XBinder

XML Schema Compiler
Version 2.7
C++ Runtime
Reference Manual

Objective Systems, Inc. — August 2021

Author's Contact Information

Comments, suggestions, and inquiries regarding XBinder may be submitted via electronic mail to info@obj-sys.com.

Contents

Chapter 1

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

Module Index

2.1 Modules

Here is a list of all modules:

Chapter 3

Hierarchical Index

3.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 4

Class Index

4.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 5

File Index

5.1 File List

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

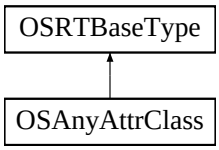
Class Documentation

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() [1/5]

```
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() [2/5]

```
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() [3/5]

```
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() [4/5]

```
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() [5/5]

```
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 clone()

```
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 copyValue()

```
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 setValue() [1/2]

```
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.

7.1.3.4 setValue() [2/2]

```
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.

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

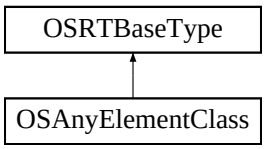
- rtxCppAnyAttr.h

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() [1/4]

```
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() [2/4]

```
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() [3/4]

```
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() [4/4]

```
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 copyValue()

```
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 print()

```
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 setValue()

```
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:

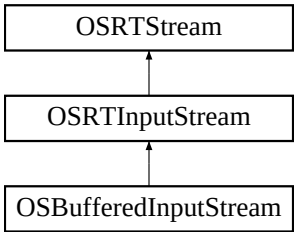
- rtxCppAnyElement.h

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.

Additional Inherited Members

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::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 ~OSBufferedInputStream()

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

Virtual destructor.

Closes the stream if it was opened.

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

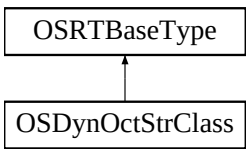
- rtxCppBufferedInputStream.h

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 (OSSIZE 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 (OSDynOctStr64 &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 (OSSIZE 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 (OSSIZE 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() [1/4]

```
OSDynOctStrClass::OSDynOctStrClass (
            OSSIZE 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() [2/4]

```
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() [3/4]

```
OSDynOctStrClass::OSDynOctStrClass (
            OSDynOctStr64 & 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.

7.4.2.4 OSDynOctStrClass() [4/4]

```
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 clone()

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

Clone method.

Creates a copied instance and returns pointer to OSRTBaseType.

Reimplemented from OSRTBaseType.

Definition at line 91 of file rtxCppDynOctStr.h.

7.4.3.2 copyValue()

```
void OSDynOctStrClass::copyValue (
            OSSIZE 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 setValue() [1/2]

```
void OSDynOctStrClass::setValue (
            OSSIZE 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.

7.4.3.4 setValue() [2/2]

```
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.

7.4.3.5 setValueFromBase64()

```
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:

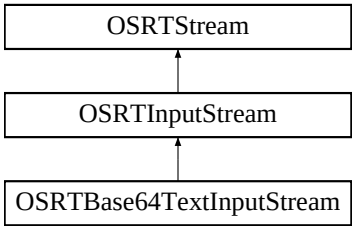
- rtxCppDynOctStr.h

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.

Additional Inherited Members

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 OSRTBase64TextInputStream()

```
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 ~OSRTBase64TextInputStream()

```
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 isA()

```
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.

References OSRTInputStream::isA().

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

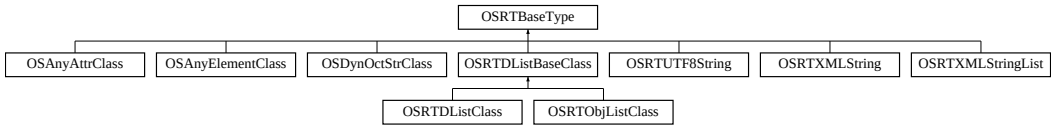
- OSRTBase64TextInputStream.h

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 64 of file OSRTContext.h.

7.7.2 Member Function Documentation

7.7.2.1 getErrorInfo() [1/3]

```
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.

7.7.2.2 getErrorInfo() [2/3]

```
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 getErrorInfo() [3/3]

```
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.

7.7.2.4 getPtr()

```
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 109 of file OSRTContext.h.

Referenced by OSRTCtxtPtr::getCtxtPtr().

7.7.2.5 getStatus()

```
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 124 of file OSRTContext.h.

7.7.2.6 isInitialized()

```
OSBOOL OSRTContext::isInitialized ( )  [inline]
```

Returns TRUE, if initialized correctly, FALSE otherwise.

Returns

TRUE, if initialized correctly, FALSE otherwise.

Definition at line 132 of file OSRTContext.h.

7.7.2.7 memAlloc()

```
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 195 of file OSRTContext.h.

7.7.2.8 memAllocZ()

```
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 208 of file OSRTContext.h.

7.7.2.9 memFreeAll()

```
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 `rtxMem↩Alloc` function with the context returned by the `getCtxtPtr` method.

Definition at line 218 of file OSRTContext.h.

7.7.2.10 memFreePtr()

```
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 230 of file OSRTContext.h.

7.7.2.11 memRealloc()

```
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 243 of file OSRTContext.h.

7.7.2.12 setDiag()

```
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 setRunTimeKey()

```
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 setStatus()

```
int OSRTContext::setStatus (
            int stat )
```

This method sets error status in the context.

Parameters

stat	Status value.

Returns

Error status value being set.

7.7.3 Member Data Documentation

7.7.3.1 mStatus

```
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 90 of file OSRTContext.h.

