# Guião 1 CG

# Chapter 1

# README

This document provides an overview of the project and instructions for running the 3D figure generator and viewer.

### 1.0.1 Table of Contents

1. Project Overview

2. Running Instructions

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### 1.0.2 Project Overview

This part 1 of the project consists of two main components:

1. **Generator**: A command-line tool to generate 3D primitive shapes (plane, box, cone, sphere) and save them in `.3d` files.

2. **Engine**: A 3D rendering engine that reads `.3d` files and renders them using OpenGL.

### 1.0.3 Running Instructions

To run the program, follow these simple steps:

1. Make the script executable:
   ```
   chmod +x run.sh
   ```

2. Run the script:
   ```
   ./run.sh
   ```

### 1.0.4 Program Features

The generator program creates 3D primitive shapes and saves them in .3d files. Program Features The interactive menu provides the following options:

1. **Clean and Build**

   - Cleans the build directory

   - Rebuilds both generator and engine

1. **Generate Figure**

- Plane (parameters: unit size, slices)

- Box (parameters: unit size, slices)

- Sphere (parameters: radius, slices, stacks)

- Cone (parameters: radius, height, slices, stacks)

All generated figures are automatically saved in tests

1. **View Figure**

- Lists all available generated figures

- Renders selected figure using OpenGL

- Config files are stored in configs

1. **Exit**

- Exits the program

Notes:

- Generated .3d files are saved in the tests directory

- XML configuration files are stored in configs folder

- Creating a new figure will override any existing file with the same name

### 1.0.4.1 TODO

- ☑ Fix some bugs

- ☐ Clean up the code

- ☑ Fix the box shape

- ☐ Document the rest of the code

### 1.0.4.2 Demo

# Chapter 2

# Namespace Index

## 2.1 Namespace List

Here is a list of all namespaces with brief descriptions:

# 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 files with brief descriptions:

# Chapter 6

# Namespace Documentation

## 6.1 tinyxml2 Namespace Reference

**Classes**

- class DynArray
- struct Entity
- class MemPool
- class MemPoolT
- class StrPair
- class XMLAttribute
- class XMLComment
- class XMLConstHandle
- class XMLDeclaration
- class XMLDocument
- class XMLElement
- class XMLHandle
- class XMLNode
- class XMLPrinter
- class XMLText
- class XMLUnknown
- class XMLUtil
- class XMLVisitor

**Enumerations**

- enum XMLError {
  XML_SUCCESS = 0 , XML_NO_ATTRIBUTE , XML_WRONG_ATTRIBUTE_TYPE , XML_ERROR_FILE_NOT_FOUND
  ,
  XML_ERROR_FILE_COULD_NOT_BE_OPENED , XML_ERROR_FILE_READ_ERROR , XML_ERROR_PARSING_ELEMENT
  , XML_ERROR_PARSING_ATTRIBUTE ,
  XML_ERROR_PARSING_TEXT , XML_ERROR_PARSING_CDATA , XML_ERROR_PARSING_COMMENT
  , XML_ERROR_PARSING_DECLARATION ,
  XML_ERROR_PARSING_UNKNOWN , XML_ERROR_EMPTY_DOCUMENT , XML_ERROR_MISMATCHED_ELEMENT
  , XML_ERROR_PARSING ,
  XML_CAN_NOT_CONVERT_TEXT , XML_NO_TEXT_NODE , XML_ELEMENT_DEPTH_EXCEEDED ,
  XML_ERROR_COUNT }
- enum Whitespace { PRESERVE_WHITESPACE , COLLAPSE_WHITESPACE , PEDANTIC_WHITESPACE }

### 6.1.1 Enumeration Type Documentation

#### 6.1.1.1 Whitespace

```
enum tinyxml2::Whitespace
```

**Enumerator**

| | |
|---|---|
| PRESERVE_WHITESPACE | |
| COLLAPSE_WHITESPACE | |
| PEDANTIC_WHITESPACE | |

Definition at line 1707 of file tinyxml2.h.

### 6.1.1.2  XMLError

enum tinyxml2::XMLError

**Enumerator**

| | |
|---|---|
| XML_SUCCESS | |
| XML_NO_ATTRIBUTE | |
| XML_WRONG_ATTRIBUTE_TYPE | |
| XML_ERROR_FILE_NOT_FOUND | |
| XML_ERROR_FILE_COULD_NOT_BE_OPENED | |
| XML_ERROR_FILE_READ_ERROR | |
| XML_ERROR_PARSING_ELEMENT | |
| XML_ERROR_PARSING_ATTRIBUTE | |
| XML_ERROR_PARSING_TEXT | |
| XML_ERROR_PARSING_CDATA | |
| XML_ERROR_PARSING_COMMENT | |
| XML_ERROR_PARSING_DECLARATION | |
| XML_ERROR_PARSING_UNKNOWN | |
| XML_ERROR_EMPTY_DOCUMENT | |
| XML_ERROR_MISMATCHED_ELEMENT | |
| XML_ERROR_PARSING | |
| XML_CAN_NOT_CONVERT_TEXT | |
| XML_NO_TEXT_NODE | |
| XML_ELEMENT_DEPTH_EXCEEDED | |
| XML_ERROR_COUNT | |

Definition at line 519 of file tinyxml2.h.

# Chapter 7

# Class Documentation

## 7.1 Camera Struct Reference

```
#include <engine.h>
```

**Public Attributes**

- Point position
- Point lookAt
- Point up
- float fov
- float near
- float far

### 7.1.1 Detailed Description

Definition at line 11 of file engine.h.

### 7.1.2 Member Data Documentation

#### 7.1.2.1 far

```
float Camera::far
```
Definition at line 17 of file engine.h.

#### 7.1.2.2 fov

```
float Camera::fov
```
Definition at line 15 of file engine.h.

#### 7.1.2.3 lookAt

```
Point Camera::lookAt
```
Definition at line 13 of file engine.h.

#### 7.1.2.4 near

```
float Camera::near
```
Definition at line 16 of file engine.h.

#### 7.1.2.5 position

```
Point Camera::position
```
Definition at line 12 of file engine.h.

**7.1.2.6 up**

```
Point Camera::up
```
Definition at line 14 of file engine.h.

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

- engine/engine.h

# 7.2 tinyxml2::DynArray< T, INITIAL_SIZE > Class Template Reference

```
#include <tinyxml2.h>
```

**Public Member Functions**

- DynArray ()
- ∼DynArray ()
- void Clear ()
- void Push (T t)
- T ∗ PushArr (size_t count)
- T Pop ()
- void PopArr (size_t count)
- bool Empty () const
- T & operator[ ] (size_t i)
- const T & operator[ ] (size_t i) const
- const T & PeekTop () const
- size_t Size () const
- size_t Capacity () const
- void SwapRemove (size_t i)
- const T ∗ Mem () const
- T ∗ Mem ()

## 7.2.1 Detailed Description

**template**<**class T, size_t INITIAL_SIZE**>
**class tinyxml2::DynArray**< **T, INITIAL_SIZE** >

Definition at line 203 of file tinyxml2.h.

## 7.2.2 Constructor & Destructor Documentation

### 7.2.2.1 DynArray()

```
template<class T, size_t INITIAL_SIZE>
tinyxml2::DynArray< T, INITIAL_SIZE >::DynArray ()  [inline]
```
Definition at line 206 of file tinyxml2.h.

### 7.2.2.2 ∼DynArray()

```
template<class T, size_t INITIAL_SIZE>
tinyxml2::DynArray< T, INITIAL_SIZE >::∼DynArray ()  [inline]
```
Definition at line 213 of file tinyxml2.h.

## 7.2.3 Member Function Documentation

### 7.2.3.1 Capacity()

```
template<class T, size_t INITIAL_SIZE>
size_t tinyxml2::DynArray< T, INITIAL_SIZE >::Capacity () const  [inline]
```
Definition at line 273 of file tinyxml2.h.

**7.2.3.2  Clear()**

```
template<class T, size_t INITIAL_SIZE>
void tinyxml2::DynArray< T, INITIAL_SIZE >::Clear ()  [inline]
```
Definition at line 219 of file tinyxml2.h.

**7.2.3.3  Empty()**

```
template<class T, size_t INITIAL_SIZE>
bool tinyxml2::DynArray< T, INITIAL_SIZE >::Empty () const  [inline]
```
Definition at line 249 of file tinyxml2.h.

**7.2.3.4  Mem()** **[1/2]**

```
template<class T, size_t INITIAL_SIZE>
T * tinyxml2::DynArray< T, INITIAL_SIZE >::Mem ()  [inline]
```
Definition at line 290 of file tinyxml2.h.

**7.2.3.5  Mem()** **[2/2]**

```
template<class T, size_t INITIAL_SIZE>
const T * tinyxml2::DynArray< T, INITIAL_SIZE >::Mem () const  [inline]
```
Definition at line 285 of file tinyxml2.h.

**7.2.3.6  operator[]()** **[1/2]**

```
template<class T, size_t INITIAL_SIZE>
T & tinyxml2::DynArray< T, INITIAL_SIZE >::operator[] (
            size_t i)  [inline]
```
Definition at line 253 of file tinyxml2.h.

**7.2.3.7  operator[]()** **[2/2]**

```
template<class T, size_t INITIAL_SIZE>
const T & tinyxml2::DynArray< T, INITIAL_SIZE >::operator[] (
            size_t i) const  [inline]
```
Definition at line 258 of file tinyxml2.h.

**7.2.3.8  PeekTop()**

```
template<class T, size_t INITIAL_SIZE>
const T & tinyxml2::DynArray< T, INITIAL_SIZE >::PeekTop () const  [inline]
```
Definition at line 263 of file tinyxml2.h.

**7.2.3.9  Pop()**

```
template<class T, size_t INITIAL_SIZE>
T tinyxml2::DynArray< T, INITIAL_SIZE >::Pop ()  [inline]
```
Definition at line 238 of file tinyxml2.h.

**7.2.3.10  PopArr()**

```
template<class T, size_t INITIAL_SIZE>
void tinyxml2::DynArray< T, INITIAL_SIZE >::PopArr (
            size_t count)  [inline]
```
Definition at line 244 of file tinyxml2.h.

**7.2.3.11 Push()**

```
template<class T, size_t INITIAL_SIZE>
void tinyxml2::DynArray< T, INITIAL_SIZE >::Push (
            T t) [inline]
```
Definition at line 223 of file tinyxml2.h.

**7.2.3.12 PushArr()**

```
template<class T, size_t INITIAL_SIZE>
T * tinyxml2::DynArray< T, INITIAL_SIZE >::PushArr (
            size_t count) [inline]
```
Definition at line 230 of file tinyxml2.h.

**7.2.3.13 Size()**

```
template<class T, size_t INITIAL_SIZE>
size_t tinyxml2::DynArray< T, INITIAL_SIZE >::Size () const [inline]
```
Definition at line 268 of file tinyxml2.h.

**7.2.3.14 SwapRemove()**

```
template<class T, size_t INITIAL_SIZE>
void tinyxml2::DynArray< T, INITIAL_SIZE >::SwapRemove (
            size_t i) [inline]
```
Definition at line 278 of file tinyxml2.h.

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

- external/tinyxml2/tinyxml2.h

# 7.3 tinyxml2::Entity Struct Reference

**Public Attributes**

- const char ∗ pattern
- int length
- char value

## 7.3.1 Detailed Description

Definition at line 136 of file tinyxml2.cpp.

## 7.3.2 Member Data Documentation

### 7.3.2.1 length

```
int tinyxml2::Entity::length
```
Definition at line 138 of file tinyxml2.cpp.

### 7.3.2.2 pattern

```
const char* tinyxml2::Entity::pattern
```
Definition at line 137 of file tinyxml2.cpp.

### 7.3.2.3 value

```
char tinyxml2::Entity::value
```
Definition at line 139 of file tinyxml2.cpp.

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

- external/tinyxml2/tinyxml2.cpp

# 7.4 tinyxml2::MemPool Class Reference

`#include <tinyxml2.h>`
Inheritance diagram for tinyxml2::MemPool:



## Public Member Functions

- MemPool ()
- virtual ∼MemPool ()
- virtual size_t ItemSize () const =0
- virtual void ∗ Alloc ()=0
- virtual void Free (void ∗)=0
- virtual void SetTracked ()=0

## 7.4.1 Detailed Description

Definition at line 326 of file tinyxml2.h.

## 7.4.2 Constructor & Destructor Documentation

### 7.4.2.1 MemPool()

`tinyxml2::MemPool::MemPool ()  [inline]`
Definition at line 329 of file tinyxml2.h.

### 7.4.2.2 ∼MemPool()

`virtual tinyxml2::MemPool::∼MemPool ()  [inline], [virtual]`
Definition at line 330 of file tinyxml2.h.

## 7.4.3 Member Function Documentation

### 7.4.3.1 Alloc()

`virtual void ∗ tinyxml2::MemPool::Alloc ()  [pure virtual]`
Implemented in tinyxml2::MemPoolT< ITEM_SIZE >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLAttribute) >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLComment) >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLElement) >, and tinyxml2::MemPoolT< sizeof(tinyxml2::XMLText) >.

### 7.4.3.2 Free()

```
virtual void tinyxml2::MemPool::Free (
            void ∗ ) [pure virtual]
```
Implemented in tinyxml2::MemPoolT< ITEM_SIZE >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLAttribute) >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLComment) >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLElement) >, and tinyxml2::MemPoolT< sizeof(tinyxml2::XMLText) >.

### 7.4.3.3 ItemSize()

`virtual size_t tinyxml2::MemPool::ItemSize () const  [pure virtual]`
Implemented in tinyxml2::MemPoolT< ITEM_SIZE >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLAttribute) >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLComment) >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLElement) >, and tinyxml2::MemPoolT< sizeof(tinyxml2::XMLText) >.

**7.4.3.4 SetTracked()**

```
virtual void tinyxml2::MemPool::SetTracked ()    [pure virtual]
```
Implemented in  tinyxml2::MemPoolT< ITEM_SIZE >,  tinyxml2::MemPoolT< sizeof(tinyxml2::XMLAttribute) >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLComment) >, tinyxml2::MemPoolT< sizeof(tinyxml2::XMLElement) >, and tinyxml2::MemPoolT< sizeof(tinyxml2::XMLText) >.

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

- external/tinyxml2/tinyxml2.h

# 7.5 tinyxml2::MemPoolT< ITEM_SIZE > Class Template Reference

```
#include <tinyxml2.h>
```
Inheritance diagram for tinyxml2::MemPoolT< ITEM_SIZE >:
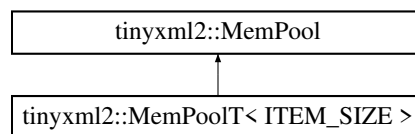


**Public Types**

- enum { ITEMS_PER_BLOCK = (4 ∗ 1024) / ITEM_SIZE }

**Public Member Functions**

- MemPoolT ()
- ∼MemPoolT ()
- void Clear ()
- virtual size_t ItemSize () const override
- size_t CurrentAllocs () const
- virtual void ∗ Alloc () override
- virtual void Free (void ∗mem) override
- void Trace (const char ∗name)
- void SetTracked () override
- size_t Untracked () const

# Public Member Functions inherited from **tinyxml2::MemPool**

- MemPool ()
- virtual ∼MemPool ()

## 7.5.1 Detailed Description

**template**<**size_t ITEM_SIZE**>
**class tinyxml2::MemPoolT**< **ITEM_SIZE** >

Definition at line 343 of file tinyxml2.h.

## 7.5.2 Member Enumeration Documentation

**7.5.2.1 anonymous enum**

```
template<size_t ITEM_SIZE>
anonymous enum
```

**Enumerator**

| ITEMS_PER_BLOCK | |
|---|---|

Definition at line 434 of file tinyxml2.h.

### 7.5.3 Constructor & Destructor Documentation

#### 7.5.3.1 MemPoolT()

```
template<size_t ITEM_SIZE>
tinyxml2::MemPoolT< ITEM_SIZE >::MemPoolT ()  [inline]
```
Definition at line 346 of file tinyxml2.h.

#### 7.5.3.2 ∼MemPoolT()

```
template<size_t ITEM_SIZE>
tinyxml2::MemPoolT< ITEM_SIZE >::∼MemPoolT ()  [inline]
```
Definition at line 347 of file tinyxml2.h.

### 7.5.4 Member Function Documentation

#### 7.5.4.1 Alloc()

```
template<size_t ITEM_SIZE>
virtual void * tinyxml2::MemPoolT< ITEM_SIZE >::Alloc ()  [inline], [override], [virtual]
```
Implements tinyxml2::MemPool.
Definition at line 371 of file tinyxml2.h.

#### 7.5.4.2 Clear()

```
template<size_t ITEM_SIZE>
void tinyxml2::MemPoolT< ITEM_SIZE >::Clear ()  [inline]
```
Definition at line 351 of file tinyxml2.h.

#### 7.5.4.3 CurrentAllocs()

```
template<size_t ITEM_SIZE>
size_t tinyxml2::MemPoolT< ITEM_SIZE >::CurrentAllocs () const  [inline]
```
Definition at line 367 of file tinyxml2.h.

#### 7.5.4.4 Free()

```
template<size_t ITEM_SIZE>
virtual void tinyxml2::MemPoolT< ITEM_SIZE >::Free (
            void * mem)  [inline], [override], [virtual]
```
Implements tinyxml2::MemPool.
Definition at line 397 of file tinyxml2.h.

#### 7.5.4.5 ItemSize()

```
template<size_t ITEM_SIZE>
virtual size_t tinyxml2::MemPoolT< ITEM_SIZE >::ItemSize () const  [inline], [override], [virtual]
```
Implements tinyxml2::MemPool.
Definition at line 364 of file tinyxml2.h.

**7.5.4.6 SetTracked()**

```
template<size_t ITEM_SIZE>
void tinyxml2::MemPoolT< ITEM_SIZE >::SetTracked () [inline], [override], [virtual]
```
Implements tinyxml2::MemPool.

Definition at line 415 of file tinyxml2.h.

**7.5.4.7 Trace()**

```
template<size_t ITEM_SIZE>
void tinyxml2::MemPoolT< ITEM_SIZE >::Trace (
            const char * name) [inline]
```
Definition at line 409 of file tinyxml2.h.

**7.5.4.8 Untracked()**

```
template<size_t ITEM_SIZE>
size_t tinyxml2::MemPoolT< ITEM_SIZE >::Untracked () const [inline]
```
Definition at line 419 of file tinyxml2.h.

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

- external/tinyxml2/tinyxml2.h

# 7.6 Model Struct Reference

```
#include <engine.h>
```

**Public Attributes**

- std::string filename
- std::vector< Point > vertices

## 7.6.1 Detailed Description

Definition at line 25 of file engine.h.

## 7.6.2 Member Data Documentation

### 7.6.2.1 filename

```
std::string Model::filename
```
Definition at line 26 of file engine.h.

### 7.6.2.2 vertices

```
std::vector<Point> Model::vertices
```
Definition at line 27 of file engine.h.

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

- engine/engine.h

# 7.7 Point Struct Reference

```
#include <engine.h>
```

**Public Attributes**

- float x
- float y
- float z

### 7.7.1 Detailed Description

Definition at line 7 of file engine.h.

### 7.7.2 Member Data Documentation

#### 7.7.2.1 x

```
float Point::x
```
Definition at line 8 of file engine.h.

#### 7.7.2.2 y

```
float Point::y
```
Definition at line 8 of file engine.h.

#### 7.7.2.3 z

```
float Point::z
```
Definition at line 8 of file engine.h.
The documentation for this struct was generated from the following file:

- engine/engine.h

## 7.8 tinyxml2::StrPair Class Reference

```
#include <tinyxml2.h>
```

**Public Types**

- enum Mode {
  NEEDS_ENTITY_PROCESSING = 0x01 , NEEDS_NEWLINE_NORMALIZATION = 0x02 , NEEDS_WHITESPACE_COLLAPSI
  = 0x04 , TEXT_ELEMENT = NEEDS_ENTITY_PROCESSING | NEEDS_NEWLINE_NORMALIZATION ,
  TEXT_ELEMENT_LEAVE_ENTITIES = NEEDS_NEWLINE_NORMALIZATION , ATTRIBUTE_NAME =
  0 , ATTRIBUTE_VALUE = NEEDS_ENTITY_PROCESSING | NEEDS_NEWLINE_NORMALIZATION ,
  ATTRIBUTE_VALUE_LEAVE_ENTITIES = NEEDS_NEWLINE_NORMALIZATION ,
  COMMENT = NEEDS_NEWLINE_NORMALIZATION }

**Public Member Functions**

- StrPair ()
- ∼StrPair ()
- void Set (char ∗start, char ∗end, int flags)
- const char ∗ GetStr ()
- bool Empty () const
- void SetInternedStr (const char ∗str)
- void SetStr (const char ∗str, int flags=0)
- char ∗ ParseText (char ∗in, const char ∗endTag, int strFlags, int ∗curLineNumPtr)
- char ∗ ParseName (char ∗in)
- void TransferTo (StrPair ∗other)
- void Reset ()

### 7.8.1 Detailed Description

Definition at line 133 of file tinyxml2.h.

## 7.8.2 Member Enumeration Documentation

### 7.8.2.1 Mode

enum `tinyxml2::StrPair::Mode`

**Enumerator**

| | |
|---|---|
| NEEDS_ENTITY_PROCESSING | |
| NEEDS_NEWLINE_NORMALIZATION | |
| NEEDS_WHITESPACE_COLLAPSING | |
| TEXT_ELEMENT | |
| TEXT_ELEMENT_LEAVE_ENTITIES | |
| ATTRIBUTE_NAME | |
| ATTRIBUTE_VALUE | |
| ATTRIBUTE_VALUE_LEAVE_ENTITIES | |
| COMMENT | |

Definition at line 136 of file tinyxml2.h.

## 7.8.3 Constructor & Destructor Documentation

### 7.8.3.1 StrPair()

`tinyxml2::StrPair::StrPair ()  [inline]`
Definition at line 149 of file tinyxml2.h.

### 7.8.3.2 ∼StrPair()

`tinyxml2::StrPair::∼StrPair ()`
Definition at line 152 of file tinyxml2.cpp.

## 7.8.4 Member Function Documentation

### 7.8.4.1 Empty()

`bool tinyxml2::StrPair::Empty () const  [inline]`
Definition at line 163 of file tinyxml2.h.

### 7.8.4.2 GetStr()

`const char * tinyxml2::StrPair::GetStr ()`
Definition at line 281 of file tinyxml2.cpp.

### 7.8.4.3 ParseName()

`char * tinyxml2::StrPair::ParseName (`
`            char * in)`
Definition at line 232 of file tinyxml2.cpp.

### 7.8.4.4 ParseText()

`char * tinyxml2::StrPair::ParseText (`
`            char * in,`
`            const char * endTag,`
`            int strFlags,`
`            int * curLineNumPtr)`
Definition at line 207 of file tinyxml2.cpp.

**7.8.4.5 Reset()**

```
void tinyxml2::StrPair::Reset ()
```
Definition at line 183 of file tinyxml2.cpp.

**7.8.4.6 Set()**

```
void tinyxml2::StrPair::Set (
            char * start,
            char * end,
            int flags)  [inline]
```
Definition at line 152 of file tinyxml2.h.

**7.8.4.7 SetInternedStr()**

```
void tinyxml2::StrPair::SetInternedStr (
            const char * str)  [inline]
```
Definition at line 167 of file tinyxml2.h.

**7.8.4.8 SetStr()**

```
void tinyxml2::StrPair::SetStr (
            const char * str,
            int flags = 0)
```
Definition at line 194 of file tinyxml2.cpp.

**7.8.4.9 TransferTo()**

```
void tinyxml2::StrPair::TransferTo (
            StrPair * other)
```
Definition at line 158 of file tinyxml2.cpp.
The documentation for this class was generated from the following files:

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

## 7.9 Vertex Struct Reference

```
#include <generatorAux.h>
```

**Public Attributes**

- float x
- float y
- float z

### 7.9.1 Detailed Description

Definition at line 7 of file generatorAux.h.

### 7.9.2 Member Data Documentation

**7.9.2.1 x**

```
float Vertex::x
```
Definition at line 8 of file generatorAux.h.

**7.9.2.2 y**

```
float Vertex::y
```
Definition at line 9 of file generatorAux.h.

**7.9.2.3 z**

```
float Vertex::z
```
Definition at line 10 of file generatorAux.h.

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

- generator/generatorAux.h

## 7.10 Window Struct Reference

```
#include <engine.h>
```

**Public Attributes**

- int width
- int height

### 7.10.1 Detailed Description

Definition at line 20 of file engine.h.

### 7.10.2 Member Data Documentation

**7.10.2.1 height**

```
int Window::height
```
Definition at line 22 of file engine.h.

**7.10.2.2 width**

```
int Window::width
```
Definition at line 21 of file engine.h.

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

- engine/engine.h

## 7.11 World Struct Reference

```
#include <engine.h>
```

**Public Attributes**

- Window window
- Camera camera
- std::vector< Model > models

### 7.11.1 Detailed Description

Definition at line 30 of file engine.h.

### 7.11.2 Member Data Documentation

#### 7.11.2.1 camera

`Camera World::camera`
Definition at line 32 of file engine.h.

#### 7.11.2.2 models

`std::vector<Model> World::models`
Definition at line 33 of file engine.h.

#### 7.11.2.3 window

`Window World::window`
Definition at line 31 of file engine.h.
The documentation for this struct was generated from the following file:

- engine/engine.h

## 7.12 tinyxml2::XMLAttribute Class Reference

`#include <tinyxml2.h>`

**Public Member Functions**

- const char ∗ Name () const

    *The name of the attribute.*

- const char ∗ Value () const

    *The value of the attribute.*

- int GetLineNum () const

    *Gets the line number the attribute is in, if the document was parsed from a file.*

- const XMLAttribute ∗ Next () const

    *The next attribute in the list.*

- int IntValue () const
- int64_t Int64Value () const
- uint64_t Unsigned64Value () const
- unsigned UnsignedValue () const

    *Query as an unsigned integer. See IntValue()*

- bool BoolValue () const

    *Query as a boolean. See IntValue()*

- double DoubleValue () const

    *Query as a double. See IntValue()*

- float FloatValue () const

    *Query as a float. See IntValue()*

- XMLError QueryIntValue (int ∗value) const
- XMLError QueryUnsignedValue (unsigned int ∗value) const

    *See QueryIntValue.*

- XMLError QueryInt64Value (int64_t ∗value) const

    *See QueryIntValue.*

- XMLError QueryUnsigned64Value (uint64_t ∗value) const

    *See QueryIntValue.*

- XMLError QueryBoolValue (bool ∗value) const

    *See QueryIntValue.*

- XMLError QueryDoubleValue (double ∗value) const

*See QueryIntValue.*

- XMLError QueryFloatValue (float ∗value) const

    *See QueryIntValue.*

- void SetAttribute (const char ∗value)

    *Set the attribute to a string value.*

- void SetAttribute (int value)

    *Set the attribute to value.*

- void SetAttribute (unsigned value)

    *Set the attribute to value.*

- void SetAttribute (int64_t value)

    *Set the attribute to value.*

- void SetAttribute (uint64_t value)

    *Set the attribute to value.*

- void SetAttribute (bool value)

    *Set the attribute to value.*

- void SetAttribute (double value)

    *Set the attribute to value.*

- void SetAttribute (float value)

    *Set the attribute to value.*

## Friends

- class XMLElement

### 7.12.1   Detailed Description

An attribute is a name-value pair. Elements have an arbitrary number of attributes, each with a unique name.

**Note**

> The attributes are not XMLNodes. You may only query the Next() attribute in a list.

Definition at line 1142 of file tinyxml2.h.

### 7.12.2   Member Function Documentation

#### 7.12.2.1   BoolValue()

```
bool tinyxml2::XMLAttribute::BoolValue () const  [inline]
```
Query as a boolean. See IntValue()
Definition at line 1189 of file tinyxml2.h.

#### 7.12.2.2   DoubleValue()

```
double tinyxml2::XMLAttribute::DoubleValue () const  [inline]
```
Query as a double. See IntValue()
Definition at line 1195 of file tinyxml2.h.

#### 7.12.2.3   FloatValue()

```
float tinyxml2::XMLAttribute::FloatValue () const  [inline]
```
Query as a float. See IntValue()
Definition at line 1201 of file tinyxml2.h.

#### 7.12.2.4   GetLineNum()

```
int tinyxml2::XMLAttribute::GetLineNum () const  [inline]
```
Gets the line number the attribute is in, if the document was parsed from a file.
Definition at line 1153 of file tinyxml2.h.

**7.12.2.5 Int64Value()**

```
int64_t tinyxml2::XMLAttribute::Int64Value () const  [inline]
```
Definition at line 1170 of file tinyxml2.h.

**7.12.2.6 IntValue()**

```
int tinyxml2::XMLAttribute::IntValue () const  [inline]
```
IntValue interprets the attribute as an integer, and returns the value. If the value isn't an integer, 0 will be returned. There is no error checking; use QueryIntValue() if you need error checking. Definition at line 1164 of file tinyxml2.h.

**7.12.2.7 Name()**

```
const char * tinyxml2::XMLAttribute::Name () const
```
The name of the attribute. Definition at line 1432 of file tinyxml2.cpp.

**7.12.2.8 Next()**

```
const XMLAttribute * tinyxml2::XMLAttribute::Next () const  [inline]
```
The next attribute in the list. Definition at line 1156 of file tinyxml2.h.

**7.12.2.9 QueryBoolValue()**

```
XMLError tinyxml2::XMLAttribute::QueryBoolValue (
            bool * value) const
```
See QueryIntValue. Definition at line 1512 of file tinyxml2.cpp.

**7.12.2.10 QueryDoubleValue()**

```
XMLError tinyxml2::XMLAttribute::QueryDoubleValue (
            double * value) const
```
See QueryIntValue. Definition at line 1530 of file tinyxml2.cpp.

**7.12.2.11 QueryFloatValue()**

```
XMLError tinyxml2::XMLAttribute::QueryFloatValue (
            float * value) const
```
See QueryIntValue. Definition at line 1521 of file tinyxml2.cpp.

**7.12.2.12 QueryInt64Value()**

```
XMLError tinyxml2::XMLAttribute::QueryInt64Value (
            int64_t * value) const
```
See QueryIntValue. Definition at line 1494 of file tinyxml2.cpp.

**7.12.2.13 QueryIntValue()**

```
XMLError tinyxml2::XMLAttribute::QueryIntValue (
            int * value) const
```
QueryIntValue interprets the attribute as an integer, and returns the value in the provided parameter. The function will return XML_SUCCESS on success, and XML_WRONG_ATTRIBUTE_TYPE if the conversion is not successful. Definition at line 1476 of file tinyxml2.cpp.

**7.12.2.14 QueryUnsigned64Value()**

XMLError tinyxml2::XMLAttribute::QueryUnsigned64Value (
            uint64_t * *value*) const

See QueryIntValue.

Definition at line 1503 of file tinyxml2.cpp.

**7.12.2.15 QueryUnsignedValue()**

XMLError tinyxml2::XMLAttribute::QueryUnsignedValue (
            unsigned int * *value*) const

See QueryIntValue.

Definition at line 1485 of file tinyxml2.cpp.

**7.12.2.16 SetAttribute()** **[1/8]**

void tinyxml2::XMLAttribute::SetAttribute (
            bool *value*)

Set the attribute to value.

Definition at line 1576 of file tinyxml2.cpp.

**7.12.2.17 SetAttribute()** **[2/8]**

void tinyxml2::XMLAttribute::SetAttribute (
            const char * *value*)

Set the attribute to a string value.

Definition at line 1539 of file tinyxml2.cpp.

**7.12.2.18 SetAttribute()** **[3/8]**

void tinyxml2::XMLAttribute::SetAttribute (
            double *value*)

Set the attribute to value.

Definition at line 1583 of file tinyxml2.cpp.

**7.12.2.19 SetAttribute()** **[4/8]**

void tinyxml2::XMLAttribute::SetAttribute (
            float *value*)

Set the attribute to value.

Definition at line 1590 of file tinyxml2.cpp.

**7.12.2.20 SetAttribute()** **[5/8]**

void tinyxml2::XMLAttribute::SetAttribute (
            int *value*)

Set the attribute to value.

Definition at line 1545 of file tinyxml2.cpp.

**7.12.2.21 SetAttribute()** **[6/8]**

void tinyxml2::XMLAttribute::SetAttribute (
            int64_t *value*)

Set the attribute to value.

Definition at line 1561 of file tinyxml2.cpp.

**7.12.2.22 SetAttribute()** **[7/8]**

void tinyxml2::XMLAttribute::SetAttribute (
            uint64_t *value*)

Set the attribute to value.
Definition at line 1568 of file tinyxml2.cpp.

### 7.12.2.23  SetAttribute() [8/8]

```
void tinyxml2::XMLAttribute::SetAttribute (
            unsigned value)
```
Set the attribute to value.
Definition at line 1553 of file tinyxml2.cpp.

### 7.12.2.24  Unsigned64Value()

```
uint64_t tinyxml2::XMLAttribute::Unsigned64Value () const  [inline]
```
Definition at line 1176 of file tinyxml2.h.

### 7.12.2.25  UnsignedValue()

```
unsigned tinyxml2::XMLAttribute::UnsignedValue () const  [inline]
```
Query as an unsigned integer. See IntValue()
Definition at line 1183 of file tinyxml2.h.

### 7.12.2.26  Value()

```
const char * tinyxml2::XMLAttribute::Value () const
```
The value of the attribute.
Definition at line 1437 of file tinyxml2.cpp.

### 7.12.3  Friends And Related Symbol Documentation

#### 7.12.3.1  XMLElement

```
friend class XMLElement  [friend]
```
Definition at line 1144 of file tinyxml2.h.
The documentation for this class was generated from the following files:

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

## 7.13  tinyxml2::XMLComment Class Reference

```
#include <tinyxml2.h>
```
Inheritance diagram for tinyxml2::XMLComment:
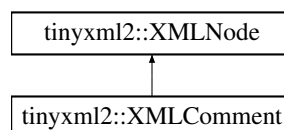


**Public Member Functions**

- virtual XMLComment ∗ ToComment () override

    *Safely cast to a Comment, or null.*
- virtual const XMLComment ∗ ToComment () const override
- virtual bool Accept (XMLVisitor ∗visitor) const override
- virtual XMLNode ∗ ShallowClone (XMLDocument ∗document) const override
- virtual bool ShallowEqual (const XMLNode ∗compare) const override

## Public Member Functions inherited from tinyxml2::XMLNode

- const XMLDocument ∗ GetDocument () const

  *Get the XMLDocument that owns this XMLNode.*
- XMLDocument ∗ GetDocument ()

  *Get the XMLDocument that owns this XMLNode.*
- virtual XMLElement ∗ ToElement ()

  *Safely cast to an Element, or null.*
- virtual XMLText ∗ ToText ()

  *Safely cast to Text, or null.*
- virtual XMLDocument ∗ ToDocument ()

  *Safely cast to a Document, or null.*
- virtual XMLDeclaration ∗ ToDeclaration ()

  *Safely cast to a Declaration, or null.*
- virtual XMLUnknown ∗ ToUnknown ()

  *Safely cast to an Unknown, or null.*
- virtual const XMLElement ∗ ToElement () const
- virtual const XMLText ∗ ToText () const
- virtual const XMLDocument ∗ ToDocument () const
- virtual const XMLDeclaration ∗ ToDeclaration () const
- virtual const XMLUnknown ∗ ToUnknown () const
- int ChildElementCount (const char ∗value) const
- int ChildElementCount () const
- const char ∗ Value () const
- void SetValue (const char ∗val, bool staticMem=false)
- int GetLineNum () const

  *Gets the line number the node is in, if the document was parsed from a file.*
- const XMLNode ∗ Parent () const

  *Get the parent of this node on the DOM.*
- XMLNode ∗ Parent ()
- bool NoChildren () const

  *Returns true if this node has no children.*
- const XMLNode ∗ FirstChild () const

  *Get the first child node, or null if none exists.*
- XMLNode ∗ FirstChild ()
- const XMLElement ∗ FirstChildElement (const char ∗name=0) const
- XMLElement ∗ FirstChildElement (const char ∗name=0)
- const XMLNode ∗ LastChild () const

  *Get the last child node, or null if none exists.*
- XMLNode ∗ LastChild ()
- const XMLElement ∗ LastChildElement (const char ∗name=0) const
- XMLElement ∗ LastChildElement (const char ∗name=0)
- const XMLNode ∗ PreviousSibling () const

  *Get the previous (left) sibling node of this node.*
- XMLNode ∗ PreviousSibling ()
- const XMLElement ∗ PreviousSiblingElement (const char ∗name=0) const

  *Get the previous (left) sibling element of this node, with an optionally supplied name.*
- XMLElement ∗ PreviousSiblingElement (const char ∗name=0)
- const XMLNode ∗ NextSibling () const

  *Get the next (right) sibling node of this node.*
- XMLNode ∗ NextSibling ()
- const XMLElement ∗ NextSiblingElement (const char ∗name=0) const

  *Get the next (right) sibling element of this node, with an optionally supplied name.*

- XMLElement ∗ NextSiblingElement (const char ∗name=0)
- XMLNode ∗ InsertEndChild (XMLNode ∗addThis)
- XMLNode ∗ LinkEndChild (XMLNode ∗addThis)
- XMLNode ∗ InsertFirstChild (XMLNode ∗addThis)
- XMLNode ∗ InsertAfterChild (XMLNode ∗afterThis, XMLNode ∗addThis)
- void DeleteChildren ()
- void DeleteChild (XMLNode ∗node)
- XMLNode ∗ DeepClone (XMLDocument ∗target) const
- void SetUserData (void ∗userData)
- void ∗ GetUserData () const

**Protected Member Functions**

- XMLComment (XMLDocument ∗doc)
- virtual ∼XMLComment ()
- char ∗ ParseDeep (char ∗p, StrPair ∗parentEndTag, int ∗curLineNumPtr) override

**Protected Member Functions inherited from tinyxml2::XMLNode**

- XMLNode (XMLDocument ∗)
- virtual ∼XMLNode ()

**Friends**

- class XMLDocument

**Additional Inherited Members**

**Protected Attributes inherited from tinyxml2::XMLNode**

- XMLDocument ∗ _document
- XMLNode ∗ _parent
- StrPair _value
- int _parseLineNum
- XMLNode ∗ _firstChild
- XMLNode ∗ _lastChild
- XMLNode ∗ _prev
- XMLNode ∗ _next
- void ∗ _userData

### 7.13.1  Detailed Description

An XML Comment.
Definition at line 1033 of file tinyxml2.h.

### 7.13.2  Constructor & Destructor Documentation

#### 7.13.2.1  XMLComment()

```
tinyxml2::XMLComment::XMLComment (
            XMLDocument * doc)  [explicit], [protected]
```
Definition at line 1288 of file tinyxml2.cpp.

#### 7.13.2.2  ∼XMLComment()

```
tinyxml2::XMLComment::∼XMLComment ()  [protected], [virtual]
```
Definition at line 1293 of file tinyxml2.cpp.

### 7.13.3 Member Function Documentation

#### 7.13.3.1 Accept()

```
bool tinyxml2::XMLComment::Accept (
            XMLVisitor * visitor) const  [override], [virtual]
```

Accept a hierarchical visit of the nodes in the TinyXML-2 DOM. Every node in the XML tree will be conditionally visited and the host will be called back via the XMLVisitor interface.

This is essentially a SAX interface for TinyXML-2. (Note however it doesn't re-parse the XML for the callbacks, so the performance of TinyXML-2 is unchanged by using this interface versus any other.)

The interface has been based on ideas from:

- http://www.saxproject.org/

- http://c2.com/cgi/wiki?HierarchicalVisitorPattern

Which are both good references for "visiting".

An example of using Accept():

```
XMLPrinter printer;
tinyxmlDoc.Accept( &printer );
const char* xmlcstr = printer.CStr();
```

Implements tinyxml2::XMLNode.
Definition at line 1327 of file tinyxml2.cpp.

#### 7.13.3.2 ParseDeep()

```
char * tinyxml2::XMLComment::ParseDeep (
            char * p,
            StrPair * parentEndTag,
            int * curLineNumPtr)  [override], [protected], [virtual]
```

Reimplemented from tinyxml2::XMLNode.
Definition at line 1298 of file tinyxml2.cpp.

#### 7.13.3.3 ShallowClone()

```
XMLNode * tinyxml2::XMLComment::ShallowClone (
            XMLDocument * document) const  [override], [virtual]
```

Make a copy of this node, but not its children. You may pass in a Document pointer that will be the owner of the new Node. If the 'document' is null, then the node returned will be allocated from the current Document. (this->GetDocument())

Note: if called on a XMLDocument, this will return null.
Implements tinyxml2::XMLNode.
Definition at line 1309 of file tinyxml2.cpp.

#### 7.13.3.4 ShallowEqual()

```
bool tinyxml2::XMLComment::ShallowEqual (
            const XMLNode * compare) const  [override], [virtual]
```

Test if 2 nodes are the same, but don't test children. The 2 nodes do not need to be in the same Document.
Note: if called on a XMLDocument, this will return false.
Implements tinyxml2::XMLNode.
Definition at line 1319 of file tinyxml2.cpp.

#### 7.13.3.5 ToComment() [1/2]

```
virtual const XMLComment * tinyxml2::XMLComment::ToComment () const  [inline], [override],
[virtual]
```

Reimplemented from tinyxml2::XMLNode.
Definition at line 1040 of file tinyxml2.h.

**7.13.3.6 ToComment()** [2/2]

`virtual` [XMLComment](#) `* tinyxml2::XMLComment::ToComment ()` `[inline]`, `[override]`, `[virtual]`
Safely cast to a Comment, or null.
Reimplemented from [tinyxml2::XMLNode](#).
Definition at line 1037 of file tinyxml2.h.

### 7.13.4 Friends And Related Symbol Documentation

#### 7.13.4.1 XMLDocument

`friend class` [XMLDocument](#) `[friend]`
Definition at line 1035 of file tinyxml2.h.
The documentation for this class was generated from the following files:

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

## 7.14 tinyxml2::XMLConstHandle Class Reference

`#include <tinyxml2.h>`

**Public Member Functions**

- [XMLConstHandle](#) (const [XMLNode](#) *node)
- [XMLConstHandle](#) (const [XMLNode](#) &node)
- [XMLConstHandle](#) (const [XMLConstHandle](#) &ref)
- [XMLConstHandle](#) & [operator=](#) (const [XMLConstHandle](#) &ref)
- const [XMLConstHandle FirstChild](#) () const
- const [XMLConstHandle FirstChildElement](#) (const char *name=0) const
- const [XMLConstHandle LastChild](#) () const
- const [XMLConstHandle LastChildElement](#) (const char *name=0) const
- const [XMLConstHandle PreviousSibling](#) () const
- const [XMLConstHandle PreviousSiblingElement](#) (const char *name=0) const
- const [XMLConstHandle NextSibling](#) () const
- const [XMLConstHandle NextSiblingElement](#) (const char *name=0) const
- const [XMLNode](#) * [ToNode](#) () const
- const [XMLElement](#) * [ToElement](#) () const
- const [XMLText](#) * [ToText](#) () const
- const [XMLUnknown](#) * [ToUnknown](#) () const
- const [XMLDeclaration](#) * [ToDeclaration](#) () const

### 7.14.1 Detailed Description

A variant of the [XMLHandle](#) class for working with const XMLNodes and Documents. It is the same in all regards, except for the 'const' qualifiers. See [XMLHandle](#) for API.
Definition at line 2136 of file tinyxml2.h.

### 7.14.2 Constructor & Destructor Documentation

#### 7.14.2.1 XMLConstHandle() [1/3]

`tinyxml2::XMLConstHandle::XMLConstHandle (`
`            const` [XMLNode](#) `* node)` `[inline]`, `[explicit]`
Definition at line 2139 of file tinyxml2.h.

**7.14.2.2 XMLConstHandle()** [2/3]

```
tinyxml2::XMLConstHandle::XMLConstHandle (
            const XMLNode & node) [inline], [explicit]
```
Definition at line 2141 of file tinyxml2.h.

**7.14.2.3 XMLConstHandle()** [3/3]

```
tinyxml2::XMLConstHandle::XMLConstHandle (
            const XMLConstHandle & ref) [inline]
```
Definition at line 2143 of file tinyxml2.h.

### 7.14.3 Member Function Documentation

#### 7.14.3.1 FirstChild()

```
const XMLConstHandle tinyxml2::XMLConstHandle::FirstChild () const [inline]
```
Definition at line 2151 of file tinyxml2.h.

#### 7.14.3.2 FirstChildElement()

```
const XMLConstHandle tinyxml2::XMLConstHandle::FirstChildElement (
            const char * name = 0) const [inline]
```
Definition at line 2154 of file tinyxml2.h.

#### 7.14.3.3 LastChild()

```
const XMLConstHandle tinyxml2::XMLConstHandle::LastChild () const [inline]
```
Definition at line 2157 of file tinyxml2.h.

#### 7.14.3.4 LastChildElement()

```
const XMLConstHandle tinyxml2::XMLConstHandle::LastChildElement (
            const char * name = 0) const [inline]
```
Definition at line 2160 of file tinyxml2.h.

#### 7.14.3.5 NextSibling()

```
const XMLConstHandle tinyxml2::XMLConstHandle::NextSibling () const [inline]
```
Definition at line 2169 of file tinyxml2.h.

#### 7.14.3.6 NextSiblingElement()

```
const XMLConstHandle tinyxml2::XMLConstHandle::NextSiblingElement (
            const char * name = 0) const [inline]
```
Definition at line 2172 of file tinyxml2.h.

#### 7.14.3.7 operator=()

```
XMLConstHandle & tinyxml2::XMLConstHandle::operator= (
            const XMLConstHandle & ref) [inline]
```
Definition at line 2146 of file tinyxml2.h.

#### 7.14.3.8 PreviousSibling()

```
const XMLConstHandle tinyxml2::XMLConstHandle::PreviousSibling () const [inline]
```
Definition at line 2163 of file tinyxml2.h.

### 7.14.3.9 PreviousSiblingElement()

const XMLConstHandle tinyxml2::XMLConstHandle::PreviousSiblingElement (
            const char * *name* = 0) const  [inline]

Definition at line 2166 of file tinyxml2.h.

### 7.14.3.10 ToDeclaration()

const XMLDeclaration * tinyxml2::XMLConstHandle::ToDeclaration () const  [inline]

Definition at line 2189 of file tinyxml2.h.

### 7.14.3.11 ToElement()

const XMLElement * tinyxml2::XMLConstHandle::ToElement () const  [inline]

Definition at line 2180 of file tinyxml2.h.

### 7.14.3.12 ToNode()

const XMLNode * tinyxml2::XMLConstHandle::ToNode () const  [inline]

Definition at line 2177 of file tinyxml2.h.

### 7.14.3.13 ToText()

const XMLText * tinyxml2::XMLConstHandle::ToText () const  [inline]

Definition at line 2183 of file tinyxml2.h.

### 7.14.3.14 ToUnknown()

const XMLUnknown * tinyxml2::XMLConstHandle::ToUnknown () const  [inline]

Definition at line 2186 of file tinyxml2.h.

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

- external/tinyxml2/tinyxml2.h

## 7.15 tinyxml2::XMLDeclaration Class Reference

#include <tinyxml2.h>

Inheritance diagram for tinyxml2::XMLDeclaration:

```
┌─────────────────────────┐
│   tinyxml2::XMLNode      │
└─────────────────────────┘
            ▲
┌─────────────────────────┐
│ tinyxml2::XMLDeclaration │
└─────────────────────────┘
```
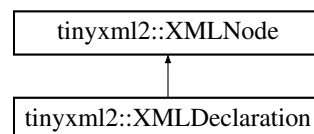
**Public Member Functions**

- virtual XMLDeclaration * ToDeclaration () override

    *Safely cast to a Declaration, or null.*
- virtual const XMLDeclaration * ToDeclaration () const override
- virtual bool Accept (XMLVisitor *visitor) const override
- virtual XMLNode * ShallowClone (XMLDocument *document) const override
- virtual bool ShallowEqual (const XMLNode *compare) const override

## Public Member Functions inherited from tinyxml2::XMLNode

- const XMLDocument ∗ GetDocument () const

  *Get the XMLDocument that owns this XMLNode.*
- XMLDocument ∗ GetDocument ()

  *Get the XMLDocument that owns this XMLNode.*
- virtual XMLElement ∗ ToElement ()

  *Safely cast to an Element, or null.*
- virtual XMLText ∗ ToText ()

  *Safely cast to Text, or null.*
- virtual XMLComment ∗ ToComment ()

  *Safely cast to a Comment, or null.*
- virtual XMLDocument ∗ ToDocument ()

  *Safely cast to a Document, or null.*
- virtual XMLUnknown ∗ ToUnknown ()

  *Safely cast to an Unknown, or null.*
- virtual const XMLElement ∗ ToElement () const
- virtual const XMLText ∗ ToText () const
- virtual const XMLComment ∗ ToComment () const
- virtual const XMLDocument ∗ ToDocument () const
- virtual const XMLUnknown ∗ ToUnknown () const
- int ChildElementCount (const char ∗value) const
- int ChildElementCount () const
- const char ∗ Value () const
- void SetValue (const char ∗val, bool staticMem=false)
- int GetLineNum () const

  *Gets the line number the node is in, if the document was parsed from a file.*
- const XMLNode ∗ Parent () const

  *Get the parent of this node on the DOM.*
- XMLNode ∗ Parent ()
- bool NoChildren () const

  *Returns true if this node has no children.*
- const XMLNode ∗ FirstChild () const

  *Get the first child node, or null if none exists.*
- XMLNode ∗ FirstChild ()
- const XMLElement ∗ FirstChildElement (const char ∗name=0) const
- XMLElement ∗ FirstChildElement (const char ∗name=0)
- const XMLNode ∗ LastChild () const

  *Get the last child node, or null if none exists.*
- XMLNode ∗ LastChild ()
- const XMLElement ∗ LastChildElement (const char ∗name=0) const
- XMLElement ∗ LastChildElement (const char ∗name=0)
- const XMLNode ∗ PreviousSibling () const

  *Get the previous (left) sibling node of this node.*
- XMLNode ∗ PreviousSibling ()
- const XMLElement ∗ PreviousSiblingElement (const char ∗name=0) const

  *Get the previous (left) sibling element of this node, with an optionally supplied name.*
- XMLElement ∗ PreviousSiblingElement (const char ∗name=0)
- const XMLNode ∗ NextSibling () const

  *Get the next (right) sibling node of this node.*
- XMLNode ∗ NextSibling ()
- const XMLElement ∗ NextSiblingElement (const char ∗name=0) const

  *Get the next (right) sibling element of this node, with an optionally supplied name.*

- • XMLElement ∗ NextSiblingElement (const char ∗name=0)
- • XMLNode ∗ InsertEndChild (XMLNode ∗addThis)
- • XMLNode ∗ LinkEndChild (XMLNode ∗addThis)
- • XMLNode ∗ InsertFirstChild (XMLNode ∗addThis)
- • XMLNode ∗ InsertAfterChild (XMLNode ∗afterThis, XMLNode ∗addThis)
- • void DeleteChildren ()
- • void DeleteChild (XMLNode ∗node)
- • XMLNode ∗ DeepClone (XMLDocument ∗target) const
- • void SetUserData (void ∗userData)
- • void ∗ GetUserData () const

**Protected Member Functions**

- • XMLDeclaration (XMLDocument ∗doc)
- • virtual ∼XMLDeclaration ()
- • char ∗ ParseDeep (char ∗p, StrPair ∗parentEndTag, int ∗curLineNumPtr) override

**Protected Member Functions inherited from tinyxml2::XMLNode**

- • XMLNode (XMLDocument ∗)
- • virtual ∼XMLNode ()

**Friends**

- • class XMLDocument

**Additional Inherited Members**

**Protected Attributes inherited from tinyxml2::XMLNode**

- • XMLDocument ∗ _document
- • XMLNode ∗ _parent
- • StrPair _value
- • int _parseLineNum
- • XMLNode ∗ _firstChild
- • XMLNode ∗ _lastChild
- • XMLNode ∗ _prev
- • XMLNode ∗ _next
- • void ∗ _userData

### 7.15.1 Detailed Description

In correct XML the declaration is the first entry in the file.

```
<?xml version="1.0" standalone="yes"?>
```

TinyXML-2 will happily read or write files without a declaration, however.
The text of the declaration isn't interpreted. It is parsed and written as a string.
Definition at line 1072 of file tinyxml2.h.

### 7.15.2 Constructor & Destructor Documentation

#### 7.15.2.1 XMLDeclaration()

```
tinyxml2::XMLDeclaration::XMLDeclaration (
            XMLDocument * doc) [explicit], [protected]
```
Definition at line 1336 of file tinyxml2.cpp.

### 7.15.2.2 ∼**XMLDeclaration()**

```
tinyxml2::XMLDeclaration::∼XMLDeclaration ()  [protected], [virtual]
```
Definition at line 1341 of file tinyxml2.cpp.

## 7.15.3 Member Function Documentation

### 7.15.3.1 Accept()

```
bool tinyxml2::XMLDeclaration::Accept (
              XMLVisitor * visitor) const  [override], [virtual]
```
Accept a hierarchical visit of the nodes in the TinyXML-2 DOM. Every node in the XML tree will be conditionally visited and the host will be called back via the XMLVisitor interface.

This is essentially a SAX interface for TinyXML-2. (Note however it doesn't re-parse the XML for the callbacks, so the performance of TinyXML-2 is unchanged by using this interface versus any other.)

The interface has been based on ideas from:

- http://www.saxproject.org/

- http://c2.com/cgi/wiki?HierarchicalVisitorPattern

Which are both good references for "visiting".

An example of using Accept():

```
XMLPrinter printer;
tinyxmlDoc.Accept( &printer );
const char* xmlcstr = printer.CStr();
```

Implements tinyxml2::XMLNode.

Definition at line 1377 of file tinyxml2.cpp.

### 7.15.3.2 ParseDeep()

```
char * tinyxml2::XMLDeclaration::ParseDeep (
              char * p,
              StrPair * parentEndTag,
              int * curLineNumPtr)  [override], [protected], [virtual]
```
Reimplemented from tinyxml2::XMLNode.

Definition at line 1347 of file tinyxml2.cpp.

### 7.15.3.3 ShallowClone()

```
XMLNode * tinyxml2::XMLDeclaration::ShallowClone (
              XMLDocument * document) const  [override], [virtual]
```
Make a copy of this node, but not its children. You may pass in a Document pointer that will be the owner of the new Node. If the 'document' is null, then the node returned will be allocated from the current Document. (this->GetDocument())

Note: if called on a XMLDocument, this will return null.

Implements tinyxml2::XMLNode.

Definition at line 1358 of file tinyxml2.cpp.

### 7.15.3.4 ShallowEqual()

```
bool tinyxml2::XMLDeclaration::ShallowEqual (
              const XMLNode * compare) const  [override], [virtual]
```
Test if 2 nodes are the same, but don't test children. The 2 nodes do not need to be in the same Document.

Note: if called on a XMLDocument, this will return false.

Implements tinyxml2::XMLNode.

Definition at line 1368 of file tinyxml2.cpp.

**7.15.3.5 ToDeclaration() [1/2]**

virtual const XMLDeclaration * tinyxml2::XMLDeclaration::ToDeclaration () const [inline],
[override], [virtual]

Reimplemented from tinyxml2::XMLNode.

Definition at line 1079 of file tinyxml2.h.

**7.15.3.6 ToDeclaration() [2/2]**

virtual XMLDeclaration * tinyxml2::XMLDeclaration::ToDeclaration () [inline], [override],
[virtual]

Safely cast to a Declaration, or null.

Reimplemented from tinyxml2::XMLNode.

Definition at line 1076 of file tinyxml2.h.

### 7.15.4 Friends And Related Symbol Documentation

#### 7.15.4.1 XMLDocument

friend class XMLDocument [friend]

Definition at line 1074 of file tinyxml2.h.

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

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

## 7.16 tinyxml2::XMLDocument Class Reference

```
#include <tinyxml2.h>
```

Inheritance diagram for tinyxml2::XMLDocument:

```
┌─────────────────────┐
│  tinyxml2::XMLNode   │
└─────────────────────┘
           ▲
           │
┌─────────────────────┐
│ tinyxml2::XMLDocument│
└─────────────────────┘
```
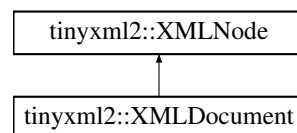
**Public Member Functions**

- XMLDocument (bool processEntities=true, Whitespace whitespaceMode=PRESERVE_WHITESPACE)
    *constructor*
- ∼XMLDocument ()
- virtual XMLDocument ∗ ToDocument () override
    *Safely cast to a Document, or null.*
- virtual const XMLDocument ∗ ToDocument () const override
- XMLError Parse (const char ∗xml, size_t nBytes=static_cast< size_t >(-1))
- XMLError LoadFile (const char ∗filename)
- XMLError LoadFile (FILE ∗)
- XMLError SaveFile (const char ∗filename, bool compact=false)
- XMLError SaveFile (FILE ∗fp, bool compact=false)
- bool ProcessEntities () const
- Whitespace WhitespaceMode () const
- bool HasBOM () const
- void SetBOM (bool useBOM)
- XMLElement ∗ RootElement ()
- const XMLElement ∗ RootElement () const
- void Print (XMLPrinter ∗streamer=0) const

- virtual bool Accept (XMLVisitor ∗visitor) const override
- XMLElement ∗ NewElement (const char ∗name)
- XMLComment ∗ NewComment (const char ∗comment)
- XMLText ∗ NewText (const char ∗text)
- XMLDeclaration ∗ NewDeclaration (const char ∗text=0)
- XMLUnknown ∗ NewUnknown (const char ∗text)
- void DeleteNode (XMLNode ∗node)
- void ClearError ()

    *Clears the error flags.*
- bool Error () const

    *Return true if there was an error parsing the document.*
- XMLError ErrorID () const

    *Return the errorID.*
- const char ∗ ErrorName () const
- const char ∗ ErrorStr () const
- void PrintError () const

    *A (trivial) utility function that prints the ErrorStr() to stdout.*
- int ErrorLineNum () const

    *Return the line where the error occurred, or zero if unknown.*
- void Clear ()

    *Clear the document, resetting it to the initial state.*
- void DeepCopy (XMLDocument ∗target) const
- char ∗ Identify (char ∗p, XMLNode ∗∗node, bool first)
- void MarkInUse (const XMLNode ∗const)
- virtual XMLNode ∗ ShallowClone (XMLDocument ∗) const override
- virtual bool ShallowEqual (const XMLNode ∗) const override

## Public Member Functions inherited from tinyxml2::XMLNode

- const XMLDocument ∗ GetDocument () const

    *Get the XMLDocument that owns this XMLNode.*
- XMLDocument ∗ GetDocument ()

    *Get the XMLDocument that owns this XMLNode.*
- virtual XMLElement ∗ ToElement ()

    *Safely cast to an Element, or null.*
- virtual XMLText ∗ ToText ()

    *Safely cast to Text, or null.*
- virtual XMLComment ∗ ToComment ()

    *Safely cast to a Comment, or null.*
- virtual XMLDeclaration ∗ ToDeclaration ()

    *Safely cast to a Declaration, or null.*
- virtual XMLUnknown ∗ ToUnknown ()

    *Safely cast to an Unknown, or null.*
- virtual const XMLElement ∗ ToElement () const
- virtual const XMLText ∗ ToText () const
- virtual const XMLComment ∗ ToComment () const
- virtual const XMLDeclaration ∗ ToDeclaration () const
- virtual const XMLUnknown ∗ ToUnknown () const
- int ChildElementCount (const char ∗value) const
- int ChildElementCount () const
- const char ∗ Value () const
- void SetValue (const char ∗val, bool staticMem=false)
- int GetLineNum () const

*Gets the line number the node is in, if the document was parsed from a file.*

- const XMLNode ∗ Parent () const

    *Get the parent of this node on the DOM.*

- XMLNode ∗ Parent ()
- bool NoChildren () const

    *Returns true if this node has no children.*

- const XMLNode ∗ FirstChild () const

    *Get the first child node, or null if none exists.*

- XMLNode ∗ FirstChild ()
- const XMLElement ∗ FirstChildElement (const char ∗name=0) const
- XMLElement ∗ FirstChildElement (const char ∗name=0)
- const XMLNode ∗ LastChild () const

    *Get the last child node, or null if none exists.*

- XMLNode ∗ LastChild ()
- const XMLElement ∗ LastChildElement (const char ∗name=0) const
- XMLElement ∗ LastChildElement (const char ∗name=0)
- const XMLNode ∗ PreviousSibling () const

    *Get the previous (left) sibling node of this node.*

- XMLNode ∗ PreviousSibling ()
- const XMLElement ∗ PreviousSiblingElement (const char ∗name=0) const

    *Get the previous (left) sibling element of this node, with an optionally supplied name.*

- XMLElement ∗ PreviousSiblingElement (const char ∗name=0)
- const XMLNode ∗ NextSibling () const

    *Get the next (right) sibling node of this node.*

- XMLNode ∗ NextSibling ()
- const XMLElement ∗ NextSiblingElement (const char ∗name=0) const

    *Get the next (right) sibling element of this node, with an optionally supplied name.*

- XMLElement ∗ NextSiblingElement (const char ∗name=0)
- XMLNode ∗ InsertEndChild (XMLNode ∗addThis)
- XMLNode ∗ LinkEndChild (XMLNode ∗addThis)
- XMLNode ∗ InsertFirstChild (XMLNode ∗addThis)
- XMLNode ∗ InsertAfterChild (XMLNode ∗afterThis, XMLNode ∗addThis)
- void DeleteChildren ()
- void DeleteChild (XMLNode ∗node)
- XMLNode ∗ DeepClone (XMLDocument ∗target) const
- void SetUserData (void ∗userData)
- void ∗ GetUserData () const

**Static Public Member Functions**

- static const char ∗ ErrorIDToName (XMLError errorID)

**Friends**

- class XMLElement
- class XMLNode
- class XMLText
- class XMLComment
- class XMLDeclaration
- class XMLUnknown

**Additional Inherited Members**

**Protected Member Functions inherited from tinyxml2::XMLNode**

- XMLNode (XMLDocument ∗)
- virtual ∼XMLNode ()
- virtual char ∗ ParseDeep (char ∗p, StrPair ∗parentEndTag, int ∗curLineNumPtr)

**Protected Attributes inherited from tinyxml2::XMLNode**

- XMLDocument ∗ _document
- XMLNode ∗ _parent
- StrPair _value
- int _parseLineNum
- XMLNode ∗ _firstChild
- XMLNode ∗ _lastChild
- XMLNode ∗ _prev
- XMLNode ∗ _next
- void ∗ _userData

### 7.16.1  Detailed Description

A Document binds together all the functionality. It can be saved, loaded, and printed to the screen. All Nodes are connected and allocated to a Document. If the Document is deleted, all its Nodes are also deleted.
Definition at line 1719 of file tinyxml2.h.

### 7.16.2  Constructor & Destructor Documentation

#### 7.16.2.1  XMLDocument()

```
tinyxml2::XMLDocument::XMLDocument (
            bool processEntities = true,
            Whitespace whitespaceMode = PRESERVE_WHITESPACE)
```
constructor
Definition at line 2183 of file tinyxml2.cpp.

#### 7.16.2.2  ∼XMLDocument()

```
tinyxml2::XMLDocument::∼XMLDocument ()
```
Definition at line 2205 of file tinyxml2.cpp.

### 7.16.3  Member Function Documentation

#### 7.16.3.1  Accept()

```
bool tinyxml2::XMLDocument::Accept (
            XMLVisitor ∗ visitor) const  [override], [virtual]
```
Accept a hierarchical visit of the nodes in the TinyXML-2 DOM. Every node in the XML tree will be conditionally visited and the host will be called back via the XMLVisitor interface.
This is essentially a SAX interface for TinyXML-2. (Note however it doesn't re-parse the XML for the callbacks, so the performance of TinyXML-2 is unchanged by using this interface versus any other.)
The interface has been based on ideas from:

- http://www.saxproject.org/

- http://c2.com/cgi/wiki?HierarchicalVisitorPattern

Which are both good references for "visiting".
An example of using Accept():

```
XMLPrinter printer;
tinyxmlDoc.Accept( &printer );
const char* xmlcstr = printer.CStr();
```

Implements tinyxml2::XMLNode.

Definition at line 782 of file tinyxml2.cpp.

### 7.16.3.2 Clear()

```
void tinyxml2::XMLDocument::Clear ()
```

Clear the document, resetting it to the initial state.

Definition at line 2224 of file tinyxml2.cpp.

### 7.16.3.3 ClearError()

```
void tinyxml2::XMLDocument::ClearError ()
```

Clears the error flags.

Definition at line 2490 of file tinyxml2.cpp.

### 7.16.3.4 DeepCopy()

```
void tinyxml2::XMLDocument::DeepCopy (
              XMLDocument * target) const
```

Copies this document to a target document. The target will be completely cleared before the copy. If you want to copy a sub-tree, see XMLNode::DeepClone().

NOTE: that the 'target' must be non-null.

Definition at line 2258 of file tinyxml2.cpp.

### 7.16.3.5 DeleteNode()

```
void tinyxml2::XMLDocument::DeleteNode (
              XMLNode * node)
```

Delete a node associated with this document. It will be unlinked from the DOM.

Definition at line 2326 of file tinyxml2.cpp.

### 7.16.3.6 Error()

```
bool tinyxml2::XMLDocument::Error () const  [inline]
```

Return true if there was an error parsing the document.

Definition at line 1884 of file tinyxml2.h.

### 7.16.3.7 ErrorID()

```
XMLError tinyxml2::XMLDocument::ErrorID () const  [inline]
```

Return the errorID.

Definition at line 1888 of file tinyxml2.h.

### 7.16.3.8 ErrorIDToName()

```
const char * tinyxml2::XMLDocument::ErrorIDToName (
              XMLError errorID)  [static]
```

Definition at line 2526 of file tinyxml2.cpp.

### 7.16.3.9 ErrorLineNum()

```
int tinyxml2::XMLDocument::ErrorLineNum () const  [inline]
```

Return the line where the error occurred, or zero if unknown.

Definition at line 1903 of file tinyxml2.h.

### 7.16.3.10 ErrorName()

```
const char * tinyxml2::XMLDocument::ErrorName () const
```
Definition at line 2545 of file tinyxml2.cpp.

### 7.16.3.11 ErrorStr()

```
const char * tinyxml2::XMLDocument::ErrorStr () const
```
Returns a "long form" error description. A hopefully helpful diagnostic with location, line number, and/or additional info.
Definition at line 2534 of file tinyxml2.cpp.

### 7.16.3.12 HasBOM()

```
bool tinyxml2::XMLDocument::HasBOM () const  [inline]
```
Returns true if this document has a leading Byte Order Mark of UTF8.
Definition at line 1801 of file tinyxml2.h.

### 7.16.3.13 Identify()

```
char * tinyxml2::XMLDocument::Identify (
            char * p,
            XMLNode ** node,
            bool first)
```
Definition at line 702 of file tinyxml2.cpp.

### 7.16.3.14 LoadFile() [1/2]

```
XMLError tinyxml2::XMLDocument::LoadFile (
            const char * filename)
```
Load an XML file from disk. Returns XML_SUCCESS (0) on success, or an errorID.
Definition at line 2344 of file tinyxml2.cpp.

### 7.16.3.15 LoadFile() [2/2]

```
XMLError tinyxml2::XMLDocument::LoadFile (
            FILE * fp)
```
Load an XML file from disk. You are responsible for providing and closing the FILE∗.
NOTE: The file should be opened as binary ("rb") not text in order for TinyXML-2 to correctly do newline normalization.
Returns XML_SUCCESS (0) on success, or an errorID.
Definition at line 2363 of file tinyxml2.cpp.

### 7.16.3.16 MarkInUse()

```
void tinyxml2::XMLDocument::MarkInUse (
            const XMLNode * const node)
```
Definition at line 2211 of file tinyxml2.cpp.

### 7.16.3.17 NewComment()

```
XMLComment * tinyxml2::XMLDocument::NewComment (
            const char * comment)
```
Create a new Comment associated with this Document. The memory for the Comment is managed by the Document.
Definition at line 2279 of file tinyxml2.cpp.

### 7.16.3.18 NewDeclaration()

```
XMLDeclaration * tinyxml2::XMLDocument::NewDeclaration (
            const char * text = 0)
```

Create a new Declaration associated with this Document. The memory for the object is managed by the Document. If the 'text' param is null, the standard declaration is used.:

```
<?xml version="1.0" encoding="UTF-8"?>
```

Definition at line 2295 of file tinyxml2.cpp.

### 7.16.3.19 NewElement()

```
XMLElement * tinyxml2::XMLDocument::NewElement (
            const char * name)
```

Create a new Element associated with this Document. The memory for the Element is managed by the Document.
Definition at line 2271 of file tinyxml2.cpp.

### 7.16.3.20 NewText()

```
XMLText * tinyxml2::XMLDocument::NewText (
            const char * text)
```

Create a new Text associated with this Document. The memory for the Text is managed by the Document.
Definition at line 2287 of file tinyxml2.cpp.

### 7.16.3.21 NewUnknown()

```
XMLUnknown * tinyxml2::XMLDocument::NewUnknown (
            const char * text)
```

Create a new Unknown associated with this Document. The memory for the object is managed by the Document.
Definition at line 2303 of file tinyxml2.cpp.

### 7.16.3.22 Parse()

```
XMLError tinyxml2::XMLDocument::Parse (
            const char * xml,
            size_t nBytes = static_cast<size_t>(-1))
```

Parse an XML file from a character string. Returns XML_SUCCESS (0) on success, or an errorID.
You may optionally pass in the 'nBytes', which is the number of bytes which will be parsed. If not specified, Tiny↩
XML-2 will assume 'xml' points to a null terminated string.
Definition at line 2447 of file tinyxml2.cpp.

### 7.16.3.23 Print()

```
void tinyxml2::XMLDocument::Print (
            XMLPrinter * streamer = 0) const
```

Print the Document. If the Printer is not provided, it will print to stdout. If you provide Printer, this can print to a file:

```
XMLPrinter printer( fp );
doc.Print( &printer );
```

Or you can use a printer to print to memory:

```
XMLPrinter printer;
doc.Print( &printer );
// printer.CStr() has a const char* to the XML
```

Definition at line 2478 of file tinyxml2.cpp.

### 7.16.3.24 PrintError()

```
void tinyxml2::XMLDocument::PrintError () const
```

A (trivial) utility function that prints the ErrorStr() to stdout.
Definition at line 2540 of file tinyxml2.cpp.

### 7.16.3.25 ProcessEntities()

`bool tinyxml2::XMLDocument::ProcessEntities () const [inline]`

Definition at line 1791 of file tinyxml2.h.

### 7.16.3.26 RootElement() [1/2]

`XMLElement * tinyxml2::XMLDocument::RootElement () [inline]`

Return the root element of DOM. Equivalent to FirstChildElement(). To get the first node, use FirstChild().

Definition at line 1813 of file tinyxml2.h.

### 7.16.3.27 RootElement() [2/2]

`const XMLElement * tinyxml2::XMLDocument::RootElement () const [inline]`

Definition at line 1816 of file tinyxml2.h.

### 7.16.3.28 SaveFile() [1/2]

```
XMLError tinyxml2::XMLDocument::SaveFile (
            const char * filename,
            bool compact = false)
```

Save the XML file to disk. Returns XML_SUCCESS (0) on success, or an errorID.

Definition at line 2417 of file tinyxml2.cpp.

### 7.16.3.29 SaveFile() [2/2]

```
XMLError tinyxml2::XMLDocument::SaveFile (
            FILE * fp,
            bool compact = false)
```

Save the XML file to disk. You are responsible for providing and closing the FILE∗.

Returns XML_SUCCESS (0) on success, or an errorID.

Definition at line 2436 of file tinyxml2.cpp.

### 7.16.3.30 SetBOM()

```
void tinyxml2::XMLDocument::SetBOM (
            bool useBOM) [inline]
```

Sets whether to write the BOM when writing the file.

Definition at line 1806 of file tinyxml2.h.

### 7.16.3.31 ShallowClone()

```
virtual XMLNode * tinyxml2::XMLDocument::ShallowClone (
            XMLDocument * document) const [inline], [override], [virtual]
```

Make a copy of this node, but not its children. You may pass in a Document pointer that will be the owner of the new Node. If the 'document' is null, then the node returned will be allocated from the current Document. (this->GetDocument())

Note: if called on a XMLDocument, this will return null.

Implements tinyxml2::XMLNode.

Definition at line 1926 of file tinyxml2.h.

### 7.16.3.32 ShallowEqual()

```
virtual bool tinyxml2::XMLDocument::ShallowEqual (
            const XMLNode * compare) const [inline], [override], [virtual]
```

Test if 2 nodes are the same, but don't test children. The 2 nodes do not need to be in the same Document.

Note: if called on a XMLDocument, this will return false.

Implements tinyxml2::XMLNode.

Definition at line 1929 of file tinyxml2.h.

### 7.16.3.33 ToDocument() [1/2]

```
virtual const XMLDocument * tinyxml2::XMLDocument::ToDocument () const [inline], [override],
[virtual]
```
Reimplemented from tinyxml2::XMLNode.

