31.2.3 EXTRTMETHOD OSRTSocketOutputStream::OSRTSocketOutputStream (OSRTSOCKET *socket*, OSBOOL *ownership* = `FALSE`)

Initializes the socket output stream using the socket handle.

**Parameters**

***socket*** Handle of the socket.

***ownership*** Indicates ownership of the socket. Set to TRUE to pass ownership to this object instance. The socket will be closed when this object instance is deleted or goes out of scope.

**See also**

rtxStreamSocketAttach

#### 7.31.2.4 OSRTSocketOutputStream::OSRTSocketOutputStream (OSRTContext * *pContext*, OSRTSOCKET *socket*, OSBOOL *ownership* = `FALSE`)

Initializes the socket output stream using the socket handle.

**Parameters**

***pContext*** Pointer to a context to use.

***socket*** Handle of the socket.

***ownership*** Indicates ownership of the socket. Set to TRUE to pass ownership to this object instance. The socket will be closed when this object instance is deleted or goes out of scope.

**See also**

rtxStreamSocketAttach

### 7.31.3 Member Function Documentation

#### 7.31.3.1 virtual OSBOOL OSRTSocketOutputStream::isA (StreamID *id*) const [inline, virtual]

This method is used to query a stream object in order to determine its actual type.

**Parameters**

***id*** Enumerated stream identifier

**Returns**

True if the stream matches the identifier

Reimplemented from OSRTOutputStream.

Definition at line 103 of file OSRTSocketOutputStream.h.

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

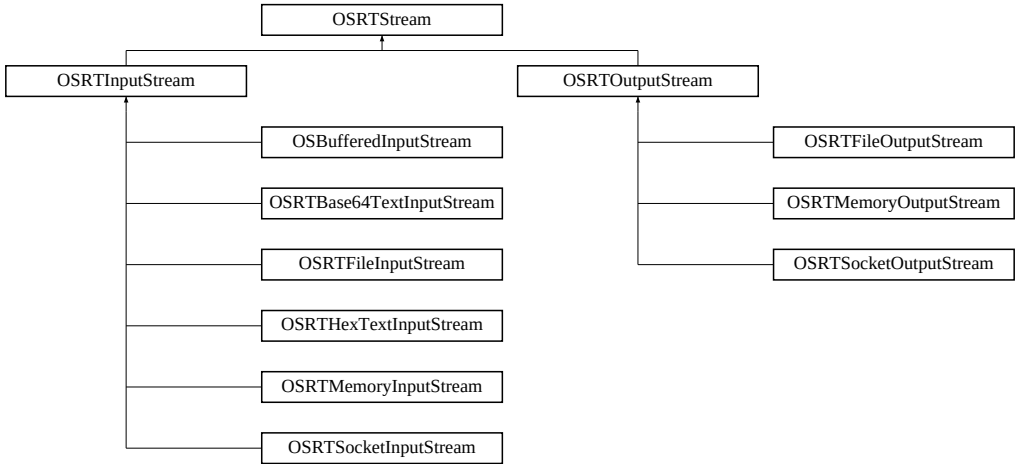
- OSRTSocketOutputStream.h

## 7.32 OSRTStream Class Reference

The default base class for using I/O streams.

`#include <OSRTStream.h>`

Inheritance diagram for OSRTStream:




### Public Member Functions

- virtual EXTRTMETHOD ~OSRTStream ()

  *Virtual destructor.*

- virtual EXTRTMETHOD int close ()

  *Closes the input or output stream and releases any system resources associated with the stream.*

- virtual EXTRTMETHOD int flush ()

  *Flushes the buffered data to the stream.*

- virtual OSRTCtxtPtr getContext ()

  *This method returns a pointer to the underlying OSRTContext object.*

- virtual OSCTXT * getCtxtPtr ()

  *This method returns a pointer to the underlying OSCTXT object.*

- virtual char * getErrorInfo ()

  *Returns error text in a dynamic memory buffer.*

- virtual char * getErrorInfo (char *pBuf, size_t &bufSize)

  *Returns error text in a memory buffer.*

- int getStatus () const

  *This method returns the completion status of previous operation.*

- virtual EXTRTMETHOD OSBOOL isOpened ()

*Checks, is the stream opened or not.*

- void printErrorInfo ()

  *The printErrorInfo method prints information on errors contained within the context.*

- void resetErrorInfo ()

  *The resetErrorInfo method resets information on errors contained within the context.*

## Protected Member Functions

- EXTRTMETHOD OSRTStream ()

  *The default constructor.*

## Protected Attributes

- OSBOOL mbAttached

  *Flag, TRUE for "attached" streams.*

- int mStatus

  *Last stream operation status.*

- int mInitStatus

  *Initialization status. 0 if initialized successfully.*

### 7.32.1 Detailed Description

The default base class for using I/O streams. This class may be subclassed, as in the case of OSRTInputStream and OSRTOutputStream or other custom implementations.

Definition at line 44 of file OSRTStream.h.

### 7.32.2 Constructor & Destructor Documentation

#### 7.32.2.1 EXTRTMETHOD OSRTStream::OSRTStream () `[protected]`

The default constructor.

It initializes a buffered stream. A buffered stream maintains data in memory before reading or writing to the device. This generally provides better performance than an unbuffered stream.

#### 7.32.2.2 virtual EXTRTMETHOD OSRTStream::~OSRTStream () `[virtual]`

Virtual destructor.

Closes the stream if it was opened.

### 7.32.3 Member Function Documentation

#### 7.32.3.1 virtual EXTRTMETHOD int OSRTStream::close () [virtual]

Closes the input or output stream and releases any system resources associated with the stream.

For output streams this function also flushes all internal buffers to the stream.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxStreamClose

Reimplemented in OSRTInputStream, and OSRTOutputStream.

#### 7.32.3.2 virtual EXTRTMETHOD int OSRTStream::flush () [virtual]

Flushes the buffered data to the stream.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

**See also**

rtxStreamFlush

Reimplemented in OSRTInputStream, and OSRTOutputStream.

#### 7.32.3.3 virtual OSRTCtxtPtr OSRTStream::getContext () [inline, virtual]

This method returns a pointer to the underlying OSRTContext object.