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

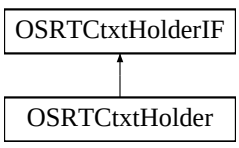
- OSRTContext.h

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.

Additional Inherited Members

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 OSRTCtxtHolder()

```
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 getContext()

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

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

Returns

Context smart pointer object.

Implements OSRTCtxtHolderIF.

Referenced by OSRTMessageBuffer::getContext(), and OSRTStream::getContext().

7.8.3.2 getCtxtPtr()

```
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.

Referenced by OSRTMessageBuffer::getCtxtPtr(), and OSRTStream::getCtxtPtr().

7.8.3.3 getErrorInfo() [1/2]

```
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.

Referenced by OSRTMessageBuffer::getErrorInfo(), and OSRTStream::getErrorInfo().

7.8.3.4 getErrorInfo() [2/2]

```
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.

7.8.3.5 getStatus()

```
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.

Referenced by OSRTMessageBuffer::getStatus().

7.8.4 Member Data Documentation

7.8.4.1 mpContext

```
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:

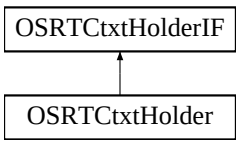
- OSRTCtxtHolder.h

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 ~OSRTCtxtHolderIF()

```
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 getContext()

```
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 getCtxtPtr()

```
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 getErrorInfo() [1/2]

```
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.

7.9.3.4 getErrorInfo() [2/2]

```
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.

7.9.3.5 getStatus()

```
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 310 of file OSRTContext.h.

7.10.2 Constructor & Destructor Documentation

7.10.2.1 OSRTCtxtPtr() [1/2]

```
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 325 of file OSRTContext.h.

References OSRTContext::_ref().

7.10.2.2 OSRTCtxtPtr() [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 335 of file OSRTContext.h.

References OSRTContext::_ref().

7.10.2.3 ~OSRTCtxtPtr()

```
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 344 of file OSRTContext.h.

References OSRTContext::_unref().

7.10.3 Member Function Documentation

7.10.3.1 operator=()

```
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 354 of file OSRTContext.h.

References OSRTContext::_ref(), OSRTContext::_unref(), and mPointer.

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

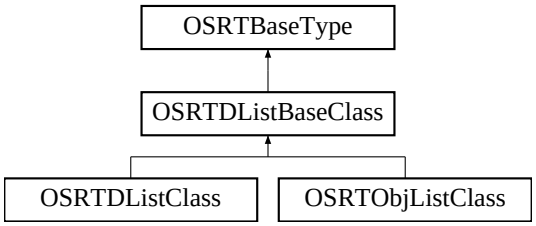
- OSRTContext.h

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 getCount()

```
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 getList() [1/2]

```
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.

7.11.2.3 getList() [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.

7.11.2.4 remove()

```
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:

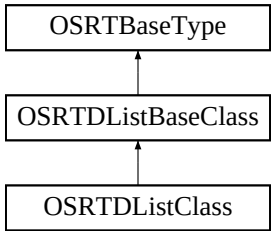
- rtxCppDList.h

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 append()

```
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 appendCopy()

```
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 getHead() [1/2]

```
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.

7.12.2.4 getHead() [2/2]

```
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.

7.12.2.5 getItem()

```
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 getTail() [1/2]

```
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.

7.12.2.7 getTail() [2/2]

```
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.

7.12.2.8 insert()

```
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:

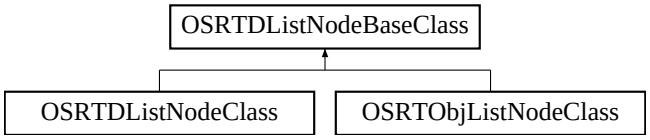
- rtxCppDList.h

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:

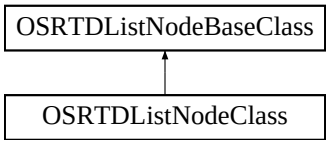
- rtxCppDList.h

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 getData() [1/2]

```
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().

7.14.2.2 getData() [2/2]

```
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.

7.14.2.3 getNext() [1/2]

```
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.

7.14.2.4 getNext() [2/2]

```
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.

7.14.2.5 getPrev() [1/2]

```
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.

7.14.2.6 getPrev() [2/2]

```
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.

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

- rtxCppDList.h

7.15 OSRTElemNameGuard Class Reference

Element name guard class.

`#include <OSRTContext.h>`

7.15.1 Detailed Description

Element name guard class.

This class pushes and pops element names from the element name stack within the context for diagnostic and error logging.

Definition at line 421 of file OSRTContext.h.

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

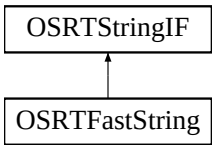
- OSRTContext.h

7.16 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.

Additional Inherited Members

7.16.1 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.

7.16.2 Constructor & Destructor Documentation

7.16.2.1 OSRTFastString() [1/3]

```
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

7.16.2.2 OSRTFastString() [2/3]

```
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

7.16.2.3 OSRTFastString() [3/3]

```
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.

7.16.3 Member Function Documentation

7.16.3.1 print()

```
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.

References OSRTStringIF::setValue().

7.16.3.2 setValue() [1/2]

```
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.

7.16.3.3 setValue() [2/2]

```
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.