Definition at line 1738 of file tinyxml2.h.

### 7.16.3.34 ToDocument() [2/2]

```
virtual XMLDocument * tinyxml2::XMLDocument::ToDocument () [inline], [override], [virtual]
```
Safely cast to a Document, or null.

Reimplemented from tinyxml2::XMLNode.

Definition at line 1734 of file tinyxml2.h.

### 7.16.3.35 WhitespaceMode()

```
Whitespace tinyxml2::XMLDocument::WhitespaceMode () const [inline]
```
Definition at line 1794 of file tinyxml2.h.

## 7.16.4 Friends And Related Symbol Documentation

### 7.16.4.1 XMLComment

```
friend class XMLComment [friend]
```
Definition at line 1726 of file tinyxml2.h.

### 7.16.4.2 XMLDeclaration

```
friend class XMLDeclaration [friend]
```
Definition at line 1727 of file tinyxml2.h.

### 7.16.4.3 XMLElement

```
friend class XMLElement [friend]
```
Definition at line 1721 of file tinyxml2.h.

### 7.16.4.4 XMLNode

```
friend class XMLNode [friend]
```
Definition at line 1724 of file tinyxml2.h.

### 7.16.4.5 XMLText

```
friend class XMLText [friend]
```
Definition at line 1725 of file tinyxml2.h.

### 7.16.4.6 XMLUnknown

```
friend class XMLUnknown [friend]
```
Definition at line 1728 of file tinyxml2.h.

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

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

## 7.17 tinyxml2::XMLElement Class Reference

```
#include <tinyxml2.h>
```
Inheritance diagram for tinyxml2::XMLElement:

```
tinyxml2::XMLNode
```

```
tinyxml2::XMLElement
```
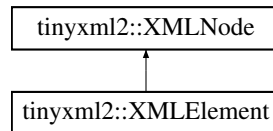
**Public Types**

- enum ElementClosingType { OPEN , CLOSED , CLOSING }

**Public Member Functions**

- const char ∗ Name () const

  *Get the name of an element (which is the Value() of the node.)*
- void SetName (const char ∗str, bool staticMem=false)

  *Set the name of the element.*
- virtual XMLElement ∗ ToElement () override

  *Safely cast to an Element, or null.*
- virtual const XMLElement ∗ ToElement () const override
- virtual bool Accept (XMLVisitor ∗visitor) const override
- const char ∗ Attribute (const char ∗name, const char ∗value=0) const
- int IntAttribute (const char ∗name, int defaultValue=0) const
- unsigned UnsignedAttribute (const char ∗name, unsigned defaultValue=0) const

  *See IntAttribute()*
- int64_t Int64Attribute (const char ∗name, int64_t defaultValue=0) const

  *See IntAttribute()*
- uint64_t Unsigned64Attribute (const char ∗name, uint64_t defaultValue=0) const

  *See IntAttribute()*
- bool BoolAttribute (const char ∗name, bool defaultValue=false) const

  *See IntAttribute()*
- double DoubleAttribute (const char ∗name, double defaultValue=0) const

  *See IntAttribute()*
- float FloatAttribute (const char ∗name, float defaultValue=0) const

  *See IntAttribute()*
- XMLError QueryIntAttribute (const char ∗name, int ∗value) const
- XMLError QueryUnsignedAttribute (const char ∗name, unsigned int ∗value) const

  *See QueryIntAttribute()*
- XMLError QueryInt64Attribute (const char ∗name, int64_t ∗value) const

  *See QueryIntAttribute()*
- XMLError QueryUnsigned64Attribute (const char ∗name, uint64_t ∗value) const

  *See QueryIntAttribute()*
- XMLError QueryBoolAttribute (const char ∗name, bool ∗value) const

  *See QueryIntAttribute()*
- XMLError QueryDoubleAttribute (const char ∗name, double ∗value) const

  *See QueryIntAttribute()*
- XMLError QueryFloatAttribute (const char ∗name, float ∗value) const

  *See QueryIntAttribute()*
- XMLError QueryStringAttribute (const char ∗name, const char ∗∗value) const

  *See QueryIntAttribute()*
- XMLError QueryAttribute (const char ∗name, int ∗value) const
- XMLError QueryAttribute (const char ∗name, unsigned int ∗value) const
- XMLError QueryAttribute (const char ∗name, int64_t ∗value) const

- **XMLError QueryAttribute** (const char ∗name, uint64_t ∗value) const
- **XMLError QueryAttribute** (const char ∗name, bool ∗value) const
- **XMLError QueryAttribute** (const char ∗name, double ∗value) const
- **XMLError QueryAttribute** (const char ∗name, float ∗value) const
- **XMLError QueryAttribute** (const char ∗name, const char ∗∗value) const
- void **SetAttribute** (const char ∗name, const char ∗value)

  *Sets the named attribute to value.*
- void **SetAttribute** (const char ∗name, int value)

  *Sets the named attribute to value.*
- void **SetAttribute** (const char ∗name, unsigned value)

  *Sets the named attribute to value.*
- void **SetAttribute** (const char ∗name, int64_t value)

  *Sets the named attribute to value.*
- void **SetAttribute** (const char ∗name, uint64_t value)

  *Sets the named attribute to value.*
- void **SetAttribute** (const char ∗name, bool value)

  *Sets the named attribute to value.*
- void **SetAttribute** (const char ∗name, double value)

  *Sets the named attribute to value.*
- void **SetAttribute** (const char ∗name, float value)

  *Sets the named attribute to value.*
- void **DeleteAttribute** (const char ∗name)
- const **XMLAttribute** ∗ **FirstAttribute** () const

  *Return the first attribute in the list.*
- const **XMLAttribute** ∗ **FindAttribute** (const char ∗name) const

  *Query a specific attribute in the list.*
- const char ∗ **GetText** () const
- void **SetText** (const char ∗inText)
- void **SetText** (int value)

  *Convenience method for setting text inside an element. See *SetText()* for important limitations.*
- void **SetText** (unsigned value)

  *Convenience method for setting text inside an element. See *SetText()* for important limitations.*
- void **SetText** (int64_t value)

  *Convenience method for setting text inside an element. See *SetText()* for important limitations.*
- void **SetText** (uint64_t value)

  *Convenience method for setting text inside an element. See *SetText()* for important limitations.*
- void **SetText** (bool value)

  *Convenience method for setting text inside an element. See *SetText()* for important limitations.*
- void **SetText** (double value)

  *Convenience method for setting text inside an element. See *SetText()* for important limitations.*
- void **SetText** (float value)

  *Convenience method for setting text inside an element. See *SetText()* for important limitations.*
- **XMLError QueryIntText** (int ∗ival) const
- **XMLError QueryUnsignedText** (unsigned ∗uval) const

  *See *QueryIntText()**
- **XMLError QueryInt64Text** (int64_t ∗uval) const

  *See *QueryIntText()**
- **XMLError QueryUnsigned64Text** (uint64_t ∗uval) const

  *See *QueryIntText()**
- **XMLError QueryBoolText** (bool ∗bval) const

  *See *QueryIntText()**

- XMLError QueryDoubleText (double ∗dval) const

    *See QueryIntText()*
- XMLError QueryFloatText (float ∗fval) const

    *See QueryIntText()*
- int IntText (int defaultValue=0) const
- unsigned UnsignedText (unsigned defaultValue=0) const

    *See QueryIntText()*
- int64_t Int64Text (int64_t defaultValue=0) const

    *See QueryIntText()*
- uint64_t Unsigned64Text (uint64_t defaultValue=0) const

    *See QueryIntText()*
- bool BoolText (bool defaultValue=false) const

    *See QueryIntText()*
- double DoubleText (double defaultValue=0) const

    *See QueryIntText()*
- float FloatText (float defaultValue=0) const

    *See QueryIntText()*
- XMLElement ∗ InsertNewChildElement (const char ∗name)
- XMLComment ∗ InsertNewComment (const char ∗comment)

    *See InsertNewChildElement()*
- XMLText ∗ InsertNewText (const char ∗text)

    *See InsertNewChildElement()*
- XMLDeclaration ∗ InsertNewDeclaration (const char ∗text)

    *See InsertNewChildElement()*
- XMLUnknown ∗ InsertNewUnknown (const char ∗text)

    *See InsertNewChildElement()*
- ElementClosingType ClosingType () const
- virtual XMLNode ∗ ShallowClone (XMLDocument ∗document) const override
- virtual bool ShallowEqual (const XMLNode ∗compare) const override

## Public Member Functions inherited from tinyxml2::XMLNode

- const XMLDocument ∗ GetDocument () const

    *Get the XMLDocument that owns this XMLNode.*
- XMLDocument ∗ GetDocument ()

    *Get the XMLDocument that owns this XMLNode.*
- virtual XMLText ∗ ToText ()

    *Safely cast to Text, or null.*
- virtual XMLComment ∗ ToComment ()

    *Safely cast to a Comment, or null.*
- virtual XMLDocument ∗ ToDocument ()

    *Safely cast to a Document, or null.*
- virtual XMLDeclaration ∗ ToDeclaration ()

    *Safely cast to a Declaration, or null.*
- virtual XMLUnknown ∗ ToUnknown ()

    *Safely cast to an Unknown, or null.*
- virtual const XMLText ∗ ToText () const
- virtual const XMLComment ∗ ToComment () const
- virtual const XMLDocument ∗ ToDocument () const
- virtual const XMLDeclaration ∗ ToDeclaration () const
- virtual const XMLUnknown ∗ ToUnknown () const
- int ChildElementCount (const char ∗value) const

- int ChildElementCount () const
- const char ∗ Value () const
- void SetValue (const char ∗val, bool staticMem=false)
- int GetLineNum () const

    *Gets the line number the node is in, if the document was parsed from a file.*

- const XMLNode ∗ Parent () const

    *Get the parent of this node on the DOM.*

- XMLNode ∗ Parent ()
- bool NoChildren () const

    *Returns true if this node has no children.*

- const XMLNode ∗ FirstChild () const

    *Get the first child node, or null if none exists.*

- XMLNode ∗ FirstChild ()
- const XMLElement ∗ FirstChildElement (const char ∗name=0) const
- XMLElement ∗ FirstChildElement (const char ∗name=0)
- const XMLNode ∗ LastChild () const

    *Get the last child node, or null if none exists.*

- XMLNode ∗ LastChild ()
- const XMLElement ∗ LastChildElement (const char ∗name=0) const
- XMLElement ∗ LastChildElement (const char ∗name=0)
- const XMLNode ∗ PreviousSibling () const

    *Get the previous (left) sibling node of this node.*

- XMLNode ∗ PreviousSibling ()
- const XMLElement ∗ PreviousSiblingElement (const char ∗name=0) const

    *Get the previous (left) sibling element of this node, with an optionally supplied name.*

- XMLElement ∗ PreviousSiblingElement (const char ∗name=0)
- const XMLNode ∗ NextSibling () const

    *Get the next (right) sibling node of this node.*

- XMLNode ∗ NextSibling ()
- const XMLElement ∗ NextSiblingElement (const char ∗name=0) const

    *Get the next (right) sibling element of this node, with an optionally supplied name.*

- XMLElement ∗ NextSiblingElement (const char ∗name=0)
- XMLNode ∗ InsertEndChild (XMLNode ∗addThis)
- XMLNode ∗ LinkEndChild (XMLNode ∗addThis)
- XMLNode ∗ InsertFirstChild (XMLNode ∗addThis)
- XMLNode ∗ InsertAfterChild (XMLNode ∗afterThis, XMLNode ∗addThis)
- void DeleteChildren ()
- void DeleteChild (XMLNode ∗node)
- XMLNode ∗ DeepClone (XMLDocument ∗target) const
- void SetUserData (void ∗userData)
- void ∗ GetUserData () const

## Protected Member Functions

- char ∗ ParseDeep (char ∗p, StrPair ∗parentEndTag, int ∗curLineNumPtr) override

## Protected Member Functions inherited from **tinyxml2::XMLNode**

- XMLNode (XMLDocument ∗)
- virtual ∼XMLNode ()

## Friends

- class XMLDocument

**Additional Inherited Members**

## Protected Attributes inherited from tinyxml2::XMLNode

- XMLDocument ∗ _document
- XMLNode ∗ _parent
- StrPair _value
- int _parseLineNum
- XMLNode ∗ _firstChild
- XMLNode ∗ _lastChild
- XMLNode ∗ _prev
- XMLNode ∗ _next
- void ∗ _userData

### 7.17.1 Detailed Description

The element is a container class. It has a value, the element name, and can contain other elements, text, comments, and unknowns. Elements also contain an arbitrary number of attributes.
Definition at line 1266 of file tinyxml2.h.

### 7.17.2 Member Enumeration Documentation

#### 7.17.2.1 ElementClosingType

```
enum tinyxml2::XMLElement::ElementClosingType
```

**Enumerator**

| OPEN | |
|------|--|
| CLOSED | |
| CLOSING | |

Definition at line 1673 of file tinyxml2.h.

### 7.17.3 Member Function Documentation

#### 7.17.3.1 Accept()

```
bool tinyxml2::XMLElement::Accept (
              XMLVisitor * visitor) const  [override], [virtual]
```
Accept a hierarchical visit of the nodes in the TinyXML-2 DOM. Every node in the XML tree will be conditionally visited and the host will be called back via the XMLVisitor interface.
This is essentially a SAX interface for TinyXML-2. (Note however it doesn't re-parse the XML for the callbacks, so the performance of TinyXML-2 is unchanged by using this interface versus any other.)
The interface has been based on ideas from:

- http://www.saxproject.org/

- http://c2.com/cgi/wiki?HierarchicalVisitorPattern

Which are both good references for "visiting".
An example of using Accept():

```
XMLPrinter printer;
tinyxmlDoc.Accept( &printer );
const char* xmlcstr = printer.CStr();
```

Implements tinyxml2::XMLNode.
Definition at line 2143 of file tinyxml2.cpp.

### 7.17.3.2 Attribute()

```
const char * tinyxml2::XMLElement::Attribute (
            const char * name,
            const char * value = 0) const
```

Given an attribute name, Attribute() returns the value for the attribute of that name, or null if none exists. For example:

```
const char* value = ele->Attribute( "foo" );
```

The 'value' parameter is normally null. However, if specified, the attribute will only be returned if the 'name' and 'value' match. This allow you to write code:

```
if ( ele->Attribute( "foo", "bar" ) ) callFooIsBar();
```

rather than:

```
if ( ele->Attribute( "foo" ) ) {
    if ( strcmp( ele->Attribute( "foo" ), "bar" ) == 0 ) callFooIsBar();
}
```

Definition at line 1627 of file tinyxml2.cpp.

### 7.17.3.3 BoolAttribute()

```
bool tinyxml2::XMLElement::BoolAttribute (
            const char * name,
            bool defaultValue = false) const
```

See IntAttribute()

Definition at line 1667 of file tinyxml2.cpp.

### 7.17.3.4 BoolText()

```
bool tinyxml2::XMLElement::BoolText (
            bool defaultValue = false) const
```

See QueryIntText()

Definition at line 1890 of file tinyxml2.cpp.

### 7.17.3.5 ClosingType()

```
ElementClosingType tinyxml2::XMLElement::ClosingType () const  [inline]
```

Definition at line 1678 of file tinyxml2.h.

### 7.17.3.6 DeleteAttribute()

```
void tinyxml2::XMLElement::DeleteAttribute (
            const char * name)
```

Delete an attribute.

Definition at line 1940 of file tinyxml2.cpp.

### 7.17.3.7 DoubleAttribute()

```
double tinyxml2::XMLElement::DoubleAttribute (
            const char * name,
            double defaultValue = 0) const
```

See IntAttribute()

Definition at line 1674 of file tinyxml2.cpp.

### 7.17.3.8 DoubleText()

```
double tinyxml2::XMLElement::DoubleText (
            double defaultValue = 0) const
```

See QueryIntText()

Definition at line 1897 of file tinyxml2.cpp.

### 7.17.3.9 FindAttribute()

```
const XMLAttribute * tinyxml2::XMLElement::FindAttribute (
            const char * name) const
```
Query a specific attribute in the list.
Definition at line 1616 of file tinyxml2.cpp.

### 7.17.3.10 FirstAttribute()

```
const XMLAttribute * tinyxml2::XMLElement::FirstAttribute () const  [inline]
```
Return the first attribute in the list.
Definition at line 1516 of file tinyxml2.h.

### 7.17.3.11 FloatAttribute()

```
float tinyxml2::XMLElement::FloatAttribute (
            const char * name,
            float defaultValue = 0) const
```
See IntAttribute()
Definition at line 1681 of file tinyxml2.cpp.

### 7.17.3.12 FloatText()

```
float tinyxml2::XMLElement::FloatText (
            float defaultValue = 0) const
```
See QueryIntText()
Definition at line 1904 of file tinyxml2.cpp.

### 7.17.3.13 GetText()

```
const char * tinyxml2::XMLElement::GetText () const
```
Convenience function for easy access to the text inside an element. Although easy and concise, GetText() is limited compared to getting the XMLText child and accessing it directly.
If the first child of 'this' is a XMLText, the GetText() returns the character string of the Text node, else null is returned. This is a convenient method for getting the text of simple contained text:

```
<foo>This is text</foo>
    const char* str = fooElement->GetText();
```

'str' will be a pointer to "This is text".
Note that this function can be misleading. If the element foo was created from this XML:

```
    <foo><b>This is text</b></foo>
```

then the value of str would be null. The first child node isn't a text node, it is another element. From this XML:

```
    <foo>This is <b>text</b></foo>
```

GetText() will return "This is ".
Definition at line 1688 of file tinyxml2.cpp.

### 7.17.3.14 InsertNewChildElement()

```
XMLElement * tinyxml2::XMLElement::InsertNewChildElement (
            const char * name)
```
Convenience method to create a new XMLElement and add it as last (right) child of this node. Returns the created and inserted element.
Definition at line 2039 of file tinyxml2.cpp.

**7.17.3.15 InsertNewComment()**

XMLComment * tinyxml2::XMLElement::InsertNewComment (
            const char * *comment*)

See InsertNewChildElement()

Definition at line 2045 of file tinyxml2.cpp.

**7.17.3.16 InsertNewDeclaration()**

XMLDeclaration * tinyxml2::XMLElement::InsertNewDeclaration (
            const char * *text*)

See InsertNewChildElement()

Definition at line 2057 of file tinyxml2.cpp.

**7.17.3.17 InsertNewText()**

XMLText * tinyxml2::XMLElement::InsertNewText (
            const char * *text*)

See InsertNewChildElement()

Definition at line 2051 of file tinyxml2.cpp.

**7.17.3.18 InsertNewUnknown()**

XMLUnknown * tinyxml2::XMLElement::InsertNewUnknown (
            const char * *text*)

See InsertNewChildElement()

Definition at line 2063 of file tinyxml2.cpp.

**7.17.3.19 Int64Attribute()**

int64_t tinyxml2::XMLElement::Int64Attribute (
            const char * *name*,
            int64_t *defaultValue* = 0) const

See IntAttribute()

Definition at line 1653 of file tinyxml2.cpp.

**7.17.3.20 Int64Text()**

int64_t tinyxml2::XMLElement::Int64Text (
            int64_t *defaultValue* = 0) const

See QueryIntText()

Definition at line 1876 of file tinyxml2.cpp.

**7.17.3.21 IntAttribute()**

int tinyxml2::XMLElement::IntAttribute (
            const char * *name*,
            int *defaultValue* = 0) const

Given an attribute name, IntAttribute() returns the value of the attribute interpreted as an integer. The default value will be returned if the attribute isn't present, or if there is an error. (For a method with error checking, see QueryIntAttribute()).

Definition at line 1639 of file tinyxml2.cpp.

**7.17.3.22 IntText()**

int tinyxml2::XMLElement::IntText (
            int *defaultValue* = 0) const

Definition at line 1862 of file tinyxml2.cpp.

### 7.17.3.23 Name()

```
const char * tinyxml2::XMLElement::Name () const  [inline]
```
Get the name of an element (which is the Value() of the node.)
Definition at line 1271 of file tinyxml2.h.

### 7.17.3.24 ParseDeep()

```
char * tinyxml2::XMLElement::ParseDeep (
            char * p,
            StrPair * parentEndTag,
            int * curLineNumPtr) [override], [protected], [virtual]
```
Reimplemented from tinyxml2::XMLNode.
Definition at line 2075 of file tinyxml2.cpp.

### 7.17.3.25 QueryAttribute() [1/8]

```
XMLError tinyxml2::XMLElement::QueryAttribute (
            const char * name,
            bool * value) const  [inline]
```
Definition at line 1450 of file tinyxml2.h.

### 7.17.3.26 QueryAttribute() [2/8]

```
XMLError tinyxml2::XMLElement::QueryAttribute (
            const char * name,
            const char ** value) const  [inline]
```
Definition at line 1462 of file tinyxml2.h.

### 7.17.3.27 QueryAttribute() [3/8]

```
XMLError tinyxml2::XMLElement::QueryAttribute (
            const char * name,
            double * value) const  [inline]
```
Definition at line 1454 of file tinyxml2.h.

### 7.17.3.28 QueryAttribute() [4/8]

```
XMLError tinyxml2::XMLElement::QueryAttribute (
            const char * name,
            float * value) const  [inline]
```
Definition at line 1458 of file tinyxml2.h.

### 7.17.3.29 QueryAttribute() [5/8]

```
XMLError tinyxml2::XMLElement::QueryAttribute (
            const char * name,
            int * value) const  [inline]
```
Given an attribute name, QueryAttribute() returns XML_SUCCESS, XML_WRONG_ATTRIBUTE_TYPE if the conversion can't be performed, or XML_NO_ATTRIBUTE if the attribute doesn't exist. It is overloaded for the primitive types, and is a generally more convenient replacement of QueryIntAttribute() and related functions.
If successful, the result of the conversion will be written to 'value'. If not successful, nothing will be written to 'value'. This allows you to provide default value:

```
int value = 10;
QueryAttribute( "foo", &value );        // if "foo" isn't found, value will still be 10
```

Definition at line 1434 of file tinyxml2.h.

**7.17.3.30 QueryAttribute()** [6/8]

XMLError tinyxml2::XMLElement::QueryAttribute (
            const char * *name*,
            int64_t * *value*) const  [inline]

Definition at line 1442 of file tinyxml2.h.

**7.17.3.31 QueryAttribute()** [7/8]

XMLError tinyxml2::XMLElement::QueryAttribute (
            const char * *name*,
            uint64_t * *value*) const  [inline]

Definition at line 1446 of file tinyxml2.h.

**7.17.3.32 QueryAttribute()** [8/8]

XMLError tinyxml2::XMLElement::QueryAttribute (
            const char * *name*,
            unsigned int * *value*) const  [inline]

Definition at line 1438 of file tinyxml2.h.

**7.17.3.33 QueryBoolAttribute()**

XMLError tinyxml2::XMLElement::QueryBoolAttribute (
            const char * *name*,
            bool * *value*) const  [inline]

See QueryIntAttribute()

Definition at line 1381 of file tinyxml2.h.

**7.17.3.34 QueryBoolText()**

XMLError tinyxml2::XMLElement::QueryBoolText (
            bool * *bval*) const

See QueryIntText()

Definition at line 1824 of file tinyxml2.cpp.

**7.17.3.35 QueryDoubleAttribute()**

XMLError tinyxml2::XMLElement::QueryDoubleAttribute (
            const char * *name*,
            double * *value*) const  [inline]

See QueryIntAttribute()

Definition at line 1389 of file tinyxml2.h.

**7.17.3.36 QueryDoubleText()**

XMLError tinyxml2::XMLElement::QueryDoubleText (
            double * *dval*) const

See QueryIntText()

Definition at line 1837 of file tinyxml2.cpp.

**7.17.3.37 QueryFloatAttribute()**

XMLError tinyxml2::XMLElement::QueryFloatAttribute (
            const char * *name*,
            float * *value*) const  [inline]

See QueryIntAttribute()

Definition at line 1397 of file tinyxml2.h.

**7.17.3.38 QueryFloatText()**

XMLError tinyxml2::XMLElement::QueryFloatText (
            float ∗ *fval*) const

See QueryIntText()

Definition at line 1850 of file tinyxml2.cpp.

**7.17.3.39 QueryInt64Attribute()**

XMLError tinyxml2::XMLElement::QueryInt64Attribute (
            const char ∗ *name*,
            int64_t ∗ *value*) const  [inline]

See QueryIntAttribute()

Definition at line 1363 of file tinyxml2.h.

**7.17.3.40 QueryInt64Text()**

XMLError tinyxml2::XMLElement::QueryInt64Text (
            int64_t ∗ *uval*) const

See QueryIntText()

Definition at line 1798 of file tinyxml2.cpp.

**7.17.3.41 QueryIntAttribute()**

XMLError tinyxml2::XMLElement::QueryIntAttribute (
            const char ∗ *name*,
            int ∗ *value*) const  [inline]

Given an attribute name, QueryIntAttribute() returns XML_SUCCESS, XML_WRONG_ATTRIBUTE_TYPE if the conversion can't be performed, or XML_NO_ATTRIBUTE if the attribute doesn't exist. If successful, the result of the conversion will be written to 'value'. If not successful, nothing will be written to 'value'. This allows you to provide default value:

```
int value = 10;
QueryIntAttribute( "foo", &value );     // if "foo" isn't found, value will still be 10
```

Definition at line 1345 of file tinyxml2.h.

**7.17.3.42 QueryIntText()**

XMLError tinyxml2::XMLElement::QueryIntText (
            int ∗ *ival*) const

Convenience method to query the value of a child text node. This is probably best shown by example. Given you have a document is this form:

```
<point>
    <x>1</x>
    <y>1.4</y>
</point>
```

The QueryIntText() and similar functions provide a safe and easier way to get to the "value" of x and y.

```
int x = 0;
float y = 0;    // types of x and y are contrived for example
const XMLElement* xElement = pointElement->FirstChildElement( "x" );
const XMLElement* yElement = pointElement->FirstChildElement( "y" );
xElement->QueryIntText( &x );
yElement->QueryFloatText( &y );
```

**Returns**

XML_SUCCESS (0) on success, XML_CAN_NOT_CONVERT_TEXT if the text cannot be converted to the requested type, and XML_NO_TEXT_NODE if there is no child text to query.

Definition at line 1772 of file tinyxml2.cpp.

**7.17.3.43 QueryStringAttribute()**

XMLError tinyxml2::XMLElement::QueryStringAttribute (
            const char * *name*,
            const char ** *value*) const  [inline]

See QueryIntAttribute()

Definition at line 1406 of file tinyxml2.h.

**7.17.3.44 QueryUnsigned64Attribute()**

XMLError tinyxml2::XMLElement::QueryUnsigned64Attribute (
            const char * *name*,
            uint64_t * *value*) const  [inline]

See QueryIntAttribute()

Definition at line 1372 of file tinyxml2.h.

**7.17.3.45 QueryUnsigned64Text()**

XMLError tinyxml2::XMLElement::QueryUnsigned64Text (
            uint64_t * *uval*) const

See QueryIntText()

Definition at line 1811 of file tinyxml2.cpp.

**7.17.3.46 QueryUnsignedAttribute()**

XMLError tinyxml2::XMLElement::QueryUnsignedAttribute (
            const char * *name*,
            unsigned int * *value*) const  [inline]

See QueryIntAttribute()

Definition at line 1354 of file tinyxml2.h.

**7.17.3.47 QueryUnsignedText()**

XMLError tinyxml2::XMLElement::QueryUnsignedText (
            unsigned * *uval*) const

See QueryIntText()

Definition at line 1785 of file tinyxml2.cpp.

**7.17.3.48 SetAttribute()** **[1/8]**

void tinyxml2::XMLElement::SetAttribute (
            const char * *name*,
            bool *value*)  [inline]

Sets the named attribute to value.

Definition at line 1495 of file tinyxml2.h.

**7.17.3.49 SetAttribute()** **[2/8]**

void tinyxml2::XMLElement::SetAttribute (
            const char * *name*,
            const char * *value*)  [inline]

Sets the named attribute to value.

Definition at line 1467 of file tinyxml2.h.

**7.17.3.50 SetAttribute()** **[3/8]**

void tinyxml2::XMLElement::SetAttribute (
            const char * *name*,
            double *value*)  [inline]

Sets the named attribute to value.

Definition at line 1500 of file tinyxml2.h.

### 7.17.3.51 SetAttribute() [4/8]

```
void tinyxml2::XMLElement::SetAttribute (
            const char * name,
            float value) [inline]
```

Sets the named attribute to value.

Definition at line 1505 of file tinyxml2.h.

### 7.17.3.52 SetAttribute() [5/8]

```
void tinyxml2::XMLElement::SetAttribute (
            const char * name,
            int value) [inline]
```

Sets the named attribute to value.

Definition at line 1472 of file tinyxml2.h.

### 7.17.3.53 SetAttribute() [6/8]

```
void tinyxml2::XMLElement::SetAttribute (
            const char * name,
            int64_t value) [inline]
```

Sets the named attribute to value.

Definition at line 1483 of file tinyxml2.h.

### 7.17.3.54 SetAttribute() [7/8]

```
void tinyxml2::XMLElement::SetAttribute (
            const char * name,
            uint64_t value) [inline]
```

Sets the named attribute to value.

Definition at line 1489 of file tinyxml2.h.

### 7.17.3.55 SetAttribute() [8/8]

```
void tinyxml2::XMLElement::SetAttribute (
            const char * name,
            unsigned value) [inline]
```

Sets the named attribute to value.

Definition at line 1477 of file tinyxml2.h.

### 7.17.3.56 SetName()

```
void tinyxml2::XMLElement::SetName (
            const char * str,
            bool staticMem = false) [inline]
```

Set the name of the element.

Definition at line 1275 of file tinyxml2.h.

### 7.17.3.57 SetText() [1/8]

```
void tinyxml2::XMLElement::SetText (
            bool value)
```

Convenience method for setting text inside an element. See SetText() for important limitations.

Definition at line 1748 of file tinyxml2.cpp.

**7.17.3.58 SetText() [2/8]**

```
void tinyxml2::XMLElement::SetText (
              const char * inText)
```

Convenience function for easy access to the text inside an element. Although easy and concise, SetText() is limited compared to creating an XMLText child and mutating it directly.

If the first child of 'this' is a XMLText, SetText() sets its value to the given string, otherwise it will create a first child that is an XMLText.

This is a convenient method for setting the text of simple contained text:

```
<foo>This is text</foo>
    fooElement->SetText( "Hullaballoo!" );
<foo>Hullaballoo!</foo>
```

Note that this function can be misleading. If the element foo was created from this XML:

```
    <foo><b>This is text</b></foo>
```

then it will not change "This is text", but rather prefix it with a text element:

```
    <foo>Hullaballoo!<b>This is text</b></foo>
```

For this XML:

```
    <foo />
```

SetText() will generate

```
    <foo>Hullaballoo!</foo>
```

Definition at line 1707 of file tinyxml2.cpp.

**7.17.3.59 SetText() [3/8]**

```
void tinyxml2::XMLElement::SetText (
              double value)
```

Convenience method for setting text inside an element. See SetText() for important limitations.
Definition at line 1764 of file tinyxml2.cpp.

**7.17.3.60 SetText() [4/8]**

```
void tinyxml2::XMLElement::SetText (
              float value)
```

Convenience method for setting text inside an element. See SetText() for important limitations.
Definition at line 1756 of file tinyxml2.cpp.

**7.17.3.61 SetText() [5/8]**

```
void tinyxml2::XMLElement::SetText (
              int value)
```

Convenience method for setting text inside an element. See SetText() for important limitations.
Definition at line 1718 of file tinyxml2.cpp.

**7.17.3.62 SetText() [6/8]**

```
void tinyxml2::XMLElement::SetText (
              int64_t value)
```

Convenience method for setting text inside an element. See SetText() for important limitations.
Definition at line 1734 of file tinyxml2.cpp.

**7.17.3.63 SetText() [7/8]**

```
void tinyxml2::XMLElement::SetText (
              uint64_t value)
```

Convenience method for setting text inside an element. See SetText() for important limitations.
Definition at line 1741 of file tinyxml2.cpp.

### 7.17.3.64 SetText() [8/8]

```
void tinyxml2::XMLElement::SetText (
              unsigned value)
```

Convenience method for setting text inside an element. See SetText() for important limitations.

Definition at line 1726 of file tinyxml2.cpp.

### 7.17.3.65 ShallowClone()

```
XMLNode * tinyxml2::XMLElement::ShallowClone (
              XMLDocument * document) const  [override], [virtual]
```

Make a copy of this node, but not its children. You may pass in a Document pointer that will be the owner of the new Node. If the 'document' is null, then the node returned will be allocated from the current Document. (this->GetDocument())

Note: if called on a XMLDocument, this will return null.

Implements tinyxml2::XMLNode.

Definition at line 2104 of file tinyxml2.cpp.

### 7.17.3.66 ShallowEqual()

```
bool tinyxml2::XMLElement::ShallowEqual (
              const XMLNode * compare) const  [override], [virtual]
```

Test if 2 nodes are the same, but don't test children. The 2 nodes do not need to be in the same Document.

Note: if called on a XMLDocument, this will return false.

Implements tinyxml2::XMLNode.

Definition at line 2117 of file tinyxml2.cpp.

### 7.17.3.67 ToElement() [1/2]

```
virtual const XMLElement * tinyxml2::XMLElement::ToElement () const  [inline], [override],
[virtual]
```

Reimplemented from tinyxml2::XMLNode.

Definition at line 1282 of file tinyxml2.h.

### 7.17.3.68 ToElement() [2/2]

```
virtual XMLElement * tinyxml2::XMLElement::ToElement ()  [inline], [override], [virtual]
```

Safely cast to an Element, or null.

Reimplemented from tinyxml2::XMLNode.

Definition at line 1279 of file tinyxml2.h.

### 7.17.3.69 Unsigned64Attribute()

```
uint64_t tinyxml2::XMLElement::Unsigned64Attribute (
              const char * name,
              uint64_t defaultValue = 0) const
```

See IntAttribute()

Definition at line 1660 of file tinyxml2.cpp.

### 7.17.3.70 Unsigned64Text()

```
uint64_t tinyxml2::XMLElement::Unsigned64Text (
              uint64_t defaultValue = 0) const
```

See QueryIntText()

Definition at line 1883 of file tinyxml2.cpp.

### 7.17.3.71 UnsignedAttribute()

```
unsigned tinyxml2::XMLElement::UnsignedAttribute (
              const char * name,
```

```
                unsigned defaultValue = 0) const
```
See IntAttribute()
Definition at line 1646 of file tinyxml2.cpp.

### 7.17.3.72 UnsignedText()

```
unsigned tinyxml2::XMLElement::UnsignedText (
                unsigned defaultValue = 0) const
```
See QueryIntText()
Definition at line 1869 of file tinyxml2.cpp.

## 7.17.4 Friends And Related Symbol Documentation

### 7.17.4.1 XMLDocument

```
friend class XMLDocument  [friend]
```
Definition at line 1268 of file tinyxml2.h.
The documentation for this class was generated from the following files:

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

## 7.18 tinyxml2::XMLHandle Class Reference

```
#include <tinyxml2.h>
```

**Public Member Functions**

- XMLHandle (XMLNode ∗node)

  *Create a handle from any node (at any depth of the tree.) This can be a null pointer.*
- XMLHandle (XMLNode &node)

  *Create a handle from a node.*
- XMLHandle (const XMLHandle &ref)

  *Copy constructor.*
- XMLHandle & operator= (const XMLHandle &ref)

  *Assignment.*
- XMLHandle FirstChild ()

  *Get the first child of this handle.*
- XMLHandle FirstChildElement (const char ∗name=0)

  *Get the first child element of this handle.*
- XMLHandle LastChild ()

  *Get the last child of this handle.*
- XMLHandle LastChildElement (const char ∗name=0)

  *Get the last child element of this handle.*
- XMLHandle PreviousSibling ()

  *Get the previous sibling of this handle.*
- XMLHandle PreviousSiblingElement (const char ∗name=0)

  *Get the previous sibling element of this handle.*
- XMLHandle NextSibling ()

  *Get the next sibling of this handle.*
- XMLHandle NextSiblingElement (const char ∗name=0)

  *Get the next sibling element of this handle.*
- XMLNode ∗ ToNode ()

  *Safe cast to XMLNode. This can return null.*
- XMLElement ∗ ToElement ()

*Safe cast to [XMLElement](). This can return null.*

- [XMLText]() * [ToText]() ()

  *Safe cast to [XMLText](). This can return null.*

- [XMLUnknown]() * [ToUnknown]() ()

  *Safe cast to [XMLUnknown](). This can return null.*

- [XMLDeclaration]() * [ToDeclaration]() ()

  *Safe cast to [XMLDeclaration](). This can return null.*

## 7.18.1   Detailed Description

A [XMLHandle]() is a class that wraps a node pointer with null checks; this is an incredibly useful thing. Note that [XMLHandle]() is not part of the TinyXML-2 DOM structure. It is a separate utility class.

Take an example:

```
<Document>
    <Element attributeA = "valueA">
        <Child attributeB = "value1" />
        <Child attributeB = "value2" />
    </Element>
</Document>
```

Assuming you want the value of "attributeB" in the 2nd "Child" element, it's very easy to write a *lot* of code that looks like:

```
XMLElement* root = document.FirstChildElement( "Document" );
if ( root )
{
    XMLElement* element = root->FirstChildElement( "Element" );
    if ( element )
    {
        XMLElement* child = element->FirstChildElement( "Child" );
        if ( child )
        {
            XMLElement* child2 = child->NextSiblingElement( "Child" );
            if ( child2 )
            {
                // Finally do something useful.
```

And that doesn't even cover "else" cases. [XMLHandle]() addresses the verbosity of such code. A [XMLHandle]() checks for null pointers so it is perfectly safe and correct to use:

```
XMLHandle docHandle( &document );
XMLElement* child2 = docHandle.FirstChildElement( "Document" ).FirstChildElement( "Element" ).FirstChildElemen
if ( child2 )
{
    // do something useful
```

Which is MUCH more concise and useful.

It is also safe to copy handles - internally they are nothing more than node pointers.

```
XMLHandle handleCopy = handle;
```

See also [XMLConstHandle](), which is the same as [XMLHandle](), but operates on const objects.

Definition at line [2055]() of file [tinyxml2.h]().

## 7.18.2   Constructor & Destructor Documentation

### 7.18.2.1   XMLHandle() [1/3]

```
tinyxml2::XMLHandle::XMLHandle (
                XMLNode * node) [inline], [explicit]
```

Create a handle from any node (at any depth of the tree.) This can be a null pointer.

Definition at line [2059]() of file [tinyxml2.h]().

**7.18.2.2 XMLHandle()** [2/3]

```
tinyxml2::XMLHandle::XMLHandle (
                XMLNode & node) [inline], [explicit]
```
Create a handle from a node.
Definition at line 2062 of file tinyxml2.h.

**7.18.2.3 XMLHandle()** [3/3]

```
tinyxml2::XMLHandle::XMLHandle (
                const XMLHandle & ref) [inline]
```
Copy constructor.
Definition at line 2065 of file tinyxml2.h.

### 7.18.3 Member Function Documentation

#### 7.18.3.1 FirstChild()

```
XMLHandle tinyxml2::XMLHandle::FirstChild () [inline]
```
Get the first child of this handle.
Definition at line 2074 of file tinyxml2.h.

#### 7.18.3.2 FirstChildElement()

```
XMLHandle tinyxml2::XMLHandle::FirstChildElement (
                const char * name = 0) [inline]
```
Get the first child element of this handle.
Definition at line 2078 of file tinyxml2.h.

#### 7.18.3.3 LastChild()

```
XMLHandle tinyxml2::XMLHandle::LastChild () [inline]
```
Get the last child of this handle.
Definition at line 2082 of file tinyxml2.h.

#### 7.18.3.4 LastChildElement()

```
XMLHandle tinyxml2::XMLHandle::LastChildElement (
                const char * name = 0) [inline]
```
Get the last child element of this handle.
Definition at line 2086 of file tinyxml2.h.

#### 7.18.3.5 NextSibling()

```
XMLHandle tinyxml2::XMLHandle::NextSibling () [inline]
```
Get the next sibling of this handle.
Definition at line 2098 of file tinyxml2.h.

#### 7.18.3.6 NextSiblingElement()

```
XMLHandle tinyxml2::XMLHandle::NextSiblingElement (
                const char * name = 0) [inline]
```
Get the next sibling element of this handle.
Definition at line 2102 of file tinyxml2.h.

#### 7.18.3.7 operator=()

```
XMLHandle & tinyxml2::XMLHandle::operator= (
                const XMLHandle & ref) [inline]
```
Assignment.
Definition at line 2068 of file tinyxml2.h.

**7.18.3.8 PreviousSibling()**

`XMLHandle tinyxml2::XMLHandle::PreviousSibling () [inline]`

Get the previous sibling of this handle.

Definition at line 2090 of file tinyxml2.h.

**7.18.3.9 PreviousSiblingElement()**

`XMLHandle tinyxml2::XMLHandle::PreviousSiblingElement (`
`            const char * name = 0) [inline]`

Get the previous sibling element of this handle.

Definition at line 2094 of file tinyxml2.h.

**7.18.3.10 ToDeclaration()**

`XMLDeclaration * tinyxml2::XMLHandle::ToDeclaration () [inline]`

Safe cast to XMLDeclaration. This can return null.

Definition at line 2123 of file tinyxml2.h.

**7.18.3.11 ToElement()**

`XMLElement * tinyxml2::XMLHandle::ToElement () [inline]`

Safe cast to XMLElement. This can return null.

Definition at line 2111 of file tinyxml2.h.

**7.18.3.12 ToNode()**

`XMLNode * tinyxml2::XMLHandle::ToNode () [inline]`

Safe cast to XMLNode. This can return null.

Definition at line 2107 of file tinyxml2.h.

**7.18.3.13 ToText()**

`XMLText * tinyxml2::XMLHandle::ToText () [inline]`

Safe cast to XMLText. This can return null.

Definition at line 2115 of file tinyxml2.h.

**7.18.3.14 ToUnknown()**

`XMLUnknown * tinyxml2::XMLHandle::ToUnknown () [inline]`

Safe cast to XMLUnknown. This can return null.

Definition at line 2119 of file tinyxml2.h.

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

- external/tinyxml2/tinyxml2.h

# 7.19 tinyxml2::XMLNode Class Reference

`#include <tinyxml2.h>`

Inheritance diagram for tinyxml2::XMLNode:
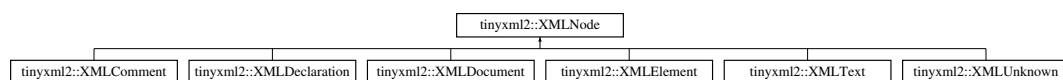
**Public Member Functions**

- const XMLDocument ∗ GetDocument () const

    *Get the XMLDocument that owns this XMLNode.*
- XMLDocument ∗ GetDocument ()

    *Get the XMLDocument that owns this XMLNode.*
- virtual XMLElement ∗ ToElement ()

    *Safely cast to an Element, or null.*
- virtual XMLText ∗ ToText ()

    *Safely cast to Text, or null.*
- virtual XMLComment ∗ ToComment ()

    *Safely cast to a Comment, or null.*
- virtual XMLDocument ∗ ToDocument ()

    *Safely cast to a Document, or null.*
- virtual XMLDeclaration ∗ ToDeclaration ()

    *Safely cast to a Declaration, or null.*
- virtual XMLUnknown ∗ ToUnknown ()

    *Safely cast to an Unknown, or null.*
- virtual const XMLElement ∗ ToElement () const
- virtual const XMLText ∗ ToText () const
- virtual const XMLComment ∗ ToComment () const
- virtual const XMLDocument ∗ ToDocument () const
- virtual const XMLDeclaration ∗ ToDeclaration () const
- virtual const XMLUnknown ∗ ToUnknown () const
- int ChildElementCount (const char ∗value) const
- int ChildElementCount () const
- const char ∗ Value () const
- void SetValue (const char ∗val, bool staticMem=false)
- int GetLineNum () const

    *Gets the line number the node is in, if the document was parsed from a file.*
- const XMLNode ∗ Parent () const

    *Get the parent of this node on the DOM.*
- XMLNode ∗ Parent ()
- bool NoChildren () const

    *Returns true if this node has no children.*
- const XMLNode ∗ FirstChild () const

    *Get the first child node, or null if none exists.*
- XMLNode ∗ FirstChild ()
- const XMLElement ∗ FirstChildElement (const char ∗name=0) const
- XMLElement ∗ FirstChildElement (const char ∗name=0)
- const XMLNode ∗ LastChild () const

    *Get the last child node, or null if none exists.*
- XMLNode ∗ LastChild ()
- const XMLElement ∗ LastChildElement (const char ∗name=0) const
- XMLElement ∗ LastChildElement (const char ∗name=0)
- const XMLNode ∗ PreviousSibling () const

    *Get the previous (left) sibling node of this node.*
- XMLNode ∗ PreviousSibling ()
- const XMLElement ∗ PreviousSiblingElement (const char ∗name=0) const

    *Get the previous (left) sibling element of this node, with an optionally supplied name.*
- XMLElement ∗ PreviousSiblingElement (const char ∗name=0)
- const XMLNode ∗ NextSibling () const

    *Get the next (right) sibling node of this node.*

- XMLNode ∗ NextSibling ()
- const XMLElement ∗ NextSiblingElement (const char ∗name=0) const

  *Get the next (right) sibling element of this node, with an optionally supplied name.*
- XMLElement ∗ NextSiblingElement (const char ∗name=0)
- XMLNode ∗ InsertEndChild (XMLNode ∗addThis)
- XMLNode ∗ LinkEndChild (XMLNode ∗addThis)
- XMLNode ∗ InsertFirstChild (XMLNode ∗addThis)
- XMLNode ∗ InsertAfterChild (XMLNode ∗afterThis, XMLNode ∗addThis)
- void DeleteChildren ()
- void DeleteChild (XMLNode ∗node)
- virtual XMLNode ∗ ShallowClone (XMLDocument ∗document) const =0
- XMLNode ∗ DeepClone (XMLDocument ∗target) const
- virtual bool ShallowEqual (const XMLNode ∗compare) const =0
- virtual bool Accept (XMLVisitor ∗visitor) const =0
- void SetUserData (void ∗userData)
- void ∗ GetUserData () const

**Protected Member Functions**

- XMLNode (XMLDocument ∗)
- virtual ∼XMLNode ()
- virtual char ∗ ParseDeep (char ∗p, StrPair ∗parentEndTag, int ∗curLineNumPtr)

**Protected Attributes**

- XMLDocument ∗ _document
- XMLNode ∗ _parent
- StrPair _value
- int _parseLineNum
- XMLNode ∗ _firstChild
- XMLNode ∗ _lastChild
- XMLNode ∗ _prev
- XMLNode ∗ _next
- void ∗ _userData

**Friends**

- class XMLDocument
- class XMLElement

## 7.19.1 Detailed Description

XMLNode is a base class for every object that is in the XML Document Object Model (DOM), except XMLAttributes. Nodes have siblings, a parent, and children which can be navigated. A node is always in a XMLDocument. The type of a XMLNode can be queried, and it can be cast to its more defined type.

A XMLDocument allocates memory for all its Nodes. When the XMLDocument gets deleted, all its Nodes will also be deleted.

```
A Document can contain: Element (container or leaf)
                        Comment (leaf)
                        Unknown (leaf)
                        Declaration( leaf )

An Element can contain: Element (container or leaf)
                        Text    (leaf)
                        Attributes (not on tree)
                        Comment (leaf)
                        Unknown (leaf)
```

Definition at line 670 of file tinyxml2.h.

### 7.19.2 Constructor & Destructor Documentation

#### 7.19.2.1 XMLNode()

```
tinyxml2::XMLNode::XMLNode (
            XMLDocument * doc) [explicit], [protected]
```
Definition at line 798 of file tinyxml2.cpp.

#### 7.19.2.2 ∼XMLNode()

```
tinyxml2::XMLNode::∼XMLNode () [protected], [virtual]
```
Definition at line 811 of file tinyxml2.cpp.

### 7.19.3 Member Function Documentation

#### 7.19.3.1 Accept()

```
virtual bool tinyxml2::XMLNode::Accept (
            XMLVisitor * visitor) const [pure virtual]
```
Accept a hierarchical visit of the nodes in the TinyXML-2 DOM. Every node in the XML tree will be conditionally visited and the host will be called back via the XMLVisitor interface.

This is essentially a SAX interface for TinyXML-2. (Note however it doesn't re-parse the XML for the callbacks, so the performance of TinyXML-2 is unchanged by using this interface versus any other.)

The interface has been based on ideas from:

- http://www.saxproject.org/

- http://c2.com/cgi/wiki?HierarchicalVisitorPattern

Which are both good references for "visiting".

An example of using Accept():

```
XMLPrinter printer;
tinyxmlDoc.Accept( &printer );
const char* xmlcstr = printer.CStr();
```

Implemented in tinyxml2::XMLComment, tinyxml2::XMLDeclaration, tinyxml2::XMLDocument, tinyxml2::XMLElement, tinyxml2::XMLText, and tinyxml2::XMLUnknown.

#### 7.19.3.2 ChildElementCount() [1/2]

```
int tinyxml2::XMLNode::ChildElementCount () const
```
Definition at line 834 of file tinyxml2.cpp.

#### 7.19.3.3 ChildElementCount() [2/2]

```
int tinyxml2::XMLNode::ChildElementCount (
            const char * value) const
```
Definition at line 821 of file tinyxml2.cpp.

#### 7.19.3.4 DeepClone()

```
XMLNode * tinyxml2::XMLNode::DeepClone (
            XMLDocument * target) const
```
Make a copy of this node and all its children.

If the 'target' is null, then the nodes will be allocated in the current document. If 'target' is specified, the memory will be allocated in the specified XMLDocument.

NOTE: This is probably not the correct tool to copy a document, since XMLDocuments can have multiple top level XMLNodes. You probably want to use XMLDocument::DeepCopy()

Definition at line 865 of file tinyxml2.cpp.

### 7.19.3.5 DeleteChild()

```
void tinyxml2::XMLNode::DeleteChild (
            XMLNode * node)
```
Delete a child of this node.

Definition at line 912 of file tinyxml2.cpp.

### 7.19.3.6 DeleteChildren()

```
void tinyxml2::XMLNode::DeleteChildren ()
```
Delete all the children of this node.

Definition at line 878 of file tinyxml2.cpp.

### 7.19.3.7 FirstChild() [1/2]

```
XMLNode * tinyxml2::XMLNode::FirstChild ()  [inline]
```
Definition at line 775 of file tinyxml2.h.

### 7.19.3.8 FirstChild() [2/2]

```
const XMLNode * tinyxml2::XMLNode::FirstChild () const  [inline]
```
Get the first child node, or null if none exists.

Definition at line 771 of file tinyxml2.h.

### 7.19.3.9 FirstChildElement() [1/2]

```
XMLElement * tinyxml2::XMLNode::FirstChildElement (
            const char * name = 0)  [inline]
```
Definition at line 784 of file tinyxml2.h.

### 7.19.3.10 FirstChildElement() [2/2]

```
const XMLElement * tinyxml2::XMLNode::FirstChildElement (
            const char * name = 0) const
```
Get the first child element, or optionally the first child element with the specified name.

Definition at line 1024 of file tinyxml2.cpp.

### 7.19.3.11 GetDocument() [1/2]

```
XMLDocument * tinyxml2::XMLNode::GetDocument ()  [inline]
```
Get the XMLDocument that owns this XMLNode.

Definition at line 682 of file tinyxml2.h.

### 7.19.3.12 GetDocument() [2/2]

```
const XMLDocument * tinyxml2::XMLNode::GetDocument () const  [inline]
```
Get the XMLDocument that owns this XMLNode.

Definition at line 677 of file tinyxml2.h.

### 7.19.3.13 GetLineNum()

```
int tinyxml2::XMLNode::GetLineNum () const  [inline]
```
Gets the line number the node is in, if the document was parsed from a file.

Definition at line 754 of file tinyxml2.h.

### 7.19.3.14 GetUserData()

```
void * tinyxml2::XMLNode::GetUserData () const  [inline]
```
Get user data set into the XMLNode. TinyXML-2 in no way processes or interprets user data. It is initially 0.

Definition at line 948 of file tinyxml2.h.

**7.19.3.15 InsertAfterChild()**

XMLNode * tinyxml2::XMLNode::InsertAfterChild (
           XMLNode * *afterThis,*
           XMLNode * *addThis*)

Add a node after the specified child node. If the child node is already part of the document, it is moved from its old location to the new location. Returns the addThis argument or 0 if the afterThis node is not a child of this node, or if the node does not belong to the same document.
Definition at line 986 of file tinyxml2.cpp.

**7.19.3.16 InsertEndChild()**

XMLNode * tinyxml2::XMLNode::InsertEndChild (
           XMLNode * *addThis*)

Add a child node as the last (right) child. If the child node is already part of the document, it is moved from its old location to the new location. Returns the addThis argument or 0 if the node does not belong to the same document.
Definition at line 925 of file tinyxml2.cpp.

**7.19.3.17 InsertFirstChild()**

XMLNode * tinyxml2::XMLNode::InsertFirstChild (
           XMLNode * *addThis*)

Add a child node as the first (left) child. If the child node is already part of the document, it is moved from its old location to the new location. Returns the addThis argument or 0 if the node does not belong to the same document.
Definition at line 955 of file tinyxml2.cpp.

**7.19.3.18 LastChild()** **[1/2]**

XMLNode * tinyxml2::XMLNode::LastChild () [inline]
Definition at line 793 of file tinyxml2.h.

**7.19.3.19 LastChild()** **[2/2]**

const XMLNode * tinyxml2::XMLNode::LastChild () const [inline]
Get the last child node, or null if none exists.
Definition at line 789 of file tinyxml2.h.

**7.19.3.20 LastChildElement()** **[1/2]**

XMLElement * tinyxml2::XMLNode::LastChildElement (
           const char * *name* = 0) [inline]
Definition at line 802 of file tinyxml2.h.

**7.19.3.21 LastChildElement()** **[2/2]**

const XMLElement * tinyxml2::XMLNode::LastChildElement (
           const char * *name* = 0) const
Get the last child element or optionally the last child element with the specified name.
Definition at line 1036 of file tinyxml2.cpp.

**7.19.3.22 LinkEndChild()**

XMLNode * tinyxml2::XMLNode::LinkEndChild (
           XMLNode * *addThis*) [inline]
Definition at line 847 of file tinyxml2.h.

**7.19.3.23 NextSibling()** **[1/2]**

XMLNode * tinyxml2::XMLNode::NextSibling () [inline]
Definition at line 827 of file tinyxml2.h.

### 7.19.3.24 NextSibling() [2/2]

const [XMLNode](#) * tinyxml2::XMLNode::NextSibling () const  [inline]

Get the next (right) sibling node of this node.

Definition at line [823](#) of file [tinyxml2.h](#).

### 7.19.3.25 NextSiblingElement() [1/2]

[XMLElement](#) * tinyxml2::XMLNode::NextSiblingElement (
            const char * *name* = 0)  [inline]

Definition at line [834](#) of file [tinyxml2.h](#).

### 7.19.3.26 NextSiblingElement() [2/2]

const [XMLElement](#) * tinyxml2::XMLNode::NextSiblingElement (
            const char * *name* = 0) const

Get the next (right) sibling element of this node, with an optionally supplied name.

Definition at line [1048](#) of file [tinyxml2.cpp](#).

### 7.19.3.27 NoChildren()

bool tinyxml2::XMLNode::NoChildren () const  [inline]

Returns true if this node has no children.

Definition at line [766](#) of file [tinyxml2.h](#).

### 7.19.3.28 Parent() [1/2]

[XMLNode](#) * tinyxml2::XMLNode::Parent ()  [inline]

Definition at line [761](#) of file [tinyxml2.h](#).

### 7.19.3.29 Parent() [2/2]

const [XMLNode](#) * tinyxml2::XMLNode::Parent () const  [inline]

Get the parent of this node on the DOM.

Definition at line [757](#) of file [tinyxml2.h](#).

### 7.19.3.30 ParseDeep()

char * tinyxml2::XMLNode::ParseDeep (
            char * *p*,
            [StrPair](#) * *parentEndTag*,
            int * *curLineNumPtr*)  [protected], [virtual]

Reimplemented in [tinyxml2::XMLComment](#), [tinyxml2::XMLDeclaration](#), [tinyxml2::XMLElement](#), [tinyxml2::XMLText](#), and [tinyxml2::XMLUnknown](#).

Definition at line [1072](#) of file [tinyxml2.cpp](#).

### 7.19.3.31 PreviousSibling() [1/2]

[XMLNode](#) * tinyxml2::XMLNode::PreviousSibling ()  [inline]

Definition at line [811](#) of file [tinyxml2.h](#).

### 7.19.3.32 PreviousSibling() [2/2]

const [XMLNode](#) * tinyxml2::XMLNode::PreviousSibling () const  [inline]

Get the previous (left) sibling node of this node.

Definition at line [807](#) of file [tinyxml2.h](#).

**7.19.3.33 PreviousSiblingElement() [1/2]**

XMLElement * tinyxml2::XMLNode::PreviousSiblingElement (
            const char * *name* = 0)  [inline]

Definition at line 818 of file tinyxml2.h.

**7.19.3.34 PreviousSiblingElement() [2/2]**

const XMLElement * tinyxml2::XMLNode::PreviousSiblingElement (
            const char * *name* = 0) const

Get the previous (left) sibling element of this node, with an optionally supplied name.

Definition at line 1060 of file tinyxml2.cpp.

**7.19.3.35 SetUserData()**

void tinyxml2::XMLNode::SetUserData (
            void * *userData*)  [inline]

Set user data into the XMLNode. TinyXML-2 in no way processes or interprets user data. It is initially 0.

Definition at line 941 of file tinyxml2.h.

**7.19.3.36 SetValue()**

void tinyxml2::XMLNode::SetValue (
            const char * *val*,
            bool *staticMem* = false)

Set the Value of an XML node.

**See also**

>    Value()

Definition at line 855 of file tinyxml2.cpp.

**7.19.3.37 ShallowClone()**

virtual XMLNode * tinyxml2::XMLNode::ShallowClone (
            XMLDocument * *document*) const  [pure virtual]

Make a copy of this node, but not its children. You may pass in a Document pointer that will be the owner of the new Node. If the 'document' is null, then the node returned will be allocated from the current Document. (this->GetDocument())

Note: if called on a XMLDocument, this will return null.

Implemented in tinyxml2::XMLComment, tinyxml2::XMLDeclaration, tinyxml2::XMLDocument, tinyxml2::XMLElement, tinyxml2::XMLText, and tinyxml2::XMLUnknown.

**7.19.3.38 ShallowEqual()**

virtual bool tinyxml2::XMLNode::ShallowEqual (
            const XMLNode * *compare*) const  [pure virtual]

Test if 2 nodes are the same, but don't test children. The 2 nodes do not need to be in the same Document.

Note: if called on a XMLDocument, this will return false.

Implemented in tinyxml2::XMLComment, tinyxml2::XMLDeclaration, tinyxml2::XMLDocument, tinyxml2::XMLElement, tinyxml2::XMLText, and tinyxml2::XMLUnknown.

**7.19.3.39 ToComment() [1/2]**

virtual XMLComment * tinyxml2::XMLNode::ToComment ()  [inline], [virtual]

Safely cast to a Comment, or null.

Reimplemented in tinyxml2::XMLComment.

Definition at line 696 of file tinyxml2.h.

### 7.19.3.40   ToComment() [2/2]

virtual const XMLComment * tinyxml2::XMLNode::ToComment () const  [inline], [virtual]

Reimplemented in tinyxml2::XMLComment.

Definition at line 718 of file tinyxml2.h.

### 7.19.3.41   ToDeclaration() [1/2]

virtual XMLDeclaration * tinyxml2::XMLNode::ToDeclaration ()  [inline], [virtual]

Safely cast to a Declaration, or null.

Reimplemented in tinyxml2::XMLDeclaration.

Definition at line 704 of file tinyxml2.h.

### 7.19.3.42   ToDeclaration() [2/2]

virtual const XMLDeclaration * tinyxml2::XMLNode::ToDeclaration () const  [inline], [virtual]

Reimplemented in tinyxml2::XMLDeclaration.

Definition at line 724 of file tinyxml2.h.

### 7.19.3.43   ToDocument() [1/2]

virtual XMLDocument * tinyxml2::XMLNode::ToDocument ()  [inline], [virtual]

Safely cast to a Document, or null.

Reimplemented in tinyxml2::XMLDocument.

Definition at line 700 of file tinyxml2.h.

### 7.19.3.44   ToDocument() [2/2]

virtual const XMLDocument * tinyxml2::XMLNode::ToDocument () const  [inline], [virtual]

Reimplemented in tinyxml2::XMLDocument.

Definition at line 721 of file tinyxml2.h.

### 7.19.3.45   ToElement() [1/2]

virtual XMLElement * tinyxml2::XMLNode::ToElement ()  [inline], [virtual]

Safely cast to an Element, or null.

Reimplemented in tinyxml2::XMLElement.

Definition at line 688 of file tinyxml2.h.

### 7.19.3.46   ToElement() [2/2]

virtual const XMLElement * tinyxml2::XMLNode::ToElement () const  [inline], [virtual]

Reimplemented in tinyxml2::XMLElement.

Definition at line 712 of file tinyxml2.h.

### 7.19.3.47   ToText() [1/2]

virtual XMLText * tinyxml2::XMLNode::ToText ()  [inline], [virtual]

Safely cast to Text, or null.

Reimplemented in tinyxml2::XMLText.

Definition at line 692 of file tinyxml2.h.

### 7.19.3.48   ToText() [2/2]

virtual const XMLText * tinyxml2::XMLNode::ToText () const  [inline], [virtual]

Reimplemented in tinyxml2::XMLText.

Definition at line 715 of file tinyxml2.h.

**7.19.3.49 ToUnknown()** [1/2]

virtual XMLUnknown * tinyxml2::XMLNode::ToUnknown () [inline], [virtual]

Safely cast to an Unknown, or null.

Reimplemented in tinyxml2::XMLUnknown.

Definition at line 708 of file tinyxml2.h.

**7.19.3.50 ToUnknown()** [2/2]

virtual const XMLUnknown * tinyxml2::XMLNode::ToUnknown () const [inline], [virtual]

Reimplemented in tinyxml2::XMLUnknown.

Definition at line 727 of file tinyxml2.h.

**7.19.3.51 Value()**

const char * tinyxml2::XMLNode::Value () const

The meaning of 'value' changes for the specific type.

```
Document:   empty (NULL is returned, not an empty string)
Element:    name of the element
Comment:    the comment text
Unknown:    the tag contents
Text:       the text string
```

Definition at line 847 of file tinyxml2.cpp.

**7.19.4 Friends And Related Symbol Documentation**

**7.19.4.1 XMLDocument**

friend class XMLDocument [friend]

Definition at line 672 of file tinyxml2.h.

**7.19.4.2 XMLElement**

friend class XMLElement [friend]

Definition at line 673 of file tinyxml2.h.

**7.19.5 Member Data Documentation**

**7.19.5.1 _document**

XMLDocument* tinyxml2::XMLNode::_document [protected]

Definition at line 956 of file tinyxml2.h.

**7.19.5.2 _firstChild**

XMLNode* tinyxml2::XMLNode::_firstChild [protected]

Definition at line 961 of file tinyxml2.h.

**7.19.5.3 _lastChild**

XMLNode* tinyxml2::XMLNode::_lastChild [protected]

Definition at line 962 of file tinyxml2.h.

**7.19.5.4 _next**

XMLNode* tinyxml2::XMLNode::_next [protected]

Definition at line 965 of file tinyxml2.h.

**7.19.5.5 _parent**

[XMLNode](XMLNode)* tinyxml2::XMLNode::_parent  [protected]
Definition at line 957 of file tinyxml2.h.

**7.19.5.6 _parseLineNum**

int tinyxml2::XMLNode::_parseLineNum  [protected]
Definition at line 959 of file tinyxml2.h.

**7.19.5.7 _prev**

[XMLNode](XMLNode)* tinyxml2::XMLNode::_prev  [protected]
Definition at line 964 of file tinyxml2.h.

**7.19.5.8 _userData**

void* tinyxml2::XMLNode::_userData  [protected]
Definition at line 967 of file tinyxml2.h.

**7.19.5.9 _value**

[StrPair](StrPair) tinyxml2::XMLNode::_value  [mutable], [protected]
Definition at line 958 of file tinyxml2.h.
The documentation for this class was generated from the following files:

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

# 7.20 tinyxml2::XMLPrinter Class Reference

#include <tinyxml2.h>
Inheritance diagram for tinyxml2::XMLPrinter:

```
┌─────────────────────────┐
│  tinyxml2::XMLVisitor   │
└─────────────────────────┘
             ▲
             │
┌─────────────────────────┐
│  tinyxml2::XMLPrinter   │
└─────────────────────────┘
```
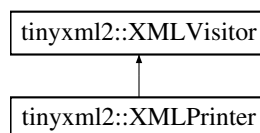
**Public Member Functions**

- [XMLPrinter](XMLPrinter) (FILE ∗file=0, bool compact=false, int depth=0)
- virtual [∼XMLPrinter](XMLPrinter) ()
- void [PushHeader](PushHeader) (bool writeBOM, bool writeDeclaration)
- void [OpenElement](OpenElement) (const char ∗name, bool compactMode=false)
- void [PushAttribute](PushAttribute) (const char ∗name, const char ∗value)
    *If streaming, add an attribute to an open element.*
- void [PushAttribute](PushAttribute) (const char ∗name, int value)
- void [PushAttribute](PushAttribute) (const char ∗name, unsigned value)
- void [PushAttribute](PushAttribute) (const char ∗name, int64_t value)
- void [PushAttribute](PushAttribute) (const char ∗name, uint64_t value)
- void [PushAttribute](PushAttribute) (const char ∗name, bool value)
- void [PushAttribute](PushAttribute) (const char ∗name, double value)
- virtual void [CloseElement](CloseElement) (bool compactMode=false)
    *If streaming, close the Element.*
- void [PushText](PushText) (const char ∗text, bool cdata=false)

*Add a text node.*

- void PushText (int value)

    *Add a text node from an integer.*

- void PushText (unsigned value)

    *Add a text node from an unsigned.*

- void PushText (int64_t value)

    *Add a text node from a signed 64bit integer.*

- void PushText (uint64_t value)

    *Add a text node from an unsigned 64bit integer.*

- void PushText (bool value)

    *Add a text node from a bool.*

- void PushText (float value)

    *Add a text node from a float.*

- void PushText (double value)

    *Add a text node from a double.*

- void PushComment (const char ∗comment)

    *Add a comment.*

- void PushDeclaration (const char ∗value)
- void PushUnknown (const char ∗value)
- virtual bool VisitEnter (const XMLDocument &) override

    *Visit a document.*

- virtual bool VisitExit (const XMLDocument &) override

    *Visit a document.*

- virtual bool VisitEnter (const XMLElement &element, const XMLAttribute ∗attribute) override

    *Visit an element.*

- virtual bool VisitExit (const XMLElement &element) override

    *Visit an element.*

- virtual bool Visit (const XMLText &text) override

    *Visit a text node.*

- virtual bool Visit (const XMLComment &comment) override

    *Visit a comment node.*

- virtual bool Visit (const XMLDeclaration &declaration) override

    *Visit a declaration.*

- virtual bool Visit (const XMLUnknown &unknown) override

    *Visit an unknown node.*

- const char ∗ CStr () const
- size_t CStrSize () const
- void ClearBuffer (bool resetToFirstElement=true)

## Public Member Functions inherited from **tinyxml2::XMLVisitor**

- virtual ∼XMLVisitor ()

## Protected Member Functions

- virtual bool CompactMode (const XMLElement &)
- virtual void PrintSpace (int depth)
- virtual void Print (const char ∗format,...)
- virtual void Write (const char ∗data, size_t size)
- virtual void Putc (char ch)
- void Write (const char ∗data)
- void SealElementIfJustOpened ()

**Protected Attributes**

- bool _elementJustOpened
- DynArray< const char ∗, 10 > _stack

## 7.20.1 Detailed Description

Printing functionality. The XMLPrinter gives you more options than the XMLDocument::Print() method.
It can:

1. Print to memory.

2. Print to a file you provide.

3. Print XML without a XMLDocument.

Print to Memory

```
XMLPrinter printer;
doc.Print( &printer );
SomeFunction( printer.CStr() );
```

Print to a File
You provide the file pointer.

```
XMLPrinter printer( fp );
doc.Print( &printer );
```

Print without a XMLDocument
When loading, an XML parser is very useful. However, sometimes when saving, it just gets in the way. The code is
often set up for streaming, and constructing the DOM is just overhead.
The Printer supports the streaming case. The following code prints out a trivially simple XML file without ever
creating an XML document.

```
XMLPrinter printer( fp );
printer.OpenElement( "foo" );
printer.PushAttribute( "foo", "bar" );
printer.CloseElement();
```

Definition at line 2240 of file tinyxml2.h.

## 7.20.2 Constructor & Destructor Documentation

### 7.20.2.1 XMLPrinter()

```
tinyxml2::XMLPrinter::XMLPrinter (
            FILE ∗ file = 0,
            bool compact = false,
            int depth = 0)
```
Construct the printer. If the FILE∗ is specified, this will print to the FILE. Else it will print to memory, and the result
is available in CStr(). If 'compact' is set to true, then output is created with only required whitespace and newlines.
Definition at line 2580 of file tinyxml2.cpp.

### 7.20.2.2 ∼XMLPrinter()

```
virtual tinyxml2::XMLPrinter::∼XMLPrinter ()  [inline], [virtual]
```
Definition at line 2250 of file tinyxml2.h.

## 7.20.3 Member Function Documentation

### 7.20.3.1 ClearBuffer()

```
void tinyxml2::XMLPrinter::ClearBuffer (
            bool resetToFirstElement = true)  [inline]
```
If in print to memory mode, reset the buffer to the beginning.
Definition at line 2324 of file tinyxml2.h.

### 7.20.3.2 CloseElement()

```
void tinyxml2::XMLPrinter::CloseElement (
            bool compactMode = false)  [virtual]
```
If streaming, close the Element.
Definition at line 2820 of file tinyxml2.cpp.

### 7.20.3.3 CompactMode()

```
virtual bool tinyxml2::XMLPrinter::CompactMode (
            const XMLElement & )  [inline], [protected], [virtual]
```
Definition at line 2331 of file tinyxml2.h.

### 7.20.3.4 CStr()

```
const char * tinyxml2::XMLPrinter::CStr () const  [inline]
```
If in print to memory mode, return a pointer to the XML file in memory.
Definition at line 2309 of file tinyxml2.h.

### 7.20.3.5 CStrSize()

```
size_t tinyxml2::XMLPrinter::CStrSize () const  [inline]
```
If in print to memory mode, return the size of the XML file in memory. (Note the size returned includes the terminating null.)
Definition at line 2317 of file tinyxml2.h.

### 7.20.3.6 OpenElement()

```
void tinyxml2::XMLPrinter::OpenElement (
            const char * name,
            bool compactMode = false)
```
If streaming, start writing an element. The element must be closed with CloseElement()
Definition at line 2748 of file tinyxml2.cpp.

### 7.20.3.7 Print()

```
void tinyxml2::XMLPrinter::Print (
            const char * format,
             ...)  [protected], [virtual]
```
Definition at line 2608 of file tinyxml2.cpp.

### 7.20.3.8 PrintSpace()

```
void tinyxml2::XMLPrinter::PrintSpace (
            int depth)  [protected], [virtual]
```
Prints out the space before an element. You may override to change the space and tabs used. A PrintSpace() override should call Print().
Definition at line 2656 of file tinyxml2.cpp.

### 7.20.3.9 PushAttribute() [1/7]

```
void tinyxml2::XMLPrinter::PushAttribute (
            const char * name,
            bool value)
```
Definition at line 2804 of file tinyxml2.cpp.

### 7.20.3.10 PushAttribute() [2/7]

```
void tinyxml2::XMLPrinter::PushAttribute (
            const char * name,
            const char * value)
```
If streaming, add an attribute to an open element.
Definition at line 2761 of file tinyxml2.cpp.

### 7.20.3.11 PushAttribute() [3/7]

```
void tinyxml2::XMLPrinter::PushAttribute (
            const char * name,
            double value)
```
Definition at line 2812 of file tinyxml2.cpp.

### 7.20.3.12 PushAttribute() [4/7]

```
void tinyxml2::XMLPrinter::PushAttribute (
            const char * name,
            int value)
```
Definition at line 2772 of file tinyxml2.cpp.

### 7.20.3.13 PushAttribute() [5/7]

```
void tinyxml2::XMLPrinter::PushAttribute (
            const char * name,
            int64_t value)
```
Definition at line 2788 of file tinyxml2.cpp.

### 7.20.3.14 PushAttribute() [6/7]

```
void tinyxml2::XMLPrinter::PushAttribute (
            const char * name,
            uint64_t value)
```
Definition at line 2796 of file tinyxml2.cpp.

### 7.20.3.15 PushAttribute() [7/7]

```
void tinyxml2::XMLPrinter::PushAttribute (
            const char * name,
            unsigned value)
```
Definition at line 2780 of file tinyxml2.cpp.