**Returns**

A reference-counted pointer to an OSRTContext object. The OSRTContext object will not be released until all referenced-counted pointer variables go out of scope. This allows safe sharing of the context between different run-time classes.

Reimplemented in OSRTInputStream, and OSRTOutputStream.

Definition at line 101 of file OSRTStream.h.

Referenced by OSRTOutputStream::getContext(), and OSRTInputStream::getContext().

#### 7.32.3.4 virtual OSCTXT* OSRTStream::getCtxtPtr () [inline, virtual]

This method returns a pointer to the underlying OSCTXT object.

This is the structure used in calls to low-level C encode/decode functions.

**Returns**

Pointer to a context (OSCTXT) structure.

Reimplemented in OSRTInputStream, and OSRTOutputStream.

Definition at line 111 of file OSRTStream.h.

Referenced by OSRTOutputStream::getCtxtPtr(), and OSRTInputStream::getCtxtPtr().

#### 7.32.3.5 virtual char* OSRTStream::getErrorInfo (char * *pBuf*, size_t & *bufSize*) [inline, virtual]

Returns error text in a memory buffer.

If buffer pointer is specified in parameters (not NULL) then error text will be copied in the passed buffer. Otherwise, this method allocates memory using the 'operator new []' function. The calling routine is responsible to free the memory by using 'operator delete []'.

**Parameters**

***pBuf*** A pointer to a destination buffer to obtain the error text. If NULL, dynamic buffer will be allocated.

***bufSize*** A reference to buffer size. If pBuf is NULL it will receive the size of allocated dynamic buffer.

**Returns**

A pointer to a buffer with error text. If pBuf is not NULL, the return pointer will be equal to it. Otherwise, returns newly allocated buffer with error text. NULL, if error occurred.

Reimplemented in OSRTInputStream, and OSRTOutputStream.

Definition at line 142 of file OSRTStream.h.

#### 7.32.3.6 virtual char* OSRTStream::getErrorInfo () [inline, virtual]

Returns error text in a dynamic memory buffer.

Buffer will be allocated by 'operator new []'. The calling routine is responsible to free the memory by using 'operator delete []'.

**Returns**

A pointer to a newly allocated buffer with error text.

Reimplemented in OSRTInputStream, and OSRTOutputStream.

Definition at line 122 of file OSRTStream.h.

Referenced by OSRTOutputStream::getErrorInfo(), and OSRTInputStream::getErrorInfo().

#### 7.32.3.7 int OSRTStream::getStatus () const [inline]

This method returns the completion status of previous operation.

It can be used to check completion status of constructors or methods, which do not return completion status.

**Returns**

Runtime status code:

- 0 = success,
- negative return value is error.

Reimplemented in OSRTInputStream, and OSRTOutputStream.

Definition at line 155 of file OSRTStream.h.

Referenced by OSRTOutputStream::getStatus(), and OSRTInputStream::getStatus().

#### 7.32.3.8 virtual EXTRTMETHOD OSBOOL OSRTStream::isOpened () [virtual]

Checks, is the stream opened or not.

**Returns**

TRUE, if the stream is opened, FALSE otherwise.

**See also**

rtxStreamIsOpened

Reimplemented in OSRTInputStream, and OSRTOutputStream.

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

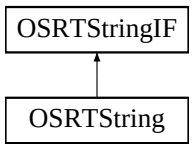
- OSRTStream.h

## 7.33 OSRTString Class Reference

C++ string class definition.

`#include <OSRTString.h>`

Inheritance diagram for OSRTString:




### Public Member Functions

- EXTRTMETHOD OSRTString ()
  *The default constructor creates an empty string.*
- EXTRTMETHOD OSRTString (const char *strval)
  *This constructor initializes the string to contain the given standard ASCII string value.*
- EXTRTMETHOD OSRTString (const OSUTF8CHAR *strval)
  *This constructor initializes the string to contain the given UTF-8 string value.*
- EXTRTMETHOD OSRTString (const OSRTString &str)
  *Copy constructor.*
- virtual EXTRTMETHOD ~OSRTString ()
  *The destructor frees string memory using the standard 'delete' operator.*
- virtual OSRTStringIF * clone ()
  *This method creates a copy of the given string object.*
- virtual const char * getValue () const
  *This method returns the pointer to UTF-8 null terminated string as a standard ASCII string.*
- virtual const OSUTF8CHAR * getUTF8Value () const
  *This method returns the pointer to UTF-8 null terminated string as a UTF-8 string.*
- virtual void print (const char *name)
  *This method prints the string value to standard output.*
- virtual EXTRTMETHOD void setValue (const char *str)
  *This method sets the string value to the given string.*
- virtual EXTRTMETHOD void setValue (const OSUTF8CHAR *str)
  *This method sets the string value to the given UTF-8 string value.*
- EXTRTMETHOD OSRTString & operator= (const OSRTString &original)
  *Assignment operator.*

### 7.33.1 Detailed Description

C++ string class definition. This can be used to hold standard ASCII or UTF-8 strings. The standard C++ 'new' and 'delete' operators are used to allocate/free memory for the strings. All strings are deep-copied.

Definition at line 49 of file OSRTString.h.

### 7.33.2 Constructor & Destructor Documentation

#### 7.33.2.1 EXTRTMETHOD OSRTString::OSRTString (const char * *strval*)

This constructor initializes the string to contain the given standard ASCII string value.

**Parameters**

***strval*** - Null-terminated C string value

#### 7.33.2.2 EXTRTMETHOD OSRTString::OSRTString (const OSUTF8CHAR * *strval*)

This constructor initializes the string to contain the given UTF-8 string value.

**Parameters**

***strval*** - Null-terminated C string value

#### 7.33.2.3 EXTRTMETHOD OSRTString::OSRTString (const OSRTString & *str*)

Copy constructor.

**Parameters**

***str*** - C++ string object to be copied.

### 7.33.3 Member Function Documentation

#### 7.33.3.1 virtual void OSRTString::print (const char * *name*) [inline, virtual]

This method prints the string value to standard output.

**Parameters**

***name*** - Name of generated string variable.

Implements OSRTStringIF.

Definition at line 114 of file OSRTString.h.

#### 7.33.3.2 virtual EXTRTMETHOD void OSRTString::setValue (const OSUTF8CHAR * *str*) [virtual]

This method sets the string value to the given UTF-8 string value.