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

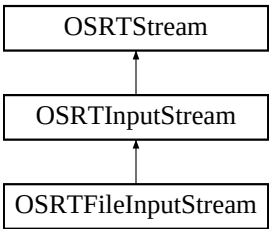
- OSRTFastString.h

7.17 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.

Additional Inherited Members

7.17.1 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.

7.17.2 Constructor & Destructor Documentation

7.17.2.1 OSRTFileInputStream() [1/4]

```
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

7.17.2.2 OSRTFileInputStream() [2/4]

```
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

7.17.2.3 OSRTFileInputStream() [3/4]

```
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

7.17.2.4 OSRTFileInputStream() [4/4]

```
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

7.17.3 Member Function Documentation

7.17.3.1 isA()

```
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 84 of file OSRTFileInputStream.h.

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

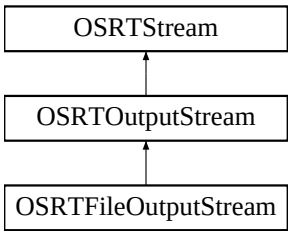
- OSRTFileInputStream.h

7.18 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.

Additional Inherited Members

7.18.1 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.

7.18.2 Constructor & Destructor Documentation

7.18.2.1 OSRTFileOutputStream() [1/4]

```
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

7.18.2.2 OSRTFileOutputStream() [2/4]

```
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

7.18.2.3 OSRTFileOutputStream() [3/4]

```
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

7.18.2.4 OSRTFileOutputStream() [4/4]

```
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

7.18.3 Member Function Documentation

7.18.3.1 isA()

```
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 88 of file OSRTFileOutputStream.h.

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

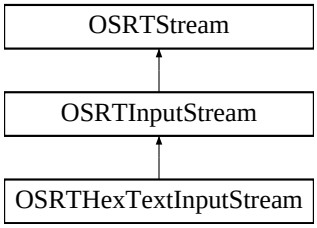
- OSRTFileOutputStream.h

7.19 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.

Additional Inherited Members

7.19.1 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.

7.19.2 Constructor & Destructor Documentation

7.19.2.1 OSRTHexTextInputStream()

```
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

7.19.2.2 ~OSRTHexTextInputStream()

```
EXTRTMETHOD OSRTHexTextInputStream::~OSRTHexTextInputStream ( )
```

The destructor deletes the underlying stream object.

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

7.19.3 Member Function Documentation

7.19.3.1 isA()

```
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.

References OSRTInputStream::isA().

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

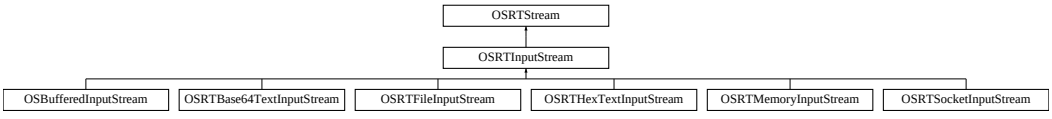
- OSRTHexTextInputStream.h

7.20 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.

Additional Inherited Members

7.20.1 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.

7.20.2 Constructor & Destructor Documentation

7.20.2.1 OSRTInputStream()

```
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.

7.20.2.2 ~OSRTInputStream()

```
virtual EXTRTMETHOD OSRTInputStream::~OSRTInputStream ( )  [virtual]
```

Virtual destructor.

Closes the stream if it was opened.

7.20.3 Member Function Documentation

7.20.3.1 close()

```
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.

7.20.3.2 currentPos()

```
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.

7.20.3.3 flush()

```
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.

7.20.3.4 getContext()

```
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().

7.20.3.5 getCtxtPtr()

```
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().

7.20.3.6 getErrorInfo() [1/2]

```
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().

7.20.3.7 getErrorInfo() [2/2]

```
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().

7.20.3.8 getPosition()

```
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.

7.20.3.9 getStatus()

```
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.

Definition at line 175 of file OSRTInputStream.h.

References OSRTStream::getStatus(), and OSRTStream::isOpened().

7.20.3.10 isA()

```
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 OSRTSocketInputStream, OSRTFileInputStream, OSRTBase64TextInputStream, OSRTHexTextInputStream, and OSRTMemoryInputStream.

Definition at line 97 of file OSRTInputStream.h.

Referenced by OSRTHexTextInputStream::isA(), and OSRTBase64TextInputStream::isA().

7.20.3.11 isOpened()

```
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.

7.20.3.12 mark()

```
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

7.20.3.13 markSupported()

```
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

7.20.3.14 read()

```
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

7.20.3.15 readBlocking()

```
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

7.20.3.16 reset()

```
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

7.20.3.17 setPosition()

```
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.

7.20.3.18 skip()

```
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

7.21 OSRTMemBuf Class Reference

Memory Buffer class.

`#include <OSRTMemBuf.h>`

Inherits OSRTMEMBUF.

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:

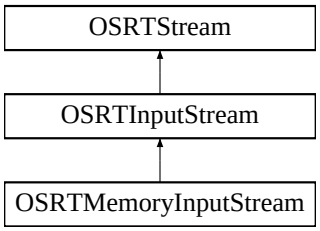
- OSRTMemBuf.h

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.

Additional Inherited Members

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 OSRTMemoryInputStream() [1/2]

```
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 OSRTMemoryInputStream() [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 isA()

```
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 68 of file OSRTMemoryInputStream.h.

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

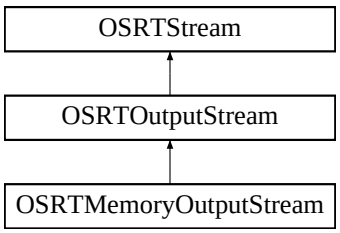
- OSRTMemoryInputStream.h

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.

Additional Inherited Members

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 OSRTMemoryOutputStream() [1/3]

```
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 OSRTMemoryOutputStream() [2/3]

```
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 OSRTMemoryOutputStream() [3/3]

```
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 getBuffer()

```
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 isA()

```
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 94 of file OSRTMemoryOutputStream.h.