### 7.20.3.16 PushComment()

```
void tinyxml2::XMLPrinter::PushComment (
            const char * comment)
```
Add a comment.
Definition at line 2930 of file tinyxml2.cpp.

### 7.20.3.17 PushDeclaration()

```
void tinyxml2::XMLPrinter::PushDeclaration (
            const char * value)
```
Definition at line 2940 of file tinyxml2.cpp.

**7.20.3.18 PushHeader()**

```
void tinyxml2::XMLPrinter::PushHeader (
            bool writeBOM,
            bool writeDeclaration)
```
If streaming, write the BOM and declaration.
Definition at line 2719 of file tinyxml2.cpp.

**7.20.3.19 PushText()** [1/8]

```
void tinyxml2::XMLPrinter::PushText (
            bool value)
```
Add a text node from a bool.
Definition at line 2906 of file tinyxml2.cpp.

**7.20.3.20 PushText()** [2/8]

```
void tinyxml2::XMLPrinter::PushText (
            const char * text,
            bool cdata = false)
```
Add a text node.
Definition at line 2858 of file tinyxml2.cpp.

**7.20.3.21 PushText()** [3/8]

```
void tinyxml2::XMLPrinter::PushText (
            double value)
```
Add a text node from a double.
Definition at line 2922 of file tinyxml2.cpp.

**7.20.3.22 PushText()** [4/8]

```
void tinyxml2::XMLPrinter::PushText (
            float value)
```
Add a text node from a float.
Definition at line 2914 of file tinyxml2.cpp.

**7.20.3.23 PushText()** [5/8]

```
void tinyxml2::XMLPrinter::PushText (
            int value)
```
Add a text node from an integer.
Definition at line 2890 of file tinyxml2.cpp.

**7.20.3.24 PushText()** [6/8]

```
void tinyxml2::XMLPrinter::PushText (
            int64_t value)
```
Add a text node from a signed 64bit integer.
Definition at line 2874 of file tinyxml2.cpp.

**7.20.3.25 PushText()** [7/8]

```
void tinyxml2::XMLPrinter::PushText (
            uint64_t value)
```
Add a text node from an unsigned 64bit integer.
Definition at line 2882 of file tinyxml2.cpp.

### 7.20.3.26 PushText() [8/8]

```
void tinyxml2::XMLPrinter::PushText (
            unsigned value)
```
Add a text node from an unsigned.

Definition at line 2898 of file tinyxml2.cpp.

### 7.20.3.27 PushUnknown()

```
void tinyxml2::XMLPrinter::PushUnknown (
            const char * value)
```
Definition at line 2950 of file tinyxml2.cpp.

### 7.20.3.28 Putc()

```
void tinyxml2::XMLPrinter::Putc (
            char ch) [protected], [virtual]
```
Definition at line 2643 of file tinyxml2.cpp.

### 7.20.3.29 SealElementIfJustOpened()

```
void tinyxml2::XMLPrinter::SealElementIfJustOpened () [protected]
```
Definition at line 2848 of file tinyxml2.cpp.

### 7.20.3.30 Visit() [1/4]

```
bool tinyxml2::XMLPrinter::Visit (
            const XMLComment & ) [override], [virtual]
```
Visit a comment node.

Reimplemented from tinyxml2::XMLVisitor.

Definition at line 3000 of file tinyxml2.cpp.

### 7.20.3.31 Visit() [2/4]

```
bool tinyxml2::XMLPrinter::Visit (
            const XMLDeclaration & ) [override], [virtual]
```
Visit a declaration.

Reimplemented from tinyxml2::XMLVisitor.

Definition at line 3006 of file tinyxml2.cpp.

### 7.20.3.32 Visit() [3/4]

```
bool tinyxml2::XMLPrinter::Visit (
            const XMLText & ) [override], [virtual]
```
Visit a text node.

Reimplemented from tinyxml2::XMLVisitor.

Definition at line 2993 of file tinyxml2.cpp.

### 7.20.3.33 Visit() [4/4]

```
bool tinyxml2::XMLPrinter::Visit (
            const XMLUnknown & ) [override], [virtual]
```
Visit an unknown node.

Reimplemented from tinyxml2::XMLVisitor.

Definition at line 3013 of file tinyxml2.cpp.

### 7.20.3.34 VisitEnter() [1/2]

```
bool tinyxml2::XMLPrinter::VisitEnter (
            const XMLDocument & ) [override], [virtual]
```

Visit a document.

Reimplemented from tinyxml2::XMLVisitor.

Definition at line 2960 of file tinyxml2.cpp.

### 7.20.3.35 VisitEnter() [2/2]

```
bool tinyxml2::XMLPrinter::VisitEnter (
            const XMLElement & ,
            const XMLAttribute * ) [override], [virtual]
```

Visit an element.

Reimplemented from tinyxml2::XMLVisitor.

Definition at line 2970 of file tinyxml2.cpp.

### 7.20.3.36 VisitExit() [1/2]

```
virtual bool tinyxml2::XMLPrinter::VisitExit (
            const XMLDocument & ) [inline], [override], [virtual]
```

Visit a document.

Reimplemented from tinyxml2::XMLVisitor.

Definition at line 2293 of file tinyxml2.h.

### 7.20.3.37 VisitExit() [2/2]

```
bool tinyxml2::XMLPrinter::VisitExit (
            const XMLElement & ) [override], [virtual]
```

Visit an element.

Reimplemented from tinyxml2::XMLVisitor.

Definition at line 2986 of file tinyxml2.cpp.

### 7.20.3.38 Write() [1/2]

```
void tinyxml2::XMLPrinter::Write (
            const char * data) [inline], [protected]
```

Definition at line 2341 of file tinyxml2.h.

### 7.20.3.39 Write() [2/2]

```
void tinyxml2::XMLPrinter::Write (
            const char * data,
            size_t size) [protected], [virtual]
```

Definition at line 2630 of file tinyxml2.cpp.

## 7.20.4 Member Data Documentation

### 7.20.4.1 _elementJustOpened

```
bool tinyxml2::XMLPrinter::_elementJustOpened [protected]
```
Definition at line 2344 of file tinyxml2.h.

### 7.20.4.2 _stack

```
DynArray< const char*, 10 > tinyxml2::XMLPrinter::_stack [protected]
```
Definition at line 2345 of file tinyxml2.h.

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

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

## 7.21 **tinyxml2::XMLText Class Reference**

`#include <tinyxml2.h>`

Inheritance diagram for tinyxml2::XMLText:

```
tinyxml2::XMLNode
        ↑
tinyxml2::XMLText
```
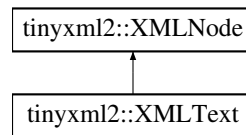
**Public Member Functions**

- virtual bool Accept (XMLVisitor ∗visitor) const override
- virtual XMLText ∗ ToText () override

    *Safely cast to Text, or null.*
- virtual const XMLText ∗ ToText () const override
- void SetCData (bool isCData)

    *Declare whether this should be CDATA or standard text.*
- bool CData () const

    *Returns true if this is a CDATA text element.*
- virtual XMLNode ∗ ShallowClone (XMLDocument ∗document) const override
- virtual bool ShallowEqual (const XMLNode ∗compare) const override

**Public Member Functions inherited from tinyxml2::XMLNode**

- const XMLDocument ∗ GetDocument () const

    *Get the XMLDocument that owns this XMLNode.*
- XMLDocument ∗ GetDocument ()

    *Get the XMLDocument that owns this XMLNode.*
- virtual XMLElement ∗ ToElement ()

    *Safely cast to an Element, or null.*
- virtual XMLComment ∗ ToComment ()

    *Safely cast to a Comment, or null.*
- virtual XMLDocument ∗ ToDocument ()

    *Safely cast to a Document, or null.*
- virtual XMLDeclaration ∗ ToDeclaration ()

    *Safely cast to a Declaration, or null.*
- virtual XMLUnknown ∗ ToUnknown ()

    *Safely cast to an Unknown, or null.*
- virtual const XMLElement ∗ ToElement () const
- virtual const XMLComment ∗ ToComment () const
- virtual const XMLDocument ∗ ToDocument () const
- virtual const XMLDeclaration ∗ ToDeclaration () const
- virtual const XMLUnknown ∗ ToUnknown () const
- int ChildElementCount (const char ∗value) const
- int ChildElementCount () const
- const char ∗ Value () const
- void SetValue (const char ∗val, bool staticMem=false)
- int GetLineNum () const

    *Gets the line number the node is in, if the document was parsed from a file.*
- const XMLNode ∗ Parent () const

    *Get the parent of this node on the DOM.*

- XMLNode ∗ Parent ()
- bool NoChildren () const

    *Returns true if this node has no children.*
- const XMLNode ∗ FirstChild () const

    *Get the first child node, or null if none exists.*
- XMLNode ∗ FirstChild ()
- const XMLElement ∗ FirstChildElement (const char ∗name=0) const
- XMLElement ∗ FirstChildElement (const char ∗name=0)
- const XMLNode ∗ LastChild () const

    *Get the last child node, or null if none exists.*
- XMLNode ∗ LastChild ()
- const XMLElement ∗ LastChildElement (const char ∗name=0) const
- XMLElement ∗ LastChildElement (const char ∗name=0)
- const XMLNode ∗ PreviousSibling () const

    *Get the previous (left) sibling node of this node.*
- XMLNode ∗ PreviousSibling ()
- const XMLElement ∗ PreviousSiblingElement (const char ∗name=0) const

    *Get the previous (left) sibling element of this node, with an optionally supplied name.*
- XMLElement ∗ PreviousSiblingElement (const char ∗name=0)
- const XMLNode ∗ NextSibling () const

    *Get the next (right) sibling node of this node.*
- XMLNode ∗ NextSibling ()
- const XMLElement ∗ NextSiblingElement (const char ∗name=0) const

    *Get the next (right) sibling element of this node, with an optionally supplied name.*
- XMLElement ∗ NextSiblingElement (const char ∗name=0)
- XMLNode ∗ InsertEndChild (XMLNode ∗addThis)
- XMLNode ∗ LinkEndChild (XMLNode ∗addThis)
- XMLNode ∗ InsertFirstChild (XMLNode ∗addThis)
- XMLNode ∗ InsertAfterChild (XMLNode ∗afterThis, XMLNode ∗addThis)
- void DeleteChildren ()
- void DeleteChild (XMLNode ∗node)
- XMLNode ∗ DeepClone (XMLDocument ∗target) const
- void SetUserData (void ∗userData)
- void ∗ GetUserData () const

**Protected Member Functions**

- XMLText (XMLDocument ∗doc)
- virtual ∼XMLText ()
- char ∗ ParseDeep (char ∗p, StrPair ∗parentEndTag, int ∗curLineNumPtr) override

**Protected Member Functions inherited from tinyxml2::XMLNode**

- XMLNode (XMLDocument ∗)
- virtual ∼XMLNode ()

**Friends**

- class XMLDocument

**Additional Inherited Members**

## Protected Attributes inherited from tinyxml2::XMLNode

- XMLDocument ∗ _document
- XMLNode ∗ _parent
- StrPair _value
- int _parseLineNum
- XMLNode ∗ _firstChild
- XMLNode ∗ _lastChild
- XMLNode ∗ _prev
- XMLNode ∗ _next
- void ∗ _userData

### 7.21.1 Detailed Description

XML text.

Note that a text node can have child element nodes, for example:

```
<root>This is <b>bold</b></root>
```

A text node can have 2 ways to output the next. "normal" output and CDATA. It will default to the mode it was parsed from the XML file and you generally want to leave it alone, but you can change the output mode with SetCData() and query it with CData().

Definition at line 993 of file tinyxml2.h.

### 7.21.2 Constructor & Destructor Documentation

#### 7.21.2.1 XMLText()

```
tinyxml2::XMLText::XMLText (
            XMLDocument ∗ doc)  [inline], [explicit], [protected]
```
Definition at line 1019 of file tinyxml2.h.

#### 7.21.2.2 ∼XMLText()

```
virtual tinyxml2::XMLText::∼XMLText ()  [inline], [protected], [virtual]
```
Definition at line 1020 of file tinyxml2.h.

### 7.21.3 Member Function Documentation

#### 7.21.3.1 Accept()

```
bool tinyxml2::XMLText::Accept (
            XMLVisitor ∗ visitor) const  [override], [virtual]
```
Accept a hierarchical visit of the nodes in the TinyXML-2 DOM. Every node in the XML tree will be conditionally visited and the host will be called back via the XMLVisitor interface.

This is essentially a SAX interface for TinyXML-2. (Note however it doesn't re-parse the XML for the callbacks, so the performance of TinyXML-2 is unchanged by using this interface versus any other.)

The interface has been based on ideas from:

- http://www.saxproject.org/

- http://c2.com/cgi/wiki?HierarchicalVisitorPattern

Which are both good references for "visiting".

An example of using Accept():

```
XMLPrinter printer;
tinyxmlDoc.Accept( &printer );
const char* xmlcstr = printer.CStr();
```

Implements tinyxml2::XMLNode.

Definition at line 1279 of file tinyxml2.cpp.

### 7.21.3.2 CData()

```
bool tinyxml2::XMLText::CData () const [inline]
```
Returns true if this is a CDATA text element.
Definition at line 1011 of file tinyxml2.h.

### 7.21.3.3 ParseDeep()

```
char * tinyxml2::XMLText::ParseDeep (
            char * p,
            StrPair * parentEndTag,
            int * curLineNumPtr) [override], [protected], [virtual]
```
Reimplemented from tinyxml2::XMLNode.
Definition at line 1233 of file tinyxml2.cpp.

### 7.21.3.4 SetCData()

```
void tinyxml2::XMLText::SetCData (
            bool isCData) [inline]
```
Declare whether this should be CDATA or standard text.
Definition at line 1007 of file tinyxml2.h.

### 7.21.3.5 ShallowClone()

```
XMLNode * tinyxml2::XMLText::ShallowClone (
            XMLDocument * document) const [override], [virtual]
```
Make a copy of this node, but not its children. You may pass in a Document pointer that will be the owner of the new Node. If the 'document' is null, then the node returned will be allocated from the current Document. (this->GetDocument())
Note: if called on a XMLDocument, this will return null.
Implements tinyxml2::XMLNode.
Definition at line 1260 of file tinyxml2.cpp.

### 7.21.3.6 ShallowEqual()

```
bool tinyxml2::XMLText::ShallowEqual (
            const XMLNode * compare) const [override], [virtual]
```
Test if 2 nodes are the same, but don't test children. The 2 nodes do not need to be in the same Document.
Note: if called on a XMLDocument, this will return false.
Implements tinyxml2::XMLNode.
Definition at line 1271 of file tinyxml2.cpp.

### 7.21.3.7 ToText() [1/2]

```
virtual const XMLText * tinyxml2::XMLText::ToText () const [inline], [override], [virtual]
```
Reimplemented from tinyxml2::XMLNode.
Definition at line 1002 of file tinyxml2.h.

### 7.21.3.8 ToText() [2/2]

```
virtual XMLText * tinyxml2::XMLText::ToText () [inline], [override], [virtual]
```
Safely cast to Text, or null.
Reimplemented from tinyxml2::XMLNode.
Definition at line 999 of file tinyxml2.h.

## 7.21.4 Friends And Related Symbol Documentation

### 7.21.4.1 XMLDocument

```
friend class XMLDocument [friend]
```

Definition at line 995 of file tinyxml2.h.

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

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

## 7.22 **tinyxml2::XMLUnknown Class Reference**

`#include <tinyxml2.h>`

Inheritance diagram for tinyxml2::XMLUnknown:

```
┌─────────────────────┐
│  tinyxml2::XMLNode  │
└─────────────────────┘
           ▲
           │
┌─────────────────────┐
│ tinyxml2::XMLUnknown│
└─────────────────────┘
```
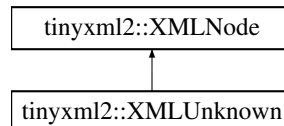
**Public Member Functions**

- virtual XMLUnknown ∗ ToUnknown () override

  *Safely cast to an Unknown, or null.*
- virtual const XMLUnknown ∗ ToUnknown () const override
- virtual bool Accept (XMLVisitor ∗visitor) const override
- virtual XMLNode ∗ ShallowClone (XMLDocument ∗document) const override
- virtual bool ShallowEqual (const XMLNode ∗compare) const override

## **Public Member Functions inherited from tinyxml2::XMLNode**

- const XMLDocument ∗ GetDocument () const

  *Get the XMLDocument that owns this XMLNode.*
- XMLDocument ∗ GetDocument ()

  *Get the XMLDocument that owns this XMLNode.*
- virtual XMLElement ∗ ToElement ()

  *Safely cast to an Element, or null.*
- virtual XMLText ∗ ToText ()

  *Safely cast to Text, or null.*
- virtual XMLComment ∗ ToComment ()

  *Safely cast to a Comment, or null.*
- virtual XMLDocument ∗ ToDocument ()

  *Safely cast to a Document, or null.*
- virtual XMLDeclaration ∗ ToDeclaration ()

  *Safely cast to a Declaration, or null.*
- virtual const XMLElement ∗ ToElement () const
- virtual const XMLText ∗ ToText () const
- virtual const XMLComment ∗ ToComment () const
- virtual const XMLDocument ∗ ToDocument () const
- virtual const XMLDeclaration ∗ ToDeclaration () const
- int ChildElementCount (const char ∗value) const
- int ChildElementCount () const
- const char ∗ Value () const
- void SetValue (const char ∗val, bool staticMem=false)
- int GetLineNum () const

  *Gets the line number the node is in, if the document was parsed from a file.*
- const XMLNode ∗ Parent () const

*Get the parent of this node on the DOM.*

- XMLNode ∗ Parent ()
- bool NoChildren () const

    *Returns true if this node has no children.*

- const XMLNode ∗ FirstChild () const

    *Get the first child node, or null if none exists.*

- XMLNode ∗ FirstChild ()
- const XMLElement ∗ FirstChildElement (const char ∗name=0) const
- XMLElement ∗ FirstChildElement (const char ∗name=0)
- const XMLNode ∗ LastChild () const

    *Get the last child node, or null if none exists.*

- XMLNode ∗ LastChild ()
- const XMLElement ∗ LastChildElement (const char ∗name=0) const
- XMLElement ∗ LastChildElement (const char ∗name=0)
- const XMLNode ∗ PreviousSibling () const

    *Get the previous (left) sibling node of this node.*

- XMLNode ∗ PreviousSibling ()
- const XMLElement ∗ PreviousSiblingElement (const char ∗name=0) const

    *Get the previous (left) sibling element of this node, with an optionally supplied name.*

- XMLElement ∗ PreviousSiblingElement (const char ∗name=0)
- const XMLNode ∗ NextSibling () const

    *Get the next (right) sibling node of this node.*

- XMLNode ∗ NextSibling ()
- const XMLElement ∗ NextSiblingElement (const char ∗name=0) const

    *Get the next (right) sibling element of this node, with an optionally supplied name.*

- XMLElement ∗ NextSiblingElement (const char ∗name=0)
- XMLNode ∗ InsertEndChild (XMLNode ∗addThis)
- XMLNode ∗ LinkEndChild (XMLNode ∗addThis)
- XMLNode ∗ InsertFirstChild (XMLNode ∗addThis)
- XMLNode ∗ InsertAfterChild (XMLNode ∗afterThis, XMLNode ∗addThis)
- void DeleteChildren ()
- void DeleteChild (XMLNode ∗node)
- XMLNode ∗ DeepClone (XMLDocument ∗target) const
- void SetUserData (void ∗userData)
- void ∗ GetUserData () const

## Protected Member Functions

- XMLUnknown (XMLDocument ∗doc)
- virtual ∼XMLUnknown ()
- char ∗ ParseDeep (char ∗p, StrPair ∗parentEndTag, int ∗curLineNumPtr) override

## Protected Member Functions inherited from **tinyxml2::XMLNode**

- XMLNode (XMLDocument ∗)
- virtual ∼XMLNode ()

## Friends

- class XMLDocument

**Additional Inherited Members**

## Protected Attributes inherited from tinyxml2::XMLNode

- XMLDocument ∗ _document
- XMLNode ∗ _parent
- StrPair _value
- int _parseLineNum
- XMLNode ∗ _firstChild
- XMLNode ∗ _lastChild
- XMLNode ∗ _prev
- XMLNode ∗ _next
- void ∗ _userData

### 7.22.1 Detailed Description

Any tag that TinyXML-2 doesn't recognize is saved as an unknown. It is a tag of text, but should not be modified. It will be written back to the XML, unchanged, when the file is saved.
DTD tags get thrown into XMLUnknowns.
Definition at line 1107 of file tinyxml2.h.

### 7.22.2 Constructor & Destructor Documentation

#### 7.22.2.1 XMLUnknown()

```
tinyxml2::XMLUnknown::XMLUnknown (
              XMLDocument ∗ doc)  [explicit], [protected]
```
Definition at line 1385 of file tinyxml2.cpp.

#### 7.22.2.2 ∼XMLUnknown()

```
tinyxml2::XMLUnknown::∼XMLUnknown ()  [protected], [virtual]
```
Definition at line 1390 of file tinyxml2.cpp.

### 7.22.3 Member Function Documentation

#### 7.22.3.1 Accept()

```
bool tinyxml2::XMLUnknown::Accept (
              XMLVisitor ∗ visitor) const  [override], [virtual]
```
Accept a hierarchical visit of the nodes in the TinyXML-2 DOM. Every node in the XML tree will be conditionally visited and the host will be called back via the XMLVisitor interface.
This is essentially a SAX interface for TinyXML-2. (Note however it doesn't re-parse the XML for the callbacks, so the performance of TinyXML-2 is unchanged by using this interface versus any other.)
The interface has been based on ideas from:

- http://www.saxproject.org/

- http://c2.com/cgi/wiki?HierarchicalVisitorPattern

Which are both good references for "visiting".
An example of using Accept():

```
XMLPrinter printer;
tinyxmlDoc.Accept( &printer );
const char* xmlcstr = printer.CStr();
```

Implements tinyxml2::XMLNode.
Definition at line 1424 of file tinyxml2.cpp.

### 7.22.3.2 ParseDeep()

```
char * tinyxml2::XMLUnknown::ParseDeep (
            char * p,
            StrPair * parentEndTag,
            int * curLineNumPtr)  [override], [protected], [virtual]
```

Reimplemented from tinyxml2::XMLNode.

Definition at line 1395 of file tinyxml2.cpp.

### 7.22.3.3 ShallowClone()

```
XMLNode * tinyxml2::XMLUnknown::ShallowClone (
            XMLDocument * document) const  [override], [virtual]
```

Make a copy of this node, but not its children. You may pass in a Document pointer that will be the owner of the new Node. If the 'document' is null, then the node returned will be allocated from the current Document. (this->GetDocument())

Note: if called on a XMLDocument, this will return null.

Implements tinyxml2::XMLNode.

Definition at line 1406 of file tinyxml2.cpp.

### 7.22.3.4 ShallowEqual()

```
bool tinyxml2::XMLUnknown::ShallowEqual (
            const XMLNode * compare) const  [override], [virtual]
```

Test if 2 nodes are the same, but don't test children. The 2 nodes do not need to be in the same Document.

Note: if called on a XMLDocument, this will return false.

Implements tinyxml2::XMLNode.

Definition at line 1416 of file tinyxml2.cpp.

### 7.22.3.5 ToUnknown() [1/2]

```
virtual const XMLUnknown * tinyxml2::XMLUnknown::ToUnknown () const  [inline], [override],
[virtual]
```

Reimplemented from tinyxml2::XMLNode.

Definition at line 1114 of file tinyxml2.h.

### 7.22.3.6 ToUnknown() [2/2]

```
virtual XMLUnknown * tinyxml2::XMLUnknown::ToUnknown ()  [inline], [override], [virtual]
```

Safely cast to an Unknown, or null.

Reimplemented from tinyxml2::XMLNode.

Definition at line 1111 of file tinyxml2.h.

## 7.22.4 Friends And Related Symbol Documentation

### 7.22.4.1 XMLDocument

```
friend class XMLDocument  [friend]
```

Definition at line 1109 of file tinyxml2.h.

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

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

## 7.23 tinyxml2::XMLUtil Class Reference

```
#include <tinyxml2.h>
```

**Static Public Member Functions**

- static const char ∗ SkipWhiteSpace (const char ∗p, int ∗curLineNumPtr)
- static char ∗ SkipWhiteSpace (char ∗const p, int ∗curLineNumPtr)
- static bool IsWhiteSpace (char p)
- static bool IsNameStartChar (unsigned char ch)
- static bool IsNameChar (unsigned char ch)
- static bool IsPrefixHex (const char ∗p)
- static bool StringEqual (const char ∗p, const char ∗q, int nChar=INT_MAX)
- static bool IsUTF8Continuation (const char p)
- static const char ∗ ReadBOM (const char ∗p, bool ∗hasBOM)
- static const char ∗ GetCharacterRef (const char ∗p, char ∗value, int ∗length)
- static void ConvertUTF32ToUTF8 (unsigned long input, char ∗output, int ∗length)
- static void ToStr (int v, char ∗buffer, int bufferSize)
- static void ToStr (unsigned v, char ∗buffer, int bufferSize)
- static void ToStr (bool v, char ∗buffer, int bufferSize)
- static void ToStr (float v, char ∗buffer, int bufferSize)
- static void ToStr (double v, char ∗buffer, int bufferSize)
- static void ToStr (int64_t v, char ∗buffer, int bufferSize)
- static void ToStr (uint64_t v, char ∗buffer, int bufferSize)
- static bool ToInt (const char ∗str, int ∗value)
- static bool ToUnsigned (const char ∗str, unsigned ∗value)
- static bool ToBool (const char ∗str, bool ∗value)
- static bool ToFloat (const char ∗str, float ∗value)
- static bool ToDouble (const char ∗str, double ∗value)
- static bool ToInt64 (const char ∗str, int64_t ∗value)
- static bool ToUnsigned64 (const char ∗str, uint64_t ∗value)
- static void SetBoolSerialization (const char ∗writeTrue, const char ∗writeFalse)

### 7.23.1 Detailed Description

Definition at line 547 of file tinyxml2.h.

### 7.23.2 Member Function Documentation

#### 7.23.2.1 ConvertUTF32ToUTF8()

```
void tinyxml2::XMLUtil::ConvertUTF32ToUTF8 (
            unsigned long input,
            char * output,
            int * length) [static]
```
Definition at line 417 of file tinyxml2.cpp.

#### 7.23.2.2 GetCharacterRef()

```
const char * tinyxml2::XMLUtil::GetCharacterRef (
            const char * p,
            char * value,
            int * length) [static]
```
Definition at line 470 of file tinyxml2.cpp.

#### 7.23.2.3 IsNameChar()

```
static bool tinyxml2::XMLUtil::IsNameChar (
            unsigned char ch) [inline], [static]
```
Definition at line 583 of file tinyxml2.h.

#### 7.23.2.4 IsNameStartChar()

```
static bool tinyxml2::XMLUtil::IsNameStartChar (
            unsigned char ch) [inline], [static]
```
Definition at line 572 of file tinyxml2.h.

#### 7.23.2.5 IsPrefixHex()

```
static bool tinyxml2::XMLUtil::IsPrefixHex (
            const char * p) [inline], [static]
```
Definition at line 590 of file tinyxml2.h.

#### 7.23.2.6 IsUTF8Continuation()

```
static bool tinyxml2::XMLUtil::IsUTF8Continuation (
            const char p) [inline], [static]
```
Definition at line 605 of file tinyxml2.h.

#### 7.23.2.7 IsWhiteSpace()

```
static bool tinyxml2::XMLUtil::IsWhiteSpace (
            char p) [inline], [static]
```
Definition at line 568 of file tinyxml2.h.

#### 7.23.2.8 ReadBOM()

```
const char * tinyxml2::XMLUtil::ReadBOM (
            const char * p,
            bool * hasBOM) [static]
```
Definition at line 399 of file tinyxml2.cpp.

#### 7.23.2.9 SetBoolSerialization()

```
void tinyxml2::XMLUtil::SetBoolSerialization (
            const char * writeTrue,
            const char * writeFalse) [static]
```
Definition at line 389 of file tinyxml2.cpp.

#### 7.23.2.10 SkipWhiteSpace() [1/2]

```
static char * tinyxml2::XMLUtil::SkipWhiteSpace (
            char *const p,
            int * curLineNumPtr) [inline], [static]
```
Definition at line 562 of file tinyxml2.h.

#### 7.23.2.11 SkipWhiteSpace() [2/2]

```
static const char * tinyxml2::XMLUtil::SkipWhiteSpace (
            const char * p,
            int * curLineNumPtr) [inline], [static]
```
Definition at line 550 of file tinyxml2.h.

#### 7.23.2.12 StringEqual()

```
static bool tinyxml2::XMLUtil::StringEqual (
            const char * p,
            const char * q,
            int nChar = INT_MAX) [inline], [static]
```
Definition at line 595 of file tinyxml2.h.

### 7.23.2.13  ToBool()

```
bool tinyxml2::XMLUtil::ToBool (
            const char * str,
            bool * value) [static]
```
Definition at line 628 of file tinyxml2.cpp.

### 7.23.2.14  ToDouble()

```
bool tinyxml2::XMLUtil::ToDouble (
            const char * str,
            double * value) [static]
```
Definition at line 663 of file tinyxml2.cpp.

### 7.23.2.15  ToFloat()

```
bool tinyxml2::XMLUtil::ToFloat (
            const char * str,
            float * value) [static]
```
Definition at line 654 of file tinyxml2.cpp.

### 7.23.2.16  ToInt()

```
bool tinyxml2::XMLUtil::ToInt (
            const char * str,
            int * value) [static]
```
Definition at line 603 of file tinyxml2.cpp.

### 7.23.2.17  ToInt64()

```
bool tinyxml2::XMLUtil::ToInt64 (
            const char * str,
            int64_t * value) [static]
```
Definition at line 672 of file tinyxml2.cpp.

### 7.23.2.18  ToStr() [1/7]

```
void tinyxml2::XMLUtil::ToStr (
            bool v,
            char * buffer,
            int bufferSize) [static]
```
Definition at line 570 of file tinyxml2.cpp.

### 7.23.2.19  ToStr() [2/7]

```
void tinyxml2::XMLUtil::ToStr (
            double v,
            char * buffer,
            int bufferSize) [static]
```
Definition at line 585 of file tinyxml2.cpp.

### 7.23.2.20  ToStr() [3/7]

```
void tinyxml2::XMLUtil::ToStr (
            float v,
            char * buffer,
            int bufferSize) [static]
```
Definition at line 579 of file tinyxml2.cpp.

**7.23.2.21 ToStr()** **[4/7]**

```
void tinyxml2::XMLUtil::ToStr (
            int v,
            char * buffer,
            int bufferSize) [static]
```
Definition at line 558 of file tinyxml2.cpp.

**7.23.2.22 ToStr()** **[5/7]**

```
void tinyxml2::XMLUtil::ToStr (
            int64_t v,
            char * buffer,
            int bufferSize) [static]
```
Definition at line 591 of file tinyxml2.cpp.

**7.23.2.23 ToStr()** **[6/7]**

```
void tinyxml2::XMLUtil::ToStr (
            uint64_t v,
            char * buffer,
            int bufferSize) [static]
```
Definition at line 597 of file tinyxml2.cpp.

**7.23.2.24 ToStr()** **[7/7]**

```
void tinyxml2::XMLUtil::ToStr (
            unsigned v,
            char * buffer,
            int bufferSize) [static]
```
Definition at line 564 of file tinyxml2.cpp.

**7.23.2.25 ToUnsigned()**

```
bool tinyxml2::XMLUtil::ToUnsigned (
            const char * str,
            unsigned * value) [static]
```
Definition at line 620 of file tinyxml2.cpp.

**7.23.2.26 ToUnsigned64()**

```
bool tinyxml2::XMLUtil::ToUnsigned64 (
            const char * str,
            uint64_t * value) [static]
```
Definition at line 692 of file tinyxml2.cpp.
The documentation for this class was generated from the following files:

- external/tinyxml2/tinyxml2.h
- external/tinyxml2/tinyxml2.cpp

# 7.24 tinyxml2::XMLVisitor Class Reference

```
#include <tinyxml2.h>
```
Inheritance diagram for tinyxml2::XMLVisitor:

```
tinyxml2::XMLVisitor
```

```
tinyxml2::XMLPrinter
```
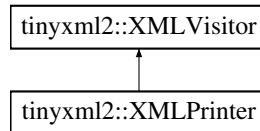
**Public Member Functions**

- virtual ∼XMLVisitor ()
- virtual bool VisitEnter (const XMLDocument &)

    *Visit a document.*

- virtual bool VisitExit (const XMLDocument &)

    *Visit a document.*

- virtual bool VisitEnter (const XMLElement &, const XMLAttribute ∗)

    *Visit an element.*

- virtual bool VisitExit (const XMLElement &)

    *Visit an element.*

- virtual bool Visit (const XMLDeclaration &)

    *Visit a declaration.*

- virtual bool Visit (const XMLText &)

    *Visit a text node.*

- virtual bool Visit (const XMLComment &)

    *Visit a comment node.*

- virtual bool Visit (const XMLUnknown &)

    *Visit an unknown node.*

## 7.24.1 Detailed Description

Implements the interface to the "Visitor pattern" (see the Accept() method.) If you call the Accept() method, it requires being passed a XMLVisitor class to handle callbacks. For nodes that contain other nodes (Document, Element) you will get called with a VisitEnter/VisitExit pair. Nodes that are always leafs are simply called with Visit(). If you return 'true' from a Visit method, recursive parsing will continue. If you return false, **no children of this node or its siblings** will be visited.

All flavors of Visit methods have a default implementation that returns 'true' (continue visiting). You need to only override methods that are interesting to you.

Generally Accept() is called on the XMLDocument, although all nodes support visiting.

You should never change the document from a callback.

**See also**

> XMLNode::Accept()

Definition at line 477 of file tinyxml2.h.

## 7.24.2 Constructor & Destructor Documentation

### 7.24.2.1 ∼XMLVisitor()

```
virtual tinyxml2::XMLVisitor::∼XMLVisitor ()  [inline], [virtual]
```
Definition at line 480 of file tinyxml2.h.

## 7.24.3 Member Function Documentation

### 7.24.3.1 Visit() [1/4]

```
virtual bool tinyxml2::XMLVisitor::Visit (
            const XMLComment & )  [inline], [virtual]
```

Visit a comment node.

Reimplemented in tinyxml2::XMLPrinter.

Definition at line 509 of file tinyxml2.h.

### 7.24.3.2 Visit() [2/4]

```
virtual bool tinyxml2::XMLVisitor::Visit (
            const XMLDeclaration & )  [inline], [virtual]
```

Visit a declaration.

Reimplemented in tinyxml2::XMLPrinter.

Definition at line 501 of file tinyxml2.h.

### 7.24.3.3 Visit() [3/4]

```
virtual bool tinyxml2::XMLVisitor::Visit (
            const XMLText & )  [inline], [virtual]
```

Visit a text node.

Reimplemented in tinyxml2::XMLPrinter.

Definition at line 505 of file tinyxml2.h.

### 7.24.3.4 Visit() [4/4]

```
virtual bool tinyxml2::XMLVisitor::Visit (
            const XMLUnknown & )  [inline], [virtual]
```

Visit an unknown node.

Reimplemented in tinyxml2::XMLPrinter.

Definition at line 513 of file tinyxml2.h.

### 7.24.3.5 VisitEnter() [1/2]

```
virtual bool tinyxml2::XMLVisitor::VisitEnter (
            const XMLDocument & )  [inline], [virtual]
```

Visit a document.

Reimplemented in tinyxml2::XMLPrinter.

Definition at line 483 of file tinyxml2.h.

### 7.24.3.6 VisitEnter() [2/2]

```
virtual bool tinyxml2::XMLVisitor::VisitEnter (
            const XMLElement & ,
            const XMLAttribute * )  [inline], [virtual]
```

Visit an element.

Reimplemented in tinyxml2::XMLPrinter.

Definition at line 492 of file tinyxml2.h.

### 7.24.3.7 VisitExit() [1/2]

```
virtual bool tinyxml2::XMLVisitor::VisitExit (
            const XMLDocument & )  [inline], [virtual]
```

Visit a document.

Reimplemented in tinyxml2::XMLPrinter.

Definition at line 487 of file tinyxml2.h.

### 7.24.3.8 VisitExit() [2/2]

```
virtual bool tinyxml2::XMLVisitor::VisitExit (
            const XMLElement & )  [inline], [virtual]
```

Visit an element.

Reimplemented in tinyxml2::XMLPrinter.

Definition at line 496 of file tinyxml2.h.

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

- external/tinyxml2/tinyxml2.h

# Chapter 8

# File Documentation

## 8.1 build/CMakeFiles/3.31.5/CompilerIdC/CMakeCCompilerId.c File Reference

**Macros**

- #define __has_include(x)
- #define COMPILER_ID ""
- #define STRINGIFY_HELPER(X)
- #define STRINGIFY(X)
- #define PLATFORM_ID
- #define ARCHITECTURE_ID
- #define DEC(n)
- #define HEX(n)
- #define C_STD_99 199901L
- #define C_STD_11 201112L
- #define C_STD_17 201710L
- #define C_STD_23 202311L
- #define C_VERSION

**Functions**

- int main (int argc, char ∗argv[ ])

**Variables**

- char const ∗ info_compiler = "INFO" ":" "compiler[" COMPILER_ID "]"
- char const ∗ info_platform = "INFO" ":" "platform[" PLATFORM_ID "]"
- char const ∗ info_arch = "INFO" ":" "arch[" ARCHITECTURE_ID "]"
- const char ∗ info_language_standard_default
- const char ∗ info_language_extensions_default

### 8.1.1 Macro Definition Documentation

#### 8.1.1.1 __has_include

```
#define __has_include(
            x)
```
**Value:**
```
0
```
Definition at line 17 of file CMakeCCompilerId.c.

---

### 8.1.1.2 ARCHITECTURE_ID

```
#define ARCHITECTURE_ID
```
Definition at line 745 of file CMakeCCompilerId.c.

### 8.1.1.3 C_STD_11

```
#define C_STD_11 201112L
```
Definition at line 831 of file CMakeCCompilerId.c.

### 8.1.1.4 C_STD_17

```
#define C_STD_17 201710L
```
Definition at line 832 of file CMakeCCompilerId.c.

### 8.1.1.5 C_STD_23

```
#define C_STD_23 202311L
```
Definition at line 833 of file CMakeCCompilerId.c.

### 8.1.1.6 C_STD_99

```
#define C_STD_99 199901L
```
Definition at line 830 of file CMakeCCompilerId.c.

### 8.1.1.7 C_VERSION

```
#define C_VERSION
```
Definition at line 843 of file CMakeCCompilerId.c.

### 8.1.1.8 COMPILER_ID

```
#define COMPILER_ID ""
```
Definition at line 448 of file CMakeCCompilerId.c.

### 8.1.1.9 DEC

```
#define DEC(
                n)
```
**Value:**
```
('0' + (((n) / 10000000)%10)), \
('0' + (((n) / 1000000)%10)),  \
('0' + (((n) / 100000)%10)),   \
('0' + (((n) / 10000)%10)),    \
('0' + (((n) / 1000)%10)),     \
('0' + (((n) / 100)%10)),      \
('0' + (((n) / 10)%10)),       \
('0' +  ((n) % 10))
```
Definition at line 749 of file CMakeCCompilerId.c.

### 8.1.1.10 HEX

```
#define HEX(
                n)
```
**Value:**
```
('0' + ((n)»28 & 0xF)), \
('0' + ((n)»24 & 0xF)), \
('0' + ((n)»20 & 0xF)), \
('0' + ((n)»16 & 0xF)), \
('0' + ((n)»12 & 0xF)), \
('0' + ((n)»8  & 0xF)), \
('0' + ((n)»4  & 0xF)), \
('0' + ((n)     & 0xF))
```
Definition at line 760 of file CMakeCCompilerId.c.

#### 8.1.1.11 PLATFORM_ID

```
#define PLATFORM_ID
```
Definition at line 579 of file CMakeCCompilerId.c.

#### 8.1.1.12 STRINGIFY

```
#define STRINGIFY(
                X)
```
**Value:**
```
STRINGIFY_HELPER(X)
```
Definition at line 469 of file CMakeCCompilerId.c.

#### 8.1.1.13 STRINGIFY_HELPER

```
#define STRINGIFY_HELPER(
                X)
```
**Value:**
```
#X
```
Definition at line 468 of file CMakeCCompilerId.c.

### 8.1.2 Function Documentation

#### 8.1.2.1 main()

```
int main (
                int argc,
                char * argv[])
```
Definition at line 877 of file CMakeCCompilerId.c.

### 8.1.3 Variable Documentation

#### 8.1.3.1 info_arch

```
char const* info_arch = "INFO" ":" "arch[" ARCHITECTURE_ID "]"
```
Definition at line 826 of file CMakeCCompilerId.c.

#### 8.1.3.2 info_compiler

```
char const* info_compiler = "INFO" ":" "compiler[" COMPILER_ID "]"
```
Definition at line 455 of file CMakeCCompilerId.c.

#### 8.1.3.3 info_language_extensions_default

```
const char* info_language_extensions_default
```
**Initial value:**
```
= "INFO" ":" "extensions_default["



  "OFF"

"]"
```
Definition at line 859 of file CMakeCCompilerId.c.

#### 8.1.3.4 info_language_standard_default

```
const char* info_language_standard_default
```
**Initial value:**
```
=
  "INFO" ":" "standard_default[" C_VERSION "]"
```
Definition at line 856 of file CMakeCCompilerId.c.

### 8.1.3.5 info_platform

char const* info_platform = "INFO" ":" "platform[" PLATFORM_ID "]"

Definition at line 825 of file CMakeCCompilerId.c.

## 8.2 CMakeCCompilerId.c

Go to the documentation of this file.

```
00001 #ifdef __cplusplus
00002 # error "A C++ compiler has been selected for C."
00003 #endif
00004
00005 #if defined(__18CXX)
00006 # define ID_VOID_MAIN
00007 #endif
00008 #if defined(__CLASSIC_C__)
00009 /* cv-qualifiers did not exist in K&R C */
00010 # define const
00011 # define volatile
00012 #endif
00013
00014 #if !defined(__has_include)
00015 /* If the compiler does not have __has_include, pretend the answer is
00016    always no.  */
00017 #  define __has_include(x) 0
00018 #endif
00019
00020
00021 /* Version number components: V=Version, R=Revision, P=Patch
00022    Version date components:   YYYY=Year, MM=Month,   DD=Day  */
00023
00024 #if defined(__INTEL_COMPILER) || defined(__ICC)
00025 # define COMPILER_ID "Intel"
00026 # if defined(_MSC_VER)
00027 #  define SIMULATE_ID "MSVC"
00028 # endif
00029 # if defined(__GNUC__)
00030 #  define SIMULATE_ID "GNU"
00031 # endif
00032  /* __INTEL_COMPILER = VRP prior to 2021, and then VVVV for 2021 and later,
00033     except that a few beta releases use the old format with V=2021.  */
00034 # if __INTEL_COMPILER < 2021 || __INTEL_COMPILER == 202110 || __INTEL_COMPILER == 202111
00035 #  define COMPILER_VERSION_MAJOR DEC(__INTEL_COMPILER/100)
00036 #  define COMPILER_VERSION_MINOR DEC(__INTEL_COMPILER/10 % 10)
00037 #  if defined(__INTEL_COMPILER_UPDATE)
00038 #   define COMPILER_VERSION_PATCH DEC(__INTEL_COMPILER_UPDATE)
00039 #  else
00040 #   define COMPILER_VERSION_PATCH DEC(__INTEL_COMPILER   % 10)
00041 #  endif
00042 # else
00043 #  define COMPILER_VERSION_MAJOR DEC(__INTEL_COMPILER)
00044 #  define COMPILER_VERSION_MINOR DEC(__INTEL_COMPILER_UPDATE)
00045    /* The third version component from --version is an update index,
00046       but no macro is provided for it.  */
00047 #  define COMPILER_VERSION_PATCH DEC(0)
00048 # endif
00049 # if defined(__INTEL_COMPILER_BUILD_DATE)
00050    /* __INTEL_COMPILER_BUILD_DATE = YYYYMMDD */
00051 #  define COMPILER_VERSION_TWEAK DEC(__INTEL_COMPILER_BUILD_DATE)
00052 # endif
00053 # if defined(_MSC_VER)
00054    /* _MSC_VER = VVRR */
00055 #  define SIMULATE_VERSION_MAJOR DEC(_MSC_VER / 100)
00056 #  define SIMULATE_VERSION_MINOR DEC(_MSC_VER % 100)
00057 # endif
00058 # if defined(__GNUC__)
00059 #  define SIMULATE_VERSION_MAJOR DEC(__GNUC__)
00060 # elif defined(__GNUG__)
00061 #  define SIMULATE_VERSION_MAJOR DEC(__GNUG__)
00062 # endif
00063 # if defined(__GNUC_MINOR__)
00064 #  define SIMULATE_VERSION_MINOR DEC(__GNUC_MINOR__)
00065 # endif
00066 # if defined(__GNUC_PATCHLEVEL__)
00067 #  define SIMULATE_VERSION_PATCH DEC(__GNUC_PATCHLEVEL__)
00068 # endif
00069
00070 #elif (defined(__clang__) && defined(__INTEL_CLANG_COMPILER)) || defined(__INTEL_LLVM_COMPILER)
00071 # define COMPILER_ID "IntelLLVM"
00072 #if defined(_MSC_VER)
00073 # define SIMULATE_ID "MSVC"
00074 #endif
00075 #if defined(__GNUC__)
```

```
00076 # define SIMULATE_ID "GNU"
00077 #endif
00078 /* __INTEL_LLVM_COMPILER = VVVVRP prior to 2021.2.0, VVVVRRPP for 2021.2.0 and
00079  * later.  Look for 6 digit vs. 8 digit version number to decide encoding.
00080  * VVVV is no smaller than the current year when a version is released.
00081  */
00082 #if __INTEL_LLVM_COMPILER < 1000000L
00083 # define COMPILER_VERSION_MAJOR DEC(__INTEL_LLVM_COMPILER/100)
00084 # define COMPILER_VERSION_MINOR DEC(__INTEL_LLVM_COMPILER/10 % 10)
00085 # define COMPILER_VERSION_PATCH DEC(__INTEL_LLVM_COMPILER    % 10)
00086 #else
00087 # define COMPILER_VERSION_MAJOR DEC(__INTEL_LLVM_COMPILER/10000)
00088 # define COMPILER_VERSION_MINOR DEC(__INTEL_LLVM_COMPILER/100 % 100)
00089 # define COMPILER_VERSION_PATCH DEC(__INTEL_LLVM_COMPILER    % 100)
00090 #endif
00091 #if defined(_MSC_VER)
00092   /* _MSC_VER = VVRR */
00093 # define SIMULATE_VERSION_MAJOR DEC(_MSC_VER / 100)
00094 # define SIMULATE_VERSION_MINOR DEC(_MSC_VER % 100)
00095 #endif
00096 #if defined(__GNUC__)
00097 # define SIMULATE_VERSION_MAJOR DEC(__GNUC__)
00098 #elif defined(__GNUG__)
00099 # define SIMULATE_VERSION_MAJOR DEC(__GNUG__)
00100 #endif
00101 #if defined(__GNUC_MINOR__)
00102 # define SIMULATE_VERSION_MINOR DEC(__GNUC_MINOR__)
00103 #endif
00104 #if defined(__GNUC_PATCHLEVEL__)
00105 # define SIMULATE_VERSION_PATCH DEC(__GNUC_PATCHLEVEL__)
00106 #endif
00107
00108 #elif defined(__PATHCC__)
00109 # define COMPILER_ID "PathScale"
00110 # define COMPILER_VERSION_MAJOR DEC(__PATHCC__)
00111 # define COMPILER_VERSION_MINOR DEC(__PATHCC_MINOR__)
00112 # if defined(__PATHCC_PATCHLEVEL__)
00113 #  define COMPILER_VERSION_PATCH DEC(__PATHCC_PATCHLEVEL__)
00114 # endif
00115
00116 #elif defined(__BORLANDC__) && defined(__CODEGEARC_VERSION__)
00117 # define COMPILER_ID "Embarcadero"
00118 # define COMPILER_VERSION_MAJOR HEX(__CODEGEARC_VERSION__»24 & 0x00FF)
00119 # define COMPILER_VERSION_MINOR HEX(__CODEGEARC_VERSION__»16 & 0x00FF)
00120 # define COMPILER_VERSION_PATCH DEC(__CODEGEARC_VERSION__    & 0xFFFF)
00121
00122 #elif defined(__BORLANDC__)
00123 # define COMPILER_ID "Borland"
00124   /* __BORLANDC__ = 0xVRR */
00125 # define COMPILER_VERSION_MAJOR HEX(__BORLANDC__»8)
00126 # define COMPILER_VERSION_MINOR HEX(__BORLANDC__ & 0xFF)
00127
00128 #elif defined(__WATCOMC__) && __WATCOMC__ < 1200
00129 # define COMPILER_ID "Watcom"
00130   /* __WATCOMC__ = VVRR */
00131 # define COMPILER_VERSION_MAJOR DEC(__WATCOMC__ / 100)
00132 # define COMPILER_VERSION_MINOR DEC((__WATCOMC__ / 10) % 10)
00133 # if (__WATCOMC__ % 10) > 0
00134 #  define COMPILER_VERSION_PATCH DEC(__WATCOMC__ % 10)
00135 # endif
00136
00137 #elif defined(__WATCOMC__)
00138 # define COMPILER_ID "OpenWatcom"
00139   /* __WATCOMC__ = VVRP + 1100 */
00140 # define COMPILER_VERSION_MAJOR DEC((__WATCOMC__ - 1100) / 100)
00141 # define COMPILER_VERSION_MINOR DEC((__WATCOMC__ / 10) % 10)
00142 # if (__WATCOMC__ % 10) > 0
00143 #  define COMPILER_VERSION_PATCH DEC(__WATCOMC__ % 10)
00144 # endif
00145
00146 #elif defined(__SUNPRO_C)
00147 # define COMPILER_ID "SunPro"
00148 # if __SUNPRO_C >= 0x5100
00149   /* __SUNPRO_C = 0xVRRP */
00150 #  define COMPILER_VERSION_MAJOR HEX(__SUNPRO_C»12)
00151 #  define COMPILER_VERSION_MINOR HEX(__SUNPRO_C»4 & 0xFF)
00152 #  define COMPILER_VERSION_PATCH HEX(__SUNPRO_C    & 0xF)
00153 # else
00154   /* __SUNPRO_CC = 0xVRP */
00155 #  define COMPILER_VERSION_MAJOR HEX(__SUNPRO_C»8)
00156 #  define COMPILER_VERSION_MINOR HEX(__SUNPRO_C»4 & 0xF)
00157 #  define COMPILER_VERSION_PATCH HEX(__SUNPRO_C    & 0xF)
00158 # endif
00159
00160 #elif defined(__HP_cc)
00161 # define COMPILER_ID "HP"
00162   /* __HP_cc = VVRRPP */
```

```
00163 # define COMPILER_VERSION_MAJOR DEC(__HP_cc/10000)
00164 # define COMPILER_VERSION_MINOR DEC(__HP_cc/100 % 100)
00165 # define COMPILER_VERSION_PATCH DEC(__HP_cc     % 100)
00166
00167 #elif defined(__DECC)
00168 # define COMPILER_ID "Compaq"
00169   /* __DECC_VER = VVRRTPPPP */
00170 # define COMPILER_VERSION_MAJOR DEC(__DECC_VER/10000000)
00171 # define COMPILER_VERSION_MINOR DEC(__DECC_VER/100000  % 100)
00172 # define COMPILER_VERSION_PATCH DEC(__DECC_VER         % 10000)
00173
00174 #elif defined(__IBMC__) && defined(__COMPILER_VER__)
00175 # define COMPILER_ID "zOS"
00176   /* __IBMC__ = VRP */
00177 # define COMPILER_VERSION_MAJOR DEC(__IBMC__/100)
00178 # define COMPILER_VERSION_MINOR DEC(__IBMC__/10 % 10)
00179 # define COMPILER_VERSION_PATCH DEC(__IBMC__    % 10)
00180
00181 #elif defined(__open_xl__) && defined(__clang__)
00182 # define COMPILER_ID "IBMClang"
00183 # define COMPILER_VERSION_MAJOR DEC(__open_xl_version__)
00184 # define COMPILER_VERSION_MINOR DEC(__open_xl_release__)
00185 # define COMPILER_VERSION_PATCH DEC(__open_xl_modification__)
00186 # define COMPILER_VERSION_TWEAK DEC(__open_xl_ptf_fix_level__)
00187
00188
00189 #elif defined(__ibmxl__) && defined(__clang__)
00190 # define COMPILER_ID "XLClang"
00191 # define COMPILER_VERSION_MAJOR DEC(__ibmxl_version__)
00192 # define COMPILER_VERSION_MINOR DEC(__ibmxl_release__)
00193 # define COMPILER_VERSION_PATCH DEC(__ibmxl_modification__)
00194 # define COMPILER_VERSION_TWEAK DEC(__ibmxl_ptf_fix_level__)
00195
00196
00197 #elif defined(__IBMC__) && !defined(__COMPILER_VER__) && __IBMC__ >= 800
00198 # define COMPILER_ID "XL"
00199   /* __IBMC__ = VRP */
00200 # define COMPILER_VERSION_MAJOR DEC(__IBMC__/100)
00201 # define COMPILER_VERSION_MINOR DEC(__IBMC__/10 % 10)
00202 # define COMPILER_VERSION_PATCH DEC(__IBMC__    % 10)
00203
00204 #elif defined(__IBMC__) && !defined(__COMPILER_VER__) && __IBMC__ < 800
00205 # define COMPILER_ID "VisualAge"
00206   /* __IBMC__ = VRP */
00207 # define COMPILER_VERSION_MAJOR DEC(__IBMC__/100)
00208 # define COMPILER_VERSION_MINOR DEC(__IBMC__/10 % 10)
00209 # define COMPILER_VERSION_PATCH DEC(__IBMC__    % 10)
00210
00211 #elif defined(__NVCOMPILER)
00212 # define COMPILER_ID "NVHPC"
00213 # define COMPILER_VERSION_MAJOR DEC(__NVCOMPILER_MAJOR__)
00214 # define COMPILER_VERSION_MINOR DEC(__NVCOMPILER_MINOR__)
00215 # if defined(__NVCOMPILER_PATCHLEVEL__)
00216 #   define COMPILER_VERSION_PATCH DEC(__NVCOMPILER_PATCHLEVEL__)
00217 # endif
00218
00219 #elif defined(__PGI)
00220 # define COMPILER_ID "PGI"
00221 # define COMPILER_VERSION_MAJOR DEC(__PGIC__)
00222 # define COMPILER_VERSION_MINOR DEC(__PGIC_MINOR__)
00223 # if defined(__PGIC_PATCHLEVEL__)
00224 #   define COMPILER_VERSION_PATCH DEC(__PGIC_PATCHLEVEL__)
00225 # endif
00226
00227 #elif defined(__clang__) && defined(__cray__)
00228 # define COMPILER_ID "CrayClang"
00229 # define COMPILER_VERSION_MAJOR DEC(__cray_major__)
00230 # define COMPILER_VERSION_MINOR DEC(__cray_minor__)
00231 # define COMPILER_VERSION_PATCH DEC(__cray_patchlevel__)
00232 # define COMPILER_VERSION_INTERNAL_STR __clang_version__
00233
00234
00235 #elif defined(_CRAYC)
00236 # define COMPILER_ID "Cray"
00237 # define COMPILER_VERSION_MAJOR DEC(_RELEASE_MAJOR)
00238 # define COMPILER_VERSION_MINOR DEC(_RELEASE_MINOR)
00239
00240 #elif defined(__TI_COMPILER_VERSION__)
00241 # define COMPILER_ID "TI"
00242   /* __TI_COMPILER_VERSION__ = VVVRRRPPP */
00243 # define COMPILER_VERSION_MAJOR DEC(__TI_COMPILER_VERSION__/1000000)
00244 # define COMPILER_VERSION_MINOR DEC(__TI_COMPILER_VERSION__/1000   % 1000)
00245 # define COMPILER_VERSION_PATCH DEC(__TI_COMPILER_VERSION__        % 1000)
00246
00247 #elif defined(__CLANG_FUJITSU)
00248 # define COMPILER_ID "FujitsuClang"
00249 # define COMPILER_VERSION_MAJOR DEC(__FCC_major__)
```

```
00250 # define COMPILER_VERSION_MINOR DEC(__FCC_minor__)
00251 # define COMPILER_VERSION_PATCH DEC(__FCC_patchlevel__)
00252 # define COMPILER_VERSION_INTERNAL_STR __clang_version__
00253
00254
00255 #elif defined(__FUJITSU)
00256 # define COMPILER_ID "Fujitsu"
00257 # if defined(__FCC_version__)
00258 #   define COMPILER_VERSION __FCC_version__
00259 # elif defined(__FCC_major__)
00260 #   define COMPILER_VERSION_MAJOR DEC(__FCC_major__)
00261 #   define COMPILER_VERSION_MINOR DEC(__FCC_minor__)
00262 #   define COMPILER_VERSION_PATCH DEC(__FCC_patchlevel__)
00263 # endif
00264 # if defined(__fcc_version)
00265 #   define COMPILER_VERSION_INTERNAL DEC(__fcc_version)
00266 # elif defined(__FCC_VERSION)
00267 #   define COMPILER_VERSION_INTERNAL DEC(__FCC_VERSION)
00268 # endif
00269
00270
00271 #elif defined(__ghs__)
00272 # define COMPILER_ID "GHS"
00273 /* __GHS_VERSION_NUMBER = VVVVRP */
00274 # ifdef __GHS_VERSION_NUMBER
00275 # define COMPILER_VERSION_MAJOR DEC(__GHS_VERSION_NUMBER / 100)
00276 # define COMPILER_VERSION_MINOR DEC(__GHS_VERSION_NUMBER / 10 % 10)
00277 # define COMPILER_VERSION_PATCH DEC(__GHS_VERSION_NUMBER     % 10)
00278 # endif
00279
00280 #elif defined(__TASKING__)
00281 # define COMPILER_ID "Tasking"
00282   # define COMPILER_VERSION_MAJOR DEC(__VERSION__/1000)
00283   # define COMPILER_VERSION_MINOR DEC(__VERSION__ % 100)
00284 # define COMPILER_VERSION_INTERNAL DEC(__VERSION__)
00285
00286 #elif defined(__ORANGEC__)
00287 # define COMPILER_ID "OrangeC"
00288 # define COMPILER_VERSION_MAJOR DEC(__ORANGEC_MAJOR__)
00289 # define COMPILER_VERSION_MINOR DEC(__ORANGEC_MINOR__)
00290 # define COMPILER_VERSION_PATCH DEC(__ORANGEC_PATCHLEVEL__)
00291
00292 #elif defined(__TINYC__)
00293 # define COMPILER_ID "TinyCC"
00294
00295 #elif defined(__BCC__)
00296 # define COMPILER_ID "Bruce"
00297
00298 #elif defined(__SCO_VERSION__)
00299 # define COMPILER_ID "SCO"
00300
00301 #elif defined(__ARMCC_VERSION) && !defined(__clang__)
00302 # define COMPILER_ID "ARMCC"
00303 #if __ARMCC_VERSION >= 1000000
00304   /* __ARMCC_VERSION = VRRPPPP */
00305   # define COMPILER_VERSION_MAJOR DEC(__ARMCC_VERSION/1000000)
00306   # define COMPILER_VERSION_MINOR DEC(__ARMCC_VERSION/10000 % 100)
00307   # define COMPILER_VERSION_PATCH DEC(__ARMCC_VERSION     % 10000)
00308 #else
00309   /* __ARMCC_VERSION = VRPPPP */
00310   # define COMPILER_VERSION_MAJOR DEC(__ARMCC_VERSION/100000)
00311   # define COMPILER_VERSION_MINOR DEC(__ARMCC_VERSION/10000 % 10)
00312   # define COMPILER_VERSION_PATCH DEC(__ARMCC_VERSION    % 10000)
00313 #endif
00314
00315
00316 #elif defined(__clang__) && defined(__apple_build_version__)
00317 # define COMPILER_ID "AppleClang"
00318 # if defined(_MSC_VER)
00319 #  define SIMULATE_ID "MSVC"
00320 # endif
00321 # define COMPILER_VERSION_MAJOR DEC(__clang_major__)
00322 # define COMPILER_VERSION_MINOR DEC(__clang_minor__)
00323 # define COMPILER_VERSION_PATCH DEC(__clang_patchlevel__)
00324 # if defined(_MSC_VER)
00325   /* _MSC_VER = VVRR */
00326 #  define SIMULATE_VERSION_MAJOR DEC(_MSC_VER / 100)
00327 #  define SIMULATE_VERSION_MINOR DEC(_MSC_VER % 100)
00328 # endif
00329 # define COMPILER_VERSION_TWEAK DEC(__apple_build_version__)
00330
00331 #elif defined(__clang__) && defined(__ARMCOMPILER_VERSION)
00332 # define COMPILER_ID "ARMClang"
00333   # define COMPILER_VERSION_MAJOR DEC(__ARMCOMPILER_VERSION/1000000)
00334   # define COMPILER_VERSION_MINOR DEC(__ARMCOMPILER_VERSION/10000 % 100)
00335   # define COMPILER_VERSION_PATCH DEC(__ARMCOMPILER_VERSION/100   % 100)
00336 # define COMPILER_VERSION_INTERNAL DEC(__ARMCOMPILER_VERSION)
```

```
00337
00338 #elif defined(__clang__) && defined(__ti__)
00339 # define COMPILER_ID "TIClang"
00340   # define COMPILER_VERSION_MAJOR DEC(__ti_major__)
00341   # define COMPILER_VERSION_MINOR DEC(__ti_minor__)
00342   # define COMPILER_VERSION_PATCH DEC(__ti_patchlevel__)
00343 # define COMPILER_VERSION_INTERNAL DEC(__ti_version__)
00344
00345 #elif defined(__clang__)
00346 # define COMPILER_ID "Clang"
00347 # if defined(_MSC_VER)
00348 #  define SIMULATE_ID "MSVC"
00349 # endif
00350 # define COMPILER_VERSION_MAJOR DEC(__clang_major__)
00351 # define COMPILER_VERSION_MINOR DEC(__clang_minor__)
00352 # define COMPILER_VERSION_PATCH DEC(__clang_patchlevel__)
00353 # if defined(_MSC_VER)
00354   /* _MSC_VER = VVRR */
00355 #  define SIMULATE_VERSION_MAJOR DEC(_MSC_VER / 100)
00356 #  define SIMULATE_VERSION_MINOR DEC(_MSC_VER % 100)
00357 # endif
00358
00359 #elif defined(__LCC__) && (defined(__GNUC__) || defined(__GNUG__) || defined(__MCST__))
00360 # define COMPILER_ID "LCC"
00361 # define COMPILER_VERSION_MAJOR DEC(__LCC__ / 100)
00362 # define COMPILER_VERSION_MINOR DEC(__LCC__ % 100)
00363 # if defined(__LCC_MINOR__)
00364 #  define COMPILER_VERSION_PATCH DEC(__LCC_MINOR__)
00365 # endif
00366 # if defined(__GNUC__) && defined(__GNUC_MINOR__)
00367 #  define SIMULATE_ID "GNU"
00368 #  define SIMULATE_VERSION_MAJOR DEC(__GNUC__)
00369 #  define SIMULATE_VERSION_MINOR DEC(__GNUC_MINOR__)
00370 #  if defined(__GNUC_PATCHLEVEL__)
00371 #   define SIMULATE_VERSION_PATCH DEC(__GNUC_PATCHLEVEL__)
00372 #  endif
00373 # endif
00374
00375 #elif defined(__GNUC__)
00376 # define COMPILER_ID "GNU"
00377 # define COMPILER_VERSION_MAJOR DEC(__GNUC__)
00378 # if defined(__GNUC_MINOR__)
00379 #  define COMPILER_VERSION_MINOR DEC(__GNUC_MINOR__)
00380 # endif
00381 # if defined(__GNUC_PATCHLEVEL__)
00382 #  define COMPILER_VERSION_PATCH DEC(__GNUC_PATCHLEVEL__)
00383 # endif
00384
00385 #elif defined(_MSC_VER)
00386 # define COMPILER_ID "MSVC"
00387   /* _MSC_VER = VVRR */
00388 # define COMPILER_VERSION_MAJOR DEC(_MSC_VER / 100)
00389 # define COMPILER_VERSION_MINOR DEC(_MSC_VER % 100)
00390 # if defined(_MSC_FULL_VER)
00391 #  if _MSC_VER >= 1400
00392     /* _MSC_FULL_VER = VVRRPPPPP */
00393 #   define COMPILER_VERSION_PATCH DEC(_MSC_FULL_VER % 100000)
00394 #  else
00395     /* _MSC_FULL_VER = VVRRPPPP */
00396 #   define COMPILER_VERSION_PATCH DEC(_MSC_FULL_VER % 10000)
00397 #  endif
00398 # endif
00399 # if defined(_MSC_BUILD)
00400 #  define COMPILER_VERSION_TWEAK DEC(_MSC_BUILD)
00401 # endif
00402
00403 #elif defined(_ADI_COMPILER)
00404 # define COMPILER_ID "ADSP"
00405 #if defined(__VERSIONNUM__)
00406   /* __VERSIONNUM__ = 0xVVRRPPTT */
00407 #  define COMPILER_VERSION_MAJOR DEC(__VERSIONNUM__ >> 24 & 0xFF)
00408 #  define COMPILER_VERSION_MINOR DEC(__VERSIONNUM__ >> 16 & 0xFF)
00409 #  define COMPILER_VERSION_PATCH DEC(__VERSIONNUM__ >> 8 & 0xFF)
00410 #  define COMPILER_VERSION_TWEAK DEC(__VERSIONNUM__ & 0xFF)
00411 #endif
00412
00413 #elif defined(__IAR_SYSTEMS_ICC__) || defined(__IAR_SYSTEMS_ICC)
00414 # define COMPILER_ID "IAR"
00415 # if defined(__VER__) && defined(__ICCARM__)
00416 #  define COMPILER_VERSION_MAJOR DEC((__VER__) / 1000000)
00417 #  define COMPILER_VERSION_MINOR DEC(((__VER__) / 1000) % 1000)
00418 #  define COMPILER_VERSION_PATCH DEC((__VER__) % 1000)
00419 #  define COMPILER_VERSION_INTERNAL DEC(__IAR_SYSTEMS_ICC__)
00420 # elif defined(__VER__) && (defined(__ICCAVR__) || defined(__ICCRX__) || defined(__ICCRH850__) ||
      defined(__ICCRL78__) || defined(__ICC430__) || defined(__ICCRISCV__) || defined(__ICCV850__) ||
      defined(__ICC8051__) || defined(__ICCSTM8__))
00421 #  define COMPILER_VERSION_MAJOR DEC((__VER__) / 100)
```

```
00422 #  define COMPILER_VERSION_MINOR DEC((__VER__) - (((__VER__) / 100)*100))
00423 #  define COMPILER_VERSION_PATCH DEC(__SUBVERSION__)
00424 #  define COMPILER_VERSION_INTERNAL DEC(__IAR_SYSTEMS_ICC__)
00425 # endif
00426
00427 #elif defined(__SDCC_VERSION_MAJOR) || defined(SDCC)
00428 # define COMPILER_ID "SDCC"
00429 # if defined(__SDCC_VERSION_MAJOR)
00430 #  define COMPILER_VERSION_MAJOR DEC(__SDCC_VERSION_MAJOR)
00431 #  define COMPILER_VERSION_MINOR DEC(__SDCC_VERSION_MINOR)
00432 #  define COMPILER_VERSION_PATCH DEC(__SDCC_VERSION_PATCH)
00433 # else
00434   /* SDCC = VRP */
00435 #  define COMPILER_VERSION_MAJOR DEC(SDCC/100)
00436 #  define COMPILER_VERSION_MINOR DEC(SDCC/10 % 10)
00437 #  define COMPILER_VERSION_PATCH DEC(SDCC    % 10)
00438 # endif
00439
00440
00441 /* These compilers are either not known or too old to define an
00442   identification macro.  Try to identify the platform and guess that
00443   it is the native compiler.  */
00444 #elif defined(__hpux) || defined(__hpua)
00445 # define COMPILER_ID "HP"
00446
00447 #else /* unknown compiler */
00448 # define COMPILER_ID ""
00449 #endif
00450
00451 /* Construct the string literal in pieces to prevent the source from
00452    getting matched.  Store it in a pointer rather than an array
00453   because some compilers will just produce instructions to fill the
00454   array rather than assigning a pointer to a static array.  */
00455 char const* info_compiler = "INFO" ":" "compiler[" COMPILER_ID "]";
00456 #ifdef SIMULATE_ID
00457 char const* info_simulate = "INFO" ":" "simulate[" SIMULATE_ID "]";
00458 #endif
00459
00460 #ifdef __QNXNTO__
00461 char const* qnxnto = "INFO" ":" "qnxnto[]";
00462 #endif
00463
00464 #if defined(__CRAYXT_COMPUTE_LINUX_TARGET)
00465 char const *info_cray = "INFO" ":" "compiler_wrapper[CrayPrgEnv]";
00466 #endif
00467
00468 #define STRINGIFY_HELPER(X) #X
00469 #define STRINGIFY(X) STRINGIFY_HELPER(X)
00470
00471 /* Identify known platforms by name.  */
00472 #if defined(__linux) || defined(__linux__) || defined(linux)
00473 # define PLATFORM_ID "Linux"
00474
00475 #elif defined(__MSYS__)
00476 # define PLATFORM_ID "MSYS"
00477
00478 #elif defined(__CYGWIN__)
00479 # define PLATFORM_ID "Cygwin"
00480
00481 #elif defined(__MINGW32__)
00482 # define PLATFORM_ID "MinGW"
00483
00484 #elif defined(__APPLE__)
00485 # define PLATFORM_ID "Darwin"
00486
00487 #elif defined(_WIN32) || defined(__WIN32__) || defined(WIN32)
00488 # define PLATFORM_ID "Windows"
00489
00490 #elif defined(__FreeBSD__) || defined(__FreeBSD)
00491 # define PLATFORM_ID "FreeBSD"
00492
00493 #elif defined(__NetBSD__) || defined(__NetBSD)
00494 # define PLATFORM_ID "NetBSD"
00495
00496 #elif defined(__OpenBSD__) || defined(__OPENBSD)
00497 # define PLATFORM_ID "OpenBSD"
00498
00499 #elif defined(__sun) || defined(sun)
00500 # define PLATFORM_ID "SunOS"
00501
00502 #elif defined(_AIX) || defined(__AIX) || defined(__AIX__) || defined(__aix) || defined(__aix__)
00503 # define PLATFORM_ID "AIX"
00504
00505 #elif defined(__hpux) || defined(__hpux__)
00506 # define PLATFORM_ID "HP-UX"
00507
00508 #elif defined(__HAIKU__)
```

```
00509 # define PLATFORM_ID "Haiku"
00510
00511 #elif defined(__BeOS) || defined(__BEOS__) || defined(_BEOS)
00512 # define PLATFORM_ID "BeOS"
00513
00514 #elif defined(__QNX__) || defined(__QNXNTO__)
00515 # define PLATFORM_ID "QNX"
00516
00517 #elif defined(__tru64) || defined(_tru64) || defined(__TRU64__)
00518 # define PLATFORM_ID "Tru64"
00519
00520 #elif defined(__riscos) || defined(__riscos__)
00521 # define PLATFORM_ID "RISCos"
00522
00523 #elif defined(__sinix) || defined(__sinix__) || defined(__SINIX__)
00524 # define PLATFORM_ID "SINIX"
00525
00526 #elif defined(__UNIX_SV__)
00527 # define PLATFORM_ID "UNIX_SV"
00528
00529 #elif defined(__bsdos__)
00530 # define PLATFORM_ID "BSDOS"
00531
00532 #elif defined(_MPRAS) || defined(MPRAS)
00533 # define PLATFORM_ID "MP-RAS"
00534
00535 #elif defined(__osf) || defined(__osf__)
00536 # define PLATFORM_ID "OSF1"
00537
00538 #elif defined(_SCO_SV) || defined(SCO_SV) || defined(sco_sv)
00539 # define PLATFORM_ID "SCO_SV"
00540
00541 #elif defined(__ultrix) || defined(__ultrix__) || defined(_ULTRIX)
00542 # define PLATFORM_ID "ULTRIX"
00543
00544 #elif defined(__XENIX__) || defined(_XENIX) || defined(XENIX)
00545 # define PLATFORM_ID "Xenix"
00546
00547 #elif defined(__WATCOMC__)
00548 # if defined(__LINUX__)
00549 #  define PLATFORM_ID "Linux"
00550
00551 # elif defined(__DOS__)
00552 #  define PLATFORM_ID "DOS"
00553
00554 # elif defined(__OS2__)
00555 #  define PLATFORM_ID "OS2"
00556
00557 # elif defined(__WINDOWS__)
00558 #  define PLATFORM_ID "Windows3x"
00559
00560 # elif defined(__VXWORKS__)
00561 #  define PLATFORM_ID "VxWorks"
00562
00563 # else /* unknown platform */
00564 #  define PLATFORM_ID
00565 # endif
00566
00567 #elif defined(__INTEGRITY)
00568 # if defined(INT_178B)
00569 #  define PLATFORM_ID "Integrity178"
00570
00571 # else /* regular Integrity */
00572 #  define PLATFORM_ID "Integrity"
00573 # endif
00574
00575 # elif defined(_ADI_COMPILER)
00576 #  define PLATFORM_ID "ADSP"
00577
00578 #else /* unknown platform */
00579 # define PLATFORM_ID
00580
00581 #endif
00582
00583 /* For windows compilers MSVC and Intel we can determine
00584    the architecture of the compiler being used.  This is because
00585    the compilers do not have flags that can change the architecture,
00586    but rather depend on which compiler is being used
00587 */
00588 #if defined(_WIN32) && defined(_MSC_VER)
00589 # if defined(_M_IA64)
00590 #  define ARCHITECTURE_ID "IA64"
00591
00592 # elif defined(_M_ARM64EC)
00593 #  define ARCHITECTURE_ID "ARM64EC"
00594
00595 # elif defined(_M_X64) || defined(_M_AMD64)
```

```
00596 #  define ARCHITECTURE_ID "x64"
00597
00598 # elif defined(_M_IX86)
00599 #  define ARCHITECTURE_ID "X86"
00600
00601 # elif defined(_M_ARM64)
00602 #  define ARCHITECTURE_ID "ARM64"
00603
00604 # elif defined(_M_ARM)
00605 #  if _M_ARM == 4
00606 #   define ARCHITECTURE_ID "ARMV4I"
00607 #  elif _M_ARM == 5
00608 #   define ARCHITECTURE_ID "ARMV5I"
00609 #  else
00610 #   define ARCHITECTURE_ID "ARMV" STRINGIFY(_M_ARM)
00611 #  endif
00612
00613 # elif defined(_M_MIPS)
00614 #  define ARCHITECTURE_ID "MIPS"
00615
00616 # elif defined(_M_SH)
00617 #  define ARCHITECTURE_ID "SHx"
00618
00619 # else /* unknown architecture */
00620 #  define ARCHITECTURE_ID ""
00621 # endif
00622
00623 #elif defined(__WATCOMC__)
00624 # if defined(_M_I86)
00625 #  define ARCHITECTURE_ID "I86"
00626
00627 # elif defined(_M_IX86)
00628 #  define ARCHITECTURE_ID "X86"
00629
00630 # else /* unknown architecture */
00631 #  define ARCHITECTURE_ID ""
00632 # endif
00633
00634 #elif defined(__IAR_SYSTEMS_ICC__) || defined(__IAR_SYSTEMS_ICC)
00635 # if defined(__ICCARM__)
00636 #  define ARCHITECTURE_ID "ARM"
00637
00638 # elif defined(__ICCRX__)
00639 #  define ARCHITECTURE_ID "RX"
00640
00641 # elif defined(__ICCRH850__)
00642 #  define ARCHITECTURE_ID "RH850"
00643
00644 # elif defined(__ICCRL78__)
00645 #  define ARCHITECTURE_ID "RL78"
00646
00647 # elif defined(__ICCRISCV__)
00648 #  define ARCHITECTURE_ID "RISCV"
00649
00650 # elif defined(__ICCAVR__)
00651 #  define ARCHITECTURE_ID "AVR"
00652
00653 # elif defined(__ICC430__)
00654 #  define ARCHITECTURE_ID "MSP430"
00655
00656 # elif defined(__ICCV850__)
00657 #  define ARCHITECTURE_ID "V850"
00658
00659 # elif defined(__ICC8051__)
00660 #  define ARCHITECTURE_ID "8051"
00661
00662 # elif defined(__ICCSTM8__)
00663 #  define ARCHITECTURE_ID "STM8"
00664
00665 # else /* unknown architecture */
00666 #  define ARCHITECTURE_ID ""
00667 # endif
00668
00669 #elif defined(__ghs__)
00670 # if defined(__PPC64__)
00671 #  define ARCHITECTURE_ID "PPC64"
00672
00673 # elif defined(__ppc__)
00674 #  define ARCHITECTURE_ID "PPC"
00675
00676 # elif defined(__ARM__)
00677 #  define ARCHITECTURE_ID "ARM"
00678
00679 # elif defined(__x86_64__)
00680 #  define ARCHITECTURE_ID "x64"
00681
00682 # elif defined(__i386__)
```

```
00683 #  define ARCHITECTURE_ID "X86"
00684
00685 # else /* unknown architecture */
00686 #  define ARCHITECTURE_ID ""
00687 # endif
00688
00689 #elif defined(__clang__) && defined(__ti__)
00690 # if defined(__ARM_ARCH)
00691 #  define ARCHITECTURE_ID "Arm"
00692
00693 # else /* unknown architecture */
00694 #  define ARCHITECTURE_ID ""
00695 # endif
00696
00697 #elif defined(__TI_COMPILER_VERSION__)
00698 # if defined(__TI_ARM__)
00699 #  define ARCHITECTURE_ID "ARM"
00700
00701 # elif defined(__MSP430__)
00702 #  define ARCHITECTURE_ID "MSP430"
00703
00704 # elif defined(__TMS320C28XX__)
00705 #  define ARCHITECTURE_ID "TMS320C28x"
00706
00707 # elif defined(__TMS320C6X__) || defined(_TMS320C6X)
00708 #  define ARCHITECTURE_ID "TMS320C6x"
00709
00710 # else /* unknown architecture */
00711 #  define ARCHITECTURE_ID ""
00712 # endif
00713
00714 # elif defined(__ADSPSHARC__)
00715 #  define ARCHITECTURE_ID "SHARC"
00716
00717 # elif defined(__ADSPBLACKFIN__)
00718 #  define ARCHITECTURE_ID "Blackfin"
00719
00720 #elif defined(__TASKING__)
00721
00722 # if defined(__CTC__) || defined(__CPTC__)
00723 #  define ARCHITECTURE_ID "TriCore"
00724
00725 # elif defined(__CMCS__)
00726 #  define ARCHITECTURE_ID "MCS"
00727
00728 # elif defined(__CARM__)
00729 #  define ARCHITECTURE_ID "ARM"
00730
00731 # elif defined(__CARC__)
00732 #  define ARCHITECTURE_ID "ARC"
00733
00734 # elif defined(__C51__)
00735 #  define ARCHITECTURE_ID "8051"
00736
00737 # elif defined(__CPCP__)
00738 #  define ARCHITECTURE_ID "PCP"
00739
00740 # else
00741 #  define ARCHITECTURE_ID ""
00742 # endif
00743
00744 #else
00745 #  define ARCHITECTURE_ID
00746 #endif
00747
00748 /* Convert integer to decimal digit literals.  */
00749 #define DEC(n)                    \
00750   ('0' + (((n) / 10000000)%10)), \
00751   ('0' + (((n) / 1000000)%10)),  \
00752   ('0' + (((n) / 100000)%10)),   \
00753   ('0' + (((n) / 10000)%10)),    \
00754   ('0' + (((n) / 1000)%10)),     \
00755   ('0' + (((n) / 100)%10)),      \
00756   ('0' + (((n) / 10)%10)),       \
00757   ('0' +  ((n) % 10))
00758
00759 /* Convert integer to hex digit literals.  */
00760 #define HEX(n)              \
00761   ('0' + ((n)>>28 & 0xF)), \
00762   ('0' + ((n)>>24 & 0xF)), \
00763   ('0' + ((n)>>20 & 0xF)), \
00764   ('0' + ((n)>>16 & 0xF)), \
00765   ('0' + ((n)>>12 & 0xF)), \
00766   ('0' + ((n)>>8  & 0xF)), \
00767   ('0' + ((n)>>4  & 0xF)), \
00768   ('0' + ((n)     & 0xF))
00769
```

```
00770 /* Construct a string literal encoding the version number. */
00771 #ifdef COMPILER_VERSION
00772 char const* info_version = "INFO" ":" "compiler_version[" COMPILER_VERSION "]";
00773
00774 /* Construct a string literal encoding the version number components. */
00775 #elif defined(COMPILER_VERSION_MAJOR)
00776 char const info_version[] = {
00777   'I', 'N', 'F', 'O', ':',
00778   'c','o','m','p','i','l','e','r','_','v','e','r','s','i','o','n','[',
00779   COMPILER_VERSION_MAJOR,
00780 # ifdef COMPILER_VERSION_MINOR
00781   '.', COMPILER_VERSION_MINOR,
00782 #  ifdef COMPILER_VERSION_PATCH
00783   '.', COMPILER_VERSION_PATCH,
00784 #   ifdef COMPILER_VERSION_TWEAK
00785   '.', COMPILER_VERSION_TWEAK,
00786 #   endif
00787 #  endif
00788 # endif
00789   ']','\0'};
00790 #endif
00791
00792 /* Construct a string literal encoding the internal version number. */
00793 #ifdef COMPILER_VERSION_INTERNAL
00794 char const info_version_internal[] = {
00795   'I', 'N', 'F', 'O', ':',
00796   'c','o','m','p','i','l','e','r','_','v','e','r','s','i','o','n','_',
00797   'i','n','t','e','r','n','a','l','[',
00798   COMPILER_VERSION_INTERNAL,']','\0'};
00799 #elif defined(COMPILER_VERSION_INTERNAL_STR)
00800 char const* info_version_internal = "INFO" ":" "compiler_version_internal["
      COMPILER_VERSION_INTERNAL_STR "]";
00801 #endif
00802
00803 /* Construct a string literal encoding the version number components. */
00804 #ifdef SIMULATE_VERSION_MAJOR
00805 char const info_simulate_version[] = {
00806   'I', 'N', 'F', 'O', ':',
00807   's','i','m','u','l','a','t','e','_','v','e','r','s','i','o','n','[',
00808   SIMULATE_VERSION_MAJOR,
00809 # ifdef SIMULATE_VERSION_MINOR
00810   '.', SIMULATE_VERSION_MINOR,
00811 #  ifdef SIMULATE_VERSION_PATCH
00812   '.', SIMULATE_VERSION_PATCH,
00813 #   ifdef SIMULATE_VERSION_TWEAK
00814   '.', SIMULATE_VERSION_TWEAK,
00815 #   endif
00816 #  endif
00817 # endif
00818   ']','\0'};
00819 #endif
00820
00821 /* Construct the string literal in pieces to prevent the source from
00822    getting matched.  Store it in a pointer rather than an array
00823    because some compilers will just produce instructions to fill the
00824    array rather than assigning a pointer to a static array.  */
00825 char const* info_platform = "INFO" ":" "platform[" PLATFORM_ID "]";
00826 char const* info_arch = "INFO" ":" "arch[" ARCHITECTURE_ID "]";
00827
00828
00829
00830 #define C_STD_99 199901L
00831 #define C_STD_11 201112L
00832 #define C_STD_17 201710L
00833 #define C_STD_23 202311L
00834
00835 #ifdef __STDC_VERSION__
00836 #  define C_STD __STDC_VERSION__
00837 #endif
00838
00839 #if !defined(__STDC__) && !defined(__clang__)
00840 # if defined(_MSC_VER) || defined(__ibmxl__) || defined(__IBMC__)
00841 #  define C_VERSION "90"
00842 # else
00843 #  define C_VERSION
00844 # endif
00845 #elif C_STD > C_STD_17
00846 # define C_VERSION "23"
00847 #elif C_STD > C_STD_11
00848 # define C_VERSION "17"
00849 #elif C_STD > C_STD_99
00850 # define C_VERSION "11"
00851 #elif C_STD >= C_STD_99
00852 # define C_VERSION "99"
00853 #else
00854 # define C_VERSION "90"
00855 #endif
```

```
00856 const char* info_language_standard_default =
00857   "INFO" ":" "standard_default[" C_VERSION "]";
00858
00859 const char* info_language_extensions_default = "INFO" ":" "extensions_default["
00860 #if (defined(__clang__) || defined(__GNUC__) || defined(__xlC__) ||            \
00861      defined(__TI_COMPILER_VERSION__)) &&                                      \
00862   !defined(__STRICT_ANSI__)
00863   "ON"
00864 #else
00865   "OFF"
00866 #endif
00867 "]";
00868
00869 /*--------------------------------------------------------------------------*/
00870
00871 #ifdef ID_VOID_MAIN
00872 void main() {}
00873 #else
00874 # if defined(__CLASSIC_C__)
00875 int main(argc, argv) int argc; char *argv[];
00876 # else
00877 int main(int argc, char* argv[])
00878 # endif
00879 {
00880   int require = 0;
00881   require += info_compiler[argc];
00882   require += info_platform[argc];
00883   require += info_arch[argc];
00884 #ifdef COMPILER_VERSION_MAJOR
00885   require += info_version[argc];
00886 #endif
00887 #ifdef COMPILER_VERSION_INTERNAL
00888   require += info_version_internal[argc];
00889 #endif
00890 #ifdef SIMULATE_ID
00891   require += info_simulate[argc];
00892 #endif
00893 #ifdef SIMULATE_VERSION_MAJOR
00894   require += info_simulate_version[argc];
00895 #endif
00896 #if defined(__CRAYXT_COMPUTE_LINUX_TARGET)
00897   require += info_cray[argc];
00898 #endif
00899   require += info_language_standard_default[argc];
00900   require += info_language_extensions_default[argc];
00901   (void)argv;
00902   return require;
00903 }
00904 #endif
```