**Parameters**

***str*** - C null-terminated UTF-8 string.

Implements OSRTStringIF.

#### 7.33.3.3 virtual EXTRTMETHOD void OSRTString::setValue (const char * *str*) [virtual]

This method sets the string value to the given string.

**Parameters**

***str*** - C null-terminated string.

Implements OSRTStringIF.

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

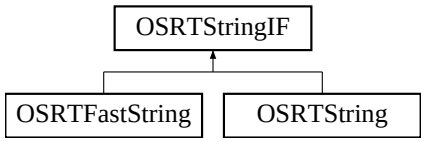
- OSRTString.h

## 7.34 OSRTStringIF Class Reference

C++ string class interface.

`#include <OSRTStringIF.h>`

Inheritance diagram for OSRTStringIF:




### Public Member Functions

- virtual ~OSRTStringIF ()

  *The destructor frees string memory using the standard 'delete' operator.*

- virtual OSRTStringIF * clone ()=0

  *This method creates a copy of the given string object.*

- virtual const char * getValue () const =0

  *This method returns the pointer to UTF-8 null terminated string as a standard ASCII string.*

- virtual const OSUTF8CHAR * getUTF8Value () const =0

  *This method returns the pointer to UTF-8 null terminated string as a UTF-8 string.*

- virtual void print (const char *name)=0

  *This method prints the string value to standard output.*

- virtual void setValue (const char *str)=0

  *This method sets the string value to the given string.*

- virtual void setValue (const OSUTF8CHAR *utf8str)=0

  *This method sets the string value to the given UTF-8 string value.*

### Protected Member Functions

- OSRTStringIF ()

  *The default constructor creates an empty string.*

- OSRTStringIF (const char *)

  *This constructor initializes the string to contain the given standard ASCII string value.*

- OSRTStringIF (const OSUTF8CHAR *)

  *This constructor initializes the string to contain the given UTF-8 string value.*

### 7.34.1 Detailed Description

C++ string class interface. This defines an interface to allow different types of string derived classes to be implemented. Currently, implementations include a standard string class (OSRTString) which deep-copies all values using new/delete, and a fast string class (OSRTFastString) that just copies pointers (i.e does no memory management).

Definition at line 49 of file OSRTStringIF.h.

### 7.34.2 Constructor & Destructor Documentation

#### 7.34.2.1 OSRTStringIF::OSRTStringIF (const char *) [inline, protected]

This constructor initializes the string to contain the given standard ASCII string value.

**Parameters**

- Null-terminated C string value

Definition at line 62 of file OSRTStringIF.h.

#### 7.34.2.2 OSRTStringIF::OSRTStringIF (const OSUTF8CHAR *) [inline, protected]

This constructor initializes the string to contain the given UTF-8 string value.

**Parameters**

- Null-terminated C string value

Definition at line 70 of file OSRTStringIF.h.

### 7.34.3 Member Function Documentation

#### 7.34.3.1 virtual void OSRTStringIF::print (const char * *name*) [pure virtual]

This method prints the string value to standard output.

**Parameters**

***name*** - Name of generated string variable.

Implemented in OSRTFastString, and OSRTString.

#### 7.34.3.2 virtual void OSRTStringIF::setValue (const OSUTF8CHAR * *utf8str*) [pure virtual]

This method sets the string value to the given UTF-8 string value.

**Parameters**

***utf8str*** - C null-terminated UTF-8 string.

Implemented in OSRTFastString, and OSRTString.

#### 7.34.3.3 virtual void OSRTStringIF::setValue (const char * *str*) [pure virtual]

This method sets the string value to the given string.

**Parameters**

***str*** - C null-terminated string.

Implemented in OSRTFastString, and OSRTString.

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

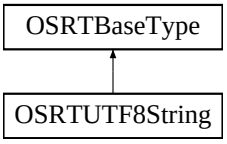
- OSRTStringIF.h

## 7.35 OSRTUTF8String Class Reference

UTF-8 string.

`#include <OSRTUTF8String.h>`

Inheritance diagram for OSRTUTF8String:




### Public Member Functions

- OSRTUTF8String ()
  *The default constructor creates an empty string.*
- OSRTUTF8String (const char *strval)
  *This constructor initializes the string to contain the given character string value.*
- OSRTUTF8String (const OSUTF8CHAR *strval)
  *This constructor initializes the string to contain the given UTF-8 character string value.*
- OSRTUTF8String (const OSRTUTF8String &str)
  *Copy constructor.*
- virtual ~OSRTUTF8String ()
  *The destructor frees string memory if the memory ownership flag is set.*
- OSRTBaseType * clone () const
  *Clone method.*
- void copyValue (const char *str)
  *This method copies the given string value to the internal string storage variable.*
- const char * c_str () const
  *This method returns the pointer to C null terminated string.*
- const char * getValue () const
  *This method returns the pointer to UTF-8 null terminated string.*
- void print (const char *name)
  *This method prints the string value to standard output.*
- void setValue (const char *str)
  *This method sets the string value to the given string.*
- OSRTUTF8String & operator= (const OSRTUTF8String &original)
  *Assignment operator.*

### 7.35.1 Detailed Description

UTF-8 string. This is the base class for generated C++ data type classes for XSD string types (string, token, NMTOKEN, etc.).

Definition at line 39 of file OSRTUTF8String.h.

### 7.35.2 Constructor & Destructor Documentation

#### 7.35.2.1 OSRTUTF8String::OSRTUTF8String (const char * *strval*)

This constructor initializes the string to contain the given character string value.

**Parameters**

***strval*** - String value

#### 7.35.2.2 OSRTUTF8String::OSRTUTF8String (const OSUTF8CHAR * *strval*)

This constructor initializes the string to contain the given UTF-8 character string value.

**Parameters**

***strval*** - String value

#### 7.35.2.3 OSRTUTF8String::OSRTUTF8String (const OSRTUTF8String & *str*)

Copy constructor.

**Parameters**

***str*** - C++ XML string class.

### 7.35.3 Member Function Documentation

#### 7.35.3.1 OSRTBaseType* OSRTUTF8String::clone () const [inline, virtual]

Clone method.

Creates a copied instance and returns pointer to OSRTBaseType.

Reimplemented from OSRTBaseType.

Definition at line 81 of file OSRTUTF8String.h.

