Jazzyk
1.20

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Namespace Documentation

5.1 jazzyk Namespace Reference

Namespace defining Jazzyk API for KR modules.

Classes

- class **AbstractKRModuleInterface**

  The abstract knowledge representation module interface adapter.

- class **AbstractKRModule**

  Concrete knowledge representation module base class.

- class **KRModuleInterface**

  Abstract base class for defining knowledge representation modules.

Typedefs

- typedef std::map< std::string, std::string, **jazzyk_private::StringCompare** > **TKRVar-Substitution**

  Type definition for variable substitution map.

- typedef unsigned int(∗ **TJzModuleApiVersionRoutine**)()

  Signature of the version API routine.

- typedef **jazzyk::KRModuleInterface** ∗(∗ **TJzModuleApiRegisterRoutine**)()

  Signature of the KR module registration routine.

Enumerations

- enum **EKRModuleError** { **OK**, **FAIL**, **INVALID_OPERATION** }

  Error codes returned from the KR module to the main process.

5.1.1 Detailed Description

Namespace defining Jazzyk API for KR modules.

5.1.2 Typedef Documentation

5.1.2.1 typedef jazzyk::KRModuleInterface∗(∗ jazzyk::TJzModuleApiRegisterRoutine)()

Signature of the KR module registration routine.

Definition at line 200 of file jazzyk_common.hpp.

5.1.2.2 typedef unsigned int(∗ jazzyk::TJzModuleApiVersionRoutine)()

Signature of the version API routine.

Definition at line 197 of file jazzyk_common.hpp.

5.1.2.3 typedef std::map<std::string, std::string, jazzyk_private::StringCompare> jazzyk::TKRVarSubstitution

Type definition for variable substitution map.

Definition at line 67 of file jazzyk.hpp.

5.1.3 Enumeration Type Documentation

5.1.3.1 enum jazzyk::EKRModuleError

Error codes returned from the KR module to the main process.

Enumerator:

OK

FAIL

INVALID_ OPERATION

Definition at line 73 of file jazzyk_common.hpp.

5.2 jazzyk_private Namespace Reference

Private namespace to be used in **jazzyk** (p. 11).

Classes

- struct **StringCompare**

  String comparison operator.

5.2.1 Detailed Description

Private namespace to be used in **jazzyk** (p. 11).

Contains internal typedefs etc.

5.3 yy Namespace Reference

5.3.1 Detailed Description

Forward declarations of the whole **CExpression** (p. 62) hierarchy.

Remark: introduced to speed up the compilation and avoid unnecessary multiple header inclusion in other headers.

Chapter 6

Class Documentation

6.1 jazzyk::AbstractKRModule Class Reference

Concrete knowledge representation module base class.

`#include <jazzyk.hpp>`

Public Member Functions

- virtual **EKRModuleError initialize** (const std::string &szCodeBlock)=0

  Interface to override in the subclasses.

- virtual **EKRModuleError finalize** (const std::string &szCodeBlock)=0

  KR module finalization notification.

- virtual **EKRModuleError cycle** (const std::string &szCodeBlock)=0

  Interpreter cycle notification.

6.1.1 Detailed Description

Concrete knowledge representation module base class.

The concrete module implementation should inherit from this base class. It has to implement the abstract methods, plus provide a query/update interface which then has to be registered using JZMODULE_MANIFEST macro family.

Definition at line 206 of file jazzyk.hpp.

6.1.2 Member Function Documentation

6.1.2.1 virtual EKRModuleError jazzyk::AbstractKRModule::initialize (const std::string & *szCodeBlock*) `[pure virtual]`

Interface to override in the subclasses.

KR module initial notification

The method is invoked right after the KR module is loaded.

It gets an initialization code supposed to contain preparation for the Jazzyk program interpretation.

6.1.2.2 virtual EKRModuleError jazzyk::AbstractKRModule::finalize (const std::string & *szCodeBlock*) `[pure virtual]`

KR module finalization notification.

The method is called right before the KR module is about to be closed and unloaded.

It gets the finalization code supposed to clean up and release all the resources possibly held, or allocated by the module during the initialization and module lifetime.

6.1.2.3 virtual EKRModuleError jazzyk::AbstractKRModule::cycle (const std::string & *szCodeBlock*) `[pure virtual]`

Interpreter cycle notification.

After each deliberation cycle finishes (an update operation was performed in one of the program's modules), all modules receive a cycle notification.

The provided code block is supposed to free all resources possibly allocated during the last deliberation cycle (e.g. cache, etc.).

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

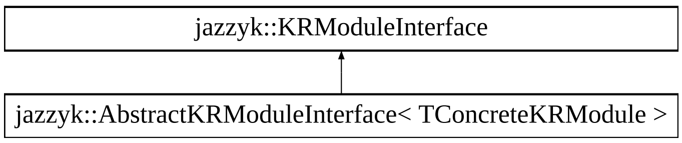
- **jazzyk.hpp**

6.2 jazzyk::AbstractKRModuleInterface< TConcreteKRModule > Class Template Reference

The abstract knowledge representation module interface adapter.

`#include <jazzyk.hpp>`

Inheritance diagram for jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::


jazzyk::KRModuleInterface
jazzyk::AbstractKRModuleInterface< TConcreteKRModule >

Public Member Functions

- **AbstractKRModuleInterface** ()

  Constructor.

- virtual ~**AbstractKRModuleInterface** ()

  Virtual destructor.

- virtual **EKRModuleError initialize** (const char ∗szCodeBlock)

  Implementations of the virtual superclass interface.

- virtual **EKRModuleError finalize** (const char ∗szCodeBlock)

  Invokes the finalize function.

- virtual **EKRModuleError cycle** (const char ∗szCodeBlock)

  Invokes the cycle function.

- virtual **EKRModuleError query** (const char ∗szOperation, const char ∗szQueryCode, const char ∗∗arrInVarID, const char ∗∗arrInVarValue, const unsigned int nInArrSize, char ∗∗&arrOutVarID, char ∗∗&arrOutVarValue, unsigned int &nOutArrSize, bool &bResult)

  Query to the KR module.

- virtual **EKRModuleError update** (const char ∗szOperation, const char ∗szUpdateCode, const char ∗∗arrVarID, const char ∗∗arrVarValue, const unsigned int nArrSize)

  Update the KR module.

- virtual **EKRModuleError getQueryInterface** (char ∗∗&arrQueryOperations, unsigned int &nSize)

  Fills an array of available query operations into the argument empty pointer.

- virtual **EKRModuleError getUpdateInterface** (char ∗∗&arrUpdateOperations, unsigned int &nSize)

  Fills an array of available update operations into the argument empty pointer.

- virtual void **free_resource** (char ∗∗&array, const unsigned int nSize)

Helper method for correct variable substitution deallocation.

- void **registerQuery** (const std::string szOperation, **TPtrQueryHandler** ptrQueryFunc)

  Query/Update interface registration.

- void **registerUpdate** (const std::string szOperation, **TPtrUpdateHandler** ptrUpdateFunc)
- virtual void __JZDLL_CALL **destroy** ()

  Artificial virtual destruction.

- void **operator delete** (void ∗ptr)

  Custom delete of the __JZDLL interface.

Private Types

- typedef **EKRModuleError**(TConcreteKRModule::∗ **TPtrQueryHandler**)(const std::string &szQueryCode, const **TKRVarSubstitution** &mapInSubst, **TKRVarSubstitution** &mapOutSubst, bool &bResult)

  Type definition for pointer-to-member to the adaptee class query function.

- typedef **EKRModuleError**(TConcreteKRModule::∗ **TPtrUpdateHandler**)(const std::string &szUpdateCode, const **TKRVarSubstitution** &mapInSubst)

  Type definition for pointer-to-member to the adaptee update function.

- typedef std::map< std::string, **TPtrQueryHandler**, **jazzyk_private::StringCompare** > **TQueryRegister**

  Type definitions for query/update register.

- typedef std::map< std::string, **TPtrUpdateHandler**, **jazzyk_private::StringCompare** > **TUpdateRegister**

Private Member Functions

- void **map2raw** (const **TKRVarSubstitution** &mapSubstitution, char ∗∗&arrVarID, char ∗∗&arrVarValue, unsigned int &nSize)

  Converts the variable substitution in the form of STL container into raw data.

- void **raw2map** (const char ∗∗arrVarID, const char ∗∗arrVarValue, const unsigned int nSize, **jazzyk::TKRVarSubstitution** &mapSubstitution)

  Converts the variable substitition in the raw form into an STL container.

Private Attributes

- TConcreteKRModule **m_concreteKRModule**

  Instance of the adaptee class.

- **TQueryRegister m_QueryOperations**

Register of query operations.

- **TUpdateRegister m_UpdateOperations**

  Register of update operations.

6.2.1 Detailed Description

template<class TConcreteKRModule> class jazzyk::AbstractKRModuleInterface< TConcreteKRModule >

The abstract knowledge representation module interface adapter.

The template should be parametrized with the particular KR module interface implementation. It holds pointers-to-members of the parameter class and serves as an adapter between the main interpreter and the concrete KR module implementation.

The instance is used on the "server" side, i.e. in the main interpreter.

The destruction implementation complements the one in the RawKRModuleInterface and is inspired by the article `http://aegisknight.org/cppinterface.html` by Chad Austin.

Definition at line 84 of file jazzyk.hpp.

6.2.2 Member Typedef Documentation

6.2.2.1 template<class TConcreteKRModule> typedef EKRModuleError(TConcreteKRModule::∗ jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::TPtrQueryHandler)(const std::string &szQueryCode, const TKRVarSubstitution &mapInSubst, TKRVarSubstitution &mapOutSubst, bool &bResult) `[private]`

Type definition for pointer-to-member to the adaptee class query function.

6.2.2.2 template<class TConcreteKRModule> typedef EKRModuleError(TConcreteKRModule::∗ jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::TPtrUpdateHandler)(const std::string &szUpdateCode, const TKRVarSubstitution &mapInSubst) `[private]`

Type definition for pointer-to-member to the adaptee update function.

6.2.2.3 template<class TConcreteKRModule> typedef std::map<std::string, TPtrQueryHandler, jazzyk_private::StringCompare> jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::TQueryRegister `[private]`

Type definitions for query/update register.

Definition at line 101 of file jazzyk.hpp.

6.2.2.4 template<class TConcreteKRModule> typedef std::map<std::string, TPtrUpdateHandler, jazzyk_private::StringCompare> jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::TUpdateRegister `[private]`

Definition at line 102 of file jazzyk.hpp.

6.2.3 Constructor & Destructor Documentation

6.2.3.1 template<class TConcreteKRModule> jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::AbstractKRModuleInterface () `[inline]`

Constructor.

Definition at line 340 of file jazzyk.hpp.

6.2.3.2 template<class TConcreteKRModule> jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::∼AbstractKRModuleInterface () `[inline, virtual]`

Virtual destructor.

Definition at line 349 of file jazzyk.hpp.

6.2.4 Member Function Documentation

6.2.4.1 template<class TConcreteKRModule> jazzyk::EKRModuleError jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::initialize (const char ∗ *szCodeBlock*) `[inline, virtual]`

Implementations of the virtual superclass interface.

Forwarding the call to the adaptee instance.

Implements **jazzyk::KRModuleInterface** (p. 200).

Definition at line 369 of file jazzyk.hpp.

References jazzyk::FAIL, and jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_-concreteKRModule.

6.2.4.2 template<class TConcreteKRModule> jazzyk::EKRModuleError jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::finalize (const char ∗ *szCodeBlock*) `[inline, virtual]`

Invokes the finalize function.

To be called when the module is being closed and de-initialized. It is supposed to provide an opprotunity to clean up all the held resources.

Implements **jazzyk::KRModuleInterface** (p. 200).

Definition at line 380 of file jazzyk.hpp.

References jazzyk::FAIL, and jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_-concreteKRModule.

6.2.4.3 template<class TConcreteKRModule> jazzyk::EKRModuleError jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::cycle (const char ∗ *szCodeBlock*) `[inline, virtual]`

Invokes the cycle function.

It is invoked at the end of each deliberation cycle of the main interpreter. It is supposed to clean up all the held resources which were acquired during the deliberation cycle execution (possible caching).

Implements **jazzyk::KRModuleInterface** (p. 200).

Definition at line 391 of file jazzyk.hpp.

References jazzyk::FAIL, and jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_-concreteKRModule.

6.2.4.4 template<class TConcreteKRModule> jazzyk::EKRModuleError jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::query (const char ∗ *szOperation*, const char ∗ *szQueryCode*, const char ∗∗ *arrInVarID*, const char ∗∗ *arrInVarValue*, const unsigned int *nInArrSize*, char ∗∗& *arrOutVarID*, char ∗∗& *arrOutVarValue*, unsigned int & *nOutArrSize*, bool & *bResult*) `[inline, virtual]`

Query to the KR module.

Takes a query formula (code), an input variable substitution for this formula, and a query operation to perform. Returns a truth value of the query operation and a new variable substitution (result of thequery).

IMPORTANT: After successful processing of the output substitution, the output substitution has to be correctly de-allocated using free_resource(.) method below.

Implements **jazzyk::KRModuleInterface** (p. 201).

Definition at line 402 of file jazzyk.hpp.

References CALL_MEMBER_FN, jazzyk::FAIL, jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::free_resource(), jazzyk::INVALID_OPERATION, jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_QueryOperations, jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::map2raw(), and jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::raw2map().

6.2.4.5 template<class TConcreteKRModule> jazzyk::EKRModuleError jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::update (const char ∗ *szOperation*, const char ∗ *szQueryCode*, const char ∗∗ *arrVarID*, const char ∗∗ *arrVarValue*, const unsigned int *nArrSize*) `[inline, virtual]`

Update the KR module.

Takes an update formula, a variable substitution for this formula and an update operation to perform.

Implements **jazzyk::KRModuleInterface** (p. 201).

Definition at line 444 of file jazzyk.hpp.

References CALL_MEMBER_FN, jazzyk::FAIL, jazzyk::INVALID_OPERATION, jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_UpdateOperations, and jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::raw2map().

6.2.4.6 template<class TConcreteKRModule> jazzyk::EKRModuleError jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::getQueryInterface (char **& *arrQueryOperations*, unsigned int & *nSize*) `[inline, virtual]`

Fills an array of available query operations into the argument empty pointer.

The method *replaces* the argument pointer, so the memory gets lost! Use empty pointers only and then do not forget to free the allocated memory using free_resource(...).

The second argument receives the size of the returned array.

Implements **jazzyk::KRModuleInterface** (p. 201).

Definition at line 469 of file jazzyk.hpp.

References jazzyk::FAIL, jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_-QueryOperations, and jazzyk::OK.

6.2.4.7 template<class TConcreteKRModule> jazzyk::EKRModuleError jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::getUpdateInterface (char **& *arrUpdateOperations*, unsigned int & *nSize*) `[inline, virtual]`

Fills an array of available update operations into the argument empty pointer.

The method *replaces* the argument pointer, so the memory gets lost! Use empty pointers only and then do not forget to free the allocated memory using free_resource(...).

The second argument receives the size of the returned array.

Implements **jazzyk::KRModuleInterface** (p. 201).

Definition at line 492 of file jazzyk.hpp.

References jazzyk::FAIL, jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_-UpdateOperations, and jazzyk::OK.

6.2.4.8 template<class TConcreteKRModule> void jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::free_resource (char **& *array*, const unsigned int *nSize*) `[inline, virtual]`

Helper method for correct variable substitution deallocation.

Implements **jazzyk::KRModuleInterface** (p. 202).

Definition at line 515 of file jazzyk.hpp.

Referenced by jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::query().

6.2.4.9 template<class TConcreteKRModule> void jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::registerQuery (const std::string *szOperation*, TPtrQueryHandler *ptrQueryFunc*) `[inline]`

Query/Update interface registration.

The operation identifier is associated with the provided module member function.

It is not used directly, but rather auto-generated by the JZMODULE_MANIFEST macro family.

Definition at line 573 of file jazzyk.hpp.

References jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_QueryOperations.

6.2.4.10 template<class TConcreteKRModule> void jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::registerUpdate (const std::string *szOperation*, TPtrUpdateHandler *ptrUpdateFunc*) `[inline]`

Definition at line 580 of file jazzyk.hpp.

References jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_UpdateOperations.

6.2.4.11 template<class TConcreteKRModule> void jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::destroy () `[inline, virtual]`

Artificial virtual destruction.

Implements the correct __JZDLL destruction mechanism. The user should NOT reimplement this method!!! For more see the article by Chad Austin mentioned above.

Implements **jazzyk::KRModuleInterface** (p. 202).

Definition at line 355 of file jazzyk.hpp.

6.2.4.12 template<class TConcreteKRModule> void jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::operator delete (void ∗ *ptr*) `[inline]`

Custom delete of the __JZDLL interface.

Complements the polymorphic destruction technique for __JZDLL interface. See comments above.

Reimplemented from **jazzyk::KRModuleInterface** (p. 202).

Definition at line 362 of file jazzyk.hpp.

6.2.4.13 template<class TConcreteKRModule> void jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::map2raw (const TKRVarSubstitution & *mapSubstitution*, char **& *arrVarID*, char **& *arrVarValue*, unsigned int & *nSize*) `[inline, private]`

Converts the variable substitution in the form of STL container into raw data.

The output arrays have to be correctly de-allocated using free_resource after processing! New resources are allocated here.

Definition at line 536 of file jazzyk.hpp.

Referenced by jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::query().

6.2.4.14 template<class TConcreteKRModule> void jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::raw2map (const char ** *arrVarID*, const char ** *arrVarValue*, const unsigned int *nSize*, jazzyk::TKRVarSubstitution & *mapSubstitution*) `[inline, private]`

Converts the variable substition in the raw form into an STL container.

Definition at line 557 of file jazzyk.hpp.

Referenced by jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::query(), and jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::update().

6.2.5 Member Data Documentation

6.2.5.1 template<class TConcreteKRModule> TConcreteKRModule jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_concreteKRModule `[private]`

Instance of the adaptee class.

All the calls of the interface are forwarded to this adaptee instance as callbacks.

Definition at line 189 of file jazzyk.hpp.

Referenced by jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::cycle(), jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::finalize(), and jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::initialize().

6.2.5.2 template<class TConcreteKRModule> TQueryRegister jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_QueryOperations `[private]`

Register of query operations.

Definition at line 192 of file jazzyk.hpp.

Referenced by jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::getQueryInterface(), jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::query(), and jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::registerQuery().

6.2.5.3 template<class TConcreteKRModule> TUpdateRegister jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::m_UpdateOperations `[private]`

Register of update operations.

Definition at line 195 of file jazzyk.hpp.

Referenced by jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::getUpdateInterface(), jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::registerUpdate(), and jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::update().

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

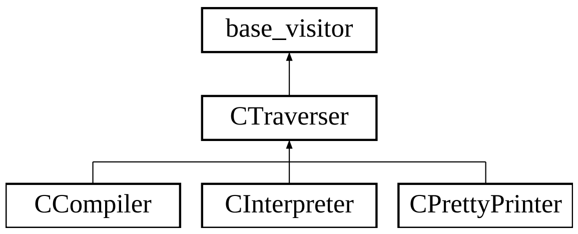
- **jazzyk.hpp**

6.3 base_visitor Class Reference

Visitor pattern library.

`#include <visitor.hpp>`

Inheritance diagram for base_visitor::



Public Member Functions

- virtual ~**base_visitor** ()

  Empty virtual destructor.

6.3.1 Detailed Description

Visitor pattern library.

Visitor pattern implementation according to Andrei Alexandrescu: Modern C++ Design.

The implemented Visitor is a generic implementation of the Visitor pattern using dynamic_cast for dispatch. Base **visitor** (p. 218) class

Definition at line 48 of file visitor.hpp.

6.3.2 Constructor & Destructor Documentation

6.3.2.1 virtual base_visitor::~base_visitor () `[inline, virtual]`

Empty virtual destructor.

Only types with at least one virtual method support dynamic_cast for RTTI.

Definition at line 56 of file visitor.hpp.

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

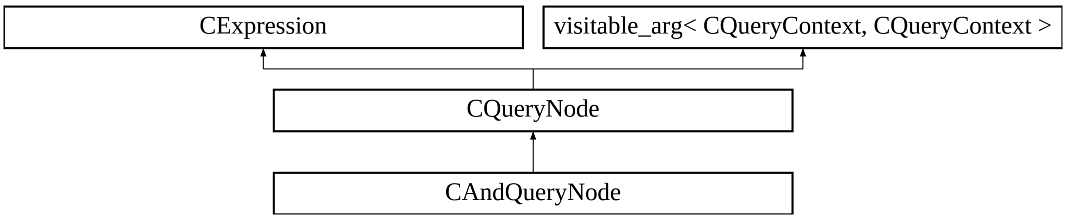
- **visitor.hpp**

6.4 CAndQueryNode Class Reference

Query node for AND logical connector of queries.

`#include <AndQueryNode.hpp>`

Inheritance diagram for CAndQueryNode::



Public Member Functions

- **CAndQueryNode** (**TPtrQueryNode** pLeftNode, **TPtrQueryNode** pRightNode)

  Default constructor.

- virtual ~**CAndQueryNode** ()

  Virtual destructor.

- **TPtrQueryNode getLeftNode** () const

  Returns the left node.

- **TPtrQueryNode getRightNode** () const

  Returns rthe right subnode.

Private Member Functions

- **CAndQueryNode** (const **CAndQueryNode** &)

  No copying defined.

- **CAndQueryNode** & **operator=** (const **CAndQueryNode** &)

  No assignment defined.

Private Attributes

- **TPtrQueryNode m_pLeftNode**

  Left hand query node.

- **TPtrQueryNode m_pRightNode**

  Right hand query node.

6.4.1 Detailed Description

Query node for AND logical connector of queries.

Holds two query subnodes.

The node evaluates to TRUE when both subnodes evaluate to true as well. The resulting substitution is the combination of the substitution set of the right and left subnodes.

Definition at line 46 of file AndQueryNode.hpp.

6.4.2 Constructor & Destructor Documentation

6.4.2.1 CAndQueryNode::CAndQueryNode (TPtrQueryNode *pLeftNode*, TPtrQueryNode *pRightNode*) `[inline]`

Default constructor.

Definition at line 102 of file AndQueryNode.hpp.

6.4.2.2 CAndQueryNode::∼CAndQueryNode () `[inline, virtual]`

Virtual destructor.

Definition at line 109 of file AndQueryNode.hpp.

6.4.2.3 CAndQueryNode::CAndQueryNode (const CAndQueryNode &) `[private]`

No copying defined.

6.4.3 Member Function Documentation

6.4.3.1 TPtrQueryNode CAndQueryNode::getLeftNode () const `[inline]`

Returns the left node.

Definition at line 114 of file AndQueryNode.hpp.

References m_pLeftNode.

Referenced by CTraverser::Visit().

6.4.3.2 TPtrQueryNode CAndQueryNode::getRightNode () const `[inline]`

Returns rthe right subnode.

Definition at line 120 of file AndQueryNode.hpp.

References m_pRightNode.

Referenced by CTraverser::Visit().

6.4.3.3 CAndQueryNode& CAndQueryNode::operator= (const CAndQueryNode &) `[private]`

No assignment defined.

6.4.4 Member Data Documentation

6.4.4.1 TPtrQueryNode CAndQueryNode::m_pLeftNode `[private]`

Left hand query node.

Definition at line 79 of file AndQueryNode.hpp.

Referenced by getLeftNode().

6.4.4.2 TPtrQueryNode CAndQueryNode::m_pRightNode `[private]`

Right hand query node.

Definition at line 82 of file AndQueryNode.hpp.

Referenced by getRightNode().

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

- **AndQueryNode.hpp**

6.5 CCodeBlock Class Reference

Code of block holder.

`#include <CodeBlock.hpp>`

Public Member Functions

- **CCodeBlock** ()
  Default constructor.
- **CCodeBlock** (const char *szText)
  Constructor from a plain string.
- virtual ~**CCodeBlock** ()
  Virtual destructor.
- **operator const char** * ()
  *Automatic conversion to char *.*
- void **append** (const char *szText)
  Append a code chunk.
- **CCodeBlock** & **operator+=** (char *szText)
  Append operator.

Private Member Functions

- **CCodeBlock** (const **CCodeBlock** &)
  Strictly "no copying".
- **CCodeBlock** & **operator=** (const **CCodeBlock** &)
  Strict "no copying".

Private Attributes

- std::string **m_szCode**
  Code block container.

6.5.1 Detailed Description

Code of block holder.

Holds a block of code, which is either part of query, or update expression.

One has to be carefull, so that this object will never copy, because it can possibly contain a large portion of data.

Definition at line 46 of file CodeBlock.hpp.

6.5.2 Constructor & Destructor Documentation

6.5.2.1 CCodeBlock::CCodeBlock ()

Default constructor.

Definition at line 39 of file CodeBlock.cpp.

6.5.2.2 CCodeBlock::CCodeBlock (const char $*$ *szText*)

Constructor from a plain string.

Definition at line 45 of file CodeBlock.cpp.

6.5.2.3 CCodeBlock::∼CCodeBlock () `[virtual]`

Virtual destructor.

Definition at line 51 of file CodeBlock.cpp.

6.5.2.4 CCodeBlock::CCodeBlock (const CCodeBlock &) `[private]`

Strictly "no copying".

6.5.3 Member Function Documentation

6.5.3.1 CCodeBlock::operator const char $*$ () `[inline]`

Automatic conversion to char $*$.

Definition at line 114 of file CodeBlock.hpp.

References m_szCode.

6.5.3.2 void CCodeBlock::append (const char $*$ *szText*) `[inline]`

Append a code chunk.

Definition at line 100 of file CodeBlock.hpp.

References m_szCode.

Referenced by operator+=().

6.5.3.3 CCodeBlock & CCodeBlock::operator+= (char $*$ *szText*) `[inline]`

Append operator.

Definition at line 106 of file CodeBlock.hpp.

References append().

6.5.3.4 CCodeBlock& CCodeBlock::operator= (const CCodeBlock &) [private]

Strict "no copying".

6.5.4 Member Data Documentation

6.5.4.1 std::string CCodeBlock::m_szCode [private]

Code block container.

Definition at line 80 of file CodeBlock.hpp.

Referenced by append(), and operator const char ∗().

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

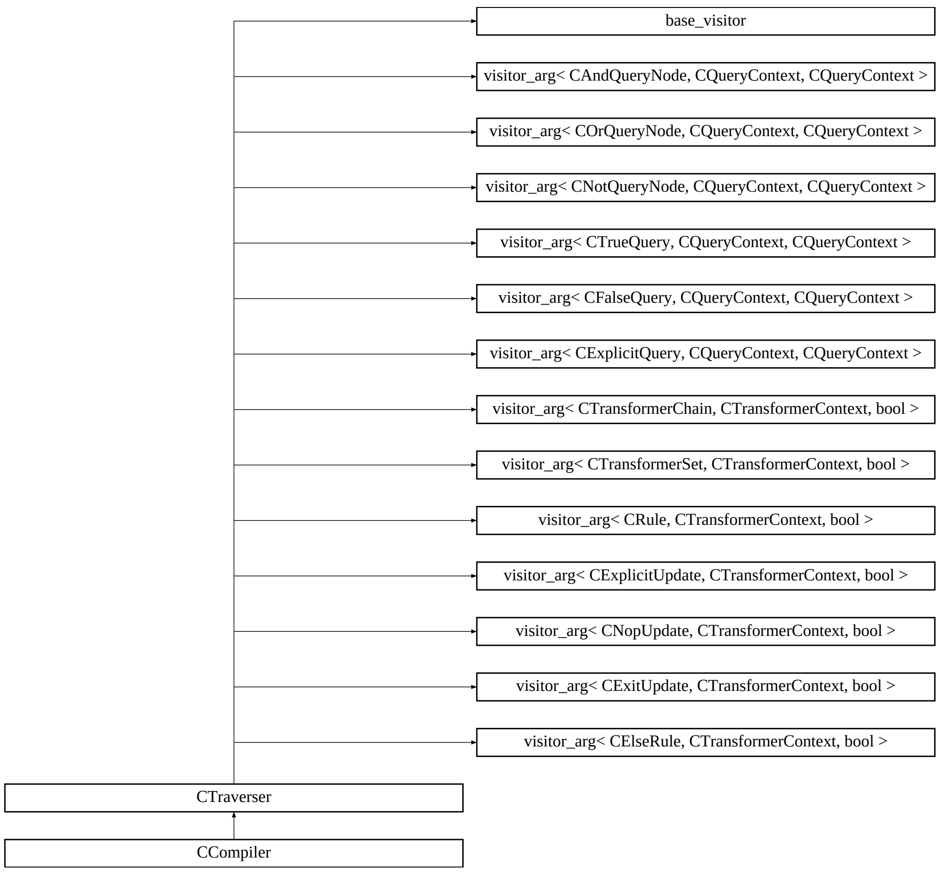
- **CodeBlock.hpp**
- **CodeBlock.cpp**

6.6 CCompiler Class Reference

Jazzyk programming language compiler.

`#include <Compiler.hpp>`

Inheritance diagram for CCompiler::


base_visitor
visitor_arg< CAndQueryNode, CQueryContext, CQueryContext >
visitor_arg< COrQueryNode, CQueryContext, CQueryContext >
visitor_arg< CNotQueryNode, CQueryContext, CQueryContext >
visitor_arg< CTrueQuery, CQueryContext, CQueryContext >
visitor_arg< CFalseQuery, CQueryContext, CQueryContext >
visitor_arg< CExplicitQuery, CQueryContext, CQueryContext >
visitor_arg< CTransformerChain, CTransformerContext, bool >
visitor_arg< CTransformerSet, CTransformerContext, bool >
visitor_arg< CRule, CTransformerContext, bool >
visitor_arg< CExplicitUpdate, CTransformerContext, bool >
visitor_arg< CNopUpdate, CTransformerContext, bool >
visitor_arg< CExitUpdate, CTransformerContext, bool >
visitor_arg< CElseRule, CTransformerContext, bool >
CTraverser
CCompiler

Public Member Functions

- **CCompiler** (**TPtrProgram** pProgram)

  Default constructor.

- virtual ~**CCompiler** ()

  Virtual destructor.

- void **setIncludePaths** (const std::vector< std::string > &vszPaths)

  Adds a new path to the list of include paths.

- virtual void **preprocess** (std::istream &inputStream, std::stringstream &preprocessed-Stream)

  Runs the macro preprocessor on the input stream.

- virtual void **preprocess** (const std::string &szFileName, std::stringstream &preprocessed-Stream)

  Runs the macro preprocessor on the input file.

- virtual void **parse** (std::istream &inputStream=std::cin)

  Parses the input from the input stream.

- virtual void **compile** ()

  Validates and compiles the parse tree to an executable program tree.

- virtual **TPtrProgram** **getProgram** () const

  Returns the pointer to the program parse tree stored.

Protected Member Functions

- virtual **CQueryContext** & **PreAction** (**CExplicitQuery** &, **CQueryContext** &)

  *Visitor/Traverser methods for the **CExpression** (p. 62) hierarchy.*

- virtual void **PreAction** (**CExplicitUpdate** &, **CTransformerContext** &)

Private Types

- enum { **PIPE_READ_END** = 0, **PIPE_WRITE_END** = 1 }

  Constants for pipe ends.

Private Member Functions

- void **preprocess** (**SMPInvocationSettings** &settings, std::istream ∗inStream, std::stringstream &outStream)

  Internal wrapper for launching the macro preprocessor.

- void **runChildProcess** (const **SMPInvocationSettings** &settings)

  Wrapper for the forked child process.

- void **runParentProcess** (const **SMPInvocationSettings** &settings, std::istream ∗inStream, std::stringstream &outStream)

  Wrapper for the parent process handler.

- void **readPipe** (const int fd, std::stringstream &outStream)

  Reads a char stream from file descriptor to a stringstream.

- void **fillIncludePaths** (**SMPInvocationSettings** &settings)

  Fills include paths into the macro preprocessor invocation settings.

- **CCompiler** (const **CCompiler** &)

  No copying defined.

- **CCompiler** & **operator=** (const **CCompiler** &)

  No assignment defined.

Private Attributes

- **TPtrProgram m_pProgram**

  Pointer to the parsed program.

- std::vector< std::string > **m_vszIncludePaths**

  Macro preprocessor include paths.

Classes

- struct **SMPInvocationSettings**

  Configuration structure for the macro preprocessor invocation.

6.6.1 Detailed Description

Jazzyk programming language compiler.

Provides a wrapper for parser and compiles the input source code into a interpretable structure.

Parser calls the bison/flex generated parser. The result is stored in **CProgram** (p. 125) parse tree structure. Compiler then provides interfaces to compile and manipulate the structure.

In order to compile/validate the parsed program, the **CCompiler** (p. 33) visits the whole **CExpression** (p. 62) hierarchy, hence it is a special kind of the program tree traverser.

Definition at line 60 of file Compiler.hpp.

6.6.2 Member Enumeration Documentation

6.6.2.1 anonymous enum `[private]`

Constants for pipe ends.

Enumerator:

PIPE_READ_END

PIPE_WRITE_END

Definition at line 194 of file Compiler.hpp.

6.6.3 Constructor & Destructor Documentation

6.6.3.1 CCompiler::CCompiler (TPtrProgram *pProgram*)

Default constructor.

