NamedItemRoutines 5.0

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Module Documentation

5.1 Models

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5.2 Utils

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5.3 NamedItem

Files

· file named item.hh

Define the NamedItem utility class.

· file named_item_messages.hh

Define the class NamedItemMessages, the class that specifies the message IDs used in the named item model.

· file named item.cc

Construct the name of a NamedItem object by conjoining the passed parameters with a dot.

file named_item_demangle.cc

Demangle a C++ name, isolated from other NamedItem methods because this has the potential to get big and ugly if JEOD is ported to a number of different systems.

file named_item_messages.cc

Implement the class NamedItemMessages.

Namespaces

· jeod

Namespace jeod.

Macros

- #define MAX_NAME_ITEMS 8
- #define __has_include(x) 0
- #define PATH "utils/named_item/"

5.3.1 Detailed Description

5.3.2 Macro Definition Documentation

```
5.3.2.1 #define __has_include( x ) 0
```

Definition at line 35 of file named_item_demangle.cc.

5.3.2.2 #define MAX_NAME_ITEMS 8

Definition at line 55 of file named_item.cc.

Referenced by jeod::NamedItem::va_construct_name().

5.3.2.3 #define PATH "utils/named_item/"

Definition at line 43 of file named_item_messages.cc.

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Namespace Documentation

6.1 jeod Namespace Reference

Namespace jeod.

Data Structures

· class NamedItem

Provides a set of static methods for constructing dot-conjoined names.

• class NamedItemMessages

Specifies the message IDs used in the named_item model.

6.1.1 Detailed Description

Namespace jeod.

Names	pace	Docur	mentatior

Data Structure Documentation

7.1 jeod::NamedItem Class Reference

Provides a set of static methods for constructing dot-conjoined names.

```
#include <named_item.hh>
```

Public Types

using size_type = std::string::size_type
 The size type used in std::string.

Public Member Functions

• NamedItem (NamedItem &&)=default

Move constructor.

virtual ∼NamedItem ()=default

Destructor.

• NamedItem & operator= (const NamedItem &src)

Copy assignment.

NamedItem & operator= (NamedItem &&src)

Move assignment.

NamedItem & operator= (const std::string &name_in)

Assignment from a string.

• const std::string & get_name () const

Getter for name.

• const char * c_str () const

Getter for name, as a C-style string.

size_type size () const

Getter for the length of the name.

• bool get_is_frozen () const

Getter for is_frozen.

• bool ends_with (size_type pos1, const char *other) const

Compare the end of this string to a C-style string.

• const char * suffix (const char *test_name) const

Given a dot-conjoined test name, find the part of the test name that follows this name, as a prefix.

```
template<typename Arg > void set_name (Arg &&arg)
```

Set the name from the given input, as a string.

 template<typename First , typename... Rest> void set_name (First &&first, Rest &&...rest)

Set the name as a dot-conjoined string of the given inputs.

void verify_unfrozen_name () const

Verify that the name is not frozen.

• void validate_name (const char *file, unsigned int line, const char *variable_type, const char *variable_name)

Checks whether a name is trivially invalid, failing if it is.

• void freeze name ()

Freeze the name – i.e., denote that the name as no longer settable.

Static Public Member Functions

static char * construct_name (const char *name_item1)

Create a copy of the provided name.

static char * construct name (const char *name item1, const char *name item2)

Construct a name as a dot-conjoined string.

• static char * construct_name (const char *name_item1, const char *name_item2, const char *name_item3)

Construct a name as a dot-conjoined string.

static char * construct_name (const char *name_item1, const char *name_item2, const char *name_item3, const char *name item4)

Construct a name as a dot-conjoined string.

• static char * construct_name (const char *name_item1, const char *name_item2, const char *name_item3, const char *name_item4, const char *name_item5)

Construct a name as a dot-conjoined string.

• static char * construct_name (const char *name_item1, const char *name_item2, const char *name_item3, const char *name_item4, const char *name_item5, const char *name_item6)

Construct a name as a dot-conjoined string.