#### 7.35.3.2 void OSRTUTF8String::copyValue (const char * *str*)

This method copies the given string value to the internal string storage variable.

A deep-copy of the given value is done; the class will delete this memory when the object is deleted.

**Parameters**

***str*** - C null-terminated string.

#### 7.35.3.3 void OSRTUTF8String::print (const char * *name*) [inline]

This method prints the string value to standard output.

**Parameters**

***name*** - Name of generated string variable.

Definition at line 111 of file OSRTUTF8String.h.

#### 7.35.3.4 void OSRTUTF8String::setValue (const char * *str*)

This method sets the string value to the given string.

A deep-copy of the given value is not done; the pointer is stored directly in the class member variable.

**Parameters**

***str*** - C null-terminated string.

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

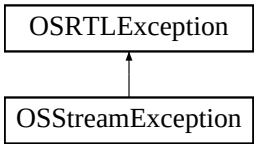
- OSRTUTF8String.h

## 7.36 OSStreamException Class Reference

Exception class for streams.

`#include <rtxCppException.h>`

Inheritance diagram for OSStreamException:




### Public Member Functions

- OSStreamException (int stat)
  *Constructor.*
- OSStreamException (OSRTContext *pContext, int stat)
  *Constructor.*
- OSStreamException (const OSStreamException &o)
  *Copy constructor.*

### 7.36.1 Detailed Description

Exception class for streams.

Definition at line 147 of file rtxCppException.h.

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

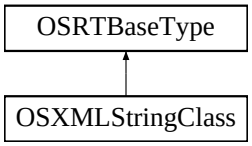
- rtxCppException.h

## 7.37 OSXMLStringClass Class Reference

XML string.

`#include <rtxCppXmlString.h>`

Inheritance diagram for OSXMLStringClass:




### Public Member Functions

- OSXMLStringClass ()

  *The default constructor creates an empty string.*

- OSXMLStringClass (const OSUTF8CHAR *strval, OSBOOL cdata_=FALSE)

  *This constructor initializes the string to contain the value.*

- OSXMLStringClass (const OSUTF8CHAR *strval, size_t nbytes, OSBOOL cdata_=FALSE)

  *This constructor initializes the string to contain the value.*

- OSXMLStringClass (const char *strval, OSBOOL cdata_=FALSE)

  *This constructor initializes the string to contain the value.*

- OSXMLStringClass (const OSXMLSTRING &str)

  *Copy constructor.*

- OSXMLStringClass (const OSXMLStringClass &str)

  *Copy constructor.*

- virtual ~OSXMLStringClass ()

  *The destructor frees string memory if the memory ownership flag is set.*

- void appendValue (const OSUTF8CHAR *utf8str, size_t nbytes=0)

  *This method copies the given string value to the end of internal string storage variable.*

- OSRTBaseType * clone () const

  *Clone method.*

- int compare (const OSUTF8CHAR *value2) const

  *This method does a standard string comparison operation (strcmp) with the UTF-8 null terminated string.*

- void copyValue (const OSUTF8CHAR *utf8str, size_t nbytes=0)

  *This method copies the given string value to the internal string storage variable.*

- void copyValue (const char *cstring, size_t nbytes=0)

*This method copies the given string value to the internal string storage variable.*

- const char * c_str () const

  *This method returns the pointer to C null terminated string.*

- virtual int decodeXML (OSCTXT *pctxt)

  *This method decodes XML content at the current stream/buffer position into this string object.*

- virtual int encodeXML (OSRTMessageBufferIF &msgbuf, const OSUTF8CHAR *elemName, OSXMLNamespace *pNS)

  *This method encodes the data in this string object into XML content in the encode data stream.*

- OSBOOL equals (const OSUTF8CHAR *value2) const

  *This method compares this string with the UTF-8 null terminated string for equality.*

- const OSUTF8CHAR * getValue () const

  *This method returns a pointer to the UTF-8 null terminated string.*

- OSBOOL isCDATA () const

  *This method returns the value of the cdata member variable.*

- void setCDATA (OSBOOL bvalue)

  *This method sets the value of the cdata member variable.*

- void print (const char *name)

  *This method prints the string value to standard output.*

- void setValue (const OSUTF8CHAR *utf8str, size_t nbytes=0)

  *This method sets the string value to the given string.*

- void setValue (const char *cstring, size_t nbytes=0)

  *This method sets the string value to the given string.*

- void setValue (OSRTMemBuf &membuf)

  *This method sets the string value to the value of the data in the given memory buffer object.*

- OSXMLStringClass & operator= (const OSXMLStringClass &original)

  *Assignment operator.*

- OSXMLStringClass & operator= (const char *original)

  *Assignment operator for C strings.*

- OSXMLStringClass & operator= (const OSUTF8CHAR *original)

  *Assignment operator for C UTF-8 strings.*

- operator const char * () const

  *String to C const char* type conversion operator.*

- operator const OSUTF8CHAR * () const

  *String to C const OSUTF8CHAR* type conversion operator.*

- size_t length () const

  *This method returns the number of characters.*

- size_t size ()

  *This method returns the number of bytes.*

### 7.37.1 Detailed Description

XML string. This is the base class for generated C++ data type classes for XSD string types (string, token, NMTOKEN, etc.).

Definition at line 46 of file rtxCppXmlString.h.

### 7.37.2 Constructor & Destructor Documentation

#### 7.37.2.1 OSXMLStringClass::OSXMLStringClass (const OSUTF8CHAR * *strval*, OSBOOL *cdata_* = FALSE)

This constructor initializes the string to contain the value.

A deep-copy of the given value is done.

**Parameters**

***strval*** - String value

***cdata_*** - Should string be encoded as a CDATA section?

#### 7.37.2.2 OSXMLStringClass::OSXMLStringClass (const OSUTF8CHAR * *strval*, size_t *nbytes*, OSBOOL *cdata_* = FALSE)

This constructor initializes the string to contain the value.

It copies up to the given number of bytes from the source string. A deep-copy of the given value is done.

**Parameters**

***strval*** - String value

***nbytes*** - Number of bytes to copy from source string

***cdata_*** - Should string be encoded as a CDATA section?

#### 7.37.2.3 OSXMLStringClass::OSXMLStringClass (const char * *strval*, OSBOOL *cdata_* = FALSE)

This constructor initializes the string to contain the value.