7.23.3.3 reset()

```
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:

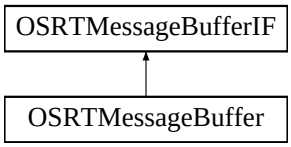
- OSRTMemoryOutputStream.h

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.
- virtual size_t getMsgLen ()

  This method returns the length in bytes of an encoded message.
- 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 OSRTMessageBuffer()

```
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 ~OSRTMessageBuffer()

```
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 getByteIndex()

```
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 getCtxtPtr()

```
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.

References OSRTCtxtHolder::getCtxtPtr().

7.24.3.3 getErrorInfo() [1/2]

```
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.

References OSRTCtxtHolder::getErrorInfo().

7.24.3.4 getErrorInfo() [2/2]

```
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.

References OSRTCtxtHolder::getErrorInfo().

7.24.3.5 getStatus()

```
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 167 of file OSRTMsgBuf.h.

References OSRTCtxtHolder::getStatus().

7.24.3.6 init()

```
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 178 of file OSRTMsgBuf.h.

References OSRTMessageBufferIF::initBuffer().

7.24.3.7 initBuffer()

```
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 setDiag()

```
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:

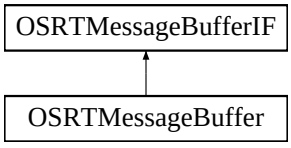
- OSRTMsgBuf.h

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 ~OSRTMessageBufferIF()

```
virtual OSRTMessageBufferIF::~OSRTMessageBufferIF ( )  [inline], [protected], [virtual]
```

The virtual destructor does nothing.

It is overridden by derived versions of this class.

Definition at line 60 of file OSRTMsgBufIF.h.

7.25.3 Member Function Documentation

7.25.3.1 getByteIndex()

```
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 getMsgCopy()

```
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 getMsgPtr()

```
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 init()

```
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 initBuffer()

```
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.

Referenced by OSRTMessageBuffer::init().

7.25.3.6 isA()

```
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, XMLEncode, XMLDecode, Stream, OEREncode, OERDecode, CBOREncode, CBORDecode.

Returns

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

7.25.3.7 setDiag()

```
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.

Referenced by OSRTMessageBuffer::setAppInfo().

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

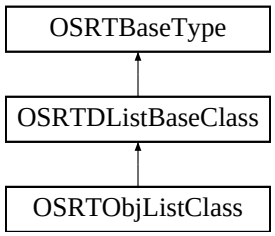
- OSRTMsgBufIF.h

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 append()

```
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 appendCopy()

```
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 getHead() [1/2]

```
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.

7.26.2.4 getHead() [2/2]

```
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.

7.26.2.5 getItem()

```
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 getTail() [1/2]

```
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.

7.26.2.7 getTail() [2/2]

```
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.

7.26.2.8 insert()

```
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 operator=()

```
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:

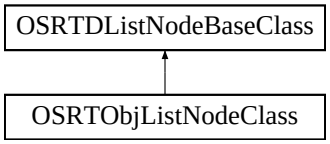
- rtxCppDList.h

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 getData() [1/2]

```
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().

7.27.2.2 getData() [2/2]

```
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.

7.27.2.3 getNext() [1/2]

```
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.

7.27.2.4 getNext() [2/2]

```
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.

7.27.2.5 getPrev() [1/2]

```
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.

7.27.2.6 getPrev() [2/2]

```
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.

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

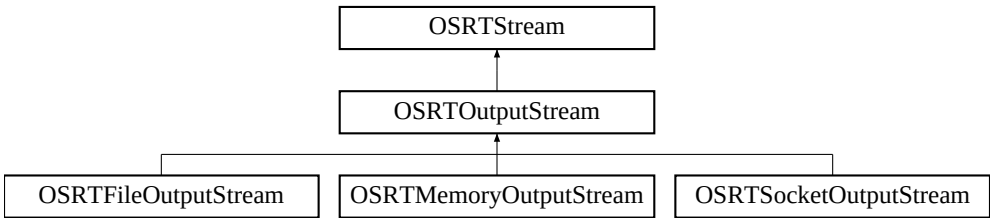
- rtxCppDList.h

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.

Additional Inherited Members

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 OSRTOutputStream()

```
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 ~OSRTOutputStream()

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

Virtual destructor.

Closes the stream if it was opened.

7.28.3 Member Function Documentation

7.28.3.1 close()

```
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 flush()

```
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 getContext()

```
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 getCtxtPtr()

```
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 getErrorInfo() [1/2]

```
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().

7.28.3.6 getErrorInfo() [2/2]

```
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().

7.28.3.7 getStatus()

```
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.

Definition at line 148 of file OSRTOutputStream.h.

References OSRTStream::getStatus().

7.28.3.8 isA()

```
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 OSRTSocketOutputStream, OSRTMemoryOutputStream, and OSRTFileOutputStream.