Note: Compiler does not take the ownership of the pProgram.

Definition at line 89 of file Compiler.cpp.

6.6.3.2 CCompiler::∼CCompiler () `[virtual]`

Virtual destructor.

Definition at line 95 of file Compiler.cpp.

6.6.3.3 CCompiler::CCompiler (const CCompiler &) `[private]`

No copying defined.

6.6.4 Member Function Documentation

6.6.4.1 void CCompiler::setIncludePaths (const std::vector< std::string > & *vszPaths*)

Adds a new path to the list of include paths.

These paths are passed further to the internal macro preprocessor invocation via -I option.

Definition at line 121 of file Compiler.cpp.

References m_vszIncludePaths.

Referenced by CJazzykApp::run().

6.6.4.2 void CCompiler::preprocess (std::istream & *inputStream*, std::stringstream & *preprocessedStream*) `[virtual]`

Runs the macro preprocessor on the input stream.

Feeds the inputStream content into GNU M4 macro preprocessor and returns the resulting output stream which can be used later as an input stream for other compiler stages.

Definition at line 274 of file Compiler.cpp.

Referenced by preprocess(), and CJazzykApp::run().

6.6.4.3 void CCompiler::preprocess (const std::string & *szFileName*, std::stringstream & *preprocessedStream*) `[virtual]`

Runs the macro preprocessor on the input file.

The GNU M4 macro preprocessor is here responsible for opening, reading and preprocessing the input file. The output stream is returned.

Note: The macro preprocessor respects only its own include markers in the input file. It means that it changes the internal line counters only when it really performs an include operation. It ignores markers added to the input file before and treats them as a plain text. This would lead to incorrect error reporting from within the GNU M4 preprocessor. Therefore it's better to let the preprocessor completely read and process the files itself, because then the error output from it is usefull and truthfull in the error reporting of the Jazzyk interpreter.

Definition at line 287 of file Compiler.cpp.

References CCompiler::SMPInvocationSettings::argv, and preprocess().

6.6.4.4 void CCompiler::parse (std::istream & *inputStream* = `std::cin`) `[virtual]`

Parses the input from the input stream.

In the case of an error occuring during parsing, method throws an **CError** (p. 47) exception.

Definition at line 100 of file Compiler.cpp.

References CError::JZPARSER_PARSE_ERROR, and m_pProgram.

Referenced by CJazzykApp::run().

6.6.4.5 void CCompiler::compile () `[virtual]`

Validates and compiles the parse tree to an executable program tree.

Program is valid when all the 'called' mental state transformers were also defined and all the references to modules link to a declared module as well. Finally, free variables used in explicit query/update expressions should be already defined sometime above in the parse tree in query expressions.

In the case the program is invalid, **compile()** (p. 37) throws an exception **CError** (p. 47).

Definition at line 115 of file Compiler.cpp.

References m_pProgram, and CTraverser::traverse().

Referenced by CJazzykApp::run().

6.6.4.6 TPtrProgram CCompiler::getProgram () const `[virtual]`

Returns the pointer to the program parse tree stored.

Definition at line 338 of file Compiler.cpp.

References m_pProgram.

6.6.4.7 CQueryContext & CCompiler::PreAction (CExplicitQuery & *guest*, CQueryContext & *ctx*) `[protected, virtual]`

Visitor/Traverser methods for the **CExpression** (p. 62) hierarchy.

CCompiler (p. 33) visits **CExpression** (p. 62) hierarchy in order to examine the program for validity.

For details on validity of a program see comments by compile(...) method.

PreAction() (p. 37) methods of traverser specialisation

Reimplemented from **CTraverser** (p. 191).

Definition at line 344 of file Compiler.cpp.

References CTransformerContext::getModuleDeclaration(), CExplicitQuery::getModuleID(), CExplicitQuery::getOperation(), CExpression::getSrcPosition(), CTransformerContext::isModuleDeclared(), CError::JZCOMPILER_VALIDITY_INVALID_OPERATION, and CError::JZCOMPILER_VALIDITY_MODULE_UNDECLARED.

6.6.4.8 void CCompiler::PreAction (CExplicitUpdate & *guest*, CTransformerContext & *ctx*) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 192).

Definition at line 373 of file Compiler.cpp.

References CTransformerContext::getModuleDeclaration(), CExplicitUpdate::getModuleID(), CExplicitUpdate::getOperation(), CExpression::getSrcPosition(), CExplicitUpdate::getUsedVariables(), CTransformerContext::isModuleDeclared(), CError::JZCOMPILER_-VALIDITY_INVALID_OPERATION, CError::JZCOMPILER_VALIDITY_MODULE_-UNDECLARED, and CError::JZCOMPILER_VARIABLE_UNDECLARED.

6.6.4.9 void CCompiler::preprocess (SMPInvocationSettings & *settings*, std::istream ∗ *inStream*, std::stringstream & *outStream*) `[private]`

Internal wrapper for launching the macro preprocessor.

According to provided settings, it forks a child process and invokes child and parent process handlers.

In the case inStream is non-zero, it's contents are fed to the child process stdin stream.

Definition at line 299 of file Compiler.cpp.

References CCompiler::SMPInvocationSettings::child_pid, CCompiler::SMPInvocationSettings::child_-stderr, CCompiler::SMPInvocationSettings::child_stdin, CCompiler::SMPInvocationSettings::child_-stdout, fillIncludePaths(), CError::JZMPREPROCESSOR_EROR, runChildProcess(), and runParentProcess().

6.6.4.10 void CCompiler::runChildProcess (const SMPInvocationSettings & *settings*) `[private]`

Wrapper for the forked child process.

Prepares the GNU M4 invocation and calls exec(). Also redirects the stdin/stdout/stderr streams to the parent process.

Definition at line 160 of file Compiler.cpp.

References CCompiler::SMPInvocationSettings::argv, CCompiler::SMPInvocationSettings::child_-stderr, CCompiler::SMPInvocationSettings::child_stdin, CCompiler::SMPInvocationSettings::child_-stdout, CCompiler::SMPInvocationSettings::cmd, CError::JZMPREPROCESSOR_EROR, PIPE_READ_END, and PIPE_WRITE_END.

Referenced by preprocess().

6.6.4.11 void CCompiler::runParentProcess (const SMPInvocationSettings & *settings*, std::istream ∗ *inStream*, std::stringstream & *outStream*) `[private]`

Wrapper for the parent process handler.

Wrapper for communication with the parent process running the macro preprocessor. By default it feeds inStream to the stdin stream of the child process and captures its stdout stream. In the case of any error, it throws a **CError** (p. 47) exception.

In the case inStream==0, it does not feed any input to the child process and only captures its output.

Definition at line 220 of file Compiler.cpp.

References CCompiler::SMPInvocationSettings::child_pid, CCompiler::SMPInvocationSettings::child_-stderr, CCompiler::SMPInvocationSettings::child_stdin, CCompiler::SMPInvocationSettings::child_-stdout, CError::JZMPREPROCESSOR_EROR, PIPE_READ_END, PIPE_WRITE_END, and readPipe().

Referenced by preprocess().

6.6.4.12 void CCompiler::readPipe (const int *fd*, std::stringstream & *outStream*) `[private]`

Reads a char stream from file descriptor to a stringstream.

Definition at line 139 of file Compiler.cpp.

References CError::JZMPREPROCESSOR_EROR.

Referenced by runParentProcess().

6.6.4.13 void CCompiler::fillIncludePaths (CCompiler::SMPInvocationSettings & *settings*) `[private]`

Fills include paths into the macro preprocessor invocation settings.

Definition at line 127 of file Compiler.cpp.

References CCompiler::SMPInvocationSettings::argv, and m_vszIncludePaths.

Referenced by preprocess().

6.6.4.14 CCompiler& CCompiler::operator= (const CCompiler &) `[private]`

No assignment defined.

6.6.5 Member Data Documentation

6.6.5.1 TPtrProgram CCompiler::m_pProgram `[private]`

Pointer to the parsed program.

Definition at line 156 of file Compiler.hpp.

Referenced by compile(), getProgram(), and parse().

6.6.5.2 std::vector<std::string> CCompiler::m_vszIncludePaths `[private]`

Macro preprocessor include paths.

Definition at line 159 of file Compiler.hpp.

Referenced by fillIncludePaths(), and setIncludePaths().

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

- **Compiler.hpp**
- **Compiler.cpp**

6.7 CCompiler::SMPInvocationSettings Struct Reference

Configuration structure for the macro preprocessor invocation.

Public Member Functions

- **SMPInvocationSettings** ()

  Default constructor.

- void **configure** (const std::string &szCmd, const std::vector< std::string > &vArgv)

  Reconfiguration of the macro preprocessor call.

Public Attributes

- int **child_stdin** [2]

  Pipe file descriptors for stdin, stdout and stderr.

- int **child_stdout** [2]
- int **child_stderr** [2]
- pid_t **child_pid**

  Child process PID.

- std::string **cmd**

  Macro preprocessor command.

- std::vector< std::string > **argv**

  Macro preprocessor command line arguments.

6.7.1 Detailed Description

Configuration structure for the macro preprocessor invocation.

Definition at line 162 of file Compiler.hpp.

6.7.2 Constructor & Destructor Documentation

6.7.2.1 CCompiler::SMPInvocationSettings::SMPInvocationSettings ()

Default constructor.

Definition at line 60 of file Compiler.cpp.

References argv.

6.7.3 Member Function Documentation

6.7.3.1 void CCompiler::SMPInvocationSettings::configure (const std::string & *szCmd*, const std::vector< std::string > & *vArgv*)

Reconfiguration of the macro preprocessor call.

Allows to implement invocation of other than default GNU M4 macro preprocessor.

Definition at line 79 of file Compiler.cpp.

References argv, and cmd.

6.7.4 Member Data Documentation

6.7.4.1 int CCompiler::SMPInvocationSettings::child_stdin[2]

Pipe file descriptors for stdin, stdout and stderr.

Definition at line 175 of file Compiler.hpp.

Referenced by CCompiler::preprocess(), CCompiler::runChildProcess(), and CCompiler::runParentProcess().

6.7.4.2 int CCompiler::SMPInvocationSettings::child_stdout[2]

Definition at line 176 of file Compiler.hpp.

Referenced by CCompiler::preprocess(), CCompiler::runChildProcess(), and CCompiler::runParentProcess().

6.7.4.3 int CCompiler::SMPInvocationSettings::child_stderr[2]

Definition at line 177 of file Compiler.hpp.

Referenced by CCompiler::preprocess(), CCompiler::runChildProcess(), and CCompiler::runParentProcess().

6.7.4.4 pid_t CCompiler::SMPInvocationSettings::child_pid

Child process PID.

Definition at line 180 of file Compiler.hpp.

Referenced by CCompiler::preprocess(), and CCompiler::runParentProcess().

6.7.4.5 std::string CCompiler::SMPInvocationSettings::cmd

Macro preprocessor command.

By default we invoke GNU M4.

Definition at line 186 of file Compiler.hpp.

Referenced by configure(), and CCompiler::runChildProcess().

6.7.4.6 std::vector<std::string> CCompiler::SMPInvocationSettings::argv

Macro preprocessor command line arguments.

Definition at line 189 of file Compiler.hpp.

Referenced by configure(), CCompiler::fillIncludePaths(), CCompiler::preprocess(), CCompiler::runChildProcess(), and SMPInvocationSettings().

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

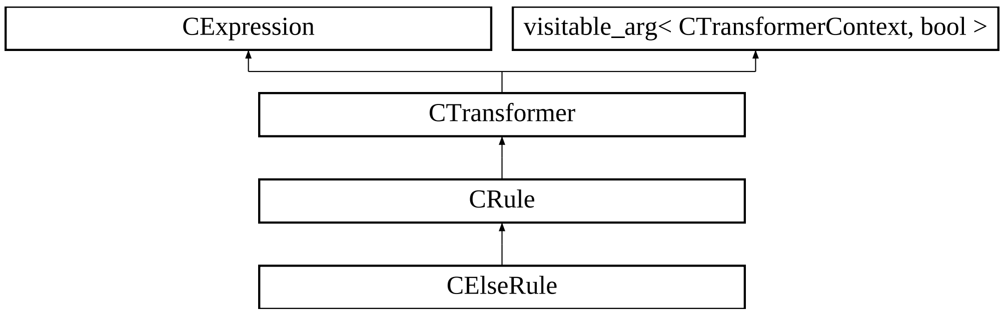
- **Compiler.hpp**
- **Compiler.cpp**

6.8 CElseRule Class Reference

If-then-else type rule.

`#include <ElseRule.hpp>`

Inheritance diagram for CElseRule::



Public Member Functions

- **CElseRule** (**TPtrQueryNode** pLHS, TPtrTransformer pThenRHS, TPtrTransformer pElseRHS)

  Default constructor.

- virtual ~**CElseRule** ()

  Virtual destructor.

- TPtrTransformer **getElseTransformer** () const

  Returns the second right hand side transformer.

Private Member Functions

- **CElseRule** (const **CElseRule** &)

  No copying defined.

- **CElseRule** & **operator=** (const **CElseRule** &)

  No assignment defined.

Private Attributes

- TPtrTransformer **m_pElseTransformer**

  Else right hand side transformer.

6.8.1 Detailed Description

If-then-else type rule.

CElseRule (p. 44) is a special type of **CRule** (p. 138) with two right hand sides. If the query evaluates to FALSE, the second right hand mental state transformer is executed.

Definition at line 45 of file ElseRule.hpp.

6.8.2 Constructor & Destructor Documentation

6.8.2.1 CElseRule::CElseRule (TPtrQueryNode *pLHS*, TPtrTransformer *pThenRHS*, TPtrTransformer *pElseRHS*) `[inline]`

Default constructor.

Definition at line 93 of file ElseRule.hpp.

6.8.2.2 CElseRule::∼CElseRule () `[inline, virtual]`

Virtual destructor.

Definition at line 100 of file ElseRule.hpp.

6.8.2.3 CElseRule::CElseRule (const CElseRule &) `[private]`

No copying defined.

6.8.3 Member Function Documentation

6.8.3.1 TPtrTransformer CElseRule::getElseTransformer () const `[inline]`

Returns the second right hand side transformer.

Definition at line 105 of file ElseRule.hpp.

References m_pElseTransformer.

Referenced by CTraverser::Visit().

6.8.3.2 CElseRule& CElseRule::operator= (const CElseRule &) `[private]`

No assignment defined.

6.8.4 Member Data Documentation

6.8.4.1 TPtrTransformer CElseRule::m_pElseTransformer `[private]`

Else right hand side transformer.

Definition at line 74 of file ElseRule.hpp.

Referenced by getElseTransformer().

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

- **ElseRule.hpp**

6.9 CError Class Reference

Error handler for the application.

`#include <Error.hpp>`

Inherits std::exception.

Public Types

- enum **EErrorType** {

  JZNOERROR = 0, **JZPARSER_PARSE_ERROR** = 1, **JZCOMPILER_-VALIDITY_MODULE_REDEFINED** = 2, **JZCOMPILER_VALIDITY_-TRANSFORMER_REDEFINED** = 3,

  JZCOMPILER_VALIDITY_TRANSFORMER_UNDEFINED = 4, **JZCOMPILER_VALIDITY_MODULE_UNDECLARED** = 5, **JZCOMPILER_VALIDITY_INVALID_OPERATION** = 6, **JZCOMPILER_-VARIABLE_UNDECLARED** = 7,

  JZINTERPRETER_VARIABLE_REWRITE = 8, **JZMODULE_ERROR** = 9, **JZLIBTOOL_ERROR** = 10, **JZMPREPROCESSOR_EROR** = 11,

  JZOTHER_ERROR = 12, **JZUNKNOWN_ERROR** = 13 }

  Enumeration of possible error types.

- typedef yy::location **TSrcLocation**

  Type to be used as a position marker of errors.

Public Member Functions

- **CError** (const **EErrorType** eErrType, const std::string &szReason)

  Default constructor.

- **CError** (const **TSrcLocation** &pos, const **EErrorType** eErrType, const std::string &szReason)

  Constructor with error position.

- virtual ~**CError** () throw ()

  Copy constructor.

- void **report** () const

  Dumps the error to the output.

- std::string & **resolveErrorType** () const

  Resolves the error type code to a reportable string.

- virtual const char ∗ **what** () const throw ()

  Virtual overwrite of the parent reporting method.

Public Attributes

- **TSrcLocation m_location**

  Error position.

- **EErrorType m_errorType**

  Error type.

- std::string **m_szReason**

  Error reason.

- std::string **m_szErrText**

  Full error message holder.

Static Public Attributes

- static std::string **m_dictErrorMsgs** [ ]

  Dictionary of error messages.

Private Member Functions

- **CError** & **operator=** (const **CError** &)

  No assignment defined.

6.9.1 Detailed Description

Error handler for the application.

Centralized error handler. All errors are directed to this class. Exceptions throw also objects of **CError** (p. 47) class.

An error holds an error type, reason as a string and an error source code position.

Error messages are held in a dictionary which has to be initialized before use of the error handler.

CError (p. 47) is also used as an exception which is thrown during program/parse tree parsing, validation, interpretation etc.

Definition at line 57 of file Error.hpp.

6.9.2 Member Typedef Documentation

6.9.2.1 typedef yy::location CError::TSrcLocation

Type to be used as a position marker of errors.

Definition at line 84 of file Error.hpp.

6.9.3 Member Enumeration Documentation

6.9.3.1 enum CError::EErrorType

Enumeration of possible error types.

Enumerator:

JZNOERROR
JZPARSER_ PARSE_ ERROR
JZCOMPILER_ VALIDITY_ MODULE_ REDEFINED
JZCOMPILER_ VALIDITY_ TRANSFORMER_ REDEFINED
JZCOMPILER_ VALIDITY_ TRANSFORMER_ UNDEFINED
JZCOMPILER_ VALIDITY_ MODULE_ UNDECLARED
JZCOMPILER_ VALIDITY_ INVALID_ OPERATION
JZCOMPILER_ VARIABLE_ UNDECLARED
JZINTERPRETER_ VARIABLE_ REWRITE
JZMODULE_ ERROR
JZLIBTOOL_ ERROR
JZMPREPROCESSOR_ EROR
JZOTHER_ ERROR
JZUNKNOWN_ ERROR

Definition at line 64 of file Error.hpp.

6.9.4 Constructor & Destructor Documentation

6.9.4.1 CError::CError (const EErrorType *eErrType*, const std::string & *szReason*)

Default constructor.

Definition at line 61 of file Error.cpp.

References m_location, m_szErrText, m_szReason, and resolveErrorType().

6.9.4.2 CError::CError (const TSrcLocation & *pos*, const EErrorType *eErrType*, const std::string & *szReason*)

Constructor with error position.

Definition at line 81 of file Error.cpp.

References m_location, m_szErrText, m_szReason, and resolveErrorType().

6.9.4.3 CError::∼CError () throw () `[virtual]`

Copy constructor.

Left for the compiler to create a default copy constructor. Virtual destructor

Definition at line 102 of file Error.cpp.

6.9.5 Member Function Documentation

6.9.5.1 void CError::report () const

Dumps the error to the output.

Definition at line 107 of file Error.cpp.

6.9.5.2 std::string & CError::resolveErrorType () const

Resolves the error type code to a reportable string.

Definition at line 113 of file Error.cpp.

References JZUNKNOWN_ERROR, m_dictErrorMsgs, and m_errorType.

Referenced by CError().

6.9.5.3 const char $*$ CError::what () const throw () `[virtual]`

Virtual overwrite of the parent reporting method.

Definition at line 128 of file Error.cpp.

References m_szErrText.

Referenced by CJazzykApp::run().

6.9.5.4 CError& CError::operator= (const CError &) `[private]`

No assignment defined.

6.9.6 Member Data Documentation

6.9.6.1 TSrcLocation CError::m_location

Error position.

Position where the error occured.

We are using the standard Bison C++ yy::location class for tracking location.

Definition at line 132 of file Error.hpp.

Referenced by CError().

6.9.6.2 EErrorType CError::m_errorType

Error type.

Definition at line 135 of file Error.hpp.

Referenced by CInterpreter::PostAction(), and resolveErrorType().

6.9.6.3 std::string CError::m_szReason

Error reason.

Definition at line 138 of file Error.hpp.

Referenced by CError(), and CInterpreter::PostAction().

6.9.6.4 std::string CError::m_dictErrorMsgs [static]

Initial value:

```
 {
        "ok",
        "parse error",
        "module declared twice",
        "transformer declared twice",
        "undefined transformer identifier",
        "referenced module undeclared",
        "invalid query/update module interface operation attempted",
        "variable used, but not instantiated before",

        "variable substitution inconsistency - value overwritten",
        "module error",
        "libtool error",
        "macro preprocessor error",

        "error",
        "unknown error"
}
```

Dictionary of error messages.

Definition at line 141 of file Error.hpp.

Referenced by resolveErrorType().

6.9.6.5 std::string CError::m_szErrText

Full error message holder.

Definition at line 144 of file Error.hpp.

Referenced by CError(), operator<<(), and what().

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

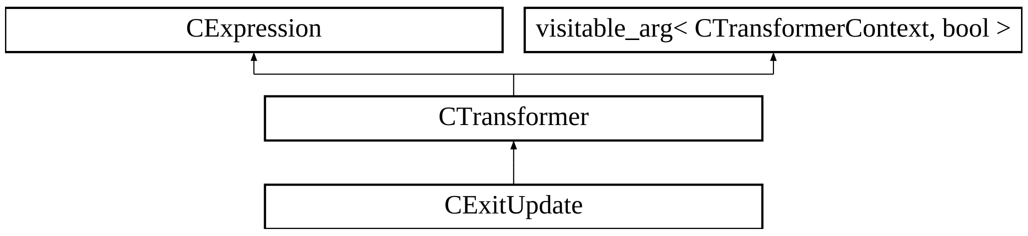
- **Error.hpp**
- **Error.cpp**

6.10 CExitUpdate Class Reference

Exit command mental state transformer inplementation.

`#include <TrivialUpdate.hpp>`

Inheritance diagram for CExitUpdate::



Public Member Functions

- **CExitUpdate** ()

  Default constructor.

- virtual ~**CExitUpdate** ()

  Virtual destructor.

Private Member Functions

- **CExitUpdate** (const **CExitUpdate** &)

  No copying defined.

- **CExitUpdate** & **operator=** (const **CExitUpdate** &)

  No assignment defined.

6.10.1 Detailed Description

Exit command mental state transformer inplementation.

Upon executing the exit command, the program shoudl stop and terminate correctly.

Definition at line 82 of file TrivialUpdate.hpp.

6.10.2 Constructor & Destructor Documentation

6.10.2.1 CExitUpdate::CExitUpdate () `[inline]`

Default constructor.

Definition at line 140 of file TrivialUpdate.hpp.

6.10.2.2 CExitUpdate::∼CExitUpdate () `[inline, virtual]`

Virtual destructor.

Definition at line 145 of file TrivialUpdate.hpp.

6.10.2.3 CExitUpdate::CExitUpdate (const CExitUpdate &) `[private]`

No copying defined.

6.10.3 Member Function Documentation

6.10.3.1 CExitUpdate& CExitUpdate::operator= (const CExitUpdate &) `[private]`

No assignment defined.

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

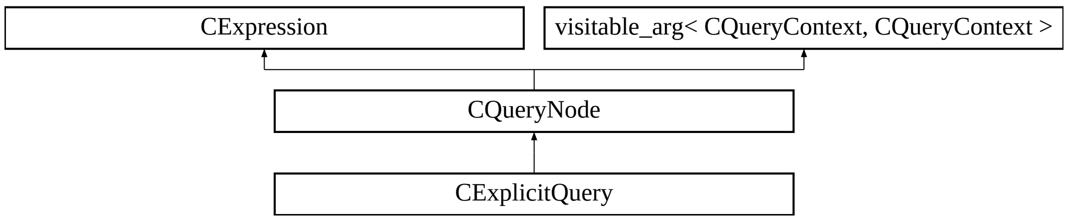
- **TrivialUpdate.hpp**

6.11 CExplicitQuery Class Reference

Explicit query class.

`#include <ExplicitQuery.hpp>`

Inheritance diagram for CExplicitQuery::



Public Member Functions

- **CExplicitQuery** (const TPtrIdentifier &pModuleID, const TPtrIdentifier &pOperation, const TPtrIdentifiers &pVariables, const TPtrCodeBlock &pCodeBlock)

    Default constructor.

- virtual ~**CExplicitQuery** ()

    Virtual destructor.

- const TPtrIdentifier & **getModuleID** () const

    Returns the module identifier.

- const TPtrIdentifier & **getOperation** () const

    Returns the pointer to the operation identifier.

- const TPtrIdentifiers & **getFreeVariables** () const

    Returns the pointer to free variables container.

- const TPtrCodeBlock & **getCodeBlock** () const

    Returns the pointer to code block.

Private Member Functions

- **CExplicitQuery** (const **CExplicitQuery** &)

    No copying defined.

- **CExplicitQuery** & **operator=** (const **CExplicitQuery** &)

    No assignment defined.

Private Attributes

- TPtrIdentifier **m_pModuleID**
  Associated module identifier.
- TPtrIdentifier **m_pOperation**
  Query operation identifier.
- TPtrIdentifiers **m_pVariables**
  List of free variables.
- TPtrCodeBlock **m_pCodeBlock**
  Query code block.

6.11.1 Detailed Description

Explicit query class.

Explicit query is so to say "normal" query comprising of the full code block and a link to an associated external module which is being queries by it.

Definition at line 45 of file ExplicitQuery.hpp.

6.11.2 Constructor & Destructor Documentation

6.11.2.1 CExplicitQuery::CExplicitQuery (const TPtrIdentifier & *pModuleID*, const TPtrIdentifier & *pOperation*, const TPtrIdentifiers & *pVariables*, const TPtrCodeBlock & *pCodeBlock*) `[inline]`

Default constructor.

Definition at line 115 of file ExplicitQuery.hpp.

6.11.2.2 CExplicitQuery::∼CExplicitQuery () `[inline, virtual]`

Virtual destructor.

Definition at line 128 of file ExplicitQuery.hpp.

6.11.2.3 CExplicitQuery::CExplicitQuery (const CExplicitQuery &) `[private]`

No copying defined.

6.11.3 Member Function Documentation

6.11.3.1 const TPtrIdentifier & CExplicitQuery::getModuleID () const `[inline]`

Returns the module identifier.

Definition at line 133 of file ExplicitQuery.hpp.

References m_pModuleID.

Referenced by CInterpreter::PostAction(), and CCompiler::PreAction().

6.11.3.2 const TPtrIdentifier & CExplicitQuery::getOperation () const `[inline]`

Returns the pointer to the operation identifier.

Definition at line 139 of file ExplicitQuery.hpp.

References m_pOperation.

Referenced by CInterpreter::PostAction(), and CCompiler::PreAction().

6.11.3.3 const TPtrIdentifiers & CExplicitQuery::getFreeVariables () const `[inline]`

Returns the pointer to free variables container.

Definition at line 145 of file ExplicitQuery.hpp.

References m_pVariables.

Referenced by CInterpreter::PostAction(), CPrettyPrinter::PreAction(), and CTraverser::Visit().

6.11.3.4 const TPtrCodeBlock & CExplicitQuery::getCodeBlock () const `[inline]`

Returns the pointer to code block.

Definition at line 151 of file ExplicitQuery.hpp.

References m_pCodeBlock.

Referenced by CInterpreter::PostAction().

6.11.3.5 CExplicitQuery& CExplicitQuery::operator= (const CExplicitQuery &) `[private]`

No assignment defined.

6.11.4 Member Data Documentation

6.11.4.1 TPtrIdentifier CExplicitQuery::m_pModuleID `[private]`

Associated module identifier.

Definition at line 87 of file ExplicitQuery.hpp.

Referenced by getModuleID().

6.11.4.2 TPtrIdentifier CExplicitQuery::m_pOperation `[private]`

Query operation identifier.

Definition at line 90 of file ExplicitQuery.hpp.

Referenced by getOperation().

6.11.4.3 TPtrIdentifiers CExplicitQuery::m_pVariables `[private]`

List of free variables.

Definition at line 93 of file ExplicitQuery.hpp.

Referenced by getFreeVariables().

6.11.4.4 TPtrCodeBlock CExplicitQuery::m_pCodeBlock `[private]`

Query code block.

Definition at line 96 of file ExplicitQuery.hpp.

Referenced by getCodeBlock().

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

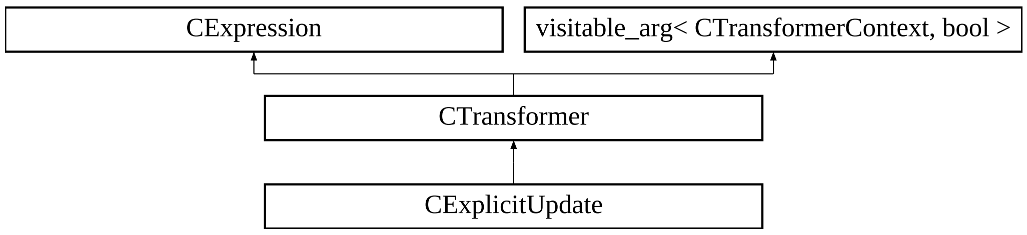
- **ExplicitQuery.hpp**

6.12 CExplicitUpdate Class Reference

Explicit update class.

`#include <ExplicitUpdate.hpp>`

Inheritance diagram for CExplicitUpdate::



Public Member Functions

- **CExplicitUpdate** (const TPtrIdentifier &pModuleID, const TPtrIdentifier &pOperation, const TPtrIdentifiers &variables, const TPtrCodeBlock &pCodeBlock)

  Default constructor.

- virtual ~**CExplicitUpdate** ()

  Virtual destructor.

- const TPtrIdentifier & **getModuleID** () const

  Returns the referred module ID.

- const TPtrIdentifier & **getOperation** () const

  Returns the update operation ID.

- const TPtrIdentifiers & **getUsedVariables** () const

  Returns the free variables list.

- const TPtrCodeBlock & **getCodeBlock** () const

  Returturnd the code block.

Private Member Functions

- **CExplicitUpdate** (const **CExplicitUpdate** &)

  No copying defined.

- **CExplicitUpdate** & **operator=** (const **CExplicitUpdate** &)

  No assignment defined.

Private Attributes

- TPtrIdentifier **m_pModuleID**

  Associated module identifier.

- TPtrIdentifier **m_pOperation**

  Update operation to invoke identifier.

- TPtrIdentifiers **m_pVariables**

  List of free variables.

- TPtrCodeBlock **m_pCodeBlock**

  Code block.

6.12.1 Detailed Description

Explicit update class.

Explicit update is so to say "normal" update comprising of the full code block and a link to an associated external module on which is it is executed.

Definition at line 46 of file ExplicitUpdate.hpp.

6.12.2 Constructor & Destructor Documentation

6.12.2.1 CExplicitUpdate::CExplicitUpdate (const TPtrIdentifier & *pModuleID*, const TPtrIdentifier & *pOperation*, const TPtrIdentifiers & *variables*, const TPtrCodeBlock & *pCodeBlock*) `[inline]`

Default constructor.

Definition at line 117 of file ExplicitUpdate.hpp.

6.12.2.2 CExplicitUpdate::∼CExplicitUpdate () `[inline, virtual]`

Virtual destructor.

Definition at line 130 of file ExplicitUpdate.hpp.

6.12.2.3 CExplicitUpdate::CExplicitUpdate (const CExplicitUpdate &) `[private]`

No copying defined.

6.12.3 Member Function Documentation

6.12.3.1 const TPtrIdentifier & CExplicitUpdate::getModuleID () const `[inline]`

Returns the referred module ID.

Definition at line 135 of file ExplicitUpdate.hpp.

References m_pModuleID.

Referenced by CInterpreter::PostAction(), and CCompiler::PreAction().

6.12.3.2 const TPtrIdentifier & CExplicitUpdate::getOperation () const [inline]

Returns the update operation ID.

Definition at line 141 of file ExplicitUpdate.hpp.

References m_pOperation.

Referenced by CInterpreter::PostAction(), and CCompiler::PreAction().

6.12.3.3 const TPtrIdentifiers & CExplicitUpdate::getUsedVariables () const [inline]

Returns the free variables list.

Definition at line 147 of file ExplicitUpdate.hpp.

References m_pVariables.

Referenced by CInterpreter::PostAction(), CPrettyPrinter::PreAction(), and CCompiler::PreAction().

6.12.3.4 const TPtrCodeBlock & CExplicitUpdate::getCodeBlock () const [inline]

Returnd the code block.

Definition at line 152 of file ExplicitUpdate.hpp.

References m_pCodeBlock.

Referenced by CInterpreter::PostAction().

6.12.3.5 CExplicitUpdate& CExplicitUpdate::operator= (const CExplicitUpdate &) [private]

No assignment defined.

6.12.4 Member Data Documentation

6.12.4.1 TPtrIdentifier CExplicitUpdate::m_pModuleID [private]

Associated module identifier.

Definition at line 89 of file ExplicitUpdate.hpp.

Referenced by getModuleID().

6.12.4.2 TPtrIdentifier CExplicitUpdate::m_pOperation [private]

Update operation to invoke identifier.

Definition at line 92 of file ExplicitUpdate.hpp.

