OmniPointer

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Chapter 1

Class Index

1.1 Class List

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2.1 File List

Here is a list of all files with brief descriptions:

Chapter 3

Class Documentation

3.1 OmniPointer Class Reference

A pointer that can point to basically any type of object. Each `OmniPointer` shall uniquely own an object, if any.

`#include <OmniPointer.hpp>`

Public Member Functions

- constexpr OmniPointer () noexcept

  Construct an empty OmniPointer.
- constexpr OmniPointer (std::nullptr_t) noexcept

  Has the same effect as the default constructor.
- OmniPointer (const OmniPointer &)=delete

  Deleted. A copy mechanism of `OmniPointer` shall not be allowed.
- OmniPointer (OmniPointer &&) noexcept

  Constructs an `OmniPointer` and moves in every information contained by the specified `OmniPointer`.
- template<class T >
  OmniPointer (T *pvar)

  Constructs an OmniPointer from the given pointer.
- template<class T >
  T * Get () const

  Gets the address of the object the `OmniPointer` is pointing to.
- template<class T >
  T * Release ()

  Releases the ownership of object, if any.
- template<class T >
  void Reset (T *tptr=(T *) nullptr)

  Resets the `OmniPointer` and changes the ownership of object if `tptr` is not null.
- void Reset (std::nullptr_t) noexcept

  Resets the `OmniPointer`.
- void Swap (OmniPointer &other) noexcept

  Swaps the ownerships between the `OmniPointer` and the other.
- OmniPointer & operator= (OmniPointer &&var) noexcept

  Resets the `OmniPointer` and moves in every information contained by the other `OmniPointer`.
- OmniPointer & operator= (const OmniPointer &)=delete

Deleted. A copy mechanism of `OmniPointer` shall not be allowed.

- OmniPointer & operator= (std::nullptr_t) noexcept

  Has the same effect as `OmniPointer::Reset(std::nullptr_t)`.

- bool operator== (const OmniPointer &other) const noexcept

  Determines if two `OmniPointer`s are pointing at the same address.

- bool operator!= (const OmniPointer &other) const noexcept

  Determines if two `OmniPointer`s are pointing at different addresses.

- template<class T >
  operator T* () const

  The same as `OmniPointer::Get<T>()`.

- ~OmniPointer () noexcept

  Destroys the `OmniPointer` and the stored object therein, if any.

3.1.1 Detailed Description

A pointer that can point to basically any type of object. Each `OmniPointer` shall uniquely own an object, if any.

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Date

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Warning

Cannot be used for pointers of dynamically-allocated array.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 OmniPointer() [1/5]

```
constexpr OmniPointer::OmniPointer ( )  [inline], [constexpr], [noexcept]
```

Construct an empty OmniPointer.

3.1.2.2 OmniPointer() [2/5]

```
constexpr OmniPointer::OmniPointer (
            std::nullptr_t  )  [inline], [constexpr], [noexcept]
```

Has the same effect as the default constructor.

3.1.2.3 OmniPointer() [3/5]

```
OmniPointer::OmniPointer (
            const OmniPointer &  )  [delete]
```

Deleted. A copy mechanism of `OmniPointer` shall not be allowed.

3.1.2.4 OmniPointer() [4/5]

```
OmniPointer::OmniPointer (
            OmniPointer && var )  [noexcept]
```

Constructs an `OmniPointer` and moves in every information contained by the specified `OmniPointer`.

Parameters

var	The other OmniPointer.

3.1.2.5 OmniPointer() [5/5]

```
template<class T >
OmniPointer::OmniPointer (
            T * pvar )  [inline]
```

Constructs an OmniPointer from the given pointer.

Template Parameters

T	The type of the object the given pointer is pointing at.

Parameters

pvar	The given pointer.