Definition at line 159 of file OSRTOutputStream.h.

References OSRTStream::isOpened().

7.28.3.9 isOpened()

```
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 write() [1/2]

```
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

7.28.3.11 write() [2/2]

```
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

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, int retryCount=1)

  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 connectTimed (const char *host, int port, int nsecs)

  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.
- EXTRTMETHOD int send (const OSOCTET *pdata, size_t size)

  This method sends data on a connected socket.
- void setOwnership (OSBOOL ownership)

  Transfers an ownership of the underlying O/S socket to or from the socket object.
- void setRetryCount (int value)

  This method sets the socket connect retry count.

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
- int mRetryCount

  number of time to retry socker connect
- 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 OSRTSocket() [1/3]

```
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 OSRTSocket() [2/3]

```
EXTRTMETHOD OSRTSocket::OSRTSocket (
            OSRTSOCKET socket,
            OSBOOL ownership = FALSE,
            int retryCount = 1 )
```

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.
retryCount	Number of times to retry a socket connect operation.

7.29.2.3 OSRTSocket() [3/3]

```
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 ~OSRTSocket()

```
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 accept()

```
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 addrToString()

```
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 bind() [1/3]

```
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

7.29.3.4 bind() [2/3]

```
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 bind() [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 187 of file OSRTSocket.h.

7.29.3.6 bindUrl()

```
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 blockingRead()

```
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 close()

```
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 connect()

```
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 connectTimed()

```
EXTRTMETHOD int OSRTSocket::connectTimed (
             const char * host,
             int port,
             int nsecs )
```

This method establishes a connection to this socket.

It is similar to the socketConnect method except that it will only wait the given number of seconds to establish a connection before giving up.

Parameters

host	Null-terminated character string representing a number expressed in the Internet standard "." (dotted) notation.
port	The destination port to connect.
nsecs	Number of seconds to wait before failing.

Returns

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

7.29.3.11 connectUrl()

```
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

7.29.3.12 getOwnership()

```
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 267 of file OSRTSocket.h.

7.29.3.13 getSocket()

```
OSRTSOCKET OSRTSocket::getSocket ( ) const  [inline]
```

This method returns the handle of the socket.

Returns

The handle of the socket.

Definition at line 274 of file OSRTSocket.h.

7.29.3.14 getStatus()

```
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 283 of file OSRTSocket.h.

7.29.3.15 listen()

```
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

7.29.3.16 recv()

```
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

7.29.3.17 send()

```
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

7.29.3.18 setOwnership()

```
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 336 of file OSRTSocket.h.

7.29.3.19 setRetryCount()

```
void OSRTSocket::setRetryCount (
             int value )  [inline]
```

This method sets the socket connect retry count.

The connect operation will be retried this many times if the operation fails. By default, the connect operation is not retried.

Parameters

value	Retry count.

Definition at line 345 of file OSRTSocket.h.

7.29.3.20 stringToAddr()

```
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:

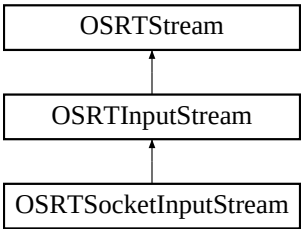
- OSRTSocket.h

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

Additional Inherited Members

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 OSRTSocketInputStream() [1/4]

```
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 OSRTSocketInputStream() [2/4]

```
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 OSRTSocketInputStream() [3/4]

```
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() [4/4]

```
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 isA()

```
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 107 of file OSRTSocketInputStream.h.

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

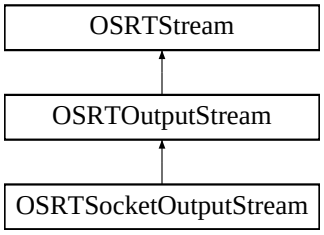
- OSRTSocketInputStream.h

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

Additional Inherited Members

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 OSRTSocketOutputStream() [1/4]

```
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 OSRTSocketOutputStream() [2/4]

```
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 OSRTSocketOutputStream() [3/4]

```
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() [4/4]

```
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 isA()

```
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 105 of file OSRTSocketOutputStream.h.

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

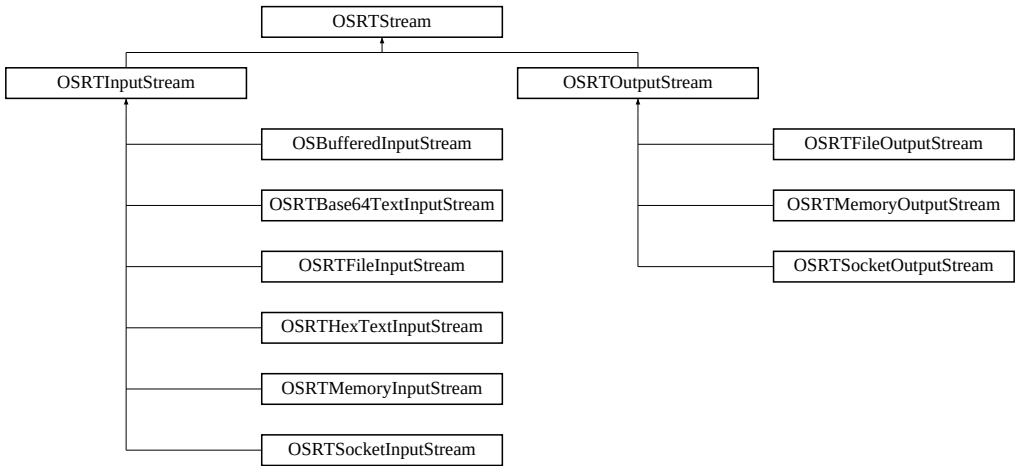
- OSRTSocketOutputStream.h

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 OSRTStream()

```
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 ~OSRTStream()

```
virtual EXTRTMETHOD OSRTStream::~OSRTStream ( )  [virtual]
```

Virtual destructor.

Closes the stream if it was opened.

7.32.3 Member Function Documentation

7.32.3.1 close()

```
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 OSRTOutputStream, and OSRTInputStream.