Referenced by getOperation().

6.12.4.3 TPtrIdentifiers CExplicitUpdate::m_pVariables `[private]`

List of free variables.

Definition at line 95 of file ExplicitUpdate.hpp.

Referenced by getUsedVariables().

6.12.4.4 TPtrCodeBlock CExplicitUpdate::m_pCodeBlock `[private]`

Code block.

Definition at line 98 of file ExplicitUpdate.hpp.

Referenced by getCodeBlock().

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

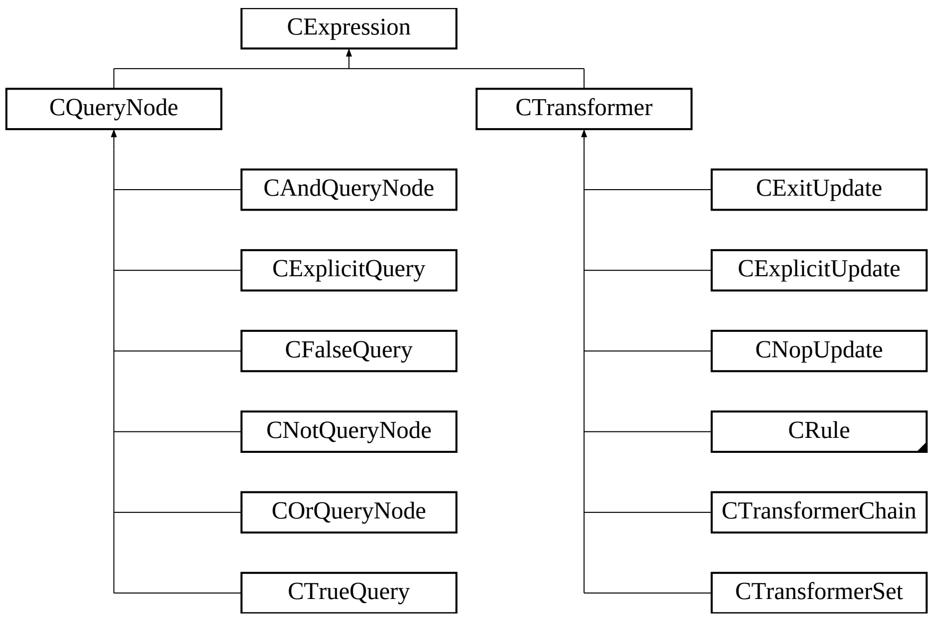
- **ExplicitUpdate.hpp**

6.13 CExpression Class Reference

Base abstract class for all the query and update expressions.

`#include <Expression.hpp>`

Inheritance diagram for CExpression::



Public Member Functions

- **CExpression** ()

  Constructor.

- virtual ~**CExpression** ()=0

  Virtual destructor.

- const **TSrcLocation** & **getSrcPosition** () const

  Returns the source position where the expression was defined.

Private Member Functions

- **CExpression** (const **CExpression** &)

  No copying defined.

- **CExpression** & **operator=** (const **CExpression** &)

  No assignment defined.

Private Attributes

- **TSrcLocation m_srcLocation**
  Source file definition position.

6.13.1 Detailed Description

Base abstract class for all the query and update expressions.

Abstract class for other types of query and update expressions.

All the manipulations on the **CExpression** (p. 62) hierarchy are done using a Visitor pattern. Hence **CExpression** (p. 62) class hierarchy is **visitable** (p. 214), all the **visitable** (p. 214) subclasses have to declare themselves to be such, i.e. use **DECLARE_VISITABLE()** (p. 300). Abstract subclasses do not have to declare their visitability. For details see the documentation of subclasses (**CTransformer** (p. 172) and **CQueryNode** (p. 136)).

To facilitate an elegant error reporting, each expressions holds a position where it was defined in the source file (stdin).

Note: In order to optimize the code, it might be useful in the future to redefine the whole **CExpression** (p. 62) hierarchy to struct, rather than classes and open the private members. Currently, most members of the hierarchy have a trivial implementation. This was achieved by the use of Visitor pattern.

Definition at line 62 of file Expression.hpp.

6.13.2 Constructor & Destructor Documentation

6.13.2.1 CExpression::CExpression ()

Constructor.

Definition at line 41 of file Expression.cpp.

6.13.2.2 CExpression::∼CExpression () `[pure virtual]`

Virtual destructor.

Definition at line 47 of file Expression.cpp.

6.13.2.3 CExpression::CExpression (const CExpression &) `[private]`

No copying defined.

6.13.3 Member Function Documentation

6.13.3.1 const TSrcLocation & CExpression::getSrcPosition () const `[inline]`

Returns the source position where the expression was defined.

Definition at line 108 of file Expression.hpp.

References m_srcLocation.

Referenced by CInterpreter::PostAction(), and CCompiler::PreAction().

6.13.3.2 CExpression& CExpression::operator= (const CExpression &) `[private]`

No assignment defined.

6.13.4 Member Data Documentation

6.13.4.1 TSrcLocation CExpression::m_srcLocation `[private]`

Source file definition position.

Definition at line 89 of file Expression.hpp.

Referenced by getSrcPosition().

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

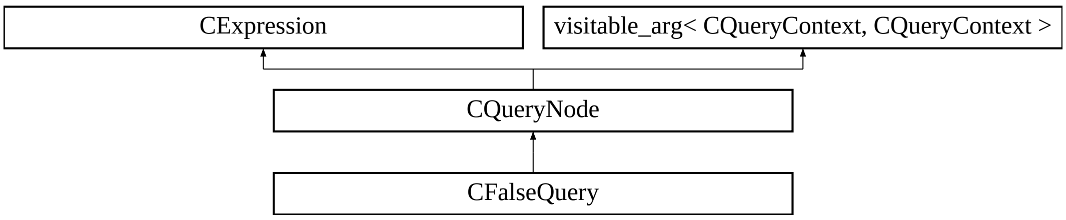
- **Expression.hpp**
- **Expression.cpp**

6.14 CFalseQuery Class Reference

Trivial False query.

`#include <TrivialQuery.hpp>`

Inheritance diagram for CFalseQuery::



Public Member Functions

- **CFalseQuery** ()

  Default constructor.

- virtual ~**CFalseQuery** ()

  Virtual destructor.

Private Member Functions

- **CFalseQuery** (const **CFalseQuery** &)

  No copying defined.

- **CFalseQuery** & **operator=** (const **CFalseQuery** &)

  No assignment defined.

6.14.1 Detailed Description

Trivial False query.

Query execution always returns false.

Definition at line 72 of file TrivialQuery.hpp.

6.14.2 Constructor & Destructor Documentation

6.14.2.1 CFalseQuery::CFalseQuery () `[inline]`

Default constructor.

Definition at line 118 of file TrivialQuery.hpp.

6.14.2.2 CFalseQuery::∼CFalseQuery () `[inline, virtual]`

Virtual destructor.

Definition at line 123 of file TrivialQuery.hpp.

6.14.2.3 CFalseQuery::CFalseQuery (const CFalseQuery &) `[private]`

No copying defined.

6.14.3 Member Function Documentation

6.14.3.1 CFalseQuery& CFalseQuery::operator= (const CFalseQuery &) `[private]`

No assignment defined.

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

- **TrivialQuery.hpp**

6.15 CIdentifier Class Reference

Identifier holder.

`#include <Identifier.hpp>`

Public Member Functions

- **CIdentifier** ()

  Default constructor.

- **CIdentifier** (const char ∗szText)

  Construct identifier from a string.

- virtual ∼**CIdentifier** ()

  Virtual destructor.

- **operator const std::string &** ()

  Automatic conversion to std::string.

- **operator const char** ∗ ()

  Automatic conversion to char ∗.

- const std::string & **get** ()

  Explicit conversion to string.

Private Member Functions

- **CIdentifier** (const **CIdentifier** &)

  Copying is strictly forbidden.

- **CIdentifier** & **operator=** (const **CIdentifier** &)

  Copying is strictly forbidden.

Private Attributes

- std::string **m_szIdentifier**

  Identifier string.

6.15.1 Detailed Description

Identifier holder.

Holds an identifier.

When it comes to copying, the same handling is applied as to **CCodeBlock** (p. 30) class.

Definition at line 45 of file Identifier.hpp.

6.15.2 Constructor & Destructor Documentation

6.15.2.1 CIdentifier::CIdentifier () `[inline]`

Default constructor.

Definition at line 111 of file Identifier.hpp.

6.15.2.2 CIdentifier::CIdentifier (const char ∗ *szText*) `[inline]`

Construct identifier from a string.

Definition at line 117 of file Identifier.hpp.

6.15.2.3 CIdentifier::∼CIdentifier () `[inline, virtual]`

Virtual destructor.

Definition at line 123 of file Identifier.hpp.

6.15.2.4 CIdentifier::CIdentifier (const CIdentifier &) `[private]`

Copying is strictly forbidden.

6.15.3 Member Function Documentation

6.15.3.1 CIdentifier::operator const std::string & () `[inline]`

Automatic conversion to std::string.

Definition at line 105 of file Identifier.hpp.

References m_szIdentifier.

6.15.3.2 CIdentifier::operator const char ∗ () `[inline]`

Automatic conversion to char ∗.

Definition at line 99 of file Identifier.hpp.

References m_szIdentifier.

6.15.3.3 const std::string & CIdentifier::get () `[inline]`

Explicit conversion to string.

Definition at line 128 of file Identifier.hpp.

6.15.3.4 CIdentifier& CIdentifier::operator= (const CIdentifier &) `[private]`

Copying is strictly forbidden.

6.15.4 Member Data Documentation

6.15.4.1 std::string CIdentifier::m_szIdentifier `[private]`

Identifier string.

Definition at line 79 of file Identifier.hpp.

Referenced by operator const char *(), and operator const std::string &().

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

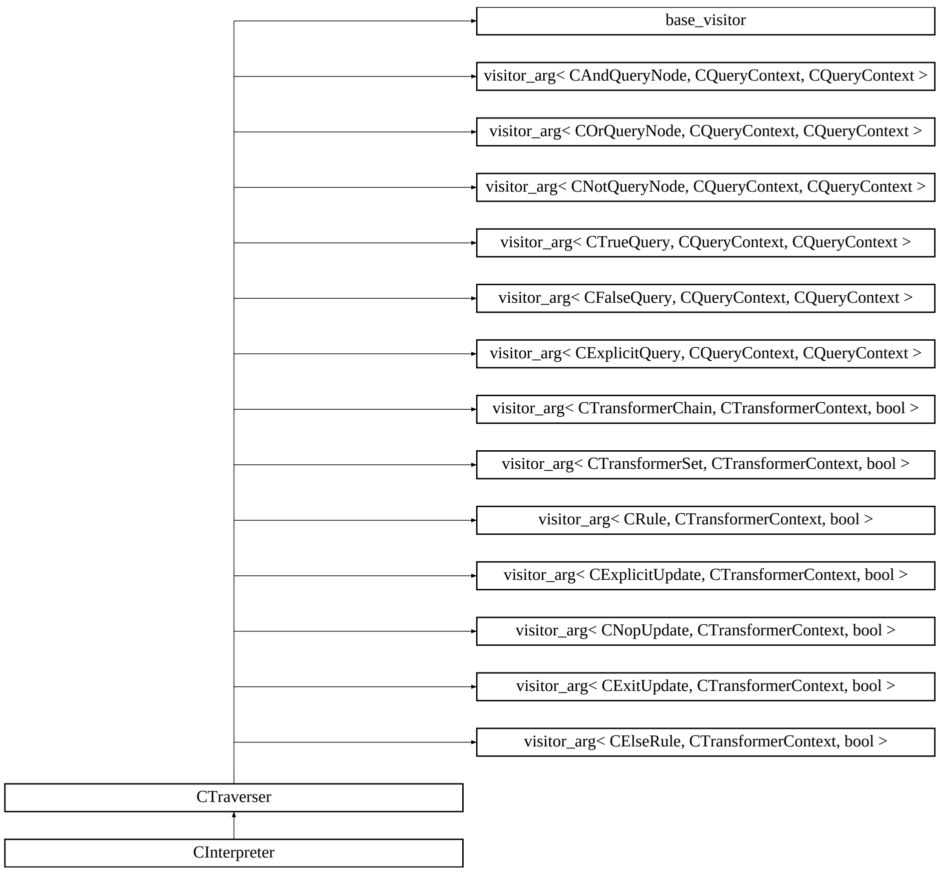
- **Identifier.hpp**

6.16 CInterpreter Class Reference

Interpreter engine of the Jazzyk language interpreter.

`#include <Interpreter.hpp>`

Inheritance diagram for CInterpreter::


base_visitor
visitor_arg< CAndQueryNode, CQueryContext, CQueryContext >
visitor_arg< COrQueryNode, CQueryContext, CQueryContext >
visitor_arg< CNotQueryNode, CQueryContext, CQueryContext >
visitor_arg< CTrueQuery, CQueryContext, CQueryContext >
visitor_arg< CFalseQuery, CQueryContext, CQueryContext >
visitor_arg< CExplicitQuery, CQueryContext, CQueryContext >
visitor_arg< CTransformerChain, CTransformerContext, bool >
visitor_arg< CTransformerSet, CTransformerContext, bool >
visitor_arg< CRule, CTransformerContext, bool >
visitor_arg< CExplicitUpdate, CTransformerContext, bool >
visitor_arg< CNopUpdate, CTransformerContext, bool >
visitor_arg< CExitUpdate, CTransformerContext, bool >
visitor_arg< CElseRule, CTransformerContext, bool >
CTraverser
CInterpreter

Public Member Functions

- **CInterpreter** (**TPtrProgram** pProgram)

  Constructor with the program to be interpreted.

- virtual ~**CInterpreter** ()

  Virtual destructor.

- virtual void **run** ()

  Main interface method for running the program.

- void **configure** (unsigned int nCycles=0, bool bFirst=false)

  Configuration method.

Protected Member Functions

- virtual bool **Visit** (**CTransformerSet** &guest, **CTransformerContext** ctx)

    Overriden inherited parts of the ***visitor*** *(*p. *218) interface.*

- virtual **CQueryContext** & **PostAction** (**CTrueQuery** &guest, **CQueryContext** &ctx)
- virtual **CQueryContext** & **PostAction** (**CFalseQuery** &guest, **CQueryContext** &ctx)
- virtual **CQueryContext** & **PostAction** (**CExplicitQuery** &guest, **CQueryContext** &ctx)
- virtual void **PostAction** (**CExplicitUpdate** &guest, **CTransformerContext** &ctx)
- virtual void **PostAction** (**CExitUpdate** &guest, **CTransformerContext** &ctx)

Protected Attributes

- struct **CInterpreter::SSettings m_settings**

    Interpreter configuration.

Private Member Functions

- void **doCycle** ()

    Performs a single interpreter deliberation cycle.

- **CInterpreter** (const **CInterpreter** &)

    No copying defined.

- **CInterpreter** & **operator=** (const **CInterpreter** &)

    No assignment defined.

Private Attributes

- **TPtrProgram m_pProgram**

    Pointer to the program to be interpreted.

- std::pointer_to_unary_function< int, int > **m_pfRandomGenerator**

    Pointer to the random generator functor.

Classes

- struct **SSettings**

    Interpreter configuration.

6.16.1 Detailed Description

Interpreter engine of the Jazzyk language interpreter.

Implementation of the core functionality of the Jazzyk programming language interpreter.

Interpreter service class is a Traverser-type **visitor** (p. 218) of the **CExpression** (p. 62) hierarchy.

Interpreter has few parameters to configure:

- number of cycles: by default the interpreter is supposed to perform infinite number of interpretation cycles. The number of cycles performed can be set.
- policy for transformer sets: by default, the interpreter chooses a random transformer from the transformer set. It can be changed to consider transformers in random order.

Definition at line 58 of file Interpreter.hpp.

6.16.2 Constructor & Destructor Documentation

6.16.2.1 CInterpreter::CInterpreter (TPtrProgram *pProgram*)

Constructor with the program to be interpreted.

Definition at line 72 of file Interpreter.cpp.

6.16.2.2 CInterpreter::∼CInterpreter () `[virtual]`

Virtual destructor.

Definition at line 81 of file Interpreter.cpp.

6.16.2.3 CInterpreter::CInterpreter (const CInterpreter &) `[private]`

No copying defined.

6.16.3 Member Function Documentation

6.16.3.1 void CInterpreter::run () `[virtual]`

Main interface method for running the program.

Program is interpreted in an infinite cycle until exit command is found, or an error occurs.

In the case of an error, or exit command execution, the interpreter throws **CError** (p. 47) exception.

Definition at line 86 of file Interpreter.cpp.

References doCycle(), m_settings, and CInterpreter::SSettings::nCycles.

Referenced by CJazzykApp::run().

6.16.3.2 void CInterpreter::configure (unsigned int *nCycles* = `0`, bool *bFirst* = `false`)

Configuration method.

In the case, the interpretre is supposed to run in a configured mode, this method should be called to change the default settings.

By default, the interpreter performs infinite number of steps and chooses random transformer from the set.

Definition at line 214 of file Interpreter.cpp.

References CInterpreter::SSettings::eTransformerSetPolicy, m_settings, CInterpreter::SSettings::nCycles, CInterpreter::SSettings::TS_FIRST, and CInterpreter::SSettings::TS_RANDOM.

Referenced by CJazzykApp::run().

6.16.3.3 bool CInterpreter::Visit (CTransformerSet & *guest*, CTransformerContext *ctx*) `[protected, virtual]`

Overriden inherited parts of the **visitor** (p. 218) interface.

Reimplemented from **CTraverser** (p. 189).

Definition at line 109 of file Interpreter.cpp.

References CInterpreter::SSettings::eTransformerSetPolicy, CTransformerSet::getTransformers(), m_pfRandomGenerator, m_settings, PostAction(), CTraverser::PreAction(), and CInterpreter::SSettings::TS_RANDOM.

6.16.3.4 CQueryContext & CInterpreter::PostAction (CTrueQuery & *guest*, CQueryContext & *ctx*) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 193).

Definition at line 147 of file Interpreter.cpp.

References CQueryContext::QTRUE, and CQueryContext::setResult().

Referenced by Visit().

6.16.3.5 CQueryContext & CInterpreter::PostAction (CFalseQuery & *guest*, CQueryContext & *ctx*) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 193).

Definition at line 156 of file Interpreter.cpp.

References CQueryContext::QFALSE, and CQueryContext::setResult().

6.16.3.6 CQueryContext & CInterpreter::PostAction (CExplicitQuery & *guest*, CQueryContext & *ctx*) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 193).

Definition at line 165 of file Interpreter.cpp.

References CExplicitQuery::getCodeBlock(), CExplicitQuery::getFreeVariables(), CExplicitQuery::getModuleID(), CExplicitQuery::getOperation(), CExpression::getSrcPosition(), CModuleManager::Instance(), CError::m_errorType, CError::m_szReason, CQueryContext::QFALSE, CQueryContext::QTRUE, and CQueryContext::setResult().

6.16.3.7 void CInterpreter::PostAction (CExplicitUpdate & *guest*, CTransformerContext & *ctx*) [protected, virtual]

Reimplemented from **CTraverser** (p. 194).

Definition at line 188 of file Interpreter.cpp.

References CExplicitUpdate::getCodeBlock(), CExplicitUpdate::getModuleID(), CExplicitUpdate::getOperation(), CExpression::getSrcPosition(), CExplicitUpdate::getUsedVariables(), CModuleManager::Instance(), CError::m_errorType, CError::m_szReason, and CModuleManager::update().

6.16.3.8 void CInterpreter::PostAction (CExitUpdate & *guest*, CTransformerContext & *ctx*) [protected, virtual]

Reimplemented from **CTraverser** (p. 194).

Definition at line 207 of file Interpreter.cpp.

References CExpression::getSrcPosition(), and CError::JZNOERROR.

6.16.3.9 void CInterpreter::doCycle () [private]

Performs a single interpreter deliberation cycle.

Definition at line 102 of file Interpreter.cpp.

References m_pProgram, and CTraverser::traverse().

Referenced by run().

6.16.3.10 CInterpreter& CInterpreter::operator= (const CInterpreter &) [private]

No assignment defined.

6.16.4 Member Data Documentation

6.16.4.1 struct CInterpreter::SSettings CInterpreter::m_settings [protected]

Interpreter configuration.

Referenced by configure(), run(), and Visit().

6.16.4.2 TPtrProgram CInterpreter::m_pProgram [private]

Pointer to the program to be interpreted.

Definition at line 136 of file Interpreter.hpp.

Referenced by doCycle().

6.16.4.3 std::pointer_to_unary_function<int, int> CInterpreter::m_-pfRandomGenerator `[private]`

Pointer to the random generator functor.

Definition at line 139 of file Interpreter.hpp.

Referenced by Visit().

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

- **Interpreter.hpp**
- **Interpreter.cpp**

6.17 CInterpreter::SSettings Struct Reference

Interpreter configuration.

`#include <Interpreter.hpp>`

Public Types

- enum { **TS_RANDOM**, **TS_FIRST** }

  Transformer set interpretation policy.

Public Member Functions

- **SSettings** ()

  Default constructor.

Public Attributes

- unsigned int **nCycles**

  Number of interpretation cycles to perform.

- enum CInterpreter::SSettings:: { ... } **eTransformerSetPolicy**

  Transformer set interpretation policy.

6.17.1 Detailed Description

Interpreter configuration.

Definition at line 109 of file Interpreter.hpp.

6.17.2 Member Enumeration Documentation

6.17.2.1 anonymous enum

Transformer set interpretation policy.

Enumerator:

TS_RANDOM

TS_FIRST

Definition at line 118 of file Interpreter.hpp.

6.17.3 Constructor & Destructor Documentation

6.17.3.1 CInterpreter::SSettings::SSettings ()

Default constructor.

Definition at line 62 of file Interpreter.cpp.

6.17.4 Member Data Documentation

6.17.4.1 unsigned int CInterpreter::SSettings::nCycles

Number of interpretation cycles to perform.

Definition at line 115 of file Interpreter.hpp.

Referenced by CInterpreter::configure(), and CInterpreter::run().

6.17.4.2 enum { ... } CInterpreter::SSettings::eTransformerSetPolicy

Transformer set interpretation policy.

Referenced by CInterpreter::configure(), and CInterpreter::Visit().

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

- **Interpreter.hpp**
- **Interpreter.cpp**

6.18 CIpcPtrDeleter< T > Class Template Reference

A functor that destroys the shared memory object of an associated smart pointer.

`#include <ModuleCommData.hpp>`

Public Types

- typedef T ∗ **TStoredPtr**

  Smart pointer type to store.

Public Member Functions

- **CIpcPtrDeleter** (**TSegmentManager** ∗manager)

  Constructor.

- void **operator()** (**TStoredPtr** pObject)

  Deleter operator.

Private Types

- typedef boost::interprocess::managed_shared_memory::segment_manager **TSegment-Manager**

  Typedef of the associated shared memory segment manager.

Private Attributes

- **TSegmentManager** ∗ **m_pSegmentManager**

  Associated shared memory segment manager.

6.18.1 Detailed Description

template<class T> class CIpcPtrDeleter< T >

A functor that destroys the shared memory object of an associated smart pointer.

The deleter object is used for specialised smart pointers and correctly destroys the pointer in the shared memory the associated pointer points to.

Definition at line 279 of file ModuleCommData.hpp.

6.18.2 Member Typedef Documentation

6.18.2.1 template<class T> typedef boost::interprocess::managed_shared_-memory::segment_manager CIpcPtrDeleter< T >::TSegmentManager `[private]`

Typedef of the associated shared memory segment manager.

Definition at line 283 of file ModuleCommData.hpp.

6.18.2.2 template<class T> typedef T* CIpcPtrDeleter< T >::TStoredPtr

Smart pointer type to store.

Definition at line 290 of file ModuleCommData.hpp.

6.18.3 Constructor & Destructor Documentation

6.18.3.1 template<class T> CIpcPtrDeleter< T >::CIpcPtrDeleter (TSegmentManager * *manager*) `[inline]`

Constructor.

Definition at line 293 of file ModuleCommData.hpp.

6.18.4 Member Function Documentation

6.18.4.1 template<class T> void CIpcPtrDeleter< T >::operator() (TStoredPtr *pObject*) `[inline]`

Deleter operator.

Definition at line 298 of file ModuleCommData.hpp.

References CIpcPtrDeleter< T >::m_pSegmentManager.

6.18.5 Member Data Documentation

6.18.5.1 template<class T> TSegmentManager* CIpcPtrDeleter< T >::m_pSegmentManager `[private]`

Associated shared memory segment manager.

Definition at line 286 of file ModuleCommData.hpp.

Referenced by CIpcPtrDeleter< T >::operator()().

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

- **ModuleCommData.hpp**

6.19 CJazzykApp Class Reference

Main Jazzyk application class.

`#include <JazzykApp.hpp>`

Public Member Functions

- int **run** (int argc, char ∗argv[ ])
  Main application entry point.

Static Public Member Functions

- static **CJazzykApp** & **Instance** ()
  Lazy singleton instance creation.

Protected Member Functions

- void **error** ()
  Application error handler.

Private Member Functions

- bool **processCmdLine** (int argc, char ∗argv[ ])
  Processes the command line and produces a configuration.
- void **version** ()
  Prints the version information for the program.
- void **license** ()
  Prints the warranty information for the program.
- void **read** (std::istream &inStream, std::stringstream &outStream)
  Reads the input from inStream and appends it to the output stream.
- **CJazzykApp** ()
  Hidden default constructor.
- virtual ∼**CJazzykApp** ()
  Hidden virtual destructor.
- **CJazzykApp** (const **CJazzykApp** &)
  No copying defined.
- **CJazzykApp** & **operator=** (const **CJazzykApp** &)
  No assignment defined.

Private Attributes

- struct **CJazzykApp::SSettings m_settings**

  Settings wrapper.

Classes

- struct **SSettings**

  Settings wrapper.

6.19.1 Detailed Description

Main Jazzyk application class.

CJazzykApp (p. 80) is the class representing the main Jazzyk application. It is the system's entry point.

CJazzykApp (p. 80) is a singleton.

Definition at line 48 of file JazzykApp.hpp.

6.19.2 Constructor & Destructor Documentation

6.19.2.1 CJazzykApp::CJazzykApp () `[private]`

Hidden default constructor.

Definition at line 86 of file JazzykApp.cpp.

6.19.2.2 CJazzykApp::~CJazzykApp () `[private, virtual]`

Hidden virtual destructor.

Definition at line 91 of file JazzykApp.cpp.

6.19.2.3 CJazzykApp::CJazzykApp (const CJazzykApp &) `[private]`

No copying defined.

6.19.3 Member Function Documentation

6.19.3.1 CJazzykApp & CJazzykApp::Instance () `[static]`

Lazy singleton instance creation.

Definition at line 96 of file JazzykApp.cpp.

Referenced by main().

6.19.3.2 int CJazzykApp::run (int *argc*, char ∗ *argv*[ ])

Main application entry point.

Takes the command line as an argument.

Definition at line 243 of file JazzykApp.cpp.

References CJazzykApp::SSettings::bBypassMP, CJazzykApp::SSettings::bCheckQuery, CJazzykApp::SSettings::bCompileOnly, CJazzykApp::SSettings::bPreprocessOnly, CJazzykApp::SSettings::bPrettyPrint, CJazzykApp::SSettings::bReadStdIn, CJazzykApp::SSettings::bSetFirst, CCompiler::compile(), CInterpreter::configure(), CJazzykApp::SSettings::files, CModuleManager::finalize(), CJazzykApp::SSettings::includePaths, CModuleManager::initialize(), CModuleManager::Instance(), CError::JZOTHER_ERROR, m_settings, CJazzykApp::SSettings::modulePaths, CJazzykApp::SSettings::nCycles, CJazzykApp::SSettings::nMemSize, CCompiler::parse(), CCompiler::preprocess(), processCmdLine(), read(), CInterpreter::run(), CCompiler::setIncludePaths(), and CError::what().

Referenced by main(), and processCmdLine().

6.19.3.3 void CJazzykApp::error () `[protected]`

Application error handler.

6.19.3.4 bool CJazzykApp::processCmdLine (int *argc*, char ∗ *argv*[ ]) `[private]`

Processes the command line and produces a configuration.

As an argument takes the command line. Returns true when the command line was processed properly. Otherwise the application is supposed to exit immediately - the method returns false.

The resulting configuration is returned in the last output argument.

Definition at line 113 of file JazzykApp.cpp.

References CJazzykApp::SSettings::bBypassMP, CJazzykApp::SSettings::bCheckQuery, CJazzykApp::SSettings::bCompileOnly, CJazzykApp::SSettings::bPreprocessOnly, CJazzykApp::SSettings::bPrettyPrint, CJazzykApp::SSettings::bReadStdIn, CJazzykApp::SSettings::bSetFirst, CJazzykApp::SSettings::files, CJazzykApp::SSettings::includePaths, license(), m_settings, CJazzykApp::SSettings::modulePaths, MOTTO, CJazzykApp::SSettings::nCycles, CJazzykApp::SSettings::nMemSize, run(), and version().

Referenced by run().

6.19.3.5 void CJazzykApp::version () `[private]`

Prints the version information for the program.

Definition at line 213 of file JazzykApp.cpp.

References JAZZYK_API_VERSION.

Referenced by processCmdLine().

6.19.3.6 void CJazzykApp::license () `[private]`

Prints the warranty information for the program.

Definition at line 221 of file JazzykApp.cpp.

Referenced by processCmdLine().

6.19.3.7 void CJazzykApp::read (std::istream & *inStream*, std::stringstream & *outStream*) `[private]`

Reads the input from inStream and appends it to the output stream.

Reads always till the very end of the input stream.

Definition at line 104 of file JazzykApp.cpp.

Referenced by run().

6.19.3.8 CJazzykApp& CJazzykApp::operator= (const CJazzykApp &) `[private]`

No assignment defined.

6.19.4 Member Data Documentation

6.19.4.1 struct CJazzykApp::SSettings CJazzykApp::m_settings `[private]`

Settings wrapper.

Referenced by processCmdLine(), and run().

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

- **JazzykApp.hpp**
- **JazzykApp.cpp**

6.20 CJazzykApp::SSettings Struct Reference

Settings wrapper.

Public Member Functions

- **SSettings** ()

  Default constructor.

Public Attributes

- std::vector< std::string > **files**

  List of files to process.

- std::vector< std::string > **includePaths**

  List of include paths to pass to the macro processor.

- std::vector< std::string > **modulePaths**

  List of module paths.

- bool **bReadStdIn**

  Explicit flag to read also the stdin after the input files are read.

- bool **bPrettyPrint**

  Pretty print the program tree structure.

- bool **bPreprocessOnly**

  Run only macro preprocessing step.

- bool **bCompileOnly**

  Compile only.

- bool **bBypassMP**

  Bypass the macro preprocessor.

- unsigned int **nCycles**

  Run only N cycles of the interpreter.

- bool **bSetFirst**

  Choose from a set transformers in first-true manner.

- unsigned int **nMemSize**

  Size of the shared memory between the main process and plug-ins.

- bool **bCheckQuery**

  Check the resulting query substitutions.

6.20.1 Detailed Description

Settings wrapper.

Definition at line 75 of file JazzykApp.hpp.

6.20.2 Constructor & Destructor Documentation

6.20.2.1 CJazzykApp::SSettings::SSettings ()

Default constructor.

Definition at line 66 of file JazzykApp.cpp.

6.20.3 Member Data Documentation

6.20.3.1 std::vector<std::string> CJazzykApp::SSettings::files

List of files to process.

Definition at line 81 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.2 std::vector<std::string> CJazzykApp::SSettings::includePaths

List of include paths to pass to the macro processor.

Definition at line 84 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.3 std::vector<std::string> CJazzykApp::SSettings::modulePaths

List of module paths.

Definition at line 87 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.4 bool CJazzykApp::SSettings::bReadStdIn

Explicit flag to read also the stdin after the input files are read.

Definition at line 90 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.5 bool CJazzykApp::SSettings::bPrettyPrint

Pretty print the program tree structure.

Definition at line 93 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.6 bool CJazzykApp::SSettings::bPreprocessOnly

Run only macro preprocessing step.

Definition at line 96 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.7 bool CJazzykApp::SSettings::bCompileOnly

Compile only.

Definition at line 99 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.8 bool CJazzykApp::SSettings::bBypassMP

Bypass the macro preprocessor.

Definition at line 102 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.9 unsigned int CJazzykApp::SSettings::nCycles

Run only N cycles of the interpreter.

Definition at line 105 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.10 bool CJazzykApp::SSettings::bSetFirst

Choose from a set transformers in first-true manner.

Definition at line 108 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.11 unsigned int CJazzykApp::SSettings::nMemSize

Size of the shared memory between the main process and plug-ins.

Definition at line 111 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

6.20.3.12 bool CJazzykApp::SSettings::bCheckQuery

Check the resulting query substitutions.

Definition at line 114 of file JazzykApp.hpp.

Referenced by CJazzykApp::processCmdLine(), and CJazzykApp::run().

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

- **JazzykApp.hpp**
- **JazzykApp.cpp**

6.21 CJazzykLexer Class Reference

Specialisation of the standard Flex C++ yyFlexLexer class.

`#include <ParserAux.hpp>`

Public Member Functions

- **CJazzykLexer** (std::istream ∗iniputStream)

  Default constructor with the input stream.