## 8.3 build/CMakeFiles/3.31.5/CompilerIdCXX/CMakeCXXCompilerId.cpp File Reference

**Macros**

- #define __has_include(x)
- #define COMPILER_ID ""
- #define STRINGIFY_HELPER(X)
- #define STRINGIFY(X)
- #define PLATFORM_ID
- #define ARCHITECTURE_ID
- #define DEC(n)
- #define HEX(n)
- #define CXX_STD_98 199711L
- #define CXX_STD_11 201103L
- #define CXX_STD_14 201402L
- #define CXX_STD_17 201703L
- #define CXX_STD_20 202002L
- #define CXX_STD_23 202302L
- #define CXX_STD __cplusplus

**Functions**

- int main (int argc, char ∗argv[])

**Variables**

- char const * info_compiler = "INFO" ":" "compiler[" COMPILER_ID "]"
- char const * info_platform = "INFO" ":" "platform[" PLATFORM_ID "]"
- char const * info_arch = "INFO" ":" "arch[" ARCHITECTURE_ID "]"
- const char * info_language_standard_default
- const char * info_language_extensions_default

### 8.3.1 Macro Definition Documentation

#### 8.3.1.1 __has_include

```
#define __has_include(
                x)
```
**Value:**
```
0
```
Definition at line 11 of file CMakeCXXCompilerId.cpp.

#### 8.3.1.2 ARCHITECTURE_ID

```
#define ARCHITECTURE_ID
```
Definition at line 724 of file CMakeCXXCompilerId.cpp.

#### 8.3.1.3 COMPILER_ID

```
#define COMPILER_ID ""
```
Definition at line 427 of file CMakeCXXCompilerId.cpp.

#### 8.3.1.4 CXX_STD

```
#define CXX_STD __cplusplus
```
Definition at line 861 of file CMakeCXXCompilerId.cpp.

#### 8.3.1.5 CXX_STD_11

```
#define CXX_STD_11 201103L
```
Definition at line 810 of file CMakeCXXCompilerId.cpp.

#### 8.3.1.6 CXX_STD_14

```
#define CXX_STD_14 201402L
```
Definition at line 811 of file CMakeCXXCompilerId.cpp.

#### 8.3.1.7 CXX_STD_17

```
#define CXX_STD_17 201703L
```
Definition at line 812 of file CMakeCXXCompilerId.cpp.

#### 8.3.1.8 CXX_STD_20

```
#define CXX_STD_20 202002L
```
Definition at line 813 of file CMakeCXXCompilerId.cpp.

#### 8.3.1.9 CXX_STD_23

```
#define CXX_STD_23 202302L
```
Definition at line 814 of file CMakeCXXCompilerId.cpp.

### 8.3.1.10 CXX_STD_98

```
#define CXX_STD_98 199711L
```
Definition at line 809 of file CMakeCXXCompilerId.cpp.

### 8.3.1.11 DEC

```
#define DEC(
                n)
```
**Value:**
```
('0' + (((n) / 10000000)%10)), \
('0' + (((n) / 1000000)%10)),  \
('0' + (((n) / 100000)%10)),   \
('0' + (((n) / 10000)%10)),    \
('0' + (((n) / 1000)%10)),     \
('0' + (((n) / 100)%10)),      \
('0' + (((n) / 10)%10)),       \
('0' +  ((n) % 10))
```
Definition at line 728 of file CMakeCXXCompilerId.cpp.

### 8.3.1.12 HEX

```
#define HEX(
                n)
```
**Value:**
```
('0' + ((n)»28 & 0xF)), \
('0' + ((n)»24 & 0xF)), \
('0' + ((n)»20 & 0xF)), \
('0' + ((n)»16 & 0xF)), \
('0' + ((n)»12 & 0xF)), \
('0' + ((n)»8  & 0xF)), \
('0' + ((n)»4  & 0xF)), \
('0' + ((n)     & 0xF))
```
Definition at line 739 of file CMakeCXXCompilerId.cpp.

### 8.3.1.13 PLATFORM_ID

```
#define PLATFORM_ID
```
Definition at line 558 of file CMakeCXXCompilerId.cpp.

### 8.3.1.14 STRINGIFY

```
#define STRINGIFY(
                X)
```
**Value:**
```
STRINGIFY_HELPER(X)
```
Definition at line 448 of file CMakeCXXCompilerId.cpp.

### 8.3.1.15 STRINGIFY_HELPER

```
#define STRINGIFY_HELPER(
                X)
```
**Value:**
```
#X
```
Definition at line 447 of file CMakeCXXCompilerId.cpp.

## 8.3.2 Function Documentation

### 8.3.2.1 main()

```
int main (
                int argc,
                char * argv[])
```
Definition at line 894 of file CMakeCXXCompilerId.cpp.

### 8.3.3 Variable Documentation

#### 8.3.3.1 info_arch

```
char const* info_arch = "INFO" ":" "arch[" ARCHITECTURE_ID "]"
```
Definition at line 805 of file CMakeCXXCompilerId.cpp.

#### 8.3.3.2 info_compiler

```
char const* info_compiler = "INFO" ":" "compiler[" COMPILER_ID "]"
```
Definition at line 434 of file CMakeCXXCompilerId.cpp.

#### 8.3.3.3 info_language_extensions_default

```
const char* info_language_extensions_default
```
**Initial value:**
```
= "INFO" ":" "extensions_default["
```

```
  "OFF"
```
```
"]"
```
Definition at line 882 of file CMakeCXXCompilerId.cpp.

#### 8.3.3.4 info_language_standard_default

```
const char* info_language_standard_default
```
**Initial value:**
```
= "INFO" ":" "standard_default["
```

```
  "98"
```
```
"]"
```
Definition at line 864 of file CMakeCXXCompilerId.cpp.

#### 8.3.3.5 info_platform

```
char const* info_platform = "INFO" ":" "platform[" PLATFORM_ID "]"
```
Definition at line 804 of file CMakeCXXCompilerId.cpp.

## 8.4 CMakeCXXCompilerId.cpp

Go to the documentation of this file.
```
00001 /* This source file must have a .cpp extension so that all C++ compilers
00002    recognize the extension without flags.  Borland does not know .cxx for
00003    example.  */
00004 #ifndef __cplusplus
00005 # error "A C compiler has been selected for C++."
00006 #endif
00007
00008 #if !defined(__has_include)
00009 /* If the compiler does not have __has_include, pretend the answer is
00010    always no.  */
00011 #  define __has_include(x) 0
00012 #endif
00013
```

```
00014
00015 /* Version number components: V=Version, R=Revision, P=Patch
00016    Version date components:  YYYY=Year, MM=Month,   DD=Day  */
00017
00018 #if defined(__INTEL_COMPILER) || defined(__ICC)
00019 # define COMPILER_ID "Intel"
00020 # if defined(_MSC_VER)
00021 #  define SIMULATE_ID "MSVC"
00022 # endif
00023 # if defined(__GNUC__)
00024 #  define SIMULATE_ID "GNU"
00025 # endif
00026 /* __INTEL_COMPILER = VRP prior to 2021, and then VVVV for 2021 and later,
00027    except that a few beta releases use the old format with V=2021.  */
00028 # if __INTEL_COMPILER < 2021 || __INTEL_COMPILER == 202110 || __INTEL_COMPILER == 202111
00029 #  define COMPILER_VERSION_MAJOR DEC(__INTEL_COMPILER/100)
00030 #  define COMPILER_VERSION_MINOR DEC(__INTEL_COMPILER/10 % 10)
00031 #  if defined(__INTEL_COMPILER_UPDATE)
00032 #   define COMPILER_VERSION_PATCH DEC(__INTEL_COMPILER_UPDATE)
00033 #  else
00034 #   define COMPILER_VERSION_PATCH DEC(__INTEL_COMPILER   % 10)
00035 #  endif
00036 # else
00037 #  define COMPILER_VERSION_MAJOR DEC(__INTEL_COMPILER)
00038 #  define COMPILER_VERSION_MINOR DEC(__INTEL_COMPILER_UPDATE)
00039    /* The third version component from --version is an update index,
00040       but no macro is provided for it.  */
00041 #  define COMPILER_VERSION_PATCH DEC(0)
00042 # endif
00043 # if defined(__INTEL_COMPILER_BUILD_DATE)
00044    /* __INTEL_COMPILER_BUILD_DATE = YYYYMMDD */
00045 #  define COMPILER_VERSION_TWEAK DEC(__INTEL_COMPILER_BUILD_DATE)
00046 # endif
00047 # if defined(_MSC_VER)
00048    /* _MSC_VER = VVRR */
00049 #  define SIMULATE_VERSION_MAJOR DEC(_MSC_VER / 100)
00050 #  define SIMULATE_VERSION_MINOR DEC(_MSC_VER % 100)
00051 # endif
00052 # if defined(__GNUC__)
00053 #  define SIMULATE_VERSION_MAJOR DEC(__GNUC__)
00054 # elif defined(__GNUG__)
00055 #  define SIMULATE_VERSION_MAJOR DEC(__GNUG__)
00056 # endif
00057 # if defined(__GNUC_MINOR__)
00058 #  define SIMULATE_VERSION_MINOR DEC(__GNUC_MINOR__)
00059 # endif
00060 # if defined(__GNUC_PATCHLEVEL__)
00061 #  define SIMULATE_VERSION_PATCH DEC(__GNUC_PATCHLEVEL__)
00062 # endif
00063
00064 #elif (defined(__clang__) && defined(__INTEL_CLANG_COMPILER)) || defined(__INTEL_LLVM_COMPILER)
00065 # define COMPILER_ID "IntelLLVM"
00066 #if defined(_MSC_VER)
00067 # define SIMULATE_ID "MSVC"
00068 #endif
00069 #if defined(__GNUC__)
00070 # define SIMULATE_ID "GNU"
00071 #endif
00072 /* __INTEL_LLVM_COMPILER = VVVVRP prior to 2021.2.0, VVVVRRPP for 2021.2.0 and
00073  * later.  Look for 6 digit vs. 8 digit version number to decide encoding.
00074  * VVVV is no smaller than the current year when a version is released.
00075  */
00076 #if __INTEL_LLVM_COMPILER < 1000000L
00077 # define COMPILER_VERSION_MAJOR DEC(__INTEL_LLVM_COMPILER/100)
00078 # define COMPILER_VERSION_MINOR DEC(__INTEL_LLVM_COMPILER/10 % 10)
00079 # define COMPILER_VERSION_PATCH DEC(__INTEL_LLVM_COMPILER   % 10)
00080 #else
00081 # define COMPILER_VERSION_MAJOR DEC(__INTEL_LLVM_COMPILER/10000)
00082 # define COMPILER_VERSION_MINOR DEC(__INTEL_LLVM_COMPILER/100 % 100)
00083 # define COMPILER_VERSION_PATCH DEC(__INTEL_LLVM_COMPILER    % 100)
00084 #endif
00085 #if defined(_MSC_VER)
00086   /* _MSC_VER = VVRR */
00087 # define SIMULATE_VERSION_MAJOR DEC(_MSC_VER / 100)
00088 # define SIMULATE_VERSION_MINOR DEC(_MSC_VER % 100)
00089 #endif
00090 #if defined(__GNUC__)
00091 # define SIMULATE_VERSION_MAJOR DEC(__GNUC__)
00092 #elif defined(__GNUG__)
00093 # define SIMULATE_VERSION_MAJOR DEC(__GNUG__)
00094 #endif
00095 #if defined(__GNUC_MINOR__)
00096 # define SIMULATE_VERSION_MINOR DEC(__GNUC_MINOR__)
00097 #endif
00098 #if defined(__GNUC_PATCHLEVEL__)
00099 # define SIMULATE_VERSION_PATCH DEC(__GNUC_PATCHLEVEL__)
00100 #endif
```

```
00101
00102 #elif defined(__PATHCC__)
00103 # define COMPILER_ID "PathScale"
00104 # define COMPILER_VERSION_MAJOR DEC(__PATHCC__)
00105 # define COMPILER_VERSION_MINOR DEC(__PATHCC_MINOR__)
00106 # if defined(__PATHCC_PATCHLEVEL__)
00107 #  define COMPILER_VERSION_PATCH DEC(__PATHCC_PATCHLEVEL__)
00108 # endif
00109
00110 #elif defined(__BORLANDC__) && defined(__CODEGEARC_VERSION__)
00111 # define COMPILER_ID "Embarcadero"
00112 # define COMPILER_VERSION_MAJOR HEX(__CODEGEARC_VERSION__»24 & 0x00FF)
00113 # define COMPILER_VERSION_MINOR HEX(__CODEGEARC_VERSION__»16 & 0x00FF)
00114 # define COMPILER_VERSION_PATCH DEC(__CODEGEARC_VERSION__    & 0xFFFF)
00115
00116 #elif defined(__BORLANDC__)
00117 # define COMPILER_ID "Borland"
00118   /* __BORLANDC__ = 0xVRR */
00119 # define COMPILER_VERSION_MAJOR HEX(__BORLANDC__»8)
00120 # define COMPILER_VERSION_MINOR HEX(__BORLANDC__ & 0xFF)
00121
00122 #elif defined(__WATCOMC__) && __WATCOMC__ < 1200
00123 # define COMPILER_ID "Watcom"
00124   /* __WATCOMC__ = VVRR */
00125 # define COMPILER_VERSION_MAJOR DEC(__WATCOMC__ / 100)
00126 # define COMPILER_VERSION_MINOR DEC((__WATCOMC__ / 10) % 10)
00127 # if (__WATCOMC__ % 10) > 0
00128 #  define COMPILER_VERSION_PATCH DEC(__WATCOMC__ % 10)
00129 # endif
00130
00131 #elif defined(__WATCOMC__)
00132 # define COMPILER_ID "OpenWatcom"
00133   /* __WATCOMC__ = VVRP + 1100 */
00134 # define COMPILER_VERSION_MAJOR DEC((__WATCOMC__ - 1100) / 100)
00135 # define COMPILER_VERSION_MINOR DEC((__WATCOMC__ / 10) % 10)
00136 # if (__WATCOMC__ % 10) > 0
00137 #  define COMPILER_VERSION_PATCH DEC(__WATCOMC__ % 10)
00138 # endif
00139
00140 #elif defined(__SUNPRO_CC)
00141 # define COMPILER_ID "SunPro"
00142 # if __SUNPRO_CC >= 0x5100
00143   /* __SUNPRO_CC = 0xVRRP */
00144 #  define COMPILER_VERSION_MAJOR HEX(__SUNPRO_CC»12)
00145 #  define COMPILER_VERSION_MINOR HEX(__SUNPRO_CC»4 & 0xFF)
00146 #  define COMPILER_VERSION_PATCH HEX(__SUNPRO_CC    & 0xF)
00147 # else
00148   /* __SUNPRO_CC = 0xVRP */
00149 #  define COMPILER_VERSION_MAJOR HEX(__SUNPRO_CC»8)
00150 #  define COMPILER_VERSION_MINOR HEX(__SUNPRO_CC»4 & 0xF)
00151 #  define COMPILER_VERSION_PATCH HEX(__SUNPRO_CC    & 0xF)
00152 # endif
00153
00154 #elif defined(__HP_aCC)
00155 # define COMPILER_ID "HP"
00156   /* __HP_aCC = VVRRPP */
00157 # define COMPILER_VERSION_MAJOR DEC(__HP_aCC/10000)
00158 # define COMPILER_VERSION_MINOR DEC(__HP_aCC/100 % 100)
00159 # define COMPILER_VERSION_PATCH DEC(__HP_aCC    % 100)
00160
00161 #elif defined(__DECCXX)
00162 # define COMPILER_ID "Compaq"
00163   /* __DECCXX_VER = VVRRTPPPP */
00164 # define COMPILER_VERSION_MAJOR DEC(__DECCXX_VER/10000000)
00165 # define COMPILER_VERSION_MINOR DEC(__DECCXX_VER/100000  % 100)
00166 # define COMPILER_VERSION_PATCH DEC(__DECCXX_VER         % 10000)
00167
00168 #elif defined(__IBMCPP__) && defined(__COMPILER_VER__)
00169 # define COMPILER_ID "zOS"
00170   /* __IBMCPP__ = VRP */
00171 # define COMPILER_VERSION_MAJOR DEC(__IBMCPP__/100)
00172 # define COMPILER_VERSION_MINOR DEC(__IBMCPP__/10 % 10)
00173 # define COMPILER_VERSION_PATCH DEC(__IBMCPP__    % 10)
00174
00175 #elif defined(__open_xl__) && defined(__clang__)
00176 # define COMPILER_ID "IBMClang"
00177 # define COMPILER_VERSION_MAJOR DEC(__open_xl_version__)
00178 # define COMPILER_VERSION_MINOR DEC(__open_xl_release__)
00179 # define COMPILER_VERSION_PATCH DEC(__open_xl_modification__)
00180 # define COMPILER_VERSION_TWEAK DEC(__open_xl_ptf_fix_level__)
00181
00182
00183 #elif defined(__ibmxl__) && defined(__clang__)
00184 # define COMPILER_ID "XLClang"
00185 # define COMPILER_VERSION_MAJOR DEC(__ibmxl_version__)
00186 # define COMPILER_VERSION_MINOR DEC(__ibmxl_release__)
00187 # define COMPILER_VERSION_PATCH DEC(__ibmxl_modification__)
```

```
00188 # define COMPILER_VERSION_TWEAK DEC(__ibmxl_ptf_fix_level__)
00189
00190
00191 #elif defined(__IBMCPP__) && !defined(__COMPILER_VER__) && __IBMCPP__ >= 800
00192 # define COMPILER_ID "XL"
00193   /* __IBMCPP__ = VRP */
00194 # define COMPILER_VERSION_MAJOR DEC(__IBMCPP__/100)
00195 # define COMPILER_VERSION_MINOR DEC(__IBMCPP__/10 % 10)
00196 # define COMPILER_VERSION_PATCH DEC(__IBMCPP__    % 10)
00197
00198 #elif defined(__IBMCPP__) && !defined(__COMPILER_VER__) && __IBMCPP__ < 800
00199 # define COMPILER_ID "VisualAge"
00200   /* __IBMCPP__ = VRP */
00201 # define COMPILER_VERSION_MAJOR DEC(__IBMCPP__/100)
00202 # define COMPILER_VERSION_MINOR DEC(__IBMCPP__/10 % 10)
00203 # define COMPILER_VERSION_PATCH DEC(__IBMCPP__    % 10)
00204
00205 #elif defined(__NVCOMPILER)
00206 # define COMPILER_ID "NVHPC"
00207 # define COMPILER_VERSION_MAJOR DEC(__NVCOMPILER_MAJOR__)
00208 # define COMPILER_VERSION_MINOR DEC(__NVCOMPILER_MINOR__)
00209 # if defined(__NVCOMPILER_PATCHLEVEL__)
00210 #   define COMPILER_VERSION_PATCH DEC(__NVCOMPILER_PATCHLEVEL__)
00211 # endif
00212
00213 #elif defined(__PGI)
00214 # define COMPILER_ID "PGI"
00215 # define COMPILER_VERSION_MAJOR DEC(__PGIC__)
00216 # define COMPILER_VERSION_MINOR DEC(__PGIC_MINOR__)
00217 # if defined(__PGIC_PATCHLEVEL__)
00218 #   define COMPILER_VERSION_PATCH DEC(__PGIC_PATCHLEVEL__)
00219 # endif
00220
00221 #elif defined(__clang__) && defined(__cray__)
00222 # define COMPILER_ID "CrayClang"
00223 # define COMPILER_VERSION_MAJOR DEC(__cray_major__)
00224 # define COMPILER_VERSION_MINOR DEC(__cray_minor__)
00225 # define COMPILER_VERSION_PATCH DEC(__cray_patchlevel__)
00226 # define COMPILER_VERSION_INTERNAL_STR __clang_version__
00227
00228
00229 #elif defined(_CRAYC)
00230 # define COMPILER_ID "Cray"
00231 # define COMPILER_VERSION_MAJOR DEC(_RELEASE_MAJOR)
00232 # define COMPILER_VERSION_MINOR DEC(_RELEASE_MINOR)
00233
00234 #elif defined(__TI_COMPILER_VERSION__)
00235 # define COMPILER_ID "TI"
00236   /* __TI_COMPILER_VERSION__ = VVVRRRPPP */
00237 # define COMPILER_VERSION_MAJOR DEC(__TI_COMPILER_VERSION__/1000000)
00238 # define COMPILER_VERSION_MINOR DEC(__TI_COMPILER_VERSION__/1000   % 1000)
00239 # define COMPILER_VERSION_PATCH DEC(__TI_COMPILER_VERSION__        % 1000)
00240
00241 #elif defined(__CLANG_FUJITSU)
00242 # define COMPILER_ID "FujitsuClang"
00243 # define COMPILER_VERSION_MAJOR DEC(__FCC_major__)
00244 # define COMPILER_VERSION_MINOR DEC(__FCC_minor__)
00245 # define COMPILER_VERSION_PATCH DEC(__FCC_patchlevel__)
00246 # define COMPILER_VERSION_INTERNAL_STR __clang_version__
00247
00248
00249 #elif defined(__FUJITSU)
00250 # define COMPILER_ID "Fujitsu"
00251 # if defined(__FCC_version__)
00252 #    define COMPILER_VERSION __FCC_version__
00253 # elif defined(__FCC_major__)
00254 #    define COMPILER_VERSION_MAJOR DEC(__FCC_major__)
00255 #    define COMPILER_VERSION_MINOR DEC(__FCC_minor__)
00256 #    define COMPILER_VERSION_PATCH DEC(__FCC_patchlevel__)
00257 # endif
00258 # if defined(__fcc_version)
00259 #    define COMPILER_VERSION_INTERNAL DEC(__fcc_version)
00260 # elif defined(__FCC_VERSION)
00261 #    define COMPILER_VERSION_INTERNAL DEC(__FCC_VERSION)
00262 # endif
00263
00264
00265 #elif defined(__ghs__)
00266 # define COMPILER_ID "GHS"
00267 /* __GHS_VERSION_NUMBER = VVVVRP */
00268 # ifdef __GHS_VERSION_NUMBER
00269 # define COMPILER_VERSION_MAJOR DEC(__GHS_VERSION_NUMBER / 100)
00270 # define COMPILER_VERSION_MINOR DEC(__GHS_VERSION_NUMBER / 10 % 10)
00271 # define COMPILER_VERSION_PATCH DEC(__GHS_VERSION_NUMBER      % 10)
00272 # endif
00273
00274 #elif defined(__TASKING__)
```

```
00275 # define COMPILER_ID "Tasking"
00276   # define COMPILER_VERSION_MAJOR DEC(__VERSION__/1000)
00277   # define COMPILER_VERSION_MINOR DEC(__VERSION__ % 100)
00278 # define COMPILER_VERSION_INTERNAL DEC(__VERSION__)
00279
00280 #elif defined(__ORANGEC__)
00281 # define COMPILER_ID "OrangeC"
00282 # define COMPILER_VERSION_MAJOR DEC(__ORANGEC_MAJOR__)
00283 # define COMPILER_VERSION_MINOR DEC(__ORANGEC_MINOR__)
00284 # define COMPILER_VERSION_PATCH DEC(__ORANGEC_PATCHLEVEL__)
00285
00286 #elif defined(__SCO_VERSION__)
00287 # define COMPILER_ID "SCO"
00288
00289 #elif defined(__ARMCC_VERSION) && !defined(__clang__)
00290 # define COMPILER_ID "ARMCC"
00291 #if __ARMCC_VERSION >= 1000000
00292   /* __ARMCC_VERSION = VRRPPPP */
00293   # define COMPILER_VERSION_MAJOR DEC(__ARMCC_VERSION/1000000)
00294   # define COMPILER_VERSION_MINOR DEC(__ARMCC_VERSION/10000 % 100)
00295   # define COMPILER_VERSION_PATCH DEC(__ARMCC_VERSION     % 10000)
00296 #else
00297   /* __ARMCC_VERSION = VRPPPP */
00298   # define COMPILER_VERSION_MAJOR DEC(__ARMCC_VERSION/100000)
00299   # define COMPILER_VERSION_MINOR DEC(__ARMCC_VERSION/10000 % 10)
00300   # define COMPILER_VERSION_PATCH DEC(__ARMCC_VERSION     % 10000)
00301 #endif
00302
00303
00304 #elif defined(__clang__) && defined(__apple_build_version__)
00305 # define COMPILER_ID "AppleClang"
00306 # if defined(_MSC_VER)
00307 #   define SIMULATE_ID "MSVC"
00308 # endif
00309 # define COMPILER_VERSION_MAJOR DEC(__clang_major__)
00310 # define COMPILER_VERSION_MINOR DEC(__clang_minor__)
00311 # define COMPILER_VERSION_PATCH DEC(__clang_patchlevel__)
00312 # if defined(_MSC_VER)
00313   /* _MSC_VER = VVRR */
00314 #   define SIMULATE_VERSION_MAJOR DEC(_MSC_VER / 100)
00315 #   define SIMULATE_VERSION_MINOR DEC(_MSC_VER % 100)
00316 # endif
00317 # define COMPILER_VERSION_TWEAK DEC(__apple_build_version__)
00318
00319 #elif defined(__clang__) && defined(__ARMCOMPILER_VERSION)
00320 # define COMPILER_ID "ARMClang"
00321   # define COMPILER_VERSION_MAJOR DEC(__ARMCOMPILER_VERSION/1000000)
00322   # define COMPILER_VERSION_MINOR DEC(__ARMCOMPILER_VERSION/10000 % 100)
00323   # define COMPILER_VERSION_PATCH DEC(__ARMCOMPILER_VERSION/100   % 100)
00324 # define COMPILER_VERSION_INTERNAL DEC(__ARMCOMPILER_VERSION)
00325
00326 #elif defined(__clang__) && defined(__ti__)
00327 # define COMPILER_ID "TIClang"
00328   # define COMPILER_VERSION_MAJOR DEC(__ti_major__)
00329   # define COMPILER_VERSION_MINOR DEC(__ti_minor__)
00330   # define COMPILER_VERSION_PATCH DEC(__ti_patchlevel__)
00331 # define COMPILER_VERSION_INTERNAL DEC(__ti_version__)
00332
00333 #elif defined(__clang__)
00334 # define COMPILER_ID "Clang"
00335 # if defined(_MSC_VER)
00336 #   define SIMULATE_ID "MSVC"
00337 # endif
00338 # define COMPILER_VERSION_MAJOR DEC(__clang_major__)
00339 # define COMPILER_VERSION_MINOR DEC(__clang_minor__)
00340 # define COMPILER_VERSION_PATCH DEC(__clang_patchlevel__)
00341 # if defined(_MSC_VER)
00342   /* _MSC_VER = VVRR */
00343 #   define SIMULATE_VERSION_MAJOR DEC(_MSC_VER / 100)
00344 #   define SIMULATE_VERSION_MINOR DEC(_MSC_VER % 100)
00345 # endif
00346
00347 #elif defined(__LCC__) && (defined(__GNUC__) || defined(__GNUG__) || defined(__MCST__))
00348 # define COMPILER_ID "LCC"
00349 # define COMPILER_VERSION_MAJOR DEC(__LCC__ / 100)
00350 # define COMPILER_VERSION_MINOR DEC(__LCC__ % 100)
00351 # if defined(__LCC_MINOR__)
00352 #   define COMPILER_VERSION_PATCH DEC(__LCC_MINOR__)
00353 # endif
00354 # if defined(__GNUC__) && defined(__GNUC_MINOR__)
00355 #   define SIMULATE_ID "GNU"
00356 #   define SIMULATE_VERSION_MAJOR DEC(__GNUC__)
00357 #   define SIMULATE_VERSION_MINOR DEC(__GNUC_MINOR__)
00358 #   if defined(__GNUC_PATCHLEVEL__)
00359 #     define SIMULATE_VERSION_PATCH DEC(__GNUC_PATCHLEVEL__)
00360 #   endif
00361 # endif
```

```
00362
00363 #elif defined(__GNUC__) || defined(__GNUG__)
00364 # define COMPILER_ID "GNU"
00365 # if defined(__GNUC__)
00366 #  define COMPILER_VERSION_MAJOR DEC(__GNUC__)
00367 # else
00368 #  define COMPILER_VERSION_MAJOR DEC(__GNUG__)
00369 # endif
00370 # if defined(__GNUC_MINOR__)
00371 #  define COMPILER_VERSION_MINOR DEC(__GNUC_MINOR__)
00372 # endif
00373 # if defined(__GNUC_PATCHLEVEL__)
00374 #  define COMPILER_VERSION_PATCH DEC(__GNUC_PATCHLEVEL__)
00375 # endif
00376
00377 #elif defined(_MSC_VER)
00378 # define COMPILER_ID "MSVC"
00379   /* _MSC_VER = VVRR */
00380 # define COMPILER_VERSION_MAJOR DEC(_MSC_VER / 100)
00381 # define COMPILER_VERSION_MINOR DEC(_MSC_VER % 100)
00382 # if defined(_MSC_FULL_VER)
00383 #  if _MSC_VER >= 1400
00384      /* _MSC_FULL_VER = VVRRPPPPP */
00385 #    define COMPILER_VERSION_PATCH DEC(_MSC_FULL_VER % 100000)
00386 #  else
00387      /* _MSC_FULL_VER = VVRRPPPP */
00388 #    define COMPILER_VERSION_PATCH DEC(_MSC_FULL_VER % 10000)
00389 #  endif
00390 # endif
00391 # if defined(_MSC_BUILD)
00392 #  define COMPILER_VERSION_TWEAK DEC(_MSC_BUILD)
00393 # endif
00394
00395 #elif defined(_ADI_COMPILER)
00396 # define COMPILER_ID "ADSP"
00397 #if defined(__VERSIONNUM__)
00398   /* __VERSIONNUM__ = 0xVVRRPPTT */
00399 #  define COMPILER_VERSION_MAJOR DEC(__VERSIONNUM__ >> 24 & 0xFF)
00400 #  define COMPILER_VERSION_MINOR DEC(__VERSIONNUM__ >> 16 & 0xFF)
00401 #  define COMPILER_VERSION_PATCH DEC(__VERSIONNUM__ >> 8 & 0xFF)
00402 #  define COMPILER_VERSION_TWEAK DEC(__VERSIONNUM__ & 0xFF)
00403 #endif
00404
00405 #elif defined(__IAR_SYSTEMS_ICC__) || defined(__IAR_SYSTEMS_ICC)
00406 # define COMPILER_ID "IAR"
00407 # if defined(__VER__) && defined(__ICCARM__)
00408 #  define COMPILER_VERSION_MAJOR DEC((__VER__) / 1000000)
00409 #  define COMPILER_VERSION_MINOR DEC(((__VER__) / 1000) % 1000)
00410 #  define COMPILER_VERSION_PATCH DEC((__VER__) % 1000)
00411 #  define COMPILER_VERSION_INTERNAL DEC(__IAR_SYSTEMS_ICC__)
00412 # elif defined(__VER__) && (defined(__ICCAVR__) || defined(__ICCRX__) || defined(__ICCRH850__) ||
      defined(__ICCRL78__) || defined(__ICC430__) || defined(__ICCRISCV__) || defined(__ICCV850__) ||
      defined(__ICC8051__) || defined(__ICCSTM8__))
00413 #  define COMPILER_VERSION_MAJOR DEC((__VER__) / 100)
00414 #  define COMPILER_VERSION_MINOR DEC((__VER__) - (((__VER__) / 100)*100))
00415 #  define COMPILER_VERSION_PATCH DEC(__SUBVERSION__)
00416 #  define COMPILER_VERSION_INTERNAL DEC(__IAR_SYSTEMS_ICC__)
00417 # endif
00418
00419
00420 /* These compilers are either not known or too old to define an
00421    identification macro.  Try to identify the platform and guess that
00422    it is the native compiler.  */
00423 #elif defined(__hpux) || defined(__hpua)
00424 # define COMPILER_ID "HP"
00425
00426 #else /* unknown compiler */
00427 # define COMPILER_ID ""
00428 #endif
00429
00430 /* Construct the string literal in pieces to prevent the source from
00431    getting matched.  Store it in a pointer rather than an array
00432    because some compilers will just produce instructions to fill the
00433    array rather than assigning a pointer to a static array.  */
00434 char const* info_compiler = "INFO" ":" "compiler[" COMPILER_ID "]";
00435 #ifdef SIMULATE_ID
00436 char const* info_simulate = "INFO" ":" "simulate[" SIMULATE_ID "]";
00437 #endif
00438
00439 #ifdef __QNXNTO__
00440 char const* qnxnto = "INFO" ":" "qnxnto[]";
00441 #endif
00442
00443 #if defined(__CRAYXT_COMPUTE_LINUX_TARGET)
00444 char const *info_cray = "INFO" ":" "compiler_wrapper[CrayPrgEnv]";
00445 #endif
00446
```

```
00447 #define STRINGIFY_HELPER(X) #X
00448 #define STRINGIFY(X) STRINGIFY_HELPER(X)
00449
00450 /* Identify known platforms by name.  */
00451 #if defined(__linux) || defined(__linux__) || defined(linux)
00452 # define PLATFORM_ID "Linux"
00453
00454 #elif defined(__MSYS__)
00455 # define PLATFORM_ID "MSYS"
00456
00457 #elif defined(__CYGWIN__)
00458 # define PLATFORM_ID "Cygwin"
00459
00460 #elif defined(__MINGW32__)
00461 # define PLATFORM_ID "MinGW"
00462
00463 #elif defined(__APPLE__)
00464 # define PLATFORM_ID "Darwin"
00465
00466 #elif defined(_WIN32) || defined(__WIN32__) || defined(WIN32)
00467 # define PLATFORM_ID "Windows"
00468
00469 #elif defined(__FreeBSD__) || defined(__FreeBSD)
00470 # define PLATFORM_ID "FreeBSD"
00471
00472 #elif defined(__NetBSD__) || defined(__NetBSD)
00473 # define PLATFORM_ID "NetBSD"
00474
00475 #elif defined(__OpenBSD__) || defined(__OPENBSD)
00476 # define PLATFORM_ID "OpenBSD"
00477
00478 #elif defined(__sun) || defined(sun)
00479 # define PLATFORM_ID "SunOS"
00480
00481 #elif defined(_AIX) || defined(__AIX) || defined(__AIX__) || defined(__aix) || defined(__aix__)
00482 # define PLATFORM_ID "AIX"
00483
00484 #elif defined(__hpux) || defined(__hpux__)
00485 # define PLATFORM_ID "HP-UX"
00486
00487 #elif defined(__HAIKU__)
00488 # define PLATFORM_ID "Haiku"
00489
00490 #elif defined(__BeOS) || defined(__BEOS__) || defined(_BEOS)
00491 # define PLATFORM_ID "BeOS"
00492
00493 #elif defined(__QNX__) || defined(__QNXNTO__)
00494 # define PLATFORM_ID "QNX"
00495
00496 #elif defined(__tru64) || defined(_tru64) || defined(__TRU64__)
00497 # define PLATFORM_ID "Tru64"
00498
00499 #elif defined(__riscos) || defined(__riscos__)
00500 # define PLATFORM_ID "RISCos"
00501
00502 #elif defined(__sinix) || defined(__sinix__) || defined(__SINIX__)
00503 # define PLATFORM_ID "SINIX"
00504
00505 #elif defined(__UNIX_SV__)
00506 # define PLATFORM_ID "UNIX_SV"
00507
00508 #elif defined(__bsdos__)
00509 # define PLATFORM_ID "BSDOS"
00510
00511 #elif defined(_MPRAS) || defined(MPRAS)
00512 # define PLATFORM_ID "MP-RAS"
00513
00514 #elif defined(__osf) || defined(__osf__)
00515 # define PLATFORM_ID "OSF1"
00516
00517 #elif defined(_SCO_SV) || defined(SCO_SV) || defined(sco_sv)
00518 # define PLATFORM_ID "SCO_SV"
00519
00520 #elif defined(__ultrix) || defined(__ultrix__) || defined(_ULTRIX)
00521 # define PLATFORM_ID "ULTRIX"
00522
00523 #elif defined(__XENIX__) || defined(_XENIX) || defined(XENIX)
00524 # define PLATFORM_ID "Xenix"
00525
00526 #elif defined(__WATCOMC__)
00527 # if defined(__LINUX__)
00528 #   define PLATFORM_ID "Linux"
00529
00530 # elif defined(__DOS__)
00531 #   define PLATFORM_ID "DOS"
00532
00533 # elif defined(__OS2__)
```

```
00534 #  define PLATFORM_ID "OS2"
00535
00536 # elif defined(__WINDOWS__)
00537 #  define PLATFORM_ID "Windows3x"
00538
00539 # elif defined(__VXWORKS__)
00540 #  define PLATFORM_ID "VxWorks"
00541
00542 # else /* unknown platform */
00543 #  define PLATFORM_ID
00544 # endif
00545
00546 #elif defined(__INTEGRITY)
00547 # if defined(INT_178B)
00548 #  define PLATFORM_ID "Integrity178"
00549
00550 # else /* regular Integrity */
00551 #  define PLATFORM_ID "Integrity"
00552 # endif
00553
00554 # elif defined(_ADI_COMPILER)
00555 #  define PLATFORM_ID "ADSP"
00556
00557 #else /* unknown platform */
00558 # define PLATFORM_ID
00559
00560 #endif
00561
00562 /* For windows compilers MSVC and Intel we can determine
00563    the architecture of the compiler being used.  This is because
00564    the compilers do not have flags that can change the architecture,
00565    but rather depend on which compiler is being used
00566 */
00567 #if defined(_WIN32) && defined(_MSC_VER)
00568 # if defined(_M_IA64)
00569 #  define ARCHITECTURE_ID "IA64"
00570
00571 # elif defined(_M_ARM64EC)
00572 #  define ARCHITECTURE_ID "ARM64EC"
00573
00574 # elif defined(_M_X64) || defined(_M_AMD64)
00575 #  define ARCHITECTURE_ID "x64"
00576
00577 # elif defined(_M_IX86)
00578 #  define ARCHITECTURE_ID "X86"
00579
00580 # elif defined(_M_ARM64)
00581 #  define ARCHITECTURE_ID "ARM64"
00582
00583 # elif defined(_M_ARM)
00584 #  if _M_ARM == 4
00585 #   define ARCHITECTURE_ID "ARMV4I"
00586 #  elif _M_ARM == 5
00587 #   define ARCHITECTURE_ID "ARMV5I"
00588 #  else
00589 #   define ARCHITECTURE_ID "ARMV" STRINGIFY(_M_ARM)
00590 #  endif
00591
00592 # elif defined(_M_MIPS)
00593 #  define ARCHITECTURE_ID "MIPS"
00594
00595 # elif defined(_M_SH)
00596 #  define ARCHITECTURE_ID "SHx"
00597
00598 # else /* unknown architecture */
00599 #  define ARCHITECTURE_ID ""
00600 # endif
00601
00602 #elif defined(__WATCOMC__)
00603 # if defined(_M_I86)
00604 #  define ARCHITECTURE_ID "I86"
00605
00606 # elif defined(_M_IX86)
00607 #  define ARCHITECTURE_ID "X86"
00608
00609 # else /* unknown architecture */
00610 #  define ARCHITECTURE_ID ""
00611 # endif
00612
00613 #elif defined(__IAR_SYSTEMS_ICC__) || defined(__IAR_SYSTEMS_ICC)
00614 # if defined(__ICCARM__)
00615 #  define ARCHITECTURE_ID "ARM"
00616
00617 # elif defined(__ICCRX__)
00618 #  define ARCHITECTURE_ID "RX"
00619
00620 # elif defined(__ICCRH850__)
```

```
00621 #   define ARCHITECTURE_ID "RH850"
00622
00623 # elif defined(__ICCRL78__)
00624 #   define ARCHITECTURE_ID "RL78"
00625
00626 # elif defined(__ICCRISCV__)
00627 #   define ARCHITECTURE_ID "RISCV"
00628
00629 # elif defined(__ICCAVR__)
00630 #   define ARCHITECTURE_ID "AVR"
00631
00632 # elif defined(__ICC430__)
00633 #   define ARCHITECTURE_ID "MSP430"
00634
00635 # elif defined(__ICCV850__)
00636 #   define ARCHITECTURE_ID "V850"
00637
00638 # elif defined(__ICC8051__)
00639 #   define ARCHITECTURE_ID "8051"
00640
00641 # elif defined(__ICCSTM8__)
00642 #   define ARCHITECTURE_ID "STM8"
00643
00644 # else /* unknown architecture */
00645 #   define ARCHITECTURE_ID ""
00646 # endif
00647
00648 #elif defined(__ghs__)
00649 # if defined(__PPC64__)
00650 #   define ARCHITECTURE_ID "PPC64"
00651
00652 # elif defined(__ppc__)
00653 #   define ARCHITECTURE_ID "PPC"
00654
00655 # elif defined(__ARM__)
00656 #   define ARCHITECTURE_ID "ARM"
00657
00658 # elif defined(__x86_64__)
00659 #   define ARCHITECTURE_ID "x64"
00660
00661 # elif defined(__i386__)
00662 #   define ARCHITECTURE_ID "X86"
00663
00664 # else /* unknown architecture */
00665 #   define ARCHITECTURE_ID ""
00666 # endif
00667
00668 #elif defined(__clang__) && defined(__ti__)
00669 # if defined(__ARM_ARCH)
00670 #   define ARCHITECTURE_ID "Arm"
00671
00672 # else /* unknown architecture */
00673 #   define ARCHITECTURE_ID ""
00674 # endif
00675
00676 #elif defined(__TI_COMPILER_VERSION__)
00677 # if defined(__TI_ARM__)
00678 #   define ARCHITECTURE_ID "ARM"
00679
00680 # elif defined(__MSP430__)
00681 #   define ARCHITECTURE_ID "MSP430"
00682
00683 # elif defined(__TMS320C28XX__)
00684 #   define ARCHITECTURE_ID "TMS320C28x"
00685
00686 # elif defined(__TMS320C6X__) || defined(_TMS320C6X)
00687 #   define ARCHITECTURE_ID "TMS320C6x"
00688
00689 # else /* unknown architecture */
00690 #   define ARCHITECTURE_ID ""
00691 # endif
00692
00693 # elif defined(__ADSPSHARC__)
00694 #   define ARCHITECTURE_ID "SHARC"
00695
00696 # elif defined(__ADSPBLACKFIN__)
00697 #   define ARCHITECTURE_ID "Blackfin"
00698
00699 #elif defined(__TASKING__)
00700
00701 # if defined(__CTC__) || defined(__CPTC__)
00702 #   define ARCHITECTURE_ID "TriCore"
00703
00704 # elif defined(__CMCS__)
00705 #   define ARCHITECTURE_ID "MCS"
00706
00707 # elif defined(__CARM__)
```

```
00708 #   define ARCHITECTURE_ID "ARM"
00709
00710 # elif defined(__CARC__)
00711 #   define ARCHITECTURE_ID "ARC"
00712
00713 # elif defined(__C51__)
00714 #   define ARCHITECTURE_ID "8051"
00715
00716 # elif defined(__CPCP__)
00717 #   define ARCHITECTURE_ID "PCP"
00718
00719 # else
00720 #   define ARCHITECTURE_ID ""
00721 # endif
00722
00723 #else
00724 #   define ARCHITECTURE_ID
00725 #endif
00726
00727 /* Convert integer to decimal digit literals.  */
00728 #define DEC(n)                  \
00729   ('0' + (((n) / 10000000)%10)), \
00730   ('0' + (((n) / 1000000)%10)),  \
00731   ('0' + (((n) / 100000)%10)),   \
00732   ('0' + (((n) / 10000)%10)),    \
00733   ('0' + (((n) / 1000)%10)),     \
00734   ('0' + (((n) / 100)%10)),      \
00735   ('0' + (((n) / 10)%10)),       \
00736   ('0' +  ((n) % 10))
00737
00738 /* Convert integer to hex digit literals.  */
00739 #define HEX(n)             \
00740   ('0' + ((n)>>28 & 0xF)), \
00741   ('0' + ((n)>>24 & 0xF)), \
00742   ('0' + ((n)>>20 & 0xF)), \
00743   ('0' + ((n)>>16 & 0xF)), \
00744   ('0' + ((n)>>12 & 0xF)), \
00745   ('0' + ((n)>>8  & 0xF)), \
00746   ('0' + ((n)>>4  & 0xF)), \
00747   ('0' + ((n)     & 0xF))
00748
00749 /* Construct a string literal encoding the version number. */
00750 #ifdef COMPILER_VERSION
00751 char const* info_version = "INFO" ":" "compiler_version[" COMPILER_VERSION "]";
00752
00753 /* Construct a string literal encoding the version number components. */
00754 #elif defined(COMPILER_VERSION_MAJOR)
00755 char const info_version[] = {
00756   'I', 'N', 'F', 'O', ':',
00757   'c','o','m','p','i','l','e','r','_','v','e','r','s','i','o','n','[',
00758   COMPILER_VERSION_MAJOR,
00759 # ifdef COMPILER_VERSION_MINOR
00760   '.', COMPILER_VERSION_MINOR,
00761 #  ifdef COMPILER_VERSION_PATCH
00762   '.', COMPILER_VERSION_PATCH,
00763 #   ifdef COMPILER_VERSION_TWEAK
00764   '.', COMPILER_VERSION_TWEAK,
00765 #   endif
00766 #  endif
00767 # endif
00768  ']','\0'};
00769 #endif
00770
00771 /* Construct a string literal encoding the internal version number. */
00772 #ifdef COMPILER_VERSION_INTERNAL
00773 char const info_version_internal[] = {
00774   'I', 'N', 'F', 'O', ':',
00775   'c','o','m','p','i','l','e','r','_','v','e','r','s','i','o','n','_',
00776   'i','n','t','e','r','n','a','l','[',
00777   COMPILER_VERSION_INTERNAL,']','\0'};
00778 #elif defined(COMPILER_VERSION_INTERNAL_STR)
00779 char const* info_version_internal = "INFO" ":" "compiler_version_internal["
    COMPILER_VERSION_INTERNAL_STR "]";
00780 #endif
00781
00782 /* Construct a string literal encoding the version number components. */
00783 #ifdef SIMULATE_VERSION_MAJOR
00784 char const info_simulate_version[] = {
00785   'I', 'N', 'F', 'O', ':',
00786   's','i','m','u','l','a','t','e','_','v','e','r','s','i','o','n','[',
00787   SIMULATE_VERSION_MAJOR,
00788 # ifdef SIMULATE_VERSION_MINOR
00789  '.', SIMULATE_VERSION_MINOR,
00790 #  ifdef SIMULATE_VERSION_PATCH
00791   '.', SIMULATE_VERSION_PATCH,
00792 #   ifdef SIMULATE_VERSION_TWEAK
00793   '.', SIMULATE_VERSION_TWEAK,
```

```
00794 #    endif
00795 #  endif
00796 # endif
00797  ']','\0'};
00798 #endif
00799
00800 /* Construct the string literal in pieces to prevent the source from
00801    getting matched.  Store it in a pointer rather than an array
00802    because some compilers will just produce instructions to fill the
00803    array rather than assigning a pointer to a static array.  */
00804 char const* info_platform = "INFO" ":" "platform[" PLATFORM_ID "]";
00805 char const* info_arch = "INFO" ":" "arch[" ARCHITECTURE_ID "]";
00806
00807
00808
00809 #define CXX_STD_98 199711L
00810 #define CXX_STD_11 201103L
00811 #define CXX_STD_14 201402L
00812 #define CXX_STD_17 201703L
00813 #define CXX_STD_20 202002L
00814 #define CXX_STD_23 202302L
00815
00816 #if defined(__INTEL_COMPILER) && defined(_MSVC_LANG)
00817 #  if _MSVC_LANG > CXX_STD_17
00818 #    define CXX_STD _MSVC_LANG
00819 #  elif _MSVC_LANG == CXX_STD_17 && defined(__cpp_aggregate_paren_init)
00820 #    define CXX_STD CXX_STD_20
00821 #  elif _MSVC_LANG > CXX_STD_14 && __cplusplus > CXX_STD_17
00822 #    define CXX_STD CXX_STD_20
00823 #  elif _MSVC_LANG > CXX_STD_14
00824 #    define CXX_STD CXX_STD_17
00825 #  elif defined(__INTEL_CXX11_MODE__) && defined(__cpp_aggregate_nsdmi)
00826 #    define CXX_STD CXX_STD_14
00827 #  elif defined(__INTEL_CXX11_MODE__)
00828 #    define CXX_STD CXX_STD_11
00829 #  else
00830 #    define CXX_STD CXX_STD_98
00831 #  endif
00832 #elif defined(_MSC_VER) && defined(_MSVC_LANG)
00833 #  if _MSVC_LANG > __cplusplus
00834 #    define CXX_STD _MSVC_LANG
00835 #  else
00836 #    define CXX_STD __cplusplus
00837 #  endif
00838 #elif defined(__NVCOMPILER)
00839 #  if __cplusplus == CXX_STD_17 && defined(__cpp_aggregate_paren_init)
00840 #    define CXX_STD CXX_STD_20
00841 #  else
00842 #    define CXX_STD __cplusplus
00843 #  endif
00844 #elif defined(__INTEL_COMPILER) || defined(__PGI)
00845 #  if __cplusplus == CXX_STD_11 && defined(__cpp_namespace_attributes)
00846 #    define CXX_STD CXX_STD_17
00847 #  elif __cplusplus == CXX_STD_11 && defined(__cpp_aggregate_nsdmi)
00848 #    define CXX_STD CXX_STD_14
00849 #  else
00850 #    define CXX_STD __cplusplus
00851 #  endif
00852 #elif (defined(__IBMCPP__) || defined(__ibmxl__)) && defined(__linux__)
00853 #  if __cplusplus == CXX_STD_11 && defined(__cpp_aggregate_nsdmi)
00854 #    define CXX_STD CXX_STD_14
00855 #  else
00856 #    define CXX_STD __cplusplus
00857 #  endif
00858 #elif __cplusplus == 1 && defined(__GXX_EXPERIMENTAL_CXX0X__)
00859 #  define CXX_STD CXX_STD_11
00860 #else
00861 #  define CXX_STD __cplusplus
00862 #endif
00863
00864 const char* info_language_standard_default = "INFO" ":" "standard_default["
00865 #if CXX_STD > CXX_STD_23
00866   "26"
00867 #elif CXX_STD > CXX_STD_20
00868   "23"
00869 #elif CXX_STD > CXX_STD_17
00870   "20"
00871 #elif CXX_STD > CXX_STD_14
00872   "17"
00873 #elif CXX_STD > CXX_STD_11
00874   "14"
00875 #elif CXX_STD >= CXX_STD_11
00876   "11"
00877 #else
00878   "98"
00879 #endif
00880 "]";
```

```
00881
00882 const char* info_language_extensions_default = "INFO" ":" "extensions_default["
00883 #if (defined(__clang__) || defined(__GNUC__) || defined(__xlC__) ||              \
00884       defined(__TI_COMPILER_VERSION__)) &&                                       \
00885   !defined(__STRICT_ANSI__)
00886   "ON"
00887 #else
00888   "OFF"
00889 #endif
00890 "]";
00891
00892 /*--------------------------------------------------------------------------*/
00893
00894 int main(int argc, char* argv[])
00895 {
00896   int require = 0;
00897   require += info_compiler[argc];
00898   require += info_platform[argc];
00899   require += info_arch[argc];
00900 #ifdef COMPILER_VERSION_MAJOR
00901   require += info_version[argc];
00902 #endif
00903 #ifdef COMPILER_VERSION_INTERNAL
00904   require += info_version_internal[argc];
00905 #endif
00906 #ifdef SIMULATE_ID
00907   require += info_simulate[argc];
00908 #endif
00909 #ifdef SIMULATE_VERSION_MAJOR
00910   require += info_simulate_version[argc];
00911 #endif
00912 #if defined(__CRAYXT_COMPUTE_LINUX_TARGET)
00913   require += info_cray[argc];
00914 #endif
00915   require += info_language_standard_default[argc];
00916   require += info_language_extensions_default[argc];
00917   (void)argv;
00918   return require;
00919 }
```

## 8.5 build/CMakeFiles/engine.dir/engine/engine.cpp.o.d File Reference

## 8.6 engine.cpp.o.d

Go to the documentation of this file.

```
00001 CMakeFiles/engine.dir/engine/engine.cpp.o: \
00002   /Users/diogokeeper12/Documents/GitHub/CG-Project/Phase\ 1/engine/engine.cpp \
00003
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/System/Library/Frameworks/GLUT.framework/Headers/glut.h
    \
00004
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/System/Library/Frameworks/OpenGL.framework/Headers/OpenGLAvailab
    \
00005   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/os/availability.h \
00006   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityInternal.h \
00007   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityVersions.h \
00008   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityInternalLegacy.h \
00009
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/System/Library/Frameworks/OpenGL.framework/Headers/gl.h
    \
00010
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/System/Library/Frameworks/OpenGL.framework/Headers/gltypes.h
    \
00011   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdint.h \
00012   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__config \
00013   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__config_site \
00014   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stdint.h \
00015   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdint.h \
00016   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int8_t.h \
00017   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int16_t.h \
00018   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int32_t.h \
00019   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int64_t.h \
00020   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint8_t.h \
00021   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint16_t.h \
00022   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint32_t.h \
00023   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint64_t.h \
00024   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types.h \
00025   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/cdefs.h \
00026   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_symbol_aliasing.h \
00027   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_posix_availability.h \
00028   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_types.h \
00029   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_types.h \
```

```
00030    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_types.h \
00031    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_intptr_t.h \
00032    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_uintptr_t.h \
00033    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_intmax_t.h \
00034    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uintmax_t.h \
00035
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/System/Library/Frameworks/OpenGL.framework/Headers/glext.h
      \
00036
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/System/Library/Frameworks/OpenGL.framework/Headers/glu.h
      \
00037    /Users/diogokeeper12/Documents/GitHub/CG-Project/Phase\ 1/engine/engine.h \
00038    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/vector \
00039    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy.h \
00040
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_move_common.h
      \
00041
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/iterator_operations.h
      \
00042    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/iter_swap.h \
00043    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/declval.h \
00044    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/swap.h \
00045
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_move_assignable.h
      \
00046
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_lvalue_reference.h
      \
00047
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_referenceable.h
      \
00048
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/integral_constant.h
      \
00049    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_same.h \
00050
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_rvalue_reference.h
      \
00051
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_move_constructible.h
      \
00052
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_move_assignable.h
      \
00053
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_move_constructible.h
      \
00054
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_constructible.h
      \
00055
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_constructible.h
      \
00056
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_reference.h
      \
00057    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstddef \
00058    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__assert \
00059    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__assertion_handler \
00060    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__verbose_abort \
00061    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__availability \
00062    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/enable_if.h
      \
00063
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_integral.h
      \
00064    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_cv.h
      \
00065
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_const.h
      \
00066
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_volatile.h
      \
00067    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/version \
00068    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stddef.h \
00069    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stddef.h \
00070    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_header_macro.h \
00071    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_ptrdiff_t.h \
00072    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_size_t.h \
00073    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_rsize_t.h \
00074    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_wchar_t.h \
00075    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_null.h \
00076    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_nullptr_t.h \
00077    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_max_align_t.h \
00078    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_offsetof.h \
```

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00079
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_swappable.h
      \
00080
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/conditional.h
      \
00081   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_void.h \
00082   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/nat.h \
00083   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/move.h \
00084
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_copy_constructible.h
      \
00085   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_const.h
      \
00086
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_reference.h
      \
00087   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__undef_macros \
00088
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_iterator_concept.h
      \
00089   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/concepts.h \
00090   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/arithmetic.h \
00091
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_floating_point.h
      \
00092   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_signed.h
      \
00093
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_arithmetic.h
      \
00094
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_signed_integer.h
      \
00095
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_unsigned_integer.h
      \
00096   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/assignable.h \
00097
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/common_reference_with.h
      \
00098
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/convertible_to.h
      \
00099
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_convertible.h
      \
00100   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_array.h
      \
00101
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      \
00102   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_const.h
      \
00103   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/same_as.h \
00104
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/common_reference.h
      \
00105
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/common_type.h
      \
00106   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/decay.h \
00107
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_pointer.h
      \
00108
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_extent.h
      \
00109
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_cvref.h
      \
00110   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/void_t.h \
00111   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/copy_cv.h \
00112   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_cv.h \
00113
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_volatile.h
      \
00114
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/copy_cvref.h
      \
00115
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      \
00116   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/forward.h \
00117
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/constructible.h
      \
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00118   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/destructible.h
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00119
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_destructible.h
\
00120
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_destructible.h
\
00121
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_all_extents.h
\
00122   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_scalar.h
\
00123   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_enum.h \
00124
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_member_pointer.h
\
00125
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_member_function_pointer.h
\
00126
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_null_pointer.h
\
00127
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_pointer.h
\
00128   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/copyable.h \
00129   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/movable.h \
00130   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/swappable.h \
00131
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/class_or_enum.h
\
00132   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_class.h
\
00133   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_union.h
\
00134   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/extent.h \
00135   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/exchange.h \
00136
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_assignable.h
\
00137   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_object.h
\
00138   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/derived_from.h
\
00139
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_base_of.h
\
00140
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/equality_comparable.h
\
00141
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/boolean_testable.h
\
00142   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/invocable.h \
00143   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/invoke.h \
00144   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/invoke.h \
00145   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/apply_cv.h
\
00146
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_volatile.h
\
00147
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_core_convertible.h
\
00148
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_member_object_pointer.h
\
00149
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_reference_wrapper.h
\
00150   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/predicate.h \
00151   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/regular.h \
00152   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/semiregular.h
\
00153   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/relation.h \
00154
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/totally_ordered.h
\
00155
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/incrementable_traits.h
\
00156
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_primary_template.h
\
00157
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_valid_expansion.h