• static char * construct_name (const char *name_item1, const char *name_item2, const char *name_item3, const char *name_item4, const char *name_item5, const char *name_item6, const char *name_item7)

Construct a name as a dot-conjoined string.

static char * vconstruct_name (const char *name_item,...)

Construct a name as a dot-conjoined string.

• static char * va_construct_name (const char *name_item, va_list args)

Construct a name as a dot-conjoined string.

• static const char * suffix (const char *prefix, const char *name)

Given a prefix and a dot-conjoined name, find the part of the name that follows the prefix.

• static const std::string demangle (const std::type info &info)

Demangle a C++ name.

static void validate_name (const char *file, unsigned int line, const char *variable_value, const char *variable_type, const char *variable_name)

Checks whether a name is trivially invalid, failing if it is.

 $\bullet \ \ \mathsf{template} \mathord{<} \mathsf{typename} \ \mathsf{Arg} >$

static std::string construct_name_string (Arg &&arg)

Construct a name from the given input, as a string.

• template<typename First , typename... Rest>

static std::string construct name string (First &&first, Rest &&...rest)

Construct a name as a dot-conjoined string of the given inputs.

Data Fields

- __pad0__: name {std::move(name_in)}
 Default constructor.
- · is frozen

Protected Member Functions

• void unfreeze name ()

Unfreeze the name – i.e., denote that the name is now settable.

Private Attributes

• std::string name

The item's name.

· bool is_frozen

Indicates whether the name is frozen.

Friends

- · class InputProcessor
- void init attrjeod NamedItem ()

7.1.1 Detailed Description

Provides a set of static methods for constructing dot-conjoined names.

The methods defined in this class allocate memory and do not release it. Releasing that memory is the responsibility of the calling function. Use the macro JEOD_DELETE_ARRAY to release this memory.

Prior to JEOD 4.0, the NamedItem class was not instantiable. It is in JEOD 4.0. The NamedItem class forms the basis of a thing with a name, with the name being a std::string. The construct_name functions and & related functions that allocate a C-style string are deprecated.

Definition at line 66 of file named_item.hh.

7.1.2 Member Typedef Documentation

7.1.2.1 using jeod::NamedItem::size_type = std::string::size_type

The size type used in std::string.

Definition at line 75 of file named_item.hh.

7.1.3 Constructor & Destructor Documentation

7.1.3.1 jeod::NamedItem::NamedItem (NamedItem &&) [default]

Move constructor.

The default implementation works fine.

Referenced by construct_name_string().

7.1.3.2 virtual jeod::NamedItem::~NamedItem() [virtual], [default]

Destructor.

The default implementation virtually works fine.

7.1.4 Member Function Documentation

7.1.4.1 const char* jeod::NamedItem::c_str() const [inline]

Getter for name, as a C-style string.

Definition at line 408 of file named_item.hh.

References name.

7.1.4.2 static char* jeod::NamedItem::construct_name(const char * name_item1) [inline], [static]

Create a copy of the provided name.

Returns

The constructed name

Parameters

in	name item1	First part of the name
		- not part or the manne

Definition at line 83 of file named_item.hh.

References vconstruct_name().

7.1.4.3 static char* jeod::NamedItem::construct_name (const char * $name_item1$, const char * $name_item2$) [inline], [static]

Construct a name as a dot-conjoined string.

Returns

The constructed name

Parameters

in	name_item1	First part of the name
in	name_item2	Second part of the name

Definition at line 95 of file named_item.hh.

References vconstruct name().

7.1.4.4 static char* jeod::NamedItem::construct_name (const char * name_item1, const char * name_item2, const char * name_item3) [inline], [static]

Construct a name as a dot-conjoined string.

Returns

The constructed name

Parameters

in	name_item1	First part of the name
in	name_item2	Second part of the name
in	name_item3	Third part of the name

Definition at line 111 of file named_item.hh.

References vconstruct name().

7.1.4.5 static char* jeod::NamedItem::construct_name (const char * name_item1, const char * name_item2, const char * name_item3, const char * name_item4) [inline], [static]

Construct a name as a dot-conjoined string.