- virtual ∼**CJazzykLexer** ()

  Virtual destructor.

- virtual int **yylex** (void ∗yylval, void ∗yylloc)

  Added yylex specialisation with yylval for return value and yylloc for locations.

Public Attributes

- void ∗ **m_pyylval**

  Pointer to the yylval argument of CJazzykLexer::lex().

- void ∗ **m_pyylloc**

  Pointer to the yylloc argument of CJazzykLexer::lex().

Private Member Functions

- **CJazzykLexer** (const **CJazzykLexer** &)

  No copying defined.

- **CJazzykLexer** & **operator=** (const **CJazzykLexer** &)

  No assignment defined.

6.21.1 Detailed Description

Specialisation of the standard Flex C++ yyFlexLexer class.

We need a special subclass of the stock yyFlexLexer class generated by Flex in the C++ mode in order to correctly communicate correctly with the Bison parser in C++ mode.

The **yylex()** (p. 89) is defined using void ∗ because at this stage the Parser.h++ is not generated yet. Actually yyllval and yylloc are of internal types of JazzykParser generated by Bison.

Definition at line 102 of file ParserAux.hpp.

6.21.2 Constructor & Destructor Documentation

6.21.2.1 CJazzykLexer::CJazzykLexer (std::istream ∗ *iniputStream*)

Default constructor with the input stream.

Definition at line 59 of file ParserAux.cpp.

6.21.2.2 CJazzykLexer::∼CJazzykLexer () `[virtual]`

Virtual destructor.

Definition at line 65 of file ParserAux.cpp.

6.21.2.3 CJazzykLexer::CJazzykLexer (const CJazzykLexer &) `[private]`

No copying defined.

6.21.3 Member Function Documentation

6.21.3.1 int CJazzykLexer::yylex (void ∗ *yylval*, void ∗ *yylloc*) `[virtual]`

Added yylex specialisation with yylval for return value and yylloc for locations.

yylval is actually of the type yy::JazzykParser::semantic_type ∗ yylloc is actually of the type yy::JazzykParser::location_type ∗

Definition at line 70 of file ParserAux.cpp.

References m_pyylloc, and m_pyylval.

6.21.3.2 CJazzykLexer& CJazzykLexer::operator= (const CJazzykLexer &) `[private]`

No assignment defined.

6.21.4 Member Data Documentation

6.21.4.1 void∗ CJazzykLexer::m_pyylval

Pointer to the yylval argument of CJazzykLexer::lex().

Definition at line 134 of file ParserAux.hpp.

Referenced by yylex().

6.21.4.2 void∗ CJazzykLexer::m_pyylloc

Pointer to the yylloc argument of CJazzykLexer::lex().

Definition at line 137 of file ParserAux.hpp.

Referenced by yylex().

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

- **ParserAux.hpp**
- **ParserAux.cpp**

6.22 CLocationTracker Class Reference

Small singleton for communication between the Bison location and CExpressions.

`#include <LocationTracker.hpp>`

Public Member Functions

- void **set** (yy::location loc)
  Sets a new location.
- yy::location **get** () const
  Returns the last location stored.

Static Public Member Functions

- static **CLocationTracker** & **Instance** ()
  Returns the singleton instance.

Protected Member Functions

- **CLocationTracker** ()
  Default constructor.
- virtual ~**CLocationTracker** ()
  Virtual destructor.

Private Member Functions

- **CLocationTracker** (const **CLocationTracker** &)
  No copying defined.
- **CLocationTracker** & **operator=** (const **CLocationTracker** &)
  No assignment defined.

Private Attributes

- yy::location **m_srcLocation**

6.22.1 Detailed Description

Small singleton for communication between the Bison location and CExpressions.

Holds the last recorded location of a token. When a new **CExpression** (p. 62) object is created, it copies the location and stores it for later verbatim error reporting.

This class is a singleton.

Definition at line 46 of file LocationTracker.hpp.

6.22.2 Constructor & Destructor Documentation

6.22.2.1 CLocationTracker::CLocationTracker () `[inline, protected]`

Default constructor.

Definition at line 94 of file LocationTracker.hpp.

6.22.2.2 CLocationTracker::~CLocationTracker () `[inline, protected, virtual]`

Virtual destructor.

Definition at line 100 of file LocationTracker.hpp.

6.22.2.3 CLocationTracker::CLocationTracker (const CLocationTracker &) `[private]`

No copying defined.

6.22.3 Member Function Documentation

6.22.3.1 CLocationTracker & CLocationTracker::Instance () `[inline, static]`

Returns the singleton instance.

Definition at line 105 of file LocationTracker.hpp.

6.22.3.2 void CLocationTracker::set (yy::location *loc*) `[inline]`

Sets a new location.

Definition at line 112 of file LocationTracker.hpp.

References m_srcLocation.

6.22.3.3 yy::location CLocationTracker::get () const `[inline]`

Returns the last location stored.

Definition at line 118 of file LocationTracker.hpp.

References m_srcLocation.

6.22.3.4 CLocationTracker& CLocationTracker::operator= (const CLocationTracker &) `[private]`

No assignment defined.

6.22.4 Member Data Documentation

6.22.4.1 yy::location CLocationTracker::m_srcLocation [private]

Definition at line 72 of file LocationTracker.hpp.

Referenced by get(), and set().

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

- **LocationTracker.hpp**

6.23 CModuleDeclaration Class Reference

Module declaration and link holder.

`#include <ModuleDeclaration.hpp>`

Public Member Functions

- **CModuleDeclaration** (const TPtrIdentifier &pIdentifier, const TPtrIdentifier &pType)
  Default constructor.
- virtual ~**CModuleDeclaration** ()
  Virtual destructor.
- const TPtrIdentifier & **getIdentifier** () const
  Returns the identifier of the module.
- const TPtrIdentifier & **getType** () const
  Returns the module type identifier.
- void **addNotification** (const **TPtrModuleNotification** &pNotification)
  Adds notification code to the module.
- void **addQueryOperation** (const TPtrIdentifier &pOperationID)
  Adds a module query interface operation.
- void **addUpdateOperation** (const TPtrIdentifier &pOperationID)
  Adds a module update interface operation.
- bool **isValidQueryOperation** (const TPtrIdentifier &pOperationID) const
  Returns true if the argument is an available module query operation.
- bool **isValidUpdateOperation** (const TPtrIdentifier &pOperationID) const
  Returns true if the argument is an available module update operation.
- const TPtrCodeBlock & **getNotificationCode** (**CModuleNotification::ENotificationType** notifyType) const
  Returns the requested notification code pointer.
- const **TSrcLocation** & **getSrcPosition** () const
  Returns the source code location of the module declaration.

Private Member Functions

- **CModuleDeclaration** (const **CModuleDeclaration** &)
  No copying defined.
- **CModuleDeclaration** & **operator=** (const **CModuleDeclaration** &)
  No assignment defined.

Private Attributes

- TPtrIdentifier **m_pIdentifier**

  Identifier of the associated module.

- TPtrIdentifier **m_pType**

  Module type identifier.

- TPtrCodeBlock **m_pInitCode**

  Codeblock for initialization of the module.

- TPtrCodeBlock **m_pFinalizeCode**

  Codeblock for finalization of the module.

- TPtrCodeBlock **m_pCycleCode**

  Codeblock for notification on interpretation cycle start.

- **TSrcLocation m_srcLocation**

  Source location of the module declaration.

- **TIdentifierSet m_queryOperations**

  List of available query module operations.

- **TIdentifierSet m_updateOperations**

  List of available update module operations.

6.23.1 Detailed Description

Module declaration and link holder.

The class is a holder of module declaration specification. It is used to load and handle the external plugins of the interpreter.

Definition at line 45 of file ModuleDeclaration.hpp.

6.23.2 Constructor & Destructor Documentation

6.23.2.1 CModuleDeclaration::CModuleDeclaration (const TPtrIdentifier & *pIdentifier*, const TPtrIdentifier & *pType*)

Default constructor.

Definition at line 43 of file ModuleDeclaration.cpp.

6.23.2.2 CModuleDeclaration::~CModuleDeclaration () `[virtual]`

Virtual destructor.

Definition at line 58 of file ModuleDeclaration.cpp.

6.23.2.3 CModuleDeclaration::CModuleDeclaration (const CModuleDeclaration &) `[private]`

No copying defined.

6.23.3 Member Function Documentation

6.23.3.1 const TPtrIdentifier & CModuleDeclaration::getIdentifier () const `[inline]`

Returns the identifier of the module.

Definition at line 135 of file ModuleDeclaration.hpp.

References m_pIdentifier.

6.23.3.2 const TPtrIdentifier & CModuleDeclaration::getType () const `[inline]`

Returns the module type identifier.

Definition at line 148 of file ModuleDeclaration.hpp.

References m_pType.

6.23.3.3 void CModuleDeclaration::addNotification (const TPtrModuleNotification & *pNotification*)

Adds notification code to the module.

Definition at line 63 of file ModuleDeclaration.cpp.

References m_pCycleCode, m_pFinalizeCode, m_pInitCode, CModuleNotification::NOTIFY_-CYCLE, CModuleNotification::NOTIFY_FINALIZE, and CModuleNotification::NOTIFY_-INITIALIZE.

6.23.3.4 void CModuleDeclaration::addQueryOperation (const TPtrIdentifier & *pOperationID*)

Adds a module query interface operation.

Definition at line 86 of file ModuleDeclaration.cpp.

References m_queryOperations.

6.23.3.5 void CModuleDeclaration::addUpdateOperation (const TPtrIdentifier & *pOperationID*)

Adds a module update interface operation.

Definition at line 92 of file ModuleDeclaration.cpp.

References m_updateOperations.

6.23.3.6 bool CModuleDeclaration::isValidQueryOperation (const TPtrIdentifier & *pOperationID*) const [inline]

Returns true if the argument is an available module query operation.

Definition at line 154 of file ModuleDeclaration.hpp.

References m_queryOperations.

6.23.3.7 bool CModuleDeclaration::isValidUpdateOperation (const TPtrIdentifier & *pOperationID*) const [inline]

Returns true if the argument is an available module update operation.

Definition at line 160 of file ModuleDeclaration.hpp.

References m_updateOperations.

6.23.3.8 const TPtrCodeBlock & CModuleDeclaration::getNotificationCode (CModuleNotification::ENotificationType *notifyType*) const

Returns the requested notification code pointer.

Definition at line 98 of file ModuleDeclaration.cpp.

References CError::JZOTHER_ERROR, m_pCycleCode, m_pFinalizeCode, m_pInitCode, CModuleNotification::NOTIFY_CYCLE, CModuleNotification::NOTIFY_FINALIZE, and CModuleNotification::NOTIFY_INITIALIZE.

6.23.3.9 const TSrcLocation & CModuleDeclaration::getSrcPosition () const [inline]

Returns the source code location of the module declaration.

Definition at line 141 of file ModuleDeclaration.hpp.

References m_srcLocation.

6.23.3.10 CModuleDeclaration& CModuleDeclaration::operator= (const CModuleDeclaration &) [private]

No assignment defined.

6.23.4 Member Data Documentation

6.23.4.1 TPtrIdentifier CModuleDeclaration::m_pIdentifier [private]

Identifier of the associated module.

Definition at line 97 of file ModuleDeclaration.hpp.

Referenced by getIdentifier().

6.23.4.2 TPtrIdentifier CModuleDeclaration::m_pType [private]

Module type identifier.

Definition at line 100 of file ModuleDeclaration.hpp.

Referenced by getType().

6.23.4.3 TPtrCodeBlock CModuleDeclaration::m_pInitCode [private]

Codeblock for initialization of the module.

Definition at line 103 of file ModuleDeclaration.hpp.

Referenced by addNotification(), and getNotificationCode().

6.23.4.4 TPtrCodeBlock CModuleDeclaration::m_pFinalizeCode [private]

Codeblock for finalization of the module.

Definition at line 106 of file ModuleDeclaration.hpp.

Referenced by addNotification(), and getNotificationCode().

6.23.4.5 TPtrCodeBlock CModuleDeclaration::m_pCycleCode [private]

Codeblock for notification on interpretation cycle start.

Definition at line 109 of file ModuleDeclaration.hpp.

Referenced by addNotification(), and getNotificationCode().

6.23.4.6 TSrcLocation CModuleDeclaration::m_srcLocation [private]

Source location of the module declaration.

Definition at line 112 of file ModuleDeclaration.hpp.

Referenced by getSrcPosition().

6.23.4.7 TIdentifierSet CModuleDeclaration::m_queryOperations [private]

List of available query module operations.

Definition at line 115 of file ModuleDeclaration.hpp.

Referenced by addQueryOperation(), and isValidQueryOperation().

6.23.4.8 TIdentifierSet CModuleDeclaration::m_updateOperations [private]

List of available update module operations.

Definition at line 118 of file ModuleDeclaration.hpp.

Referenced by addUpdateOperation(), and isValidUpdateOperation().

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

- **ModuleDeclaration.hpp**
- **ModuleDeclaration.cpp**

6.24 CModuleManager Class Reference

External plug-ins/modules manager.

`#include <ModuleManager.hpp>`

Public Member Functions

- void **initialize** (const std::vector< std::string > &vszSearchPaths, unsigned int nMemSize, bool bCheckQuery)

  Configures the module manager and initializes the server side shared memory.

- void **finalize** ()

  Server side deinitialization of the module manager.

- void **load** (**TPtrModuleDeclaration** &pDecl)

  Loads a plugin according to the module declaration.

- void **unload** (const **TPtrModuleDeclaration** &pDecl)

  Unloads a plugin according to the module declaration.

- bool **query** (const TPtrIdentifier &pModuleID, const TPtrIdentifier &pOperation, const TPtrCodeBlock &pQueryCode, const TPtrIdentifiers &pFreeVars, **TVariableSubstitution** &substitution)

  Executes a specified query in the given module.

- void **update** (const TPtrIdentifier &pModuleID, const TPtrIdentifier &pOperation, const TPtrCodeBlock &pUpdateCode, const TPtrIdentifiers &pUsedVars, **TVariableSubstitution** &substitution)

  Executes a specified update in the given module.

- void **cycle** (const **TPtrModuleDeclaration** &pDecl)

  Module notification about the end of the cycle.

Static Public Member Functions

- static **CModuleManager** & **Instance** ()

  Returns the singleton instance.

Protected Member Functions

- void **load** (const TPtrIdentifier &pType, const TPtrIdentifier &pModuleID, const TPtrCodeBlock &pInitCode)

  Loads the module.

- void **unload** (const TPtrIdentifier &pModuleID, const TPtrCodeBlock &pFinalizeCode)

  Unloads the module identified by the argument.

Private Member Functions

- **TPtrSModuleRequest writeRequest** (const **EModuleRequestType** eReqType, const TPtrIdentifier ∗pOperation, const TPtrCodeBlock ∗ppCode, const **TVariableSubstitution** ∗pSubstitution)

  Creates and write the request into the memory.

- **TPtrSModuleResponse extractResponse** (const TPtrIdentifier &pIdentifier, **TVariableSubstitution** ∗pSubstitution, bool ∗pbQueryResult)

  Retrieves response from the shared memory.

- void **communicate** (const TPtrIdentifier &pModuleID, const **EModuleRequestType** eReqType, const TPtrIdentifier ∗ppOperation, const TPtrCodeBlock ∗ppCode, **TVariableSubstitution** ∗pSubstitution, bool ∗pbQueryResult)

  Sends the request, waits for a response and retrieves it.

- void **killModule** (const TPtrIdentifier &pModuleID, bool bHang=true)

  Kills the subprocess of the given KR module.

- void **filterVariables** (const **TVariableSubstitution** &inSubstitution, const TPtrIdentifiers &pFilter, **TVariableSubstitution** &outSubstitution)

  Filters a variable substitution.

- **CModuleManager** ()

  Default constructor.

- virtual ∼**CModuleManager** ()

  Virtual destructor.

- **CModuleManager** (const **CModuleManager** &)

  No copying defined.

- **CModuleManager** & **operator=** (const **CModuleManager** &)

  No assignment defined.

Private Attributes

- **TIdentifierMap**< pid_t > **m_mapPIDSubprocesses**

  Map of module subprocess' PIDs.

- **TVecStrings m_vecSearchPaths**

  DLL search paths as specified by the app user.

- bool **m_bCheckQuery**

  Flag for checking sanity of resulting query variable substitutions.

6.24.1 Detailed Description

External plug-ins/modules manager.

The singleton manages loading, unloading and storing handles to external modules for various KR techniques/languages. It is also responsible for the low level query/update interfacing with the modules.

Module is identified by a unique identifier pId and it is a dynamically linked library identified by pType. One plug-in library can serve several modules with different IDs. This is because it is not possible to dynamically load the same DLL library twice.

Important remark: ModuleManager makes a strong assumption that the program is sane and valid. That means that it does not perform additional checking whether modules are loaded/unloaded in the correct order, or that modules are being loaded twice, or unloaded when not loaded.

Definition at line 84 of file ModuleManager.hpp.

6.24.2 Constructor & Destructor Documentation

6.24.2.1 CModuleManager::CModuleManager () `[private]`

Default constructor.

Definition at line 63 of file ModuleManager.cpp.

6.24.2.2 CModuleManager::∼CModuleManager () `[private, virtual]`

Virtual destructor.

Definition at line 71 of file ModuleManager.cpp.

6.24.2.3 CModuleManager::CModuleManager (const CModuleManager &) `[private]`

No copying defined.

6.24.3 Member Function Documentation

6.24.3.1 CModuleManager & CModuleManager::Instance () `[static]`

Returns the singleton instance.

Also does the lazy initialization of the Meyers-type singleton

Definition at line 54 of file ModuleManager.cpp.

Referenced by CProgram::cycle(), CProgram::loadModules(), CInterpreter::PostAction(), CJazzykApp::run(), and CProgram::unloadModules().

6.24.3.2 void CModuleManager::initialize (const std::vector< std::string > & *vszSearchPaths*, unsigned int *nMemSize*, bool *bCheckQuery*)

Configures the module manager and initializes the server side shared memory.

Sets search paths where to look for the modules. If unsuccessful, it throws **CError** (p. 47) exception.

A flag to check that all the variables returned by queries are instantiated is also configured.

Definition at line 78 of file ModuleManager.cpp.

References CShmServerMgr::initialize(), CShmServerMgr::Instance(), m_bCheckQuery, and m_-vecSearchPaths.

Referenced by CJazzykApp::run().

6.24.3.3 void CModuleManager::finalize ()

Server side deinitialization of the module manager.

Definition at line 86 of file ModuleManager.cpp.

References CShmServerMgr::finalize(), CShmServerMgr::Instance(), CError::JZMODULE_-ERROR, and m_mapPIDSubprocesses.

Referenced by CJazzykApp::run().

6.24.3.4 void CModuleManager::load (TPtrModuleDeclaration & *pDecl*)

Loads a plugin according to the module declaration.

Also retrieves the module query/update interface information and stores it in the provided module declaration instance.

Definition at line 179 of file ModuleManager.cpp.

References communicate(), g_JZAPI_QUERY, g_JZAPI_UPDATE, GETINTERFACE, CError::JZMODULE_ERROR, LOG, and CModuleNotification::NOTIFY_INITIALIZE.

Referenced by CProgram::loadModules().

6.24.3.5 void CModuleManager::unload (const TPtrModuleDeclaration & *pDecl*)

Unloads a plugin according to the module declaration.

Definition at line 216 of file ModuleManager.cpp.

References CModuleNotification::NOTIFY_FINALIZE.

Referenced by CProgram::unloadModules().

6.24.3.6 bool CModuleManager::query (const TPtrIdentifier & *pModuleID*, const TPtrIdentifier & *pOperation*, const TPtrCodeBlock & *pQueryCode*, const TPtrIdentifiers & *pFreeVars*, TVariableSubstitution & *substitution*)

Executes a specified query in the given module.

It takes a variable substitution as an input/output argument. After a successful query evaluation, the updated variable substitution is stored back to the substitution argument.

Additional checks are made on the returned substitution:

- no new variable can be added to the substitution

- no already substituted variable can be substituted again

Definition at line 225 of file ModuleManager.cpp.

References communicate(), filterVariables(), CError::JZMODULE_ERROR, m_bCheckQuery, and QUERY.

6.24.3.7 void CModuleManager::update (const TPtrIdentifier & *pModuleID*, const TPtrIdentifier & *pOperation*, const TPtrCodeBlock & *pUpdateCode*, const TPtrIdentifiers & *pUsedVars*, TVariableSubstitution & *substitution*)

Executes a specified update in the given module.

Takes a variable substitution as an argument. It does not modify this substitution.

Definition at line 294 of file ModuleManager.cpp.

References communicate(), filterVariables(), and UPDATE.

Referenced by CInterpreter::PostAction().

6.24.3.8 void CModuleManager::cycle (const TPtrModuleDeclaration & *pDecl*)

Module notification about the end of the cycle.

At each cycle end, the plugin is notified by the code specified in the code.

Definition at line 311 of file ModuleManager.cpp.

References communicate(), CYCLE, and CModuleNotification::NOTIFY_CYCLE.

Referenced by CProgram::cycle().

6.24.3.9 void CModuleManager::load (const TPtrIdentifier & *pType*, const TPtrIdentifier & *pModuleID*, const TPtrCodeBlock & *pInitCode*) `[protected]`

Loads the module.

Launches a new subprocess, which starts the plug-in wrapper (**CSingleModule** (p. 165)) in a separate process and let's it load the library.

The communication with the subprocess happens via shared memory channel.

Definition at line 100 of file ModuleManager.cpp.

References CShmServerMgr::addModuleSync(), communicate(), INITIALIZE, CSingleModule::Instance(), CShmServerMgr::Instance(), CError::JZMODULE_ERROR, LOG, m_mapPIDSubprocesses, m_vecSearchPaths, and CSingleModule::run().

6.24.3.10 void CModuleManager::unload (const TPtrIdentifier & *pModuleID*, const TPtrCodeBlock & *pFinalizeCode*) `[protected]`

Unloads the module identified by the argument.

Finishes the corresponding plug-in subprocess. Subprocess is notified and requested to finalize itself with the provided finalization code and subsequently it should quit (or is destroyed by the main process).

Definition at line 145 of file ModuleManager.cpp.

References communicate(), FINALIZE, killModule(), LOG, and m_mapPIDSubprocesses.

6.24.3.11 TPtrSModuleRequest CModuleManager::writeRequest (const EModuleRequestType *eReqType*, const TPtrIdentifier ∗ *pOperation*, const TPtrCodeBlock ∗ *ppCode*, const TVariableSubstitution ∗ *pSubstitution*) `[private]`

Creates and write the request into the memory.

Effectively, the substitution is broke down into two parts of already substituted variables and free variables. After obtaining a response from the module child process, these are again merged into one so that the module had no chance to change the already substituted variables.

Returns a handle to the request so that the caller can keep control over the shared memory object lifetime.

Only non-null arguments are written into the request structure.

If an error occurs it throws either interprocess_exception, or **CError** (p. 47).

Definition at line 319 of file ModuleManager.cpp.

References CShmServerMgr::Instance(), and CError::JZMODULE_ERROR.

Referenced by communicate().

6.24.3.12 TPtrSModuleResponse CModuleManager::extractResponse (const TPtrIdentifier & *pIdentifier*, TVariableSubstitution ∗ *pSubstitution*, bool ∗ *pbQueryResult*) `[private]`

Retrieves response from the shared memory.

Returns a handle to the request so that the caller can keep control over the shared memory object lifetime.

For query respones the query result is also provided. Otherwise it should be ignored. The output substitution is returned in the second argument (if present).

Definition at line 368 of file ModuleManager.cpp.

References CShmServerMgr::Instance(), CError::JZMODULE_ERROR, LOG, and OK.

Referenced by communicate().

6.24.3.13 void CModuleManager::communicate (const TPtrIdentifier & *pModuleID*, const EModuleRequestType *eReqType*, const TPtrIdentifier ∗ *ppOperation*, const TPtrCodeBlock ∗ *ppCode*, TVariableSubstitution ∗ *pSubstitution*, bool ∗ *pbQueryResult*) `[private]`

Sends the request, waits for a response and retrieves it.

Implements the synchronised communication section.

Only non-null arguments are communicated and returned. What was passed as null, it will return as null.

If the underlying module reports an error on return, or other error occurs, it throws **CError** (p. 47) exception.

Definition at line 418 of file ModuleManager.cpp.

References extractResponse(), CShmServerMgr::Instance(), LOG, CShmServerMgr::notifyRequest(), CShmServerMgr::waitForReady(), CShmServerMgr::waitForResponse(), and writeRequest().

Referenced by cycle(), load(), query(), unload(), and update().

6.24.3.14 void CModuleManager::killModule (const TPtrIdentifier & *pModuleID*, bool *bHang* = `true`) `[private]`

Kills the subprocess of the given KR module.

If the bHang argument is set to false, the process will be remorselessly killed right away, without polite waiting for its exit.

Definition at line 465 of file ModuleManager.cpp.

References CError::JZMODULE_ERROR, and m_mapPIDSubprocesses.

Referenced by unload().

6.24.3.15 void CModuleManager::filterVariables (const TVariableSubstitution & *inSubstitution*, const TPtrIdentifiers & *pFilter*, TVariableSubstitution & *outSubstitution*) `[private]`

Filters a variable substitution.

Fills the output substitution, with the variables from the input substitution, which are present in the filter list.

Definition at line 481 of file ModuleManager.cpp.

References CError::JZMODULE_ERROR.

Referenced by query(), and update().

6.24.3.16 CModuleManager& CModuleManager::operator= (const CModuleManager &) `[private]`

No assignment defined.

6.24.4 Member Data Documentation

6.24.4.1 TIdentifierMap<pid_t> CModuleManager::m_mapPIDSubprocesses `[private]`

Map of module subprocess' PIDs.

Definition at line 266 of file ModuleManager.hpp.

Referenced by finalize(), killModule(), load(), and unload().

6.24.4.2 TVecStrings CModuleManager::m_vecSearchPaths `[private]`

DLL search paths as specified by the app user.

Definition at line 269 of file ModuleManager.hpp.

Referenced by initialize(), and load().

6.24.4.3 bool CModuleManager::m_bCheckQuery `[private]`

Flag for checking sanity of resulting query variable substitutions.

Definition at line 272 of file ModuleManager.hpp.

Referenced by initialize(), and query().

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

- **ModuleManager.hpp**
- **ModuleManager.cpp**

6.25 CModuleNotification Class Reference

Wrapper class for the module notification declaration.

`#include <ModuleNotification.hpp>`

Public Types

- enum **ENotificationType** { **NOTIFY_INITIALIZE**, **NOTIFY_FINALIZE**, **NOTIFY_CYCLE** }

  Notification types.

Public Member Functions

- **CModuleNotification** (**ENotificationType** type, const TPtrIdentifier &id, const TPtr-CodeBlock &code)

  Default constructor.

- virtual ~**CModuleNotification** ()

  Virtual destructor.

- **ENotificationType getType** () const

  Returns notification type.

- const TPtrCodeBlock & **getCode** () const

  Returns the contained code block.

- const TPtrIdentifier & **getIdentifier** () const

  Returns the contained module identifier.

- const **TSrcLocation** & **getSrcPosition** () const

  Returns the source code position of the notification object.

Private Member Functions

- **CModuleNotification** (const **CModuleNotification** &)

  No copying defined.

- **CModuleNotification** & **operator=** (const **CModuleNotification** &)

  No assignment defined.

Private Attributes

- **ENotificationType m_eType**

  Notification type.

- TPtrIdentifier **m_pIdentifier**

  Notified module identifier.

- TPtrCodeBlock **m_pCode**

  Code block of the notification declaration.

- **TSrcLocation m_srcLocation**

  Source location of the notification.

6.25.1 Detailed Description

Wrapper class for the module notification declaration.

Module notification declaration serves only a temporary purpose during the source code parsing. **CModuleNotification** (p. 108) object is created, then passed to **CProgram** (p. 125) and **CModuleDeclaration** (p. 94) to transfer the event notification code and destroyed upon return.

Definition at line 48 of file ModuleNotification.hpp.

6.25.2 Member Enumeration Documentation

6.25.2.1 enum CModuleNotification::ENotificationType

Notification types.

Enumerator:

NOTIFY_INITIALIZE

NOTIFY_FINALIZE

NOTIFY_CYCLE

Definition at line 54 of file ModuleNotification.hpp.

6.25.3 Constructor & Destructor Documentation

6.25.3.1 CModuleNotification::CModuleNotification (ENotificationType *type*, const TPtrIdentifier & *id*, const TPtrCodeBlock & *code*) `[inline]`

Default constructor.

Definition at line 122 of file ModuleNotification.hpp.

6.25.3.2 CModuleNotification::~CModuleNotification () `[inline, virtual]`

Virtual destructor.

Definition at line 131 of file ModuleNotification.hpp.

6.25.3.3 CModuleNotification::CModuleNotification (const CModuleNotification &) `[private]`

No copying defined.

6.25.4 Member Function Documentation

6.25.4.1 CModuleNotification::ENotificationType CModuleNotification::getType () const `[inline]`

Returns notification type.

Definition at line 136 of file ModuleNotification.hpp.

References m_eType.

6.25.4.2 const TPtrCodeBlock & CModuleNotification::getCode () const `[inline]`

Returns the contained code block.

Definition at line 142 of file ModuleNotification.hpp.

References m_pCode.

6.25.4.3 const TPtrIdentifier & CModuleNotification::getIdentifier () const `[inline]`

Returns the contained module identifier.

Definition at line 148 of file ModuleNotification.hpp.

References m_pIdentifier.

6.25.4.4 const TSrcLocation & CModuleNotification::getSrcPosition () const `[inline]`

Returns the source code position of the notification object.

Definition at line 154 of file ModuleNotification.hpp.

References m_srcLocation.

6.25.4.5 CModuleNotification& CModuleNotification::operator= (const CModuleNotification &) `[private]`

No assignment defined.

6.25.5 Member Data Documentation

6.25.5.1 ENotificationType CModuleNotification::m_eType `[private]`

Notification type.

Definition at line 94 of file ModuleNotification.hpp.

Referenced by getType().

6.25.5.2 TPtrIdentifier CModuleNotification::m_pIdentifier `[private]`

Notified module identifier.

Definition at line 97 of file ModuleNotification.hpp.

Referenced by getIdentifier().

6.25.5.3 TPtrCodeBlock CModuleNotification::m_pCode `[private]`

Code block of the notification declaration.

Definition at line 100 of file ModuleNotification.hpp.

Referenced by getCode().

6.25.5.4 TSrcLocation CModuleNotification::m_srcLocation `[private]`

Source location of the notification.

Definition at line 103 of file ModuleNotification.hpp.

Referenced by getSrcPosition().

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

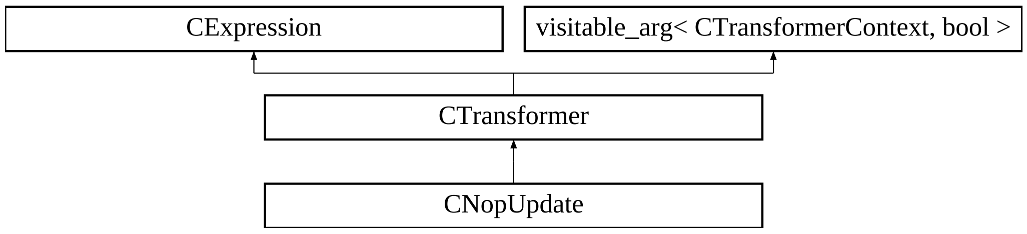
- **ModuleNotification.hpp**

6.26 CNopUpdate Class Reference

Empty update class implementation.

`#include <TrivialUpdate.hpp>`

Inheritance diagram for CNopUpdate::



Public Member Functions

- **CNopUpdate** ()

  Default constructor.

- virtual ~**CNopUpdate** ()

  Virtual destructor.

Private Member Functions

- **CNopUpdate** (const **CNopUpdate** &)

  No copying defined.

- **CNopUpdate** & **operator=** (const **CNopUpdate** &)

  No assignment defined.

6.26.1 Detailed Description

Empty update class implementation.

The NOP mental state transformer

Definition at line 42 of file TrivialUpdate.hpp.

6.26.2 Constructor & Destructor Documentation

6.26.2.1 CNopUpdate::CNopUpdate () `[inline]`

Default constructor.

Definition at line 126 of file TrivialUpdate.hpp.

6.26.2.2 CNopUpdate::∼CNopUpdate () `[inline, virtual]`

Virtual destructor.

Definition at line 131 of file TrivialUpdate.hpp.

6.26.2.3 CNopUpdate::CNopUpdate (const CNopUpdate &) `[private]`

No copying defined.

6.26.3 Member Function Documentation

6.26.3.1 CNopUpdate& CNopUpdate::operator= (const CNopUpdate &) `[private]`

No assignment defined.