7.32.3.2 flush()

```
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 getContext()

```
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.

References OSRTCtxtHolder::getContext().

Referenced by OSRTOutputStream::getContext(), and OSRTInputStream::getContext().

7.32.3.4 getCtxtPtr()

```
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.

References OSRTCtxtHolder::getCtxtPtr().

Referenced by OSRTOutputStream::getCtxtPtr(), and OSRTInputStream::getCtxtPtr().

7.32.3.5 getErrorInfo() [1/2]

```
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.

References OSRTCtxtHolder::getErrorInfo().

Referenced by OSRTOutputStream::getErrorInfo(), and OSRTInputStream::getErrorInfo().

7.32.3.6 getErrorInfo() [2/2]

```
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.

References OSRTCtxtHolder::getErrorInfo().

7.32.3.7 getStatus()

```
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.

Definition at line 155 of file OSRTStream.h.

Referenced by OSRTOutputStream::getStatus(), and OSRTInputStream::getStatus().

7.32.3.8 isOpened()

```
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.

Referenced by OSRTInputStream::getStatus(), and OSRTOutputStream::isA().

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

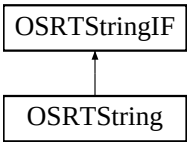
- OSRTStream.h

7.33 OSRTString Class Reference

C++ string class definition.

`#include <OSRTString.h>`

Inheritance diagram for OSRTString:



Public Member Functions

- OSRTString ()
  The default constructor creates an empty string.
- OSRTString (const char *strval)
  This constructor initializes the string to contain the given standard ASCII string value.
- OSRTString (const OSUTF8CHAR *strval)
  This constructor initializes the string to contain the given UTF-8 string value.
- OSRTString (const OSRTString &str)
  Copy constructor.
- virtual ~OSRTString ()
  The destructor frees string memory using the standard 'delete' operator.
- virtual OSRTStringIF * clone ()
  This method creates a copy of the given string object.
- const char * data () const
  This method is a synonym for getValue().
- 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.
- int indexOf (char ch) const
  This method returns the index of the first occurence of the given characetr within the string or -1 if the character is not found.
- size_t length () const
  This method returns the length of the string.
- virtual void print (const char *name)
  This method prints the string value to standard output.
- virtual EXTRTMETHOD void setValue (const char *strval)
  This method sets the string value to the given string.
- virtual EXTRTMETHOD void setValue (const OSUTF8CHAR *strval)
  This method sets the string value to the given UTF-8 string value.
- virtual EXTRTMETHOD void setValuePtr (char *strval)
  This method sets the string value to the given string value pointer.

- bool toInt (OSINT32 &value) const

  This method converts the string to a signed 32-bit integer value.
- bool toSize (OSSIZE &value) const

  This method converts the string to a size typed (site_t) value.
- bool toUInt (OSUINT32 &value) const

  This method converts the string to an unsigned 32-bit integer value.
- bool toUInt64 (OSUINT64 &value) const

  This method converts the string to an unsigned 64-bit integer value.
- EXTRTMETHOD OSRTString & operator= (const OSRTString &original)

  Assignment operator.

Additional Inherited Members

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 OSRTString() [1/3]

```
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 OSRTString() [2/3]

```
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 OSRTString() [3/3]

```
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 print()

```
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 130 of file OSRTString.h.

References OSRTStringIF::getValue(), and OSRTStringIF::setValue().

7.33.3.2 setValue() [1/2]

```
virtual EXTRTMETHOD void OSRTString::setValue (
            const char * strval )  [virtual]
```

This method sets the string value to the given string.

Parameters

str	- C null-terminated string.

Implements OSRTStringIF.

7.33.3.3 setValue() [2/2]

```
virtual EXTRTMETHOD void OSRTString::setValue (
            const OSUTF8CHAR * strval )  [virtual]
```

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

Parameters

str	- C null-terminated UTF-8 string.

Implements OSRTStringIF.

7.33.3.4 setValuePtr()

```
virtual EXTRTMETHOD void OSRTString::setValuePtr (
            char * strval )  [virtual]
```

This method sets the string value to the given string value pointer.

This is assumed to be a mutable string allocated with the new operator. This class will assume ownership of the string memory.

Parameters

str	- Mutable null-terminated string allocated with new.

7.33.3.5 toInt()

```
bool OSRTString::toInt (
            OSINT32 & value ) const
```

This method converts the string to a signed 32-bit integer value.

Parameters

value	Reference to variable to receive converted integer value.

Returns

Boolean result, true if successful or false if failed.

7.33.3.6 toSize()