A deep-copy of the given value is done.

**Parameters**

***strval*** - String value

***cdata_*** - Should string be encoded as a CDATA section?

#### 7.37.2.4 OSXMLStringClass::OSXMLStringClass (const OSXMLSTRING & *str*)

Copy constructor.

**Parameters**

***str*** - C XML string structure.

#### 7.37.2.5 OSXMLStringClass::OSXMLStringClass (const OSXMLStringClass & *str*)

Copy constructor.

**Parameters**

***str*** - C++ XML string class.

### 7.37.3 Member Function Documentation

#### 7.37.3.1 void OSXMLStringClass::appendValue (const OSUTF8CHAR * *utf8str*, size_t *nbytes* = 0)

This method copies the given string value to the end of internal string storage variable.

A deep-copy of the given value is done; the class will delete this memory when the object is deleted.

**Parameters**

***utf8str*** - C null-terminated string.

***nbytes*** - length of utf8str in bytes.

#### 7.37.3.2 OSRTBaseType* OSXMLStringClass::clone () const [inline, virtual]

Clone method.

Creates a copied instance and returns pointer to OSRTBaseType.

Reimplemented from OSRTBaseType.

Definition at line 142 of file rtxCppXmlString.h.

#### 7.37.3.3 int OSXMLStringClass::compare (const OSUTF8CHAR * *value2*) const [inline]

This method does a standard string comparison operation (strcmp) with the UTF-8 null terminated string.

**Returns**

Zero (0) if the compared characters sequences are equal, -1 if the internal string value is less than the argument value, and +1 if the internal string value is greater than the argument value.

Definition at line 152 of file rtxCppXmlString.h.

#### 7.37.3.4 void OSXMLStringClass::copyValue (const char * *cstring*, size_t *nbytes* = 0) [inline]

This method copies the given string value to the internal string storage variable.

A deep-copy of the given value is done; the class will delete this memory when the object is deleted.

**Parameters**

***cstring*** - C null-terminated string.

***nbytes*** - length of cstring in bytes.

Definition at line 176 of file rtxCppXmlString.h.

#### 7.37.3.5 void OSXMLStringClass::copyValue (const OSUTF8CHAR * *utf8str*, size_t *nbytes* = 0)

This method copies the given string value to the internal string storage variable.

A deep-copy of the given value is done; the class will delete this memory when the object is deleted.

**Parameters**

***utf8str*** - C null-terminated string.

***nbytes*** - length of utf8str in bytes.

#### 7.37.3.6 virtual int OSXMLStringClass::decodeXML (OSCTXT * *pctxt*) [virtual]

This method decodes XML content at the current stream/buffer position into this string object.

This method is normally overridden by a decodeXML method in a generated class.

**Parameters**

***pctxt*** Pointer to context block structure.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

#### 7.37.3.7 virtual int OSXMLStringClass::encodeXML (OSRTMessageBufferIF & *msgbuf*, const OSUTF8CHAR * *elemName*, OSXMLNamespace * *pNS*) [virtual]

This method encodes the data in this string object into XML content in the encode data stream.

This method is normally overridden by an encodeXML method in a generated class.

**Parameters**

***msgbuf*** Message buffer or stream object reference.

***elemName*** XML element name that should be added to encoded fragment.

***pNS*** Pointer to namespace structure.

**Returns**

Completion status of operation:

- 0 = success,
- negative return value is error.

#### 7.37.3.8 OSBOOL OSXMLStringClass::isCDATA () const [inline]

This method returns the value of the cdata member variable.

This indicates if this string should be encoded as a CDATA section in an XML document.

**Returns**

- True if string is to be encoded as CDATA section

Definition at line 237 of file rtxCppXmlString.h.

#### 7.37.3.9 void OSXMLStringClass::print (const char * *name*) [inline]

This method prints the string value to standard output.

**Parameters**

***name*** - Name of generated string variable.

Definition at line 253 of file rtxCppXmlString.h.

#### 7.37.3.10 void OSXMLStringClass::setCDATA (OSBOOL *bvalue*) [inline]

This method sets the value of the cdata member variable.

This indicates if this string should be encoded as a CDATA section in an XML document.

**Parameters**

***bvalue*** - Boolean value.

Definition at line 246 of file rtxCppXmlString.h.

#### 7.37.3.11 void OSXMLStringClass::setValue (OSRTMemBuf & *membuf*) [inline]

This method sets the string value to the value of the data in the given memory buffer object.

A deep-copy of the value is done.

**Parameters**

***membuf*** - Reference to a memory buffer object.

Definition at line 284 of file rtxCppXmlString.h.

#### 7.37.3.12 void OSXMLStringClass::setValue (const char * *cstring*, size_t *nbytes* = 0) [inline]

This method sets the string value to the given string.

A deep-copy of the given value is done.

**Parameters**

***cstring*** - C null-terminated string.

***nbytes*** - Number of bytes to copy from the source string. If zero, bytes are copied up to the null-terminator.

Definition at line 273 of file rtxCppXmlString.h.

#### 7.37.3.13 void OSXMLStringClass::setValue (const OSUTF8CHAR * *utf8str*, size_t *nbytes* = 0)

This method sets the string value to the given string.

A deep-copy of the given value is done.

**Parameters**

***utf8str*** - UTF8 null-terminated string.

***nbytes*** - Number of bytes to copy from the source string. If zero, bytes are copied up to the null-terminator.

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

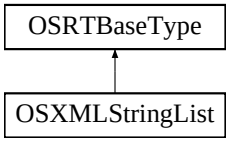
- rtxCppXmlString.h

## 7.38 OSXMLStringList Class Reference

XML list string.

`#include <rtxCppXmlStringList.h>`

Inheritance diagram for OSXMLStringList:




### Public Member Functions

- OSXMLStringList ()

  *The default constructor creates an empty list.*

- OSXMLStringList (const OSXMLStringList &orig)

  *The copy constructor creates a deep-copy of the original list.*

- OSXMLStringList & operator= (const OSXMLStringList &orig)

  *The assignment operator frees the existing list and then makes a deep-copy of the original list.*

- void append (OSXMLStringClass *pdata)

  *The append method adds the given object to the end of the list.*

- void appendCopy (OSXMLStringClass *pdata)

  *The appendCopy method adds a copy of the given object to the end of the list.*

- virtual OSRTBaseType * clone () const

  *The clone method makes a cloned copy of this object.*

- OSXMLStringClass * getItem (int idx)

  *The getItem method returns a pointer to the indexed item in the list or NULL if the index in out-of-range.*

### Public Attributes

- OSRTObjListClass mElemList

  *List of OSXMLStringClass objects.*

### 7.38.1 Detailed Description

XML list string. This is the base class for generated C++ data type classes for repeating occurences of XSD string types (string, token, NMTOKEN, etc.).