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

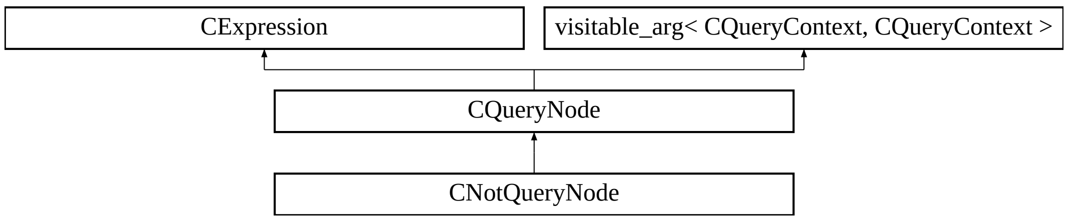
- **TrivialUpdate.hpp**

6.27 CNotQueryNode Class Reference

Query node for NOT logical modifier of a query expression.

`#include <NotQueryNode.hpp>`

Inheritance diagram for CNotQueryNode::



Public Member Functions

- **CNotQueryNode** (**TPtrQueryNode** pQueryNode)

  Default constructor.

- virtual ∼**CNotQueryNode** ()

  Virtual destructor.

- **TPtrQueryNode getNode** () const

  Returns the negated node.

Private Member Functions

- **CNotQueryNode** (const **CNotQueryNode** &)

  No copying defined.

- **CNotQueryNode** & **operator=** (const **CNotQueryNode** &)

  No assignment defined.

Private Attributes

- **TPtrQueryNode m_pNegatedNode**

  Modified query node.

6.27.1 Detailed Description

Query node for NOT logical modifier of a query expression.

Holds a single query subnode.

The node evaluates to TRUE when the contained subnoded evaluates to FALSE end vice versa.

Additionally, no substitution set is returned.

Definition at line 47 of file NotQueryNode.hpp.

6.27.2 Constructor & Destructor Documentation

6.27.2.1 CNotQueryNode::CNotQueryNode (TPtrQueryNode *pQueryNode*) `[inline]`

Default constructor.

Definition at line 96 of file NotQueryNode.hpp.

6.27.2.2 CNotQueryNode::~CNotQueryNode () `[inline, virtual]`

Virtual destructor.

Definition at line 102 of file NotQueryNode.hpp.

6.27.2.3 CNotQueryNode::CNotQueryNode (const CNotQueryNode &) `[private]`

No copying defined.

6.27.3 Member Function Documentation

6.27.3.1 TPtrQueryNode CNotQueryNode::getNode () const `[inline]`

Returns the negated node.

Definition at line 107 of file NotQueryNode.hpp.

References m_pNegatedNode.

Referenced by CTraverser::Visit().

6.27.3.2 CNotQueryNode& CNotQueryNode::operator= (const CNotQueryNode &) `[private]`

No assignment defined.

6.27.4 Member Data Documentation

6.27.4.1 TPtrQueryNode CNotQueryNode::m_pNegatedNode `[private]`

Modified query node.

Definition at line 77 of file NotQueryNode.hpp.

Referenced by getNode().

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

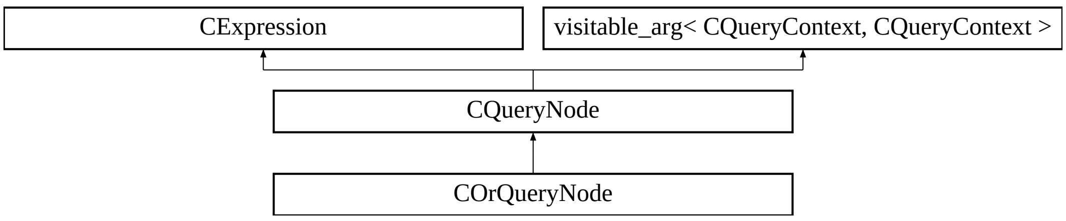
- **NotQueryNode.hpp**

6.28 COrQueryNode Class Reference

Query node for OR logical connector of queries.

`#include <OrQueryNode.hpp>`

Inheritance diagram for COrQueryNode::



Public Member Functions

- **COrQueryNode** (**TPtrQueryNode** pLeftNode, **TPtrQueryNode** pRightNode)

  Default constructor.

- virtual ~**COrQueryNode** ()

  Virtual destructor.

- **TPtrQueryNode getLeftNode** () const

  Returns the left node.

- **TPtrQueryNode getRightNode** () const

  Returns rthe right subnode.

Private Member Functions

- **COrQueryNode** (const **COrQueryNode** &)

  No copying defined.

- **COrQueryNode** & **operator=** (const **COrQueryNode** &)

  No assignment defined.

Private Attributes

- **TPtrQueryNode m_pLeftNode**

  Left hand query node.

- **TPtrQueryNode m_pRightNode**

  Right hand query node.

6.28.1 Detailed Description

Query node for OR logical connector of queries.

Holds two query subnodes.

The node evaluates to TRUE when both subnodes evaluate to true as well. The resulting substitution is the constructed according to the truth value of the subnodes:

- if only one of the subnodes is TRUE, its substitution set is returned
- if both of them are TRUE then the combination substitution set of the right and the left subnodes is returned.

Additionally, the right subnode takes as input the output substitution set of the left one.

Definition at line 53 of file OrQueryNode.hpp.

6.28.2 Constructor & Destructor Documentation

6.28.2.1 COrQueryNode::COrQueryNode (TPtrQueryNode *pLeftNode*, TPtrQueryNode *pRightNode*) `[inline]`

Default constructor.

Definition at line 108 of file OrQueryNode.hpp.

6.28.2.2 COrQueryNode::∼COrQueryNode () `[inline, virtual]`

Virtual destructor.

Definition at line 115 of file OrQueryNode.hpp.

6.28.2.3 COrQueryNode::COrQueryNode (const COrQueryNode &) `[private]`

No copying defined.

6.28.3 Member Function Documentation

6.28.3.1 TPtrQueryNode COrQueryNode::getLeftNode () const `[inline]`

Returns the left node.

Definition at line 120 of file OrQueryNode.hpp.

References m_pLeftNode.

Referenced by CTraverser::Visit().

6.28.3.2 TPtrQueryNode COrQueryNode::getRightNode () const `[inline]`

Returns rthe right subnode.

Definition at line 126 of file OrQueryNode.hpp.

References m_pRightNode.

Referenced by CTraverser::Visit().

6.28.3.3 COrQueryNode& COrQueryNode::operator= (const COrQueryNode &) `[private]`

No assignment defined.

6.28.4 Member Data Documentation

6.28.4.1 TPtrQueryNode COrQueryNode::m_pLeftNode `[private]`

Left hand query node.

Definition at line 85 of file OrQueryNode.hpp.

Referenced by getLeftNode().

6.28.4.2 TPtrQueryNode COrQueryNode::m_pRightNode `[private]`

Right hand query node.

Definition at line 88 of file OrQueryNode.hpp.

Referenced by getRightNode().

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

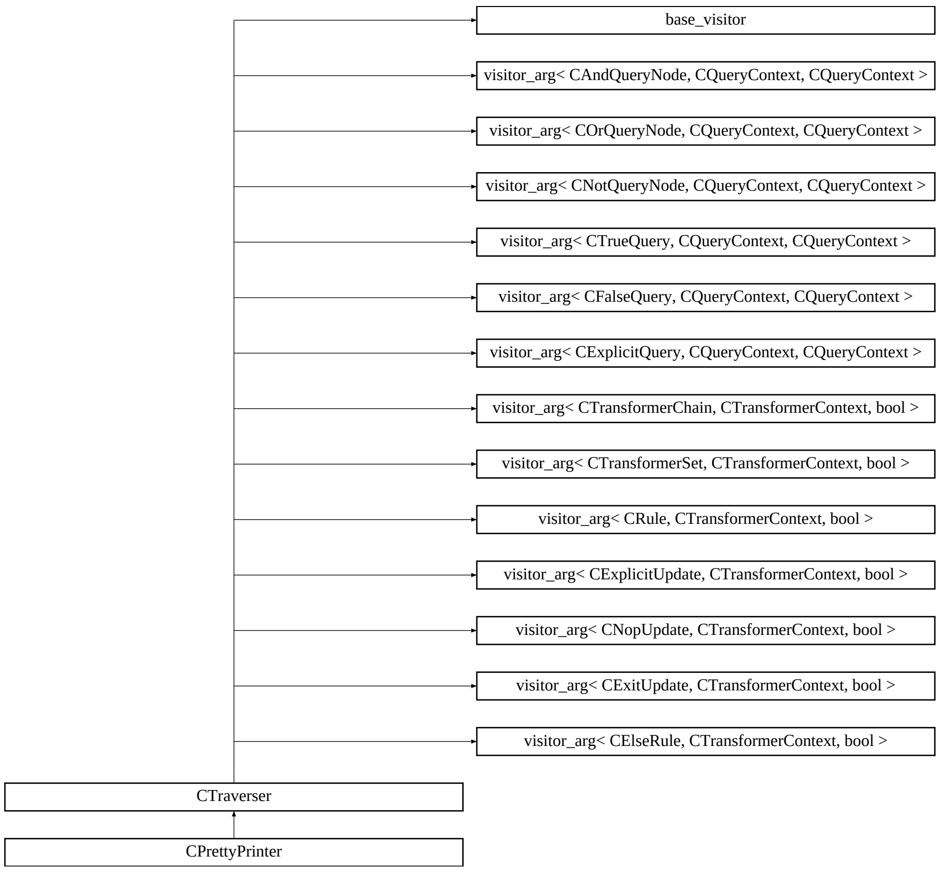
- **OrQueryNode.hpp**

6.29 CPrettyPrinter Class Reference

Jazzyk program rretty printig service class.

`#include <PrettyPrinter.hpp>`

Inheritance diagram for CPrettyPrinter::


base_visitor
visitor_arg< CAndQueryNode, CQueryContext, CQueryContext >
visitor_arg< COrQueryNode, CQueryContext, CQueryContext >
visitor_arg< CNotQueryNode, CQueryContext, CQueryContext >
visitor_arg< CTrueQuery, CQueryContext, CQueryContext >
visitor_arg< CFalseQuery, CQueryContext, CQueryContext >
visitor_arg< CExplicitQuery, CQueryContext, CQueryContext >
visitor_arg< CTransformerChain, CTransformerContext, bool >
visitor_arg< CTransformerSet, CTransformerContext, bool >
visitor_arg< CRule, CTransformerContext, bool >
visitor_arg< CExplicitUpdate, CTransformerContext, bool >
visitor_arg< CNopUpdate, CTransformerContext, bool >
visitor_arg< CExitUpdate, CTransformerContext, bool >
visitor_arg< CElseRule, CTransformerContext, bool >
CTraverser
CPrettyPrinter

Public Member Functions

- **CPrettyPrinter** (**TPtrProgram** pProgram, std::ostream &str=std::cout)

  Constructor with the program to print.

- virtual ∼**CPrettyPrinter** ()

  Virtual destructor.

- virtual void **dump** ()

  Prints the program to the stream.

Protected Member Functions

- virtual **CQueryContext** & **PreAction** (**CAndQueryNode** &, **CQueryContext** &)

Inherited virtuals for handling various types of the ***CExpression*** *(*p. *62) hierarchy.*

- virtual **CQueryContext** & **PreAction** (**COrQueryNode** &, **CQueryContext** &)
- virtual **CQueryContext** & **PreAction** (**CNotQueryNode** &, **CQueryContext** &)
- virtual **CQueryContext** & **PreAction** (**CTrueQuery** &, **CQueryContext** &)
- virtual **CQueryContext** & **PreAction** (**CFalseQuery** &, **CQueryContext** &)
- virtual **CQueryContext** & **PreAction** (**CExplicitQuery** &, **CQueryContext** &)
- virtual void **PreAction** (**CTransformerChain** &, **CTransformerContext** &)
- virtual void **PreAction** (**CTransformerSet** &, **CTransformerContext** &)
- virtual void **PreAction** (**CRule** &, **CTransformerContext** &)
- virtual void **PreAction** (**CExplicitUpdate** &, **CTransformerContext** &)
- virtual void **PreAction** (**CNopUpdate** &, **CTransformerContext** &)
- virtual void **PreAction** (**CElseRule** &, **CTransformerContext** &)
- virtual void **DefaultPostAction** ()

Private Member Functions

- std::string **indent** ()

  Prints the indentation at the beginning of the line.

- **CPrettyPrinter** (const **CPrettyPrinter** &)

  No copying defined.

- **CPrettyPrinter** & **operator=** (const **CPrettyPrinter** &)

  No assignment defined.

Private Attributes

- **TPtrProgram m_pProgram**

  Program to print.

- std::ostream & **m_outStream**

  Output stream to be used.

- unsigned int **m_level**

  Indentation level of the structure.

6.29.1 Detailed Description

Jazzyk program rretty printig service class.

Pretty printer prints the parsed program in a structured manner with adjusted indentation for each level of the program nested structure.

The program is printed to the given output stream. If no output stream is provided, std::cout is used.

Definition at line 51 of file PrettyPrinter.hpp.

6.29.2 Constructor & Destructor Documentation

6.29.2.1 CPrettyPrinter::CPrettyPrinter (TPtrProgram *pProgram*, std::ostream & *str* = `std::cout`)

Constructor with the program to print.

Definition at line 39 of file PrettyPrinter.cpp.

6.29.2.2 CPrettyPrinter::∼CPrettyPrinter () `[virtual]`

Virtual destructor.

Definition at line 47 of file PrettyPrinter.cpp.

6.29.2.3 CPrettyPrinter::CPrettyPrinter (const CPrettyPrinter &) `[private]`

No copying defined.

6.29.3 Member Function Documentation

6.29.3.1 void CPrettyPrinter::dump () `[virtual]`

Prints the program to the stream.

Definition at line 64 of file PrettyPrinter.cpp.

References m_pProgram, and CTraverser::traverse().

6.29.3.2 CQueryContext & CPrettyPrinter::PreAction (CAndQueryNode &, CQueryContext & *ctx*) `[protected, virtual]`

Inherited virtuals for handling various types of the **CExpression** (p. 62) hierarchy.

Reimplemented from **CTraverser** (p. 190).

Definition at line 70 of file PrettyPrinter.cpp.

References indent(), m_level, and m_outStream.

6.29.3.3 CQueryContext & CPrettyPrinter::PreAction (COrQueryNode &, CQueryContext & *ctx*) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 190).

Definition at line 79 of file PrettyPrinter.cpp.

References indent(), m_level, and m_outStream.

6.29.3.4 CQueryContext & CPrettyPrinter::PreAction (CNotQueryNode &, CQueryContext & *ctx*) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 190).

Definition at line 88 of file PrettyPrinter.cpp.

References indent(), m_level, and m_outStream.

6.29.3.5 CQueryContext & CPrettyPrinter::PreAction (CTrueQuery &, CQueryContext & *ctx*) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 191).

Definition at line 97 of file PrettyPrinter.cpp.

References indent(), m_level, and m_outStream.

6.29.3.6 CQueryContext & CPrettyPrinter::PreAction (CFalseQuery &, CQueryContext & *ctx*) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 191).

Definition at line 106 of file PrettyPrinter.cpp.

References indent(), m_level, and m_outStream.

6.29.3.7 CQueryContext & CPrettyPrinter::PreAction (CExplicitQuery & *guest*, CQueryContext & *ctx*) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 191).

Definition at line 115 of file PrettyPrinter.cpp.

References CExplicitQuery::getFreeVariables(), indent(), m_level, and m_outStream.

6.29.3.8 void CPrettyPrinter::PreAction (CTransformerChain &, CTransformerContext &) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 191).

Definition at line 137 of file PrettyPrinter.cpp.

References indent(), m_level, and m_outStream.

6.29.3.9 void CPrettyPrinter::PreAction (CTransformerSet &, CTransformerContext &) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 191).

Definition at line 144 of file PrettyPrinter.cpp.

References indent(), m_level, and m_outStream.

6.29.3.10 void CPrettyPrinter::PreAction (CRule &, CTransformerContext &) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 191).

Definition at line 151 of file PrettyPrinter.cpp.

References indent(), m_level, and m_outStream.

6.29.3.11 void CPrettyPrinter::PreAction (CExplicitUpdate & *guest*, CTransformerContext & *ctx*) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 192).

Definition at line 158 of file PrettyPrinter.cpp.

References CExplicitUpdate::getUsedVariables(), indent(), m_level, and m_outStream.

6.29.3.12 void CPrettyPrinter::PreAction (CNopUpdate &, CTransformerContext &) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 192).

Definition at line 188 of file PrettyPrinter.cpp.

References indent(), m_level, and m_outStream.

6.29.3.13 void CPrettyPrinter::PreAction (CElseRule &, CTransformerContext &) `[protected, virtual]`

Reimplemented from **CTraverser** (p. 192).

Definition at line 195 of file PrettyPrinter.cpp.

References indent(), m_level, and m_outStream.

6.29.3.14 void CPrettyPrinter::DefaultPostAction () `[protected, virtual]`

Reimplemented from **CTraverser** (p. 195).

Definition at line 202 of file PrettyPrinter.cpp.

References m_level.

6.29.3.15 std::string CPrettyPrinter::indent () `[private]`

Prints the indentation at the beginning of the line.

Definition at line 52 of file PrettyPrinter.cpp.

References m_level.

Referenced by PreAction().

6.29.3.16 CPrettyPrinter& CPrettyPrinter::operator= (const CPrettyPrinter &) `[private]`

No assignment defined.

6.29.4 Member Data Documentation

6.29.4.1 TPtrProgram CPrettyPrinter::m_pProgram `[private]`

Program to print.

Definition at line 98 of file PrettyPrinter.hpp.

Referenced by dump().

6.29.4.2 std::ostream& CPrettyPrinter::m_outStream [private]

Output stream to be used.

Definition at line 101 of file PrettyPrinter.hpp.

Referenced by PreAction().

6.29.4.3 unsigned int CPrettyPrinter::m_level [private]

Indentation level of the structure.

Definition at line 104 of file PrettyPrinter.hpp.

Referenced by DefaultPostAction(), indent(), and PreAction().

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

- **PrettyPrinter.hpp**
- **PrettyPrinter.cpp**

6.30 CProgram Class Reference

The Jazzyk program backend structure.

`#include <Program.hpp>`

Public Member Functions

- **CProgram** ()

  Default constructor.

- virtual ~**CProgram** ()

  Virtual destructor.

- void **add** (**TPtrModuleDeclaration** pDecl)

  Adds a new module declaration to the program.

- void **add** (TPtrTransformer pTransformer)

  Adds a new mental state transformer to the program.

- void **add** (const **TPtrModuleNotification** &pNotification)

  Adds a notification to the module.

- bool **isModuleDeclared** (const TPtrIdentifier &pIdentifier) const

  Returns true is there is an already declared module with the identifier.

- **TPtrModuleDeclaration** **getModuleDeclaration** (const TPtrIdentifier &id) const

  Returns pointer to the declaration of the module 'id'.

- TPtrTransformer **getTransformer** () const

  Returns the pointer to the top-level mental state transformer.

- void **loadModules** ()

  Loads all the module declarations.

- void **unloadModules** ()

  Unloads all the module declarations.

- void **cycle** ()

  Notifies all the modules about the new deliberation cycle.

- void **retrieveInterfaces** ()

  Retrieves the loaded module query/update interfaces.

Private Member Functions

- **CProgram** (const **CProgram** &)

  No copying defined.

- **CProgram** & **operator=** (const **CProgram** &)

  No assignment defined.

Private Attributes

- **TModuleDeclCollection m_moduleDeclarations**

  Collection of module declarations.

- **TPtrTransformerSet m_pTransformerCollection**

  Top level mental state transformer.

6.30.1 Detailed Description

The Jazzyk program backend structure.

The Jazzyk program consists of a set of a collection of module declarations and a collection of mental state transformers in the form of a set of transformers (semicolon separated statements).

The collection of mental state transformers is held in a top-level mental state transformer and build a tree structure of sub-transformers.

The program structure is generated during the parsing stage of the compiler run. Later it is checked for validity and finally the interpeter interprets it.

On destruction, the program unloads all the modules it loaded.

Definition at line 56 of file Program.hpp.

6.30.2 Constructor & Destructor Documentation

6.30.2.1 CProgram::CProgram ()

Default constructor.

Definition at line 46 of file Program.cpp.

6.30.2.2 CProgram::∼CProgram () `[virtual]`

Virtual destructor.

Definition at line 53 of file Program.cpp.

References unloadModules().

6.30.2.3 CProgram::CProgram (const CProgram &) `[private]`

No copying defined.

6.30.3 Member Function Documentation

6.30.3.1 void CProgram::add (TPtrModuleDeclaration *pDecl*)

Adds a new module declaration to the program.

Definition at line 59 of file Program.cpp.

References CError::JZCOMPILER_VALIDITY_MODULE_REDEFINED, and m_-moduleDeclarations.

6.30.3.2 void CProgram::add (TPtrTransformer *pTransformer*)

Adds a new mental state transformer to the program.

Definition at line 76 of file Program.cpp.

References m_pTransformerCollection.

6.30.3.3 void CProgram::add (const TPtrModuleNotification & *pNotification*)

Adds a notification to the module.

If the module was not previously declared, exception is thrown.

Definition at line 89 of file Program.cpp.

References getModuleDeclaration(), isModuleDeclared(), and CError::JZPARSER_PARSE_-ERROR.

6.30.3.4 bool CProgram::isModuleDeclared (const TPtrIdentifier & *pIdentifier*) const

Returns true is there is an already declared module with the identifier.

Definition at line 82 of file Program.cpp.

References m_moduleDeclarations.

Referenced by add().

6.30.3.5 TPtrModuleDeclaration CProgram::getModuleDeclaration (const TPtrIdentifier & *id*) const

Returns pointer to the declaration of the module 'id'.

Definition at line 110 of file Program.cpp.

References m_moduleDeclarations.

Referenced by add().

6.30.3.6 TPtrTransformer CProgram::getTransformer () const

Returns the pointer to the top-level mental state transformer.

Definition at line 116 of file Program.cpp.

References m_pTransformerCollection.

6.30.3.7 void CProgram::loadModules ()

Loads all the module declarations.

Definition at line 122 of file Program.cpp.

References CModuleManager::Instance(), CModuleManager::load(), and m_moduleDeclarations.

6.30.3.8 void CProgram::unloadModules ()

Unloads all the module declarations.

Definition at line 133 of file Program.cpp.

References CModuleManager::Instance(), m_moduleDeclarations, and CModuleManager::unload().

Referenced by ~CProgram().

6.30.3.9 void CProgram::cycle ()

Notifies all the modules about the new deliberation cycle.

Definition at line 144 of file Program.cpp.

References CModuleManager::cycle(), CModuleManager::Instance(), and m_moduleDeclarations.

6.30.3.10 void CProgram::retrieveInterfaces ()

Retrieves the loaded module query/update interfaces.

The retrieved interfaces from the KR modules are stroed in the corresponding module declaration instances.

6.30.3.11 CProgram& CProgram::operator= (const CProgram &) `[private]`

No assignment defined.

6.30.4 Member Data Documentation

6.30.4.1 TModuleDeclCollection CProgram::m_moduleDeclarations `[private]`

Collection of module declarations.

Definition at line 117 of file Program.hpp.

Referenced by add(), cycle(), getModuleDeclaration(), isModuleDeclared(), loadModules(), and unloadModules().

6.30.4.2 TPtrTransformerSet CProgram::m_pTransformerCollection [private]

Top level mental state transformer.

Definition at line 120 of file Program.hpp.

Referenced by add(), and getTransformer().

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

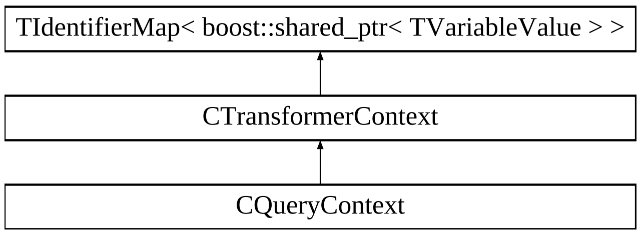
- **Program.hpp**
- **Program.cpp**

6.31 CQueryContext Class Reference

Interpreter context used while traversing the query subtree.

`#include <Context.hpp>`

Inheritance diagram for CQueryContext::



Public Types

- enum **EQueryReturnValue** { **QFALSE**, **QTRUE**, **QUNDEFINED** }

  Query return values.

Public Member Functions

- **CQueryContext** (const **CTransformerContext** &ctx)

  Basic constructor.

- virtual ~**CQueryContext** ()

  Context is copy-constructible.

- **CQueryContext** & **operator=** (const **CQueryContext** &)

  Assignment operator.

- **EQueryReturnValue getResult** () const

  Returns the query evaluation result.

- void **setResult** (**EQueryReturnValue** val)

  Sets the truth value of the context.

- void **resetResult** ()

  Resets result to UNDEFINED turth value.

- bool **isTrue** () const

  Returns true when the result is strictly TRUE.

- bool **isTrueW** () const

  Returns true when the query result is TRUE, or UNDEFINED (weak true).

- bool **isFalse** () const

  Returns true when the query result is strictly FALSE.

- bool **isFalseW** () const

  Returns true when the query result is FALSE, or UNDEFINED (weak false).

- virtual **CQueryContext** & **operator &=** (const **EQueryReturnValue** &rhs)

  Updates the context result in a 3-valued AND manner.

- virtual **CQueryContext** & **operator**|= (const **EQueryReturnValue** &rhs)

  Updates the context result in a 3-valued OR manner.

- virtual **CQueryContext** & **negate** ()

  Updates the context result in a 3-valued NOT manner.

Private Member Functions

- **CQueryContext** ()

  Default constructor.

Private Attributes

- **EQueryReturnValue m_result**

  Query context return value.

6.31.1 Detailed Description

Interpreter context used while traversing the query subtree.

When created it it derives it internal structures from the currently valid **CTransformer** (p. 172) context.

The query context is also used as a return value of Accept/Visit dispatch. It holds mainly the result of the query evaluation.

Finally its held variable substitution is supposed to be unified with the variable substitution held by the parent transformer context (e.g. in the interpretation phase).

Note: The instances are copied extensively during the program tree traversal, but that allows passing the substitution between the separate parts of the query expression finally resulting in a valid variable substitution.

Definition at line 147 of file Context.hpp.

6.31.2 Member Enumeration Documentation

6.31.2.1 enum CQueryContext::EQueryReturnValue

Query return values.

Enumerator:

QFALSE

QTRUE

QUNDEFINED

Definition at line 177 of file Context.hpp.

6.31.3 Constructor & Destructor Documentation

6.31.3.1 CQueryContext::CQueryContext (const CTransformerContext & *ctx*)

Basic constructor.

Initializes the shared data for traversing the whole query subtree. It is a specialized copy constructor of the **CTransformer** (p. 172) parent class.

Should be used only at the very top node of a query subtree.

Definition at line 98 of file Context.cpp.

6.31.3.2 CQueryContext::∼CQueryContext () `[virtual]`

Context is copy-constructible.

Let the compiler create a default copy constructor. Virtual destructor

Definition at line 105 of file Context.cpp.

6.31.3.3 CQueryContext::CQueryContext () `[private]`

Default constructor.

The method should be never called and **visitor** (p. 218) should throw a runtime_error exception in the case it is needed.

Note: It is never defined, although it might break some compilers.

6.31.4 Member Function Documentation

6.31.4.1 CQueryContext & CQueryContext::operator= (const CQueryContext & *ctx*)

Assignment operator.

Only the return result and the variable substitution are copied, not the context transformer reference.

That's because only the first top-level query context is created using a constructor from context and all the others are copied from parent query contexts. I.e. all the query contexts of one large query expression share the reference to one single transformer context object.

Definition at line 171 of file Context.cpp.

References m_result.

6.31.4.2 CQueryContext::EQueryReturnValue CQueryContext::getResult () const `[inline]`

Returns the query evaluation result.

Definition at line 281 of file Context.hpp.

References m_result.

Referenced by CTraverser::Visit().

6.31.4.3 void CQueryContext::setResult (EQueryReturnValue *val*) `[inline]`

Sets the truth value of the context.

Definition at line 287 of file Context.hpp.

References m_result.

Referenced by CInterpreter::PostAction(), resetResult(), and CTraverser::Visit().

6.31.4.4 void CQueryContext::resetResult () `[inline]`

Resets result to UNDEFINED turth value.

Definition at line 293 of file Context.hpp.

References QUNDEFINED, and setResult().

Referenced by CTraverser::Visit().

6.31.4.5 bool CQueryContext::isTrue () const `[inline]`

Returns true when the result is strictly TRUE.

Definition at line 299 of file Context.hpp.

References m_result, and QTRUE.

6.31.4.6 bool CQueryContext::isTrueW () const `[inline]`

Returns true when the query result is TRUE, or UNDEFINED (weak true).

Definition at line 305 of file Context.hpp.

References m_result, QTRUE, and QUNDEFINED.

Referenced by CTraverser::Visit().

6.31.4.7 bool CQueryContext::isFalse () const `[inline]`

Returns true when the query result is strictly FALSE.

Definition at line 311 of file Context.hpp.

References m_result, and QFALSE.

6.31.4.8 bool CQueryContext::isFalseW () const `[inline]`

Returns true when the query result is FALSE, or UNDEFINED (weak false).

Definition at line 317 of file Context.hpp.

References m_result, QFALSE, and QUNDEFINED.

Referenced by CTraverser::Visit().

6.31.4.9 CQueryContext & CQueryContext::operator &= (const EQueryReturnValue & *rhs*) `[virtual]`

Updates the context result in a 3-valued AND manner.

Truth values: (T,T)=T, (T,F)=F, (F,T)=F, (F,F)=F (U,∗)=U, (∗,U)=U

Note: Does not affect the contained variable substitution!

Definition at line 109 of file Context.cpp.

References m_result, QFALSE, QTRUE, and QUNDEFINED.

6.31.4.10 CQueryContext & CQueryContext::operator\|= (const EQueryReturnValue & *rhs*) `[virtual]`

Updates the context result in a 3-valued OR manner.

Truth values: (T,T)=T, (T,F)=T, (F,T)=T, (F,F)=T (U,∗)=U, (∗,U)=U

Note: Does not affect the contained variable substitution!

Definition at line 129 of file Context.cpp.

References m_result, QFALSE, QTRUE, and QUNDEFINED.

6.31.4.11 CQueryContext & CQueryContext::negate () `[virtual]`

Updates the context result in a 3-valued NOT manner.

Truth values: (T)=F, (F)=T, (U)=U

Note: Clears the contained variable substitution!

Definition at line 149 of file Context.cpp.

References m_result, QFALSE, QTRUE, and QUNDEFINED.

Referenced by CTraverser::Visit().

6.31.5 Member Data Documentation

6.31.5.1 EQueryReturnValue CQueryContext::m_result `[private]`

Query context return value.

Definition at line 259 of file Context.hpp.

Referenced by getResult(), isFalse(), isFalseW(), isTrue(), isTrueW(), negate(), operator &=(), operator=(), operator|=(), and setResult().

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

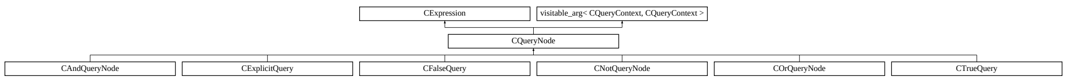
- **Context.hpp**
- **Context.cpp**

6.32 CQueryNode Class Reference

Query node abstract base class.

`#include <QueryNode.hpp>`

Inheritance diagram for CQueryNode::



Public Member Functions

- **CQueryNode** ()

  Default constructor.

- virtual ~**CQueryNode** ()=0

  Pure virtual destructor.

Private Member Functions

- **CQueryNode** (const **CQueryNode** &)

  No copying defined.

- **CQueryNode** & **operator=** (const **CQueryNode** &)

  No assignment defined.

6.32.1 Detailed Description

Query node abstract base class.

Query nodes are specialized expressions, which compose a tree structure of queries which can be hierarchically evaluated according to 1st order logic rules.

CQueryNode (p. 136) hierarchy is **visitable** (p. 214) with **CQueryContext** (p. 130) instance as an argument asd well as a return value.

Definition at line 49 of file QueryNode.hpp.

6.32.2 Constructor & Destructor Documentation

6.32.2.1 CQueryNode::CQueryNode () `[inline]`

Default constructor.

Definition at line 87 of file QueryNode.hpp.

6.32.2.2 CQueryNode::∼CQueryNode () `[inline, pure virtual]`

Pure virtual destructor.

Definition at line 92 of file QueryNode.hpp.

6.32.2.3 CQueryNode::CQueryNode (const CQueryNode &) `[private]`

No copying defined.

6.32.3 Member Function Documentation

6.32.3.1 CQueryNode& CQueryNode::operator= (const CQueryNode &) `[private]`

No assignment defined.

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

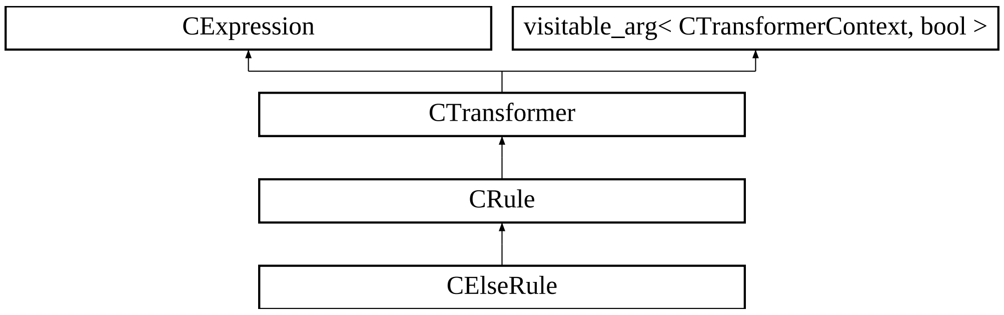
- **QueryNode.hpp**

6.33 CRule Class Reference

If-then rule mental state transformer.