```
bool OSRTString::toSize (
            OSSIZE & value ) const
```

This method converts the string to a size typed (site_t) value.

Parameters

value	Reference to variable to receive converted integer value.

Returns

Boolean result, true if successful or false if failed.

7.33.3.7 toUInt()

```
bool OSRTString::toUInt (
            OSUINT32 & value ) const
```

This method converts the string to an unsigned 32-bit integer value.

Parameters

value	Reference to variable to receive converted integer value.

Returns

Boolean result, true if successful or false if failed.

7.33.3.8 toUInt64()

```
bool OSRTString::toUInt64 (
             OSUINT64 & value ) const
```

This method converts the string to an unsigned 64-bit integer value.

Parameters

value	Reference to variable to receive converted integer value.

Returns

Boolean result, true if successful or false if failed.

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

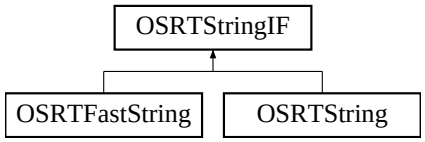
- OSRTString.h

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() [1/2]

```
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() [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 print()

```
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 OSRTString, and OSRTFastString.

7.34.3.2 setValue() [1/2]

```
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 OSRTString, and OSRTFastString.

Referenced by OSRTFastString::print(), and OSRTString::print().

7.34.3.3 setValue() [2/2]

```
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 OSRTString, and OSRTFastString.

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

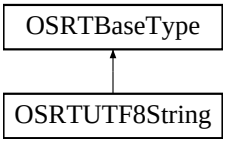
- OSRTStringIF.h

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() [1/3]

```
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() [2/3]

```
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() [3/3]

```
OSRTUTF8String::OSRTUTF8String (
            const OSRTUTF8String & str )
```

Copy constructor.

Parameters

str	- C++ XML string class.

7.35.3 Member Function Documentation

7.35.3.1 clone()

```
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 copyValue()

```
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 print()

```
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 setValue()

```
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:

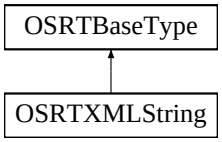
- OSRTUTF8String.h

7.36 OSRTXMLString Class Reference

XML string.

```
#include <rtxCppXmlString.h>
```

Inheritance diagram for OSRTXMLString:



Public Member Functions

- OSRTXMLString ()

  The default constructor creates an empty string.
- OSRTXMLString (const OSUTF8CHAR *strval, OSBOOL cdata_=FALSE)

  This constructor initializes the string to contain the value.
- OSRTXMLString (const OSUTF8CHAR *strval, size_t nbytes, OSBOOL cdata_=FALSE)

  This constructor initializes the string to contain the value.
- OSRTXMLString (const char *strval, OSBOOL cdata_=FALSE)

  This constructor initializes the string to contain the value.
- OSRTXMLString (const OSXMLSTRING &str)

  Copy constructor.
- OSRTXMLString (const OSRTXMLString &str)

  Copy constructor.
- virtual ~OSRTXMLString ()

  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.
- OSRTXMLString & operator= (const OSRTXMLString &original)

  Assignment operator.
- OSRTXMLString & operator= (const char *original)

  Assignment operator for C strings.
- OSRTXMLString & 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.

7.36.1 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.

7.36.2 Constructor & Destructor Documentation

7.36.2.1 OSRTXMLString() [1/5]

```
OSRTXMLString::OSRTXMLString (
             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?

7.36.2.2 OSRTXMLString() [2/5]

```
OSRTXMLString::OSRTXMLString (
             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?

7.36.2.3 OSRTXMLString() [3/5]

```
OSRTXMLString::OSRTXMLString (
             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?

7.36.2.4 OSRTXMLString() [4/5]

```
OSRTXMLString::OSRTXMLString (
            const OSXMLSTRING & str )
```

Copy constructor.

Parameters

str	- C XML string structure.

7.36.2.5 OSRTXMLString() [5/5]

```
OSRTXMLString::OSRTXMLString (
            const OSRTXMLString & str )
```

Copy constructor.

Parameters

str	- C++ XML string class.

7.36.3 Member Function Documentation

7.36.3.1 appendValue()

```
void OSRTXMLString::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.

7.36.3.2 clone()

```
OSRTBaseType* OSRTXMLString::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.

7.36.3.3 compare()

```
int OSRTXMLString::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.

7.36.3.4 copyValue() [1/2]

```
void OSRTXMLString::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.

7.36.3.5 copyValue() [2/2]

```
void OSRTXMLString::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.

7.36.3.6 decodeXML()

```
virtual int OSRTXMLString::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.

7.36.3.7 encodeXML()

```
virtual int OSRTXMLString::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.

7.36.3.8 isCDATA()

```
OSBOOL OSRTXMLString::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.

7.36.3.9 print()

```
void OSRTXMLString::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.

7.36.3.10 setCDATA()

```
void OSRTXMLString::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.

7.36.3.11 setValue() [1/3]

```
void OSRTXMLString::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.

7.36.3.12 setValue() [2/3]

```
void OSRTXMLString::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.