Definition at line 39 of file rtxCppXmlStringList.h.

## 7.38.2 Constructor & Destructor Documentation

### 7.38.2.1 OSXMLStringList::OSXMLStringList (const OSXMLStringList & *orig*)

The copy constructor creates a deep-copy of the original list.

**Parameters**

***orig*** Object to be copied.

## 7.38.3 Member Function Documentation

### 7.38.3.1 void OSXMLStringList::append (OSXMLStringClass * *pdata*)

The append method adds the given object to the end of the list.

The pointer is assigned directly (i.e. a deep-copy is not made).

**Parameters**

***pdata*** Pointer to object to be appended.

### 7.38.3.2 void OSXMLStringList::appendCopy (OSXMLStringClass * *pdata*)

The appendCopy method adds a copy of the given object to the end of the list.

In this case, a deep-copy of the given object is made before appending it to the list.

**Parameters**

***pdata*** Pointer to object to be appended.

### 7.38.3.3 virtual OSRTBaseType* OSXMLStringList::clone () const [virtual]

The clone method makes a cloned copy of this object.

It may be used to create a copy of any object derived from this base class.

Reimplemented from OSRTBaseType.

### 7.38.3.4 OSXMLStringList& OSXMLStringList::operator= (const OSXMLStringList & *orig*)

The assignment operator frees the existing list and then makes a deep-copy of the original list.

**Parameters**

***orig*** Object to be assigned.

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

- rtxCppXmlStringList.h

# Chapter 8

# File Documentation

## 8.1 OSRTBase64TextInputStream.h File Reference

C++ hexadecimal text input stream filter class.

```
#include "rtxsrc/OSRTInputStream.h"
#include "rtxsrc/rtxStreamBase64Text.h"
```

### Classes

- class OSRTBase64TextInputStream

  *Hexadecimal text input stream filter class.*

### 8.1.1 Detailed Description

C++ hexadecimal text input stream filter class.

Definition in file OSRTBase64TextInputStream.h.

## 8.2 OSRTBaseType.h File Reference

C++ run-time base class for structured type definitions.

```
#include "rtxsrc/OSRTContext.h"
```

### Classes

- class OSRTBaseType

  *C++ structured type base class.*

### 8.2.1 Detailed Description

C++ run-time base class for structured type definitions.

Definition in file OSRTBaseType.h.

## 8.3 OSRTContext.h File Reference

C++ run-time context class definition.

```
#include "rtxsrc/rtxContext.h"
#include "rtxsrc/rtxDiag.h"
#include "rtxsrc/rtxError.h"
#include "rtxsrc/rtxMemory.h"
```

### Classes

- class OSRTContext

  *Reference counted context class.*

- class OSRTCtxtPtr

  *Context reference counted pointer class.*

### Functions

- EXTERNRT void ∗ operator new (size_t nbytes, OSCTXT ∗pctxt)

  *Custom placement new function to allocate memory using context memory-management functions.*

- EXTERNRT void operator delete (void ∗pmem, OSCTXT ∗pctxt)

  *Custom placement delete function to free memory using context memory-management functions.*

### 8.3.1 Detailed Description

C++ run-time context class definition.

Definition in file OSRTContext.h.

## 8.4 OSRTCtxtHolder.h File Reference

C++ run-time message buffer interface class definition.

```
#include "rtxsrc/OSRTCtxtHolderIF.h"
```

### Classes

- class OSRTCtxtHolder

  *Abstract message buffer or stream interface class.*

### 8.4.1 Detailed Description

C++ run-time message buffer interface class definition.

Definition in file OSRTCtxtHolder.h.

## 8.5 OSRTCtxtHolderIF.h File Reference

C++ run-time message buffer interface class definition.

```
#include "rtxsrc/OSRTContext.h"
```

### Classes

- class OSRTCtxtHolderIF

  *Abstract message buffer or stream interface class.*

### 8.5.1 Detailed Description

C++ run-time message buffer interface class definition.

Definition in file OSRTCtxtHolderIF.h.

## 8.6 OSRTFastString.h File Reference

C++ fast string class definition.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/rtxPrint.h"
```

### Classes

- class OSRTFastString

  *C++ fast string class definition.*

### 8.6.1 Detailed Description

C++ fast string class definition. This can be used to hold standard ASCII or UTF-8 strings. This string class implementations directly assigns any assigned pointers to internal member variables. It does no memory management.

Definition in file OSRTFastString.h.

## 8.7 OSRTFileInputStream.h File Reference

C++ base class definitions for operations with input file streams.

```
#include "rtxsrc/OSRTInputStream.h"
```

### Classes

- class OSRTFileInputStream

  *Generic file input stream.*

### 8.7.1 Detailed Description

C++ base class definitions for operations with input file streams.

Definition in file OSRTFileInputStream.h.

## 8.8 OSRTFileOutputStream.h File Reference

C++ base class definitions for operations with output file streams.

```
#include "rtxsrc/OSRTOutputStream.h"
```

### Classes

- class OSRTFileOutputStream

  *Generic file output stream.*

### 8.8.1 Detailed Description

C++ base class definitions for operations with output file streams.

Definition in file OSRTFileOutputStream.h.

## 8.9 OSRTHexTextInputStream.h File Reference

C++ hexadecimal text input stream filter class.

```
#include "rtxsrc/OSRTInputStream.h"
```

### Classes

- class OSRTHexTextInputStream

  *Hexadecimal text input stream filter class.*

### 8.9.1 Detailed Description

C++ hexadecimal text input stream filter class.

Definition in file OSRTHexTextInputStream.h.

## 8.10 OSRTInputStream.h File Reference

C++ base class definitions for operations with input streams.