Returns

The constructed name

Parameters

in	name_item1	First part of the name
in	name_item2	Second part of the name
in	name_item3	Third part of the name
in	name_item4	Fourth part of the name

Definition at line 130 of file named_item.hh.

References vconstruct_name().

7.1.4.6 static char* jeod::NamedItem::construct_name (const char * name_item1, const char * name_item2, const char * name_item3, const char * name_item5) [inline], [static]

Construct a name as a dot-conjoined string.

Returns

The constructed name

Parameters

in	name_item1	First part of the name
in	name_item2	Second part of the name
in	name_item3	Third part of the name
in	name_item4	Fourth part of the name
in	name_item5	Fifth part of the name

Definition at line 152 of file named_item.hh.

References vconstruct_name().

7.1.4.7 static char* jeod::NamedItem::construct_name (const char * name_item1, const char * name_item2, const char * name_item3, const char * name_item5, const char * name_item6) [inline], [static]

Construct a name as a dot-conjoined string.

Returns

The constructed name

Parameters

in	name_item1	First part of the name
in	name_item2	Second part of the name
in	name_item3	Third part of the name
in	name_item4	Fourth part of the name
in	name_item5	Fifth part of the name
in	name_item6	Sixth part of the name

Definition at line 177 of file named_item.hh.

References vconstruct_name().

7.1.4.8 static char* jeod::NamedItem::construct_name (const char * name_item1, const char * name_item2, const char * name_item3, const char * name_item4, const char * name_item5, const char * name_item6, const char * name_item7
) [inline], [static]

Construct a name as a dot-conjoined string.

Returns

The constructed name

Parameters

in	name_item1	First part of the name
in	name_item2	Second part of the name
in	name_item3	Third part of the name
in	name_item4	Fourth part of the name
in	name_item5	Fifth part of the name
in	name_item6	Sixth part of the name
in	name_item7	Seventh part of the name

Definition at line 205 of file named_item.hh.

References vconstruct_name().

7.1.4.9 template<typename Arg > static std::string jeod::NamedItem::construct_name_string (Arg && arg) [inline], [static]

Construct a name from the given input, as a string.

The input must not be the empty string or the null pointer.

Template Parameters

Arg	Type of the argument to construct_name_string.
-----	--

Parameters

arg	Argument to construct_name_string.
-----	------------------------------------

Returns

std::string that is conceptually equal to (==) arg.

Definition at line 299 of file named_item.hh.

References validate_name().

Referenced by set_name().

7.1.4.10 template<typename First, typename... Rest> static std::string jeod::NamedItem::construct_name_string (First && first, Rest &&... rest) [inline], [static]

Construct a name as a dot-conjoined string of the given inputs.

Each input must not be the empty string or the null pointer.

Template Parameters

First	Type of the first argument to construct_name_string.
Rest	Types of the remaining arguments to construct_name_string.

Parameters

first	First argument to construct_name_string.
rest	Remaining arguments to construct_name_string.

Returns

The given inputs as a dot-conjoined string.

Definition at line 316 of file named_item.hh.

References NamedItem(), and validate name().

7.1.4.11 const std::string jeod::NamedItem::demangle (const std::type_info & info) [static]

Demangle a C++ name.

Returns

Demangled name

Parameters

in	info	Typeinfo to be demangled

Definition at line 62 of file named_item_demangle.cc.

7.1.4.12 bool jeod::NamedItem::ends_with (size_type pos1, const char * other) const [inline]

Compare the end of this string to a C-style string.

See std::string::compare.

Parameters

pos1	The start index in the name.
other	The C-style null-terminated string.

Returns

True if the end part of the name equals the given C-style string.

Definition at line 436 of file named_item.hh.

References name.

7.1.4.13 void jeod::NamedItem::freeze_name() [inline]

Freeze the name - i.e., denote that the name as no longer settable.

Definition at line 507 of file named_item.hh.

References is frozen.

7.1.4.14 bool jeod::NamedItem::get_is_frozen() const [inline]

Getter for is_frozen.

Definition at line 424 of file named_item.hh.