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00158
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_signed.h
         \
00159    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/type_list.h
         \
00160    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iter_move.h \
00161
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iterator_traits.h
         \
00162    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/pair.h \
00163
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/readable_traits.h
         \
00164
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/disjunction.h
         \
00165    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/pointer_traits.h
         \
00166    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/addressof.h \
00167
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/conjunction.h
         \
00168    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/advance.h \
00169
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/convert_to_integral.h
         \
00170
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/underlying_type.h
         \
00171    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/unreachable.h \
00172    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/limits \
00173    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/type_traits \
00174    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/hash.h \
00175
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/aligned_storage.h
         \
00176
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/aligned_union.h
         \
00177
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/alignment_of.h
         \
00178
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/can_extract_key.h
         \
00179
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_const_ref.h
         \
00180
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/dependent_type.h
         \
00181
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/has_unique_object_representatio
         \
00182
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/has_virtual_destructor.h
         \
00183
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_abstract.h
         \
00184
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_aggregate.h
         \
00185
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_assignable.h
         \
00186
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_bounded_array.h
         \
00187
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_callable.h
         \
00188
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_char_like_type.h
         \
00189
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_standard_layout.h
         \
00190
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivial.h
         \
00191
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_compound.h
         \
00192
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_fundamental.h
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00193
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_constant_evaluated.h
      \
00194
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_copy_assignable.h
      \
00195
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_default_constructible.h
00196   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_empty.h
      \
00197   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_final.h
      \
00198
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      \
00199
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_literal_type.h
      \
00200
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_convertible.h
00201   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/lazy.h \
00202
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_copy_assignable.h
      \
00203
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_copy_constructible.h
      \
00204
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_default_constructibl
      \
00205   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_pod.h \
00206
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_polymorphic.h
      \
00207
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_scoped_enum.h
      \
00208
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_specialization.h
      \
00209
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_assignable.h
      \
00210
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_constructible.h
      \
00211
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_copy_assignable.h
      \
00212
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_copy_constructible
      \
00213
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_copyable.h
      \
00214   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdint \
00215
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_default_construct
      \
00216
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_destructible.h
      \
00217
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_move_assignable.h
      \
00218
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_move_constructible
      \
00219
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_unbounded_array.h
      \
00220
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_unsigned.h
      \
00221
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_unsigned.h
      \
00222
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/maybe_const.h
      \
00223   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/negation.h
      \
00224   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/rank.h \
00225
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      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_pointer.h
      \
00226   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/result_of.h
      \
00227
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/type_identity.h
      \
00228
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/unwrap_ref.h
      \
00229   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/distance.h \
00230   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/access.h \
00231
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/enable_borrowed_range.h
      \
00232   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/auto_cast.h \
00233   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/concepts.h \
00234   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/data.h \
00235   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/enable_view.h \
00236   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/size.h \
00237   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/initializer_list \
00238   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iter_swap.h \
00239   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/next.h \
00240   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/prev.h \
00241   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/unwrap_iter.h
      \
00242
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/unwrap_range.h
      \
00243   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/pair.h \
00244
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/common_comparison_category.h
      \
00245   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/ordering.h \
00246
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/synth_three_way.h
      \
00247
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/three_way_comparable.h
      \
00248
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/different_from.h
      \
00249   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/array.h \
00250   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/get.h \
00251   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/subrange.h \
00252   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/tuple.h \
00253   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_element.h \
00254   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_indices.h \
00255
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/integer_sequence.h
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00256   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_types.h \
00257   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/pair_like.h \
00258   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_like.h \
00259   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_size.h \
00260   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/sfinae_helpers.h
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00261
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/make_tuple_types.h
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00262   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_like_ext.h
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00263
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00264
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__string/constexpr_c_functions.h
      \
00265   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/construct_at.h \
00266   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/access.h \
00267   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/voidify.h \
00268   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/new \
00269   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/exception.h \
00270   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdlib.h \
00271   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdlib.h \
00272   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_stdlib.h \
00273   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/Availability.h \
00274   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types.h \
00275   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/wait.h \
00276   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_pid_t.h \
00277   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_id_t.h \
00278   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/signal.h \
00279   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/appleapiopts.h \
00280   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/signal.h \
00281   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/signal.h \
00282   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_mcontext.h \
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00283    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_mcontext.h \
00284    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/mach/machine/_structs.h \
00285    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/mach/arm/_structs.h \
00286    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/types.h \
00287    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/types.h \
00288    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int8_t.h \
00289    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int16_t.h \
00290    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int32_t.h \
00291    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int64_t.h \
00292    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_attr_t.h \
00293    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_sigaltstack.h \
00294    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ucontext.h \
00295    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_sigset_t.h \
00296    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_size_t.h \
00297    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_uid_t.h \
00298    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/resource.h \
00299    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_timeval.h \
00300    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/endian.h \
00301    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/endian.h \
00302    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_endian.h \
00303    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_endian.h \
00304    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_endian.h \
00305    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/__endian.h \
00306    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/libkern/_OSByteOrder.h \
00307    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/libkern/arm/_OSByteOrder.h \
00308    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/alloca.h \
00309    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ct_rune_t.h \
00310    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_rune_t.h \
00311    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_wchar_t.h \
00312    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_null.h \
00313    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/malloc/_malloc.h \
00314    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/malloc/_malloc_type.h \
00315    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/malloc/_ptrcheck.h \
00316    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_abort.h \
00317    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_dev_t.h \
00318    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_mode_t.h \
00319    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdlib \
00320
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     \
00321
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     \
00322
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_equality_comparable.h
     \
00323
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_lexicographically
     \
00324
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/is_pointer_in_range.h
     \
00325   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/comp.h \
00326
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/operation_traits.h
     \
00327
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each_segment.h
     \
00328
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/segmented_iterator.h
     \
00329   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/min.h \
00330
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/comp_ref_type.h
     \
00331   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/min_element.h
     \
00332   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/identity.h \
00333
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/reference_wrapper.h
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00334
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/weak_result_type.h
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00335
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00336
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00337   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/equal.h \
00338   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fill_n.h \
00339
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/lexicographical_compare.h
     \
00340
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     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/lexicographical_compare_three_way
     \
00341
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     \
00342
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_three_way.h
     \
00343  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove.h \
00344  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find.h \
00345
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_segment_if.h
     \
00346  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/countr.h \
00347  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/rotate.h \
00348  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/invert_if.h \
00349  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/bit_reference.h \
00350  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cwchar \
00351  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cwctype \
00352  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cctype \
00353  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ctype.h \
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00355  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_ctype.h \
00356  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/runetype.h \
00357  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_wint_t.h \
00358  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/wctype.h \
00359  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/wctype.h \
00360  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_wctype.h \
00361  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_wctrans_t.h \
00362  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/__wctype.h \
00363  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/___wctype.h \
00364  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_wctype_t.h \
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00366  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/wchar.h \
00367  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_wchar.h \
00368  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_mbstate_t.h \
00369  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stdarg.h \
00370  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_header_macro.h \
00371  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg___gnuc_va_list.h \
00372  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_list.h \
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00374  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg___va_copy.h \
00375  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_copy.h \
00376  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdio.h \
00377  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdio.h \
00378  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_stdio.h \
00379  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_va_list.h \
00380  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/stdio.h \
00381  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_printf.h \
00382  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_seek_set.h \
00383  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_ctermid.h \
00384  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_off_t.h \
00385  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ssize_t.h \
00386  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/time.h \
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00389  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_time_t.h \
00390  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_timespec.h \
00391  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_if.h \
00392  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove_if.h \
00393  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/rotate.h \
00394  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/move.h \
00395
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     \
00396  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/swap_ranges.h
     \
00397  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit_reference \
00398  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_n.h \
00399  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/popcount.h \
00400  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstring \
00401  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string.h \
00402  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/string.h \
00403  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_string.h \
00404  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_rsize_t.h \
00405  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_errno_t.h \
00406  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_strings.h \
00407
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/enable_insertable.h
     \
00408  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter.h \
00409  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_fwd.h \
00410  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_bool.h
     \
00411  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/concepts.h \
00412
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_parse_context.h
```

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        \
00413   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_error.h \
00414   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdexcept \
00415   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/string.h \
00416   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/memory_resource.h \
00417   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/exception \
00418
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/exception_ptr.h
        \
00419   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/operations.h
        \
00420   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/typeinfo \
00421
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/nested_exception.h
        \
00422   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/terminate.h \
00423   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iosfwd \
00424   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/fstream.h \
00425   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/ios.h \
00426   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/istream.h \
00427   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/ostream.h \
00428   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/sstream.h \
00429   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/streambuf.h \
00430   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__std_mbstate_t.h \
00431   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mbstate_t.h \
00432   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string_view \
00433   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/hash.h \
00434   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/string_view.h \
00435   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/bounded_iter.h
        \
00436
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/reverse_iterator.h
        \
00437
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_three_way_result.h
        \
00438   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iterator.h \
00439   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/subrange.h \
00440   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/dangling.h \
00441   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/view_interface.h
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00442   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/empty.h \
00443   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__string/char_traits.h \
00444   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_end.h \
00445   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/search.h \
00446
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00447   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdio \
00448   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/data.h \
00449   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/empty.h \
00450
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/reverse_access.h
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00451   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/size.h \
00452   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/compare \
00453
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        \
00454   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/partial_order.h
        \
00455   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/weak_order.h \
00456   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/strong_order.h
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00457   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/bit_cast.h \
00458   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/priority_tag.h
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00459   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cmath \
00460   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/promote.h \
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00462   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/math.h \
00463   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/abs.h \
00464   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/copysign.h \
00465   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/error_functions.h
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00466
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00467   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/fdim.h \
00468   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/fma.h \
00469   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/gamma.h \
00470
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00471   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/hypot.h \
00472
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/inverse_hyperbolic_functions.h
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00473  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/inverse_trigonometric_functions.h
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00474   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/logarithms.h \
00475   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/min_max.h \
00476   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/modulo.h \
00477   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/remainder.h \
00478   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/roots.h \
00479
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00480   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/traits.h \
00481
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00482
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00483
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00484   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/is_eq.h \
00485   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/algorithm \
00486
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00487   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/all_of.h \
00488   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/any_of.h \
00489
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       \
00490   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/lower_bound.h
       \
00491
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00492   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/clamp.h \
00493
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       \
00494   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_if.h \
00495   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/count.h \
00496   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/count_if.h \
00497   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/equal_range.h
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00498   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/upper_bound.h
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00499   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fill.h \
00500   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_if_not.h
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00501   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fold.h \
00502   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each.h \
00503   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/movable_box.h \
00504   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/optional \
00505   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/in_place.h \
00506   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/atomic \
00507   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/aliases.h \
00508   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic.h \
00509   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_base.h \
00510   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_sync.h \
00511   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/contention_t.h \
00512
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       \
00513
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       \
00514   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/memory_order.h \
00515   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/duration.h \
00516   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ratio \
00517   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/climits \
00518   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/limits.h \
00519   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/limits.h \
00520   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/limits.h \
00521   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/limits.h \
00522   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_limits.h \
00523   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/syslimits.h \
00524
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__thread/poll_with_backoff.h
       \
00525
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/high_resolution_clock.h
       \
00526   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/steady_clock.h \
00527   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/time_point.h \
00528   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/system_clock.h \
```

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00529    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ctime \
00530    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__threading_support \
00531
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00532    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/errno.h \
00533    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/errno.h \
00534    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/errno.h \
00535    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread.h \
00536    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/sched.h \
00537    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/pthread_impl.h \
00538    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_cond_t.h \
00539
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00541    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_mutex_t.h
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00542
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00543    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_once_t.h \
00544    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_rwlock_t.h
      \
00545
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      \
00546    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_t.h \
00547    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/qos.h \
00548    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/qos.h \
00549    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_mach_port_t.h \
00550    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sched.h \
00551
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      \
00552    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/operations.h
      \
00553
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00554    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_flag.h \
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00558    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/concepts \
00559    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/common_with.h
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00562
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00563    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/variant \
00564    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/forward_like.h
      \
00565    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__variant/monostate.h \
00566    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/tuple \
00567
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00568    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/uses_allocator.h
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00569    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/utility \
00570    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/as_const.h \
00571    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/as_lvalue.h \
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00573
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00574    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/rel_ops.h \
00575    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/to_underlying.h
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00576
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00577
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00578
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00579
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00580
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00581  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/projected.h \
00582
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00583
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00584
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00585  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/mergeable.h \
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00592  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/sortable.h \
00593
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00594  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/wrap_iter.h \
00595  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/memory \
00596  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/align.h \
00597
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00598
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator_traits.h
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00599
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocation_guard.h
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00600  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator.h \
00601  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/assume_aligned.h
    \
00602  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/auto_ptr.h \
00603
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/compressed_pair.h
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00604  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/concepts.h \
00605
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/ranges_construct_at.h
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00606
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/ranges_uninitialized_algorithms.h
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00607
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_out_result.h
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00608
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/uninitialized_algorithms.h
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00609
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/raw_storage_iterator.h
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00610  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/shared_ptr.h \
00611
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator_destructor.h
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00612  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/unique_ptr.h \
00613
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/temporary_buffer.h
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00614
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/uses_allocator_construction.h
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00615  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each_n.h
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00616  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/generate.h \
00617  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/generate_n.h
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/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_found_result.h \
00619
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_fun_result.h \
00620
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_in_out_result.h \
00621
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_in_result.h \
00622
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_out_out_result.h \
00623   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/includes.h \
00624
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/inplace_merge.h \
00625   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/destruct_n.h \
00626   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_heap.h \
00627
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00628
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_partitioned.h \
00629
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_permutation.h \
00630   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_sorted.h \
00631
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_sorted_until.h \
00632   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/make_heap.h \
00633   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sift_down.h \
00634   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/max.h \
00635   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/max_element.h \
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00638   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/minmax.h \
00639
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00640   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/mismatch.h \
00641
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/next_permutation.h \
00642   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/reverse.h \
00643   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/none_of.h \
00644   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/nth_element.h \
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00646
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partial_sort.h \
00647   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sort_heap.h \
00648   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pop_heap.h \
00649   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/push_heap.h \
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00651
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00652   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/blsr.h \
00653   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/countl.h \
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00655
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/make_projected.h \
00656   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partition.h \
00657
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partition_copy.h \
00658
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partition_point.h \
00659
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/prev_permutation.h \
00660
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_any_all_none_of.h

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00661   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_find.h \
00662
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_backend.h
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00663
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00664
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00665
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_backends/cpu_backends/backer
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00666
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00667   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__numeric/reduce.h \
00668   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/empty.h \
00669
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00670
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00671
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00672
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00673
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00674
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00675   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/stable_sort.h
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00676
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00677   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/transform.h \
00678
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00679
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00680   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/execution \
00681
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00683   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_copy.h \
00684
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_transform.h
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00685   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_count.h
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00686
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00687
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00688   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_equal.h
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00689   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_fill.h \
00690
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00691
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00692   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_merge.h
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00693   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_move.h \
00694
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00695
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00697
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00698
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00761
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove_copy_if.h
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00762
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_replace.h
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00763
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_replace_if.h
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00764
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/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_replace_copy_if.h
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00766
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00767
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00769
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/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__random/uniform_int_distribution.h
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00774   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__random/log2.h \
00775
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00778
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00782
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00784
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00785
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/set_symmetric_difference.h
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/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_set_union.h
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00788
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00789   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/shuffle.h \

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00803    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/replace.h \
00804
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00805
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00806    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/replace_if.h
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00807
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00808    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/rotate_copy.h
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00816    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/byteswap.h \
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00823
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00824    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__system_error/errc.h \
00825    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cerrno \
00826    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/traits.h \
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00828
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00829    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/buffer.h \
00830
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00831
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       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/parser_std_format_spec.h
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00833   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_string.h
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00835
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00837   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string \
00838   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ios/fpos.h \
00839   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/swap_allocator.h
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00845
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00846
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00848   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/locale \
00849   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__locale \
00850   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/once_flag.h \
00851   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/no_destroy.h \
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00853   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/locale.h \
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00857   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_xlocale.h \
00858   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/__xlocale.h \
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00863   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_stdlib.h \
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00876   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/unique_lock.h \
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00884   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_char.h \
00885   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_short.h \
00886   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int.h \
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00987  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iostream

## 8.7  build/CMakeFiles/engine.dir/engine/xmlParser.cpp.o.d File Reference

## 8.8  xmlParser.cpp.o.d

Go to the documentation of this file.

00001 CMakeFiles/engine.dir/engine/xmlParser.cpp.o: \
00002  /Users/diogokeeper12/Documents/GitHub/CG-Project/Phase\ 1/engine/xmlParser.cpp \
00003  /Users/diogokeeper12/Documents/GitHub/CG-Project/Phase\ 1/external/tinyxml2/tinyxml2.h \
00004  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cctype \
00005  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__assert \
00006  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__assertion_handler \
00007  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__config \
00008  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__config_site \
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00012  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/ctype.h \
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00143   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/version \
00144   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stddef.h \
00145   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stddef.h \
00146   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_header_macro.h \
00147   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_ptrdiff_t.h \
00148   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_size_t.h \
00149   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_rsize_t.h \
00150   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_wchar_t.h \
00151   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_null.h \
00152   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_nullptr_t.h \
00153   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_max_align_t.h \
00154   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_offsetof.h \
00155
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_swappable.h
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00156
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00157   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_void.h \
00158   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/nat.h \
00159   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/move.h \
00160
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     \
00161   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_const.h
     \
00162
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_reference.h
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00163   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__undef_macros \
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     \
00165   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/concepts.h \
00166   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/arithmetic.h \
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00169
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00171
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00172   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/assignable.h \
00173
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00174
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00175
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     \
00176   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_array.h
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00177
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_function.h
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00178    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_const.h \
00179    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/same_as.h \
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    \
00181
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00182    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/decay.h \
00183
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00184
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00185
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    \
00186    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/void_t.h \
00187    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/copy_cv.h \
00188    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_cv.h \
00189
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00190
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00191
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00193
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    \
00194    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/destructible.h
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00195
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00196
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00197
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00199    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_enum.h \
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00203
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00204    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/copyable.h \
00205    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/movable.h \
00206    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/swappable.h \
00207
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    \
00208    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_class.h
    \
00209    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_union.h
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00210    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/extent.h \
00211    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/exchange.h \
00212
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    \
00213    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_object.h
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00214    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/derived_from.h
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00215
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00216
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00217

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      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/boolean_testable.h
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00219   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/invoke.h \
00220   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/invoke.h \
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00222
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00223
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00225
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00234
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00235   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/type_list.h
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00236   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iter_move.h \
00237
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00238   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/pair.h \
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00240
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00241   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/pointer_traits.h
\
00242   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/addressof.h \
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00248   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/limits \
00249   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/type_traits \
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00255
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00256
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00257
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00258
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00259
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00271  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_empty.h
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00272  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_final.h
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00280  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_pod.h \
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00284
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00285
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00286
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00287
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_copy_constructible
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00288
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00289   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdint \
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00303
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00304   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/distance.h \
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00306
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/enable_borrowed_range.h
      \
00307   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/auto_cast.h \
00308   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/concepts.h \
00309   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/data.h \
00310   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/enable_view.h \
00311   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/size.h \
00312   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/initializer_list \
00313   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iter_swap.h \
00314   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/next.h \
00315   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/prev.h \
00316   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/unwrap_iter.h
      \
00317
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/unwrap_range.h
      \
00318   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/pair.h \
00319
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/common_comparison_category.h
      \
00320   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/ordering.h \
00321
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/synth_three_way.h
      \
00322
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/three_way_comparable.h
      \
00323
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/different_from.h
      \
00324   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/array.h \
00325   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/get.h \
00326   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/subrange.h \
00327   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/tuple.h \
00328   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_element.h \
00329   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_indices.h \
00330
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/integer_sequence.h
      \
00331   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_types.h \
00332   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/pair_like.h \
00333   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_like.h \
```

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00334    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_size.h \
00335    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/sfinae_helpers.h
         \
00336
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/make_tuple_types.h
         \
00337    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_like_ext.h
         \
00338
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/piecewise_construct.h
         \
00339
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__string/constexpr_c_functions.h
         \
00340    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/construct_at.h \
00341    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/access.h \
00342    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/voidify.h \
00343    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/new \
00344    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/exception.h \
00345
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/datasizeof.h
         \
00346
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_always_bitcastable.h
         \
00347
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_equality_comparable.h
         \
00348
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_lexicographically_
         \
00349
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/is_pointer_in_range.h
         \
00350    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/comp.h \
00351
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/operation_traits.h
         \
00352
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each_segment.h
         \
00353
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/segmented_iterator.h
         \
00354    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/min.h \
00355
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/comp_ref_type.h
         \
00356    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/min_element.h
         \
00357    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/identity.h \
00358
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/reference_wrapper.h
         \
00359
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/weak_result_type.h
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00360
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/binary_function.h
         \
00361
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/unary_function.h
         \
00362    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/equal.h \
00363    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fill_n.h \
00364
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/lexicographical_compare.h
         \
00365
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/lexicographical_compare_three_way
         \
00366
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/three_way_comp_ref_type.h
         \
00367
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_three_way.h
         \
00368    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove.h \
00369    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find.h \
00370
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_segment_if.h
         \
00371    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/countr.h \
00372    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/rotate.h \
00373    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/invert_if.h \
00374    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/bit_reference.h \
00375    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cwchar \
```

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00376    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cwctype \
00377    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/wctype.h \
00378    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/wctype.h \
00379    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_wctype.h \
00380    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_wctrans_t.h \
00381    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/__wctype.h \
00382    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/___wctype.h \
00383    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_wctype_t.h \
00384    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/wchar.h \
00385    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/wchar.h \
00386    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_wchar.h \
00387    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_mbstate_t.h \
00388    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stdarg.h \
00389    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_header_macro.h \
00390    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg___gnuc_va_list.h \
00391    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_list.h \
00392    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_arg.h \
00393    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg___va_copy.h \
00394    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_copy.h \
00395    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/time.h \
00396    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_time.h \
00397    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_clock_t.h \
00398    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_time_t.h \
00399    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_timespec.h \
00400    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_if.h \
00401    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove_if.h \
00402    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/rotate.h \
00403    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/move.h \
00404
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/move_backward.h
    \
00405    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/swap_ranges.h
    \
00406    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit_reference \
00407    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_n.h \
00408    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/popcount.h \
00409
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/enable_insertable.h
    \
00410    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter.h \
00411    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_fwd.h \
00412    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_bool.h
    \
00413    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/concepts.h \
00414
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_parse_context.h
    \
00415    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_error.h \
00416    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdexcept \
00417    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/string.h \
00418    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/memory_resource.h \
00419    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/exception \
00420
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/exception_ptr.h
    \
00421    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/operations.h
    \
00422    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/typeinfo \
00423
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/nested_exception.h
    \
00424    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/terminate.h \
00425    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iosfwd \
00426    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/fstream.h \
00427    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/ios.h \
00428    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/istream.h \
00429    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/ostream.h \
00430    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/sstream.h \
00431    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/streambuf.h \
00432    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__std_mbstate_t.h \
00433    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mbstate_t.h \
00434    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string_view \
00435    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/hash.h \
00436    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/string_view.h \
00437    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/bounded_iter.h
    \
00438
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/reverse_iterator.h
    \
00439
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_three_way_result.h
    \
00440    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iterator.h \
00441    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/subrange.h \
00442    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/dangling.h \
00443    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/view_interface.h
    \
```

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00444    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/empty.h \
00445    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__string/char_traits.h \
00446    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_end.h \
00447    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/search.h \
00448
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_first_of.h
      \
00449    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/data.h \
00450    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/empty.h \
00451
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/reverse_access.h
      \
00452    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/size.h \
00453    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/compare \
00454
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_partial_order_fallback.h
      \
00455    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/partial_order.h
      \
00456    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/weak_order.h \
00457    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/strong_order.h
      \
00458    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/bit_cast.h \
00459    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/priority_tag.h
      \
00460    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cmath \
00461    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/promote.h \
00462    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/math.h \
00463    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/math.h \
00464    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/abs.h \
00465    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/copysign.h \
00466    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/error_functions.h
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00467
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00468    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/fdim.h \
00469    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/fma.h \
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00472    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/hypot.h \
00473
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      \
00474
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      \
00475    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/logarithms.h \
00476    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/min_max.h \
00477    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/modulo.h \
00478    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/remainder.h \
00479    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/roots.h \
00480
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/rounding_functions.h
      \
00481    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/traits.h \
00482
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/trigonometric_functions.h
      \
00483
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_strong_order_fallback.h
      \
00484
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_weak_order_fallback.h
      \
00485    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/is_eq.h \
00486    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/algorithm \
00487
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/adjacent_find.h
      \
00488    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/all_of.h \
00489    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/any_of.h \
00490
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/binary_search.h
      \
00491    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/lower_bound.h
      \
00492
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/half_positive.h
      \
00493    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/clamp.h \
00494
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_backward.h
      \
00495    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_if.h \
```

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00496    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/count.h \
00497    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/count_if.h \
00498    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/equal_range.h
      \
00499    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/upper_bound.h
      \
00500    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fill.h \
00501    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_if_not.h
      \
00502    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fold.h \
00503    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each.h \
00504    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/movable_box.h \
00505    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/optional \
00506    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/in_place.h \
00507    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/atomic \
00508    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/aliases.h \
00509    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic.h \
00510    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_base.h \
00511    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_sync.h \
00512    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/contention_t.h \
00513
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/cxx_atomic_impl.h
      \
00514
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/is_always_lock_free.h
      \
00515    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/memory_order.h \
00516    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/duration.h \
00517    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ratio \
00518
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__thread/poll_with_backoff.h
      \
00519
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/high_resolution_clock.h
      \
00520    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/steady_clock.h \
00521    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/time_point.h \
00522    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/system_clock.h \
00523    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ctime \
00524    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__threading_support \
00525
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/convert_to_timespec.h
      \
00526    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/errno.h \
00527    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/errno.h \
00528    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/errno.h \
00529    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread.h \
00530    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/sched.h \
00531    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/pthread_impl.h \
00532    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_cond_t.h \
00533
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_condattr_t.h
      \
00534    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_key_t.h \
00535    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_mutex_t.h
      \
00536
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_mutexattr_t.h
      \
00537    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_once_t.h \
00538    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_rwlock_t.h
      \
00539
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_rwlockattr_t.h
      \
00540    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_t.h \
00541    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/qos.h \
00542    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/qos.h \
00543    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_mach_port_t.h \
00544    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sched.h \
00545
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/check_memory_order.h
      \
00546    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/operations.h
      \
00547
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_lock_free.h
      \
00548    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_flag.h \
00549    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_init.h \
00550    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/fence.h \
00551
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/kill_dependency.h
      \
00552    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/concepts \
00553    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/common_with.h
      \
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00554    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iterator \
00555
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/back_insert_iterator.h
     \
00556
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/common_iterator.h
     \
00557    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/variant \
00558    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/forward_like.h
     \
00559    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__variant/monostate.h \
00560    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/tuple \
00561
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator_arg_t.h
     \
00562    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/uses_allocator.h
     \
00563    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/utility \
00564    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/as_const.h \
00565    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/as_lvalue.h \
00566    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/cmp.h \
00567
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/exception_guard.h
     \
00568    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/rel_ops.h \
00569    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/to_underlying.h
     \
00570
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/counted_iterator.h
     \
00571
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/default_sentinel.h
     \
00572
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/erase_if_container.h
     \
00573
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/front_insert_iterator.h
     \
00574
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/indirectly_comparable.h
     \
00575    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/projected.h \
00576
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/insert_iterator.h
     \
00577
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/istream_iterator.h
     \
00578
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/istreambuf_iterator.h
     \
00579    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/mergeable.h \
00580
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/ranges_operations.h
     \
00581
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/move_iterator.h
     \
00582
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/move_sentinel.h
     \
00583
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/ostream_iterator.h
     \
00584
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/ostreambuf_iterator.h
     \
00585    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/permutable.h \
00586    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/sortable.h \
00587
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/unreachable_sentinel.h
     \
00588    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/wrap_iter.h \
00589    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/memory \
00590    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/align.h \
00591
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocate_at_least.h
     \
00592
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator_traits.h
     \
00593
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocation_guard.h
     \
00594    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator.h \
00595    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/assume_aligned.h

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       \
00596  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/auto_ptr.h \
00597
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/compressed_pair.h
       \
00598  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/concepts.h \
00599
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/ranges_construct_at.h
       \
00600
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/ranges_uninitialized_algorithms.h
       \
00601
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_out_result.h
       \
00602
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/uninitialized_algorithms.h
       \
00603
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/raw_storage_iterator.h
       \
00604  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/shared_ptr.h \
00605
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator_destructor.h
       \
00606  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/unique_ptr.h \
00607
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/temporary_buffer.h
       \
00608
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/uses_allocator_construction.h
       \
00609  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each_n.h
       \
00610  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/generate.h \
00611  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/generate_n.h
       \
00612
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_found_result.h
       \
00613
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_fun_result.h
       \
00614
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_in_out_result.h
       \
00615
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_in_result.h
       \
00616
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/in_out_out_result.h
00617  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/includes.h \
00618
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/inplace_merge.h
       \
00619  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/destruct_n.h \
00620  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_heap.h \
00621
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_heap_until.h
       \
00622
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_partitioned.h
       \
00623
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_permutation.h
       \
00624  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_sorted.h \
00625
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_sorted_until.h
       \
00626  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/make_heap.h \
00627  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sift_down.h \
00628  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/max.h \
00629  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/max_element.h
       \
00630  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/merge.h \
00631
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/min_max_result.h
       \
00632  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/minmax.h \
00633
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/minmax_element.h
       \
00634  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/mismatch.h \
00635
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/next_permutation.h
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       \
00636    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/reverse.h \
00637    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/none_of.h \
00638    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/nth_element.h
       \
00639    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sort.h \
00640
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partial_sort.h
       \
00641    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sort_heap.h \
00642    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pop_heap.h \
00643    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/push_heap.h \
00644
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__debug_utils/strict_weak_ordering_check.h
       \
00645
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__debug_utils/randomize_range.h
       \
00646    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/blsr.h \
00647    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/countl.h \
00648
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partial_sort_copy.h
       \
00649
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/make_projected.h
       \
00650    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partition.h \
00651
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partition_copy.h
       \
00652
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partition_point.h
       \
00653
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/prev_permutation.h
       \
00654
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_any_all_none_of.h
       \
00655    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_find.h \
00656
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_backend.h
       \
00657
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_backends/cpu_backend.h
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00658
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00659
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_backends/cpu_backends/backen
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00660
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_backends/cpu_backends/libdis
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00661    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__numeric/reduce.h \
00662    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/empty.h \
00663
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_execution_policy.h
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00664
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_backends/cpu_backends/fill.h
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00665
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00666
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00667
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00669    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/stable_sort.h
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00670
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00671    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/transform.h \
00672
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_backends/cpu_backends/trans
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00673
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00674   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/execution \

00675
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00676
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00677   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_copy.h \

00678
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00679   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_count.h
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00680
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00682   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_equal.h
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00683   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_fill.h \

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00693
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00694
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          \
00818     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__system_error/errc.h \
00819     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cerrno \
00820     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/traits.h \
00821
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_32_64_or_128_bit.h
          \
00822
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_output.h
          \
00823     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/buffer.h \
00824
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_to_n_result.h
          \
00825
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/parser_std_format_spec.h
          \
00826     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_arg.h \
00827     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_string.h
          \
00828     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/unicode.h \
00829
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/extended_grapheme_cluster_table.h
          \
00830
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/width_estimation_table.h
          \
00831     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string \
00832     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ios/fpos.h \
00833     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/swap_allocator.h
          \
00834
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory_resource/polymorphic_allocator.h
          \
00835
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory_resource/memory_resource.h
          \
00836
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/container_compatible_range.h
          \
00837     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/from_range.h \
00838
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__string/extern_template_lists.h
          \
00839
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_allocator.h
          \
00840
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/noexcept_move_assign_container
          \
00841     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/array \
00842     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/locale \
00843     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__locale \
00844     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/once_flag.h \
00845     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/no_destroy.h \
00846     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/clocale \
00847     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/locale.h \
00848     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/locale.h \
00849     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_locale.h \
00850     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale.h \
00851     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_xlocale.h \
00852     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/__xlocale.h \
00853     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_mb_cur_max.h \
00854     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_ctype.h \
```

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00855    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/___wctype.h \
00856    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_stdio.h \
00857    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_stdlib.h \
00858    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_string.h \
00859    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_time.h \
00860    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_wchar.h \
00861    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_wctype.h \
00862    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ios \
00863
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      \
00864
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      \
00865
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__system_error/error_condition.h
      \
00866
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__system_error/system_error.h
      \
00867    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/mutex \
00868
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__condition_variable/condition_variable.h
      \
00869    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/mutex.h \
00870    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/unique_lock.h \
00871    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/tag_types.h \
00872    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/lock_guard.h \
00873    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__thread/id.h \
00874    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/system_error \
00875    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/streambuf \
00876    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/nl_types.h \
00877    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/types.h \
00878    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_char.h \
00879    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_short.h \
00880    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int.h \
00881    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_caddr_t.h \
00882    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_blkcnt_t.h \
00883    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_blksize_t.h \
00884    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_gid_t.h \
00885    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_in_addr_t.h \
00886    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_in_port_t.h \
00887    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ino_t.h \
00888    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ino64_t.h \
00889    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_key_t.h \
00890    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_nlink_t.h \
00891    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_useconds_t.h \
00892    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_suseconds_t.h \
00893    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_fd_def.h \
00894    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_fd_setsize.h \
00895    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_fd_set.h \
00896    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_fd_clr.h \
00897    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_fd_zero.h \
00898    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_fd_isset.h \
00899    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_fd_copy.h \
00900    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_fsblkcnt_t.h \
00901    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_fsfilcnt_t.h \
00902    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_nl_item.h \
00903
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__locale_dir/locale_base_api/bsd_locale_defa
      \
00904    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdarg \
00905    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/temp_value.h \
00906    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__split_buffer \
00907    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iostream \
00908    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/istream \
00909    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ostream \
00910    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/bitset \
00911    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/format \
00912
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/container_adaptor.h
      \
00913
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/range_default_formatter.h
      \
00914
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/statically_widen.h
      \
00915
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/range_formatter.h
      \
00916    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_context.h
      \
00917
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_arg_store.h
      \
00918    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_args.h \
```

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00919   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/ref_view.h \
00920   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/queue \
00921   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/deque \
00922   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/functional \
00923
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/binary_negate.h
     \
00924   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/bind.h \
00925   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/bind_back.h
     \
00926
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/perfect_forward.h
     \
00927   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/bind_front.h
     \
00928   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/binder1st.h
     \
00929   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/binder2nd.h
     \
00930
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     \
00931   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/unordered_map \
00932
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/is_transparent.h
     \
00933   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__hash_table \
00934
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/ranges_iterator_traits.h
     \
00935   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__node_handle \
00936   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/compose.h \
00937
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/default_searcher.h
     \
00938   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/function.h \
00939
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     \
00940
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/strip_signature.h
     \
00941   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/mem_fn.h \
00942
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/mem_fun_ref.h
     \
00943   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/not_fn.h \
00944
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/pointer_to_binary_function.h
     \
00945
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/pointer_to_unary_function.h
     \
00946
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/unary_negate.h
     \
00947   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stack \
00948
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_functions.h
     \
00949   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_char.h
     \
00950   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/write_escaped.h
     \
00951
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     \
00952
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_floating_point.h
     \
00953   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/chars_format.h
     \
00954
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/to_chars_floating_point.h
     \
00955
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     \
00956
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_pointer.h
     \
00957
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_string.h
     \
00958
     /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_tuple.h
     \
```

```
00959    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/print \
00960    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/unistd.h
```

## 8.9 build/CMakeFiles/generator.dir/generator/generator.cpp.o.d File Reference

## 8.10 generator.cpp.o.d

[Go to the documentation of this file.](#)

```
00001 CMakeFiles/generator.dir/generator/generator.cpp.o: \
00002    /Users/diogokeeper12/Documents/GitHub/CG-Project/Phase\ 1/generator/generator.cpp \
00003    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iostream \
00004    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__assert \
00005    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__assertion_handler \
00006    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__config \
00007    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__config_site \
00008    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__verbose_abort \
00009    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__availability \
00010    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/version \
00011    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ios \
00012    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/ios.h \
00013    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/string.h \
00014    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/memory_resource.h \
00015    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ios/fpos.h \
00016    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__locale \
00017    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/shared_ptr.h \
00018
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_three_way.h
    \
00019
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    \
00020
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    \
00021    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/ordering.h \
00022    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/enable_if.h
    \
00023    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_same.h \
00024
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/integral_constant.h
    \
00025    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstddef \
00026
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_integral.h
    \
00027    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_cv.h
    \
00028
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_const.h
    \
00029
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_volatile.h
    \
00030    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stddef.h \
00031    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stddef.h \
00032    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_header_macro.h \
00033    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_ptrdiff_t.h \
00034    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_size_t.h \
00035    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_wchar_t.h \
00036    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_null.h \
00037    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_nullptr_t.h \
00038    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_max_align_t.h \
00039    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_offsetof.h \
00040
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/common_reference_with.h
    \
00041
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/convertible_to.h
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00042
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_convertible.h
    \
00043    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_array.h
    \
00044
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_function.h
    \
00045    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_const.h
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00046
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/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_reference.h
\
00047    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_void.h \
00048
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_reference.h
\
00049    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/declval.h \
00050    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/same_as.h \
00051
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/common_reference.h
\
00052
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/common_type.h
\
00053
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/conditional.h
\
00054    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/decay.h \
00055
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_pointer.h
\
00056
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_referenceable.h
\
00057
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_extent.h
\
00058
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_cvref.h
\
00059    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/void_t.h \
00060    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/copy_cv.h \
00061    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_const.h
\
00062    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_cv.h \
00063
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_volatile.h
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00064
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/copy_cvref.h
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00065
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00066
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00067
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\
00068
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/boolean_testable.h
\
00069    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/forward.h \
00070
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_const_lvalue_ref.h
\
00071
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\
00072    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/exception.h \
00073
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/binary_function.h
\
00074    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/operations.h
\
00075
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/unary_function.h
\
00076
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/operation_traits.h
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00077
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/reference_wrapper.h
\
00078    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/invoke.h \
00079    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/invoke.h \
00080    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/apply_cv.h
\
00081
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_volatile.h
\
00082
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_base_of.h
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00083
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_core_convertible.h

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00084
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_member_function_pointer.h
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00085
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00086
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_reference_wrapper.h
          \
00087    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/nat.h \
00088
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/weak_result_type.h
          \
00089    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/addressof.h \
00090    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/ostream.h \
00091    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/access.h \
00092
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocation_guard.h
          \
00093
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator_traits.h
          \
00094    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/construct_at.h \
00095    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/voidify.h \
00096    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/move.h \
00097
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          \
00098
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          \
00099
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          \
00100
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00101    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__undef_macros \
00102    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/new \
00103    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdlib.h \
00104    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdlib.h \
00105    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_stdlib.h \
00106    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/Availability.h \
00107    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityVersions.h \
00108    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityInternal.h \
00109    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityInternalLegacy.h \
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00113    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types.h \
00114    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types.h \
00115    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_types.h \
00116    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_types.h \
00117    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_types.h \
00118    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/wait.h \
00119    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_pid_t.h \
00120    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_id_t.h \
00121    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/signal.h \
00122    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/appleapiopts.h \
00123    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/signal.h \
00124    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/signal.h \
00125    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_mcontext.h \
00126    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_mcontext.h \
00127    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/mach/machine/_structs.h \
00128    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/mach/arm/_structs.h \
00129    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/types.h \
00130    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/types.h \
00131    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int8_t.h \
00132    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int16_t.h \
00133    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int32_t.h \
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00135    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int8_t.h \
00136    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int16_t.h \
00137    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int32_t.h \
00138    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int64_t.h \
00139    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_intptr_t.h \
00140    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_uintptr_t.h \
00141    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_attr_t.h \
00142    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_sigaltstack.h \
00143    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ucontext.h \
00144    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_sigset_t.h \
00145    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_size_t.h \
00146    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_uid_t.h \
00147    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/resource.h \
00148    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdint.h \
00149    /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stdint.h \
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00150   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdint.h \
00151   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint8_t.h \
00152   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint16_t.h \
00153   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint32_t.h \
00154   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint64_t.h \
00155   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_intmax_t.h \
00156   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uintmax_t.h \
00157   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_timeval.h \
00158   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/endian.h \
00159   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/endian.h \
00160   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_endian.h \
00161   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_endian.h \
00162   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_endian.h \
00163   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/__endian.h \
00164   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/libkern/_OSByteOrder.h \
00165   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/libkern/arm/_OSByteOrder.h \
00166   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/alloca.h \
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00168   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_rune_t.h \
00169   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_wchar_t.h \
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00172   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/malloc/_malloc_type.h \
00173   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/malloc/_ptrcheck.h \
00174   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_abort.h \
00175   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_dev_t.h \
00176   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_mode_t.h \
00177   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdlib \
00178   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/type_traits \
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00185   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/pair.h \
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00190   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/extent.h \
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00197
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00198
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00199
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_bounded_array.h
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00200
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00201
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00202
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      \
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      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_assignable.h
      \
00221
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_convertible.h
      \
00222   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/lazy.h \
00223
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_copy_assignable.h
      \
00224
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_copy_constructible.h
      \
00225
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_default_constructible
      \
00226
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_destructible.h
      \
00227   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_scalar.h
      \
00228
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_pointer.h
      \
00229
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_move_assignable.h
      \
00230   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_object.h
      \
00231   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_union.h
      \
00232   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_pod.h \
00233
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_polymorphic.h
```

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        \
00234
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_scoped_enum.h
        \
00235
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/underlying_type.h
        \
00236   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_signed.h
        \
00237
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_specialization.h
        \
00238
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_swappable.h
        \
00239
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_assignable.h
        \
00240
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_constructible.h
        \
00241
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_copy_assignable.h
        \
00242
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_copy_constructible
        \
00243
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_copyable.h
        \
00244   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdint \
00245
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_default_construct
        \
00246
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_destructible.h
        \
00247
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_move_assignable.h
        \
00248
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_move_constructible
        \
00249
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_unbounded_array.h
        \
00250
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_unsigned.h
        \
00251
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_signed.h
        \
00252
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_unsigned.h
        \
00253
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/maybe_const.h
        \
00254   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/negation.h
        \
00255   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/rank.h \
00256
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_pointer.h
        \
00257   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/result_of.h
        \
00258
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/type_identity.h
        \
00259
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/unwrap_ref.h
        \
00260   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/pointer_traits.h
        \
00261   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/limits \
00262   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator.h \
00263
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocate_at_least.h
        \
00264
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator_destructor.h
        \
00265   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/auto_ptr.h \
00266
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/compressed_pair.h
        \
00267   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/get.h \
```

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00268    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/copyable.h \
00269    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/assignable.h \
00270
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/constructible.h
\
00271    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/destructible.h
\
00272    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/movable.h \
00273    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/swappable.h \
00274
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/class_or_enum.h
\
00275    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/exchange.h \
00276    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/swap.h \
00277    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/array.h \
00278    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/subrange.h \
00279    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/tuple.h \
00280    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_element.h \
00281    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_indices.h \
00282
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/integer_sequence.h
\
00283    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_types.h \
00284
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/piecewise_construct.h
\
00285
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/uninitialized_algorithms.h
\
00286    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy.h \
00287
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_move_common.h
\
00288
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/iterator_operations.h
\
00289    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/iter_swap.h \
00290
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_iterator_concept.h
\
00291    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/concepts.h \
00292    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/arithmetic.h \
00293
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_signed_integer.h
\
00294
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_unsigned_integer.h
\
00295    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/derived_from.h
\
00296    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/invocable.h \
00297    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/predicate.h \
00298    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/regular.h \
00299    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/semiregular.h
\
00300    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/relation.h \
00301
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/incrementable_traits.h
\
00302
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_primary_template.h
\
00303
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_valid_expansion.h
\
00304    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iter_move.h \
00305
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iterator_traits.h
\
00306
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/readable_traits.h
\
00307    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/advance.h \
00308
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/convert_to_integral.h
\
00309    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/unreachable.h \
00310    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/distance.h \
00311    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/access.h \
00312
    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/enable_borrowed_range.h
\
00313    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/auto_cast.h \
00314    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/concepts.h \
00315    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/data.h \
00316    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/enable_view.h \
00317    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/size.h \
```

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00318    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/initializer_list \
00319    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iter_swap.h \
00320    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/next.h \
00321    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/prev.h \
00322    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/unwrap_iter.h
       \
00323
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/unwrap_range.h
       \
00324    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/pair.h \
00325
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/synth_three_way.h
       \
00326
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/different_from.h
       \
00327    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/pair_like.h \
00328    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_like.h \
00329    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_size.h \
00330    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/sfinae_helpers.h
       \
00331
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/make_tuple_types.h
       \
00332    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_like_ext.h
       \
00333
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__string/constexpr_c_functions.h
       \
00334
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/datasizeof.h
       \
00335
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_always_bitcastable.h
       \
00336
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_equality_comparable.h
       \
00337
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_lexicographically
       \
00338
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/is_pointer_in_range.h
       \
00339    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/comp.h \
00340
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each_segment.h
       \
00341
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/segmented_iterator.h
       \
00342    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/min.h \
00343
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/comp_ref_type.h
       \
00344    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/min_element.h
       \
00345    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/identity.h \
00346    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/move.h \
00347
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/reverse_iterator.h
       \
00348
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_three_way_result.h
       \
00349    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iterator.h \
00350    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/subrange.h \
00351    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/dangling.h \
00352    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/view_interface.h
       \
00353    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/empty.h \
00354
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/exception_guard.h
       \
00355    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/unique_ptr.h \
00356    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/hash.h \
00357    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstring \
00358    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string.h \
00359    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/string.h \
00360    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_string.h \
00361    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_rsize_t.h \
00362    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_errno_t.h \
00363    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ssize_t.h \
00364    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_strings.h \
00365    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/typeinfo \
00366    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/memory_order.h \
00367    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/once_flag.h \
```

```
00368   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/tuple \
00369
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator_arg_t.h
      \
00370   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/uses_allocator.h
      \
00371   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/compare \
00372
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_partial_order_fallback.h
      \
00373   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/partial_order.h
      \
00374   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/weak_order.h \
00375   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/strong_order.h
      \
00376   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/bit_cast.h \
00377   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/priority_tag.h
      \
00378   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cmath \
00379   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/promote.h \
00380   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/math.h \
00381   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/math.h \
00382   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/abs.h \
00383   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/copysign.h \
00384   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/error_functions.h
      \
00385
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/exponential_functions.h
      \
00386   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/fdim.h \
00387   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/fma.h \
00388   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/gamma.h \
00389
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/hyperbolic_functions.h
      \
00390   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/hypot.h \
00391
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/inverse_hyperbolic_functions.h
      \
00392
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/inverse_trigonometric_functions.h
      \
00393   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/logarithms.h \
00394   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/min_max.h \
00395   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/modulo.h \
00396   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/remainder.h \
00397   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/roots.h \
00398
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/rounding_functions.h
      \
00399   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/traits.h \
00400
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/trigonometric_functions.h
      \
00401
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      \
00402
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_weak_order_fallback.h
      \
00403   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/is_eq.h \
00404   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/exception \
00405
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/exception_ptr.h
      \
00406   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/operations.h
      \
00407
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/nested_exception.h
      \
00408   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/terminate.h \
00409   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iosfwd \
00410   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/fstream.h \
00411   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/istream.h \
00412   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/sstream.h \
00413   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/streambuf.h \
00414   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__std_mbstate_t.h \
00415   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mbstate_t.h \
00416   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_mbstate_t.h \
00417   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/utility \
00418   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/as_const.h \
00419   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/as_lvalue.h \
00420   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/cmp.h \
00421   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/forward_like.h
      \
00422   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/in_place.h \
00423   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/rel_ops.h \
```

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00424  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/to_underlying.h
       \
00425  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/no_destroy.h \
00426  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cctype \
00427  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ctype.h \
00428  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/ctype.h \
00429  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_ctype.h \
00430  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/runetype.h \
00431  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_wint_t.h \
00432  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/clocale \
00433  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/locale.h \
00434  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/locale.h \
00435  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_locale.h \
00436  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string \
00437  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/max.h \
00438  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/max_element.h
       \
00439  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove.h \
00440  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find.h \
00441
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_segment_if.h
       \
00442  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/countr.h \
00443  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/rotate.h \
00444  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/invert_if.h \
00445  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/bit_reference.h \
00446  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cwchar \
00447  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cwctype \
00448  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/wctype.h \
00449  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/wctype.h \
00450  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_wctype.h \
00451  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_wctrans_t.h \
00452  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/__wctype.h \
00453  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/___wctype.h \
00454  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_wctype_t.h \
00455  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/wchar.h \
00456  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_rsize_t.h \
00457  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/wchar.h \
00458  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_wchar.h \
00459  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stdarg.h \
00460  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_header_macro.h \
00461  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg___gnuc_va_list.h \
00462  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_list.h \
00463  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_arg.h \
00464  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg___va_copy.h \
00465  /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_copy.h \
00466  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdio.h \
00467  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdio.h \
00468  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_stdio.h \
00469  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_va_list.h \
00470  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/stdio.h \
00471  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_printf.h \
00472  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_seek_set.h \
00473  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_ctermid.h \
00474  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_off_t.h \
00475  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/time.h \
00476  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_time.h \
00477  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_clock_t.h \
00478  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_time_t.h \
00479  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_timespec.h \
00480  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_if.h \
00481  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove_if.h \
00482
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/enable_insertable.h
       \
00483  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/wrap_iter.h \
00484  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/swap_allocator.h
       \
00485
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       \
00486
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       \
00487
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/container_compatible_range.h
       \
00488  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/from_range.h \
00489  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__string/char_traits.h \
00490  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_n.h \
00491  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fill_n.h \
00492  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_end.h \
00493  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/search.h \
00494
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_first_of.h
       \
00495  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdio \
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00496
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__string/extern_template_lists.h
      \
00497
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_allocator.h
      \
00498
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/noexcept_move_assign_container
      \
00499   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/climits \
00500   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/limits.h \
00501   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/limits.h \
00502   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/limits.h \
00503   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/limits.h \
00504   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_limits.h \
00505   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/syslimits.h \
00506   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdexcept \
00507   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string_view \
00508   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/string_view.h \
00509   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/bounded_iter.h
      \
00510   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/data.h \
00511   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/empty.h \
00512
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/reverse_access.h
      \
00513   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/size.h \
00514   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/algorithm \
00515
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      \
00516   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/all_of.h \
00517   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/any_of.h \
00518
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      \
00519   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/lower_bound.h
      \
00520
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00521   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/clamp.h \
00522
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      \
00523   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_if.h \
00524   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/count.h \
00525   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/popcount.h \
00526   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/count_if.h \
00527   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/equal.h \
00528   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/equal_range.h
      \
00529   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/upper_bound.h
      \
00530   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fill.h \
00531   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_if_not.h
      \
00532   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fold.h \
00533   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each.h \
00534   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/movable_box.h \
00535   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/optional \
00536   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/atomic \
00537   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/aliases.h \
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00539   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_base.h \
00540   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_sync.h \
00541   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/contention_t.h \
00542
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      \
00543
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      \
00544   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/duration.h \
00545   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ratio \
00546
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      \
00547
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      \
00548   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/steady_clock.h \
00549   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/time_point.h \
00550   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/system_clock.h \
00551   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ctime \
00552   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__threading_support \
00553
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/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/convert_to_timespec.h
\
00554   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/errno.h \
00555   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/errno.h \
00556   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/errno.h \
00557   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread.h \
00558   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/sched.h \
00559   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/pthread_impl.h \
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\
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\
00565   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_once_t.h \
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\
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\
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00570   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/qos.h \
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00572   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sched.h \
00573
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\
00574
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\
00575   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_flag.h \
00576   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_init.h \
00577   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/fence.h \
00578
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/kill_dependency.h
\
00579   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/concepts \
00580   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/common_with.h
\
00581   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iterator \
00582
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/back_insert_iterator.h
\
00583
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/common_iterator.h
\
00584   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/variant \
00585   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__variant/monostate.h \
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00587
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00588
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00589
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00590
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\
00591   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/projected.h \
00592
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00593
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00594
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00595   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/mergeable.h \
00596
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00597
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\
00598
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/move_sentinel.h

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00601   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/permutable.h \
00602   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/sortable.h \
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00604   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/memory \
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00606   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/assume_aligned.h
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00614   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each_n.h
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00629
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00635
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00636
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00638   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sift_down.h \
00639   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/merge.h \
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00642
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00643   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/mismatch.h \
00644
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00645   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/reverse.h \
00646   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/none_of.h \
00647   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/nth_element.h
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00648   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sort.h \
00649
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partial_sort.h
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00650   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sort_heap.h \
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00652   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/push_heap.h \
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00656   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/countl.h \
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00659   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partition.h \
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00662
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00663
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00664   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_find.h \
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00666
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00667
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00668
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       \
00669
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00673
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00674
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       \
00675
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00676
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       \
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00677
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00723
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00739
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_make_heap.h
\
00740   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_max.h
\
00741
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_min_element.h

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00742
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_max_element.h
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00743
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_merge.h
      \
00744   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_min.h
      \
00745
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_minmax.h
      \
00746
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_minmax_element.h
      \
00747   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_move.h
      \
00748
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_move_backward.h
      \
00749
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_next_permutation.h
      \
00750
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_none_of.h
      \
00751
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_nth_element.h
      \
00752
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_partial_sort.h
      \
00753
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_partial_sort_copy.h
      \
00754
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_partition.h
      \
00755
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_partition_copy.h
      \
00756
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_partition_point.h
      \
00757
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_pop_heap.h
      \
00758
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_prev_permutation.h
      \
00759
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_push_heap.h
      \
00760
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_remove.h
      \
00761
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_remove_if.h
      \
00762
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_remove_copy.h
      \
00763
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00764
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove_copy_if.h
      \
00765
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00766
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_replace_if.h
      \
00767
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_replace_copy.h
      \
00768
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      \
00769
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      \
00770
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_reverse_copy.h
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00771
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/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_rotate.h
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00772
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_rotate_copy.h
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00773
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_sample.h
\
00774  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sample.h \
00775
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__random/uniform_int_distribution.h
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00776  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__random/is_valid.h \
00777  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__random/log2.h \
00778
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\
00779
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00780
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00781
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_search_n.h
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00785
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00786
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00787
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00788
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/set_symmetric_difference.h
\
00789
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_set_union.h
\
00790  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/set_union.h \
00791
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_shuffle.h
\
00792  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/shuffle.h \
00793  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_sort.h
\
00794
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_sort_heap.h
\
00795
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\
00796
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/stable_partition.h
\
00797
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_stable_sort.h
\
00798
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_swap_ranges.h
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00799
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_transform.h
\
00800
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_unique.h
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00801  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/unique.h \
00802
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_unique_copy.h
\
00803  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/unique_copy.h
\
00804
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_upper_bound.h
\
00805  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove_copy.h
\

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00806    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/replace.h \
00807
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/replace_copy.h
      \
00808
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/replace_copy_if.h
      \
00809    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/replace_if.h
      \
00810
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00811    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/rotate_copy.h
      \
00812    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/shift_left.h
      \
00813    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/shift_right.h
      \
00814    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/bit \
00815    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/bit_ceil.h \
00816    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/bit_floor.h \
00817    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/bit_log2.h \
00818    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/bit_width.h \
00819    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/byteswap.h \
00820    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/endian.h \
00821    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/has_single_bit.h \
00822    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale.h \
00823    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_xlocale.h \
00824    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/__xlocale.h \
00825    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_mb_cur_max.h \
00826    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_ctype.h \
00827    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/___wctype.h \
00828    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_stdio.h \
00829    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_stdlib.h \
00830    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_string.h \
00831    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_time.h \
00832    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_wchar.h \
00833    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/xlocale/_wctype.h \
00834
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      \
00835
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      \
00836    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__system_error/errc.h \
00837    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cerrno \
00838
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      \
00839
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__system_error/system_error.h
      \
00840    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/mutex \
00841
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      \
00842    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/mutex.h \
00843    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/unique_lock.h \
00844    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/tag_types.h \
00845    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/lock_guard.h \
00846    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__thread/id.h \
00847    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/system_error \
00848    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/istream \
00849    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ostream \
00850    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/bitset \
00851    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit_reference \
00852    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/format \
00853    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/buffer.h \
00854    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/concepts.h \
00855    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_fwd.h \
00856
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      \
00857    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_error.h \
00858
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_to_n_result.h
      \
00859
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/container_adaptor.h
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00860    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter.h \
00861
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/range_default_formatter.h
      \
00862
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/statically_widen.h
      \
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00863
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/range_formatter.h
      \
00864   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_context.h
      \
00865   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_arg.h \
00866
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_arg_store.h
      \
00867   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_args.h \
00868   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/locale \
00869   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/streambuf \
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00872   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_char.h \
00873   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_short.h \
00874   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int.h \
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00879   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_in_addr_t.h \
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00886   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_suseconds_t.h \
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00888   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_fd_setsize.h \
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00906   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/queue \
00907   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/deque \
00908   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/temp_value.h \
00909   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__split_buffer \
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      \
00915   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/bind_front.h
      \
00916   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/binder1st.h
      \
00917   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/binder2nd.h
      \
00918
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/boyer_moore_searcher.h
      \
00919   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/array \
00920   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/unordered_map \
00921
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/is_transparent.h
      \
```

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00922    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__hash_table \
00923
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/ranges_iterator_traits.h
      \
00924    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__node_handle \
00925    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/vector \
00926    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_bool.h
      \
00927
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_integral.h
      \
00928
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/to_chars_integral.h
      \
00929    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/tables.h \
00930
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/to_chars_base_10.h
      \
00931
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/to_chars_result.h
      \
00932    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/traits.h \
00933
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_32_64_or_128_bit.h
      \
00934    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/compose.h \
00935
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/default_searcher.h
      \
00936    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/function.h \
00937
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/builtin_new_allocator.h
      \
00938
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/strip_signature.h
      \
00939    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/mem_fn.h \
00940
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/mem_fun_ref.h
      \
00941    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/not_fn.h \
00942
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/pointer_to_binary_function.h
      \
00943
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/pointer_to_unary_function.h
      \
00944
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/unary_negate.h
      \
00945    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stack \
00946
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/format_functions.h
      \
00947    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_char.h
      \
00948    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/write_escaped.h
      \
00949
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/escaped_output_table.h
      \
00950
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      \
00951    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/chars_format.h
      \
00952
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__charconv/to_chars_floating_point.h
      \
00953
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_integer.h
      \
00954
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_pointer.h
      \
00955
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_string.h
      \
00956
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/formatter_tuple.h
      \
00957    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/print \
00958    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/unistd.h \
00959    /Users/diogokeeper12/Documents/GitHub/CG-Project/Phase\ 1/generator/generatorAux.h
```

## 8.11 build/CMakeFiles/generator.dir/generator/generatorAux.cpp.o.d File Reference

## 8.12 generatorAux.cpp.o.d

Go to the documentation of this file.
```
00001 CMakeFiles/generator.dir/generator/generatorAux.cpp.o: \
00002   /Users/diogokeeper12/Documents/GitHub/CG-Project/Phase\ 1/generator/generatorAux.cpp \
00003   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iostream \
00004   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__assert \
00005   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__assertion_handler \
00006   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__config \
00007   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__config_site \
00008   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__verbose_abort \
00009   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__availability \
00010   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/version \
00011   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ios \
00012   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/ios.h \
00013   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/string.h \
00014   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/memory_resource.h \
00015   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ios/fpos.h \
00016   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__locale \
00017   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/shared_ptr.h \
00018
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_three_way.h
      \
00019
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/three_way_comparable.h
      \
00020
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/common_comparison_category.h
      \
00021   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/ordering.h \
00022   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/enable_if.h
      \
00023   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_same.h \
00024
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/integral_constant.h
      \
00025   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstddef \
00026
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_integral.h
      \
00027   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_cv.h
      \
00028
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_const.h
      \
00029
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_volatile.h
      \
00030   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stddef.h \
00031   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stddef.h \
00032   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_header_macro.h \
00033   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_ptrdiff_t.h \
00034   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_size_t.h \
00035   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_wchar_t.h \
00036   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_null.h \
00037   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_nullptr_t.h \
00038   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_max_align_t.h \
00039   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_offsetof.h \
00040
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/common_reference_with.h
      \
00041
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/convertible_to.h
      \
00042
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_convertible.h
      \
00043   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_array.h
      \
00044
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_function.h
      \
00045   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_const.h
      \
00046
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_reference.h
      \
00047   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_void.h \
00048
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_reference.h
```

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      \
00049   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/declval.h \
00050   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/same_as.h \
00051
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/common_reference.h
      \
00052
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/common_type.h
      \
00053
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/conditional.h
      \
00054   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/decay.h \
00055
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_pointer.h
      \
00056
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_referenceable.h
      \
00057
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_extent.h
      \
00058
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_cvref.h
      \
00059   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/void_t.h \
00060   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/copy_cv.h \
00061   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_const.h
      \
00062   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_cv.h \
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      \
00064
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00065
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      \
00066
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      \
00067
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      \
00068
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/boolean_testable.h
      \
00069   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/forward.h \
00070
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_const_lvalue_ref.h
      \
00071
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      \
00072   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/exception.h \
00073
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/binary_function.h
      \
00074   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/operations.h
      \
00075
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      \
00076
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      \
00077
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      \
00078   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/invoke.h \
00079   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/invoke.h \
00080   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/apply_cv.h
      \
00081
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_volatile.h
      \
00082
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      \
00083
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      \
00084
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_member_function_pointer.h
      \
00085
```

```
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_member_object_pointer.h
     \
00086
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     \
00087   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/nat.h \
00088
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/weak_result_type.h
     \
00089   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/addressof.h \
00090   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/ostream.h \
00091   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/access.h \
00092
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocation_guard.h
     \
00093
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator_traits.h
     \
00094   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/construct_at.h \
00095   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/voidify.h \
00096   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/move.h \
00097
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_copy_constructible.h
     \
00098
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_move_constructible.h
     \
00099
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_constructible.h
     \
00100
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_constructible.h
     \
00101   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__undef_macros \
00102   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/new \
00103   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdlib.h \
00104   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdlib.h \
00105   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_stdlib.h \
00106   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/Availability.h \
00107   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityVersions.h \
00108   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityInternal.h \
00109   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityInternalLegacy.h \
00110   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/cdefs.h \
00111   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_symbol_aliasing.h \
00112   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_posix_availability.h \
00113   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types.h \
00114   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types.h \
00115   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_types.h \
00116   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_types.h \
00117   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_types.h \
00118   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/wait.h \
00119   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_pid_t.h \
00120   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_id_t.h \
00121   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/signal.h \
00122   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/appleapiopts.h \
00123   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/signal.h \
00124   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/signal.h \
00125   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_mcontext.h \
00126   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_mcontext.h \
00127   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/mach/machine/_structs.h \
00128   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/mach/arm/_structs.h \
00129   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/types.h \
00130   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/types.h \
00131   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int8_t.h \
00132   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int16_t.h \
00133   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int32_t.h \
00134   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int64_t.h \
00135   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int8_t.h \
00136   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int16_t.h \
00137   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int32_t.h \
00138   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int64_t.h \
00139   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_intptr_t.h \
00140   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_uintptr_t.h \
00141   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_attr_t.h \
00142   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_sigaltstack.h \
00143   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ucontext.h \
00144   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_sigset_t.h \
00145   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_size_t.h \
00146   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_uid_t.h \
00147   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/resource.h \
00148   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdint.h \
00149   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stdint.h \
00150   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdint.h \
00151   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint8_t.h \
00152   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint16_t.h \
00153   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint32_t.h \
00154   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint64_t.h \
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00155    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_intmax_t.h \
00156    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uintmax_t.h \
00157    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_timeval.h \
00158    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/endian.h \
00159    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/endian.h \
00160    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_endian.h \
00161    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_endian.h \
00162    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_endian.h \
00163    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/__endian.h \
00164    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/libkern/_OSByteOrder.h \
00165    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/libkern/arm/_OSByteOrder.h \
00166    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/alloca.h \
00167    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ct_rune_t.h \
00168    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_rune_t.h \
00169    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_wchar_t.h \
00170    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_null.h \
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00172    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/malloc/_malloc_type.h \
00173    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/malloc/_ptrcheck.h \
00174    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_abort.h \
00175    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_dev_t.h \
00176    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_mode_t.h \
00177    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdlib \
00178    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/type_traits \
00179    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/hash.h \
00180
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00181    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/type_list.h
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00186
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00189
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00190    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/extent.h \
00191
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     \
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00194
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00195
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00197
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00199
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00200
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00201
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00202
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/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_standard_layout.h
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00203
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00204  /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_class.h
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00205
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00206
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00207
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00210
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00224
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00225
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00226
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00235

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00240
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00244   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdint \
00245
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00246
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00247
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00251
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00252
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00268   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/copyable.h \
00269   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/assignable.h \
00270
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\

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00272    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/movable.h \
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00304    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iter_move.h \
00305
         /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iterator_traits.h
         \
00306
         /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/readable_traits.h
         \
00307    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/advance.h \
00308
         /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/convert_to_integral.h
         \
00309    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/unreachable.h \
00310    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/distance.h \
00311    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/access.h \
00312
         /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/enable_borrowed_range.h
         \
00313    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/auto_cast.h \
00314    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/concepts.h \
00315    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/data.h \
00316    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/enable_view.h \
00317    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/size.h \
00318    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/initializer_list \
00319    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iter_swap.h \
00320    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/next.h \
00321    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/prev.h \
00322    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/unwrap_iter.h

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00323
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/unwrap_range.h
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00324   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/pair.h \
00325
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/synth_three_way.h
      \
00326
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/different_from.h
      \
00327   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/pair_like.h \
00328   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_like.h \
00329   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_size.h \
00330   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/sfinae_helpers.h
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00331
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00332   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__tuple/tuple_like_ext.h
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00333
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00334
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/datasizeof.h
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00335
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_always_bitcastable.h
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      \
00338
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      \
00339   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/comp.h \
00340
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      \
00341
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00342   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/min.h \
00343
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/comp_ref_type.h
      \
00344   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/min_element.h
      \
00345   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/identity.h \
00346   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/move.h \
00347
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      \
00348
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_three_way_result.h
      \
00349   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/iterator.h \
00350   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/subrange.h \
00351   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/dangling.h \
00352   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/view_interface.h
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00353   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/empty.h \
00354
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/exception_guard.h
      \
00355   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/unique_ptr.h \
00356   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/hash.h \
00357   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstring \
00358   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string.h \
00359   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/string.h \
00360   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_string.h \
00361   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_rsize_t.h \
00362   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_errno_t.h \
00363   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ssize_t.h \
00364   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_strings.h \
00365   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/typeinfo \
00366   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/memory_order.h \
00367   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/once_flag.h \
00368   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/tuple \
00369
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/allocator_arg_t.h
      \
00370   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/uses_allocator.h
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00371    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/compare \
00372
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/compare_partial_order_fallback.h
         \
00373    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/partial_order.h
         \
00374    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/weak_order.h \
00375    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/strong_order.h
         \
00376    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/bit_cast.h \
00377    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/priority_tag.h
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00378    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cmath \
00379    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/promote.h \
00380    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/math.h \
00381    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/math.h \
00382    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/abs.h \
00383    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/copysign.h \
00384    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/error_functions.h
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00385
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00386    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/fdim.h \
00387    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/fma.h \
00388    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/gamma.h \
00389
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00390    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/hypot.h \
00391
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         \
00392
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/inverse_trigonometric_functions.h
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00393    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/logarithms.h \
00394    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/min_max.h \
00395    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/modulo.h \
00396    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/remainder.h \
00397    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/roots.h \
00398
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00399    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__math/traits.h \
00400
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00401
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00402
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00403    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__compare/is_eq.h \
00404    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/exception \
00405
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00406    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/operations.h
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00407
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/nested_exception.h
         \
00408    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/terminate.h \
00409    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iosfwd \
00410    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/fstream.h \
00411    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/istream.h \
00412    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/sstream.h \
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00414    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__std_mbstate_t.h \
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00417    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/utility \
00418    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/as_const.h \
00419    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/as_lvalue.h \
00420    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/cmp.h \
00421    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/forward_like.h
         \
00422    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/in_place.h \
00423    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/rel_ops.h \
00424    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/to_underlying.h
         \
00425    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/no_destroy.h \
00426    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cctype \
00427    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ctype.h \
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00428   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/ctype.h \
00429   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_ctype.h \
00430   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/runetype.h \
00431   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_wint_t.h \
00432   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/clocale \
00433   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/locale.h \
00434   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/locale.h \
00435   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_locale.h \
00436   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string \
00437   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/max.h \
00438   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/max_element.h
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00439   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove.h \
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      \
00442   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/countr.h \
00443   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/rotate.h \
00444   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/invert_if.h \
00445   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/bit_reference.h \
00446   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cwchar \
00447   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cwctype \
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00451   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_wctrans_t.h \
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00453   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/___wctype.h \
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00455   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/wchar.h \
00456   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_rsize_t.h \
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00465   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_copy.h \
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00473   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_ctermid.h \
00474   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_off_t.h \
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00476   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_time.h \
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00479   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_timespec.h \
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00481   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove_if.h \
00482
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00483   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/wrap_iter.h \
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00485
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00487
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/container_compatible_range.h
      \
00488   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/from_range.h \
00489   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__string/char_traits.h \
00490   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_n.h \
00491   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fill_n.h \
00492   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_end.h \
00493   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/search.h \
00494
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_first_of.h
      \
00495   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdio \
00496
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__string/extern_template_lists.h
      \
00497
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_allocator.h
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00498
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/noexcept_move_assign_container
        \
00499   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/climits \
00500   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/limits.h \
00501   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/limits.h \
00502   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/limits.h \
00503   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/limits.h \
00504   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_limits.h \
00505   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/syslimits.h \
00506   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdexcept \
00507   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string_view \
00508   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/string_view.h \
00509   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/bounded_iter.h
        \
00510   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/data.h \
00511   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/empty.h \
00512
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/reverse_access.h
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00513   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/size.h \
00514   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/algorithm \
00515
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        \
00516   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/all_of.h \
00517   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/any_of.h \
00518
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        \
00519   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/lower_bound.h
        \
00520
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/half_positive.h
        \
00521   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/clamp.h \
00522
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_backward.h
        \
00523   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/copy_if.h \
00524   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/count.h \
00525   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/popcount.h \
00526   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/count_if.h \
00527   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/equal.h \
00528   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/equal_range.h
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00529   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/upper_bound.h
        \
00530   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fill.h \
00531   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/find_if_not.h
        \
00532   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/fold.h \
00533   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each.h \
00534   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__ranges/movable_box.h \
00535   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/optional \
00536   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/atomic \
00537   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/aliases.h \
00538   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic.h \
00539   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_base.h \
00540   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_sync.h \
00541   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/contention_t.h \
00542
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        \
00543
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        \
00544   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/duration.h \
00545   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ratio \
00546
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__thread/poll_with_backoff.h
        \
00547
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/high_resolution_clock.h
        \
00548   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/steady_clock.h \
00549   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/time_point.h \
00550   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/system_clock.h \
00551   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/ctime \
00552   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__threading_support \
00553
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__chrono/convert_to_timespec.h
        \
00554   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/errno.h \
00555   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/errno.h \
00556   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/errno.h \
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00557    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread.h \
00558    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/sched.h \
00559    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/pthread_impl.h \
00560    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_cond_t.h \
00561
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_condattr_t.h
      \
00562    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_key_t.h \
00563    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_mutex_t.h
      \
00564
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      \
00565    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_once_t.h \
00566    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_rwlock_t.h
      \
00567
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_rwlockattr_t.h
      \
00568    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_t.h \
00569    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/pthread/qos.h \
00570    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/qos.h \
00571    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_mach_port_t.h \
00572    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sched.h \
00573
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/check_memory_order.h
      \
00574
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_lock_free.h
      \
00575    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_flag.h \
00576    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/atomic_init.h \
00577    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/fence.h \
00578
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__atomic/kill_dependency.h
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00579    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/concepts \
00580    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__concepts/common_with.h
      \
00581    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/iterator \
00582
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      \
00583
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/common_iterator.h
      \
00584    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/variant \
00585    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__variant/monostate.h \
00586
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00587
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/default_sentinel.h
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00588
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      \
00589
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      \
00590
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/indirectly_comparable.h
      \
00591    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/projected.h \
00592
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      \
00593
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/istream_iterator.h
      \
00594
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/istreambuf_iterator.h
      \
00595    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/mergeable.h \
00596
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/ranges_operations.h
      \
00597
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/move_iterator.h
      \
00598
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/move_sentinel.h
      \
00599
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/ostream_iterator.h
      \
00600
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      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/ostreambuf_iterator.h
      \
00601   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/permutable.h \
00602   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/sortable.h \
00603
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__iterator/unreachable_sentinel.h
      \
00604   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/memory \
00605   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/align.h \
00606   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/assume_aligned.h
      \
00607   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/concepts.h \
00608
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/ranges_construct_at.h
      \
00609
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      \
00610
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      \
00611
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      \
00612
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/temporary_buffer.h
      \
00613
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/uses_allocator_construction.h
      \
00614   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/for_each_n.h
      \
00615   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/generate.h \
00616   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/generate_n.h
      \
00617
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      \
00618
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      \
00619
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      \
00620
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      \
00621
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      \
00622   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/includes.h \
00623
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/inplace_merge.h
      \
00624   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/rotate.h \
00625
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      \
00626   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/swap_ranges.h
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00627   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__memory/destruct_n.h \
00628   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_heap.h \
00629
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00630
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00631
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      \
00632   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/is_sorted.h \
00633
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00634
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00635
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      \
00636
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/three_way_comp_ref_type.h
      \
00637   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/make_heap.h \
00638   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sift_down.h \
00639   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/merge.h \
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00640
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/min_max_result.h
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00641   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/minmax.h \
00642
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      \
00643   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/mismatch.h \
00644
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/next_permutation.h
      \
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00646   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/none_of.h \
00647   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/nth_element.h
      \
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      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partial_sort.h
      \
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00651   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pop_heap.h \
00652   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/push_heap.h \
00653
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      \
00654
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      \
00655   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/blsr.h \
00656   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/count1.h \
00657
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      \
00658
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/make_projected.h
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00659   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/partition.h \
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00661
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      \
00662
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/prev_permutation.h
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00663
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_any_all_none_of.h
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00664   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_find.h \
00665
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_backend.h
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00666
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00667
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/pstl_backends/cpu_backends/any_o
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00668
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00669
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00672
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00673
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00676
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00677
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00678   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/stable_sort.h
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00679
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00681
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\
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00684
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00689
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00694
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00708
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_find_if.h
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00709   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_copy.h
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00710
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00711
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_copy_if.h
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00712
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_copy_n.h
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00713
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_count.h

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00714
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00715
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00716
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00717
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_starts_with.h
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00718
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00720    /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_fill.h
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00721
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00723
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00725
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00726
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00727
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00728
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00731
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00732
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00733
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00734
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00735
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00736
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00737
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00738
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00739
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00741
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00742
       /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_max_element.h
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/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_merge.h

00744   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_min.h
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00745
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_minmax.h
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00746
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_minmax_element.h