`#include <Rule.hpp>`

Inheritance diagram for CRule::



Public Member Functions

- **CRule** (**TPtrQueryNode** pLHS, TPtrTransformer pRHS)

  Default constructor.

- virtual ~**CRule** ()

  Virtual destructor.

- **TPtrQueryNode getQuery** () const

  Returns pointer to the left hand side query.

- TPtrTransformer **getThenTransformer** () const

  Returns pointer to the right hand side transformer.

Protected Attributes

- **TPtrQueryNode m_pQueryList**

  Left hand side query.

- TPtrTransformer **m_pThenTransformer**

  Right hand side mental state transformer.

Private Member Functions

- **CRule** (const **CRule** &)

  No copying defined.

- **CRule** & **operator=** (const **CRule** &)

  No assignment defined.

6.33.1 Detailed Description

If-then rule mental state transformer.

The rule mental state transformer stands for the full rule with both left hand as well as right hand side. The left hand side is a query, while the right hand side is a mental state transformer.

Definition at line 45 of file Rule.hpp.

6.33.2 Constructor & Destructor Documentation

6.33.2.1 CRule::CRule (TPtrQueryNode *pLHS*, TPtrTransformer *pRHS*) `[inline]`

Default constructor.

Definition at line 99 of file Rule.hpp.

6.33.2.2 CRule::∼CRule () `[inline, virtual]`

Virtual destructor.

Definition at line 106 of file Rule.hpp.

6.33.2.3 CRule::CRule (const CRule &) `[private]`

No copying defined.

6.33.3 Member Function Documentation

6.33.3.1 TPtrQueryNode CRule::getQuery () const `[inline]`

Returns pointer to the left hand side query.

Definition at line 111 of file Rule.hpp.

References m_pQueryList.

Referenced by CTraverser::Visit().

6.33.3.2 TPtrTransformer CRule::getThenTransformer () const `[inline]`

Returns pointer to the right hand side transformer.

Definition at line 117 of file Rule.hpp.

References m_pThenTransformer.

Referenced by CTraverser::Visit().

6.33.3.3 CRule& CRule::operator= (const CRule &) `[private]`

No assignment defined.

6.33.4 Member Data Documentation

6.33.4.1 TPtrQueryNode CRule::m_pQueryList [protected]

Left hand side query.

Definition at line 77 of file Rule.hpp.

Referenced by getQuery().

6.33.4.2 TPtrTransformer CRule::m_pThenTransformer [protected]

Right hand side mental state transformer.

Definition at line 80 of file Rule.hpp.

Referenced by getThenTransformer().

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

- **Rule.hpp**

6.34 CShmClientMgr Class Reference

Client side interprocess communication manager.

`#include <ShmClientMgr.hpp>`

Public Member Functions

- void **initialize** (const std::string &szModuleID)

  Initializes the client side shared memory manager.

- void **finalize** ()

  Closes the shared memory and releases the handles to named conditions, mutexes etc.

- void **notifyReady** ()

  Notifies the server (main) process that the child (client) is ready.

- void **notifyResponse** ()

  Notifies the server (main) process that the response is present in the shared memory and should be processed.

- void **waitForRequest** (**ShmemLock** &lock)

  Waits for a request sync signal from the main process.

- **SModuleRequest** ∗ **retrieveRequest** ()

  Retrieves the request data structure from the shared memory.

- **SModuleResponse** ∗ **createResponse** ()

  Creates a response data structure in the shared memory.

Static Public Member Functions

- static **CShmClientMgr** & **Instance** ()

  Returns the singleton instance.

Private Member Functions

- **CShmClientMgr** ()

  Default constructor.

- virtual ∼**CShmClientMgr** ()

  Virtual destructor.

- **CShmClientMgr** (const **CShmClientMgr** &)

  No copying defined.

- **CShmClientMgr** & **operator=** (const **CShmClientMgr** &)

  No assignment defined.

Private Attributes

- **CShmemManager::TPtrSModuleSync m_pModuleSync**
  Synchronisation conditions.

6.34.1 Detailed Description

Client side interprocess communication manager.

A singleton interface to the **CShmemManager** (p. 145) to be used in the subprocesses.

It stores a set of synchronisation conditions for the subprocess.

Definition at line 44 of file ShmClientMgr.hpp.

6.34.2 Constructor & Destructor Documentation

6.34.2.1 CShmClientMgr::CShmClientMgr () `[private]`

Default constructor.

Definition at line 38 of file ShmClientMgr.cpp.

6.34.2.2 CShmClientMgr::∼CShmClientMgr () `[private, virtual]`

Virtual destructor.

Definition at line 44 of file ShmClientMgr.cpp.

6.34.2.3 CShmClientMgr::CShmClientMgr (const CShmClientMgr &) `[private]`

No copying defined.

6.34.3 Member Function Documentation

6.34.3.1 CShmClientMgr & CShmClientMgr::Instance () `[static]`

Returns the singleton instance.

Definition at line 49 of file ShmClientMgr.cpp.

Referenced by CSingleModule::extractRequest(), CSingleModule::handleModuleError(), CSingle-Module::run(), and CSingleModule::writeResponse().

6.34.3.2 void CShmClientMgr::initialize (const std::string & *szModuleID*)

Initializes the client side shared memory manager.

Opens the shared memory objects. To map the named synchronisation conditions, it uses the module ID string provided as an argument.

Definition at line 57 of file ShmClientMgr.cpp.

References CShmemManager::initializeChildProcess(), CShmemManager::Instance(), and m_-pModuleSync.

Referenced by CSingleModule::run().

6.34.3.3 void CShmClientMgr::finalize ()

Closes the shared memory and releases the handles to named conditions, mutexes etc.

Definition at line 69 of file ShmClientMgr.cpp.

References CShmemManager::finalizeChildProcess(), CShmemManager::Instance(), and m_-pModuleSync.

Referenced by CSingleModule::run().

6.34.3.4 void CShmClientMgr::notifyReady ()

Notifies the server (main) process that the child (client) is ready.

Notification is comoplementary to **CShmServerMgr::waitForReady()** (p. 162) method.

Definition at line 79 of file ShmClientMgr.cpp.

References m_pModuleSync.

Referenced by CSingleModule::run().

6.34.3.5 void CShmClientMgr::notifyResponse ()

Notifies the server (main) process that the response is present in the shared memory and should be processed.

Notification is complementary to **CShmServerMgr::waitForResponse()** (p. 162) method.

Definition at line 85 of file ShmClientMgr.cpp.

References m_pModuleSync.

Referenced by CSingleModule::handleModuleError(), and CSingleModule::run().

6.34.3.6 void CShmClientMgr::waitForRequest (ShmemLock & *lock*)

Waits for a request sync signal from the main process.

Takes a lock object of the scope the caller is in.

This wait is complementary to **CShmServerMgr::notifyRequest()** (p. 162) method.

Definition at line 91 of file ShmClientMgr.cpp.

References m_pModuleSync.

Referenced by CSingleModule::run().

6.34.3.7 SModuleRequest ∗ CShmClientMgr::retrieveRequest ()

Retrieves the request data structure from the shared memory.

Returns a plain pointer to the extracted request data structure. The user should not destroy the shared object. The server is responsible for its correct destruction.

Definition at line 97 of file ShmClientMgr.cpp.

References CShmemManager::Instance(), and CShmemManager::retrieveRequest().

Referenced by CSingleModule::extractRequest().

6.34.3.8 SModuleResponse ∗ CShmClientMgr::createResponse ()

Creates a response data structure in the shared memory.

Returns a plain pointer to the allocated data structure. The client shouldn't destroy the object after it communicates as it is left for the server side to destroy it correctly.

Definition at line 103 of file ShmClientMgr.cpp.

References CShmemManager::allocateResponse(), and CShmemManager::Instance().

Referenced by CSingleModule::writeResponse().

6.34.3.9 CShmClientMgr& CShmClientMgr::operator= (const CShmClientMgr &) `[private]`

No assignment defined.

6.34.4 Member Data Documentation

6.34.4.1 CShmemManager::TPtrSModuleSync CShmClientMgr::m_pModuleSync `[private]`

Synchronisation conditions.

Definition at line 114 of file ShmClientMgr.hpp.

Referenced by finalize(), initialize(), notifyReady(), notifyResponse(), and waitForRequest().

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

- **ShmClientMgr.hpp**
- **ShmClientMgr.cpp**

6.35 CShmemManager Class Reference

Service managing the shared memory between the main process and plug-in processes.

`#include <ShmemManager.hpp>`

Protected Types

- typedef boost::shared_ptr< **SModuleSync** > **TPtrSModuleSync**

  Type definition for a smart pointer to the ***SModuleSync*** *(*p. *155) struct.*

Protected Member Functions

- const std::string **getMemoryID** ()

  Name resolution helper methods.

- const std::string **getMutexID** ()
- const **TPtrIpcMutex** & **getMutex** ()

  Returns reference to the mutex.

- void **initializeMainProcess** (unsigned int nMemSize)

  Compound method to be called in the main process (server side) to initialize the shared memory of the server.

- void **initializeChildProcess** ()

  Compound method to be called in the subprocess (client side) to initialize the shared memory of the client.

- void **finalizeMainProcess** ()

  Compound method to be called when the shared memory of the main process is no longer to be used.

- void **finalizeChildProcess** ()

  Compound method to be called when the shared memory of the child process is no longer to be used.

- **SModuleRequest** ∗ **allocateRequest** ()

  Allocates a new request object in the shared memory.

- **SModuleResponse** ∗ **allocateResponse** ()

  Allocates a new response object in the shared memory.

- **SModuleRequest** ∗ **retrieveRequest** ()

  Retrieves a handle to the request data structure from the shared memory.

- **SModuleResponse** ∗ **retrieveResponse** ()

  Retrieves a handle to the response data structure from the shared memory.

- const **TPtrSModuleRequestDeleter** & **getRequestDeleter** ()

Returns the instance of the request deleter.

- const **TPtrSModuleResponseDeleter** & **getResponseDeleter** ()

  Returns the instance of the response deleter.

Static Protected Member Functions

- static void **configure** (const std::string &szPrefix)

  Configures the prefix of the shared memory objects.

- static **CShmemManager** & **Instance** ()

  Returns singleton instance.

Private Member Functions

- void **createShmem** (unsigned int nMemSize)

  Create the shared memory objects.

- void **deleteShmem** ()

  Destroys the shared memory.

- void **openShmem** ()

  Open the shared memory objects.

- void **closeShmem** ()

  Closes the shared memory.

- void **initializeHelpers** ()

  Initialize the shared memory helper functors.

- const std::string **getRequestID** ()

  Constructs a request/response instance names.

- const std::string **getResponseID** ()
- **CShmemManager** ()

  Default constructor.

- virtual ~**CShmemManager** ()

  Virtual destructor.

- **CShmemManager** (const **CShmemManager** &)

  No copying defined.

- **CShmemManager** & **operator=** (const **CShmemManager** &)

  No assignment defined.

Private Attributes

- **TPtrIpcManagedSharedMemory m_pShMemory**

  Shared memory object.

- **TPtrIpcMutex m_pShMutex**

  Shared mutex for access to the whole shared memory.

- **TPtrIpcCharAllocator m_pCharAllocator**

  Character allocator instance.

- **TPtrIpcSubstAllocator m_pSubstAllocator**

  Variable substitution allocator instance.

- **TPtrSModuleRequestDeleter m_pRequestDeleter**

  Module request smart pointer deleter.

- **TPtrSModuleResponseDeleter m_pResponseDeleter**

  Module response smart pointer deleter.

Static Private Attributes

- static std::string **m_szPrefix**

  Application specific prefix for shared memory objects.

Friends

- struct **ShmemLock**
- class **CShmClientMgr**
- class **CShmServerMgr**

Classes

- struct **SModuleSync**

  Synchronisation conditions structure.

6.35.1 Detailed Description

Service managing the shared memory between the main process and plug-in processes.

The service holds all the memory allocators, pointer deleters and other helper objects.

It is not to be used itself, therefore it has empty public interface. Instead a specialised interface subclasses should be used by the final user code.

All subprocesses share the same memory, same mutex for it, but for each of them, the manager holds a separate set of signaling named condition.

All identifiers are composed of a constant application prefix, main process ID and an additional data structure suffix. The prefix is provided by the application when the shared memory manager is created. The constants are defined in the corresponding cpp file.

Important note: Each process (main + subprocesses) should use only one single instance of the shared memory manager. However, the main process has to ∗configure∗ and subsequently ∗create∗ the shared memory and, the mutexes and condition variables _before_ subprocesses are forked, while these ∗open∗ them after they are launched. Do not re-use the server side (main process) instance in the child process after the fork invocation!

Important note: The class does not handle the exceptions possibly thrown by the Boost.Interprocess library. The user code has to handle these!!!

Each failure in Boost.Interprocess results in boost::interprocess::interprocess_exception throw.

Definition at line 82 of file ShmemManager.hpp.

6.35.2 Member Typedef Documentation

6.35.2.1 typedef boost::shared_ptr<SModuleSync> CShmemManager::TPtrSModuleSync `[protected]`

Type definition for a smart pointer to the **SModuleSync** (p. 155) struct.

Definition at line 235 of file ShmemManager.hpp.

6.35.3 Constructor & Destructor Documentation

6.35.3.1 CShmemManager::CShmemManager () `[private]`

Default constructor.

Definition at line 62 of file ShmemManager.cpp.

6.35.3.2 CShmemManager::∼CShmemManager () `[private, virtual]`

Virtual destructor.

Definition at line 67 of file ShmemManager.cpp.

6.35.3.3 CShmemManager::CShmemManager (const CShmemManager &) `[private]`

No copying defined.

6.35.4 Member Function Documentation

6.35.4.1 void CShmemManager::configure (const std::string & *szPrefix*) `[inline, static, protected]`

Configures the prefix of the shared memory objects.

Definition at line 349 of file ShmemManager.hpp.

References m_szPrefix.

Referenced by CShmServerMgr::initialize().

6.35.4.2 const std::string CShmemManager::getMemoryID () `[protected]`

Name resolution helper methods.

These methods construct the canonical name of the corresponding shared objects.

Definition at line 154 of file ShmemManager.cpp.

References g_szMemorySuffix(), and m_szPrefix.

Referenced by createShmem(), deleteShmem(), and openShmem().

6.35.4.3 const std::string CShmemManager::getMutexID () `[protected]`

Definition at line 160 of file ShmemManager.cpp.

References g_szMutexSuffix(), and m_szPrefix.

Referenced by createShmem(), deleteShmem(), and openShmem().

6.35.4.4 const TPtrIpcMutex & CShmemManager::getMutex () `[inline, protected]`

Returns reference to the mutex.

Used by the friend class **ShmemLock** (p. 203).

Definition at line 355 of file ShmemManager.hpp.

References m_pShMutex.

6.35.4.5 CShmemManager & CShmemManager::Instance () `[static, protected]`

Returns singleton instance.

Definition at line 72 of file ShmemManager.cpp.

Referenced by CShmServerMgr::createRequest(), CShmClientMgr::createResponse(), CShmServerMgr::finalize(), CShmClientMgr::finalize(), CShmServerMgr::initialize(), CShmClientMgr::initialize(), CShmClientMgr::retrieveRequest(), and CShmServerMgr::retrieveResponse().

6.35.4.6 void CShmemManager::initializeMainProcess (unsigned int *nMemSize*) `[protected]`

Compound method to be called in the main process (server side) to initialize the shared memory of the server.

Before the main process forks the subprocesses it should invoke this method in order to create the shared memory segment and initialize the shared memory manager for the future child oprocesses.

The argument is the size of the requested shared memory to be allocated.

Definition at line 180 of file ShmemManager.cpp.

References createShmem(), and initializeHelpers().

Referenced by CShmServerMgr::initialize().

6.35.4.7 void CShmemManager::initializeChildProcess () [protected]

Compound method to be called in the subprocess (client side) to initialize the shared memory of the client.

When a sub-process is launched, it should call this method in order to reset some already in the main process initialized data members (e.g. pointers to the shared memory which was already created in the main process).

Definition at line 166 of file ShmemManager.cpp.

References initializeHelpers(), m_pCharAllocator, m_pRequestDeleter, m_pResponseDeleter, m_pShMemory, m_pShMutex, m_pSubstAllocator, and openShmem().

Referenced by CShmClientMgr::initialize().

6.35.4.8 void CShmemManager::finalizeMainProcess () [protected]

Compound method to be called when the shared memory of the main process is no longer to be used.

Should be called in the main process only. It closes the references to the shared memory objects and destroys the shared memory object from the operating system resources.

Definition at line 187 of file ShmemManager.cpp.

References deleteShmem().

Referenced by CShmServerMgr::finalize().

6.35.4.9 void CShmemManager::finalizeChildProcess () [protected]

Compound method to be called when the shared memory of the child process is no longer to be used.

Should be called only in the child processes. It closes the references to the shared objects.

Definition at line 193 of file ShmemManager.cpp.

References closeShmem().

Referenced by CShmClientMgr::finalize().

6.35.4.10 SModuleRequest * CShmemManager::allocateRequest () [protected]

Allocates a new request object in the shared memory.

Returns a shared pointer to the constructed object. The shared pointer is initialized with the appropriate object deleter, so when the object is being deleted, it is deleted using this deleter.

The user is responsible for the correct object destruction. The best is to let it be deleted automagically when the last shared pointer reference to it is destroyed.

Definition at line 199 of file ShmemManager.cpp.

References getRequestID(), m_pCharAllocator, m_pShMemory, and m_pSubstAllocator.

6.35.4.11 SModuleResponse * CShmemManager::allocateResponse () [protected]

Allocates a new response object in the shared memory.

See comments by **allocateRequest()** (p. 150) above.

Definition at line 205 of file ShmemManager.cpp.

References getResponseID(), m_pCharAllocator, m_pShMemory, and m_pSubstAllocator.

Referenced by CShmClientMgr::createResponse().

6.35.4.12 SModuleRequest ∗ CShmemManager::retrieveRequest () `[protected]`

Retrieves a handle to the request data structure from the shared memory.

Definition at line 224 of file ShmemManager.cpp.

References getRequestID(), and m_pShMemory.

Referenced by CShmClientMgr::retrieveRequest().

6.35.4.13 SModuleResponse ∗ CShmemManager::retrieveResponse () `[protected]`

Retrieves a handle to the response data structure from the shared memory.

Definition at line 232 of file ShmemManager.cpp.

References getResponseID(), and m_pShMemory.

6.35.4.14 const TPtrSModuleRequestDeleter & CShmemManager::getRequestDeleter () `[inline, protected]`

Returns the instance of the request deleter.

Definition at line 361 of file ShmemManager.hpp.

References m_pRequestDeleter.

6.35.4.15 const TPtrSModuleResponseDeleter & CShmemManager::getResponseDeleter () `[inline, protected]`

Returns the instance of the response deleter.

Definition at line 367 of file ShmemManager.hpp.

References m_pResponseDeleter.

6.35.4.16 void CShmemManager::createShmem (unsigned int *nMemSize*) `[private]`

Create the shared memory objects.

Should be called only in the main process.

Definition at line 80 of file ShmemManager.cpp.

References getMemoryID(), getMutexID(), m_pShMemory, and m_pShMutex.

Referenced by initializeMainProcess().

6.35.4.17 void CShmemManager::deleteShmem () [private]

Destroys the shared memory.

Should be called only in the main process.

Definition at line 104 of file ShmemManager.cpp.

References closeShmem(), getMemoryID(), and getMutexID().

Referenced by finalizeMainProcess().

6.35.4.18 void CShmemManager::openShmem () [private]

Open the shared memory objects.

Should be called only in the subprocesses.

Definition at line 114 of file ShmemManager.cpp.

References getMemoryID(), getMutexID(), m_pShMemory, and m_pShMutex.

Referenced by initializeChildProcess().

6.35.4.19 void CShmemManager::closeShmem () [private]

Closes the shared memory.

Should be called only in the subprocesses.

Definition at line 132 of file ShmemManager.cpp.

References m_pCharAllocator, m_pRequestDeleter, m_pResponseDeleter, m_pShMemory, m_-pShMutex, and m_pSubstAllocator.

Referenced by deleteShmem(), and finalizeChildProcess().

6.35.4.20 void CShmemManager::initializeHelpers () [private]

Initialize the shared memory helper functors.

Initializes the character/pair allocators and scoped_ptr corresponding deleters.

This method can be called only after either **createShmem()** (p. 151), or **openShmem()** (p. 152) was called.

Definition at line 144 of file ShmemManager.cpp.

References m_pCharAllocator, m_pRequestDeleter, m_pResponseDeleter, m_pShMemory, and m_pSubstAllocator.

Referenced by initializeChildProcess(), and initializeMainProcess().

6.35.4.21 const std::string CShmemManager::getRequestID () [private]

Constructs a request/response instance names.

Definition at line 211 of file ShmemManager.cpp.

References g_szRequestSuffix(), and m_szPrefix.

Referenced by allocateRequest(), and retrieveRequest().

6.35.4.22 const std::string CShmemManager::getResponseID () [private]

Definition at line 217 of file ShmemManager.cpp.

References g_szResponseSuffix(), and m_szPrefix.

Referenced by allocateResponse(), and retrieveResponse().

6.35.4.23 CShmemManager& CShmemManager::operator= (const CShmemManager &) [private]

No assignment defined.

6.35.5 Friends And Related Function Documentation

6.35.5.1 friend struct ShmemLock [friend]

Definition at line 86 of file ShmemManager.hpp.

6.35.5.2 friend class CShmClientMgr [friend]

Definition at line 87 of file ShmemManager.hpp.

6.35.5.3 friend class CShmServerMgr [friend]

Definition at line 88 of file ShmemManager.hpp.

6.35.6 Member Data Documentation

6.35.6.1 TPtrIpcManagedSharedMemory CShmemManager::m_pShMemory [private]

Shared memory object.

Definition at line 283 of file ShmemManager.hpp.

Referenced by allocateRequest(), allocateResponse(), closeShmem(), createShmem(), initializeChildProcess(), initializeHelpers(), openShmem(), retrieveRequest(), and retrieveResponse().

6.35.6.2 TPtrIpcMutex CShmemManager::m_pShMutex [private]

Shared mutex for access to the whole shared memory.

Definition at line 286 of file ShmemManager.hpp.

Referenced by closeShmem(), createShmem(), getMutex(), initializeChildProcess(), and openShmem().

6.35.6.3 TPtrIpcCharAllocator CShmemManager::m_pCharAllocator [private]

Character allocator instance.

Definition at line 289 of file ShmemManager.hpp.

Referenced by allocateRequest(), allocateResponse(), closeShmem(), initializeChildProcess(), and initializeHelpers().

6.35.6.4 TPtrIpcSubstAllocator CShmemManager::m_pSubstAllocator [private]

Variable substitution allocator instance.

Definition at line 292 of file ShmemManager.hpp.

Referenced by allocateRequest(), allocateResponse(), closeShmem(), initializeChildProcess(), and initializeHelpers().

6.35.6.5 TPtrSModuleRequestDeleter CShmemManager::m_pRequestDeleter [private]

Module request smart pointer deleter.

Definition at line 295 of file ShmemManager.hpp.

Referenced by closeShmem(), getRequestDeleter(), initializeChildProcess(), and initializeHelpers().

6.35.6.6 TPtrSModuleResponseDeleter CShmemManager::m_pResponseDeleter [private]

Module response smart pointer deleter.

Definition at line 298 of file ShmemManager.hpp.

Referenced by closeShmem(), getResponseDeleter(), initializeChildProcess(), and initializeHelpers().

6.35.6.7 std::string CShmemManager::m_szPrefix [static, private]

Application specific prefix for shared memory objects.

Definition at line 301 of file ShmemManager.hpp.

Referenced by configure(), getMemoryID(), getMutexID(), CShmemManager::SModuleSync::getReadySemaphoreID(), CShmemManager::SModuleSync::getRequestConditionID(), getRequestID(), CShmemManager::SModuleSync::getResponseConditionID(), and getResponseID().

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

- **ShmemManager.hpp**
- **ShmemManager.cpp**

6.36 CShmemManager::SModuleSync Struct Reference

Synchronisation conditions structure.

`#include <ShmemManager.hpp>`

Public Member Functions

- **SModuleSync** (const std::string &szModuleID)

    Constructor with the module ID.

- void **create** ()

    Creates the shared named conditions.

- void **open** ()

    Opens the shared named conditions.

- void **close** ()

    Closes the handles to the shared conditions.

- void **destroy** ()

    Destroys the shared named conditions.

- const std::string **getRequestConditionID** ()

    Name resolution helper methods.

- const std::string **getResponseConditionID** ()
- const std::string **getReadySemaphoreID** ()

Public Attributes

- std::string **m_szModuleID**

    Application specific prefix for shared named conditions.

- **TPtrIpcCondition m_pShReqCondition**

    Shared condition for signaling that request is present in the memory.

- **TPtrIpcCondition m_pShRespCondition**

    Shared condition for signaling that response is present in the memory.

- **TPtrIpcSemaphore m_pShReadySemaphore**

    Shared condition for signaling readiness for an request-response exchange.

6.36.1 Detailed Description

Synchronisation conditions structure.

The structure for synchronising the a single module (client) with the main (server) process. It is instantiated on both Ipc sides. On server side, the conditions are created, while on the client side they are just opened.

The instance is copyable and copyconstructible.

Definition at line 195 of file ShmemManager.hpp.

6.36.2 Constructor & Destructor Documentation

6.36.2.1 CShmemManager::SModuleSync::SModuleSync (const std::string & *szModuleID*)

Constructor with the module ID.

Definition at line 244 of file ShmemManager.cpp.

6.36.3 Member Function Documentation

6.36.3.1 void CShmemManager::SModuleSync::create ()

Creates the shared named conditions.

Definition at line 250 of file ShmemManager.cpp.

References getReadySemaphoreID(), getRequestConditionID(), getResponseConditionID(), m_-pShReadySemaphore, m_pShReqCondition, and m_pShRespCondition.

6.36.3.2 void CShmemManager::SModuleSync::open ()

Opens the shared named conditions.

Definition at line 260 of file ShmemManager.cpp.

References getReadySemaphoreID(), getRequestConditionID(), getResponseConditionID(), m_-pShReadySemaphore, m_pShReqCondition, and m_pShRespCondition.

6.36.3.3 void CShmemManager::SModuleSync::close ()

Closes the handles to the shared conditions.

Definition at line 300 of file ShmemManager.cpp.

References m_pShReadySemaphore, m_pShReqCondition, and m_pShRespCondition.

Referenced by destroy().

6.36.3.4 void CShmemManager::SModuleSync::destroy ()

Destroys the shared named conditions.

Definition at line 288 of file ShmemManager.cpp.

References close(), getReadySemaphoreID(), getRequestConditionID(), and getResponseConditionID().

6.36.3.5 const std::string CShmemManager::SModuleSync::getRequestConditionID ()

Name resolution helper methods.

These methods construct the canonical name of the corresponding shared objects.

Definition at line 270 of file ShmemManager.cpp.

References g_szRequestConditionSuffix(), m_szModuleID, and CShmemManager::m_szPrefix.

Referenced by create(), destroy(), and open().

6.36.3.6 const std::string CShmemManager::SModuleSync::getResponseConditionID ()

Definition at line 276 of file ShmemManager.cpp.

References g_szResponseConditionSuffix(), m_szModuleID, and CShmemManager::m_szPrefix.

Referenced by create(), destroy(), and open().

6.36.3.7 const std::string CShmemManager::SModuleSync::getReadySemaphoreID ()

Definition at line 282 of file ShmemManager.cpp.

References g_szReadySemaphoreSuffix(), m_szModuleID, and CShmemManager::m_szPrefix.

Referenced by create(), destroy(), and open().

6.36.4 Member Data Documentation

6.36.4.1 std::string CShmemManager::SModuleSync::m_szModuleID

Application specific prefix for shared named conditions.

Definition at line 201 of file ShmemManager.hpp.

Referenced by getReadySemaphoreID(), getRequestConditionID(), and getResponseConditionID().

6.36.4.2 TPtrIpcCondition CShmemManager::SModuleSync::m_pShReqCondition

Shared condition for signaling that request is present in the memory.

Definition at line 204 of file ShmemManager.hpp.

Referenced by close(), create(), and open().

6.36.4.3 TPtrIpcCondition CShmemManager::SModuleSync::m_pShRespCondition

Shared condition for signaling that response is present in the memory.

Definition at line 207 of file ShmemManager.hpp.

Referenced by close(), create(), and open().

6.36.4.4 TPtrIpcSemaphore CShmemManager::SModuleSync::m_-pShReadySemaphore

Shared condition for signaling readiness for an request-response exchange.

Definition at line 210 of file ShmemManager.hpp.

Referenced by close(), create(), and open().

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

- **ShmemManager.hpp**
- **ShmemManager.cpp**

6.37 CShmServerMgr Class Reference

Server side interprocess communication manager.

`#include <ShmServerMgr.hpp>`

Public Member Functions

- void **initialize** (unsigned int nMemSize)

  Initialized the server side shared memory manager.

- void **finalize** ()

  Destroys the shared memory objects.

- void **addModuleSync** (const TPtrIdentifier &identifier)

  Adds a new conditions set for a given module.

- void **waitForReady** (const TPtrIdentifier &identifier)

  Waits for the ready sync signal from the child process.

- void **waitForResponse** (const TPtrIdentifier &identifier, **ShmemLock** &lock)

  Waits for the response sync signal from the child process.

- void **waitForResponse** (const TPtrIdentifier &identifier, const unsigned long &nMilliSeconds, **ShmemLock** &lock)

  Waits a limited time for the response sync signal from the child process.

- void **notifyRequest** (const TPtrIdentifier &identifier)

  Notyfies the subprocess about the request data presence in the shared memory.

- **TPtrSModuleRequest createRequest** ()

  Creates a request structure in the shared memory.

- **TPtrSModuleResponse retrieveResponse** ()

  Retrieves a response from the shared memory.

Static Public Member Functions

- static **CShmServerMgr** & **Instance** ()

  Returns the singleton instance.

Private Types

- typedef **TIdentifierMap< CShmemManager::TPtrSModuleSync > TModuleSyncMap**

  Type definition for map of module synchronisation conditions.

Private Member Functions

- void **freeSyncs** ()
  Destroys the shared condition resources for the shared memory.
- **CShmServerMgr** ()
  Default constructor.
- virtual ∼**CShmServerMgr** ()
  Virtual destructor.
- **CShmServerMgr** (const **CShmServerMgr** &)
  No copying defined.
- **CShmServerMgr** & **operator=** (const **CShmServerMgr** &)
  No assignment defined.

Private Attributes

- **TModuleSyncMap m_mapModuleSync**
  Association map for sync. conditions specified per each subprocess (identified by an identifier).

6.37.1 Detailed Description

Server side interprocess communication manager.

An interface to the server side **CShmemManager** (p. 145) class. The singleton is only a bare interface to the shared memory manager singleton instance in the process.

Stores a map of module synchronisation conditions used for signaling between the main process (server) and a corresponding subprocess (client).

It is also used to configure the shared memory manager with the main proces specific prefix. It's form is "jazzyk_<pid>_".

Important note: Since the shared memory prefix has to be propagated to all the subprocesses which should subsequently open the shared memory according to this identifier, the singleton *must* be first time used to create the shared memory before forking the subprocesses.

Definition at line 59 of file ShmServerMgr.hpp.

6.37.2 Member Typedef Documentation

6.37.2.1 typedef TIdentifierMap<CShmemManager::TPtrSModuleSync> CShmServerMgr::TModuleSyncMap `[private]`

Type definition for map of module synchronisation conditions.

Basically, it is good only to save typing in the source code.

Definition at line 167 of file ShmServerMgr.hpp.

6.37.3 Constructor & Destructor Documentation

6.37.3.1 CShmServerMgr::CShmServerMgr () `[private]`

Default constructor.

Definition at line 52 of file ShmServerMgr.cpp.

6.37.3.2 CShmServerMgr::~CShmServerMgr () `[private, virtual]`

Virtual destructor.

Definition at line 58 of file ShmServerMgr.cpp.

6.37.3.3 CShmServerMgr::CShmServerMgr (const CShmServerMgr &) `[private]`

No copying defined.

6.37.4 Member Function Documentation

6.37.4.1 CShmServerMgr & CShmServerMgr::Instance () `[static]`

Returns the singleton instance.

Definition at line 63 of file ShmServerMgr.cpp.

Referenced by CModuleManager::communicate(), CModuleManager::extractResponse(), CModuleManager::finalize(), CModuleManager::initialize(), CModuleManager::load(), and CModuleManager::writeRequest().

6.37.4.2 void CShmServerMgr::initialize (unsigned int *nMemSize*)

Initialized the server side shared memory manager.

Configures the **CShmemManager** (p. 145) class and creates the shared memory objects. It takes an argument which is the size of the shared memory segment to allocate.

To be called before forking the subprocesses!