References is_frozen.

7.1.4.15 const std::string& jeod::NamedItem::get_name() const [inline]

Getter for name.

Definition at line 400 of file named item.hh.

References name.

7.1.4.16 NamedItem& jeod::NamedItem::operator=(const NamedItem & src) [inline]

Copy assignment.

Only the name is copied, and only if the name isn't frozen.

Definition at line 368 of file named item.hh.

References name, and verify_unfrozen_name().

7.1.4.17 NamedItem&jeod::NamedItem::operator=(NamedItem && src) [inline]

Move assignment.

The default implementation works fine.

Definition at line 378 of file named_item.hh.

References name, and verify_unfrozen_name().

7.1.4.18 NamedItem& jeod::NamedItem::operator=(const std::string & name_in) [inline]

Assignment from a string.

Definition at line 389 of file named item.hh.

References name, and verify_unfrozen_name().

7.1.4.19 template<typename Arg > void jeod::NamedItem::set_name (Arg && arg) [inline]

Set the name from the given input, as a string.

The input must not be the empty string or the null pointer.

Template Parameters

Arg | Type of the argument to construct_name_string.

Parameters

arg	Argument to construct_name_string.
-----	------------------------------------

Definition at line 461 of file named_item.hh.

References construct_name_string(), name, and verify_unfrozen_name().

Set the name as a dot-conjoined string of the given inputs.

Each input must not be the empty string or the null pointer.

Template Parameters

First Type of the first argument to construct_name_string.	
Rest Types of the remaining arguments to construct_name_string.	

Parameters

first	First argument to construct_name_string.
rest	Remaining arguments to construct_name_string.

Definition at line 476 of file named item.hh.

References construct_name_string(), name, and verify_unfrozen_name().

7.1.4.21 size_type jeod::NamedItem::size() const [inline]

Getter for the length of the name.

Definition at line 416 of file named_item.hh.

References name.

7.1.4.22 const char * jeod::NamedItem::suffix (const char * prefix, const char * name) [static]

Given a prefix and a dot-conjoined name, find the part of the name that follows the prefix.

For names of the form "prefix.suffix", this function returns a pointer to "suffix". The function returns the input name if the name does not start with "prefix.".

Returns

Suffix

Parameters

in	prefix	Prefix
in	name	Name, possibly prefixed

Definition at line 159 of file named_item.cc.

References name.

Referenced by suffix().

7.1.4.23 const char* jeod::NamedItem::suffix (const char * test_name) const [inline]

Given a dot-conjoined test name, find the part of the test name that follows this name, as a prefix.

For names of the form "prefix.suffix", this function returns a pointer to "suffix". The function returns the input name if the name does not start with "prefix.".

Returns

Suffix

Parameters

	·	
in	test_name	Test name, possibly prefixed

Definition at line 449 of file named_item.hh.

References name, and suffix().

7.1.4.24 void jeod::NamedItem::unfreeze_name() [inline], [protected]

Unfreeze the name – i.e., denote that the name is now settable.

This exists solely to parallel freeze name().

Definition at line 519 of file named_item.hh.

References is frozen.

7.1.4.25 char * jeod::NamedItem::va_construct_name (const char * name_item, va_list args) [static]

Construct a name as a dot-conjoined string.

Notes -

- This function takes a va_list argument that contains any additional strings to be appended.
- The calling function must form the args argument by invoking va_start().
- The calling function should not invoke va_end(); this is done inside va_construct_name().
- The last argument embodied in the args argument must be a NULL to signal the end of the argument list.

Returns

The constructed name

Parameters

in	name_item	First part of the name
in	args	Rest of the name

Definition at line 82 of file named_item.cc.

References jeod::NamedItemMessages::bad args, MAX NAME ITEMS, and name.

Referenced by vconstruct_name().

7.1.4.26 void jeod::NamedItem::validate_name (const char * *file*, unsigned int *line*, const char * *variable_value*, const char * *variable_type*, const char * *variable_name*) [static]

Checks whether a name is trivially invalid, failing if it is.