Warning

Assigning a local raw pointer is not recommended for it may cause dangling pointers in case two OmniPointers are constructed from the same raw pointer or it is itself a dangling or wild pointer. Assigning a pointer of a dynamic array is also not recommended for the deletion mechanism will most likely be invalid.

3.1.2.6 ~OmniPointer()

```
OmniPointer::~OmniPointer ( )  [noexcept]
```

Destroys the OmniPointer and the stored object therein, if any.

3.1.3 Member Function Documentation

3.1.3.1 Get()

```
template<class T >
T * OmniPointer::Get ( ) const  [inline]
```

Gets the address of the object the OmniPointer is pointing to.

Template Parameters

T	The desired type

Returns

A `T` pointer containing the address the `OmniPointer` is pointing at.

Exceptions

std::logic_error	when `T` does not match the information (given by the hash code) stored in the `OmniPointer`.

3.1.3.2 operator T*()

```
template<class T >
OmniPointer::operator T* ( ) const  [inline]
```

The same as `OmniPointer::Get<T>()`.

Template Parameters

T	The desired type

Exceptions

std::logic_error	when `T` does not match the information (given by the hash code) stored in the `OmniPointer`.

3.1.3.3 operator"!=()

```
bool OmniPointer::operator!= (
            const OmniPointer & other ) const  [noexcept]
```

Determines if two `OmniPointer`s are pointing at different addresses.

3.1.3.4 operator=() [1/3]

```
OmniPointer & OmniPointer::operator= (
            const OmniPointer &  )  [delete]
```

Deleted. A copy mechanism of `OmniPointer` shall not be allowed.

3.1.3.5 operator=() [2/3]

```
OmniPointer & OmniPointer::operator= (
            OmniPointer && var )  [noexcept]
```

Resets the `OmniPointer` and moves in every information contained by the other `OmniPointer`.

Parameters

var	The other `OmniPointer`.

3.1.3.6 operator=() [3/3]

```
OmniPointer & OmniPointer::operator= (
            std::nullptr_t  )  [noexcept]
```

Has the same effect as `OmniPointer::Reset(std::nullptr_t)`.

3.1.3.7 operator==()

```
bool OmniPointer::operator== (
            const OmniPointer & other ) const  [noexcept]
```

Determines if two `OmniPointer`s are pointing at the same address.

3.1.3.8 Release()

```
template<class T >
T * OmniPointer::Release ( )  [inline]
```

Releases the ownership of object, if any.

Template Parameters

T	The desired type

Returns

A `T` pointer containing the address the `OmniPointer` was previously pointing at.

Exceptions

std::logic_error	when `T` does not match the information (given by the hash code) stored in the `OmniPointer`.

Note

A null pointer may be returned if the `OmniPointer` previously had no stored object.

3.1.3.9 Reset() [1/2]

```
void OmniPointer::Reset (
            std::nullptr_t  )  [noexcept]
```

Resets the `OmniPointer`.

3.1.3.10 Reset() [2/2]

```
template<class T >
void OmniPointer::Reset (
            T * tptr = (T*) nullptr )  [inline]
```

Resets the OmniPointer and changes the ownership of object if tptr is not null.

Template Parameters

T	The desired type

Parameters

tptr	The pointer to the object to be acquired ownership of

3.1.3.11 Swap()

```
void OmniPointer::Swap (
            OmniPointer & other )  [noexcept]
```

Swaps the ownerships between the `OmniPointer` and the other.

Parameters

other	The other `OmniPointer` to swap ownerships with

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

- OmniPointer.hpp
- OmniPointer.cpp

Chapter 4

File Documentation

4.1 OmniPointer.cpp File Reference

```
#include "OmniPointer.hpp"
```

4.2 OmniPointer.hpp File Reference

```
#include <cstddef>
#include <stdexcept>
#include <type_traits>
#include <typeinfo>
```

Classes

- class OmniPointer

  A pointer that can point to basically any type of object. Each `OmniPointer` shall uniquely own an object, if any.

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