Definition at line 71 of file ShmServerMgr.cpp.

References CShmemManager::configure(), g_szSharedMemoryPrefix(), CShmemManager::initializeMainProcess(), and CShmemManager::Instance().

Referenced by CModuleManager::initialize().

6.37.4.3 void CShmServerMgr::finalize ()

Destroys the shared memory objects.

It is to be used when the shared memory is no longer to be used.

Definition at line 84 of file ShmServerMgr.cpp.

References CShmemManager::finalizeMainProcess(), freeSyncs(), and CShmemManager::Instance().

Referenced by CModuleManager::finalize().

6.37.4.4 void CShmServerMgr::addModuleSync (const TPtrIdentifier & *identifier*)

Adds a new conditions set for a given module.

Definition at line 94 of file ShmServerMgr.cpp.

References m_mapModuleSync.

Referenced by CModuleManager::load().

6.37.4.5 void CShmServerMgr::waitForReady (const TPtrIdentifier & *identifier*)

Waits for the ready sync signal from the child process.

Waits for the ready condition signal from the subprocess corresponding to the identifier in the method's first argument.

The second argument is the scoped lock object for the scope we are in and which is currently being locked.

For more detail, check the Boost.Interprocess documentation on boost::interprocess::named_-condition::wait(L& lock).

Definition at line 119 of file ShmServerMgr.cpp.

References m_mapModuleSync.

Referenced by CModuleManager::communicate().

6.37.4.6 void CShmServerMgr::waitForResponse (const TPtrIdentifier & *identifier*, ShmemLock & *lock*)

Waits for the response sync signal from the child process.

For more info, check the waitForReady(.) method documentation above.

Definition at line 125 of file ShmServerMgr.cpp.

References m_mapModuleSync.

Referenced by CModuleManager::communicate().

6.37.4.7 void CShmServerMgr::waitForResponse (const TPtrIdentifier & *identifier*, const unsigned long & *nMilliSeconds*, ShmemLock & *lock*)

Waits a limited time for the response sync signal from the child process.

Definition at line 131 of file ShmServerMgr.cpp.

References m_mapModuleSync.

6.37.4.8 void CShmServerMgr::notifyRequest (const TPtrIdentifier & *identifier*)

Notyfies the subprocess about the request data presence in the shared memory.

Notifies the corresponding subprocess that the request data structure is present in the memory and should be processed.

On more info, read the documentation of boost::interprocess::named_condition::notify_one(.).

Definition at line 141 of file ShmServerMgr.cpp.

References m_mapModuleSync.

Referenced by CModuleManager::communicate().

6.37.4.9 TPtrSModuleRequest CShmServerMgr::createRequest ()

Creates a request structure in the shared memory.

Returns a smart pointer to the allocated object in the shared memory. The user is responsible for the object destruction! I.e., let the smart pointer die and the shared memory object dies with it.

Remark: The server side is responsible for the shared memory object destruction.

Definition at line 147 of file ShmServerMgr.cpp.

References CShmemManager::Instance().

6.37.4.10 TPtrSModuleResponse CShmServerMgr::retrieveResponse ()

Retrieves a response from the shared memory.

The variable substitution is erased and its content is replaced with the returned one.

Note: Regarding object's destruction, see the comment in createRequest(...) method.

Remark: The server side is responsible for the shared memory object destruction.

Definition at line 156 of file ShmServerMgr.cpp.

References CShmemManager::Instance().

6.37.4.11 void CShmServerMgr::freeSyncs () `[private]`

Destroys the shared condition resources for the shared memory.

Definition at line 106 of file ShmServerMgr.cpp.

References m_mapModuleSync.

Referenced by finalize().

6.37.4.12 CShmServerMgr& CShmServerMgr::operator= (const CShmServerMgr &) `[private]`

No assignment defined.

6.37.5 Member Data Documentation

6.37.5.1 TModuleSyncMap CShmServerMgr::m_mapModuleSync `[private]`

Association map for sync. conditions specified per each subprocess (identified by an identifier).

However, we have to be careful to destroy the shared named conditions properly. On server side destroy() has to be called. On client side, no special handling is needed.

Definition at line 175 of file ShmServerMgr.hpp.

Referenced by addModuleSync(), freeSyncs(), notifyRequest(), waitForReady(), and waitForResponse().

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

- **ShmServerMgr.hpp**
- **ShmServerMgr.cpp**

6.38 CSingleModule Class Reference

Wrapper for a KR module.

`#include <SingleModule.hpp>`

Public Member Functions

- void **run** (const std::string &szType, const std::string &pModuleID, const **TVecStrings** &vecSearchPaths)

  Implements the subprocess main routine.

Static Public Member Functions

- static **CSingleModule** & **Instance** ()

  Returns the singleton instance.

Private Types

- typedef boost::shared_ptr< **jazzyk::KRModuleInterface** > **TPtrModule**

  Type definition for a pointer to the abstract KR module interface instance.

Private Member Functions

- **SModuleRequest** ∗ **extractRequest** ()

  Retrieves a request from the shared memory.

- void **writeResponse** (const **EModuleErrCode** eError, const char ∗parrszSubstName[ ]=0, const char ∗parrszSubstValue[ ]=0, const unsigned int ∗pnSubstSize=0, const bool ∗pbQueryResult=0)

  Writes the response into the shared memory.

- bool **processRequest** ()

  Handles the request on the subprocess side.

- void **loadDll** ()

  Loads the DLL corresponding to the KR module.

- void **unloadDll** ()

  Unloadsthe DLL corresponding to the KR module.

- void **extract_names_values** (const **TIpcSubst** &substitution, char ∗∗&arrszName, char ∗∗&arrszValue, unsigned int &nSize)

  Converts a variable substitution from the shared memory format into the raw format.

- void **convert_operations** (char ∗∗arrszID1, char ∗∗arrszID2, char ∗∗&arrszName, char ∗∗&arrszValue, const unsigned int &nSize1, const unsigned int &nSize2)

Fills the map structure with module operation API entries according to their type.

- void **free_names_values** (char **arrszName, char **arrszValue, const unsigned int &nSize)

  De-allocates the converted raw variable substitution.

- void **handleModuleError** (const std::string &szReason, bool bForce=false)

  Reports the libtool error.

- **CSingleModule** ()

  Default constructor.

- virtual ~**CSingleModule** ()

  Virtual destructor.

- **CSingleModule** (const **CSingleModule** &)

  No copying defined.

- **CSingleModule** & **operator=** (const **CSingleModule** &)

  No assignment defined.

Private Attributes

- std::string **m_szModuleType**

  KR module type.

- std::string **m_szModuleID**

  KR module identifier.

- **TVecStrings m_vecPaths**

  Shared library paths.

- lt_dlhandle **m_hLibrary**

  Handle to the DLL.

- boost::shared_ptr< **jazzyk::KRModuleInterface** > **m_pModule**

  Pointer to the abstract KR module interface instance.

6.38.1 Detailed Description

Wrapper for a KR module.

Singleton responsible to the run the KR module subprocess. Communicates with the server (ModuleManager) via shared memory and on the other hand controls the shared library comntaining the corresponding KR module.

Definition at line 52 of file SingleModule.hpp.

6.38.2 Member Typedef Documentation

6.38.2.1 typedef boost::shared_ptr<jazzyk::KRModuleInterface> CSingleModule::TPtrModule `[private]`

Type definition for a pointer to the abstract KR module interface instance.

Definition at line 198 of file SingleModule.hpp.

6.38.3 Constructor & Destructor Documentation

6.38.3.1 CSingleModule::CSingleModule () `[private]`

Default constructor.

Definition at line 61 of file SingleModule.cpp.

6.38.3.2 CSingleModule::∼CSingleModule () `[private, virtual]`

Virtual destructor.

Definition at line 70 of file SingleModule.cpp.

6.38.3.3 CSingleModule::CSingleModule (const CSingleModule &) `[private]`

No copying defined.

6.38.4 Member Function Documentation

6.38.4.1 CSingleModule & CSingleModule::Instance () `[static]`

Returns the singleton instance.

Definition at line 75 of file SingleModule.cpp.

Referenced by CModuleManager::load().

6.38.4.2 void CSingleModule::run (const std::string & *szType*, const std::string & *pModuleID*, const TVecStrings & *vecSearchPaths*)

Implements the subprocess main routine.

The subprocess enters the communication cycle: 1.- signal readiness to the main process 2.- wait for a request in the shared memory 3.- handle the request 4.- put the response to the shared memory 5.- signal to the main process that response is present in the shared memory 6.- goto 1.

The communication cycle is synchronised using a shared named mutex and semaphore with the main process.

The arguments designate the plug-in type and the identifier of the module.

IMPORTANT: The first message communicated to the subprocess has to be INITIALIZE, which causes the subprocess to load the KR module shared library. Only then the other messages can be processed correctly.

Definition at line 82 of file SingleModule.cpp.

References CShmClientMgr::finalize(), CShmClientMgr::initialize(), CShmClientMgr::Instance(), LOG, m_szModuleID, m_szModuleType, m_vecPaths, CShmClientMgr::notifyReady(), CShmClientMgr::notifyResponse(), processRequest(), and CShmClientMgr::waitForRequest().

Referenced by CModuleManager::load().

6.38.4.3 SModuleRequest ∗ CSingleModule::extractRequest () `[private]`

Retrieves a request from the shared memory.

Returns a plain pointer to the request. No attempt to destroy the object should be made.

Definition at line 141 of file SingleModule.cpp.

References CShmClientMgr::Instance(), and CShmClientMgr::retrieveRequest().

Referenced by processRequest().

6.38.4.4 void CSingleModule::writeResponse (const EModuleErrCode *eError*, const char ∗ *parrszSubstName*[ ] = `0`, const char ∗ *parrszSubstValue*[ ] = `0`, const unsigned int ∗ *pnSubstSize* = `0`, const bool ∗ *pbQueryResult* = `0`) `[private]`

Writes the response into the shared memory.

Fills the non-null arguments into the response which is then written to the shared memory.

Does not return any handle. The lifetime of the object is controlled by the server side.

Definition at line 147 of file SingleModule.cpp.

References SModuleResponse::addVariableSubst(), CShmClientMgr::createResponse(), handleModuleError(), CShmClientMgr::Instance(), LOG, SModuleResponse::m_bQueryResult, and SModuleResponse::m_eError.

Referenced by handleModuleError(), and processRequest().

6.38.4.5 bool CSingleModule::processRequest () `[private]`

Handles the request on the subprocess side.

1.- Reads the shared memory, 2.- Retrieves the request to the subprocess, 3.- Forwards the request to the corresponding KR module, and finally 4.- Writes response to the shared memory

Returns true if the child process should exit for whatever reason, otherwise returns false.

It is a counterpart of communicate(...) on the server side.

Definition at line 186 of file SingleModule.cpp.

References convert_operations(), CYCLE, extract_names_values(), extractRequest(), FAIL, FINALIZE, free_names_values(), GETINTERFACE, handleModuleError(), INITIALIZE, jazzyk::INVALID_OPERATION, loadDll(), LOG, SModuleRequest::m_eType, SModuleRequest::m_mapFreeVariables, SModuleRequest::m_mapSubstitution, m_pModule, SModuleRequest::m_szCodeBlock, SModuleRequest::m_szOperation, OK, jazzyk::OK, QUERY, UPDATE, and writeResponse().

Referenced by run().

6.38.4.6 void CSingleModule::loadDll () `[private]`

Loads the DLL corresponding to the KR module.

Initializes the libtool DLL loading mechanism and loads the shared library.

Definition at line 425 of file SingleModule.cpp.

References cszLibNamePrefix(), cszLibNameSuffix(), handleModuleError(), JAZZYK_API_-VERSION, JZMODULE_API_REGISTER_ROUTINE, JZMODULE_API_VERSION_-ROUTINE, LOG, m_hLibrary, m_pModule, m_szModuleType, and m_vecPaths.

Referenced by processRequest().

6.38.4.7 void CSingleModule::unloadDll () `[private]`

Unloadsthe DLL corresponding to the KR module.

Unloads the shared library and de-initializes the libtool loading mechanism.

Definition at line 495 of file SingleModule.cpp.

References handleModuleError(), and m_hLibrary.

6.38.4.8 void CSingleModule::extract_names_values (const TIpcSubst & *substitution*, char **& *arrszName*, char **& *arrszValue*, unsigned int & *nSize*) `[private]`

Converts a variable substitution from the shared memory format into the raw format.

Definition at line 543 of file SingleModule.cpp.

Referenced by processRequest().

6.38.4.9 void CSingleModule::convert_operations (char ** *arrszID1*, char ** *arrszID2*, char **& *arrszName*, char **& *arrszValue*, const unsigned int & *nSize1*, const unsigned int & *nSize2*) `[private]`

Fills the map structure with module operation API entries according to their type.

- first argument is a list of query operations
- second argument is a list of update operations
- third/fourth arguments are the output map
- fifth/sixth arguments are sizes of first/second arguments respectively

Definition at line 564 of file SingleModule.cpp.

References g_JZAPI_QUERY, and g_JZAPI_UPDATE.

Referenced by processRequest().

6.38.4.10 void CSingleModule::free_names_values (char ** *arrszName*, char ** *arrszValue*, const unsigned int & *nSize*) `[private]`

De-allocates the converted raw variable substitution.

Definition at line 595 of file SingleModule.cpp.

Referenced by processRequest().

6.38.4.11 void CSingleModule::handleModuleError (const std::string & *szReason*, bool *bForce* = `false`) `[private]`

Reports the libtool error.

Writes a response about failing request processing into the shared memory, notifies the main process about this issue.

However, it does not exit the subprocess, but rather waits for the main process to finish it by the FINALIZE message.

If the optional argument bForce is set to true, nothing will be written to the shared memory and the process will simply throw. This should be used in situations when the shared memory is broken and there's no point in attempting a communication again.

IMPORTANT: Can be called only if the communication channel is opened and working. Otherwise, the subprocess should simply throw.

Definition at line 513 of file SingleModule.cpp.

References FAIL, CShmClientMgr::Instance(), CError::JZMODULE_ERROR, LOG, m_-szModuleID, CShmClientMgr::notifyResponse(), and writeResponse().

Referenced by loadDll(), processRequest(), unloadDll(), and writeResponse().

6.38.4.12 CSingleModule& CSingleModule::operator= (const CSingleModule &) `[private]`

No assignment defined.

6.38.5 Member Data Documentation

6.38.5.1 std::string CSingleModule::m_szModuleType `[private]`

KR module type.

Definition at line 186 of file SingleModule.hpp.

Referenced by loadDll(), and run().

6.38.5.2 std::string CSingleModule::m_szModuleID `[private]`

KR module identifier.

Definition at line 189 of file SingleModule.hpp.

Referenced by handleModuleError(), and run().

6.38.5.3 TVecStrings CSingleModule::m_vecPaths `[private]`

Shared library paths.

Definition at line 192 of file SingleModule.hpp.

Referenced by loadDll(), and run().

6.38.5.4 lt_dlhandle CSingleModule::m_hLibrary `[private]`

Handle to the DLL.

Definition at line 195 of file SingleModule.hpp.

Referenced by loadDll(), and unloadDll().

6.38.5.5 boost::shared_ptr<jazzyk::KRModuleInterface> CSingleModule::m_pModule `[private]`

Pointer to the abstract KR module interface instance.

Definition at line 201 of file SingleModule.hpp.

Referenced by loadDll(), and processRequest().

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

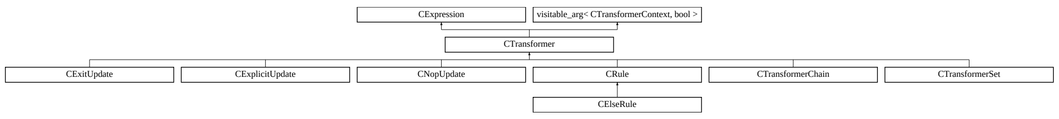
- **SingleModule.hpp**
- **SingleModule.cpp**

6.39 CTransformer Class Reference

Abstract class for all the various types of mental state transformers.

`#include <Transformer.hpp>`

Inheritance diagram for CTransformer::



Public Member Functions

- **CTransformer** ()

  Default constructor.

- virtual ∼**CTransformer** ()=0

  Virtual destructor.

Private Member Functions

- **CTransformer** (const **CTransformer** &)

  No copying defined.

- **CTransformer** & **operator=** (const **CTransformer** &)

  No assignment defined.

6.39.1 Detailed Description

Abstract class for all the various types of mental state transformers.

A general mental state transformer is considered to be a coumpound mental state transformer. Only its special subclass stands for a single transformer.

CTransformer (p. 172) hierarchy is **visitable** (p. 214) with an argument **CTransformerContext** (p. 177) instance and void return value.

Definition at line 51 of file Transformer.hpp.

6.39.2 Constructor & Destructor Documentation

6.39.2.1 CTransformer::CTransformer () `[inline]`

Default constructor.

Definition at line 93 of file Transformer.hpp.

6.39.2.2 CTransformer::∼CTransformer () `[inline, pure virtual]`

Virtual destructor.

Definition at line 98 of file Transformer.hpp.

6.39.2.3 CTransformer::CTransformer (const CTransformer &) `[private]`

No copying defined.

6.39.3 Member Function Documentation

6.39.3.1 CTransformer& CTransformer::operator= (const CTransformer &) `[private]`

No assignment defined.

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

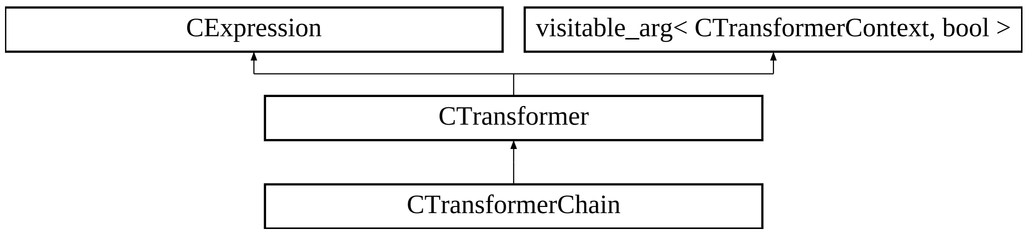
- **Transformer.hpp**

6.40 CTransformerChain Class Reference

Chain of mental state transformers.

`#include <TransformerChain.hpp>`

Inheritance diagram for CTransformerChain::



Public Member Functions

- **CTransformerChain** ()

    Default constructor.

- **CTransformerChain** (TPtrTransformer pTransformer1, TPtrTransformer pTransformer2)

    Constructor from two transformers.

- virtual ~**CTransformerChain** ()

    Virtual destructor.

- virtual void **push_front** (TPtrTransformer pTransformer)

    Adds a new member of the chain to the front.

- virtual void **push_back** (TPtrTransformer pTransformer)

    Adds a new member of the chain to the back.

- **TPtrTransformers getTransformers** () const

    Returns pointer to the collection of transformers.

Private Member Functions

- **CTransformerChain** (const **CTransformerChain** &)

    No copying defined.

- **CTransformerChain** & **operator=** (const **CTransformerChain** &)

    No assignment defined.

Private Attributes

- **TPtrTransformers m_pTransformers**
  Chain of contained mental state transformers.

6.40.1 Detailed Description

Chain of mental state transformers.

Chain of mental state transformers is executed one after another until the end.

Definition at line 44 of file TransformerChain.hpp.

6.40.2 Constructor & Destructor Documentation

6.40.2.1 CTransformerChain::CTransformerChain ()

Default constructor.

Initializes to an empty chain transformer

Definition at line 38 of file TransformerChain.cpp.

6.40.2.2 CTransformerChain::CTransformerChain (TPtrTransformer *pTransformer1*, TPtrTransformer *pTransformer2*)

Constructor from two transformers.

Definition at line 44 of file TransformerChain.cpp.

References m_pTransformers.

6.40.2.3 CTransformerChain::∼CTransformerChain () `[virtual]`

Virtual destructor.

Definition at line 53 of file TransformerChain.cpp.

6.40.2.4 CTransformerChain::CTransformerChain (const CTransformerChain &) `[private]`

No copying defined.

6.40.3 Member Function Documentation

6.40.3.1 void CTransformerChain::push_front (TPtrTransformer *pTransformer*) `[virtual]`

Adds a new member of the chain to the front.

Definition at line 58 of file TransformerChain.cpp.

References m_pTransformers.

6.40.3.2 void CTransformerChain::push_back (TPtrTransformer *pTransformer*) [virtual]

Adds a new member of the chain to the back.

Definition at line 64 of file TransformerChain.cpp.

References m_pTransformers.

6.40.3.3 TPtrTransformers CTransformerChain::getTransformers () const [inline]

Returns pointer to the collection of transformers.

Definition at line 108 of file TransformerChain.hpp.

References m_pTransformers.

Referenced by CTraverser::Visit().

6.40.3.4 CTransformerChain& CTransformerChain::operator= (const CTransformerChain &) [private]

No assignment defined.

6.40.4 Member Data Documentation

6.40.4.1 TPtrTransformers CTransformerChain::m_pTransformers [private]

Chain of contained mental state transformers.

Definition at line 89 of file TransformerChain.hpp.

Referenced by CTransformerChain(), getTransformers(), push_back(), and push_front().

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

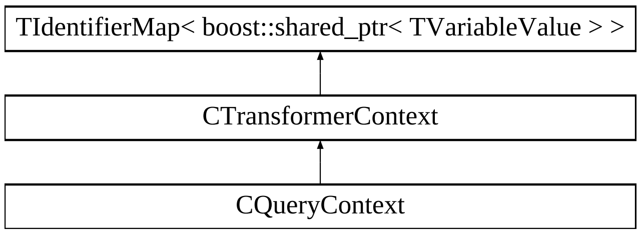
- **TransformerChain.hpp**
- **TransformerChain.cpp**

6.41 CTransformerContext Class Reference

Interpreter context used while traversing the transformer tree structure.

`#include <Context.hpp>`

Inheritance diagram for CTransformerContext::



Public Member Functions

- **CTransformerContext** (**TPtrProgram** pProgram)

  Basic constructor.

- virtual ∼**CTransformerContext** ()

  Context is copy-constructible.

- bool **isModuleDeclared** (const TPtrIdentifier &id) const

  Verifies whether the module ID is declared in the corresponding transformer context.

- **TPtrModuleDeclaration getModuleDeclaration** (const TPtrIdentifier &id) const

  Returns the associated module link.

- virtual bool **unify** (**TVariableSubstitution** &subst, TPtrIdentifier &pVariable)

  Adds new variable substitution to the context.

- virtual bool **unify** (**TVariableSubstitution** &subst)

  Simply adds a new variable substitution to the context.

Private Member Functions

- **CTransformerContext** & **operator=** (const **CTransformerContext** &)

  No assignment defined.

Private Attributes

- **TPtrProgram m_pProgram**

  Pointer to the program so that the root is always accessible.

Friends

- class **CQueryContext**

6.41.1 Detailed Description

Interpreter context used while traversing the transformer tree structure.

While the interpreter traverses the mental state transformer program sub-structure, it holds the context data in **CTransformerContext** (p. 177). **CTransformerContext** (p. 177) is also used in compiler for validating the program.

The main task of the context is to hold the currently valid free variable substitution. Variable substitutions used in the children nodes are not shared by the higher level nodes, therefore in each subsequent recursive step, the context is being copied and on the return it is destroyed.

Definition at line 53 of file Context.hpp.

6.41.2 Constructor & Destructor Documentation

6.41.2.1 CTransformerContext::CTransformerContext (TPtrProgram *pProgram*)

Basic constructor.

The context is always initialized with the program parse trees to be traversed.

Definition at line 39 of file Context.cpp.

6.41.2.2 CTransformerContext::~CTransformerContext () `[virtual]`

Context is copy-constructible.

Context has to be passed to the **visitor** (p. 218) pattern machinery with argument. During the recursive traversal new contexts in each node are created.

No declaration/implementation provided - let the compiler generate an implicit copy constructor. Virtual destructor

Definition at line 45 of file Context.cpp.

6.41.3 Member Function Documentation

6.41.3.1 bool CTransformerContext::isModuleDeclared (const TPtrIdentifier & *id*) const

Verifies whether the module ID is declared in the corresponding transformer context.

Definition at line 50 of file Context.cpp.

References m_pProgram.

Referenced by CCompiler::PreAction().

6.41.3.2 TPtrModuleDeclaration CTransformerContext::getModuleDeclaration (const TPtrIdentifier & *id*) const

Returns the associated module link.

Definition at line 56 of file Context.cpp.

References m_pProgram.

Referenced by CCompiler::PreAction().

6.41.3.3 bool CTransformerContext::unify (TVariableSubstitution & *subst*, TPtrIdentifier & *pVariable*) `[virtual]`

Adds new variable substitution to the context.

Additionally, performs a consistency check on the new substitution. In the case the new variable substitution is about to rewrite a currently held variable substitution with a new value for a variable returns false and variable contains a pointer to the variable which first caused the inconsistency.

Otherwise the return value is true and variable is not touched.

Definition at line 62 of file Context.cpp.

Referenced by unify(), and CTraverser::Visit().

6.41.3.4 bool CTransformerContext::unify (TVariableSubstitution & *subst*) `[virtual]`

Simply adds a new variable substitution to the context.

Performs no consistency check.

Definition at line 88 of file Context.cpp.

References unify().

6.41.3.5 CTransformerContext& CTransformerContext::operator= (const CTransformerContext &) `[private]`

No assignment defined.

6.41.4 Friends And Related Function Documentation

6.41.4.1 friend class CQueryContext `[friend]`

Definition at line 56 of file Context.hpp.

6.41.5 Member Data Documentation

6.41.5.1 TPtrProgram CTransformerContext::m_pProgram `[private]`

Pointer to the program so that the root is always accessible.

Definition at line 119 of file Context.hpp.

Referenced by getModuleDeclaration(), and isModuleDeclared().

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

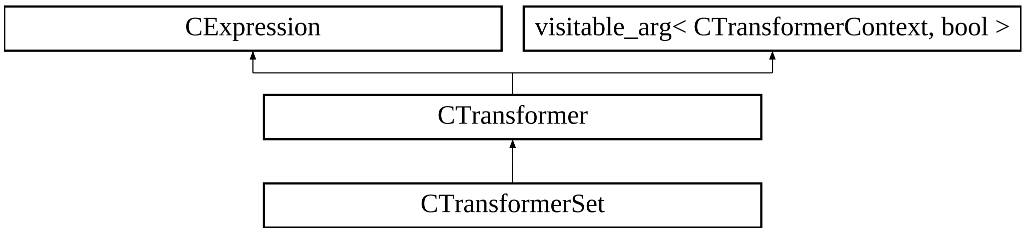
- **Context.hpp**
- **Context.cpp**

6.42 CTransformerSet Class Reference

Set of mental state transformers.

`#include <TransformerSet.hpp>`

Inheritance diagram for CTransformerSet::



Public Member Functions

- **CTransformerSet** ()
  Default constructor.
- **CTransformerSet** (TPtrTransformer pTransformer1, TPtrTransformer pTransformer2)
  Constructor from two transformers.
- virtual ∼**CTransformerSet** ()
  Virtual destructor.
- virtual void **push_front** (TPtrTransformer pTransformer)
  Adds new transformer to the set.
- virtual void **push_back** (TPtrTransformer pTransformer)
  Adds new transformer to the set.
- **TPtrTransformers getTransformers** () const
  Returns the pointer to the transformers.

Private Member Functions

- **CTransformerSet** (const **CTransformerSet** &)
  No copying defined.
- **CTransformerSet** & **operator=** (const **CTransformerSet** &)
  No assignment defined.

Private Attributes

- **TPtrTransformers m_pTransformers**
  Set of mental state transformers.

6.42.1 Detailed Description

Set of mental state transformers.

Set of mental state transformers is executed by picking one transformer which is executed.

Definition at line 44 of file TransformerSet.hpp.

6.42.2 Constructor & Destructor Documentation

6.42.2.1 CTransformerSet::CTransformerSet ()

Default constructor.

Initializes to an empty set transformer.

Definition at line 38 of file TransformerSet.cpp.

6.42.2.2 CTransformerSet::CTransformerSet (TPtrTransformer *pTransformer1*, TPtrTransformer *pTransformer2*)

Constructor from two transformers.

Definition at line 44 of file TransformerSet.cpp.

References m_pTransformers.

6.42.2.3 CTransformerSet::~CTransformerSet () `[virtual]`

Virtual destructor.

Definition at line 52 of file TransformerSet.cpp.

6.42.2.4 CTransformerSet::CTransformerSet (const CTransformerSet &) `[private]`

No copying defined.

6.42.3 Member Function Documentation

6.42.3.1 void CTransformerSet::push_front (TPtrTransformer *pTransformer*) `[virtual]`

Adds new transformer to the set.

Adds the new member to the front of the list.

Also set is implemented as a list, and we want to keep track of order as well.

Definition at line 57 of file TransformerSet.cpp.

References m_pTransformers.

6.42.3.2 void CTransformerSet::push_back (TPtrTransformer *pTransformer*) `[virtual]`

Adds new transformer to the set.

Adds the new member to the back of the list

Also set is implemented as a list, and we want to keep track of order as well.

Definition at line 63 of file TransformerSet.cpp.

References m_pTransformers.

6.42.3.3 TPtrTransformers CTransformerSet::getTransformers () const `[inline]`

Returns the pointer to the transformers.

Definition at line 119 of file TransformerSet.hpp.

References m_pTransformers.

Referenced by CTraverser::Visit(), and CInterpreter::Visit().

6.42.3.4 CTransformerSet& CTransformerSet::operator= (const CTransformerSet &) `[private]`

No assignment defined.

6.42.4 Member Data Documentation

6.42.4.1 TPtrTransformers CTransformerSet::m_pTransformers `[private]`

Set of mental state transformers.

Definition at line 100 of file TransformerSet.hpp.

Referenced by CTransformerSet(), getTransformers(), push_back(), and push_front().

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

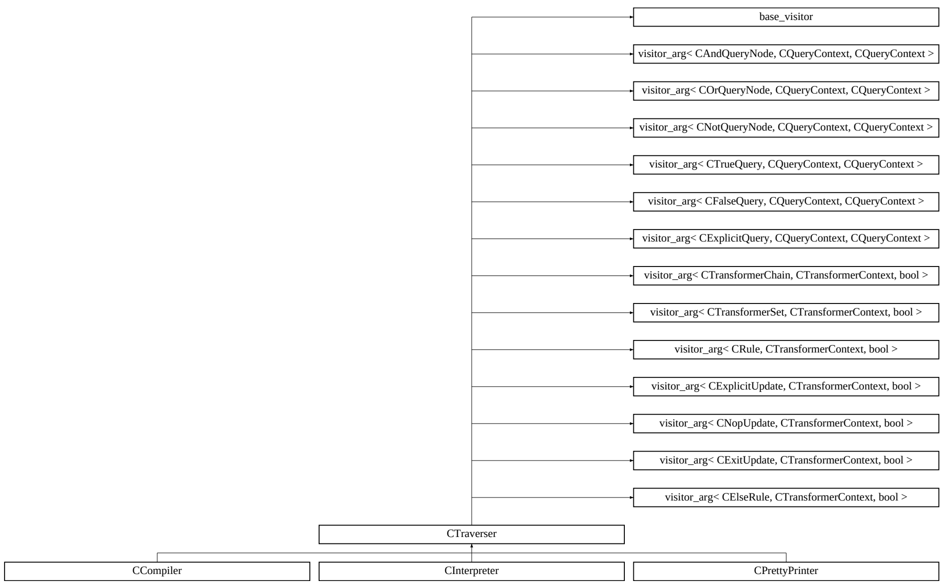
- **TransformerSet.hpp**
- **TransformerSet.cpp**

6.43 CTraverser Class Reference

Program transformer tree traversal abstract class.

`#include <Traverser.hpp>`

Inheritance diagram for CTraverser::


base_visitor
visitor_arg< CAndQueryNode, CQueryContext, CQueryContext >
visitor_arg< COrQueryNode, CQueryContext, CQueryContext >
visitor_arg< CNotQueryNode, CQueryContext, CQueryContext >
visitor_arg< CTrueQuery, CQueryContext, CQueryContext >
visitor_arg< CFalseQuery, CQueryContext, CQueryContext >
visitor_arg< CExplicitQuery, CQueryContext, CQueryContext >
visitor_arg< CTransformerChain, CTransformerContext, bool >
visitor_arg< CTransformerSet, CTransformerContext, bool >
visitor_arg< CRule, CTransformerContext, bool >
visitor_arg< CExplicitUpdate, CTransformerContext, bool >
visitor_arg< CNopUpdate, CTransformerContext, bool >
visitor_arg< CExitUpdate, CTransformerContext, bool >
visitor_arg< CElseRule, CTransformerContext, bool >
CTraverser
CCompiler
CInterpreter
CPrettyPrinter

Public Member Functions

- **CTraverser** ()

  Default constructor.

- virtual ∼**CTraverser** ()=0

  Virtual destructor.

- virtual **CQueryContext Visit** (**CAndQueryNode** &, **CQueryContext**)

  Visitor methods for the ***CExpression*** *(*p. *62) hierarchy.*

- virtual **CQueryContext Visit** (**COrQueryNode** &, **CQueryContext**)

  Abstract callback from the guest.