```
#include "rtxsrc/OSRTInputStreamIF.h"
#include "rtxsrc/OSRTStream.h"
```

### Classes

- class OSRTInputStream

  *This is the base class for input streams.*

### 8.10.1 Detailed Description

C++ base class definitions for operations with input streams.

Definition in file OSRTInputStream.h.

## 8.11 OSRTInputStreamIF.h File Reference

C++ interface class definitions for operations with input streams.

```
#include "rtxsrc/OSRTStreamIF.h"
```

### 8.11.1 Detailed Description

C++ interface class definitions for operations with input streams.

Definition in file OSRTInputStreamIF.h.

## 8.12 OSRTMemBuf.h File Reference

```
#include "rtxsrc/rtxMemBuf.h"
```

### Classes

- class OSRTMemBuf

  *Memory Buffer class.*

### 8.12.1 Detailed Description

Definition in file OSRTMemBuf.h.

## 8.13 OSRTMemoryInputStream.h File Reference

C++ base class definitions for operations with input memory streams.

```
#include "rtxsrc/OSRTInputStream.h"
```

### Classes

- class OSRTMemoryInputStream

  *Generic memory input stream.*

### 8.13.1 Detailed Description

C++ base class definitions for operations with input memory streams.

Definition in file OSRTMemoryInputStream.h.

## 8.14 OSRTMemoryOutputStream.h File Reference

C++ base class definitions for operations with output memory streams.

```
#include "rtxsrc/OSRTOutputStream.h"
```

### Classes

- class OSRTMemoryOutputStream

  *Generic memory output stream.*

### 8.14.1 Detailed Description

C++ base class definitions for operations with output memory streams.

Definition in file OSRTMemoryOutputStream.h.

## 8.15 OSRTMsgBuf.h File Reference

C++ run-time message buffer class definition.

```
#include "rtxsrc/OSRTCtxtHolder.h"
#include "rtxsrc/OSRTMsgBufIF.h"
```

### Classes

- class OSRTMessageBuffer

  *Abstract message buffer base class.*

### 8.15.1 Detailed Description

C++ run-time message buffer class definition.

Definition in file OSRTMsgBuf.h.

## 8.16 OSRTMsgBufIF.h File Reference

C++ run-time message buffer interface class definition.

```
#include "rtxsrc/OSRTContext.h"
#include "rtxsrc/OSRTCtxtHolderIF.h"
```

### Classes

- class OSRTMessageBufferIF

  *Abstract message buffer or stream interface class.*

### 8.16.1 Detailed Description

C++ run-time message buffer interface class definition.

Definition in file OSRTMsgBufIF.h.

## 8.17 OSRTOutputStream.h File Reference

C++ base class definitions for operations with output streams.

```
#include "rtxsrc/OSRTOutputStreamIF.h"
#include "rtxsrc/OSRTStream.h"
```

### Classes

- class OSRTOutputStream

  *The base class definition for operations with output streams.*

### 8.17.1 Detailed Description

C++ base class definitions for operations with output streams.

Definition in file OSRTOutputStream.h.

## 8.18 OSRTOutputStreamIF.h File Reference

C++ interface class definitions for operations with output streams.

```
#include "rtxsrc/OSRTStreamIF.h"
```

### 8.18.1 Detailed Description

C++ interface class definitions for operations with output streams.

Definition in file OSRTOutputStreamIF.h.

## 8.19 OSRTSocket.h File Reference

TCP/IP or UDP socket class definitions.

```
#include "rtxsrc/rtxSocket.h"
```

### Classes

- class OSRTSocket

  *Wrapper class for TCP/IP or UDP sockets.*

### 8.19.1 Detailed Description

TCP/IP or UDP socket class definitions.

Definition in file OSRTSocket.h.

## 8.20 OSRTSocketInputStream.h File Reference

C++ base class definitions for operations with input socket streams.

```
#include "rtxsrc/OSRTSocket.h"
#include "rtxsrc/OSRTInputStream.h"
```

### Classes

- class OSRTSocketInputStream

  *Generic socket input stream.*

### 8.20.1 Detailed Description

C++ base class definitions for operations with input socket streams.

Definition in file OSRTSocketInputStream.h.

## 8.21 OSRTSocketOutputStream.h File Reference

C++ base class definitions for operations with output socket streams.

```
#include "rtxsrc/OSRTSocket.h"
#include "rtxsrc/OSRTOutputStream.h"
```

### Classes

- class OSRTSocketOutputStream

  *Generic socket output stream.*

### 8.21.1 Detailed Description

C++ base class definitions for operations with output socket streams.

Definition in file OSRTSocketOutputStream.h.

## 8.22 OSRTStream.h File Reference

C++ base class definitions for operations with I/O streams.

```
#include "rtxsrc/OSRTCtxtHolder.h"
#include "rtxsrc/OSRTStreamIF.h"
```

### Classes

- class OSRTStream

  *The default base class for using I/O streams.*

### 8.22.1 Detailed Description

C++ base class definitions for operations with I/O streams.

Definition in file OSRTStream.h.

## 8.23 OSRTStreamIF.h File Reference

C++ interface class definitions for operations with I/O streams.

```
#include "rtxsrc/OSRTCtxtHolderIF.h"
```

### 8.23.1 Detailed Description

C++ interface class definitions for operations with I/O streams.

Definition in file OSRTStreamIF.h.

## 8.24 OSRTString.h File Reference

C++ string class definition.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/rtxPrint.h"
#include "rtxsrc/OSRTStringIF.h"
```

### Classes

- class OSRTString

  *C++ string class definition.*

### 8.24.1 Detailed Description

C++ string class definition. This can be used to hold standard ASCII or UTF-8 strings. The standard C++ 'new' and 'delete' operators are used to allocate/free memory for the strings. All strings are deep-copied.

Definition in file OSRTString.h.

## 8.25 OSRTStringIF.h File Reference

C++ string class interface.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/rtxPrint.h"
```

### Classes

- class OSRTStringIF

  *C++ string class interface.*

### 8.25.1 Detailed Description

C++ string class interface. This defines an interface to allow different types of string derived classes to be implemented. Currently, implementations include a standard string class (OSRTString) which deep-copies all values using new/delete, and a fast string class (OSRTFastString) that just copies pointers (i.e does no memory management).

These classes can be used to hold standard ASCII or UTF-8 strings.

Definition in file OSRTStringIF.h.

## 8.26 OSRTUTF8String.h File Reference

C++ UTF-8 string class definition.