00747   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_move.h
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00748
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_move_backward.h
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00749
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_next_permutation.h
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00750
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00751
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_nth_element.h
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00754
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00755
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00756
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00757
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_pop_heap.h
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00758
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00759
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00761
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00762
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00763
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_remove_copy_if.h
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00764
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00766
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00767
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00768
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00770
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_reverse_copy.h
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00771
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_rotate.h
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00772
/Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/ranges_rotate_copy.h
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00773
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00774   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/sample.h \
00775
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__random/uniform_int_distribution.h
      \
00776   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__random/is_valid.h \
00777   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__random/log2.h \
00778
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      \
00779
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00804
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00805   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/remove_copy.h
      \
00806   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/replace.h \
00807
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/replace_copy.h
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00808
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        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/replace_copy_if.h
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00809   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/replace_if.h
        \
00810
        /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/reverse_copy.h
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00811   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/rotate_copy.h
        \
00812   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/shift_left.h
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00813   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__algorithm/shift_right.h
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00814   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/bit \
00815   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/bit_ceil.h \
00816   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit/bit_floor.h \
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00844   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/tag_types.h \
00845   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__mutex/lock_guard.h \
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00851   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__bit_reference \
00852   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/format \
00853   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/buffer.h \
00854   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__format/concepts.h \
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00907   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/deque \
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00963
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00978   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__filesystem/u8path.h \
00979   /Users/diogokeeper12/Documents/GitHub/CG-Project/Phase\ 1/generator/generatorAux.h
```

## 8.13 build/CMakeFiles/tinyxml2.dir/external/tinyxml2/tinyxml2.cpp.o.d File Reference

## 8.14 tinyxml2.cpp.o.d

Go to the documentation of this file.

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00001 CMakeFiles/tinyxml2.dir/external/tinyxml2/tinyxml2.cpp.o: \
00002   /Users/diogokeeper12/Documents/GitHub/CG-Project/Phase\ 1/external/tinyxml2/tinyxml2.cpp \
00003   /Users/diogokeeper12/Documents/GitHub/CG-Project/Phase\ 1/external/tinyxml2/tinyxml2.h \
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00023   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_size_t.h \
00024   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ct_rune_t.h \
00025   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_rune_t.h \
00026   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_wchar_t.h \
00027   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_wint_t.h \
00028   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/climits \
00029   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/limits.h \
00030   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/limits.h \
00031   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/limits.h \
00032   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/limits.h \
00033   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_limits.h \
00034   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/syslimits.h \
00035   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdio \
00036   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdio.h \
00037   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdio.h \
00038   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_stdio.h \
00039   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/Availability.h \
```

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00040   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityVersions.h \
00041   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityInternal.h \
00042   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/AvailabilityInternalLegacy.h \
00043   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_va_list.h \
00044   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/types.h \
00045   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/types.h \
00046   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int8_t.h \
00047   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int16_t.h \
00048   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int32_t.h \
00049   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_int64_t.h \
00050   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int8_t.h \
00051   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int16_t.h \
00052   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int32_t.h \
00053   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_u_int64_t.h \
00054   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_intptr_t.h \
00055   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_uintptr_t.h \
00056   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_null.h \
00057   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/stdio.h \
00058   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_printf.h \
00059   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_seek_set.h \
00060   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_ctermid.h \
00061   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_off_t.h \
00062   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ssize_t.h \
00063   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdlib \
00064   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdlib.h \
00065   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdlib.h \
00066   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_stdlib.h \
00067   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/wait.h \
00068   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_pid_t.h \
00069   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_id_t.h \
00070   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/signal.h \
00071   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/appleapiopts.h \
00072   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/signal.h \
00073   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/signal.h \
00074   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_mcontext.h \
00075   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_mcontext.h \
00076   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/mach/machine/_structs.h \
00077   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/mach/arm/_structs.h \
00078   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_pthread/_pthread_attr_t.h \
00079   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_sigaltstack.h \
00080   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_ucontext.h \
00081   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_sigset_t.h \
00082   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_uid_t.h \
00083   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/resource.h \
00084   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stdint.h \
00085   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stdint.h \
00086   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/stdint.h \
00087   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint8_t.h \
00088   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint16_t.h \
00089   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint32_t.h \
00090   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uint64_t.h \
00091   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_intmax_t.h \
00092   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_types/_uintmax_t.h \
00093   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_timeval.h \
00094   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/endian.h \
00095   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/endian.h \
00096   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_endian.h \
00097   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/machine/_endian.h \
00098   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/arm/_endian.h \
00099   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/__endian.h \
00100   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/libkern/_OSByteOrder.h \
00101   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/libkern/arm/_OSByteOrder.h \
00102   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/alloca.h \
00103   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/malloc/_malloc.h \
00104   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/malloc/_malloc_type.h \
00105   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/malloc/_ptrcheck.h \
00106   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_abort.h \
00107   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_dev_t.h \
00108   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_mode_t.h \
00109   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstring \
00110
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_constant_evaluated.h
      \
00111   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/string.h \
00112   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/string.h \
00113   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_string.h \
00114   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_rsize_t.h \
00115   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/sys/_types/_errno_t.h \
00116   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/_strings.h \
00117   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/new \
00118   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__exception/exception.h \
00119
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_function.h
      \
00120
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/integral_constant.h
      \
```

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00121   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_const.h
        \
00122
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_reference.h
        \
00123   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_same.h \
00124   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_cv.h
        \
00125
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_const.h
        \
00126
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_volatile.h
        \
00127   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstddef \
00128   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/enable_if.h
        \
00129
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_integral.h
        \
00130   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/version \
00131   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/stddef.h \
00132   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stddef.h \
00133   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_header_macro.h \
00134   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_ptrdiff_t.h \
00135   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_size_t.h \
00136   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_rsize_t.h \
00137   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_wchar_t.h \
00138   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_null.h \
00139   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_nullptr_t.h \
00140   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_max_align_t.h \
00141   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stddef_offsetof.h \
00142   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/type_traits \
00143   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/hash.h \
00144   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_const.h
        \
00145   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_cv.h \
00146
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_lvalue_reference.h
        \
00147
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_referenceable.h
        \
00148
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_pointer.h
        \
00149   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_void.h \
00150
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_reference.h
        \
00151
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_rvalue_reference.h
        \
00152
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/add_volatile.h
        \
00153
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/aligned_storage.h
        \
00154
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/conditional.h
        \
00155   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/nat.h \
00156   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/type_list.h
        \
00157
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/aligned_union.h
        \
00158
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/alignment_of.h
        \
00159   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/apply_cv.h
        \
00160
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_volatile.h
        \
00161
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/can_extract_key.h
        \
00162   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__fwd/pair.h \
00163
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_const_ref.h
        \
00164
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/common_reference.h
        \
00165
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      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/common_type.h
  \
00166   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/decay.h \
00167   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_array.h
  \
00168
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_extent.h
  \
00169
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_cvref.h
  \
00170   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/void_t.h \
00171   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/declval.h \
00172   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/copy_cv.h \
00173
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/copy_cvref.h
  \
00174
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_convertible.h
  \
00175
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/conjunction.h
  \
00176
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/dependent_type.h
  \
00177
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/disjunction.h
  \
00178   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/extent.h \
00179
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/has_unique_object_representatio
  \
00180
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_all_extents.h
  \
00181
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/has_virtual_destructor.h
  \
00182   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/invoke.h \
00183
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_base_of.h
  \
00184
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_core_convertible.h
  \
00185
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_member_function_pointer.h
  \
00186
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_member_object_pointer.h
  \
00187
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_reference_wrapper.h
  \
00188   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__utility/forward.h \
00189
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_abstract.h
  \
00190
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_aggregate.h
  \
00191
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_arithmetic.h
  \
00192
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_floating_point.h
  \
00193
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_assignable.h
  \
00194
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_bounded_array.h
  \
00195
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_callable.h
  \
00196
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_char_like_type.h
  \
00197
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_standard_layout.h
  \
00198
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivial.h
  \
00199   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_class.h
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00200
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_compound.h
      \
00201
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_fundamental.h
      \
00202
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_null_pointer.h
      \
00203
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_constructible.h
      \
00204
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_copy_assignable.h
      \
00205
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_copy_constructible.h
      \
00206
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_default_constructible.h
      \
00207
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_destructible.h
      \
00208   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_empty.h
      \
00209   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_enum.h \
00210   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_final.h
      \
00211
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_implicitly_default_construct
      \
00212
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_literal_type.h
      \
00213
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_member_pointer.h
      \
00214
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_move_assignable.h
      \
00215
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_move_constructible.h
      \
00216
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_assignable.h
      \
00217
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_constructible.h
      \
00218
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_convertible.h
      \
00219   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/lazy.h \
00220
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_copy_assignable.h
      \
00221
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_copy_constructible.h
      \
00222
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_default_constructibl
      \
00223
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_destructible.h
      \
00224   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_scalar.h
      \
00225
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_pointer.h
      \
00226
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_move_assignable.h
      \
00227
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_nothrow_move_constructible.h
      \
00228   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_object.h
      \
00229   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_union.h
      \
00230   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_pod.h \
00231
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_polymorphic.h
      \
00232
```

```
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_scoped_enum.h
      \
00233
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/underlying_type.h
      \
00234   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_signed.h
      \
00235
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_specialization.h
      \
00236
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_swappable.h
      \
00237
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_assignable.h
      \
00238
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_constructible.h
      \
00239
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_copy_assignable.h
      \
00240
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_copy_constructible
      \
00241
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_copyable.h
      \
00242   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdint \
00243
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_default_construct
      \
00244
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_destructible.h
      \
00245
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_move_assignable.h
      \
00246
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_trivially_move_constructible
      \
00247
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_unbounded_array.h
      \
00248
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/is_unsigned.h
      \
00249
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_const_lvalue_ref.h
      \
00250
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_signed.h
      \
00251
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/make_unsigned.h
      \
00252
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/maybe_const.h
      \
00253   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/negation.h
      \
00254   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/rank.h \
00255
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/remove_pointer.h
      \
00256   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/result_of.h
      \
00257   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__functional/invoke.h \
00258
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/type_identity.h
      \
00259
      /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/__type_traits/unwrap_ref.h
      \
00260   /Library/Developer/CommandLineTools/SDKs/MacOSX15.1.sdk/usr/include/c++/v1/cstdarg \
00261   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/stdarg.h \
00262   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_header_macro.h \
00263   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg___gnuc_va_list.h \
00264   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_list.h \
00265   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_arg.h \
00266   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg___va_copy.h \
00267   /Library/Developer/CommandLineTools/usr/lib/clang/16/include/__stdarg_va_copy.h
```

## 8.15 engine/engine.cpp File Reference

Main rendering engine for 3D graphics application.
```
#include <GL/glut.h>
#include "engine.h"
#include "xmlParser.h"
#include <fstream>
#include <iostream>
#include <cmath>
```

**Macros**

- #define GL_SILENCE_DEPRECATION

**Functions**

- void loadModel (Model &model)

    *Loads a 3D model from a file into memory.*
- void renderScene ()

    *Main rendering function called by GLUT for each frame.*
- void changeSize (int w, int h)

    *Window resize callback function.*
- int main (int argc, char **argv)

    *Main function - program entry point.*

**Variables**

- World world

    *Global world state containing all scene information.*

### 8.15.1 Detailed Description

Main rendering engine for 3D graphics application.
This file implements the core rendering engine that processes 3D models defined in XML configuration files, and renders them using OpenGL.
Definition in file engine.cpp.

### 8.15.2 Macro Definition Documentation

#### 8.15.2.1 GL_SILENCE_DEPRECATION

```
#define GL_SILENCE_DEPRECATION
```
Definition at line 10 of file engine.cpp.

### 8.15.3 Function Documentation

#### 8.15.3.1 changeSize()

```
void changeSize (
            int w,
            int h)
```
Window resize callback function.

Handles viewport and projection matrix updates when the window is resized. Maintains the correct aspect ratio for the perspective projection.

**Parameters**

| | |
|---|---|
| *w* | New window width in pixels |

**Parameters**

| | |
|---|---|
| *h* | New window height in pixels |

Definition at line 106 of file engine.cpp.

#### 8.15.3.2 loadModel()

```
void loadModel (
            Model & model)
```
Loads a 3D model from a file into memory.
Reads vertex data from the specified file and stores it in the model's vertices vector. Each vertex consists of x, y, z coordinates.

**Parameters**

| | |
|---|---|
| *model* | Reference to the Model object to populate with vertex data |

Definition at line 45 of file engine.cpp.

#### 8.15.3.3 main()

```
int main (
            int argc,
            char ** argv)
```
Main function - program entry point.
Initializes GLUT, loads XML configuration and model data, sets up rendering parameters, and starts the main rendering loop.

**Parameters**

| | |
|---|---|
| *argc* | Command line argument count |
| *argv* | Command line argument values |

**Returns**

> 0 on successful execution, 1 on error

Definition at line 135 of file engine.cpp.

#### 8.15.3.4 renderScene()

```
void renderScene ()
```
Main rendering function called by GLUT for each frame.
Clears the screen, sets up the camera view based on world configuration, and renders all models in wireframe mode using GL_TRIANGLES.
Definition at line 64 of file engine.cpp.

### 8.15.4 Variable Documentation

#### 8.15.4.1 world

```
World world
```
Global world state containing all scene information.
This includes models, camera configuration, and window settings loaded from the XML configuration file.
Definition at line 35 of file engine.cpp.

## 8.16 engine.cpp

```cpp
00001
00008
00009 // Suppress deprecation warnings on macOS
00010 #define GL_SILENCE_DEPRECATION
00011
00012 // Platform-specific OpenGL includes
00013 #ifdef __APPLE__
00014 #include <GLUT/glut.h>
00015 #elif __linux__
00016 #include <GL/glut.h>
00017 #include <GL/gl.h>
00018 #include <GL/glu.h>
00019 #else
00020 #include <GL/glut.h>
00021 #endif
00022
00023 #include "engine.h"
00024 #include "xmlParser.h"
00025 #include <fstream>
00026 #include <iostream>
00027 #include <cmath>
00028
00035 World world;
00036
00045 void loadModel(Model& model) {
00046     std::ifstream file(model.filename);
00047     if (!file.is_open()) {
00048         std::cerr « "Error opening file: " « model.filename « std::endl;
00049         return;
00050     }
00051
00052     Point vertex;
00053     while (file » vertex.x » vertex.y » vertex.z) {
00054         model.vertices.push_back(vertex);
00055     }
00056 }
00057
00064 void renderScene() {
00065     // Clear the color and depth buffers
00066     glClear(GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);
00067
00068     // Reset the modelview matrix
00069     glLoadIdentity();
00070
00071     // Set up camera position, look-at point, and up vector
00072     gluLookAt(world.camera.position.x, world.camera.position.y, world.camera.position.z,
00073             world.camera.lookAt.x, world.camera.lookAt.y, world.camera.lookAt.z,
00074             world.camera.up.x, world.camera.up.y, world.camera.up.z);
00075
00076     // Draw each model listed in the XML
00077     for (const Model& model : world.models) {
00078         glBegin(GL_TRIANGLES);  // Drawing triangles for 3D models
00079         const std::vector<Point>& vertices = model.vertices;
00080
00081         // Calculate slices from vertex count (for debugging purposes)
00082         int slices = sqrt(vertices.size()) - 1;
00083
00084         // Process vertices in groups of 3 to form triangles
00085         for (size_t i = 0; i < vertices.size(); i += 3) {
00086             glVertex3f(vertices[i].x, vertices[i].y, vertices[i].z);
00087             glVertex3f(vertices[i + 1].x, vertices[i + 1].y, vertices[i + 1].z);
00088             glVertex3f(vertices[i + 2].x, vertices[i + 2].y, vertices[i + 2].z);
00089         }
00090         glEnd();
00091     }
00092
00093     // Swap front and back buffers (double buffering)
00094     glutSwapBuffers();
00095 }
00096
00106 void changeSize(int w, int h) {
00107     // Prevent division by zero
00108     if (h == 0) h = 1;
00109
00110     // Calculate the new aspect ratio
00111     float ratio = w * 1.0f / h;
00112
00113     // Set up the projection matrix
00114     glMatrixMode(GL_PROJECTION);
00115     glLoadIdentity();
00116     glViewport(0, 0, w, h);
00117
00118     // Set up perspective projection using parameters from XML
```

```
00119     gluPerspective(world.camera.fov, ratio, world.camera.near, world.camera.far);
00120
00121     // Return to modelview matrix for rendering
00122     glMatrixMode(GL_MODELVIEW);
00123 }
00124
00135 int main(int argc, char** argv) {
00136     // Check command line arguments
00137     if (argc != 2) {
00138         std::cout « "Usage: " « argv[0] « " <configs/config.xml>" « std::endl;
00139         return 1;
00140     }
00141
00142     // Parse XML and load world configuration
00143     world = parseXMLFile(argv[1]);
00144
00145     // Load all model files referenced in the XML
00146     for (Model& model : world.models) {
00147         loadModel(model);
00148     }
00149
00150     // Initialize GLUT
00151     glutInit(&argc, argv);
00152
00153     // Set display mode (depth testing, double buffering, RGB color)
00154     glutInitDisplayMode(GLUT_DEPTH | GLUT_DOUBLE | GLUT_RGBA);
00155
00156     // Set initial window position and size from XML configuration
00157     glutInitWindowPosition(100, 100);
00158     glutInitWindowSize(world.window.width, world.window.height);
00159
00160     // Create the rendering window
00161     glutCreateWindow("CG@DI-UM");
00162
00163     // Register callback functions
00164     glutDisplayFunc(renderScene);  // For rendering frames
00165     glutReshapeFunc(changeSize);   // For window resizing
00166
00167     // Enable depth testing to properly handle occlusion
00168     glEnable(GL_DEPTH_TEST);
00169
00170     // Enable back-face culling for improved performance
00171     glEnable(GL_CULL_FACE);
00172     glDepthFunc(GL_LESS);         // Depth comparison function
00173     glCullFace(GL_BACK);          // Cull back faces
00174     glFrontFace(GL_CCW);          // Define front faces as counter-clockwise
00175
00176     // Use wireframe rendering mode
00177     glPolygonMode(GL_FRONT_AND_BACK, GL_LINE);
00178
00179     // Enter GLUT's main event processing loop
00180     // (This will handle rendering and user input until program exit)
00181     glutMainLoop();
00182
00183     return 0;
00184 }
```

## 8.17   engine/engine.h File Reference

```
#include <vector>
#include <string>
```

**Classes**

- struct Point
- struct Camera
- struct Window
- struct Model
- struct World

## 8.18   engine.h

Go to the documentation of this file.

```
00001 #ifndef ENGINE_STRUCTS_H
```

```
00002 #define ENGINE_STRUCTS_H
00003
00004 #include <vector>
00005 #include <string>
00006
00007 struct Point {
00008     float x, y, z;
00009 };
00010
00011 struct Camera {
00012     Point position;
00013     Point lookAt;
00014     Point up;
00015     float fov;
00016     float near;
00017     float far;
00018 };
00019
00020 struct Window {
00021     int width;
00022     int height;
00023 };
00024
00025 struct Model {
00026     std::string filename;
00027     std::vector<Point> vertices;
00028 };
00029
00030 struct World {
00031     Window window;
00032     Camera camera;
00033     std::vector<Model> models;
00034 };
00035
00036 #endif
```

## 8.19 engine/xmlParser.cpp File Reference

XML configuration parser for 3D graphics engine.

```
#include "tinyxml2.h"
#include "engine.h"
#include <iostream>
```

**Functions**

- World parseXMLFile (const char ∗filename)

    *Parses an XML configuration file and constructs a World object.*

### 8.19.1 Detailed Description

XML configuration parser for 3D graphics engine.

This file implements functionality to parse XML configuration files that define camera settings, window dimensions, and 3D model references for the rendering engine.

Definition in file xmlParser.cpp.

### 8.19.2 Function Documentation

#### 8.19.2.1 parseXMLFile()

```
World parseXMLFile (
            const char * filename)
```

Parses an XML configuration file and constructs a World object.

This function reads an XML file that defines:

- Window dimensions (width and height)

- Camera parameters (position, lookAt point, up vector, projection settings)

- 3D models to be rendered

XML structure expected: <world> <window width="X" height="Y" > <camera> <position x="X" y="Y" z="Z" > <lookAt x="X" y="Y" z="Z" > <up x="X" y="Y" z="Z" > <projection fov="F" near="N" far="F" > </camera> <group> <models> <model file="filename.3d" > ... </models> </group> </world>

**Parameters**

| *filename* | Path to the XML configuration file |
|---|---|

**Returns**

> World object containing parsed configuration data

Parse window settings
Example: <window width="512" height="512" >
Extracts width and height attributes to define the window dimensions.
Parse camera settings
Example: <camera> <position x="5" y="-2" z="3" > <lookAt x="0" y="0" z="0" > <up x="0" y="1" z="0" > <projection fov="60" near="1" far="1000" > </camera>
Extracts camera position, lookAt point, up vector, and projection parameters.
Parse 3D model references
Example: <group> <models> <model file="cone_1_2_4_3.3d" > </models> </group>
Extracts model filenames and constructs paths to the 3D model files.
Definition at line 43 of file xmlParser.cpp.

## 8.20  xmlParser.cpp

Go to the documentation of this file.

```
00001
00008
00009 #include "tinyxml2.h"
00010 #include "engine.h"
00011 #include <iostream>
00012
00013 using namespace tinyxml2;
00014
00043 World parseXMLFile(const char* filename) {
00044     World world;
00045     XMLDocument doc;
00046
00047     // Get the directory of the XML file
00048     std::string xmlPath = filename;
00049     size_t lastSlash = xmlPath.find_last_of("/\\");
00050     std::string xmlDir = (lastSlash != std::string::npos) ?
00051                     xmlPath.substr(0, lastSlash + 1) : "";
00052
00053     // Load XML file
00054     if (doc.LoadFile(filename) != XML_SUCCESS) {
00055         std::cerr << "Error loading XML file: " << filename << std::endl;
00056         return world;
00057     }
00058
00059     XMLElement* rootElement = doc.RootElement();
00060
00068     XMLElement* windowElement = rootElement->FirstChildElement("window");
00069     if (windowElement) {
00070         world.window.width = windowElement->IntAttribute("width");
00071         world.window.height = windowElement->IntAttribute("height");
00072     }
00073
00087     XMLElement* cameraElement = rootElement->FirstChildElement("camera");
00088     if (cameraElement) {
00089         // Parse camera position (x,y,z coordinates)
00090         XMLElement* posElement = cameraElement->FirstChildElement("position");
00091         Point position = {
00092             posElement->FloatAttribute("x"),
00093             posElement->FloatAttribute("y"),
00094             posElement->FloatAttribute("z")
00095         };
00096         world.camera.position = position;
00097
00098         // Parse lookAt point (x,y,z coordinates)
00099         XMLElement* lookAtElement = cameraElement->FirstChildElement("lookAt");
00100         Point lookAt = {
```

```
00101              lookAtElement->FloatAttribute("x"),
00102              lookAtElement->FloatAttribute("y"),
00103              lookAtElement->FloatAttribute("z")
00104          };
00105          world.camera.lookAt = lookAt;
00106
00107          // Parse up vector (x,y,z coordinates)
00108          XMLElement* upElement = cameraElement->FirstChildElement("up");
00109          Point up = {
00110              upElement->FloatAttribute("x"),
00111              upElement->FloatAttribute("y"),
00112              upElement->FloatAttribute("z")
00113          };
00114          world.camera.up = up;
00115
00116          // Parse projection parameters (field of view, near and far planes)
00117          XMLElement* projElement = cameraElement->FirstChildElement("projection");
00118          world.camera.fov = projElement->FloatAttribute("fov");
00119          world.camera.near = projElement->FloatAttribute("near");
00120          world.camera.far = projElement->FloatAttribute("far");
00121      }
00122
00135      XMLElement* groupElement = rootElement->FirstChildElement("group");
00136      if (groupElement) {
00137          XMLElement* modelsElement = groupElement->FirstChildElement("models");
00138          if (modelsElement) {
00139              // Iterate through all model elements
00140              for (XMLElement* modelElement = modelsElement->FirstChildElement("model");
00141                   modelElement;
00142                   modelElement = modelElement->NextSiblingElement("model")) {
00143
00144                  Model model;
00145                  std::string modelFile = modelElement->Attribute("file");
00146
00147                  // Set path to the model file in the tests directory
00148                  model.filename = "../tests/" + modelFile;
00149
00150                  // Debug output to verify model loading
00151                  std::cout « "Loading model from: " « model.filename « std::endl;
00152
00153                  // Add the model to the world's model collection
00154                  world.models.push_back(model);
00155              }
00156          }
00157      }
00158
00159      return world;
00160 }
00161
```

## 8.21 engine/xmlParser.h File Reference

```
#include "engine.h"
```

### Functions

- World parseXMLFile (const char ∗filename)

  *Parses an XML configuration file and constructs a* World *object.*

### 8.21.1 Function Documentation

#### 8.21.1.1 parseXMLFile()

```
World parseXMLFile (
             const char * filename)
```
Parses an XML configuration file and constructs a World object.
This function reads an XML file that defines:

- Window dimensions (width and height)

- Camera parameters (position, lookAt point, up vector, projection settings)

- 3D models to be rendered

XML structure expected: <world> <window width="X" height="Y" > <camera> <position x="X" y="Y" z="Z" > <lookAt x="X" y="Y" z="Z" > <up x="X" y="Y" z="Z" > <projection fov="F" near="N" far="F" > </camera> <group> <models> <model file="filename.3d" > ... </models> </group> </world>

**Parameters**

| *filename* | Path to the XML configuration file |
| --- | --- |

**Returns**

      World object containing parsed configuration data

Parse window settings
Example: <window width="512" height="512" >
Extracts width and height attributes to define the window dimensions.
Parse camera settings
Example: <camera> <position x="5" y="-2" z="3" > <lookAt x="0" y="0" z="0" > <up x="0" y="1" z="0" > <projection fov="60" near="1" far="1000" > </camera>
Extracts camera position, lookAt point, up vector, and projection parameters.
Parse 3D model references
Example: <group> <models> <model file="cone_1_2_4_3.3d" > </models> </group>
Extracts model filenames and constructs paths to the 3D model files.
Definition at line 43 of file xmlParser.cpp.

## 8.22 xmlParser.h

Go to the documentation of this file.
```
00001 #ifndef XML_PARSER_H
00002 #define XML_PARSER_H
00003
00004 #include "engine.h"
00005
00006 World parseXMLFile(const char* filename);
00007
00008 #endif
```

## 8.23 external/tinyxml2/tinyxml2.cpp File Reference

```
#include "tinyxml2.h"
#include <new>
#include <cstddef>
#include <cstdarg>
```

**Classes**

- struct tinyxml2::Entity

**Namespaces**

- namespace tinyxml2

**Macros**

- #define TIXML_SNPRINTF snprintf
- #define TIXML_VSNPRINTF vsnprintf
- #define TIXML_SSCANF sscanf
- #define TIXML_FSEEK fseek
- #define TIXML_FTELL ftell