Parameters

in	file	Usually FILE
in	line	Usually LINE
in	variable_value	Value to check
in	variable_type	Variable description
in	variable_name	Variable name

Definition at line 184 of file named_item.cc.

References jeod::NamedItemMessages::invalid_name.

Referenced by construct_name_string(), and validate_name().

7.1.4.27 void jeod::NamedItem::validate_name (const char * *file*, unsigned int *line*, const char * *variable_name*) [inline]

Checks whether a name is trivially invalid, failing if it is.

Parameters

	in	file	Usually FILE
	in	line	Usually LINE
Ī	in	variable_type	Variable description
ſ	in	variable_name	Variable name

Definition at line 495 of file named_item.hh.

References name, and validate_name().

7.1.4.28 char * jeod::NamedItem::vconstruct_name(const char * name_item, ...) [static]

Construct a name as a dot-conjoined string.

Note that this is a varargs function. The last argument must be NULL to signal the end of the argument list.

Returns

The constructed name

Parameters

in	name_item	First part of the name
in		Rest of the name

Definition at line 62 of file named_item.cc.

References name, and va_construct_name().

Referenced by construct_name().

7.1.4.29 void jeod::NamedItem::verify_unfrozen_name () const

Verify that the name is not frozen.

Definition at line 211 of file named_item.cc.

References jeod::NamedItemMessages::frozen_name, is_frozen, and name.

Referenced by operator=(), and set_name().

7.1.5 Friends And Related Function Documentation

```
7.1.5.1 void init_attrjeod__NamedItem() [friend]
```

7.1.5.2 friend class InputProcessor [friend]

Definition at line 68 of file named item.hh.

7.1.6 Field Documentation

```
7.1.6.1 jeod::NamedItem::_pad0_
```

Default constructor.

This is the default constructor by virtue of the defaults.

Parameters

name_in	Initial value of the name, defaults to the empty string.
frozen_in	Initial value of is_frozen, defaults to false.

Definition at line 339 of file named_item.hh.

7.1.6.2 jeod::NamedItem::is_frozen

Initial value:

```
{frozen_in}
{    }

NamedItem (const NamedItem&) = default
```

Definition at line 340 of file named_item.hh.

Referenced by freeze_name(), get_is_frozen(), unfreeze_name(), and verify_unfrozen_name().

```
7.1.6.3 bool jeod::NamedItem::is_frozen [private]
```

Indicates whether the name is frozen.

```
trick_units(-)
```

Definition at line 535 of file named item.hh.

```
7.1.6.4 std::string jeod::NamedItem::name [private]
```

The item's name.

```
trick units(-)
```

Definition at line 530 of file named_item.hh.

Referenced by c_str(), ends_with(), get_name(), operator=(), set_name(), size(), suffix(), va_construct_name(), validate_name(), vconstruct_name(), and verify_unfrozen_name().

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

- · named_item.hh
- named item.cc
- · named_item_demangle.cc

7.2 jeod::NamedItemMessages Class Reference

Specifies the message IDs used in the named_item model.

```
#include <named_item_messages.hh>
```

Static Public Attributes

- static char const * bad_args = "utils/named_item/" "bad_args"
 Error issued when the arguments to named item are invalid.
- static char const * invalid_name = "utils/named_item/" "invalid_name"

 Error issued when a name is the null pointer or an empty string.
- static char const * frozen_name = "utils/named_item/" "frozen_name"

 Error issued when set name is called with the name marked as frozen.

Private Member Functions

- NamedItemMessages (void)
- NamedItemMessages (const NamedItemMessages &)
- NamedItemMessages & operator= (const NamedItemMessages &)

Friends

- · class InputProcessor
- void init_attrjeod__NamedItemMessages ()

7.2.1 Detailed Description

Specifies the message IDs used in the named_item model.

Definition at line 49 of file named_item_messages.hh.