7.36.3.13 setValue() [3/3]

```
void OSRTXMLString::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.

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

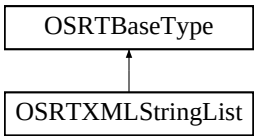
- rtxCppXmlString.h

7.37 OSRTXMLStringList Class Reference

XML list string.

`#include <rtxCppXmlStringList.h>`

Inheritance diagram for OSRTXMLStringList:



Public Member Functions

- OSRTXMLStringList ()

  The default constructor creates an empty list.
- OSRTXMLStringList (const OSRTXMLStringList &orig)

  The copy constructor creates a deep-copy of the original list.
- OSRTXMLStringList & operator= (const OSRTXMLStringList &orig)

  The assignment operator frees the existing list and then makes a deep-copy of the original list.
- void append (OSRTXMLString *pdata)

  The append method adds the given object to the end of the list.
- void appendCopy (OSRTXMLString *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.
- OSRTXMLString * 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 OSRTXMLString objects.

7.37.1 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.

7.37.2 Constructor & Destructor Documentation

7.37.2.1 OSRTXMLStringList()

```
OSRTXMLStringList::OSRTXMLStringList (
            const OSRTXMLStringList & orig )
```

The copy constructor creates a deep-copy of the original list.

Parameters

orig	Object to be copied.

7.37.3 Member Function Documentation

7.37.3.1 append()

```
void OSRTXMLStringList::append (
            OSRTXMLString * 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.

7.37.3.2 appendCopy()

```
void OSRTXMLStringList::appendCopy (
            OSRTXMLString * 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.

7.37.3.3 clone()

```
virtual OSRTBaseType* OSRTXMLStringList::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.

7.37.3.4 operator=()

```
OSRTXMLStringList& OSRTXMLStringList::operator= (
            const OSRTXMLStringList & 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.

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.

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.
- class OSRTElemNameGuard

  Element name guard 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.

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.

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.

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.

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.

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.

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.

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.

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.

8.12 OSRTMemBuf.h File Reference

```
#include "rtxsrc/rtxMemBuf.h"
```

Classes

- class OSRTMemBuf

  Memory Buffer class.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

8.25 OSRTStringConst.h File Reference

C++ string constant class.

```
#include <stddef.h>
#include "rtxsrc/osSysTypes.h"
#include "rtxsrc/rtxExternDefs.h"
```

8.25.1 Detailed Description

C++ string constant class.

8.26 OSRTStringIF.h File Reference

C++ string class interface.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/rtxPrint.h"
```

Classes

- class OSRTStringIF

  C++ string class interface.

8.26.1 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.

8.27 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.

8.27.1 Detailed Description

C++ UTF-8 string class definition.

8.28 OSRTVoidPtrList.h File Reference

Void pointer list class definition.

```
#include "osSysTypes.h"
#include "rtxsrc/rtxExternDefs.h"
```

8.28.1 Detailed Description

Void pointer list class definition.

This is used to hold a list of generic pointers.

8.29 rtxCppAnyAttr.h File Reference

C++ any element class definition.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/OSRTBaseType.h"
```

Classes

- class OSAnyAttrClass
  Any attribute.

8.29.1 Detailed Description

C++ any element class definition.

8.30 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.

8.30.1 Detailed Description

C++ any element class definition.

8.31 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.
- EXTERNRT int rtxCppCheckBitBounds64 (OSOCTET *&pBits, OSSIZE &numocts, size_t minRequiredBits, size_t preferredLimitBits)

  This function is identical to rtxCppCheckBitBounds except that it supports a 64-bit integer length on 64-bit systems.

8.31.1 Detailed Description

Contains utility function for sizing a bit string.

8.31.2 Function Documentation

8.31.2.1 rtxCppCheckBitBounds()

```
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.

8.31.2.2 rtxCppCheckBitBounds64()

```
EXTERNRT int rtxCppCheckBitBounds64 (
             OSOCTET *& pBits,
             OSSIZE & numocts,
             size_t minRequiredBits,
             size_t preferredLimitBits )
```

This function is identical to rtxCppCheckBitBounds except that it supports a 64-bit integer length on 64-bit systems.

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.

8.32 rtxCppBufferedInputStream.h File Reference

```
#include "rtxsrc/OSRTInputStream.h"
```

Classes

- class OSBufferedInputStream

  The buffered input stream class.

8.33 rtxCppDateTime.h File Reference

C++ XML schema date/time definition.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/OSRTBaseType.h"
```

8.33.1 Detailed Description

C++ XML schema date/time definition.

8.34 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.

8.35 rtxCppDynOctStr.h File Reference

C++ dynamic binary string class definition.

```
#include "rtxsrc/rtxCommon.h"
#include "rtxsrc/OSRTBaseType.h"
```

Classes

- class OSDynOctStrClass

  Dynamic binary string.

8.35.1 Detailed Description

C++ dynamic binary string class definition.

8.36 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"
```

8.36.1 Detailed Description

C++ common type and class definitions.

8.37 rtxCppXmlSTLString.h File Reference

C++ XML STL string class definition.

8.37.1 Detailed Description

C++ XML STL string class definition.

8.38 rtxCppXmlSTLStringList.h File Reference

C++ XML STL string list class definition.

```
#include "rtxsrc/rtxCppDList.h"
```

8.38.1 Detailed Description

C++ XML STL string list class definition.

8.39 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 OSRTXMLString

  XML string.

8.39.1 Detailed Description

C++ XML string class definition.

8.40 rtxCppXmlStringList.h File Reference

C++ XML string list class definition.

```
#include "rtxsrc/rtxCppDList.h"
#include "rtxsrc/rtxCppXmlString.h"
```

Classes

- class OSRTXMLStringList

  XML list string.

8.40.1 Detailed Description

C++ XML string list class definition.

Index