### 8.23.1 Macro Definition Documentation

#### 8.23.1.1 TIXML_FSEEK

```
#define TIXML_FSEEK fseek
```
Definition at line 113 of file tinyxml2.cpp.

#### 8.23.1.2 TIXML_FTELL

```
#define TIXML_FTELL ftell
```
Definition at line 114 of file tinyxml2.cpp.

#### 8.23.1.3 TIXML_SNPRINTF

```
#define TIXML_SNPRINTF snprintf
```
Definition at line 92 of file tinyxml2.cpp.

#### 8.23.1.4 TIXML_SSCANF

```
#define TIXML_SSCANF sscanf
```
Definition at line 100 of file tinyxml2.cpp.

#### 8.23.1.5 TIXML_VSNPRINTF

```
#define TIXML_VSNPRINTF vsnprintf
```
Definition at line 93 of file tinyxml2.cpp.

## 8.24 tinyxml2.cpp

Go to the documentation of this file.
```
00001 /*
00002 Original code by Lee Thomason (www.grinninglizard.com)
00003
00004 This software is provided 'as-is', without any express or implied
00005 warranty. In no event will the authors be held liable for any
00006 damages arising from the use of this software.
00007
00008 Permission is granted to anyone to use this software for any
00009 purpose, including commercial applications, and to alter it and
00010 redistribute it freely, subject to the following restrictions:
00011
00012 1. The origin of this software must not be misrepresented; you must
00013 not claim that you wrote the original software. If you use this
00014 software in a product, an acknowledgment in the product documentation
00015 would be appreciated but is not required.
00016
00017 2. Altered source versions must be plainly marked as such, and
00018 must not be misrepresented as being the original software.
00019
00020 3. This notice may not be removed or altered from any source
00021 distribution.
00022 */
00023
00024 #include "tinyxml2.h"
00025
00026 #include <new>       // yes, this one new style header, is in the Android SDK.
00027 #if defined(ANDROID_NDK) || defined(__BORLANDC__) || defined(__QNXNTO__)
00028 #   include <stddef.h>
00029 #   include <stdarg.h>
00030 #else
00031 #   include <cstddef>
00032 #   include <cstdarg>
00033 #endif
00034
00035 #if defined(_MSC_VER) && (_MSC_VER >= 1400 ) && (!defined WINCE)
00036     // Microsoft Visual Studio, version 2005 and higher. Not WinCE.
00037     /*int _snprintf_s(
00038        char *buffer,
00039        size_t sizeOfBuffer,
00040        size_t count,
00041        const char *format [,
00042           argument] ...
00043     );*/
```

```
00044     static inline int TIXML_SNPRINTF( char* buffer, size_t size, const char* format, ... )
00045     {
00046         va_list va;
00047         va_start( va, format );
00048         const int result = vsnprintf_s( buffer, size, _TRUNCATE, format, va );
00049         va_end( va );
00050         return result;
00051     }
00052
00053     static inline int TIXML_VSNPRINTF( char* buffer, size_t size, const char* format, va_list va )
00054     {
00055         const int result = vsnprintf_s( buffer, size, _TRUNCATE, format, va );
00056         return result;
00057     }
00058
00059     #define TIXML_VSCPRINTF _vscprintf
00060     #define TIXML_SSCANF    sscanf_s
00061 #elif defined _MSC_VER
00062     // Microsoft Visual Studio 2003 and earlier or WinCE
00063     #define TIXML_SNPRINTF  _snprintf
00064     #define TIXML_VSNPRINTF _vsnprintf
00065     #define TIXML_SSCANF    sscanf
00066     #if (_MSC_VER < 1400 ) && (!defined WINCE)
00067         // Microsoft Visual Studio 2003 and not WinCE.
00068         #define TIXML_VSCPRINTF   _vscprintf // VS2003's C runtime has this, but VC6 C runtime or
    WinCE SDK doesn't have.
00069     #else
00070         // Microsoft Visual Studio 2003 and earlier or WinCE.
00071         static inline int TIXML_VSCPRINTF( const char* format, va_list va )
00072         {
00073             int len = 512;
00074             for (;;) {
00075                 len = len*2;
00076                 char* str = new char[len]();
00077                 const int required = _vsnprintf(str, len, format, va);
00078                 delete[] str;
00079                 if ( required != -1 ) {
00080                     TIXMLASSERT( required >= 0 );
00081                     len = required;
00082                     break;
00083                 }
00084             }
00085             TIXMLASSERT( len >= 0 );
00086             return len;
00087         }
00088     #endif
00089 #else
00090     // GCC version 3 and higher
00091     //#warning( "Using sn* functions." )
00092     #define TIXML_SNPRINTF  snprintf
00093     #define TIXML_VSNPRINTF vsnprintf
00094     static inline int TIXML_VSCPRINTF( const char* format, va_list va )
00095     {
00096         int len = vsnprintf( 0, 0, format, va );
00097         TIXMLASSERT( len >= 0 );
00098         return len;
00099     }
00100     #define TIXML_SSCANF    sscanf
00101 #endif
00102
00103 #if defined(_WIN64)
00104     #define TIXML_FSEEK _fseeki64
00105     #define TIXML_FTELL _ftelli64
00106 #elif defined(__APPLE__) || defined(__FreeBSD__) || defined(__OpenBSD__) || defined(__NetBSD__) ||
    defined(__DragonFly__) || defined(__CYGWIN__)
00107     #define TIXML_FSEEK fseeko
00108     #define TIXML_FTELL ftello
00109 #elif defined(__ANDROID__) && __ANDROID_API__ > 24
00110     #define TIXML_FSEEK fseeko64
00111     #define TIXML_FTELL ftello64
00112 #else
00113     #define TIXML_FSEEK fseek
00114     #define TIXML_FTELL ftell
00115 #endif
00116
00117
00118 static const char LINE_FEED            = static_cast<char>(0x0a);        // all line endings are
    normalized to LF
00119 static const char LF = LINE_FEED;
00120 static const char CARRIAGE_RETURN      = static_cast<char>(0x0d);        // CR gets filtered out
00121 static const char CR = CARRIAGE_RETURN;
00122 static const char SINGLE_QUOTE         = '\'';
00123 static const char DOUBLE_QUOTE         = '\"';
00124
00125 // Bunch of unicode info at:
00126 //        http://www.unicode.org/faq/utf_bom.html
00127 //   ef bb bf (Microsoft "lead bytes") - designates UTF-8
```

```
00128
00129 static const unsigned char TIXML_UTF_LEAD_0 = 0xefU;
00130 static const unsigned char TIXML_UTF_LEAD_1 = 0xbbU;
00131 static const unsigned char TIXML_UTF_LEAD_2 = 0xbfU;
00132
00133 namespace tinyxml2
00134 {
00135
00136 struct Entity {
00137     const char* pattern;
00138     int length;
00139     char value;
00140 };
00141
00142 static const int NUM_ENTITIES = 5;
00143 static const Entity entities[NUM_ENTITIES] = {
00144     { "quot", 4,    DOUBLE_QUOTE },
00145     { "amp", 3,     '&'  },
00146     { "apos", 4,    SINGLE_QUOTE },
00147     { "lt", 2,      '<'  },
00148     { "gt", 2,      '>'  }
00149 };
00150
00151
00152 StrPair::~StrPair()
00153 {
00154     Reset();
00155 }
00156
00157
00158 void StrPair::TransferTo( StrPair* other )
00159 {
00160     if ( this == other ) {
00161         return;
00162     }
00163     // This in effect implements the assignment operator by "moving"
00164     // ownership (as in auto_ptr).
00165
00166     TIXMLASSERT( other != 0 );
00167     TIXMLASSERT( other->_flags == 0 );
00168     TIXMLASSERT( other->_start == 0 );
00169     TIXMLASSERT( other->_end == 0 );
00170
00171     other->Reset();
00172
00173     other->_flags = _flags;
00174     other->_start = _start;
00175     other->_end = _end;
00176
00177     _flags = 0;
00178     _start = 0;
00179     _end = 0;
00180 }
00181
00182
00183 void StrPair::Reset()
00184 {
00185     if ( _flags & NEEDS_DELETE ) {
00186         delete [] _start;
00187     }
00188     _flags = 0;
00189     _start = 0;
00190     _end = 0;
00191 }
00192
00193
00194 void StrPair::SetStr( const char* str, int flags )
00195 {
00196     TIXMLASSERT( str );
00197     Reset();
00198     size_t len = strlen( str );
00199     TIXMLASSERT( _start == 0 );
00200     _start = new char[ len+1 ];
00201     memcpy( _start, str, len+1 );
00202     _end = _start + len;
00203     _flags = flags | NEEDS_DELETE;
00204 }
00205
00206
00207 char* StrPair::ParseText( char* p, const char* endTag, int strFlags, int* curLineNumPtr )
00208 {
00209     TIXMLASSERT( p );
00210     TIXMLASSERT( endTag && *endTag );
00211     TIXMLASSERT(curLineNumPtr);
00212
00213     char* start = p;
00214     const char  endChar = *endTag;
```

```
00215      size_t length = strlen( endTag );
00216
00217      // Inner loop of text parsing.
00218      while ( *p ) {
00219          if ( *p == endChar && strncmp( p, endTag, length ) == 0 ) {
00220              Set( start, p, strFlags );
00221              return p + length;
00222          } else if (*p == '\n') {
00223              ++(*curLineNumPtr);
00224          }
00225          ++p;
00226          TIXMLASSERT( p );
00227      }
00228      return 0;
00229 }
00230
00231
00232 char* StrPair::ParseName( char* p )
00233 {
00234      if ( !p || !(*p) ) {
00235          return 0;
00236      }
00237      if ( !XMLUtil::IsNameStartChar( static_cast<unsigned char>(*p) ) ) {
00238          return 0;
00239      }
00240
00241      char* const start = p;
00242      ++p;
00243      while ( *p && XMLUtil::IsNameChar( static_cast<unsigned char>(*p) ) ) {
00244          ++p;
00245      }
00246
00247      Set( start, p, 0 );
00248      return p;
00249 }
00250
00251
00252 void StrPair::CollapseWhitespace()
00253 {
00254      // Adjusting _start would cause undefined behavior on delete[]
00255      TIXMLASSERT( ( _flags & NEEDS_DELETE ) == 0 );
00256      // Trim leading space.
00257      _start = XMLUtil::SkipWhiteSpace( _start, 0 );
00258
00259      if ( *_start ) {
00260          const char* p = _start; // the read pointer
00261          char* q = _start;   // the write pointer
00262
00263          while( *p ) {
00264              if ( XMLUtil::IsWhiteSpace( *p )) {
00265                  p = XMLUtil::SkipWhiteSpace( p, 0 );
00266                  if ( *p == 0 ) {
00267                      break;    // don't write to q; this trims the trailing space.
00268                  }
00269                  *q = ' ';
00270                  ++q;
00271              }
00272              *q = *p;
00273              ++q;
00274              ++p;
00275          }
00276          *q = 0;
00277      }
00278 }
00279
00280
00281 const char* StrPair::GetStr()
00282 {
00283      TIXMLASSERT( _start );
00284      TIXMLASSERT( _end );
00285      if ( _flags & NEEDS_FLUSH ) {
00286          *_end = 0;
00287          _flags ^= NEEDS_FLUSH;
00288
00289          if ( _flags ) {
00290              const char* p = _start; // the read pointer
00291              char* q = _start;   // the write pointer
00292
00293              while( p < _end ) {
00294                  if ( (_flags & NEEDS_NEWLINE_NORMALIZATION) && *p == CR ) {
00295                      // CR-LF pair becomes LF
00296                      // CR alone becomes LF
00297                      // LF-CR becomes LF
00298                      if ( *(p+1) == LF ) {
00299                          p += 2;
00300                      }
00301                      else {
```

```
00302                              ++p;
00303                          }
00304                          *q = LF;
00305                          ++q;
00306                      }
00307                  else if ( (_flags & NEEDS_NEWLINE_NORMALIZATION) && *p == LF ) {
00308                      if ( *(p+1) == CR ) {
00309                          p += 2;
00310                      }
00311                      else {
00312                          ++p;
00313                      }
00314                      *q = LF;
00315                      ++q;
00316                  }
00317                  else if ( (_flags & NEEDS_ENTITY_PROCESSING) && *p == '&' ) {
00318                      // Entities handled by tinyXML2:
00319                      // - special entities in the entity table [in/out]
00320                      // - numeric character reference [in]
00321                      //   &#20013; or &#x4e2d;
00322
00323                      if ( *(p+1) == '#' ) {
00324                          const int buflen = 10;
00325                          char buf[buflen] = { 0 };
00326                          int len = 0;
00327                          const char* adjusted = const_cast<char*>( XMLUtil::GetCharacterRef( p, buf,
      &len ) );
00328                          if ( adjusted == 0 ) {
00329                              *q = *p;
00330                              ++p;
00331                              ++q;
00332                          }
00333                          else {
00334                              TIXMLASSERT( 0 <= len && len <= buflen );
00335                              TIXMLASSERT( q + len <= adjusted );
00336                              p = adjusted;
00337                              memcpy( q, buf, len );
00338                              q += len;
00339                          }
00340                      }
00341                      else {
00342                          bool entityFound = false;
00343                          for( int i = 0; i < NUM_ENTITIES; ++i ) {
00344                              const Entity& entity = entities[i];
00345                              if ( strncmp( p + 1, entity.pattern, entity.length ) == 0
00346                                      && *( p + entity.length + 1 ) == ';' ) {
00347                                  // Found an entity - convert.
00348                                  *q = entity.value;
00349                                  ++q;
00350                                  p += entity.length + 2;
00351                                  entityFound = true;
00352                                  break;
00353                              }
00354                          }
00355                          if ( !entityFound ) {
00356                              // fixme: treat as error?
00357                              ++p;
00358                              ++q;
00359                          }
00360                      }
00361                  }
00362                  else {
00363                      *q = *p;
00364                      ++p;
00365                      ++q;
00366                  }
00367              }
00368              *q = 0;
00369          }
00370          // The loop below has plenty going on, and this
00371          // is a less useful mode. Break it out.
00372          if ( _flags & NEEDS_WHITESPACE_COLLAPSING ) {
00373              CollapseWhitespace();
00374          }
00375          _flags = (_flags & NEEDS_DELETE);
00376      }
00377      TIXMLASSERT( _start );
00378      return _start;
00379 }
00380
00381
00382
00383
00384 // --------- XMLUtil ---------- //
00385
00386 const char* XMLUtil::writeBoolTrue  = "true";
00387 const char* XMLUtil::writeBoolFalse = "false";
```

```
00388
00389 void XMLUtil::SetBoolSerialization(const char* writeTrue, const char* writeFalse)
00390 {
00391     static const char* defTrue  = "true";
00392     static const char* defFalse = "false";
00393
00394     writeBoolTrue  = (writeTrue) ? writeTrue : defTrue;
00395     writeBoolFalse = (writeFalse) ? writeFalse : defFalse;
00396 }
00397
00398
00399 const char* XMLUtil::ReadBOM( const char* p, bool* bom )
00400 {
00401     TIXMLASSERT( p );
00402     TIXMLASSERT( bom );
00403     *bom = false;
00404     const unsigned char* pu = reinterpret_cast<const unsigned char*>(p);
00405     // Check for BOM:
00406     if (    *(pu+0) == TIXML_UTF_LEAD_0
00407             && *(pu+1) == TIXML_UTF_LEAD_1
00408             && *(pu+2) == TIXML_UTF_LEAD_2 ) {
00409         *bom = true;
00410         p += 3;
00411     }
00412     TIXMLASSERT( p );
00413     return p;
00414 }
00415
00416
00417 void XMLUtil::ConvertUTF32ToUTF8( unsigned long input, char* output, int* length )
00418 {
00419     const unsigned long BYTE_MASK = 0xBF;
00420     const unsigned long BYTE_MARK = 0x80;
00421     const unsigned long FIRST_BYTE_MARK[7] = { 0x00, 0x00, 0xC0, 0xE0, 0xF0, 0xF8, 0xFC };
00422
00423     if (input < 0x80) {
00424         *length = 1;
00425     }
00426     else if ( input < 0x800 ) {
00427         *length = 2;
00428     }
00429     else if ( input < 0x10000 ) {
00430         *length = 3;
00431     }
00432     else if ( input < 0x200000 ) {
00433         *length = 4;
00434     }
00435     else {
00436         *length = 0;    // This code won't convert this correctly anyway.
00437         return;
00438     }
00439
00440     output += *length;
00441
00442     // Scary scary fall throughs are annotated with carefully designed comments
00443     // to suppress compiler warnings such as -Wimplicit-fallthrough in gcc
00444     switch (*length) {
00445         case 4:
00446             --output;
00447             *output = static_cast<char>((input | BYTE_MARK) & BYTE_MASK);
00448             input >>= 6;
00449             //fall through
00450         case 3:
00451             --output;
00452             *output = static_cast<char>((input | BYTE_MARK) & BYTE_MASK);
00453             input >>= 6;
00454             //fall through
00455         case 2:
00456             --output;
00457             *output = static_cast<char>((input | BYTE_MARK) & BYTE_MASK);
00458             input >>= 6;
00459             //fall through
00460         case 1:
00461             --output;
00462             *output = static_cast<char>(input | FIRST_BYTE_MARK[*length]);
00463             break;
00464         default:
00465             TIXMLASSERT( false );
00466     }
00467 }
00468
00469
00470 const char* XMLUtil::GetCharacterRef(const char* p, char* value, int* length)
00471 {
00472     // Assume an entity, and pull it out.
00473     *length = 0;
00474
```

```
00475      static const uint32_t MAX_CODE_POINT = 0x10FFFF;
00476
00477      if (*(p + 1) == '#' && *(p + 2)) {
00478          uint32_t ucs = 0;
00479          ptrdiff_t delta = 0;
00480          uint32_t mult = 1;
00481          static const char SEMICOLON = ';';
00482
00483          bool hex = false;
00484          uint32_t radix = 10;
00485          const char* q = 0;
00486          char terminator = '#';
00487
00488          if (*(p + 2) == 'x') {
00489              // Hexadecimal.
00490              hex = true;
00491              radix = 16;
00492              terminator = 'x';
00493
00494              q = p + 3;
00495          }
00496          else {
00497              // Decimal.
00498              q = p + 2;
00499          }
00500          if (!(*q)) {
00501              return 0;
00502          }
00503
00504          q = strchr(q, SEMICOLON);
00505          if (!q) {
00506              return 0;
00507          }
00508          TIXMLASSERT(*q == SEMICOLON);
00509
00510          delta = q - p;
00511          --q;
00512
00513          while (*q != terminator) {
00514              uint32_t digit = 0;
00515
00516              if (*q >= '0' && *q <= '9') {
00517                  digit = *q - '0';
00518              }
00519              else if (hex && (*q >= 'a' && *q <= 'f')) {
00520                  digit = *q - 'a' + 10;
00521              }
00522              else if (hex && (*q >= 'A' && *q <= 'F')) {
00523                  digit = *q - 'A' + 10;
00524              }
00525              else {
00526                  return 0;
00527              }
00528              TIXMLASSERT(digit < radix);
00529
00530              const unsigned int digitScaled = mult * digit;
00531              ucs += digitScaled;
00532              mult *= radix;
00533
00534              // Security check: could a value exist that is out of range?
00535              // Easily; limit to the MAX_CODE_POINT, which also allows for a
00536              // bunch of leading zeroes.
00537              if (mult > MAX_CODE_POINT) {
00538                  mult = MAX_CODE_POINT;
00539              }
00540              --q;
00541          }
00542          // Out of range:
00543          if (ucs > MAX_CODE_POINT) {
00544              return 0;
00545          }
00546          // convert the UCS to UTF-8
00547          ConvertUTF32ToUTF8(ucs, value, length);
00548          if (length == 0) {
00549              // If length is 0, there was an error. (Security? Bad input?)
00550              // Fail safely.
00551              return 0;
00552          }
00553          return p + delta + 1;
00554      }
00555      return p + 1;
00556 }
00557
00558 void XMLUtil::ToStr( int v, char* buffer, int bufferSize )
00559 {
00560      TIXML_SNPRINTF( buffer, bufferSize, "%d", v );
00561 }
```

```
00562
00563
00564 void XMLUtil::ToStr( unsigned v, char* buffer, int bufferSize )
00565 {
00566     TIXML_SNPRINTF( buffer, bufferSize, "%u", v );
00567 }
00568
00569
00570 void XMLUtil::ToStr( bool v, char* buffer, int bufferSize )
00571 {
00572     TIXML_SNPRINTF( buffer, bufferSize, "%s", v ? writeBoolTrue : writeBoolFalse);
00573 }
00574
00575 /*
00576     ToStr() of a number is a very tricky topic.
00577     https://github.com/leethomason/tinyxml2/issues/106
00578 */
00579 void XMLUtil::ToStr( float v, char* buffer, int bufferSize )
00580 {
00581     TIXML_SNPRINTF( buffer, bufferSize, "%.8g", v );
00582 }
00583
00584
00585 void XMLUtil::ToStr( double v, char* buffer, int bufferSize )
00586 {
00587     TIXML_SNPRINTF( buffer, bufferSize, "%.17g", v );
00588 }
00589
00590
00591 void XMLUtil::ToStr( int64_t v, char* buffer, int bufferSize )
00592 {
00593     // horrible syntax trick to make the compiler happy about %lld
00594     TIXML_SNPRINTF(buffer, bufferSize, "%lld", static_cast<long long>(v));
00595 }
00596
00597 void XMLUtil::ToStr( uint64_t v, char* buffer, int bufferSize )
00598 {
00599     // horrible syntax trick to make the compiler happy about %llu
00600     TIXML_SNPRINTF(buffer, bufferSize, "%llu", static_cast<unsigned long long>(v));
00601 }
00602
00603 bool XMLUtil::ToInt(const char* str, int* value)
00604 {
00605     if (IsPrefixHex(str)) {
00606         unsigned v;
00607         if (TIXML_SSCANF(str, "%x", &v) == 1) {
00608             *value = static_cast<int>(v);
00609             return true;
00610         }
00611     }
00612     else {
00613         if (TIXML_SSCANF(str, "%d", value) == 1) {
00614             return true;
00615         }
00616     }
00617     return false;
00618 }
00619
00620 bool XMLUtil::ToUnsigned(const char* str, unsigned* value)
00621 {
00622     if (TIXML_SSCANF(str, IsPrefixHex(str) ? "%x" : "%u", value) == 1) {
00623         return true;
00624     }
00625     return false;
00626 }
00627
00628 bool XMLUtil::ToBool( const char* str, bool* value )
00629 {
00630     int ival = 0;
00631     if ( ToInt( str, &ival )) {
00632         *value = (ival==0) ? false : true;
00633         return true;
00634     }
00635     static const char* TRUE_VALS[] = { "true", "True", "TRUE", 0 };
00636     static const char* FALSE_VALS[] = { "false", "False", "FALSE", 0 };
00637
00638     for (int i = 0; TRUE_VALS[i]; ++i) {
00639         if (StringEqual(str, TRUE_VALS[i])) {
00640             *value = true;
00641             return true;
00642         }
00643     }
00644     for (int i = 0; FALSE_VALS[i]; ++i) {
00645         if (StringEqual(str, FALSE_VALS[i])) {
00646             *value = false;
00647             return true;
00648         }
```

```
00649        }
00650        return false;
00651 }
00652
00653
00654 bool XMLUtil::ToFloat( const char* str, float* value )
00655 {
00656        if ( TIXML_SSCANF( str, "%f", value ) == 1 ) {
00657            return true;
00658        }
00659        return false;
00660 }
00661
00662
00663 bool XMLUtil::ToDouble( const char* str, double* value )
00664 {
00665        if ( TIXML_SSCANF( str, "%lf", value ) == 1 ) {
00666            return true;
00667        }
00668        return false;
00669 }
00670
00671
00672 bool XMLUtil::ToInt64(const char* str, int64_t* value)
00673 {
00674        if (IsPrefixHex(str)) {
00675            unsigned long long v = 0;    // horrible syntax trick to make the compiler happy about %llx
00676            if (TIXML_SSCANF(str, "%llx", &v) == 1) {
00677                *value = static_cast<int64_t>(v);
00678                return true;
00679            }
00680        }
00681        else {
00682            long long v = 0;     // horrible syntax trick to make the compiler happy about %lld
00683            if (TIXML_SSCANF(str, "%lld", &v) == 1) {
00684                *value = static_cast<int64_t>(v);
00685                return true;
00686            }
00687        }
00688        return false;
00689 }
00690
00691
00692 bool XMLUtil::ToUnsigned64(const char* str, uint64_t* value) {
00693        unsigned long long v = 0;    // horrible syntax trick to make the compiler happy about %llu
00694        if(TIXML_SSCANF(str, IsPrefixHex(str) ? "%llx" : "%llu", &v) == 1) {
00695            *value = static_cast<uint64_t>(v);
00696            return true;
00697        }
00698        return false;
00699 }
00700
00701
00702 char* XMLDocument::Identify( char* p, XMLNode** node, bool first )
00703 {
00704        TIXMLASSERT( node );
00705        TIXMLASSERT( p );
00706        char* const start = p;
00707        int const startLine = _parseCurLineNum;
00708        p = XMLUtil::SkipWhiteSpace( p, &_parseCurLineNum );
00709        if( !*p ) {
00710            *node = 0;
00711            TIXMLASSERT( p );
00712            return p;
00713        }
00714
00715        // These strings define the matching patterns:
00716        static const char* xmlHeader       = { "<?" };
00717        static const char* commentHeader   = { "<!--" };
00718        static const char* cdataHeader     = { "<![CDATA[" };
00719        static const char* dtdHeader       = { "<!" };
00720        static const char* elementHeader   = { "<" };  // and a header for everything else; check last.
00721
00722        static const int xmlHeaderLen      = 2;
00723        static const int commentHeaderLen  = 4;
00724        static const int cdataHeaderLen    = 9;
00725        static const int dtdHeaderLen      = 2;
00726        static const int elementHeaderLen  = 1;
00727
00728        TIXMLASSERT( sizeof( XMLComment ) == sizeof( XMLUnknown ) );     // use same memory pool
00729        TIXMLASSERT( sizeof( XMLComment ) == sizeof( XMLDeclaration ) ); // use same memory pool
00730        XMLNode* returnNode = 0;
00731        if ( XMLUtil::StringEqual( p, xmlHeader, xmlHeaderLen ) ) {
00732            returnNode = CreateUnlinkedNode<XMLDeclaration>( _commentPool );
00733            returnNode->_parseLineNum = _parseCurLineNum;
00734            p += xmlHeaderLen;
00735        }
```

```
00736      else if ( XMLUtil::StringEqual( p, commentHeader, commentHeaderLen ) ) {
00737          returnNode = CreateUnlinkedNode<XMLComment>( _commentPool );
00738          returnNode->_parseLineNum = _parseCurLineNum;
00739          p += commentHeaderLen;
00740      }
00741      else if ( XMLUtil::StringEqual( p, cdataHeader, cdataHeaderLen ) ) {
00742          XMLText* text = CreateUnlinkedNode<XMLText>( _textPool );
00743          returnNode = text;
00744          returnNode->_parseLineNum = _parseCurLineNum;
00745          p += cdataHeaderLen;
00746          text->SetCData( true );
00747      }
00748      else if ( XMLUtil::StringEqual( p, dtdHeader, dtdHeaderLen ) ) {
00749          returnNode = CreateUnlinkedNode<XMLUnknown>( _commentPool );
00750          returnNode->_parseLineNum = _parseCurLineNum;
00751          p += dtdHeaderLen;
00752      }
00753      else if ( XMLUtil::StringEqual( p, elementHeader, elementHeaderLen ) ) {
00754
00755          // Preserve whitespace pedantically before closing tag, when it's immediately after opening
     tag
00756          if (WhitespaceMode() == PEDANTIC_WHITESPACE && first && p != start && *(p + elementHeaderLen)
     == '/') {
00757              returnNode = CreateUnlinkedNode<XMLText>(_textPool);
00758              returnNode->_parseLineNum = startLine;
00759              p = start;  // Back it up, all the text counts.
00760              _parseCurLineNum = startLine;
00761          }
00762          else {
00763              returnNode = CreateUnlinkedNode<XMLElement>(_elementPool);
00764              returnNode->_parseLineNum = _parseCurLineNum;
00765              p += elementHeaderLen;
00766          }
00767      }
00768      else {
00769          returnNode = CreateUnlinkedNode<XMLText>( _textPool );
00770          returnNode->_parseLineNum = _parseCurLineNum; // Report line of first non-whitespace character
00771          p = start;  // Back it up, all the text counts.
00772          _parseCurLineNum = startLine;
00773      }
00774
00775      TIXMLASSERT( returnNode );
00776      TIXMLASSERT( p );
00777      *node = returnNode;
00778      return p;
00779 }
00780
00781
00782 bool XMLDocument::Accept( XMLVisitor* visitor ) const
00783 {
00784      TIXMLASSERT( visitor );
00785      if ( visitor->VisitEnter( *this ) ) {
00786          for ( const XMLNode* node=FirstChild(); node; node=node->NextSibling() ) {
00787              if ( !node->Accept( visitor ) ) {
00788                  break;
00789              }
00790          }
00791      }
00792      return visitor->VisitExit( *this );
00793 }
00794
00795
00796 // --------- XMLNode ----------- //
00797
00798 XMLNode::XMLNode( XMLDocument* doc ) :
00799      _document( doc ),
00800      _parent( 0 ),
00801      _value(),
00802      _parseLineNum( 0 ),
00803      _firstChild( 0 ), _lastChild( 0 ),
00804      _prev( 0 ), _next( 0 ),
00805      _userData( 0 ),
00806      _memPool( 0 )
00807 {
00808 }
00809
00810
00811 XMLNode::~XMLNode()
00812 {
00813      DeleteChildren();
00814      if ( _parent ) {
00815          _parent->Unlink( this );
00816      }
00817 }
00818
00819 // ChildElementCount was originally suggested by msteiger on the sourceforge page for TinyXML and
     modified by KB1SPH for TinyXML-2.
```

```
00820
00821 int XMLNode::ChildElementCount(const char *value) const {
00822     int count = 0;
00823
00824     const XMLElement *e = FirstChildElement(value);
00825
00826     while (e) {
00827         e = e->NextSiblingElement(value);
00828         count++;
00829     }
00830
00831     return count;
00832 }
00833
00834 int XMLNode::ChildElementCount() const {
00835     int count = 0;
00836
00837     const XMLElement *e = FirstChildElement();
00838
00839     while (e) {
00840         e = e->NextSiblingElement();
00841         count++;
00842     }
00843
00844     return count;
00845 }
00846
00847 const char* XMLNode::Value() const
00848 {
00849     // Edge case: XMLDocuments don't have a Value. Return null.
00850     if ( this->ToDocument() )
00851         return 0;
00852     return _value.GetStr();
00853 }
00854
00855 void XMLNode::SetValue( const char* str, bool staticMem )
00856 {
00857     if ( staticMem ) {
00858         _value.SetInternedStr( str );
00859     }
00860     else {
00861         _value.SetStr( str );
00862     }
00863 }
00864
00865 XMLNode* XMLNode::DeepClone(XMLDocument* target) const
00866 {
00867     XMLNode* clone = this->ShallowClone(target);
00868     if (!clone) return 0;
00869
00870     for (const XMLNode* child = this->FirstChild(); child; child = child->NextSibling()) {
00871         XMLNode* childClone = child->DeepClone(target);
00872         TIXMLASSERT(childClone);
00873         clone->InsertEndChild(childClone);
00874     }
00875     return clone;
00876 }
00877
00878 void XMLNode::DeleteChildren()
00879 {
00880     while( _firstChild ) {
00881         TIXMLASSERT( _lastChild );
00882         DeleteChild( _firstChild );
00883     }
00884     _firstChild = _lastChild = 0;
00885 }
00886
00887
00888 void XMLNode::Unlink( XMLNode* child )
00889 {
00890     TIXMLASSERT( child );
00891     TIXMLASSERT( child->_document == _document );
00892     TIXMLASSERT( child->_parent == this );
00893     if ( child == _firstChild ) {
00894         _firstChild = _firstChild->_next;
00895     }
00896     if ( child == _lastChild ) {
00897         _lastChild = _lastChild->_prev;
00898     }
00899
00900     if ( child->_prev ) {
00901         child->_prev->_next = child->_next;
00902     }
00903     if ( child->_next ) {
00904         child->_next->_prev = child->_prev;
00905     }
00906     child->_next = 0;
```

```
00907      child->_prev = 0;
00908      child->_parent = 0;
00909 }
00910
00911
00912 void XMLNode::DeleteChild( XMLNode* node )
00913 {
00914      TIXMLASSERT( node );
00915      TIXMLASSERT( node->_document == _document );
00916      TIXMLASSERT( node->_parent == this );
00917      Unlink( node );
00918      TIXMLASSERT(node->_prev == 0);
00919      TIXMLASSERT(node->_next == 0);
00920      TIXMLASSERT(node->_parent == 0);
00921      DeleteNode( node );
00922 }
00923
00924
00925 XMLNode* XMLNode::InsertEndChild( XMLNode* addThis )
00926 {
00927      TIXMLASSERT( addThis );
00928      if ( addThis->_document != _document ) {
00929          TIXMLASSERT( false );
00930          return 0;
00931      }
00932      InsertChildPreamble( addThis );
00933
00934      if ( _lastChild ) {
00935          TIXMLASSERT( _firstChild );
00936          TIXMLASSERT( _lastChild->_next == 0 );
00937          _lastChild->_next = addThis;
00938          addThis->_prev = _lastChild;
00939          _lastChild = addThis;
00940
00941          addThis->_next = 0;
00942      }
00943      else {
00944          TIXMLASSERT( _firstChild == 0 );
00945          _firstChild = _lastChild = addThis;
00946
00947          addThis->_prev = 0;
00948          addThis->_next = 0;
00949      }
00950      addThis->_parent = this;
00951      return addThis;
00952 }
00953
00954
00955 XMLNode* XMLNode::InsertFirstChild( XMLNode* addThis )
00956 {
00957      TIXMLASSERT( addThis );
00958      if ( addThis->_document != _document ) {
00959          TIXMLASSERT( false );
00960          return 0;
00961      }
00962      InsertChildPreamble( addThis );
00963
00964      if ( _firstChild ) {
00965          TIXMLASSERT( _lastChild );
00966          TIXMLASSERT( _firstChild->_prev == 0 );
00967
00968          _firstChild->_prev = addThis;
00969          addThis->_next = _firstChild;
00970          _firstChild = addThis;
00971
00972          addThis->_prev = 0;
00973      }
00974      else {
00975          TIXMLASSERT( _lastChild == 0 );
00976          _firstChild = _lastChild = addThis;
00977
00978          addThis->_prev = 0;
00979          addThis->_next = 0;
00980      }
00981      addThis->_parent = this;
00982      return addThis;
00983 }
00984
00985
00986 XMLNode* XMLNode::InsertAfterChild( XMLNode* afterThis, XMLNode* addThis )
00987 {
00988      TIXMLASSERT( addThis );
00989      if ( addThis->_document != _document ) {
00990          TIXMLASSERT( false );
00991          return 0;
00992      }
00993
```

```
00994      TIXMLASSERT( afterThis );
00995
00996      if ( afterThis->_parent != this ) {
00997          TIXMLASSERT( false );
00998          return 0;
00999      }
01000      if ( afterThis == addThis ) {
01001          // Current state: BeforeThis -> AddThis -> OneAfterAddThis
01002          // Now AddThis must disappear from it's location and then
01003          // reappear between BeforeThis and OneAfterAddThis.
01004          // So just leave it where it is.
01005          return addThis;
01006      }
01007
01008      if ( afterThis->_next == 0 ) {
01009          // The last node or the only node.
01010          return InsertEndChild( addThis );
01011      }
01012      InsertChildPreamble( addThis );
01013      addThis->_prev = afterThis;
01014      addThis->_next = afterThis->_next;
01015      afterThis->_next->_prev = addThis;
01016      afterThis->_next = addThis;
01017      addThis->_parent = this;
01018      return addThis;
01019 }
01020
01021
01022
01023
01024 const XMLElement* XMLNode::FirstChildElement( const char* name ) const
01025 {
01026      for( const XMLNode* node = _firstChild; node; node = node->_next ) {
01027          const XMLElement* element = node->ToElementWithName( name );
01028          if ( element ) {
01029              return element;
01030          }
01031      }
01032      return 0;
01033 }
01034
01035
01036 const XMLElement* XMLNode::LastChildElement( const char* name ) const
01037 {
01038      for( const XMLNode* node = _lastChild; node; node = node->_prev ) {
01039          const XMLElement* element = node->ToElementWithName( name );
01040          if ( element ) {
01041              return element;
01042          }
01043      }
01044      return 0;
01045 }
01046
01047
01048 const XMLElement* XMLNode::NextSiblingElement( const char* name ) const
01049 {
01050      for( const XMLNode* node = _next; node; node = node->_next ) {
01051          const XMLElement* element = node->ToElementWithName( name );
01052          if ( element ) {
01053              return element;
01054          }
01055      }
01056      return 0;
01057 }
01058
01059
01060 const XMLElement* XMLNode::PreviousSiblingElement( const char* name ) const
01061 {
01062      for( const XMLNode* node = _prev; node; node = node->_prev ) {
01063          const XMLElement* element = node->ToElementWithName( name );
01064          if ( element ) {
01065              return element;
01066          }
01067      }
01068      return 0;
01069 }
01070
01071
01072 char* XMLNode::ParseDeep( char* p, StrPair* parentEndTag, int* curLineNumPtr )
01073 {
01074      // This is a recursive method, but thinking about it "at the current level"
01075      // it is a pretty simple flat list:
01076      //      <foo/>
01077      //      <!-- comment -->
01078      //
01079      // With a special case:
01080      //      <foo>
```

```
01081     //        </foo>
01082     //        <!-- comment -->
01083     //
01084     // Where the closing element (/foo) *must* be the next thing after the opening
01085     // element, and the names must match. BUT the tricky bit is that the closing
01086     // element will be read by the child.
01087     //
01088     // 'endTag' is the end tag for this node, it is returned by a call to a child.
01089     // 'parentEnd' is the end tag for the parent, which is filled in and returned.
01090
01091     XMLDocument::DepthTracker tracker(_document);
01092     if (_document->Error())
01093         return 0;
01094
01095     bool first = true;
01096     while( p && *p ) {
01097         XMLNode* node = 0;
01098
01099         p = _document->Identify( p, &node, first );
01100         TIXMLASSERT( p );
01101         if ( node == 0 ) {
01102             break;
01103         }
01104         first = false;
01105
01106         const int initialLineNum = node->_parseLineNum;
01107
01108         StrPair endTag;
01109         p = node->ParseDeep( p, &endTag, curLineNumPtr );
01110         if ( !p ) {
01111             _document->DeleteNode( node );
01112             if ( !_document->Error() ) {
01113                 _document->SetError( XML_ERROR_PARSING, initialLineNum, 0);
01114             }
01115             break;
01116         }
01117
01118         const XMLDeclaration* const decl = node->ToDeclaration();
01119         if ( decl ) {
01120             // Declarations are only allowed at document level
01121             //
01122             // Multiple declarations are allowed but all declarations
01123             // must occur before anything else.
01124             //
01125             // Optimized due to a security test case. If the first node is
01126             // a declaration, and the last node is a declaration, then only
01127             // declarations have so far been added.
01128             bool wellLocated = false;
01129
01130             if (ToDocument()) {
01131                 if (FirstChild()) {
01132                     wellLocated =
01133                         FirstChild() &&
01134                         FirstChild()->ToDeclaration() &&
01135                         LastChild() &&
01136                         LastChild()->ToDeclaration();
01137                 }
01138                 else {
01139                     wellLocated = true;
01140                 }
01141             }
01142             if ( !wellLocated ) {
01143                 _document->SetError( XML_ERROR_PARSING_DECLARATION, initialLineNum, "XMLDeclaration
      value=%s", decl->Value());
01144                 _document->DeleteNode( node );
01145                 break;
01146             }
01147         }
01148
01149         XMLElement* ele = node->ToElement();
01150         if ( ele ) {
01151             // We read the end tag. Return it to the parent.
01152             if ( ele->ClosingType() == XMLElement::CLOSING ) {
01153                 if ( parentEndTag ) {
01154                     ele->_value.TransferTo( parentEndTag );
01155                 }
01156                 node->_memPool->SetTracked();   // created and then immediately deleted.
01157                 DeleteNode( node );
01158                 return p;
01159             }
01160
01161             // Handle an end tag returned to this level.
01162             // And handle a bunch of annoying errors.
01163             bool mismatch = false;
01164             if ( endTag.Empty() ) {
01165                 if ( ele->ClosingType() == XMLElement::OPEN ) {
01166                     mismatch = true;
```

```
01167                     }
01168                 }
01169                 else {
01170                     if ( ele->ClosingType() != XMLElement::OPEN ) {
01171                         mismatch = true;
01172                     }
01173                     else if ( !XMLUtil::StringEqual( endTag.GetStr(), ele->Name() ) ) {
01174                         mismatch = true;
01175                     }
01176                 }
01177                 if ( mismatch ) {
01178                     _document->SetError( XML_ERROR_MISMATCHED_ELEMENT, initialLineNum, "XMLElement
       name=%s", ele->Name());
01179                     _document->DeleteNode( node );
01180                     break;
01181                 }
01182             }
01183             InsertEndChild( node );
01184         }
01185     return 0;
01186 }
01187
01188 /*static*/ void XMLNode::DeleteNode( XMLNode* node )
01189 {
01190     if ( node == 0 ) {
01191         return;
01192     }
01193     TIXMLASSERT(node->_document);
01194     if (!node->ToDocument()) {
01195         node->_document->MarkInUse(node);
01196     }
01197
01198     MemPool* pool = node->_memPool;
01199     node->~XMLNode();
01200     pool->Free( node );
01201 }
01202
01203 void XMLNode::InsertChildPreamble( XMLNode* insertThis ) const
01204 {
01205     TIXMLASSERT( insertThis );
01206     TIXMLASSERT( insertThis->_document == _document );
01207
01208     if (insertThis->_parent) {
01209         insertThis->_parent->Unlink( insertThis );
01210     }
01211     else {
01212         insertThis->_document->MarkInUse(insertThis);
01213         insertThis->_memPool->SetTracked();
01214     }
01215 }
01216
01217 const XMLElement* XMLNode::ToElementWithName( const char* name ) const
01218 {
01219     const XMLElement* element = this->ToElement();
01220     if ( element == 0 ) {
01221         return 0;
01222     }
01223     if ( name == 0 ) {
01224         return element;
01225     }
01226     if ( XMLUtil::StringEqual( element->Name(), name ) ) {
01227         return element;
01228     }
01229     return 0;
01230 }
01231
01232 // --------- XMLText ---------- //
01233 char* XMLText::ParseDeep( char* p, StrPair*, int* curLineNumPtr )
01234 {
01235     if ( this->CData() ) {
01236         p = _value.ParseText( p, "]]>", StrPair::NEEDS_NEWLINE_NORMALIZATION, curLineNumPtr );
01237         if ( !p ) {
01238             _document->SetError( XML_ERROR_PARSING_CDATA, _parseLineNum, 0 );
01239         }
01240         return p;
01241     }
01242     else {
01243         int flags = _document->ProcessEntities() ? StrPair::TEXT_ELEMENT :
       StrPair::TEXT_ELEMENT_LEAVE_ENTITIES;
01244         if ( _document->WhitespaceMode() == COLLAPSE_WHITESPACE ) {
01245             flags |= StrPair::NEEDS_WHITESPACE_COLLAPSING;
01246         }
01247
01248         p = _value.ParseText( p, "<", flags, curLineNumPtr );
01249         if ( p && *p ) {
01250             return p-1;
01251         }
```

```
01252            if ( !p ) {
01253                _document->SetError( XML_ERROR_PARSING_TEXT, _parseLineNum, 0 );
01254            }
01255        }
01256        return 0;
01257 }
01258
01259
01260 XMLNode* XMLText::ShallowClone( XMLDocument* doc ) const
01261 {
01262        if ( !doc ) {
01263            doc = _document;
01264        }
01265        XMLText* text = doc->NewText( Value() ); // fixme: this will always allocate memory. Intern?
01266        text->SetCData( this->CData() );
01267        return text;
01268 }
01269
01270
01271 bool XMLText::ShallowEqual( const XMLNode* compare ) const
01272 {
01273        TIXMLASSERT( compare );
01274        const XMLText* text = compare->ToText();
01275        return ( text && XMLUtil::StringEqual( text->Value(), Value() ) );
01276 }
01277
01278
01279 bool XMLText::Accept( XMLVisitor* visitor ) const
01280 {
01281        TIXMLASSERT( visitor );
01282        return visitor->Visit( *this );
01283 }
01284
01285
01286 // --------- XMLComment ---------- //
01287
01288 XMLComment::XMLComment( XMLDocument* doc ) : XMLNode( doc )
01289 {
01290 }
01291
01292
01293 XMLComment::~XMLComment()
01294 {
01295 }
01296
01297
01298 char* XMLComment::ParseDeep( char* p, StrPair*, int* curLineNumPtr )
01299 {
01300        // Comment parses as text.
01301        p = _value.ParseText( p, "-->", StrPair::COMMENT, curLineNumPtr );
01302        if ( p == 0 ) {
01303            _document->SetError( XML_ERROR_PARSING_COMMENT, _parseLineNum, 0 );
01304        }
01305        return p;
01306 }
01307
01308
01309 XMLNode* XMLComment::ShallowClone( XMLDocument* doc ) const
01310 {
01311        if ( !doc ) {
01312            doc = _document;
01313        }
01314        XMLComment* comment = doc->NewComment( Value() );  // fixme: this will always allocate memory.
      Intern?
01315        return comment;
01316 }
01317
01318
01319 bool XMLComment::ShallowEqual( const XMLNode* compare ) const
01320 {
01321        TIXMLASSERT( compare );
01322        const XMLComment* comment = compare->ToComment();
01323        return ( comment && XMLUtil::StringEqual( comment->Value(), Value() ));
01324 }
01325
01326
01327 bool XMLComment::Accept( XMLVisitor* visitor ) const
01328 {
01329        TIXMLASSERT( visitor );
01330        return visitor->Visit( *this );
01331 }
01332
01333
01334 // --------- XMLDeclaration ---------- //
01335
01336 XMLDeclaration::XMLDeclaration( XMLDocument* doc ) : XMLNode( doc )
01337 {
```

```
01338 }
01339
01340
01341 XMLDeclaration::~XMLDeclaration()
01342 {
01343     //printf( "~XMLDeclaration\n" );
01344 }
01345
01346
01347 char* XMLDeclaration::ParseDeep( char* p, StrPair*, int* curLineNumPtr )
01348 {
01349     // Declaration parses as text.
01350     p = _value.ParseText( p, "?>", StrPair::NEEDS_NEWLINE_NORMALIZATION, curLineNumPtr );
01351     if ( p == 0 ) {
01352         _document->SetError( XML_ERROR_PARSING_DECLARATION, _parseLineNum, 0 );
01353     }
01354     return p;
01355 }
01356
01357
01358 XMLNode* XMLDeclaration::ShallowClone( XMLDocument* doc ) const
01359 {
01360     if ( !doc ) {
01361         doc = _document;
01362     }
01363     XMLDeclaration* dec = doc->NewDeclaration( Value() );  // fixme: this will always allocate memory.
    Intern?
01364     return dec;
01365 }
01366
01367
01368 bool XMLDeclaration::ShallowEqual( const XMLNode* compare ) const
01369 {
01370     TIXMLASSERT( compare );
01371     const XMLDeclaration* declaration = compare->ToDeclaration();
01372     return ( declaration && XMLUtil::StringEqual( declaration->Value(), Value() ));
01373 }
01374
01375
01376
01377 bool XMLDeclaration::Accept( XMLVisitor* visitor ) const
01378 {
01379     TIXMLASSERT( visitor );
01380     return visitor->Visit( *this );
01381 }
01382
01383 // --------- XMLUnknown ---------- //
01384
01385 XMLUnknown::XMLUnknown( XMLDocument* doc ) : XMLNode( doc )
01386 {
01387 }
01388
01389
01390 XMLUnknown::~XMLUnknown()
01391 {
01392 }
01393
01394
01395 char* XMLUnknown::ParseDeep( char* p, StrPair*, int* curLineNumPtr )
01396 {
01397     // Unknown parses as text.
01398     p = _value.ParseText( p, ">", StrPair::NEEDS_NEWLINE_NORMALIZATION, curLineNumPtr );
01399     if ( !p ) {
01400         _document->SetError( XML_ERROR_PARSING_UNKNOWN, _parseLineNum, 0 );
01401     }
01402     return p;
01403 }
01404
01405
01406 XMLNode* XMLUnknown::ShallowClone( XMLDocument* doc ) const
01407 {
01408     if ( !doc ) {
01409         doc = _document;
01410     }
01411     XMLUnknown* text = doc->NewUnknown( Value() ); // fixme: this will always allocate memory. Intern?
01412     return text;
01413 }
01414
01415
01416 bool XMLUnknown::ShallowEqual( const XMLNode* compare ) const
01417 {
01418     TIXMLASSERT( compare );
01419     const XMLUnknown* unknown = compare->ToUnknown();
01420     return ( unknown && XMLUtil::StringEqual( unknown->Value(), Value() ));
01421 }
01422
01423
```

```
01424 bool XMLUnknown::Accept( XMLVisitor* visitor ) const
01425 {
01426     TIXMLASSERT( visitor );
01427     return visitor->Visit( *this );
01428 }
01429
01430 // ---------- XMLAttribute ---------- //
01431
01432 const char* XMLAttribute::Name() const
01433 {
01434     return _name.GetStr();
01435 }
01436
01437 const char* XMLAttribute::Value() const
01438 {
01439     return _value.GetStr();
01440 }
01441
01442 char* XMLAttribute::ParseDeep( char* p, bool processEntities, int* curLineNumPtr )
01443 {
01444     // Parse using the name rules: bug fix, was using ParseText before
01445     p = _name.ParseName( p );
01446     if ( !p || !*p ) {
01447         return 0;
01448     }
01449
01450     // Skip white space before =
01451     p = XMLUtil::SkipWhiteSpace( p, curLineNumPtr );
01452     if ( *p != '=' ) {
01453         return 0;
01454     }
01455
01456     ++p;    // move up to opening quote
01457     p = XMLUtil::SkipWhiteSpace( p, curLineNumPtr );
01458     if ( *p != '\"' && *p != '\'' ) {
01459         return 0;
01460     }
01461
01462     const char endTag[2] = { *p, 0 };
01463     ++p;    // move past opening quote
01464
01465     p = _value.ParseText( p, endTag, processEntities ? StrPair::ATTRIBUTE_VALUE :
    StrPair::ATTRIBUTE_VALUE_LEAVE_ENTITIES, curLineNumPtr );
01466     return p;
01467 }
01468
01469
01470 void XMLAttribute::SetName( const char* n )
01471 {
01472     _name.SetStr( n );
01473 }
01474
01475
01476 XMLError XMLAttribute::QueryIntValue( int* value ) const
01477 {
01478     if ( XMLUtil::ToInt( Value(), value )) {
01479         return XML_SUCCESS;
01480     }
01481     return XML_WRONG_ATTRIBUTE_TYPE;
01482 }
01483
01484
01485 XMLError XMLAttribute::QueryUnsignedValue( unsigned int* value ) const
01486 {
01487     if ( XMLUtil::ToUnsigned( Value(), value )) {
01488         return XML_SUCCESS;
01489     }
01490     return XML_WRONG_ATTRIBUTE_TYPE;
01491 }
01492
01493
01494 XMLError XMLAttribute::QueryInt64Value(int64_t* value) const
01495 {
01496     if (XMLUtil::ToInt64(Value(), value)) {
01497         return XML_SUCCESS;
01498     }
01499     return XML_WRONG_ATTRIBUTE_TYPE;
01500 }
01501
01502
01503 XMLError XMLAttribute::QueryUnsigned64Value(uint64_t* value) const
01504 {
01505     if(XMLUtil::ToUnsigned64(Value(), value)) {
01506         return XML_SUCCESS;
01507     }
01508     return XML_WRONG_ATTRIBUTE_TYPE;
01509 }
```

```
01510
01511
01512 XMLError XMLAttribute::QueryBoolValue( bool* value ) const
01513 {
01514     if ( XMLUtil::ToBool( Value(), value )) {
01515         return XML_SUCCESS;
01516     }
01517     return XML_WRONG_ATTRIBUTE_TYPE;
01518 }
01519
01520
01521 XMLError XMLAttribute::QueryFloatValue( float* value ) const
01522 {
01523     if ( XMLUtil::ToFloat( Value(), value )) {
01524         return XML_SUCCESS;
01525     }
01526     return XML_WRONG_ATTRIBUTE_TYPE;
01527 }
01528
01529
01530 XMLError XMLAttribute::QueryDoubleValue( double* value ) const
01531 {
01532     if ( XMLUtil::ToDouble( Value(), value )) {
01533         return XML_SUCCESS;
01534     }
01535     return XML_WRONG_ATTRIBUTE_TYPE;
01536 }
01537
01538
01539 void XMLAttribute::SetAttribute( const char* v )
01540 {
01541     _value.SetStr( v );
01542 }
01543
01544
01545 void XMLAttribute::SetAttribute( int v )
01546 {
01547     char buf[BUF_SIZE];
01548     XMLUtil::ToStr( v, buf, BUF_SIZE );
01549     _value.SetStr( buf );
01550 }
01551
01552
01553 void XMLAttribute::SetAttribute( unsigned v )
01554 {
01555     char buf[BUF_SIZE];
01556     XMLUtil::ToStr( v, buf, BUF_SIZE );
01557     _value.SetStr( buf );
01558 }
01559
01560
01561 void XMLAttribute::SetAttribute(int64_t v)
01562 {
01563     char buf[BUF_SIZE];
01564     XMLUtil::ToStr(v, buf, BUF_SIZE);
01565     _value.SetStr(buf);
01566 }
01567
01568 void XMLAttribute::SetAttribute(uint64_t v)
01569 {
01570     char buf[BUF_SIZE];
01571     XMLUtil::ToStr(v, buf, BUF_SIZE);
01572     _value.SetStr(buf);
01573 }
01574
01575
01576 void XMLAttribute::SetAttribute( bool v )
01577 {
01578     char buf[BUF_SIZE];
01579     XMLUtil::ToStr( v, buf, BUF_SIZE );
01580     _value.SetStr( buf );
01581 }
01582
01583 void XMLAttribute::SetAttribute( double v )
01584 {
01585     char buf[BUF_SIZE];
01586     XMLUtil::ToStr( v, buf, BUF_SIZE );
01587     _value.SetStr( buf );
01588 }
01589
01590 void XMLAttribute::SetAttribute( float v )
01591 {
01592     char buf[BUF_SIZE];
01593     XMLUtil::ToStr( v, buf, BUF_SIZE );
01594     _value.SetStr( buf );
01595 }
01596
```

```
01597
01598 // --------- XMLElement ---------- //
01599 XMLElement::XMLElement( XMLDocument* doc ) : XMLNode( doc ),
01600     _closingType( OPEN ),
01601     _rootAttribute( 0 )
01602 {
01603 }
01604
01605
01606 XMLElement::~XMLElement()
01607 {
01608     while( _rootAttribute ) {
01609         XMLAttribute* next = _rootAttribute->_next;
01610         DeleteAttribute( _rootAttribute );
01611         _rootAttribute = next;
01612     }
01613 }
01614
01615
01616 const XMLAttribute* XMLElement::FindAttribute( const char* name ) const
01617 {
01618     for( XMLAttribute* a = _rootAttribute; a; a = a->_next ) {
01619         if ( XMLUtil::StringEqual( a->Name(), name ) ) {
01620             return a;
01621         }
01622     }
01623     return 0;
01624 }
01625
01626
01627 const char* XMLElement::Attribute( const char* name, const char* value ) const
01628 {
01629     const XMLAttribute* a = FindAttribute( name );
01630     if ( !a ) {
01631         return 0;
01632     }
01633     if ( !value || XMLUtil::StringEqual( a->Value(), value )) {
01634         return a->Value();
01635     }
01636     return 0;
01637 }
01638
01639 int XMLElement::IntAttribute(const char* name, int defaultValue) const
01640 {
01641     int i = defaultValue;
01642     QueryIntAttribute(name, &i);
01643     return i;
01644 }
01645
01646 unsigned XMLElement::UnsignedAttribute(const char* name, unsigned defaultValue) const
01647 {
01648     unsigned i = defaultValue;
01649     QueryUnsignedAttribute(name, &i);
01650     return i;
01651 }
01652
01653 int64_t XMLElement::Int64Attribute(const char* name, int64_t defaultValue) const
01654 {
01655     int64_t i = defaultValue;
01656     QueryInt64Attribute(name, &i);
01657     return i;
01658 }
01659
01660 uint64_t XMLElement::Unsigned64Attribute(const char* name, uint64_t defaultValue) const
01661 {
01662     uint64_t i = defaultValue;
01663     QueryUnsigned64Attribute(name, &i);
01664     return i;
01665 }
01666
01667 bool XMLElement::BoolAttribute(const char* name, bool defaultValue) const
01668 {
01669     bool b = defaultValue;
01670     QueryBoolAttribute(name, &b);
01671     return b;
01672 }
01673
01674 double XMLElement::DoubleAttribute(const char* name, double defaultValue) const
01675 {
01676     double d = defaultValue;
01677     QueryDoubleAttribute(name, &d);
01678     return d;
01679 }
01680
01681 float XMLElement::FloatAttribute(const char* name, float defaultValue) const
01682 {
01683     float f = defaultValue;
```

```
01684        QueryFloatAttribute(name, &f);
01685        return f;
01686 }
01687
01688 const char* XMLElement::GetText() const
01689 {
01690        /* skip comment node */
01691        const XMLNode* node = FirstChild();
01692        while (node) {
01693            if (node->ToComment()) {
01694                node = node->NextSibling();
01695                continue;
01696            }
01697            break;
01698        }
01699
01700        if ( node && node->ToText() ) {
01701            return node->Value();
01702        }
01703        return 0;
01704 }
01705
01706
01707 void    XMLElement::SetText( const char* inText )
01708 {
01709        if ( FirstChild() && FirstChild()->ToText() )
01710            FirstChild()->SetValue( inText );
01711        else {
01712            XMLText* theText = GetDocument()->NewText( inText );
01713            InsertFirstChild( theText );
01714        }
01715 }
01716
01717
01718 void XMLElement::SetText( int v )
01719 {
01720        char buf[BUF_SIZE];
01721        XMLUtil::ToStr( v, buf, BUF_SIZE );
01722        SetText( buf );
01723 }
01724
01725
01726 void XMLElement::SetText( unsigned v )
01727 {
01728        char buf[BUF_SIZE];
01729        XMLUtil::ToStr( v, buf, BUF_SIZE );
01730        SetText( buf );
01731 }
01732
01733
01734 void XMLElement::SetText(int64_t v)
01735 {
01736        char buf[BUF_SIZE];
01737        XMLUtil::ToStr(v, buf, BUF_SIZE);
01738        SetText(buf);
01739 }
01740
01741 void XMLElement::SetText(uint64_t v) {
01742        char buf[BUF_SIZE];
01743        XMLUtil::ToStr(v, buf, BUF_SIZE);
01744        SetText(buf);
01745 }
01746
01747
01748 void XMLElement::SetText( bool v )
01749 {
01750        char buf[BUF_SIZE];
01751        XMLUtil::ToStr( v, buf, BUF_SIZE );
01752        SetText( buf );
01753 }
01754
01755
01756 void XMLElement::SetText( float v )
01757 {
01758        char buf[BUF_SIZE];
01759        XMLUtil::ToStr( v, buf, BUF_SIZE );
01760        SetText( buf );
01761 }
01762
01763
01764 void XMLElement::SetText( double v )
01765 {
01766        char buf[BUF_SIZE];
01767        XMLUtil::ToStr( v, buf, BUF_SIZE );
01768        SetText( buf );
01769 }
01770
```

```
01771
01772 XMLError XMLElement::QueryIntText( int* ival ) const
01773 {
01774     if ( FirstChild() && FirstChild()->ToText() ) {
01775         const char* t = FirstChild()->Value();
01776         if ( XMLUtil::ToInt( t, ival ) ) {
01777             return XML_SUCCESS;
01778         }
01779         return XML_CAN_NOT_CONVERT_TEXT;
01780     }
01781     return XML_NO_TEXT_NODE;
01782 }
01783
01784
01785 XMLError XMLElement::QueryUnsignedText( unsigned* uval ) const
01786 {
01787     if ( FirstChild() && FirstChild()->ToText() ) {
01788         const char* t = FirstChild()->Value();
01789         if ( XMLUtil::ToUnsigned( t, uval ) ) {
01790             return XML_SUCCESS;
01791         }
01792         return XML_CAN_NOT_CONVERT_TEXT;
01793     }
01794     return XML_NO_TEXT_NODE;
01795 }
01796
01797
01798 XMLError XMLElement::QueryInt64Text(int64_t* ival) const
01799 {
01800     if (FirstChild() && FirstChild()->ToText()) {
01801         const char* t = FirstChild()->Value();
01802         if (XMLUtil::ToInt64(t, ival)) {
01803             return XML_SUCCESS;
01804         }
01805         return XML_CAN_NOT_CONVERT_TEXT;
01806     }
01807     return XML_NO_TEXT_NODE;
01808 }
01809
01810
01811 XMLError XMLElement::QueryUnsigned64Text(uint64_t* uval) const
01812 {
01813     if(FirstChild() && FirstChild()->ToText()) {
01814         const char* t = FirstChild()->Value();
01815         if(XMLUtil::ToUnsigned64(t, uval)) {
01816             return XML_SUCCESS;
01817         }
01818         return XML_CAN_NOT_CONVERT_TEXT;
01819     }
01820     return XML_NO_TEXT_NODE;
01821 }
01822
01823
01824 XMLError XMLElement::QueryBoolText( bool* bval ) const
01825 {
01826     if ( FirstChild() && FirstChild()->ToText() ) {
01827         const char* t = FirstChild()->Value();
01828         if ( XMLUtil::ToBool( t, bval ) ) {
01829             return XML_SUCCESS;
01830         }
01831         return XML_CAN_NOT_CONVERT_TEXT;
01832     }
01833     return XML_NO_TEXT_NODE;
01834 }
01835
01836
01837 XMLError XMLElement::QueryDoubleText( double* dval ) const
01838 {
01839     if ( FirstChild() && FirstChild()->ToText() ) {
01840         const char* t = FirstChild()->Value();
01841         if ( XMLUtil::ToDouble( t, dval ) ) {
01842             return XML_SUCCESS;
01843         }
01844         return XML_CAN_NOT_CONVERT_TEXT;
01845     }
01846     return XML_NO_TEXT_NODE;
01847 }
01848
01849
01850 XMLError XMLElement::QueryFloatText( float* fval ) const
01851 {
01852     if ( FirstChild() && FirstChild()->ToText() ) {
01853         const char* t = FirstChild()->Value();
01854         if ( XMLUtil::ToFloat( t, fval ) ) {
01855             return XML_SUCCESS;
01856         }
01857         return XML_CAN_NOT_CONVERT_TEXT;
```

```
01858        }
01859        return XML_NO_TEXT_NODE;
01860 }
01861
01862 int XMLElement::IntText(int defaultValue) const
01863 {
01864        int i = defaultValue;
01865        QueryIntText(&i);
01866        return i;
01867 }
01868
01869 unsigned XMLElement::UnsignedText(unsigned defaultValue) const
01870 {
01871        unsigned i = defaultValue;
01872        QueryUnsignedText(&i);
01873        return i;
01874 }
01875
01876 int64_t XMLElement::Int64Text(int64_t defaultValue) const
01877 {
01878        int64_t i = defaultValue;
01879        QueryInt64Text(&i);
01880        return i;
01881 }
01882
01883 uint64_t XMLElement::Unsigned64Text(uint64_t defaultValue) const
01884 {
01885        uint64_t i = defaultValue;
01886        QueryUnsigned64Text(&i);
01887        return i;
01888 }
01889
01890 bool XMLElement::BoolText(bool defaultValue) const
01891 {
01892        bool b = defaultValue;
01893        QueryBoolText(&b);
01894        return b;
01895 }
01896
01897 double XMLElement::DoubleText(double defaultValue) const
01898 {
01899        double d = defaultValue;
01900        QueryDoubleText(&d);
01901        return d;
01902 }
01903
01904 float XMLElement::FloatText(float defaultValue) const
01905 {
01906        float f = defaultValue;
01907        QueryFloatText(&f);
01908        return f;
01909 }
01910
01911
01912 XMLAttribute* XMLElement::FindOrCreateAttribute( const char* name )
01913 {
01914        XMLAttribute* last = 0;
01915        XMLAttribute* attrib = 0;
01916        for( attrib = _rootAttribute;
01917                attrib;
01918                last = attrib, attrib = attrib->_next ) {
01919            if ( XMLUtil::StringEqual( attrib->Name(), name ) ) {
01920                break;
01921            }
01922        }
01923        if ( !attrib ) {
01924            attrib = CreateAttribute();
01925            TIXMLASSERT( attrib );
01926            if ( last ) {
01927                TIXMLASSERT( last->_next == 0 );
01928                last->_next = attrib;
01929            }
01930            else {
01931                TIXMLASSERT( _rootAttribute == 0 );
01932                _rootAttribute = attrib;
01933            }
01934            attrib->SetName( name );
01935        }
01936        return attrib;
01937 }
01938
01939
01940 void XMLElement::DeleteAttribute( const char* name )
01941 {
01942        XMLAttribute* prev = 0;
01943        for( XMLAttribute* a=_rootAttribute; a; a=a->_next ) {
01944            if ( XMLUtil::StringEqual( name, a->Name() ) ) {
```

```
01945                    if ( prev ) {
01946                        prev->_next = a->_next;
01947                    }
01948                    else {
01949                        _rootAttribute = a->_next;
01950                    }
01951                    DeleteAttribute( a );
01952                    break;
01953                }
01954            prev = a;
01955        }
01956 }
01957
01958
01959 char* XMLElement::ParseAttributes( char* p, int* curLineNumPtr )
01960 {
01961     XMLAttribute* prevAttribute = 0;
01962
01963     // Read the attributes.
01964     while( p ) {
01965        p = XMLUtil::SkipWhiteSpace( p, curLineNumPtr );
01966        if ( !(*p) ) {
01967            _document->SetError( XML_ERROR_PARSING_ELEMENT, _parseLineNum, "XMLElement name=%s",
    Name() );
01968            return 0;
01969        }
01970
01971        // attribute.
01972        if (XMLUtil::IsNameStartChar( static_cast<unsigned char>(*p) ) ) {
01973            XMLAttribute* attrib = CreateAttribute();
01974            TIXMLASSERT( attrib );
01975            attrib->_parseLineNum = _document->_parseCurLineNum;
01976
01977            const int attrLineNum = attrib->_parseLineNum;
01978
01979            p = attrib->ParseDeep( p, _document->ProcessEntities(), curLineNumPtr );
01980            if ( !p || Attribute( attrib->Name() ) ) {
01981                DeleteAttribute( attrib );
01982                _document->SetError( XML_ERROR_PARSING_ATTRIBUTE, attrLineNum, "XMLElement name=%s",
    Name() );
01983                return 0;
01984            }
01985            // There is a minor bug here: if the attribute in the source xml
01986            // document is duplicated, it will not be detected and the
01987            // attribute will be doubly added. However, tracking the 'prevAttribute'
01988            // avoids re-scanning the attribute list. Preferring performance for
01989            // now, may reconsider in the future.
01990            if ( prevAttribute ) {
01991                TIXMLASSERT( prevAttribute->_next == 0 );
01992                prevAttribute->_next = attrib;
01993            }
01994            else {
01995                TIXMLASSERT( _rootAttribute == 0 );
01996                _rootAttribute = attrib;
01997            }
01998            prevAttribute = attrib;
01999        }
02000        // end of the tag
02001        else if ( *p == '>' ) {
02002            ++p;
02003            break;
02004        }
02005        // end of the tag
02006        else if ( *p == '/' && *(p+1) == '>' ) {
02007            _closingType = CLOSED;
02008            return p+2; // done; sealed element.
02009        }
02010        else {
02011            _document->SetError( XML_ERROR_PARSING_ELEMENT, _parseLineNum, 0 );
02012            return 0;
02013        }
02014    }
02015    return p;
02016 }
02017
02018 void XMLElement::DeleteAttribute( XMLAttribute* attribute )
02019 {
02020     if ( attribute == 0 ) {
02021         return;
02022     }
02023     MemPool* pool = attribute->_memPool;
02024     attribute->~XMLAttribute();
02025     pool->Free( attribute );
02026 }
02027
02028 XMLAttribute* XMLElement::CreateAttribute()
02029 {
```

```
02030      TIXMLASSERT( sizeof( XMLAttribute ) == _document->_attributePool.ItemSize() );
02031      XMLAttribute* attrib = new (_document->_attributePool.Alloc() ) XMLAttribute();
02032      TIXMLASSERT( attrib );
02033      attrib->_memPool = &_document->_attributePool;
02034      attrib->_memPool->SetTracked();
02035      return attrib;
02036 }
02037
02038
02039 XMLElement* XMLElement::InsertNewChildElement(const char* name)
02040 {
02041      XMLElement* node = _document->NewElement(name);
02042      return InsertEndChild(node) ? node : 0;
02043 }
02044
02045 XMLComment* XMLElement::InsertNewComment(const char* comment)
02046 {
02047      XMLComment* node = _document->NewComment(comment);
02048      return InsertEndChild(node) ? node : 0;
02049 }
02050
02051 XMLText* XMLElement::InsertNewText(const char* text)
02052 {
02053      XMLText* node = _document->NewText(text);
02054      return InsertEndChild(node) ? node : 0;
02055 }
02056
02057 XMLDeclaration* XMLElement::InsertNewDeclaration(const char* text)
02058 {
02059      XMLDeclaration* node = _document->NewDeclaration(text);
02060      return InsertEndChild(node) ? node : 0;
02061 }
02062
02063 XMLUnknown* XMLElement::InsertNewUnknown(const char* text)
02064 {
02065      XMLUnknown* node = _document->NewUnknown(text);
02066      return InsertEndChild(node) ? node : 0;
02067 }
02068
02069
02070
02071 //
02072 //   <ele></ele>
02073 //   <ele>foo<b>bar</b></ele>
02074 //
02075 char* XMLElement::ParseDeep( char* p, StrPair* parentEndTag, int* curLineNumPtr )
02076 {
02077      // Read the element name.
02078      p = XMLUtil::SkipWhiteSpace( p, curLineNumPtr );
02079
02080      // The closing element is the </element> form. It is
02081      // parsed just like a regular element then deleted from
02082      // the DOM.
02083      if ( *p == '/' ) {
02084          _closingType = CLOSING;
02085          ++p;
02086      }
02087
02088      p = _value.ParseName( p );
02089      if ( _value.Empty() ) {
02090          return 0;
02091      }
02092
02093      p = ParseAttributes( p, curLineNumPtr );
02094      if ( !p || !*p || _closingType != OPEN ) {
02095          return p;
02096      }
02097
02098      p = XMLNode::ParseDeep( p, parentEndTag, curLineNumPtr );
02099      return p;
02100 }
02101
02102
02103
02104 XMLNode* XMLElement::ShallowClone( XMLDocument* doc ) const
02105 {
02106      if ( !doc ) {
02107          doc = _document;
02108      }
02109      XMLElement* element = doc->NewElement( Value() );                     // fixme: this will always
     allocate memory. Intern?
02110      for( const XMLAttribute* a=FirstAttribute(); a; a=a->Next() ) {
02111          element->SetAttribute( a->Name(), a->Value() );                   // fixme: this will always
     allocate memory. Intern?
02112      }
02113      return element;
02114 }
```

```
02115
02116
02117 bool XMLElement::ShallowEqual( const XMLNode* compare ) const
02118 {
02119     TIXMLASSERT( compare );
02120     const XMLElement* other = compare->ToElement();
02121     if ( other && XMLUtil::StringEqual( other->Name(), Name() )) {
02122
02123         const XMLAttribute* a=FirstAttribute();
02124         const XMLAttribute* b=other->FirstAttribute();
02125
02126         while ( a && b ) {
02127             if ( !XMLUtil::StringEqual( a->Value(), b->Value() ) ) {
02128                 return false;
02129             }
02130             a = a->Next();
02131             b = b->Next();
02132         }
02133         if ( a || b ) {
02134             // different count
02135             return false;
02136         }
02137         return true;
02138     }
02139     return false;
02140 }
02141
02142
02143 bool XMLElement::Accept( XMLVisitor* visitor ) const
02144 {
02145     TIXMLASSERT( visitor );
02146     if ( visitor->VisitEnter( *this, _rootAttribute ) ) {
02147         for ( const XMLNode* node=FirstChild(); node; node=node->NextSibling() ) {
02148             if ( !node->Accept( visitor ) ) {
02149                 break;
02150             }
02151         }
02152     }
02153     return visitor->VisitExit( *this );
02154 }
02155
02156
02157 // --------- XMLDocument ----------- //
02158
02159 // Warning: List must match 'enum XMLError'
02160 const char* XMLDocument::_errorNames[XML_ERROR_COUNT] = {
02161     "XML_SUCCESS",
02162     "XML_NO_ATTRIBUTE",
02163     "XML_WRONG_ATTRIBUTE_TYPE",
02164     "XML_ERROR_FILE_NOT_FOUND",
02165     "XML_ERROR_FILE_COULD_NOT_BE_OPENED",
02166     "XML_ERROR_FILE_READ_ERROR",
02167     "XML_ERROR_PARSING_ELEMENT",
02168     "XML_ERROR_PARSING_ATTRIBUTE",
02169     "XML_ERROR_PARSING_TEXT",
02170     "XML_ERROR_PARSING_CDATA",
02171     "XML_ERROR_PARSING_COMMENT",
02172     "XML_ERROR_PARSING_DECLARATION",
02173     "XML_ERROR_PARSING_UNKNOWN",
02174     "XML_ERROR_EMPTY_DOCUMENT",
02175     "XML_ERROR_MISMATCHED_ELEMENT",
02176     "XML_ERROR_PARSING",
02177     "XML_CAN_NOT_CONVERT_TEXT",
02178     "XML_NO_TEXT_NODE",
02179     "XML_ELEMENT_DEPTH_EXCEEDED"
02180 };
02181
02182
02183 XMLDocument::XMLDocument( bool processEntities, Whitespace whitespaceMode ) :
02184     XMLNode( 0 ),
02185     _writeBOM( false ),
02186     _processEntities( processEntities ),
02187     _errorID(XML_SUCCESS),
02188     _whitespaceMode( whitespaceMode ),
02189     _errorStr(),
02190     _errorLineNum( 0 ),
02191     _charBuffer( 0 ),
02192     _parseCurLineNum( 0 ),
02193     _parsingDepth(0),
02194     _unlinked(),
02195     _elementPool(),
02196     _attributePool(),
02197     _textPool(),
02198     _commentPool()
02199 {
02200     // avoid VC++ C4355 warning about 'this' in initializer list (C4355 is off by default in VS2012+)
02201     _document = this;
```

```
02202 }
02203
02204
02205 XMLDocument::~XMLDocument()
02206 {
02207     Clear();
02208 }
02209
02210
02211 void XMLDocument::MarkInUse(const XMLNode* const node)
02212 {
02213     TIXMLASSERT(node);
02214     TIXMLASSERT(node->_parent == 0);
02215
02216     for (size_t i = 0; i < _unlinked.Size(); ++i) {
02217         if (node == _unlinked[i]) {
02218             _unlinked.SwapRemove(i);
02219             break;
02220         }
02221     }
02222 }
02223
02224 void XMLDocument::Clear()
02225 {
02226     DeleteChildren();
02227     while( _unlinked.Size()) {
02228         DeleteNode(_unlinked[0]); // Will remove from _unlinked as part of delete.
02229     }
02230
02231 #ifdef TINYXML2_DEBUG
02232     const bool hadError = Error();
02233 #endif
02234     ClearError();
02235
02236     delete [] _charBuffer;
02237     _charBuffer = 0;
02238     _parsingDepth = 0;
02239
02240 #if 0
02241     _textPool.Trace( "text" );
02242     _elementPool.Trace( "element" );
02243     _commentPool.Trace( "comment" );
02244     _attributePool.Trace( "attribute" );
02245 #endif
02246
02247 #ifdef TINYXML2_DEBUG
02248     if ( !hadError ) {
02249         TIXMLASSERT( _elementPool.CurrentAllocs()   == _elementPool.Untracked() );
02250         TIXMLASSERT( _attributePool.CurrentAllocs() == _attributePool.Untracked() );
02251         TIXMLASSERT( _textPool.CurrentAllocs()      == _textPool.Untracked() );
02252         TIXMLASSERT( _commentPool.CurrentAllocs()   == _commentPool.Untracked() );
02253     }
02254 #endif
02255 }
02256
02257
02258 void XMLDocument::DeepCopy(XMLDocument* target) const
02259 {
02260     TIXMLASSERT(target);
02261     if (target == this) {
02262         return; // technically success - a no-op.
02263     }
02264
02265     target->Clear();
02266     for (const XMLNode* node = this->FirstChild(); node; node = node->NextSibling()) {
02267         target->InsertEndChild(node->DeepClone(target));
02268     }
02269 }
02270
02271 XMLElement* XMLDocument::NewElement( const char* name )
02272 {
02273     XMLElement* ele = CreateUnlinkedNode<XMLElement>( _elementPool );
02274     ele->SetName( name );
02275     return ele;
02276 }
02277
02278
02279 XMLComment* XMLDocument::NewComment( const char* str )
02280 {
02281     XMLComment* comment = CreateUnlinkedNode<XMLComment>( _commentPool );
02282     comment->SetValue( str );
02283     return comment;
02284 }
02285
02286
02287 XMLText* XMLDocument::NewText( const char* str )
02288 {
```

```
02289      XMLText* text = CreateUnlinkedNode<XMLText>( _textPool );
02290      text->SetValue( str );
02291      return text;
02292 }
02293
02294
02295 XMLDeclaration* XMLDocument::NewDeclaration( const char* str )
02296 {
02297      XMLDeclaration* dec = CreateUnlinkedNode<XMLDeclaration>( _commentPool );
02298      dec->SetValue( str ? str : "xml version=\"1.0\" encoding=\"UTF-8\"" );
02299      return dec;
02300 }
02301
02302
02303 XMLUnknown* XMLDocument::NewUnknown( const char* str )
02304 {
02305      XMLUnknown* unk = CreateUnlinkedNode<XMLUnknown>( _commentPool );
02306      unk->SetValue( str );
02307      return unk;
02308 }
02309
02310 static FILE* callfopen( const char* filepath, const char* mode )
02311 {
02312      TIXMLASSERT( filepath );
02313      TIXMLASSERT( mode );
02314 #if defined(_MSC_VER) && (_MSC_VER >= 1400 ) && (!defined WINCE)
02315      FILE* fp = 0;
02316      const errno_t err = fopen_s( &fp, filepath, mode );
02317      if ( err ) {
02318          return 0;
02319      }
02320 #else
02321      FILE* fp = fopen( filepath, mode );
02322 #endif
02323      return fp;
02324 }
02325
02326 void XMLDocument::DeleteNode( XMLNode* node ) {
02327      TIXMLASSERT( node );
02328      TIXMLASSERT(node->_document == this );
02329      if (node->_parent) {
02330          node->_parent->DeleteChild( node );
02331      }
02332      else {
02333          // Isn't in the tree.
02334          // Use the parent delete.
02335          // Also, we need to mark it tracked: we 'know'
02336          // it was never used.
02337          node->_memPool->SetTracked();
02338          // Call the static XMLNode version:
02339          XMLNode::DeleteNode(node);
02340      }
02341 }
02342
02343
02344 XMLError XMLDocument::LoadFile( const char* filename )
02345 {
02346      if ( !filename ) {
02347          TIXMLASSERT( false );
02348          SetError( XML_ERROR_FILE_COULD_NOT_BE_OPENED, 0, "filename=<null>" );
02349          return _errorID;
02350      }
02351
02352      Clear();
02353      FILE* fp = callfopen( filename, "rb" );
02354      if ( !fp ) {
02355          SetError( XML_ERROR_FILE_NOT_FOUND, 0, "filename=%s", filename );
02356          return _errorID;
02357      }
02358      LoadFile( fp );
02359      fclose( fp );
02360      return _errorID;
02361 }
02362
02363 XMLError XMLDocument::LoadFile( FILE* fp )
02364 {
02365      Clear();
02366
02367      TIXML_FSEEK( fp, 0, SEEK_SET );
02368      if ( fgetc( fp ) == EOF && ferror( fp ) != 0 ) {
02369          SetError( XML_ERROR_FILE_READ_ERROR, 0, 0 );
02370          return _errorID;
02371      }
02372
02373      TIXML_FSEEK( fp, 0, SEEK_END );
02374
02375      unsigned long long filelength;
```

```
02376     {
02377         const long long fileLengthSigned = TIXML_FTELL( fp );
02378         TIXML_FSEEK( fp, 0, SEEK_SET );
02379         if ( fileLengthSigned == -1L ) {
02380             SetError( XML_ERROR_FILE_READ_ERROR, 0, 0 );
02381             return _errorID;
02382         }
02383         TIXMLASSERT( fileLengthSigned >= 0 );
02384         filelength = static_cast<unsigned long long>(fileLengthSigned);
02385     }
02386
02387     const size_t maxSizeT = static_cast<size_t>(-1);
02388     // We'll do the comparison as an unsigned long long, because that's guaranteed to be at
02389     // least 8 bytes, even on a 32-bit platform.
02390     if ( filelength >= static_cast<unsigned long long>(maxSizeT) ) {
02391         // Cannot handle files which won't fit in buffer together with null terminator
02392         SetError( XML_ERROR_FILE_READ_ERROR, 0, 0 );
02393         return _errorID;
02394     }
02395
02396     if ( filelength == 0 ) {
02397         SetError( XML_ERROR_EMPTY_DOCUMENT, 0, 0 );
02398         return _errorID;
02399     }
02400
02401     const size_t size = static_cast<size_t>(filelength);
02402     TIXMLASSERT( _charBuffer == 0 );
02403     _charBuffer = new char[size+1];
02404     const size_t read = fread( _charBuffer, 1, size, fp );
02405     if ( read != size ) {
02406         SetError( XML_ERROR_FILE_READ_ERROR, 0, 0 );
02407         return _errorID;
02408     }
02409
02410     _charBuffer[size] = 0;
02411
02412     Parse();
02413     return _errorID;
02414 }
02415
02416
02417 XMLError XMLDocument::SaveFile( const char* filename, bool compact )
02418 {
02419     if ( !filename ) {
02420         TIXMLASSERT( false );
02421         SetError( XML_ERROR_FILE_COULD_NOT_BE_OPENED, 0, "filename=<null>" );
02422         return _errorID;
02423     }
02424
02425     FILE* fp = callfopen( filename, "w" );
02426     if ( !fp ) {
02427         SetError( XML_ERROR_FILE_COULD_NOT_BE_OPENED, 0, "filename=%s", filename );
02428         return _errorID;
02429     }
02430     SaveFile(fp, compact);
02431     fclose( fp );
02432     return _errorID;
02433 }
02434
02435
02436 XMLError XMLDocument::SaveFile( FILE* fp, bool compact )
02437 {
02438     // Clear any error from the last save, otherwise it will get reported
02439     // for *this* call.
02440     ClearError();
02441     XMLPrinter stream( fp, compact );
02442     Print( &stream );
02443     return _errorID;
02444 }
02445
02446
02447 XMLError XMLDocument::Parse( const char* xml, size_t nBytes )
02448 {
02449     Clear();
02450
02451     if ( nBytes == 0 || !xml || !*xml ) {
02452         SetError( XML_ERROR_EMPTY_DOCUMENT, 0, 0 );
02453         return _errorID;
02454     }
02455     if ( nBytes == static_cast<size_t>(-1) ) {
02456         nBytes = strlen( xml );
02457     }
02458     TIXMLASSERT( _charBuffer == 0 );
02459     _charBuffer = new char[ nBytes+1 ];
02460     memcpy( _charBuffer, xml, nBytes );
02461     _charBuffer[nBytes] = 0;
02462
```

```
02463      Parse();
02464      if ( Error() ) {
02465          // clean up now essentially dangling memory.
02466          // and the parse fail can put objects in the
02467          // pools that are dead and inaccessible.
02468          DeleteChildren();
02469          _elementPool.Clear();
02470          _attributePool.Clear();
02471          _textPool.Clear();
02472          _commentPool.Clear();
02473      }
02474      return _errorID;
02475 }
02476
02477
02478 void XMLDocument::Print( XMLPrinter* streamer ) const
02479 {
02480      if ( streamer ) {
02481          Accept( streamer );
02482      }
02483      else {
02484          XMLPrinter stdoutStreamer( stdout );
02485          Accept( &stdoutStreamer );
02486      }
02487 }
02488
02489
02490 void XMLDocument::ClearError() {
02491      _errorID = XML_SUCCESS;
02492      _errorLineNum = 0;
02493      _errorStr.Reset();
02494 }
02495
02496
02497 void XMLDocument::SetError( XMLError error, int lineNum, const char* format, ... )
02498 {
02499      TIXMLASSERT(error >= 0 && error < XML_ERROR_COUNT);
02500      _errorID = error;
02501      _errorLineNum = lineNum;
02502      _errorStr.Reset();
02503
02504      const size_t BUFFER_SIZE = 1000;
02505      char* buffer = new char[BUFFER_SIZE];
02506
02507      TIXMLASSERT(sizeof(error) <= sizeof(int));
02508      TIXML_SNPRINTF(buffer, BUFFER_SIZE, "Error=%s ErrorID=%d (0x%x) Line number=%d",
02509          ErrorIDToName(error), static_cast<int>(error), static_cast<unsigned int>(error), lineNum);
02510
02511      if (format) {
02512          size_t len = strlen(buffer);
02513          TIXML_SNPRINTF(buffer + len, BUFFER_SIZE - len, ": ");
02514          len = strlen(buffer);
02515
02516          va_list va;
02517          va_start(va, format);
02518          TIXML_VSNPRINTF(buffer + len, BUFFER_SIZE - len, format, va);
02519          va_end(va);
02520      }
02521      _errorStr.SetStr(buffer);
02522      delete[] buffer;
02523 }
02524
02525
02526 /*static*/ const char* XMLDocument::ErrorIDToName(XMLError errorID)
02527 {
02528      TIXMLASSERT( errorID >= 0 && errorID < XML_ERROR_COUNT );
02529      const char* errorName = _errorNames[errorID];
02530      TIXMLASSERT( errorName && errorName[0] );
02531      return errorName;
02532 }
02533
02534 const char* XMLDocument::ErrorStr() const
02535 {
02536      return _errorStr.Empty() ? "" : _errorStr.GetStr();
02537 }
02538
02539
02540 void XMLDocument::PrintError() const
02541 {
02542      printf("%s\n", ErrorStr());
02543 }
02544
02545 const char* XMLDocument::ErrorName() const
02546 {
02547      return ErrorIDToName(_errorID);
02548 }
02549
```

```
02550  void XMLDocument::Parse()
02551  {
02552      TIXMLASSERT( NoChildren() ); // Clear() must have been called previously
02553      TIXMLASSERT( _charBuffer );
02554      _parseCurLineNum = 1;
02555      _parseLineNum = 1;
02556      char* p = _charBuffer;
02557      p = XMLUtil::SkipWhiteSpace( p, &_parseCurLineNum );
02558      p = const_cast<char*>( XMLUtil::ReadBOM( p, &_writeBOM ) );
02559      if ( !*p ) {
02560          SetError( XML_ERROR_EMPTY_DOCUMENT, 0, 0 );
02561          return;
02562      }
02563      ParseDeep(p, 0, &_parseCurLineNum );
02564  }
02565
02566  void XMLDocument::PushDepth()
02567  {
02568      _parsingDepth++;
02569      if (_parsingDepth == TINYXML2_MAX_ELEMENT_DEPTH) {
02570          SetError(XML_ELEMENT_DEPTH_EXCEEDED, _parseCurLineNum, "Element nesting is too deep." );
02571      }
02572  }
02573
02574  void XMLDocument::PopDepth()
02575  {
02576      TIXMLASSERT(_parsingDepth > 0);
02577      --_parsingDepth;
02578  }
02579
02580  XMLPrinter::XMLPrinter( FILE* file, bool compact, int depth ) :
02581      _elementJustOpened( false ),
02582      _stack(),
02583      _firstElement( true ),
02584      _fp( file ),
02585      _depth( depth ),
02586      _textDepth( -1 ),
02587      _processEntities( true ),
02588      _compactMode( compact ),
02589      _buffer()
02590  {
02591      for( int i=0; i<ENTITY_RANGE; ++i ) {
02592          _entityFlag[i] = false;
02593          _restrictedEntityFlag[i] = false;
02594      }
02595      for( int i=0; i<NUM_ENTITIES; ++i ) {
02596          const char entityValue = entities[i].value;
02597          const unsigned char flagIndex = static_cast<unsigned char>(entityValue);
02598          TIXMLASSERT( flagIndex < ENTITY_RANGE );
02599          _entityFlag[flagIndex] = true;
02600      }
02601      _restrictedEntityFlag[static_cast<unsigned char>('&')] = true;
02602      _restrictedEntityFlag[static_cast<unsigned char>('<')] = true;
02603      _restrictedEntityFlag[static_cast<unsigned char>('>')] = true;  // not required, but consistency
       is nice
02604      _buffer.Push( 0 );
02605  }
02606
02607
02608  void XMLPrinter::Print( const char* format, ... )
02609  {
02610      va_list     va;
02611      va_start( va, format );
02612
02613      if ( _fp ) {
02614          vfprintf( _fp, format, va );
02615      }
02616      else {
02617          const int len = TIXML_VSCPRINTF( format, va );
02618          // Close out and re-start the va-args
02619          va_end( va );
02620          TIXMLASSERT( len >= 0 );
02621          va_start( va, format );
02622          TIXMLASSERT( _buffer.Size() > 0 && _buffer[_buffer.Size() - 1] == 0 );
02623          char* p = _buffer.PushArr( len ) - 1;   // back up over the null terminator.
02624          TIXML_VSNPRINTF( p, len+1, format, va );
02625      }
02626      va_end( va );
02627  }
02628
02629
02630  void XMLPrinter::Write( const char* data, size_t size )
02631  {
02632      if ( _fp ) {
02633          fwrite ( data , sizeof(char), size, _fp);
02634      }
02635      else {
```

```
02636          char* p = _buffer.PushArr( static_cast<int>(size) ) - 1;    // back up over the null
    terminator.
02637          memcpy( p, data, size );
02638          p[size] = 0;
02639      }
02640 }
02641
02642
02643 void XMLPrinter::Putc( char ch )
02644 {
02645      if ( _fp ) {
02646          fputc ( ch, _fp);
02647      }
02648      else {
02649          char* p = _buffer.PushArr( sizeof(char) ) - 1;    // back up over the null terminator.
02650          p[0] = ch;
02651          p[1] = 0;
02652      }
02653 }
02654
02655
02656 void XMLPrinter::PrintSpace( int depth )
02657 {
02658      for( int i=0; i<depth; ++i ) {
02659          Write( "    " );
02660      }
02661 }
02662
02663
02664 void XMLPrinter::PrintString( const char* p, bool restricted )
02665 {
02666      // Look for runs of bytes between entities to print.
02667      const char* q = p;
02668
02669      if ( _processEntities ) {
02670          const bool* flag = restricted ? _restrictedEntityFlag : _entityFlag;
02671          while ( *q ) {
02672              TIXMLASSERT( p <= q );
02673              // Remember, char is sometimes signed. (How many times has that bitten me?)
02674              if ( *q > 0 && *q < ENTITY_RANGE ) {
02675                  // Check for entities. If one is found, flush
02676                  // the stream up until the entity, write the
02677                  // entity, and keep looking.
02678                  if ( flag[static_cast<unsigned char>(*q)] ) {
02679                      while ( p < q ) {
02680                          const size_t delta = q - p;
02681                          const int toPrint = ( INT_MAX < delta ) ? INT_MAX : static_cast<int>(delta);
02682                          Write( p, toPrint );
02683                          p += toPrint;
02684                      }
02685                      bool entityPatternPrinted = false;
02686                      for( int i=0; i<NUM_ENTITIES; ++i ) {
02687                          if ( entities[i].value == *q ) {
02688                              Putc( '&' );
02689                              Write( entities[i].pattern, entities[i].length );
02690                              Putc( ';' );
02691                              entityPatternPrinted = true;
02692                              break;
02693                          }
02694                      }
02695                      if ( !entityPatternPrinted ) {
02696                          // TIXMLASSERT( entityPatternPrinted ) causes gcc -Wunused-but-set-variable in
    release
02697                          TIXMLASSERT( false );
02698                      }
02699                      ++p;
02700                  }
02701              }
02702              ++q;
02703              TIXMLASSERT( p <= q );
02704          }
02705          // Flush the remaining string. This will be the entire
02706          // string if an entity wasn't found.
02707          if ( p < q ) {
02708              const size_t delta = q - p;
02709              const int toPrint = ( INT_MAX < delta ) ? INT_MAX : static_cast<int>(delta);
02710              Write( p, toPrint );
02711          }
02712      }
02713      else {
02714          Write( p );
02715      }
02716 }
02717
02718
02719 void XMLPrinter::PushHeader( bool writeBOM, bool writeDec )
02720 {
```

```
02721      if ( writeBOM ) {
02722          static const unsigned char bom[] = { TIXML_UTF_LEAD_0, TIXML_UTF_LEAD_1, TIXML_UTF_LEAD_2, 0
      };
02723          Write( reinterpret_cast< const char* >( bom ) );
02724      }
02725      if ( writeDec ) {
02726          PushDeclaration( "xml version=\"1.0\"" );
02727      }
02728 }
02729
02730 void XMLPrinter::PrepareForNewNode( bool compactMode )
02731 {
02732      SealElementIfJustOpened();
02733
02734      if ( compactMode ) {
02735          return;
02736      }
02737
02738      if ( _firstElement ) {
02739          PrintSpace (_depth);
02740      } else if ( _textDepth < 0) {
02741          Putc( '\n' );
02742          PrintSpace( _depth );
02743      }
02744
02745      _firstElement = false;
02746 }
02747
02748 void XMLPrinter::OpenElement( const char* name, bool compactMode )
02749 {
02750      PrepareForNewNode( compactMode );
02751      _stack.Push( name );
02752
02753      Write ( "<" );
02754      Write ( name );
02755
02756      _elementJustOpened = true;
02757      ++_depth;
02758 }
02759
02760
02761 void XMLPrinter::PushAttribute( const char* name, const char* value )
02762 {
02763      TIXMLASSERT( _elementJustOpened );
02764      Putc ( ' ' );
02765      Write( name );
02766      Write( "=\"" );
02767      PrintString( value, false );
02768      Putc ( '\"' );
02769 }
02770
02771
02772 void XMLPrinter::PushAttribute( const char* name, int v )
02773 {
02774      char buf[BUF_SIZE];
02775      XMLUtil::ToStr( v, buf, BUF_SIZE );
02776      PushAttribute( name, buf );
02777 }
02778
02779
02780 void XMLPrinter::PushAttribute( const char* name, unsigned v )
02781 {
02782      char buf[BUF_SIZE];
02783      XMLUtil::ToStr( v, buf, BUF_SIZE );
02784      PushAttribute( name, buf );
02785 }
02786
02787
02788 void XMLPrinter::PushAttribute(const char* name, int64_t v)
02789 {
02790      char buf[BUF_SIZE];
02791      XMLUtil::ToStr(v, buf, BUF_SIZE);
02792      PushAttribute(name, buf);
02793 }
02794
02795
02796 void XMLPrinter::PushAttribute(const char* name, uint64_t v)
02797 {
02798      char buf[BUF_SIZE];
02799      XMLUtil::ToStr(v, buf, BUF_SIZE);
02800      PushAttribute(name, buf);
02801 }
02802
02803
02804 void XMLPrinter::PushAttribute( const char* name, bool v )
02805 {
02806      char buf[BUF_SIZE];
```

```
02807        XMLUtil::ToStr( v, buf, BUF_SIZE );
02808        PushAttribute( name, buf );
02809 }
02810
02811
02812 void XMLPrinter::PushAttribute( const char* name, double v )
02813 {
02814        char buf[BUF_SIZE];
02815        XMLUtil::ToStr( v, buf, BUF_SIZE );
02816        PushAttribute( name, buf );
02817 }
02818
02819
02820 void XMLPrinter::CloseElement( bool compactMode )
02821 {
02822        --_depth;
02823        const char* name = _stack.Pop();
02824
02825        if ( _elementJustOpened ) {
02826            Write( "/>" );
02827        }
02828        else {
02829            if ( _textDepth < 0 && !compactMode) {
02830                Putc( '\n' );
02831                PrintSpace( _depth );
02832            }
02833            Write ( "</" );
02834            Write ( name );
02835            Write ( ">" );
02836        }
02837
02838        if ( _textDepth == _depth ) {
02839            _textDepth = -1;
02840        }
02841        if ( _depth == 0 && !compactMode) {
02842            Putc( '\n' );
02843        }
02844        _elementJustOpened = false;
02845 }
02846
02847
02848 void XMLPrinter::SealElementIfJustOpened()
02849 {
02850        if ( !_elementJustOpened ) {
02851            return;
02852        }
02853        _elementJustOpened = false;
02854        Putc( '>' );
02855 }
02856
02857
02858 void XMLPrinter::PushText( const char* text, bool cdata )
02859 {
02860        _textDepth = _depth-1;
02861
02862        SealElementIfJustOpened();
02863        if ( cdata ) {
02864            Write( "<![CDATA[" );
02865            Write( text );
02866            Write( "]]>" );
02867        }
02868        else {
02869            PrintString( text, true );
02870        }
02871 }
02872
02873
02874 void XMLPrinter::PushText( int64_t value )
02875 {
02876        char buf[BUF_SIZE];
02877        XMLUtil::ToStr( value, buf, BUF_SIZE );
02878        PushText( buf, false );
02879 }
02880
02881
02882 void XMLPrinter::PushText( uint64_t value )
02883 {
02884        char buf[BUF_SIZE];
02885        XMLUtil::ToStr(value, buf, BUF_SIZE);
02886        PushText(buf, false);
02887 }
02888
02889
02890 void XMLPrinter::PushText( int value )
02891 {
02892        char buf[BUF_SIZE];
02893        XMLUtil::ToStr( value, buf, BUF_SIZE );
```

```
02894        PushText( buf, false );
02895 }
02896
02897
02898 void XMLPrinter::PushText( unsigned value )
02899 {
02900        char buf[BUF_SIZE];
02901        XMLUtil::ToStr( value, buf, BUF_SIZE );
02902        PushText( buf, false );
02903 }
02904
02905
02906 void XMLPrinter::PushText( bool value )
02907 {
02908        char buf[BUF_SIZE];
02909        XMLUtil::ToStr( value, buf, BUF_SIZE );
02910        PushText( buf, false );
02911 }
02912
02913
02914 void XMLPrinter::PushText( float value )
02915 {
02916        char buf[BUF_SIZE];
02917        XMLUtil::ToStr( value, buf, BUF_SIZE );
02918        PushText( buf, false );
02919 }
02920
02921
02922 void XMLPrinter::PushText( double value )
02923 {
02924        char buf[BUF_SIZE];
02925        XMLUtil::ToStr( value, buf, BUF_SIZE );
02926        PushText( buf, false );
02927 }
02928
02929
02930 void XMLPrinter::PushComment( const char* comment )
02931 {
02932        PrepareForNewNode( _compactMode );
02933
02934        Write( "<!--" );
02935        Write( comment );
02936        Write( "-->" );
02937 }
02938
02939
02940 void XMLPrinter::PushDeclaration( const char* value )
02941 {
02942        PrepareForNewNode( _compactMode );
02943
02944        Write( "<?" );
02945        Write( value );
02946        Write( "?>" );
02947 }
02948
02949
02950 void XMLPrinter::PushUnknown( const char* value )
02951 {
02952        PrepareForNewNode( _compactMode );
02953
02954        Write( "<!" );
02955        Write( value );
02956        Putc( '>' );
02957 }
02958
02959
02960 bool XMLPrinter::VisitEnter( const XMLDocument& doc )
02961 {
02962        _processEntities = doc.ProcessEntities();
02963        if ( doc.HasBOM() ) {
02964            PushHeader( true, false );
02965        }
02966        return true;
02967 }
02968
02969
02970 bool XMLPrinter::VisitEnter( const XMLElement& element, const XMLAttribute* attribute )
02971 {
02972        const XMLElement* parentElem = 0;
02973        if ( element.Parent() ) {
02974            parentElem = element.Parent()->ToElement();
02975        }
02976        const bool compactMode = parentElem ? CompactMode( *parentElem ) : _compactMode;
02977        OpenElement( element.Name(), compactMode );
02978        while ( attribute ) {
02979            PushAttribute( attribute->Name(), attribute->Value() );
02980            attribute = attribute->Next();
```

```
02981     }
02982     return true;
02983 }
02984
02985
02986 bool XMLPrinter::VisitExit( const XMLElement& element )
02987 {
02988     CloseElement( CompactMode(element) );
02989     return true;
02990 }
02991
02992
02993 bool XMLPrinter::Visit( const XMLText& text )
02994 {
02995     PushText( text.Value(), text.CData() );
02996     return true;
02997 }
02998
02999
03000 bool XMLPrinter::Visit( const XMLComment& comment )
03001 {
03002     PushComment( comment.Value() );
03003     return true;
03004 }
03005
03006 bool XMLPrinter::Visit( const XMLDeclaration& declaration )
03007 {
03008     PushDeclaration( declaration.Value() );
03009     return true;
03010 }
03011
03012
03013 bool XMLPrinter::Visit( const XMLUnknown& unknown )
03014 {
03015     PushUnknown( unknown.Value() );
03016     return true;
03017 }
03018
03019 }   // namespace tinyxml2
```

## 8.25 external/tinyxml2/tinyxml2.h File Reference

```
#include <cctype>
#include <climits>
#include <cstdio>
#include <cstdlib>
#include <cstring>
#include <stdint.h>
```

**Classes**

- class tinyxml2::StrPair
- class tinyxml2::DynArray< T, INITIAL_SIZE >
- class tinyxml2::MemPool
- class tinyxml2::MemPoolT< ITEM_SIZE >
- class tinyxml2::XMLVisitor
- class tinyxml2::XMLUtil
- class tinyxml2::XMLNode
- class tinyxml2::XMLText
- class tinyxml2::XMLComment
- class tinyxml2::XMLDeclaration
- class tinyxml2::XMLUnknown
- class tinyxml2::XMLAttribute
- class tinyxml2::XMLElement
- class tinyxml2::XMLDocument
- class tinyxml2::XMLHandle
- class tinyxml2::XMLConstHandle
- class tinyxml2::XMLPrinter

**Namespaces**

- namespace tinyxml2

**Macros**

- #define TINYXML2_LIB
- #define TIXMLASSERT(x)
- #define TINYXML2_MAJOR_VERSION 10
- #define TINYXML2_MINOR_VERSION 0
- #define TINYXML2_PATCH_VERSION 0

**Enumerations**

- enum tinyxml2::XMLError {
  tinyxml2::XML_SUCCESS = 0 , tinyxml2::XML_NO_ATTRIBUTE , tinyxml2::XML_WRONG_ATTRIBUTE_TYPE
  , tinyxml2::XML_ERROR_FILE_NOT_FOUND ,
  tinyxml2::XML_ERROR_FILE_COULD_NOT_BE_OPENED , tinyxml2::XML_ERROR_FILE_READ_ERROR
  , tinyxml2::XML_ERROR_PARSING_ELEMENT , tinyxml2::XML_ERROR_PARSING_ATTRIBUTE ,
  tinyxml2::XML_ERROR_PARSING_TEXT , tinyxml2::XML_ERROR_PARSING_CDATA , tinyxml2::XML_ERROR_PARSING_C
  , tinyxml2::XML_ERROR_PARSING_DECLARATION ,
  tinyxml2::XML_ERROR_PARSING_UNKNOWN , tinyxml2::XML_ERROR_EMPTY_DOCUMENT , tinyxml2::XML_ERROR_MIS
  , tinyxml2::XML_ERROR_PARSING ,
  tinyxml2::XML_CAN_NOT_CONVERT_TEXT , tinyxml2::XML_NO_TEXT_NODE , tinyxml2::XML_ELEMENT_DEPTH_EXCEE
  , tinyxml2::XML_ERROR_COUNT }
- enum tinyxml2::Whitespace { tinyxml2::PRESERVE_WHITESPACE , tinyxml2::COLLAPSE_WHITESPACE ,
  tinyxml2::PEDANTIC_WHITESPACE }

## 8.25.1 Macro Definition Documentation

### 8.25.1.1 TINYXML2_LIB

#define TINYXML2_LIB
Definition at line 75 of file tinyxml2.h.

### 8.25.1.2 TINYXML2_MAJOR_VERSION

#define TINYXML2_MAJOR_VERSION 10
Definition at line 103 of file tinyxml2.h.

### 8.25.1.3 TINYXML2_MINOR_VERSION

#define TINYXML2_MINOR_VERSION 0
Definition at line 104 of file tinyxml2.h.

### 8.25.1.4 TINYXML2_PATCH_VERSION

#define TINYXML2_PATCH_VERSION 0
Definition at line 105 of file tinyxml2.h.

### 8.25.1.5 TIXMLASSERT

#define TIXMLASSERT(
              x)
**Value:**
do {} while(false)
Definition at line 92 of file tinyxml2.h.