7.2.2 Constructor & Destructor Documentation

- **7.2.2.1** jeod::NamedItemMessages::NamedItemMessages (void) [private]
- 7.2.2.2 jeod::NamedItemMessages::NamedItemMessages &) [private]
- 7.2.3 Member Function Documentation
- 7.2.3.1 NamedItemMessages& jeod::NamedItemMessages::operator=(const NamedItemMessages &)

 [private]

7.2.4 Friends And Related Function Documentation

- **7.2.4.1** void init_attrjeod__NamedItemMessages() [friend]
- **7.2.4.2** friend class InputProcessor [friend]

Definition at line 52 of file named_item_messages.hh.

7.2.5 Field Documentation

7.2.5.1 char const * jeod::NamedItemMessages::bad_args = "utils/named_item/" "bad_args" [static]

Error issued when the arguments to named item are invalid.

trick_units(-)

Definition at line 62 of file named_item_messages.hh.

Referenced by jeod::NamedItem::va_construct_name().

7.2.5.2 char const * jeod::NamedItemMessages::frozen_name = "utils/named_item/" "frozen_name" [static]

Error issued when set_name is called with the name marked as frozen.

trick_units(-)

Definition at line 72 of file named_item_messages.hh.

Referenced by jeod::NamedItem::verify_unfrozen_name().

7.2.5.3 char const * jeod::NamedItemMessages::invalid_name = "utils/named_item/" "invalid_name" [static]

Error issued when a name is the null pointer or an empty string.

trick_units(-)

Definition at line 67 of file named_item_messages.hh.

Referenced by jeod::NamedItem::validate_name().

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

- · named item messages.hh
- named_item_messages.cc

File Documentation

8.1 named_item.cc File Reference

Construct the name of a NamedItem object by conjoining the passed parameters with a dot.

```
#include <cstdarg>
#include <cstddef>
#include <cstring>
#include "utils/memory/include/jeod_alloc.hh"
#include "utils/message/include/message_handler.hh"
#include "../include/named_item.hh"
#include "../include/named_item_messages.hh"
```

Namespaces

• jeod

Namespace jeod.

Macros

• #define MAX_NAME_ITEMS 8

8.1.1 Detailed Description

Construct the name of a NamedItem object by conjoining the passed parameters with a dot.

Definition in file named_item.cc.

8.2 named_item.hh File Reference

Define the NamedItem utility class.

```
#include "utils/sim_interface/include/jeod_class.hh"
#include <cstdarg>
#include <string>
#include <typeinfo>
#include <utility>
#include <vector>
```

30 File Documentation

Data Structures

· class jeod::NamedItem

Provides a set of static methods for constructing dot-conjoined names.

Namespaces

jeod

Namespace jeod.

8.2.1 Detailed Description

Define the NamedItem utility class.

Definition in file named item.hh.

8.3 named_item_demangle.cc File Reference

Demangle a C++ name, isolated from other NamedItem methods because this has the potential to get big and ugly if JEOD is ported to a number of different systems.

```
#include <cstdlib>
#include <string>
#include <typeinfo>
#include "../include/named_item.hh"
#include "../include/named_item_messages.hh"
```

Namespaces

• jeod

Namespace jeod.

Macros

• #define __has_include(x) 0

8.3.1 Detailed Description

Demangle a C++ name, isolated from other NamedItem methods because this has the potential to get big and ugly if JEOD is ported to a number of different systems.

Definition in file named_item_demangle.cc.

8.4 named_item_messages.cc File Reference

Implement the class NamedItemMessages.

```
#include "../include/named_item_messages.hh"
```

Namespaces

jeod

Namespace jeod.

Macros

• #define PATH "utils/named item/"

8.4.1 Detailed Description

Implement the class NamedItemMessages.

Definition in file named_item_messages.cc.

8.5 named_item_messages.hh File Reference

Define the class NamedItemMessages, the class that specifies the message IDs used in the named item model.

```
#include "utils/sim_interface/include/jeod_class.hh"
```

Data Structures

• class jeod::NamedItemMessages

Specifies the message IDs used in the named_item model.

Namespaces

• jeod

Namespace jeod.

8.5.1 Detailed Description

Define the class NamedItemMessages, the class that specifies the message IDs used in the named item model. Definition in file named_item_messages.hh.

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