```
#include "rtxsrc/OSRTBaseType.h"
#include "rtxsrc/rtxPrint.h"
#include "rtxsrc/rtxUTF8.h"
```

### Classes

- class OSRTUTF8String
  *UTF-8 string.*

### 8.26.1 Detailed Description

C++ UTF-8 string class definition.

Definition in file OSRTUTF8String.h.

## 8.27 rtxCppAnyAttr.h File Reference

C++ any element class definition.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/OSRTBaseType.h"
```

### Classes

- class OSAnyAttrClass

  *Any attribute.*

### 8.27.1 Detailed Description

C++ any element class definition.

Definition in file rtxCppAnyAttr.h.

## 8.28 rtxCppAnyElement.h File Reference

C++ any element class definition.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/OSRTBaseType.h"
#include "rtxsrc/rtxPrint.h"
```

### Classes

- class OSAnyElementClass

  *Any element.*

### 8.28.1 Detailed Description

C++ any element class definition.

Definition in file rtxCppAnyElement.h.

## 8.29 rtxCppBitString.h File Reference

- Contains utility function for sizing a bit string.

```
#include "rtxsrc/rtxContext.h"
```

### Functions

- EXTERNRT int rtxCppCheckBitBounds (OSOCTET *&pBits, OSUINT32 &numocts, size_t minRequiredBits, size_t preferredLimitBits)

  *Check whether the given bit string is large enough, and expand it if necessary.*

### 8.29.1 Detailed Description

- Contains utility function for sizing a bit string.

Definition in file rtxCppBitString.h.

### 8.29.2 Function Documentation

#### 8.29.2.1 EXTERNRT int rtxCppCheckBitBounds (OSOCTET *& *pBits*, OSUINT32 & *numocts*, size_t *minRequiredBits*, size_t *preferredLimitBits*)

Check whether the given bit string is large enough, and expand it if necessary.

**Parameters**

***pBits*** pBits is a pointer to the bit string, or NULL if one has not been created. If the string is expanded, pBits receives a pointer to the new bit string.

***numocts*** is the current size of the bit string in octets. If the bit string is expanded, numocts receives the new size.

***minRequiredBits*** The minimum number of bits needed in the bit string. On return, pBits will point to a bit string with at least this many bits.

***preferredLimitBits*** The number of bits over which we prefer not to go. If nonzero, no more bytes will be allocated than necessary for this many bits, unless explicitly required by minRequiredBits.

**Returns**

If successful, 0. Otherwise, an error code.

## 8.30 rtxCppBufferedInputStream.h File Reference

```
#include "rtxsrc/OSRTInputStream.h"
```

### Classes

- class OSBufferedInputStream

  *The buffered input stream class.*

### 8.30.1 Detailed Description

Definition in file rtxCppBufferedInputStream.h.

## 8.31 rtxCppDateTime.h File Reference

C++ XML schema date/time definition.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/OSRTBaseType.h"
```

### 8.31.1 Detailed Description

C++ XML schema date/time definition.

Definition in file rtxCppDateTime.h.

## 8.32 rtxCppDList.h File Reference

```
#include "rtxsrc/OSRTBaseType.h"
#include "rtxsrc/rtxDList.h"
```

### Classes

- class OSRTDListNodeBaseClass

  *This class is a base class for C++ representations of a node for the doubly-linked list structure.*

- class OSRTDListNodeClass

  *This class represents a doubly-linked list node structure.*

- class OSRTObjListNodeClass

  *This class represents a doubly-linked list node structure for `OSRTBaseType` instances.*

- class OSRTDListBaseClass

  *This class is a base class for C++ representations of a doubly-linked list classes.*

- class OSRTDListClass

  *This class represents a doubly-linked list structure.*

- class OSRTObjListClass

  *This class represents a doubly-linked list structure for objects.*

### 8.32.1 Detailed Description

Definition in file rtxCppDList.h.

## 8.33 rtxCppDynOctStr.h File Reference

C++ dynamic binary string class definition.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/OSRTBaseType.h"
```

### Classes

- class OSDynOctStrClass

  *Dynamic binary string.*

### 8.33.1 Detailed Description

C++ dynamic binary string class definition.

Definition in file rtxCppDynOctStr.h.

## 8.34 rtxCppException.h File Reference

C++ run-time deprecated definition.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/OSRTContext.h"
```

### Classes

- class OSRTLException

  *The base exception class for the C++ run-time.*

- class OSStreamException

  *Exception class for streams.*

### 8.34.1 Detailed Description

C++ run-time deprecated definition.

Definition in file rtxCppException.h.

## 8.35 rtxCppTypes.h File Reference

C++ common type and class definitions.

```
#include "rtxsrc/rtxCppAnyElement.h"
#include "rtxsrc/rtxCppDList.h"
#include "rtxsrc/rtxCppDynOctStr.h"
#include "rtxsrc/rtxCppXmlString.h"
```

### 8.35.1 Detailed Description

C++ common type and class definitions.

Definition in file rtxCppTypes.h.

## 8.36 rtxCppXmlSTLString.h File Reference

C++ XML STL string class definition.

### 8.36.1 Detailed Description

C++ XML STL string class definition.

Definition in file rtxCppXmlSTLString.h.

## 8.37 rtxCppXmlString.h File Reference

C++ XML string class definition.

```
#include "rtxsrc/OSRTBaseType.h"
#include "rtxsrc/OSRTMemBuf.h"
#include "rtxsrc/rtxPrint.h"
#include "rtxsrc/rtxUTF8.h"
#include "rtxsrc/rtxXmlStr.h"
```

### Classes

- class OSXMLStringClass

  *XML string.*

### 8.37.1 Detailed Description

C++ XML string class definition.

Definition in file rtxCppXmlString.h.

## 8.38 rtxCppXmlStringList.h File Reference

C++ XML string list class definition.

```
#include "rtxsrc/rtxCppDList.h"
#include "rtxsrc/rtxCppXmlString.h"
```

### Classes

- class OSXMLStringList
  *XML list string.*

### 8.38.1 Detailed Description

C++ XML string list class definition.

Definition in file rtxCppXmlStringList.h.

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