## 8.26  tinyxml2.h

Go to the documentation of this file.

```
00001 /*
00002 Original code by Lee Thomason (www.grinninglizard.com)
00003
00004 This software is provided 'as-is', without any express or implied
00005 warranty. In no event will the authors be held liable for any
00006 damages arising from the use of this software.
00007
00008 Permission is granted to anyone to use this software for any
00009 purpose, including commercial applications, and to alter it and
00010 redistribute it freely, subject to the following restrictions:
00011
00012 1. The origin of this software must not be misrepresented; you must
00013 not claim that you wrote the original software. If you use this
00014 software in a product, an acknowledgment in the product documentation
00015 would be appreciated but is not required.
00016
00017 2. Altered source versions must be plainly marked as such, and
00018 must not be misrepresented as being the original software.
00019
00020 3. This notice may not be removed or altered from any source
00021 distribution.
00022 */
00023
00024 #ifndef TINYXML2_INCLUDED
00025 #define TINYXML2_INCLUDED
00026
00027 #if defined(ANDROID_NDK) || defined(__BORLANDC__) || defined(__QNXNTO__)
00028 #   include <ctype.h>
00029 #   include <limits.h>
00030 #   include <stdio.h>
00031 #   include <stdlib.h>
00032 #   include <string.h>
00033 #   if defined(__PS3__)
00034 #       include <stddef.h>
00035 #   endif
00036 #else
00037 #   include <cctype>
00038 #   include <climits>
00039 #   include <cstdio>
00040 #   include <cstdlib>
00041 #   include <cstring>
00042 #endif
00043 #include <stdint.h>
00044
00045 /*
00046    gcc:
00047        g++ -Wall -DTINYXML2_DEBUG tinyxml2.cpp xmltest.cpp -o gccxmltest.exe
00048
00049    Formatting, Artistic Style:
00050        AStyle.exe --style=1tbs --indent-switches --break-closing-brackets --indent-preprocessor
00051    tinyxml2.cpp tinyxml2.h
00051 */
00052
00053 #if defined( _DEBUG ) || defined (__DEBUG__)
00054 #   ifndef TINYXML2_DEBUG
00055 #       define TINYXML2_DEBUG
00056 #   endif
00057 #endif
00058
00059 #ifdef _MSC_VER
00060 #   pragma warning(push)
00061 #   pragma warning(disable: 4251)
00062 #endif
00063
00064 #ifdef _MSC_VER
00065 #   ifdef TINYXML2_EXPORT
00066 #       define TINYXML2_LIB __declspec(dllexport)
00067 #   elif defined(TINYXML2_IMPORT)
00068 #       define TINYXML2_LIB __declspec(dllimport)
00069 #   else
00070 #       define TINYXML2_LIB
00071 #   endif
00072 #elif __GNUC__ >= 4
00073 #   define TINYXML2_LIB __attribute__((visibility("default")))
00074 #else
00075 #   define TINYXML2_LIB
00076 #endif
00077
00078
00079 #if !defined(TIXMLASSERT)
00080 #if defined(TINYXML2_DEBUG)
00081 #   if defined(_MSC_VER)
00082 #       // "(void)0," is for suppressing C4127 warning in "assert(false)", "assert(true)" and the like
```

```
00083 #       define TIXMLASSERT( x )              do { if ( !((void)0,(x))) { __debugbreak(); } } while(false)
00084 #   elif defined (ANDROID_NDK)
00085 #       include <android/log.h>
00086 #       define TIXMLASSERT( x )              do { if ( !(x)) { __android_log_assert( "assert", "grinliz",
      "ASSERT in '%s' at %d.", __FILE__, __LINE__ ); } } while(false)
00087 #   else
00088 #       include <assert.h>
00089 #       define TIXMLASSERT                   assert
00090 #   endif
00091 #else
00092 #   define TIXMLASSERT( x )                  do {} while(false)
00093 #endif
00094 #endif
00095
00096 /* Versioning, past 1.0.14:
00097     http://semver.org/
00098 */
00099 static const int TIXML2_MAJOR_VERSION = 10;
00100 static const int TIXML2_MINOR_VERSION = 0;
00101 static const int TIXML2_PATCH_VERSION = 0;
00102
00103 #define TINYXML2_MAJOR_VERSION 10
00104 #define TINYXML2_MINOR_VERSION 0
00105 #define TINYXML2_PATCH_VERSION 0
00106
00107 // A fixed element depth limit is problematic. There needs to be a
00108 // limit to avoid a stack overflow. However, that limit varies per
00109 // system, and the capacity of the stack. On the other hand, it's a trivial
00110 // attack that can result from ill, malicious, or even correctly formed XML,
00111 // so there needs to be a limit in place.
00112 static const int TINYXML2_MAX_ELEMENT_DEPTH = 500;
00113
00114 namespace tinyxml2
00115 {
00116 class XMLDocument;
00117 class XMLElement;
00118 class XMLAttribute;
00119 class XMLComment;
00120 class XMLText;
00121 class XMLDeclaration;
00122 class XMLUnknown;
00123 class XMLPrinter;
00124
00125 /*
00126     A class that wraps strings. Normally stores the start and end
00127     pointers into the XML file itself, and will apply normalization
00128     and entity translation if actually read. Can also store (and memory
00129     manage) a traditional char[]
00130
00131     Isn't clear why TINYXML2_LIB is needed; but seems to fix #719
00132 */
00133 class TINYXML2_LIB StrPair
00134 {
00135 public:
00136     enum Mode {
00137         NEEDS_ENTITY_PROCESSING          = 0x01,
00138         NEEDS_NEWLINE_NORMALIZATION      = 0x02,
00139         NEEDS_WHITESPACE_COLLAPSING      = 0x04,
00140
00141         TEXT_ELEMENT                     = NEEDS_ENTITY_PROCESSING | NEEDS_NEWLINE_NORMALIZATION,
00142         TEXT_ELEMENT_LEAVE_ENTITIES      = NEEDS_NEWLINE_NORMALIZATION,
00143         ATTRIBUTE_NAME                   = 0,
00144         ATTRIBUTE_VALUE                  = NEEDS_ENTITY_PROCESSING | NEEDS_NEWLINE_NORMALIZATION,
00145        ATTRIBUTE_VALUE_LEAVE_ENTITIES   = NEEDS_NEWLINE_NORMALIZATION,
00146         COMMENT                          = NEEDS_NEWLINE_NORMALIZATION
00147     };
00148
00149     StrPair() : _flags( 0 ), _start( 0 ), _end( 0 ) {}
00150     ~StrPair();
00151
00152     void Set( char* start, char* end, int flags ) {
00153         TIXMLASSERT( start );
00154         TIXMLASSERT( end );
00155         Reset();
00156         _start  = start;
00157         _end    = end;
00158         _flags  = flags | NEEDS_FLUSH;
00159     }
00160
00161     const char* GetStr();
00162
00163     bool Empty() const {
00164         return _start == _end;
00165     }
00166
00167     void SetInternedStr( const char* str ) {
00168         Reset();
```

```
00169            _start = const_cast<char*>(str);
00170      }
00171
00172      void SetStr( const char* str, int flags=0 );
00173
00174      char* ParseText( char* in, const char* endTag, int strFlags, int* curLineNumPtr );
00175      char* ParseName( char* in );
00176
00177      void TransferTo( StrPair* other );
00178      void Reset();
00179
00180 private:
00181      void CollapseWhitespace();
00182
00183      enum {
00184          NEEDS_FLUSH = 0x100,
00185          NEEDS_DELETE = 0x200
00186      };
00187
00188      int    _flags;
00189      char*  _start;
00190      char*  _end;
00191
00192      StrPair( const StrPair& other );    // not supported
00193      void operator=( const StrPair& other ); // not supported, use TransferTo()
00194 };
00195
00196
00197 /*
00198      A dynamic array of Plain Old Data. Doesn't support constructors, etc.
00199      Has a small initial memory pool, so that low or no usage will not
00200      cause a call to new/delete
00201 */
00202 template <class T, size_t INITIAL_SIZE>
00203 class DynArray
00204 {
00205 public:
00206      DynArray() :
00207          _mem( _pool ),
00208          _allocated( INITIAL_SIZE ),
00209          _size( 0 )
00210      {
00211      }
00212
00213      ~DynArray() {
00214          if ( _mem != _pool ) {
00215              delete [] _mem;
00216          }
00217      }
00218
00219      void Clear() {
00220          _size = 0;
00221      }
00222
00223      void Push( T t ) {
00224          TIXMLASSERT( _size < INT_MAX );
00225          EnsureCapacity( _size+1 );
00226          _mem[_size] = t;
00227          ++_size;
00228      }
00229
00230      T* PushArr( size_t count ) {
00231          TIXMLASSERT( _size <= SIZE_MAX - count );
00232          EnsureCapacity( _size+count );
00233          T* ret = &_mem[_size];
00234          _size += count;
00235          return ret;
00236      }
00237
00238      T Pop() {
00239          TIXMLASSERT( _size > 0 );
00240          --_size;
00241          return _mem[_size];
00242      }
00243
00244      void PopArr( size_t count ) {
00245          TIXMLASSERT( _size >= count );
00246          _size -= count;
00247      }
00248
00249      bool Empty() const                  {
00250          return _size == 0;
00251      }
00252
00253      T& operator[](size_t i) {
00254          TIXMLASSERT( i < _size );
00255          return _mem[i];
```

```
00256        }
00257
00258        const T& operator[](size_t i) const {
00259            TIXMLASSERT( i < _size );
00260            return _mem[i];
00261        }
00262
00263        const T& PeekTop() const              {
00264            TIXMLASSERT( _size > 0 );
00265            return _mem[ _size - 1];
00266        }
00267
00268        size_t Size() const {
00269            TIXMLASSERT( _size >= 0 );
00270            return _size;
00271        }
00272
00273        size_t Capacity() const {
00274            TIXMLASSERT( _allocated >= INITIAL_SIZE );
00275            return _allocated;
00276        }
00277
00278        void SwapRemove(size_t i) {
00279            TIXMLASSERT(i < _size);
00280            TIXMLASSERT(_size > 0);
00281            _mem[i] = _mem[_size - 1];
00282            --_size;
00283        }
00284
00285        const T* Mem() const              {
00286            TIXMLASSERT( _mem );
00287            return _mem;
00288        }
00289
00290        T* Mem() {
00291            TIXMLASSERT( _mem );
00292            return _mem;
00293        }
00294
00295 private:
00296        DynArray( const DynArray& ); // not supported
00297        void operator=( const DynArray& ); // not supported
00298
00299        void EnsureCapacity( size_t cap ) {
00300            TIXMLASSERT( cap > 0 );
00301            if ( cap > _allocated ) {
00302                TIXMLASSERT( cap <= SIZE_MAX / 2 / sizeof(T));
00303                const size_t newAllocated = cap * 2;
00304                T* newMem = new T[newAllocated];
00305                TIXMLASSERT( newAllocated >= _size );
00306                memcpy( newMem, _mem, sizeof(T) * _size );  // warning: not using constructors, only works
     for PODs
00307                if ( _mem != _pool ) {
00308                    delete [] _mem;
00309                }
00310                _mem = newMem;
00311                _allocated = newAllocated;
00312            }
00313        }
00314
00315        T*  _mem;
00316        T   _pool[INITIAL_SIZE];
00317        size_t _allocated;       // objects allocated
00318        size_t _size;            // number objects in use
00319 };
00320
00321
00322 /*
00323     Parent virtual class of a pool for fast allocation
00324     and deallocation of objects.
00325 */
00326 class MemPool
00327 {
00328 public:
00329        MemPool() {}
00330        virtual ~MemPool() {}
00331
00332        virtual size_t ItemSize() const = 0;
00333        virtual void* Alloc() = 0;
00334        virtual void Free( void* ) = 0;
00335        virtual void SetTracked() = 0;
00336 };
00337
00338
00339 /*
00340     Template child class to create pools of the correct type.
00341 */
```

```
00342 template< size_t ITEM_SIZE >
00343 class MemPoolT : public MemPool
00344 {
00345 public:
00346     MemPoolT() : _blockPtrs(), _root(0), _currentAllocs(0), _nAllocs(0), _maxAllocs(0), _nUntracked(0)
       {}
00347     ~MemPoolT() {
00348         MemPoolT< ITEM_SIZE >::Clear();
00349     }
00350
00351     void Clear() {
00352         // Delete the blocks.
00353         while( !_blockPtrs.Empty()) {
00354             Block* lastBlock = _blockPtrs.Pop();
00355             delete lastBlock;
00356         }
00357         _root = 0;
00358         _currentAllocs = 0;
00359         _nAllocs = 0;
00360         _maxAllocs = 0;
00361         _nUntracked = 0;
00362     }
00363
00364     virtual size_t ItemSize() const override {
00365         return ITEM_SIZE;
00366     }
00367     size_t CurrentAllocs() const {
00368         return _currentAllocs;
00369     }
00370
00371     virtual void* Alloc() override{
00372         if ( !_root ) {
00373             // Need a new block.
00374             Block* block = new Block;
00375             _blockPtrs.Push( block );
00376
00377             Item* blockItems = block->items;
00378             for( size_t i = 0; i < ITEMS_PER_BLOCK - 1; ++i ) {
00379                 blockItems[i].next = &(blockItems[i + 1]);
00380             }
00381             blockItems[ITEMS_PER_BLOCK - 1].next = 0;
00382             _root = blockItems;
00383         }
00384         Item* const result = _root;
00385         TIXMLASSERT( result != 0 );
00386         _root = _root->next;
00387
00388         ++_currentAllocs;
00389         if ( _currentAllocs > _maxAllocs ) {
00390             _maxAllocs = _currentAllocs;
00391         }
00392         ++_nAllocs;
00393         ++_nUntracked;
00394         return result;
00395     }
00396
00397     virtual void Free( void* mem ) override {
00398         if ( !mem ) {
00399             return;
00400         }
00401         --_currentAllocs;
00402         Item* item = static_cast<Item*>( mem );
00403 #ifdef TINYXML2_DEBUG
00404         memset( item, 0xfe, sizeof( *item ) );
00405 #endif
00406         item->next = _root;
00407         _root = item;
00408     }
00409     void Trace( const char* name ) {
00410         printf( "Mempool %s watermark=%d [%dk] current=%d size=%d nAlloc=%d blocks=%d\n",
00411                 name, _maxAllocs, _maxAllocs * ITEM_SIZE / 1024, _currentAllocs,
00412                 ITEM_SIZE, _nAllocs, _blockPtrs.Size() );
00413     }
00414
00415     void SetTracked() override {
00416         --_nUntracked;
00417     }
00418
00419     size_t Untracked() const {
00420         return _nUntracked;
00421     }
00422
00423     // This number is perf sensitive. 4k seems like a good tradeoff on my machine.
00424     // The test file is large, 170k.
00425     // Release:     VS2010 gcc(no opt)
00426     //      1k:     4000
00427     //      2k:     4000
```

```
00428      //      4k:     3900    21000
00429      //      16k:    5200
00430      //      32k:    4300
00431      //      64k:    4000    21000
00432      // Declared public because some compilers do not accept to use ITEMS_PER_BLOCK
00433      // in private part if ITEMS_PER_BLOCK is private
00434      enum { ITEMS_PER_BLOCK = (4 * 1024) / ITEM_SIZE };
00435
00436 private:
00437      MemPoolT( const MemPoolT& ); // not supported
00438      void operator=( const MemPoolT& ); // not supported
00439
00440      union Item {
00441          Item*   next;
00442          char    itemData[static_cast<size_t>(ITEM_SIZE)];
00443      };
00444      struct Block {
00445          Item items[ITEMS_PER_BLOCK];
00446      };
00447      DynArray< Block*, 10 > _blockPtrs;
00448      Item* _root;
00449
00450      size_t _currentAllocs;
00451      size_t _nAllocs;
00452      size_t _maxAllocs;
00453      size_t _nUntracked;
00454 };
00455
00456
00457
00477 class TINYXML2_LIB XMLVisitor
00478 {
00479 public:
00480      virtual ~XMLVisitor() {}
00481
00483      virtual bool VisitEnter( const XMLDocument& /*doc*/ )          {
00484          return true;
00485      }
00487      virtual bool VisitExit( const XMLDocument& /*doc*/ )           {
00488          return true;
00489      }
00490
00492      virtual bool VisitEnter( const XMLElement& /*element*/, const XMLAttribute* /*firstAttribute*/ )
    {
00493          return true;
00494      }
00496      virtual bool VisitExit( const XMLElement& /*element*/ )         {
00497          return true;
00498      }
00499
00501      virtual bool Visit( const XMLDeclaration& /*declaration*/ )     {
00502          return true;
00503      }
00505      virtual bool Visit( const XMLText& /*text*/ )                  {
00506          return true;
00507      }
00509      virtual bool Visit( const XMLComment& /*comment*/ )            {
00510          return true;
00511      }
00513      virtual bool Visit( const XMLUnknown& /*unknown*/ )            {
00514          return true;
00515      }
00516 };
00517
00518 // WARNING: must match XMLDocument::_errorNames[]
00519 enum XMLError {
00520      XML_SUCCESS = 0,
00521      XML_NO_ATTRIBUTE,
00522      XML_WRONG_ATTRIBUTE_TYPE,
00523      XML_ERROR_FILE_NOT_FOUND,
00524      XML_ERROR_FILE_COULD_NOT_BE_OPENED,
00525      XML_ERROR_FILE_READ_ERROR,
00526      XML_ERROR_PARSING_ELEMENT,
00527      XML_ERROR_PARSING_ATTRIBUTE,
00528      XML_ERROR_PARSING_TEXT,
00529      XML_ERROR_PARSING_CDATA,
00530      XML_ERROR_PARSING_COMMENT,
00531      XML_ERROR_PARSING_DECLARATION,
00532      XML_ERROR_PARSING_UNKNOWN,
00533      XML_ERROR_EMPTY_DOCUMENT,
00534      XML_ERROR_MISMATCHED_ELEMENT,
00535      XML_ERROR_PARSING,
00536      XML_CAN_NOT_CONVERT_TEXT,
00537      XML_NO_TEXT_NODE,
00538      XML_ELEMENT_DEPTH_EXCEEDED,
00539
00540      XML_ERROR_COUNT
```

```
00541 };
00542
00543
00544 /*
00545     Utility functionality.
00546 */
00547 class TINYXML2_LIB XMLUtil
00548 {
00549 public:
00550     static const char* SkipWhiteSpace( const char* p, int* curLineNumPtr )     {
00551         TIXMLASSERT( p );
00552
00553         while( IsWhiteSpace(*p) ) {
00554             if (curLineNumPtr && *p == '\n') {
00555                 ++(*curLineNumPtr);
00556             }
00557             ++p;
00558         }
00559         TIXMLASSERT( p );
00560         return p;
00561     }
00562     static char* SkipWhiteSpace( char* const p, int* curLineNumPtr ) {
00563         return const_cast<char*>( SkipWhiteSpace( const_cast<const char*>(p), curLineNumPtr ) );
00564     }
00565
00566     // Anything in the high order range of UTF-8 is assumed to not be whitespace. This isn't
00567     // correct, but simple, and usually works.
00568     static bool IsWhiteSpace( char p )                 {
00569         return !IsUTF8Continuation(p) && isspace( static_cast<unsigned char>(p) );
00570     }
00571
00572     inline static bool IsNameStartChar( unsigned char ch ) {
00573         if ( ch >= 128 ) {
00574             // This is a heuristic guess in attempt to not implement Unicode-aware isalpha()
00575             return true;
00576         }
00577         if ( isalpha( ch ) ) {
00578             return true;
00579         }
00580         return ch == ':' || ch == '_';
00581     }
00582
00583     inline static bool IsNameChar( unsigned char ch ) {
00584         return IsNameStartChar( ch )
00585                || isdigit( ch )
00586                || ch == '.'
00587                || ch == '-';
00588     }
00589
00590     inline static bool IsPrefixHex( const char* p) {
00591         p = SkipWhiteSpace(p, 0);
00592         return p && *p == '0' && ( *(p + 1) == 'x' || *(p + 1) == 'X');
00593     }
00594
00595     inline static bool StringEqual( const char* p, const char* q, int nChar=INT_MAX )   {
00596         if ( p == q ) {
00597             return true;
00598         }
00599         TIXMLASSERT( p );
00600         TIXMLASSERT( q );
00601         TIXMLASSERT( nChar >= 0 );
00602         return strncmp( p, q, static_cast<size_t>(nChar) ) == 0;
00603     }
00604
00605     inline static bool IsUTF8Continuation( const char p ) {
00606         return ( p & 0x80 ) != 0;
00607     }
00608
00609     static const char* ReadBOM( const char* p, bool* hasBOM );
00610     // p is the starting location,
00611     // the UTF-8 value of the entity will be placed in value, and length filled in.
00612     static const char* GetCharacterRef( const char* p, char* value, int* length );
00613     static void ConvertUTF32ToUTF8( unsigned long input, char* output, int* length );
00614
00615     // converts primitive types to strings
00616     static void ToStr( int v, char* buffer, int bufferSize );
00617     static void ToStr( unsigned v, char* buffer, int bufferSize );
00618     static void ToStr( bool v, char* buffer, int bufferSize );
00619     static void ToStr( float v, char* buffer, int bufferSize );
00620     static void ToStr( double v, char* buffer, int bufferSize );
00621     static void ToStr(int64_t v, char* buffer, int bufferSize);
00622     static void ToStr(uint64_t v, char* buffer, int bufferSize);
00623
00624     // converts strings to primitive types
00625     static bool ToInt( const char* str, int* value );
00626     static bool ToUnsigned( const char* str, unsigned* value );
00627     static bool ToBool( const char* str, bool* value );
```

```
00628      static bool ToFloat( const char* str, float* value );
00629      static bool ToDouble( const char* str, double* value );
00630      static bool ToInt64(const char* str, int64_t* value);
00631      static bool ToUnsigned64(const char* str, uint64_t* value);
00632      // Changes what is serialized for a boolean value.
00633      // Default to "true" and "false". Shouldn't be changed
00634      // unless you have a special testing or compatibility need.
00635      // Be careful: static, global, & not thread safe.
00636      // Be sure to set static const memory as parameters.
00637      static void SetBoolSerialization(const char* writeTrue, const char* writeFalse);
00638
00639 private:
00640      static const char* writeBoolTrue;
00641      static const char* writeBoolFalse;
00642 };
00643
00644
00670 class TINYXML2_LIB XMLNode
00671 {
00672      friend class XMLDocument;
00673      friend class XMLElement;
00674 public:
00675
00677      const XMLDocument* GetDocument() const     {
00678          TIXMLASSERT( _document );
00679          return _document;
00680      }
00682      XMLDocument* GetDocument()                  {
00683          TIXMLASSERT( _document );
00684          return _document;
00685      }
00686
00688      virtual XMLElement*      ToElement()        {
00689          return 0;
00690      }
00692      virtual XMLText*     ToText()      {
00693          return 0;
00694      }
00696      virtual XMLComment*      ToComment()        {
00697          return 0;
00698      }
00700      virtual XMLDocument* ToDocument()  {
00701          return 0;
00702      }
00704      virtual XMLDeclaration*  ToDeclaration()    {
00705          return 0;
00706      }
00708      virtual XMLUnknown*      ToUnknown()        {
00709          return 0;
00710      }
00711
00712      virtual const XMLElement*     ToElement() const       {
00713          return 0;
00714      }
00715      virtual const XMLText*          ToText() const              {
00716          return 0;
00717      }
00718      virtual const XMLComment*     ToComment() const       {
00719          return 0;
00720      }
00721      virtual const XMLDocument*       ToDocument() const         {
00722          return 0;
00723      }
00724      virtual const XMLDeclaration* ToDeclaration() const  {
00725          return 0;
00726      }
00727      virtual const XMLUnknown*     ToUnknown() const       {
00728          return 0;
00729      }
00730
00731      // ChildElementCount was originally suggested by msteiger on the sourceforge page for TinyXML and
      modified by KB1SPH for TinyXML-2.
00732
00733      int ChildElementCount(const char *value) const;
00734
00735      int ChildElementCount() const;
00736
00746      const char* Value() const;
00747
00751      void SetValue( const char* val, bool staticMem=false );
00752
00754      int GetLineNum() const { return _parseLineNum; }
00755
00757      const XMLNode*   Parent() const             {
00758          return _parent;
00759      }
00760
```

```
00761     XMLNode* Parent()                         {
00762         return _parent;
00763     }
00764
00766     bool NoChildren() const                   {
00767         return !_firstChild;
00768     }
00769
00771     const XMLNode*  FirstChild() const     {
00772         return _firstChild;
00773     }
00774
00775     XMLNode*      FirstChild()          {
00776         return _firstChild;
00777     }
00778
00782     const XMLElement* FirstChildElement( const char* name = 0 )  const;
00783
00784     XMLElement* FirstChildElement( const char* name = 0 )     {
00785         return const_cast<XMLElement*>(const_cast<const XMLNode*>(this)->FirstChildElement( name ));
00786     }
00787
00789     const XMLNode*   LastChild() const                      {
00790         return _lastChild;
00791     }
00792
00793     XMLNode*      LastChild()                               {
00794         return _lastChild;
00795     }
00796
00800     const XMLElement* LastChildElement( const char* name = 0 ) const;
00801
00802     XMLElement* LastChildElement( const char* name = 0 )  {
00803         return const_cast<XMLElement*>(const_cast<const XMLNode*>(this)->LastChildElement(name) );
00804     }
00805
00807     const XMLNode*   PreviousSibling() const               {
00808         return _prev;
00809     }
00810
00811     XMLNode* PreviousSibling()                             {
00812         return _prev;
00813     }
00814
00816     const XMLElement* PreviousSiblingElement( const char* name = 0 ) const ;
00817
00818     XMLElement*   PreviousSiblingElement( const char* name = 0 ) {
00819         return const_cast<XMLElement*>(const_cast<const XMLNode*>(this)->PreviousSiblingElement( name
    ) );
00820     }
00821
00823     const XMLNode*   NextSibling() const                   {
00824         return _next;
00825     }
00826
00827     XMLNode* NextSibling()                                 {
00828         return _next;
00829     }
00830
00832     const XMLElement* NextSiblingElement( const char* name = 0 ) const;
00833
00834     XMLElement*   NextSiblingElement( const char* name = 0 )     {
00835         return const_cast<XMLElement*>(const_cast<const XMLNode*>(this)->NextSiblingElement( name ) );
00836     }
00837
00845     XMLNode* InsertEndChild( XMLNode* addThis );
00846
00847     XMLNode* LinkEndChild( XMLNode* addThis ) {
00848         return InsertEndChild( addThis );
00849     }
00857     XMLNode* InsertFirstChild( XMLNode* addThis );
00866     XMLNode* InsertAfterChild( XMLNode* afterThis, XMLNode* addThis );
00867
00871     void DeleteChildren();
00872
00876     void DeleteChild( XMLNode* node );
00877
00887     virtual XMLNode* ShallowClone( XMLDocument* document ) const = 0;
00888
00902     XMLNode* DeepClone( XMLDocument* target ) const;
00903
00910     virtual bool ShallowEqual( const XMLNode* compare ) const = 0;
00911
00934     virtual bool Accept( XMLVisitor* visitor ) const = 0;
00935
00941     void SetUserData(void* userData) { _userData = userData; }
00942
```

```
00948      void* GetUserData() const                { return _userData; }
00949
00950 protected:
00951      explicit XMLNode( XMLDocument* );
00952      virtual ~XMLNode();
00953
00954      virtual char* ParseDeep( char* p, StrPair* parentEndTag, int* curLineNumPtr);
00955
00956      XMLDocument* _document;
00957      XMLNode*     _parent;
00958      mutable StrPair  _value;
00959      int              _parseLineNum;
00960
00961      XMLNode*     _firstChild;
00962      XMLNode*     _lastChild;
00963
00964      XMLNode*     _prev;
00965      XMLNode*     _next;
00966
00967      void*             _userData;
00968
00969 private:
00970      MemPool*     _memPool;
00971      void Unlink( XMLNode* child );
00972      static void DeleteNode( XMLNode* node );
00973      void InsertChildPreamble( XMLNode* insertThis ) const;
00974      const XMLElement* ToElementWithName( const char* name ) const;
00975
00976      XMLNode( const XMLNode& );     // not supported
00977      XMLNode& operator=( const XMLNode& ); // not supported
00978 };
00979
00980
00993 class TINYXML2_LIB XMLText : public XMLNode
00994 {
00995      friend class XMLDocument;
00996 public:
00997      virtual bool Accept( XMLVisitor* visitor ) const override;
00998
00999      virtual XMLText* ToText() override      {
01000          return this;
01001      }
01002      virtual const XMLText* ToText() const override {
01003          return this;
01004      }
01005
01007      void SetCData( bool isCData )           {
01008          _isCData = isCData;
01009      }
01011      bool CData() const                      {
01012          return _isCData;
01013      }
01014
01015      virtual XMLNode* ShallowClone( XMLDocument* document ) const override;
01016      virtual bool ShallowEqual( const XMLNode* compare ) const override;
01017
01018 protected:
01019      explicit XMLText( XMLDocument* doc )  : XMLNode( doc ), _isCData( false )  {}
01020      virtual ~XMLText()                                              {}
01021
01022      char* ParseDeep( char* p, StrPair* parentEndTag, int* curLineNumPtr ) override;
01023
01024 private:
01025      bool _isCData;
01026
01027      XMLText( const XMLText& );     // not supported
01028      XMLText& operator=( const XMLText& ); // not supported
01029 };
01030
01031
01033 class TINYXML2_LIB XMLComment : public XMLNode
01034 {
01035      friend class XMLDocument;
01036 public:
01037      virtual XMLComment*  ToComment() override      {
01038          return this;
01039      }
01040      virtual const XMLComment* ToComment() const override {
01041          return this;
01042      }
01043
01044      virtual bool Accept( XMLVisitor* visitor ) const override;
01045
01046      virtual XMLNode* ShallowClone( XMLDocument* document ) const override;
01047      virtual bool ShallowEqual( const XMLNode* compare ) const override;
01048
01049 protected:
```

```
01050      explicit XMLComment( XMLDocument* doc );
01051      virtual ~XMLComment();
01052
01053      char* ParseDeep( char* p, StrPair* parentEndTag, int* curLineNumPtr) override;
01054
01055 private:
01056      XMLComment( const XMLComment& );    // not supported
01057      XMLComment& operator=( const XMLComment& ); // not supported
01058 };
01059
01060
01072 class TINYXML2_LIB XMLDeclaration : public XMLNode
01073 {
01074      friend class XMLDocument;
01075 public:
01076      virtual XMLDeclaration*  ToDeclaration() override       {
01077          return this;
01078      }
01079      virtual const XMLDeclaration* ToDeclaration() const override {
01080          return this;
01081      }
01082
01083      virtual bool Accept( XMLVisitor* visitor ) const override;
01084
01085      virtual XMLNode* ShallowClone( XMLDocument* document ) const override;
01086      virtual bool ShallowEqual( const XMLNode* compare ) const override;
01087
01088 protected:
01089      explicit XMLDeclaration( XMLDocument* doc );
01090      virtual ~XMLDeclaration();
01091
01092      char* ParseDeep( char* p, StrPair* parentEndTag, int* curLineNumPtr ) override;
01093
01094 private:
01095      XMLDeclaration( const XMLDeclaration& );    // not supported
01096      XMLDeclaration& operator=( const XMLDeclaration& ); // not supported
01097 };
01098
01099
01107 class TINYXML2_LIB XMLUnknown : public XMLNode
01108 {
01109      friend class XMLDocument;
01110 public:
01111      virtual XMLUnknown*  ToUnknown() override       {
01112          return this;
01113      }
01114      virtual const XMLUnknown* ToUnknown() const override {
01115          return this;
01116      }
01117
01118      virtual bool Accept( XMLVisitor* visitor ) const override;
01119
01120      virtual XMLNode* ShallowClone( XMLDocument* document ) const override;
01121      virtual bool ShallowEqual( const XMLNode* compare ) const override;
01122
01123 protected:
01124      explicit XMLUnknown( XMLDocument* doc );
01125      virtual ~XMLUnknown();
01126
01127      char* ParseDeep( char* p, StrPair* parentEndTag, int* curLineNumPtr ) override;
01128
01129 private:
01130      XMLUnknown( const XMLUnknown& );    // not supported
01131      XMLUnknown& operator=( const XMLUnknown& ); // not supported
01132 };
01133
01134
01135
01142 class TINYXML2_LIB XMLAttribute
01143 {
01144      friend class XMLElement;
01145 public:
01147      const char* Name() const;
01148
01150      const char* Value() const;
01151
01153      int GetLineNum() const { return _parseLineNum; }
01154
01156      const XMLAttribute* Next() const {
01157          return _next;
01158      }
01159
01164      int IntValue() const {
01165          int i = 0;
01166          QueryIntValue(&i);
01167          return i;
01168      }
```

```
01169
01170     int64_t Int64Value() const {
01171         int64_t i = 0;
01172         QueryInt64Value(&i);
01173         return i;
01174     }
01175
01176     uint64_t Unsigned64Value() const {
01177         uint64_t i = 0;
01178         QueryUnsigned64Value(&i);
01179         return i;
01180     }
01181
01183     unsigned UnsignedValue() const          {
01184         unsigned i=0;
01185         QueryUnsignedValue( &i );
01186         return i;
01187     }
01189     bool      BoolValue() const              {
01190         bool b=false;
01191         QueryBoolValue( &b );
01192         return b;
01193     }
01195     double    DoubleValue() const           {
01196         double d=0;
01197         QueryDoubleValue( &d );
01198         return d;
01199     }
01201     float     FloatValue() const                {
01202         float f=0;
01203         QueryFloatValue( &f );
01204         return f;
01205     }
01206
01211     XMLError QueryIntValue( int* value ) const;
01213     XMLError QueryUnsignedValue( unsigned int* value ) const;
01215     XMLError QueryInt64Value(int64_t* value) const;
01217     XMLError QueryUnsigned64Value(uint64_t* value) const;
01219     XMLError QueryBoolValue( bool* value ) const;
01221     XMLError QueryDoubleValue( double* value ) const;
01223     XMLError QueryFloatValue( float* value ) const;
01224
01226     void SetAttribute( const char* value );
01228     void SetAttribute( int value );
01230     void SetAttribute( unsigned value );
01232     void SetAttribute(int64_t value);
01234     void SetAttribute(uint64_t value);
01236     void SetAttribute( bool value );
01238     void SetAttribute( double value );
01240     void SetAttribute( float value );
01241
01242 private:
01243     enum { BUF_SIZE = 200 };
01244
01245     XMLAttribute() : _name(), _value(),_parseLineNum( 0 ), _next( 0 ), _memPool( 0 ) {}
01246     virtual ~XMLAttribute() {}
01247
01248     XMLAttribute( const XMLAttribute& );    // not supported
01249     void operator=( const XMLAttribute& );  // not supported
01250     void SetName( const char* name );
01251
01252     char* ParseDeep( char* p, bool processEntities, int* curLineNumPtr );
01253
01254     mutable StrPair _name;
01255     mutable StrPair _value;
01256     int             _parseLineNum;
01257     XMLAttribute*   _next;
01258     MemPool*        _memPool;
01259 };
01260
01261
01266 class TINYXML2_LIB XMLElement : public XMLNode
01267 {
01268     friend class XMLDocument;
01269 public:
01271     const char* Name() const        {
01272         return Value();
01273     }
01275     void SetName( const char* str, bool staticMem=false )     {
01276         SetValue( str, staticMem );
01277     }
01278
01279     virtual XMLElement* ToElement() override   {
01280         return this;
01281     }
01282     virtual const XMLElement* ToElement() const override {
01283         return this;
```

```
01284        }
01285        virtual bool Accept( XMLVisitor* visitor ) const override;
01286
01310        const char* Attribute( const char* name, const char* value=0 ) const;
01311
01318        int IntAttribute(const char* name, int defaultValue = 0) const;
01320        unsigned UnsignedAttribute(const char* name, unsigned defaultValue = 0) const;
01322        int64_t Int64Attribute(const char* name, int64_t defaultValue = 0) const;
01324        uint64_t Unsigned64Attribute(const char* name, uint64_t defaultValue = 0) const;
01326        bool BoolAttribute(const char* name, bool defaultValue = false) const;
01328        double DoubleAttribute(const char* name, double defaultValue = 0) const;
01330        float FloatAttribute(const char* name, float defaultValue = 0) const;
01331
01345        XMLError QueryIntAttribute( const char* name, int* value ) const              {
01346            const XMLAttribute* a = FindAttribute( name );
01347            if ( !a ) {
01348                return XML_NO_ATTRIBUTE;
01349            }
01350            return a->QueryIntValue( value );
01351        }
01352
01354        XMLError QueryUnsignedAttribute( const char* name, unsigned int* value ) const    {
01355            const XMLAttribute* a = FindAttribute( name );
01356            if ( !a ) {
01357                return XML_NO_ATTRIBUTE;
01358            }
01359            return a->QueryUnsignedValue( value );
01360        }
01361
01363        XMLError QueryInt64Attribute(const char* name, int64_t* value) const {
01364            const XMLAttribute* a = FindAttribute(name);
01365            if (!a) {
01366                return XML_NO_ATTRIBUTE;
01367            }
01368            return a->QueryInt64Value(value);
01369        }
01370
01372        XMLError QueryUnsigned64Attribute(const char* name, uint64_t* value) const {
01373            const XMLAttribute* a = FindAttribute(name);
01374            if(!a) {
01375                return XML_NO_ATTRIBUTE;
01376            }
01377            return a->QueryUnsigned64Value(value);
01378        }
01379
01381        XMLError QueryBoolAttribute( const char* name, bool* value ) const              {
01382            const XMLAttribute* a = FindAttribute( name );
01383            if ( !a ) {
01384                return XML_NO_ATTRIBUTE;
01385            }
01386            return a->QueryBoolValue( value );
01387        }
01389        XMLError QueryDoubleAttribute( const char* name, double* value ) const            {
01390            const XMLAttribute* a = FindAttribute( name );
01391            if ( !a ) {
01392                return XML_NO_ATTRIBUTE;
01393            }
01394            return a->QueryDoubleValue( value );
01395        }
01397        XMLError QueryFloatAttribute( const char* name, float* value ) const            {
01398            const XMLAttribute* a = FindAttribute( name );
01399            if ( !a ) {
01400                return XML_NO_ATTRIBUTE;
01401            }
01402            return a->QueryFloatValue( value );
01403        }
01404
01406        XMLError QueryStringAttribute(const char* name, const char** value) const {
01407            const XMLAttribute* a = FindAttribute(name);
01408            if (!a) {
01409                return XML_NO_ATTRIBUTE;
01410            }
01411            *value = a->Value();
01412            return XML_SUCCESS;
01413        }
01414
01415
01416
01434        XMLError QueryAttribute( const char* name, int* value ) const {
01435            return QueryIntAttribute( name, value );
01436        }
01437
01438        XMLError QueryAttribute( const char* name, unsigned int* value ) const {
01439            return QueryUnsignedAttribute( name, value );
01440        }
01441
01442        XMLError QueryAttribute(const char* name, int64_t* value) const {
```

```
01443            return QueryInt64Attribute(name, value);
01444        }
01445
01446        XMLError QueryAttribute(const char* name, uint64_t* value) const {
01447            return QueryUnsigned64Attribute(name, value);
01448        }
01449
01450        XMLError QueryAttribute( const char* name, bool* value ) const {
01451            return QueryBoolAttribute( name, value );
01452        }
01453
01454        XMLError QueryAttribute( const char* name, double* value ) const {
01455            return QueryDoubleAttribute( name, value );
01456        }
01457
01458        XMLError QueryAttribute( const char* name, float* value ) const {
01459            return QueryFloatAttribute( name, value );
01460        }
01461
01462        XMLError QueryAttribute(const char* name, const char** value) const {
01463            return QueryStringAttribute(name, value);
01464        }
01465
01467        void SetAttribute( const char* name, const char* value )    {
01468            XMLAttribute* a = FindOrCreateAttribute( name );
01469            a->SetAttribute( value );
01470        }
01472        void SetAttribute( const char* name, int value )            {
01473            XMLAttribute* a = FindOrCreateAttribute( name );
01474            a->SetAttribute( value );
01475        }
01477        void SetAttribute( const char* name, unsigned value )       {
01478            XMLAttribute* a = FindOrCreateAttribute( name );
01479            a->SetAttribute( value );
01480        }
01481
01483        void SetAttribute(const char* name, int64_t value) {
01484            XMLAttribute* a = FindOrCreateAttribute(name);
01485            a->SetAttribute(value);
01486        }
01487
01489        void SetAttribute(const char* name, uint64_t value) {
01490            XMLAttribute* a = FindOrCreateAttribute(name);
01491            a->SetAttribute(value);
01492        }
01493
01495        void SetAttribute( const char* name, bool value )           {
01496            XMLAttribute* a = FindOrCreateAttribute( name );
01497            a->SetAttribute( value );
01498        }
01500        void SetAttribute( const char* name, double value )     {
01501            XMLAttribute* a = FindOrCreateAttribute( name );
01502            a->SetAttribute( value );
01503        }
01505        void SetAttribute( const char* name, float value )      {
01506            XMLAttribute* a = FindOrCreateAttribute( name );
01507            a->SetAttribute( value );
01508        }
01509
01513        void DeleteAttribute( const char* name );
01514
01516        const XMLAttribute* FirstAttribute() const {
01517            return _rootAttribute;
01518        }
01520        const XMLAttribute* FindAttribute( const char* name ) const;
01521
01550        const char* GetText() const;
01551
01586        void SetText( const char* inText );
01588        void SetText( int value );
01590        void SetText( unsigned value );
01592        void SetText(int64_t value);
01594        void SetText(uint64_t value);
01596        void SetText( bool value );
01598        void SetText( double value );
01600        void SetText( float value );
01601
01628        XMLError QueryIntText( int* ival ) const;
01630        XMLError QueryUnsignedText( unsigned* uval ) const;
01632        XMLError QueryInt64Text(int64_t* uval) const;
01634        XMLError QueryUnsigned64Text(uint64_t* uval) const;
01636        XMLError QueryBoolText( bool* bval ) const;
01638        XMLError QueryDoubleText( double* dval ) const;
01640        XMLError QueryFloatText( float* fval ) const;
01641
01642        int  IntText(int defaultValue = 0) const;
01643
```

```
01645      unsigned UnsignedText(unsigned defaultValue = 0) const;
01647      int64_t Int64Text(int64_t defaultValue = 0) const;
01649      uint64_t Unsigned64Text(uint64_t defaultValue = 0) const;
01651      bool BoolText(bool defaultValue = false) const;
01653      double DoubleText(double defaultValue = 0) const;
01655      float FloatText(float defaultValue = 0) const;
01656
01661      XMLElement* InsertNewChildElement(const char* name);
01663      XMLComment* InsertNewComment(const char* comment);
01665      XMLText* InsertNewText(const char* text);
01667      XMLDeclaration* InsertNewDeclaration(const char* text);
01669      XMLUnknown* InsertNewUnknown(const char* text);
01670
01671
01672      // internal:
01673      enum ElementClosingType {
01674          OPEN,          // <foo>
01675          CLOSED,        // <foo/>
01676          CLOSING        // </foo>
01677      };
01678      ElementClosingType ClosingType() const {
01679          return _closingType;
01680      }
01681      virtual XMLNode* ShallowClone( XMLDocument* document ) const override;
01682      virtual bool ShallowEqual( const XMLNode* compare ) const override;
01683
01684 protected:
01685      char* ParseDeep( char* p, StrPair* parentEndTag, int* curLineNumPtr ) override;
01686
01687 private:
01688      XMLElement( XMLDocument* doc );
01689      virtual ~XMLElement();
01690      XMLElement( const XMLElement& );    // not supported
01691      void operator=( const XMLElement& );  // not supported
01692
01693      XMLAttribute* FindOrCreateAttribute( const char* name );
01694      char* ParseAttributes( char* p, int* curLineNumPtr );
01695      static void DeleteAttribute( XMLAttribute* attribute );
01696      XMLAttribute* CreateAttribute();
01697
01698      enum { BUF_SIZE = 200 };
01699      ElementClosingType _closingType;
01700      // The attribute list is ordered; there is no 'lastAttribute'
01701      // because the list needs to be scanned for dupes before adding
01702      // a new attribute.
01703      XMLAttribute* _rootAttribute;
01704 };
01705
01706
01707 enum Whitespace {
01708      PRESERVE_WHITESPACE,
01709      COLLAPSE_WHITESPACE,
01710      PEDANTIC_WHITESPACE
01711 };
01712
01713
01719 class TINYXML2_LIB XMLDocument : public XMLNode
01720 {
01721      friend class XMLElement;
01722      // Gives access to SetError and Push/PopDepth, but over-access for everything else.
01723      // Wishing C++ had "internal" scope.
01724      friend class XMLNode;
01725      friend class XMLText;
01726      friend class XMLComment;
01727      friend class XMLDeclaration;
01728      friend class XMLUnknown;
01729 public:
01731      XMLDocument( bool processEntities = true, Whitespace whitespaceMode = PRESERVE_WHITESPACE );
01732      ~XMLDocument();
01733
01734      virtual XMLDocument* ToDocument() override      {
01735          TIXMLASSERT( this == _document );
01736          return this;
01737      }
01738      virtual const XMLDocument* ToDocument() const override {
01739          TIXMLASSERT( this == _document );
01740          return this;
01741      }
01742
01753      XMLError Parse( const char* xml, size_t nBytes=static_cast<size_t>(-1) );
01754
01760      XMLError LoadFile( const char* filename );
01761
01773      XMLError LoadFile( FILE* );
01774
01780      XMLError SaveFile( const char* filename, bool compact = false );
01781
```

```
01789        XMLError SaveFile( FILE* fp, bool compact = false );
01790
01791        bool ProcessEntities() const     {
01792            return _processEntities;
01793        }
01794        Whitespace WhitespaceMode() const    {
01795            return _whitespaceMode;
01796        }
01797
01801        bool HasBOM() const {
01802            return _writeBOM;
01803        }
01806        void SetBOM( bool useBOM ) {
01807            _writeBOM = useBOM;
01808        }
01809
01813        XMLElement* RootElement()              {
01814            return FirstChildElement();
01815        }
01816        const XMLElement* RootElement() const  {
01817            return FirstChildElement();
01818        }
01819
01834        void Print( XMLPrinter* streamer=0 ) const;
01835        virtual bool Accept( XMLVisitor* visitor ) const override;
01836
01842        XMLElement* NewElement( const char* name );
01848        XMLComment* NewComment( const char* comment );
01854        XMLText* NewText( const char* text );
01866        XMLDeclaration* NewDeclaration( const char* text=0 );
01872        XMLUnknown* NewUnknown( const char* text );
01873
01878        void DeleteNode( XMLNode* node );
01879
01881        void ClearError();
01882
01884        bool Error() const {
01885            return _errorID != XML_SUCCESS;
01886        }
01888        XMLError  ErrorID() const {
01889            return _errorID;
01890        }
01891        const char* ErrorName() const;
01892        static const char* ErrorIDToName(XMLError errorID);
01893
01897        const char* ErrorStr() const;
01898
01900        void PrintError() const;
01901
01903        int ErrorLineNum() const
01904        {
01905            return _errorLineNum;
01906        }
01907
01909        void Clear();
01910
01918        void DeepCopy(XMLDocument* target) const;
01919
01920        // internal
01921        char* Identify( char* p, XMLNode** node, bool first );
01922
01923        // internal
01924        void MarkInUse(const XMLNode* const);
01925
01926        virtual XMLNode* ShallowClone( XMLDocument* /*document*/ ) const override{
01927            return 0;
01928        }
01929        virtual bool ShallowEqual( const XMLNode* /*compare*/ ) const override{
01930            return false;
01931        }
01932
01933 private:
01934        XMLDocument( const XMLDocument& );     // not supported
01935        void operator=( const XMLDocument& );    // not supported
01936
01937        bool           _writeBOM;
01938        bool           _processEntities;
01939        XMLError       _errorID;
01940        Whitespace      _whitespaceMode;
01941        mutable StrPair _errorStr;
01942        int            _errorLineNum;
01943        char*          _charBuffer;
01944        int            _parseCurLineNum;
01945        int            _parsingDepth;
01946        // Memory tracking does add some overhead.
01947        // However, the code assumes that you don't
01948        // have a bunch of unlinked nodes around.
```

```
01949        // Therefore it takes less memory to track
01950        // in the document vs. a linked list in the XMLNode,
01951        // and the performance is the same.
01952        DynArray<XMLNode*, 10> _unlinked;
01953
01954        MemPoolT< sizeof(XMLElement) >     _elementPool;
01955        MemPoolT< sizeof(XMLAttribute) > _attributePool;
01956        MemPoolT< sizeof(XMLText) >        _textPool;
01957        MemPoolT< sizeof(XMLComment) >     _commentPool;
01958
01959        static const char* _errorNames[XML_ERROR_COUNT];
01960
01961        void Parse();
01962
01963        void SetError( XMLError error, int lineNum, const char* format, ... );
01964
01965        // Something of an obvious security hole, once it was discovered.
01966        // Either an ill-formed XML or an excessively deep one can overflow
01967        // the stack. Track stack depth, and error out if needed.
01968        class DepthTracker {
01969        public:
01970            explicit DepthTracker(XMLDocument * document) {
01971                this->_document = document;
01972                document->PushDepth();
01973            }
01974            ~DepthTracker() {
01975                _document->PopDepth();
01976            }
01977        private:
01978            XMLDocument * _document;
01979        };
01980        void PushDepth();
01981        void PopDepth();
01982
01983        template<class NodeType, size_t PoolElementSize>
01984        NodeType* CreateUnlinkedNode( MemPoolT<PoolElementSize>& pool );
01985 };
01986
01987 template<class NodeType, size_t PoolElementSize>
01988 inline NodeType* XMLDocument::CreateUnlinkedNode( MemPoolT<PoolElementSize>& pool )
01989 {
01990        TIXMLASSERT( sizeof( NodeType ) == PoolElementSize );
01991        TIXMLASSERT( sizeof( NodeType ) == pool.ItemSize() );
01992        NodeType* returnNode = new (pool.Alloc()) NodeType( this );
01993        TIXMLASSERT( returnNode );
01994        returnNode->_memPool = &pool;
01995
01996        _unlinked.Push(returnNode);
01997        return returnNode;
01998 }
01999
02055 class TINYXML2_LIB XMLHandle
02056 {
02057 public:
02059     explicit XMLHandle( XMLNode* node ) : _node( node ) {
02060     }
02062     explicit XMLHandle( XMLNode& node ) : _node( &node ) {
02063     }
02065     XMLHandle( const XMLHandle& ref ) : _node( ref._node ) {
02066     }
02068     XMLHandle& operator=( const XMLHandle& ref )                    {
02069         _node = ref._node;
02070         return *this;
02071     }
02072
02074     XMLHandle FirstChild()                                         {
02075         return XMLHandle( _node ? _node->FirstChild() : 0 );
02076     }
02078     XMLHandle FirstChildElement( const char* name = 0 )            {
02079         return XMLHandle( _node ? _node->FirstChildElement( name ) : 0 );
02080     }
02082     XMLHandle LastChild()                                          {
02083         return XMLHandle( _node ? _node->LastChild() : 0 );
02084     }
02086     XMLHandle LastChildElement( const char* name = 0 )             {
02087         return XMLHandle( _node ? _node->LastChildElement( name ) : 0 );
02088     }
02090     XMLHandle PreviousSibling()                                    {
02091         return XMLHandle( _node ? _node->PreviousSibling() : 0 );
02092     }
02094     XMLHandle PreviousSiblingElement( const char* name = 0 )       {
02095         return XMLHandle( _node ? _node->PreviousSiblingElement( name ) : 0 );
02096     }
02098     XMLHandle NextSibling()                                        {
02099         return XMLHandle( _node ? _node->NextSibling() : 0 );
02100     }
02102     XMLHandle NextSiblingElement( const char* name = 0 )           {
```

```
02103          return XMLHandle( _node ? _node->NextSiblingElement( name ) : 0 );
02104      }
02105
02107      XMLNode* ToNode()                          {
02108          return _node;
02109      }
02111      XMLElement* ToElement()               {
02112          return ( _node ? _node->ToElement() : 0 );
02113      }
02115      XMLText* ToText()                     {
02116          return ( _node ? _node->ToText() : 0 );
02117      }
02119      XMLUnknown* ToUnknown()               {
02120          return ( _node ? _node->ToUnknown() : 0 );
02121      }
02123      XMLDeclaration* ToDeclaration()           {
02124          return ( _node ? _node->ToDeclaration() : 0 );
02125      }
02126
02127 private:
02128      XMLNode* _node;
02129 };
02130
02131
02136 class TINYXML2_LIB XMLConstHandle
02137 {
02138 public:
02139      explicit XMLConstHandle( const XMLNode* node ) : _node( node ) {
02140      }
02141      explicit XMLConstHandle( const XMLNode& node ) : _node( &node ) {
02142      }
02143      XMLConstHandle( const XMLConstHandle& ref ) : _node( ref._node ) {
02144      }
02145
02146      XMLConstHandle& operator=( const XMLConstHandle& ref )                      {
02147          _node = ref._node;
02148          return *this;
02149      }
02150
02151      const XMLConstHandle FirstChild() const                                    {
02152          return XMLConstHandle( _node ? _node->FirstChild() : 0 );
02153      }
02154      const XMLConstHandle FirstChildElement( const char* name = 0 ) const           {
02155          return XMLConstHandle( _node ? _node->FirstChildElement( name ) : 0 );
02156      }
02157      const XMLConstHandle LastChild() const                                     {
02158          return XMLConstHandle( _node ? _node->LastChild() : 0 );
02159      }
02160      const XMLConstHandle LastChildElement( const char* name = 0 ) const            {
02161          return XMLConstHandle( _node ? _node->LastChildElement( name ) : 0 );
02162      }
02163      const XMLConstHandle PreviousSibling() const                               {
02164          return XMLConstHandle( _node ? _node->PreviousSibling() : 0 );
02165      }
02166      const XMLConstHandle PreviousSiblingElement( const char* name = 0 ) const       {
02167          return XMLConstHandle( _node ? _node->PreviousSiblingElement( name ) : 0 );
02168      }
02169      const XMLConstHandle NextSibling() const                                   {
02170          return XMLConstHandle( _node ? _node->NextSibling() : 0 );
02171      }
02172      const XMLConstHandle NextSiblingElement( const char* name = 0 ) const           {
02173          return XMLConstHandle( _node ? _node->NextSiblingElement( name ) : 0 );
02174      }
02175
02176
02177      const XMLNode* ToNode() const             {
02178          return _node;
02179      }
02180      const XMLElement* ToElement() const          {
02181          return ( _node ? _node->ToElement() : 0 );
02182      }
02183      const XMLText* ToText() const                {
02184          return ( _node ? _node->ToText() : 0 );
02185      }
02186      const XMLUnknown* ToUnknown() const          {
02187          return ( _node ? _node->ToUnknown() : 0 );
02188      }
02189      const XMLDeclaration* ToDeclaration() const  {
02190          return ( _node ? _node->ToDeclaration() : 0 );
02191      }
02192
02193 private:
02194      const XMLNode* _node;
02195 };
02196
02197
02240 class TINYXML2_LIB XMLPrinter : public XMLVisitor
```

```
02241 {
02242 public:
02249     XMLPrinter( FILE* file=0, bool compact = false, int depth = 0 );
02250     virtual ~XMLPrinter()     {}
02251
02253     void PushHeader( bool writeBOM, bool writeDeclaration );
02257     void OpenElement( const char* name, bool compactMode=false );
02259     void PushAttribute( const char* name, const char* value );
02260     void PushAttribute( const char* name, int value );
02261     void PushAttribute( const char* name, unsigned value );
02262     void PushAttribute( const char* name, int64_t value );
02263     void PushAttribute( const char* name, uint64_t value );
02264     void PushAttribute( const char* name, bool value );
02265     void PushAttribute( const char* name, double value );
02267     virtual void CloseElement( bool compactMode=false );
02268
02270     void PushText( const char* text, bool cdata=false );
02272     void PushText( int value );
02274     void PushText( unsigned value );
02276     void PushText( int64_t value );
02278     void PushText( uint64_t value );
02280     void PushText( bool value );
02282     void PushText( float value );
02284     void PushText( double value );
02285
02287     void PushComment( const char* comment );
02288
02289     void PushDeclaration( const char* value );
02290     void PushUnknown( const char* value );
02291
02292     virtual bool VisitEnter( const XMLDocument& /*doc*/ ) override;
02293     virtual bool VisitExit( const XMLDocument& /*doc*/ ) override    {
02294         return true;
02295     }
02296
02297     virtual bool VisitEnter( const XMLElement& element, const XMLAttribute* attribute ) override;
02298     virtual bool VisitExit( const XMLElement& element ) override;
02299
02300     virtual bool Visit( const XMLText& text ) override;
02301     virtual bool Visit( const XMLComment& comment ) override;
02302     virtual bool Visit( const XMLDeclaration& declaration ) override;
02303     virtual bool Visit( const XMLUnknown& unknown ) override;
02304
02309     const char* CStr() const {
02310         return _buffer.Mem();
02311     }
02317     size_t CStrSize() const {
02318         return _buffer.Size();
02319     }
02324     void ClearBuffer( bool resetToFirstElement = true ) {
02325         _buffer.Clear();
02326         _buffer.Push(0);
02327         _firstElement = resetToFirstElement;
02328     }
02329
02330 protected:
02331     virtual bool CompactMode( const XMLElement& )  { return _compactMode; }
02332
02336     virtual void PrintSpace( int depth );
02337     virtual void Print( const char* format, ... );
02338     virtual void Write( const char* data, size_t size );
02339     virtual void Putc( char ch );
02340
02341     inline void Write(const char* data) { Write(data, strlen(data)); }
02342
02343     void SealElementIfJustOpened();
02344     bool _elementJustOpened;
02345     DynArray< const char*, 10 > _stack;
02346
02347 private:
02352     void PrepareForNewNode( bool compactMode );
02353     void PrintString( const char*, bool restrictedEntitySet );  // prints out, after detecting
      entities.
02354
02355     bool _firstElement;
02356     FILE* _fp;
02357     int _depth;
02358     int _textDepth;
02359     bool _processEntities;
02360     bool _compactMode;
02361
02362     enum {
02363         ENTITY_RANGE = 64,
02364         BUF_SIZE = 200
02365     };
02366     bool _entityFlag[ENTITY_RANGE];
02367     bool _restrictedEntityFlag[ENTITY_RANGE];
```

```
02368
02369     DynArray< char, 20 > _buffer;
02370
02371     // Prohibit cloning, intentionally not implemented
02372     XMLPrinter( const XMLPrinter& );
02373     XMLPrinter& operator=( const XMLPrinter& );
02374 };
02375
02376
02377 } // namespace tinyxml2
02378
02379 #if defined(_MSC_VER)
02380 #   pragma warning(pop)
02381 #endif
02382
02383 #endif // TINYXML2_INCLUDED
```

## 8.27 generator/generator.cpp File Reference

3D primitive shape generator implementation
```
#include <iostream>
#include <string>
#include <unordered_map>
#include <stdexcept>
#include "generatorAux.h"
```

### Functions

- void showUsage (const std::string &programName)

    *Displays usage instructions for the generator program.*
- void handlePlane (int argc, char ∗∗argv)

    *Handles the generation of a plane primitive.*
- void handleBox (int argc, char ∗∗argv)

    *Handles the generation of a box primitive.*
- void handleCone (int argc, char ∗∗argv)

    *Handles the generation of a cone primitive.*
- void handleSphere (int argc, char ∗∗argv)

    *Handles the generation of a sphere primitive.*
- int main (int argc, char ∗∗argv)

    *Main function - program entry point.*

### 8.27.1 Detailed Description

3D primitive shape generator implementation
This file implements a command-line application for generating 3D primitive shapes (plane, box, cone, sphere) and saving them to .3d files for use in the rendering engine. Each primitive can be customized with different parameters to control its dimensions and complexity.
Definition in file generator.cpp.

### 8.27.2 Function Documentation

#### 8.27.2.1 handleBox()

```
void handleBox (
            int argc,
            char ** argv)
```
Handles the generation of a box primitive.
Creates a box centered at the origin with specified dimensions and complexity. Each face of the box is divided according to the slices parameter.

**Parameters**

| argc | The total number of command line arguments |
|------|-------------------------------------------|
| argv | The array of command line arguments argv[2]: unit - The half-length of the box sides argv[3]: slices - The number of divisions along each axis of each face argv[4]: output filename (ignored; standardized name is used) |

**Exceptions**

| std::invalid_argument | If the required parameters are missing or invalid |
|-----------------------|---------------------------------------------------|

Definition at line 73 of file generator.cpp.

### 8.27.2.2 handleCone()

```
void handleCone (
            int argc,
            char ** argv)
```

Handles the generation of a cone primitive.

Creates a cone with its base centered at the origin and apex along the positive Y axis. The cone's complexity is controlled by slices (around the circular base) and stacks (along height).

**Parameters**

| argc | The total number of command line arguments |
|------|-------------------------------------------|
| argv | The array of command line arguments argv[2]: radius - The radius of the cone base argv[3]: height - The height of the cone argv[4]: slices - The number of divisions around the circular base argv[5]: stacks - The number of divisions along the height argv[6]: output filename (ignored; standardized name is used) |

**Exceptions**

| std::invalid_argument | If the required parameters are missing or invalid |
|-----------------------|---------------------------------------------------|

Definition at line 100 of file generator.cpp.

### 8.27.2.3 handlePlane()

```
void handlePlane (
            int argc,
            char ** argv)
```

Handles the generation of a plane primitive.

Creates a plane centered at the origin with specified dimensions and complexity. The plane is constructed in the XZ plane (with Y as up axis).

**Parameters**

| argc | The total number of command line arguments |
|------|-------------------------------------------|
| argv | The array of command line arguments argv[2]: unit - The half-length of the plane sides argv[3]: slices - The number of divisions along each axis argv[4]: output filename (ignored; standardized name is used) |

**Exceptions**

| std::invalid_argument | If the required parameters are missing or invalid |
|-----------------------|---------------------------------------------------|

Definition at line 48 of file generator.cpp.

### 8.27.2.4 handleSphere()

```
void handleSphere (
            int argc,
            char ** argv)
```
Handles the generation of a sphere primitive.

Creates a sphere centered at the origin with specified radius and complexity. The sphere's complexity is controlled by slices (longitude) and stacks (latitude).

**Parameters**

| argc | The total number of command line arguments |
|------|---------------------------------------------|
| argv | The array of command line arguments argv[2]: radius - The radius of the sphere argv[3]: slices - The number of divisions along the longitude (around vertical axis) argv[4]: stacks - The number of divisions along the latitude (from pole to pole) argv[5]: output filename (ignored; standardized name is used) |

**Exceptions**

| std::invalid_argument | If the required parameters are missing or invalid |
|-----------------------|----------------------------------------------------|

Definition at line 132 of file generator.cpp.

### 8.27.2.5 main()

```
int main (
            int argc,
            char ** argv)
```
Main function - program entry point.

Parses command-line arguments and dispatches to the appropriate shape handler function. Uses a map to associate primitive names with their handler functions for extensibility.

**Parameters**

| argc | The total number of command line arguments |
|------|---------------------------------------------|
| argv | The array of command line arguments argv[0]: program name argv[1]: shape type (plane, box, cone, sphere) argv[2+]: shape-specific parameters |

**Returns**

0 on successful execution, 1 on error

Definition at line 158 of file generator.cpp.

### 8.27.2.6 showUsage()

```
void showUsage (
            const std::string & programName)
```
Displays usage instructions for the generator program.

Outputs a help message showing the available shapes, their required parameters, and example usage to guide users in correctly invoking the program.

**Parameters**

| programName | The name of the executable (argv[0]) |
|-------------|---------------------------------------|

Definition at line 24 of file generator.cpp.

## 8.28 generator.cpp

Go to the documentation of this file.

```
00001
00009
00010 #include <iostream>
00011 #include <string>
00012 #include <unordered_map>
00013 #include <stdexcept>
00014 #include "generatorAux.h"
00015
00024 void showUsage(const std::string& programName) {
00025     std::cout « "Usage: " « programName « " <shape> [parameters...]\n";
00026     std::cout « "Shapes and their parameters:\n";
00027     std::cout « "  plane <unit> <slices> <plane.3d>\n";
00028     std::cout « "  box <unit> <slices> <box.3d>\n";
00029     std::cout « "  cone <radius> <height> <slices> <stacks> <cone.3d\n";
00030     std::cout « "  sphere <radius> <slices> <stacks> <sphere.3d>\n";
00031     std::cout « "Example: " « programName « " plane 10 5 plane.3d\n";
00032     std::cout « "NOTE: Creating a 3d file will override the previous one!\n";
00033 }
00034
00048 void handlePlane(int argc, char** argv) {
00049     if (argc != 5) {
00050         throw std::invalid_argument("Error: Plane requires 3 arguments: <unit> <slices>
    <output_file>");
00051     }
00052     float unit = std::stof(argv[2]);
00053     int slices = std::stoi(argv[3]);
00054     // Create standardized filename
00055     std::string filename = "../tests/plane_" + std::string(argv[2]) + "_" + argv[3] + ".3d";
00056     plane(unit, slices, filename);
00057     std::cout « "Plane generated successfully! Saved to " « filename « "\n";
00058 }
00059
00073 void handleBox(int argc, char** argv) {
00074     if (argc != 5) {
00075         throw std::invalid_argument("Error: Box requires 3 arguments: <unit> <slices> <output_file>");
00076     }
00077     float unit = std::stof(argv[2]);
00078     int slices = std::stoi(argv[3]);
00079     // Create standardized filename
00080     std::string filename = "../tests/box_" + std::string(argv[2]) + "_" + argv[3] + ".3d";
00081     box(unit, slices, filename);
00082     std::cout « "Box generated successfully! Saved to " « filename « "\n";
00083 }
00084
00100 void handleCone(int argc, char** argv) {
00101     if (argc != 7) {
00102         throw std::invalid_argument("Usage: cone radius height slices stacks filename");
00103     }
00104
00105     float radius = std::stof(argv[2]);
00106     float height = std::stof(argv[3]);
00107     int slices = std::stoi(argv[4]);
00108     int stacks = std::stoi(argv[5]);
00109
00110     // Create standardized filename with correct path
00111     std::string filename = "../tests/cone_" + std::string(argv[2]) + "_" + argv[3] + "_" +
00112                        argv[4] + "_" + argv[5] + ".3d";  // Added "../" prefix
00113
00114     cone(radius, height, slices, stacks, filename);
00115     std::cout « "Cone generated successfully! Saved to " « filename « "\n";
00116 }
00117
00132 void handleSphere(int argc, char** argv) {
00133     if (argc != 6) {
00134         throw std::invalid_argument("Error: Sphere requires 4 arguments: <radius> <slices> <stacks>
    <output_file>");
00135     }
00136     float radius = std::stof(argv[2]);
00137     int slices = std::stoi(argv[3]);
00138     int stacks = std::stoi(argv[4]);
00139     // Create standardized filename
00140     std::string filename = "../tests/sphere_" + std::string(argv[2]) + "_" + argv[3] + "_" + argv[4] +
    ".3d";
00141     sphere(radius, slices, stacks, filename);
00142     std::cout « "Sphere generated successfully! Saved to " « filename « "\n";
00143 }
00144
00158 int main(int argc, char** argv) {
00159     // Create a map to associate primitive names with handler functions
00160     std::unordered_map<std::string, void (*)(int, char**)> shapeHandlers;
00161     shapeHandlers["plane"] = handlePlane;
00162     shapeHandlers["box"] = handleBox;
00163     shapeHandlers["cone"] = handleCone;
```

```
00164      shapeHandlers["sphere"] = handleSphere;
00165
00166      // Check if the user requested help
00167      if (argc == 2 && (std::string(argv[1]) == "--help" || std::string(argv[1]) == "-h")) {
00168          showUsage(argv[0]);
00169          return 0;
00170      }
00171
00172      // Check if the user provided at least the shape name
00173      if (argc < 2) {
00174          std::cerr « "Error: No shape specified.\n";
00175          showUsage(argv[0]);
00176          return 1;
00177      }
00178
00179      // Get the shape name
00180      std::string shape = argv[1];
00181
00182      // Check if the shape is valid
00183      if (shapeHandlers.find(shape) == shapeHandlers.end()) {
00184          std::cerr « "Error: Invalid shape '" « shape « "'.\n";
00185          showUsage(argv[0]);
00186          return 1;
00187      }
00188
00189      // Call the appropriate handler function
00190      try {
00191          shapeHandlers[shape](argc, argv);
00192      } catch (const std::exception& e) {
00193          std::cerr « e.what() « "\n";
00194          showUsage(argv[0]);
00195          return 1;
00196      }
00197
00198      return 0;
00199 }
```

## 8.29 generator/generatorAux.cpp File Reference

```
#include <iostream>
#include <fstream>
#include <vector>
#include <cmath>
#include <string>
#include <stdexcept>
#include "generatorAux.h"
```

**Functions**

- void writeVertices (const std::string &filename, const std::vector< Vertex > &vertices)
- void plane (float unit, int slices, const std::string &filename)
- void box (float unit, int slices, const std::string &filename)
- void cone (float radius, float height, int slices, int stacks, const std::string &filename)
- void sphere (float radius, int slices, int stacks, const std::string &filename)

### 8.29.1 Function Documentation

#### 8.29.1.1 box()

```
void box (
          float unit,
          int slices,
          const std::string & filename)
```
Definition at line 68 of file generatorAux.cpp.

#### 8.29.1.2 cone()

```
void cone (
          float radius,
```

```
          float height,
          int slices,
          int stacks,
          const std::string & filename)
```
Generates vertices for a cone with a circular base and a pointed apex.

**Parameters**

| radius | The radius of the base of the cone. |
|---|---|
| height | The height of the cone. |
| slices | The number of divisions around the circumference. |
| stacks | The number of divisions along the height. |
| filename | The name of the file to save the vertices. |

**Exceptions**

| std::invalid_argument | If radius, height, slices, or stacks are non-positive. |
|---|---|

Definition at line 209 of file generatorAux.cpp.

### 8.29.1.3 plane()

```
void plane (
          float unit,
          int slices,
          const std::string & filename)
```
Generates vertices for a plane in the XZ plane, centered at the origin.

**Parameters**

| unit | The size of the plane (length of each side). |
|---|---|
| slices | The number of divisions along each axis. |
| filename | The name of the file to save the vertices. |

**Exceptions**

| std::invalid_argument | If unit or slices are non-positive. |
|---|---|

Definition at line 37 of file generatorAux.cpp.

### 8.29.1.4 sphere()

```
void sphere (
          float radius,
          int slices,
          int stacks,
          const std::string & filename)
```
Generates vertices for a sphere using spherical coordinates.

**Parameters**

| radius | The radius of the sphere. |
|---|---|
| slices | The number of divisions around the equator. |
| stacks | The number of divisions from pole to pole. |
| filename | The name of the file to save the vertices. |

**Exceptions**

| *std::invalid_argument* | If radius, slices, or stacks are non-positive. |
| --- | --- |

Definition at line 277 of file generatorAux.cpp.

#### 8.29.1.5 writeVertices()

```
void writeVertices (
            const std::string & filename,
            const std::vector< Vertex > & vertices)
```

Writes a list of vertices to a file. The first line of the file contains the number of vertices, followed by the coordinates of each vertex.

**Parameters**

| *filename* | The name of the file to write the vertices to. |
| --- | --- |
| *vertices* | The list of vertices to write. |

**Exceptions**

| *std::runtime_error* | If the file cannot be opened. |
| --- | --- |

Definition at line 17 of file generatorAux.cpp.

## 8.30 generatorAux.cpp

Go to the documentation of this file.

```
00001 #include <iostream>
00002 #include <fstream>
00003 #include <vector>
00004 #include <cmath>
00005 #include <string>
00006 #include <stdexcept> // For std::invalid_argument
00007 #include "generatorAux.h"
00008
00017 void writeVertices(const std::string& filename, const std::vector<Vertex>& vertices) {
00018     std::ofstream file(filename);
00019     if (!file.is_open()) {
00020         throw std::runtime_error("Error: Unable to open file " + filename);
00021     }
00022     // Escreve cada vértice em uma nova linha
00023     for (const auto& v : vertices) {
00024         file << v.x << " " << v.y << " " << v.z << "\n";
00025     }
00026     file.close();
00027 }
00028
00037 void plane(float unit, int slices, const std::string& filename) {
00038     if (unit <= 0 || slices <= 0) {
00039         throw std::invalid_argument("Error: Unit and slices must be positive.");
00040     }
00041
00042     std::vector<Vertex> vertices;
00043     float comp = unit / slices;
00044     float offset = unit / 2.0f;
00045
00046     for (int i = 0; i < slices; i++) {
00047         for (int j = 0; j < slices; j++) {
00048             float x1 = i * comp - offset;
00049             float z1 = j * comp - offset;
00050             float x2 = (i + 1) * comp - offset;
00051             float z2 = (j + 1) * comp - offset;
00052
00053             // Triângulo 1
00054             vertices.push_back({x1, 0.0f, z1});
00055             vertices.push_back({x2, 0.0f, z2});
00056             vertices.push_back({x2, 0.0f, z1});
00057
00058             // Triângulo 2
```

```
00059                     vertices.push_back({x1, 0.0f, z1});
00060                     vertices.push_back({x1, 0.0f, z2});
00061                     vertices.push_back({x2, 0.0f, z2});
00062                 }
00063         }
00064
00065         writeVertices(filename, vertices);
00066 }
00067
00068 void box(float unit, int slices, const std::string& filename) {
00069         if (unit <= 0 || slices <= 0) {
00070             throw std::invalid_argument("Error: Unit and slices must be positive.");
00071         }
00072
00073         std::vector<Vertex> vertices;
00074         float comp = unit / slices;
00075         float offset = unit / 2.0f;
00076
00077         // Front face (Z = offset)
00078         for (int i = 0; i < slices; i++) {
00079             for (int j = 0; j < slices; j++) {
00080                 float x1 = i * comp - offset;
00081                 float z1 = j * comp - offset;
00082                 float x2 = (i + 1) * comp - offset;
00083                 float z2 = (j + 1) * comp - offset;
00084
00085                 // Triangle 1
00086                 vertices.push_back({x1, offset, z1});
00087                 vertices.push_back({x2, offset, z2});
00088                 vertices.push_back({x2, offset, z1});
00089
00090                 // Triangle 2
00091                 vertices.push_back({x1, offset, z1});
00092                 vertices.push_back({x1, offset, z2});
00093                 vertices.push_back({x2, offset, z2});
00094             }
00095         }
00096
00097         // Back face (Z = -offset)
00098         for (int i = 0; i < slices; i++) {
00099             for (int j = 0; j < slices; j++) {
00100                 float x1 = i * comp - offset;
00101                 float z1 = j * comp - offset;
00102                 float x2 = (i + 1) * comp - offset;
00103                 float z2 = (j + 1) * comp - offset;
00104
00105                 // Triangle 1
00106                 vertices.push_back({x2, -offset, z2});
00107                 vertices.push_back({x1, -offset, z1});
00108                 vertices.push_back({x2, -offset, z1});
00109
00110                 // Triangle 2
00111                 vertices.push_back({x1, -offset, z2});
00112                 vertices.push_back({x1, -offset, z1});
00113                 vertices.push_back({x2, -offset, z2});
00114             }
00115         }
00116
00117         // Right face (X = offset)
00118         for (int i = 0; i < slices; i++) {
00119             for (int j = 0; j < slices; j++) {
00120                 float x1 = i * comp - offset;
00121                 float y1 = j * comp - offset;
00122                 float x2 = (i + 1) * comp - offset;
00123                 float y2 = (j + 1) * comp - offset;
00124
00125                 // Triangle 1
00126                 vertices.push_back({x2, y2, offset});
00127                 vertices.push_back({x1, y1, offset});
00128                 vertices.push_back({x2, y1, offset});
00129
00130                 // Triangle 2
00131                 vertices.push_back({x1, y2, offset});
00132                 vertices.push_back({x1, y1, offset});
00133                 vertices.push_back({x2, y2, offset});
00134             }
00135         }
00136
00137         // Left face (X = -offset)
00138         for (int i = 0; i < slices; i++) {
00139             for (int j = 0; j < slices; j++) {
00140                 float x1 = i * comp - offset;
00141                 float y1 = j * comp - offset;
00142                 float x2 = (i + 1) * comp - offset;
00143                 float y2 = (j + 1) * comp - offset;
00144
00145                 // Triangle 1
```

```
00146                     vertices.push_back({x1, y1, -offset});
00147                     vertices.push_back({x2, y2, -offset});
00148                     vertices.push_back({x2, y1, -offset});
00149
00150                     // Triangle 2
00151                     vertices.push_back({x1, y1, -offset});
00152                     vertices.push_back({x1, y2, -offset});
00153                     vertices.push_back({x2, y2, -offset});
00154                 }
00155         }
00156
00157         // Top face (Y = offset)
00158         for (int i = 0; i < slices; i++) {
00159             for (int j = 0; j < slices; j++) {
00160                 float z1 = i * comp - offset;
00161                 float y1 = j * comp - offset;
00162                 float z2 = (i + 1) * comp - offset;
00163                 float y2 = (j + 1) * comp - offset;
00164
00165                 // Triangle 1
00166                 vertices.push_back({offset, y1, z1});
00167                 vertices.push_back({offset, y2, z2});
00168                 vertices.push_back({offset, y1, z2});
00169
00170                 // Triangle 2
00171                 vertices.push_back({offset, y1, z1});
00172                 vertices.push_back({offset, y2, z1});
00173                 vertices.push_back({offset, y2, z2});
00174             }
00175         }
00176
00177         // Bottom face (Y = -offset)
00178         for (int i = 0; i < slices; i++) {
00179             for (int j = 0; j < slices; j++) {
00180                 float z1 = i * comp - offset;
00181                 float y1 = j * comp - offset;
00182                 float z2 = (i + 1) * comp - offset;
00183                 float y2 = (j + 1) * comp - offset;
00184
00185                 // Triangle 1
00186                 vertices.push_back({-offset, y2, z2});
00187                 vertices.push_back({-offset, y1, z1});
00188                 vertices.push_back({-offset, y1, z2});
00189
00190                 // Triangle 2
00191                 vertices.push_back({-offset, y2, z1});
00192                 vertices.push_back({-offset, y1, z1});
00193                 vertices.push_back({-offset, y2, z2});
00194             }
00195         }
00196     writeVertices(filename, vertices);
00197 }
00198
00209 void cone(float radius, float height, int slices, int stacks, const std::string& filename) {
00210     if (radius <= 0 || height <= 0 || slices <= 0 || stacks <= 0) {
00211         throw std::invalid_argument("Error: Radius, height, slices, and stacks must be positive.");
00212     }
00213
00214     std::vector<Vertex> vertices;
00215     float arch_alfa = 2 * static_cast<float>(M_PI) / slices;
00216     float ratio = height / radius;
00217     float stack_size = height / stacks;
00218
00219     // Base do cone
00220     for (int i = 0; i < slices; i++) {
00221         float x1 = radius * sin(arch_alfa * i);
00222         float z1 = radius * cos(arch_alfa * i);
00223         float x2 = radius * sin(arch_alfa * (i + 1));
00224         float z2 = radius * cos(arch_alfa * (i + 1));
00225
00226         // Triângulo da base
00227         vertices.push_back({x1, 0.0f, z1});
00228         vertices.push_back({0.0f, 0.0f, 0.0f});
00229         vertices.push_back({x2, 0.0f, z2});
00230     }
00231
00232     // Lateral do cone
00233     for (int i = 0; i < stacks; i++) {
00234         for (int j = 0; j < slices; j++) {
00235             float h1 = height - (i * stack_size);
00236             float h2 = height - ((i + 1) * stack_size);
00237             float r1 = h1 / ratio;
00238             float r2 = h2 / ratio;
00239
00240             float x1 = r1 * sin(arch_alfa * j);
00241             float x2 = r1 * sin(arch_alfa * (j + 1));
00242             float x3 = r2 * sin(arch_alfa * (j + 1));
```

```
00243              float x4 = r2 * sin(arch_alfa * j);
00244              float y1 = i * stack_size;
00245              float y2 = (i + 1) * stack_size;
00246              float z1 = r1 * cos(arch_alfa * j);
00247              float z2 = r1 * cos(arch_alfa * (j + 1));
00248              float z3 = r2 * cos(arch_alfa * (j + 1));
00249              float z4 = r2 * cos(arch_alfa * j);
00250
00251              // Triângulo 1
00252              vertices.push_back({x1, y1, z1});
00253              vertices.push_back({x2, y1, z2});
00254              vertices.push_back({x4, y2, z4});
00255
00256              // Triângulo 2
00257              if (j != slices - 1) {
00258                  vertices.push_back({x4, y2, z4});
00259                  vertices.push_back({x2, y1, z2});
00260                  vertices.push_back({x3, y2, z3});
00261              }
00262          }
00263      }
00264
00265      writeVertices(filename, vertices);
00266 }
00267
00277 void sphere(float radius, int slices, int stacks, const std::string& filename) {
00278      if (radius <= 0 || slices <= 0 || stacks <= 0) {
00279          throw std::invalid_argument("Error: Radius, slices, and stacks must be positive.");
00280      }
00281
00282      std::vector<Vertex> vertices;
00283      float arch_alfa = static_cast<float>(2 * M_PI) / slices;  // Ângulo entre fatias
00284      float stack_size = static_cast<float>(M_PI) / stacks;      // Tamanho de cada stack
00285
00286      for (int i = 0; i < stacks; i++) {
00287          float theta1 = static_cast<float>(i) * stack_size;     // Ângulo theta1
00288          float theta2 = static_cast<float>(i + 1) * stack_size; // Ângulo theta2
00289
00290          for (int j = 0; j < slices; j++) {
00291              float phi1 = static_cast<float>(j) * arch_alfa;     // Ângulo phi1
00292              float phi2 = static_cast<float>(j + 1) * arch_alfa; // Ângulo phi2
00293
00294              // Vértices para formar dois triângulos
00295              Vertex v1 = {
00296                  static_cast<float>(radius * sin(theta1) * cos(phi1)),
00297                  static_cast<float>(radius * cos(theta1)),
00298                  static_cast<float>(radius * sin(theta1) * sin(phi1))
00299              };
00300
00301              Vertex v2 = {
00302                  static_cast<float>(radius * sin(theta1) * cos(phi2)),
00303                  static_cast<float>(radius * cos(theta1)),
00304                  static_cast<float>(radius * sin(theta1) * sin(phi2))
00305              };
00306
00307              Vertex v3 = {
00308                  static_cast<float>(radius * sin(theta2) * cos(phi2)),
00309                  static_cast<float>(radius * cos(theta2)),
00310                  static_cast<float>(radius * sin(theta2) * sin(phi2))
00311              };
00312
00313              Vertex v4 = {
00314                  static_cast<float>(radius * sin(theta2) * cos(phi1)),
00315                  static_cast<float>(radius * cos(theta2)),
00316                  static_cast<float>(radius * sin(theta2) * sin(phi1))
00317              };
00318
00319              // Triângulo 1
00320              vertices.push_back(v1);
00321              vertices.push_back(v2);
00322              vertices.push_back(v3);
00323
00324              // Triângulo 2
00325              vertices.push_back(v1);
00326              vertices.push_back(v3);
00327              vertices.push_back(v4);
00328          }
00329      }
00330
00331      writeVertices(filename, vertices);
00332 }
```

# 8.31 generator/generatorAux.h File Reference

```
#include <string>
#include <vector>
```

**Classes**

- struct Vertex

**Functions**

- void writeVertices (const std::string &filename, const std::vector< Vertex > &vertices)
- void plane (float unit, int slices, const std::string &filename)
- void box (float unit, int slices, const std::string &filename)
- void cone (float radius, float height, int slices, int stacks, const std::string &filename)
- void sphere (float radius, int slices, int stacks, const std::string &filename)

## 8.31.1 Function Documentation

### 8.31.1.1 box()

```
void box (
            float unit,
            int slices,
            const std::string & filename)
```
Definition at line 68 of file generatorAux.cpp.

### 8.31.1.2 cone()

```
void cone (
            float radius,
            float height,
            int slices,
            int stacks,
            const std::string & filename)
```
Generates vertices for a cone with a circular base and a pointed apex.

**Parameters**

| radius | The radius of the base of the cone. |
|---|---|
| height | The height of the cone. |
| slices | The number of divisions around the circumference. |
| stacks | The number of divisions along the height. |
| filename | The name of the file to save the vertices. |

**Exceptions**

| std::invalid_argument | If radius, height, slices, or stacks are non-positive. |
|---|---|

Definition at line 209 of file generatorAux.cpp.

### 8.31.1.3 plane()

```
void plane (
            float unit,
```

```
            int slices,
            const std::string & filename)
```
Generates vertices for a plane in the XZ plane, centered at the origin.

**Parameters**

| | |
|---|---|
| *unit* | The size of the plane (length of each side). |
| *slices* | The number of divisions along each axis. |
| *filename* | The name of the file to save the vertices. |

**Exceptions**

| | |
|---|---|
| *std::invalid_argument* | If unit or slices are non-positive. |

Definition at line 37 of file generatorAux.cpp.

### 8.31.1.4 sphere()

```
void sphere (
            float radius,
            int slices,
            int stacks,
            const std::string & filename)
```

Generates vertices for a sphere using spherical coordinates.

**Parameters**

| | |
|---|---|
| *radius* | The radius of the sphere. |
| *slices* | The number of divisions around the equator. |
| *stacks* | The number of divisions from pole to pole. |
| *filename* | The name of the file to save the vertices. |

**Exceptions**

| | |
|---|---|
| *std::invalid_argument* | If radius, slices, or stacks are non-positive. |

Definition at line 277 of file generatorAux.cpp.

### 8.31.1.5 writeVertices()

```
void writeVertices (
            const std::string & filename,
            const std::vector< Vertex > & vertices)
```

Writes a list of vertices to a file. The first line of the file contains the number of vertices, followed by the coordinates of each vertex.

**Parameters**

| | |
|---|---|
| *filename* | The name of the file to write the vertices to. |
| *vertices* | The list of vertices to write. |

**Exceptions**

| | |
|---|---|
| *std::runtime_error* | If the file cannot be opened. |

Definition at line 17 of file generatorAux.cpp.

## 8.32 generatorAux.h

Go to the documentation of this file.

```
00001 #ifndef GENERATORAUX_H
00002 #define GENERATORAUX_H
00003
00004 #include <string>
00005 #include <vector>
00006
00007 struct Vertex {
00008     float x;
00009     float y;
00010     float z;
00011 };
00012
00013 void writeVertices(const std::string& filename, const std::vector<Vertex>& vertices);
00014
00015 void plane(float unit, int slices, const std::string& filename);
00016
00017 void box(float unit, int slices, const std::string& filename);
00018
00019 void cone(float radius, float height, int slices, int stacks, const std::string& filename);
00020
00021 void sphere(float radius, int slices, int stacks, const std::string& filename);
00022
00023 #endif // GENERATORAUX_H
```

## 8.33 README.md File Reference

# Index