- virtual **CQueryContext Visit** (**CNotQueryNode** &, **CQueryContext**)

  Abstract callback from the guest.

- virtual **CQueryContext Visit** (**CTrueQuery** &, **CQueryContext**)

  Abstract callback from the guest.

- virtual **CQueryContext Visit** (**CFalseQuery** &, **CQueryContext**)

  Abstract callback from the guest.

- virtual **CQueryContext Visit** (**CExplicitQuery** &, **CQueryContext**)

Abstract callback from the guest.

- virtual bool **Visit** (**CTransformerChain** &, **CTransformerContext**)

  Abstract callback from the guest.

- virtual bool **Visit** (**CTransformerSet** &, **CTransformerContext**)

  Abstract callback from the guest.

- virtual bool **Visit** (**CRule** &, **CTransformerContext**)

  Abstract callback from the guest.

- virtual bool **Visit** (**CExplicitUpdate** &, **CTransformerContext**)

  Abstract callback from the guest.

- virtual bool **Visit** (**CNopUpdate** &, **CTransformerContext**)

  Abstract callback from the guest.

- virtual bool **Visit** (**CExitUpdate** &, **CTransformerContext**)

  Abstract callback from the guest.

- virtual bool **Visit** (**CElseRule** &, **CTransformerContext**)

  Abstract callback from the guest.

Protected Member Functions

- virtual **CQueryContext** & **PreAction** (**CAndQueryNode** &, **CQueryContext** &)

  Action invoked before the node is being visited.

- virtual **CQueryContext** & **PreAction** (**COrQueryNode** &, **CQueryContext** &)
- virtual **CQueryContext** & **PreAction** (**CNotQueryNode** &, **CQueryContext** &)
- virtual **CQueryContext** & **PreAction** (**CTrueQuery** &, **CQueryContext** &)
- virtual **CQueryContext** & **PreAction** (**CFalseQuery** &, **CQueryContext** &)
- virtual **CQueryContext** & **PreAction** (**CExplicitQuery** &, **CQueryContext** &)
- virtual void **PreAction** (**CTransformerChain** &, **CTransformerContext** &)
- virtual void **PreAction** (**CTransformerSet** &, **CTransformerContext** &)
- virtual void **PreAction** (**CRule** &, **CTransformerContext** &)
- virtual void **PreAction** (**CExplicitUpdate** &, **CTransformerContext** &)
- virtual void **PreAction** (**CNopUpdate** &, **CTransformerContext** &)
- virtual void **PreAction** (**CExitUpdate** &, **CTransformerContext** &)
- virtual void **PreAction** (**CElseRule** &, **CTransformerContext** &)
- virtual **CQueryContext** & **PostAction** (**CAndQueryNode** &, **CQueryContext** &)

  Action invoked after the node is being visited.

- virtual **CQueryContext** & **PostAction** (**COrQueryNode** &, **CQueryContext** &)
- virtual **CQueryContext** & **PostAction** (**CNotQueryNode** &, **CQueryContext** &)
- virtual **CQueryContext** & **PostAction** (**CTrueQuery** &, **CQueryContext** &)
- virtual **CQueryContext** & **PostAction** (**CFalseQuery** &, **CQueryContext** &)
- virtual **CQueryContext** & **PostAction** (**CExplicitQuery** &, **CQueryContext** &)
- virtual void **PostAction** (**CTransformerChain** &, **CTransformerContext** &)

- virtual void **PostAction** (**CTransformerSet** &, **CTransformerContext** &)
- virtual void **PostAction** (**CRule** &, **CTransformerContext** &)
- virtual void **PostAction** (**CExplicitUpdate** &, **CTransformerContext** &)
- virtual void **PostAction** (**CNopUpdate** &, **CTransformerContext** &)
- virtual void **PostAction** (**CExitUpdate** &, **CTransformerContext** &)
- virtual void **PostAction** (**CElseRule** &, **CTransformerContext** &)
- virtual void **RuleMidAction** (**CRule** &, **CQueryContext** &, **CTransformerContext** &)

  Action invoked after the rule query is traversed but before the transformer is visited.

- virtual void **RuleMidAction** (**CElseRule** &, **CQueryContext** &, **CTransformerContext** &)
- virtual **CQueryContext** & **DefaultPreAction** (**CExpression** &, **CQueryContext** &)

  Default Pre-/Post- and MidRule- action implementations.

- virtual void **DefaultPreAction** (**CExpression** &, **CTransformerContext** &)
- virtual **CQueryContext** & **DefaultPostAction** (**CExpression** &, **CQueryContext** &)
- virtual void **DefaultPostAction** (**CExpression** &, **CTransformerContext** &)
- virtual void **DefaultRuleMidAction** (**CExpression** &, **CQueryContext** &, **CTransformerContext** &)
- virtual void **DefaultPreAction** ()
- virtual void **DefaultPostAction** ()
- virtual void **DefaultRuleMidAction** ()
- virtual void **traverse** (**TPtrProgram** pProgram)

  Start the tree structure traversal.

Private Member Functions

- **CTraverser** (const **CTraverser** &)

  No copying defined.

- **CTraverser** & **operator=** (const **CTraverser** &)

  No assignment defined.

6.43.1 Detailed Description

Program transformer tree traversal abstract class.

CTraverser (p. 184) is a **visitor** (p. 218) of the whole **CExpression** (p. 62) hierarchy and implements the transformer tree depth-first recursive traversal.

It serves as a base class of classes which need to traverse the program tree. Program mental transformer tree is searched with the context object passed through the calls.

Subclasses are to implement the action methods for particular nodes of the program parse tree: they do not have to implement the traversal algorithm itself. Each node visit results in a calls to **PreAction()** (p. 190) and **PostAction()** (p. 192) called before and after the node visit respectively.

The traversal of **CTransformer** (p. 172) subhierarchy is guided by the **CTransformerContext** (p. 177) context objects, while CQuery subhierarchy is traversed using **CQueryContext** (p. 130) context objects.

The context handling is as follows: In the mental state transformer subtree, the contexts are passed in a top-down manner so data from higher level nodes are not shared by the children nodes, but rather plainly copied. Contrary to that, in the query node subtree, the contexts are "built" bottom up therefore the data are shared between the parent and children nodes.

Visits of transformer subhierarchy result in a bool value which indicates whether the leaf mst within the considered transformer was executed or not.

NOTE: The substitution resulting from a visit to a negated query (**CNotQueryNode** (p. 114)) is simply thrown away as the substitution is useless later. The same holds for the resulting substitution resulting from a visit to **COrQueryNode** (p. 116).

Definition at line 77 of file Traverser.hpp.

6.43.2 Constructor & Destructor Documentation

6.43.2.1 CTraverser::CTraverser ()

Default constructor.

Definition at line 41 of file Traverser.cpp.

6.43.2.2 CTraverser::~CTraverser () `[pure virtual]`

Virtual destructor.

This is a pure abstract class, however still implementing default (empty) behaviour.

Definition at line 46 of file Traverser.cpp.

6.43.2.3 CTraverser::CTraverser (const CTraverser &) `[private]`

No copying defined.

6.43.3 Member Function Documentation

6.43.3.1 CQueryContext CTraverser::Visit (CAndQueryNode & *guest*, CQueryContext *ctx*) `[virtual]`

Visitor methods for the **CExpression** (p. 62) hierarchy.

Visit() (p. 187) always invokes virtual methods **PreAction()** (p. 190) and **PostAction()** (p. 192) with the corresponding context passed to the subclasses.

Implements **visitor_arg< CAndQueryNode, CQueryContext, CQueryContext >** (p. 221).

Definition at line 59 of file Traverser.cpp.

References CAndQueryNode::getLeftNode(), CQueryContext::getResult(), CAndQueryNode::getRightNode(), CQueryContext::isTrueW(), PostAction(), PreAction(), CQueryContext::resetResult(), and CQueryContext::setResult().

6.43.3.2 CQueryContext CTraverser::Visit (COrQueryNode &, CQueryContext) `[virtual]`

Abstract callback from the guest.

Implements **visitor_arg< COrQueryNode, CQueryContext, CQueryContext >** (p. 221).

Definition at line 101 of file Traverser.cpp.

References COrQueryNode::getLeftNode(), CQueryContext::getResult(), COrQueryNode::getRightNode(), CQueryContext::isFalseW(), CQueryContext::isTrueW(), PostAction(), PreAction(), CQueryContext::resetResult(), and CQueryContext::setResult().

6.43.3.3 CQueryContext CTraverser::Visit (CNotQueryNode &, CQueryContext) `[virtual]`

Abstract callback from the guest.

Implements **visitor_arg< CNotQueryNode, CQueryContext, CQueryContext >** (p. 221).

Definition at line 146 of file Traverser.cpp.

References CNotQueryNode::getNode(), CQueryContext::getResult(), CQueryContext::negate(), PostAction(), PreAction(), and CQueryContext::setResult().

6.43.3.4 CQueryContext CTraverser::Visit (CTrueQuery &, CQueryContext) `[virtual]`

Abstract callback from the guest.

Implements **visitor_arg< CTrueQuery, CQueryContext, CQueryContext >** (p. 221).

Definition at line 164 of file Traverser.cpp.

References PostAction(), and PreAction().

6.43.3.5 CQueryContext CTraverser::Visit (CFalseQuery &, CQueryContext) `[virtual]`

Abstract callback from the guest.

Implements **visitor_arg< CFalseQuery, CQueryContext, CQueryContext >** (p. 221).

Definition at line 174 of file Traverser.cpp.

References PostAction(), and PreAction().

6.43.3.6 CQueryContext CTraverser::Visit (CExplicitQuery &, CQueryContext) `[virtual]`

Abstract callback from the guest.

Implements **visitor_arg< CExplicitQuery, CQueryContext, CQueryContext >** (p. 221).

Definition at line 184 of file Traverser.cpp.

References CExplicitQuery::getFreeVariables(), PostAction(), and PreAction().

6.43.3.7 bool CTraverser::Visit (CTransformerChain &, CTransformerContext) [virtual]

Abstract callback from the guest.

Implements **visitor_arg< CTransformerChain, CTransformerContext, bool >** (p. 221).

Definition at line 208 of file Traverser.cpp.

References CTransformerChain::getTransformers(), PostAction(), and PreAction().

6.43.3.8 bool CTraverser::Visit (CTransformerSet &, CTransformerContext) [virtual]

Abstract callback from the guest.

Implements **visitor_arg< CTransformerSet, CTransformerContext, bool >** (p. 221).

Reimplemented in **CInterpreter** (p. 73).

Definition at line 227 of file Traverser.cpp.

References CTransformerSet::getTransformers(), PostAction(), and PreAction().

6.43.3.9 bool CTraverser::Visit (CRule &, CTransformerContext) [virtual]

Abstract callback from the guest.

Implements **visitor_arg< CRule, CTransformerContext, bool >** (p. 221).

Definition at line 252 of file Traverser.cpp.

References CRule::getQuery(), CRule::getThenTransformer(), CQueryContext::isTrueW(), PostAction(), PreAction(), RuleMidAction(), and CTransformerContext::unify().

6.43.3.10 bool CTraverser::Visit (CExplicitUpdate &, CTransformerContext) [virtual]

Abstract callback from the guest.

Implements **visitor_arg< CExplicitUpdate, CTransformerContext, bool >** (p. 221).

Definition at line 283 of file Traverser.cpp.

References PostAction(), and PreAction().

6.43.3.11 bool CTraverser::Visit (CNopUpdate &, CTransformerContext) [virtual]

Abstract callback from the guest.

Implements **visitor_arg< CNopUpdate, CTransformerContext, bool >** (p. 221).

Definition at line 296 of file Traverser.cpp.

References PostAction(), and PreAction().

6.43.3.12 bool CTraverser::Visit (CExitUpdate &, CTransformerContext) `[virtual]`

Abstract callback from the guest.

Implements **visitor_arg< CExitUpdate, CTransformerContext, bool >** (p. 221).

Definition at line 309 of file Traverser.cpp.

References PostAction(), and PreAction().

6.43.3.13 bool CTraverser::Visit (CElseRule &, CTransformerContext) `[virtual]`

Abstract callback from the guest.

Implements **visitor_arg< CElseRule, CTransformerContext, bool >** (p. 221).

Definition at line 323 of file Traverser.cpp.

References CElseRule::getElseTransformer(), CRule::getQuery(), CRule::getThenTransformer(), CQueryContext::isFalseW(), CQueryContext::isTrueW(), PostAction(), PreAction(), RuleMidAction(), and CTransformerContext::unify().

6.43.3.14 CQueryContext & CTraverser::PreAction (CAndQueryNode & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Action invoked before the node is being visited.

Allows additional context tweaking.

By default executes corresponding **DefaultPreAction()** (p. 195) method.

Note: Method is always implemented as empty in the base class so that subclasses do not have to implement all the variants corresponding to the whole **CExpression** (p. 62) hierarchy, but only needed ones. In the default case the call lands in the empty call of the base class.

Reimplemented in **CPrettyPrinter** (p. 121).

Definition at line 370 of file Traverser.cpp.

References DefaultPreAction().

Referenced by Visit(), and CInterpreter::Visit().

6.43.3.15 CQueryContext & CTraverser::PreAction (COrQueryNode & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Reimplemented in **CPrettyPrinter** (p. 121).

Definition at line 376 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.16 CQueryContext & CTraverser::PreAction (CNotQueryNode & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Reimplemented in **CPrettyPrinter** (p. 121).

Definition at line 382 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.17 CQueryContext & CTraverser::PreAction (CTrueQuery & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Reimplemented in **CPrettyPrinter** (p. 122).

Definition at line 388 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.18 CQueryContext & CTraverser::PreAction (CFalseQuery & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Reimplemented in **CPrettyPrinter** (p. 122).

Definition at line 394 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.19 CQueryContext & CTraverser::PreAction (CExplicitQuery & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Reimplemented in **CCompiler** (p. 37), and **CPrettyPrinter** (p. 122).

Definition at line 400 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.20 void CTraverser::PreAction (CTransformerChain & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Reimplemented in **CPrettyPrinter** (p. 122).

Definition at line 406 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.21 void CTraverser::PreAction (CTransformerSet & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Reimplemented in **CPrettyPrinter** (p. 122).

Definition at line 412 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.22 void CTraverser::PreAction (CRule & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Reimplemented in **CPrettyPrinter** (p. 122).

Definition at line 418 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.23 void CTraverser::PreAction (CExplicitUpdate & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Reimplemented in **CCompiler** (p. 38), and **CPrettyPrinter** (p. 123).

Definition at line 424 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.24 void CTraverser::PreAction (CNopUpdate & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Reimplemented in **CPrettyPrinter** (p. 123).

Definition at line 430 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.25 void CTraverser::PreAction (CExitUpdate & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Definition at line 436 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.26 void CTraverser::PreAction (CElseRule & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Reimplemented in **CPrettyPrinter** (p. 123).

Definition at line 442 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.27 CQueryContext & CTraverser::PostAction (CAndQueryNode & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Action invoked after the node is being visited.

Allows additional context tweaking.

By default executes corresponding **DefaultPostAction()** (p. 195) method.

Note: See note by PreAction.

Definition at line 448 of file Traverser.cpp.

References DefaultPostAction().

Referenced by Visit().

6.43.3.28 CQueryContext & CTraverser::PostAction (COrQueryNode & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Definition at line 454 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.29 CQueryContext & CTraverser::PostAction (CNotQueryNode & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Definition at line 460 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.30 CQueryContext & CTraverser::PostAction (CTrueQuery & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Reimplemented in **CInterpreter** (p. 73).

Definition at line 466 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.31 CQueryContext & CTraverser::PostAction (CFalseQuery & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Reimplemented in **CInterpreter** (p. 73).

Definition at line 472 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.32 CQueryContext & CTraverser::PostAction (CExplicitQuery & *guest*, CQueryContext & *qCtx*) `[protected, virtual]`

Reimplemented in **CInterpreter** (p. 73).

Definition at line 478 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.33 void CTraverser::PostAction (CTransformerChain & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Definition at line 484 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.34 void CTraverser::PostAction (CTransformerSet & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Definition at line 490 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.35 void CTraverser::PostAction (CRule & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Definition at line 496 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.36 void CTraverser::PostAction (CExplicitUpdate & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Reimplemented in **CInterpreter** (p. 74).

Definition at line 502 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.37 void CTraverser::PostAction (CNopUpdate & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Definition at line 508 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.38 void CTraverser::PostAction (CExitUpdate & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Reimplemented in **CInterpreter** (p. 74).

Definition at line 514 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.39 void CTraverser::PostAction (CElseRule & *guest*, CTransformerContext & *tCtx*) `[protected, virtual]`

Definition at line 520 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.40 void CTraverser::RuleMidAction (CRule & *guest*, CQueryContext & *qCtx*, CTransformerContext & *tCtx*) `[protected, virtual]`

Action invoked after the rule query is traversed but before the transformer is visited.

Allows additional context tweaking before the -then branch of rules is executed.

In the case the -else branch of **CElseRule** (p. 44) is about to be executed no context tweaking is allowed because context is not changed by a negative query evaluation.

By default executes **DefaultRuleMidAction()** (p. 196) method.

Note: See note by PreAction.

Definition at line 526 of file Traverser.cpp.

References DefaultRuleMidAction().

Referenced by Visit().

6.43.3.41 void CTraverser::RuleMidAction (CElseRule & *guest*, CQueryContext & *qCtx*, CTransformerContext & *tCtx*) `[protected, virtual]`

Definition at line 532 of file Traverser.cpp.

References DefaultRuleMidAction().

6.43.3.42 CQueryContext & CTraverser::DefaultPreAction (CExpression &, CQueryContext & *qCtx*) `[protected, virtual]`

Default Pre-/Post- and MidRule- action implementations.

By default all the generic implementations provided in the **CTraverser** (p. 184) protected interface, simply link to the default actions. In the case Pre-/Post-, or MidRule- actions are implemented by the same routine in the whole Traverser specialisation, simply overload these methods.

Finally, all Default∗Action methods simply link to the Default∗Action() methods.

Definition at line 538 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.43 void CTraverser::DefaultPreAction (CExpression &, CTransformerContext &) `[protected, virtual]`

Definition at line 546 of file Traverser.cpp.

References DefaultPreAction().

6.43.3.44 CQueryContext & CTraverser::DefaultPostAction (CExpression &, CQueryContext & *qCtx*) `[protected, virtual]`

Definition at line 552 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.45 void CTraverser::DefaultPostAction (CExpression &, CTransformerContext &) `[protected, virtual]`

Definition at line 560 of file Traverser.cpp.

References DefaultPostAction().

6.43.3.46 void CTraverser::DefaultRuleMidAction (CExpression &, CQueryContext &, CTransformerContext &) `[protected, virtual]`

Definition at line 566 of file Traverser.cpp.

References DefaultRuleMidAction().

6.43.3.47 void CTraverser::DefaultPreAction () `[protected, virtual]`

Definition at line 572 of file Traverser.cpp.

Referenced by DefaultPreAction(), and PreAction().

6.43.3.48 void CTraverser::DefaultPostAction () `[protected, virtual]`

Reimplemented in **CPrettyPrinter** (p. 123).

Definition at line 578 of file Traverser.cpp.

Referenced by DefaultPostAction(), and PostAction().

6.43.3.49 void CTraverser::DefaultRuleMidAction () [protected, virtual]

Definition at line 584 of file Traverser.cpp.

Referenced by DefaultRuleMidAction(), and RuleMidAction().

6.43.3.50 void CTraverser::traverse (TPtrProgram *pProgram*) [protected, virtual]

Start the tree structure traversal.

To be used only in the subclasses. The traversal start is always wrapped in some service interface.

Definition at line 51 of file Traverser.cpp.

Referenced by CCompiler::compile(), CInterpreter::doCycle(), and CPrettyPrinter::dump().

6.43.3.51 CTraverser& CTraverser::operator= (const CTraverser &) [private]

No assignment defined.

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

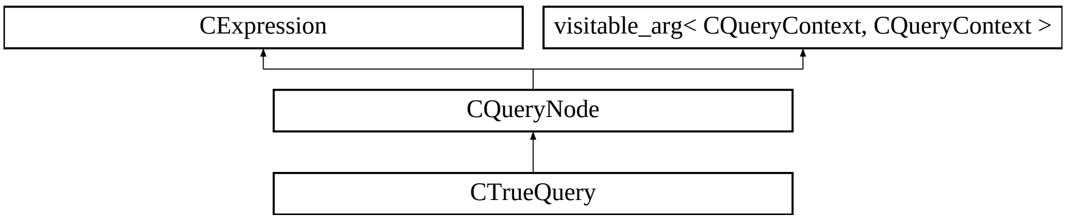
- **Traverser.hpp**
- **Traverser.cpp**

6.44 CTrueQuery Class Reference

Trivial True query.

`#include <TrivialQuery.hpp>`

Inheritance diagram for CTrueQuery::



Public Member Functions

- **CTrueQuery** ()

  Default constructor.

- virtual ~**CTrueQuery** ()

  Virtual destructor.

Private Member Functions

- **CTrueQuery** (const **CTrueQuery** &)

  No copying defined.

- **CTrueQuery** & **operator=** (const **CTrueQuery** &)

  No assignment defined.

6.44.1 Detailed Description

Trivial True query.

Query execution always returns true.

Definition at line 42 of file TrivialQuery.hpp.

6.44.2 Constructor & Destructor Documentation

6.44.2.1 CTrueQuery::CTrueQuery () `[inline]`

Default constructor.

Definition at line 104 of file TrivialQuery.hpp.

6.44.2.2 CTrueQuery::∼CTrueQuery () [inline, virtual]

Virtual destructor.

Definition at line 109 of file TrivialQuery.hpp.

6.44.2.3 CTrueQuery::CTrueQuery (const CTrueQuery &) [private]

No copying defined.

6.44.3 Member Function Documentation

6.44.3.1 CTrueQuery& CTrueQuery::operator= (const CTrueQuery &) [private]

No assignment defined.

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

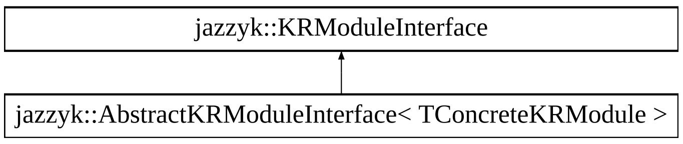
- **TrivialQuery.hpp**

6.45 jazzyk::KRModuleInterface Class Reference

Abstract base class for defining knowledge representation modules.

`#include <jazzyk_common.hpp>`

Inheritance diagram for jazzyk::KRModuleInterface::



jazzyk::KRModuleInterface
jazzyk::AbstractKRModuleInterface< TConcreteKRModule >

Public Member Functions

- virtual **EKRModuleError** __JZDLL_CALL **initialize** (const char ∗szCodeBlock)=0

  KR module initialization.

- virtual **EKRModuleError** __JZDLL_CALL **finalize** (const char ∗szCodeBlock)=0

  Invokes the finalize function.

- virtual **EKRModuleError** __JZDLL_CALL **cycle** (const char ∗szCodeBlock)=0

  Invokes the cycle function.

- virtual **EKRModuleError** __JZDLL_CALL **getQueryInterface** (char ∗∗&arrQueryOperations, unsigned int &nSize)=0

  Fills an array of available query operations into the argument empty pointer.

- virtual **EKRModuleError** __JZDLL_CALL **getUpdateInterface** (char ∗∗&arrUpdateOperations, unsigned int &nSize)=0

  Fills an array of available update operations into the argument empty pointer.

- virtual **EKRModuleError** __JZDLL_CALL **query** (const char ∗szOperation, const char ∗szQueryCode, const char ∗∗arrInVarID, const char ∗∗arrInVarValue, const unsigned int nInArrSize, char ∗∗&arrOutVarID, char ∗∗&arrOutVarValue, unsigned int &nOutArrSize, bool &bResult)=0

  Query to the KR module.

- virtual **EKRModuleError** __JZDLL_CALL **update** (const char ∗szOperation, const char ∗szQueryCode, const char ∗∗arrVarID, const char ∗∗arrVarValue, const unsigned int nArrSize)=0

  Update the KR module.

- virtual void __JZDLL_CALL **free_resource** (char ∗∗&array, unsigned int nSize)=0

  Helper method for correct variable substitution deallocation.

- void **operator delete** (void ∗ptr)

  Specialized delete that calls destroy instead of the destructor.

Protected Member Functions

- virtual void __JZDLL_CALL **destroy** ()=0

  Proprietary destruction of the module interface.

6.45.1 Detailed Description

Abstract base class for defining knowledge representation modules.

The class precisely defines the interface of a module, which all the plugins have to comply to. It is used only on the server side (main process) as a handle to the module DLL interface.

It correctly defines the API instance destruction according to the article `http://aegisknight.org/cppinterface.html` by Chad Austin.

Definition at line 91 of file jazzyk_common.hpp.

6.45.2 Member Function Documentation

6.45.2.1 virtual EKRModuleError __JZDLL_CALL jazzyk::KRModuleInterface::initialize (const char * *szCodeBlock*) `[pure virtual]`

KR module initialization.

To be called at the very beginning of the module usage right after the module is opened. It is supposed to prepare the module for the execution of the application.

Implemented in **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >** (p. 20).

6.45.2.2 virtual EKRModuleError __JZDLL_CALL jazzyk::KRModuleInterface::finalize (const char * *szCodeBlock*) `[pure virtual]`

Invokes the finalize function.

To be called when the module is being closed and de-initialized. It is supposed to provide an opprotunity to clean up all the held resources.

Implemented in **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >** (p. 20).

6.45.2.3 virtual EKRModuleError __JZDLL_CALL jazzyk::KRModuleInterface::cycle (const char * *szCodeBlock*) `[pure virtual]`

Invokes the cycle function.

It is invoked at the end of each deliberation cycle of the main interpreter. It is supposed to clean up all the held resources which were acquired during the deliberation cycle execution (possible caching).

Implemented in **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >** (p. 21).

6.45.2.4 virtual EKRModuleError __JZDLL_CALL jazzyk::KRModuleInterface::getQueryInterface (char ∗∗& *arrQueryOperations*, unsigned int & *nSize*) `[pure virtual]`

Fills an array of available query operations into the argument empty pointer.

The method ∗replaces∗ the argument pointer, so the memory gets lost! Use empty pointers only and then do not forget to free the allocated memory using free_resource(...).

The second argument receives the size of the returned array.

Implemented in **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >** (p. 22).

6.45.2.5 virtual EKRModuleError __JZDLL_CALL jazzyk::KRModuleInterface::getUpdateInterface (char ∗∗& *arrUpdateOperations*, unsigned int & *nSize*) `[pure virtual]`

Fills an array of available update operations into the argument empty pointer.

The method ∗replaces∗ the argument pointer, so the memory gets lost! Use empty pointers only and then do not forget to free the allocated memory using free_resource(...).

The second argument receives the size of the returned array.

Implemented in **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >** (p. 22).

6.45.2.6 virtual EKRModuleError __JZDLL_CALL jazzyk::KRModuleInterface::query (const char ∗ *szOperation*, const char ∗ *szQueryCode*, const char ∗∗ *arrInVarID*, const char ∗∗ *arrInVarValue*, const unsigned int *nInArrSize*, char ∗∗& *arrOutVarID*, char ∗∗& *arrOutVarValue*, unsigned int & *nOutArrSize*, bool & *bResult*) `[pure virtual]`

Query to the KR module.

Takes a query formula (code), an input variable substitution for this formula, and a query operation to perform. Returns a truth value of the query operation and a new variable substitution (result of thequery).

IMPORTANT: After successful processing of the output substitution, the output substitution has to be correctly de-allocated using free_resource(.) method below.

Implemented in **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >** (p. 21).

6.45.2.7 virtual EKRModuleError __JZDLL_CALL jazzyk::KRModuleInterface::update (const char ∗ *szOperation*, const char ∗ *szQueryCode*, const char ∗∗ *arrVarID*, const char ∗∗ *arrVarValue*, const unsigned int *nArrSize*) `[pure virtual]`

Update the KR module.

Takes an update formula, a variable substitution for this formula and an update operation to perform.

Implemented in **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >** (p. 21).

6.45.2.8 virtual void __JZDLL_CALL jazzyk::KRModuleInterface::free_resource (char **& *array*, unsigned int *nSize*) `[pure virtual]`

Helper method for correct variable substitution deallocation.

Implemented in **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >** (p. 22).

6.45.2.9 virtual void __JZDLL_CALL jazzyk::KRModuleInterface::destroy () `[protected, pure virtual]`

Proprietary destruction of the module interface.

Handles the destruction of this class. This is essentially a destructor that works across DLL boundaries.

Implemented in **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >** (p. 23).

Referenced by operator delete().

6.45.2.10 void jazzyk::KRModuleInterface::operator delete (void * *ptr*) `[inline]`

Specialized delete that calls destroy instead of the destructor.

A kind of virtual destructor invoked via DLL boundary. For more documentation, see `http://aegisknight.org/cppinterface.html`. Designed and inspired by this article.

Reimplemented in **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >** (p. 23).

Definition at line 187 of file jazzyk_common.hpp.

References destroy().

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

- **jazzyk_common.hpp**

6.46 ShmemLock Struct Reference

Specialised shared memory lock.

`#include <ShmemManager.hpp>`

Public Member Functions

- **ShmemLock** ()

  Constructor.

6.46.1 Detailed Description

Specialised shared memory lock.

The lock is specific for the memory managed by the **CShmemManager** (p. 145) singleton.

Definition at line 327 of file ShmemManager.hpp.

6.46.2 Constructor & Destructor Documentation

6.46.2.1 ShmemLock::ShmemLock ()

Constructor.

Creates a lock specific to the shared memory managed by the **CShmemManager** (p. 145) singleton. For that, it needs to retrieve the mutex form the singleton. Hence the struct is a friend class of **CShmemManager** (p. 145).

Definition at line 308 of file ShmemManager.cpp.

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

- **ShmemManager.hpp**
- **ShmemManager.cpp**

6.47 SIdentifierCompare Struct Reference

Comparison operator.

`#include <IdentifierMap.hpp>`

Public Member Functions

- bool **operator()** (const boost::shared_ptr< **CIdentifier** > &s1, const boost::shared_ptr< **CIdentifier** > &s2) const

6.47.1 Detailed Description

Comparison operator.

Definition at line 71 of file IdentifierMap.hpp.

6.47.2 Member Function Documentation

6.47.2.1 bool SIdentifierCompare::operator() (const boost::shared_ptr< CIdentifier > & *s1*, const boost::shared_ptr< CIdentifier > & *s2*) const `[inline]`

Definition at line 73 of file IdentifierMap.hpp.

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

- **IdentifierMap.hpp**

6.48 SIdentifierEqual Struct Reference

Equality operator.

`#include <IdentifierMap.hpp>`

Public Member Functions

- bool **operator()** (const boost::shared_ptr< **CIdentifier** > &s1, const boost::shared_ptr< **CIdentifier** > &s2) const

6.48.1 Detailed Description

Equality operator.

The program can compile with either std::map, or __gnu_cxx:hash_map used for map, where __gnu_cxx is preferred.

TIdentifierMap (p. 213) is an alias for an appropriate map with TPtrIdentifier as the key.

STL containers are not polymorphic, so do not store, or copy **TIdentifierMap** (p. 213) to their parent classes!

Definition at line 62 of file IdentifierMap.hpp.

6.48.2 Member Function Documentation

6.48.2.1 bool SIdentifierEqual::operator() (const boost::shared_ptr< CIdentifier > & *s1*, const boost::shared_ptr< CIdentifier > & *s2*) const `[inline]`

Definition at line 64 of file IdentifierMap.hpp.

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

- **IdentifierMap.hpp**

6.49 SIpcStringCompare Struct Reference

String comparison operator.

`#include <ModuleCommData.hpp>`

Public Member Functions

- bool **operator()** (const boost::interprocess::string s1, const boost::interprocess::string s2) const

6.49.1 Detailed Description

String comparison operator.

Helper structure for the variable substitution map.

Definition at line 63 of file ModuleCommData.hpp.

6.49.2 Member Function Documentation

6.49.2.1 bool SIpcStringCompare::operator() (const boost::interprocess::string *s1*, const boost::interprocess::string *s2*) const `[inline]`

Definition at line 65 of file ModuleCommData.hpp.

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

- **ModuleCommData.hpp**

6.50 SModuleRequest Struct Reference

Plug-in request structure.

`#include <ModuleCommData.hpp>`

Public Member Functions

- **SModuleRequest** (const **TIpcCharAllocator** &charalloc, const **TIpcSubstAllocator** &strpairalloc)

  Default structure constructor.

- void **addVariableSubst** (const char ∗szVarName, const char ∗szVarValue)

  Adds a new variable substitution.

- void **addFreeVariable** (const char ∗szVarName)

  Adds a new free variable.

Public Attributes

- **EModuleRequestType m_eType**

  Request type.

- **TIpcString m_szOperation**

  Interface query/update operator name.

- **TIpcString m_szCodeBlock**

  Code block associated with the plug-in operation.

- **TIpcSubst m_mapSubstitution**

  Variable susbtitution passed to Query/Update operations.

- **TIpcSubst m_mapFreeVariables**

  Initial free variables substitution.

Private Attributes

- const **TIpcCharAllocator** & **m_charAllocator**

  String allocator for adding new map pairs.

6.50.1 Detailed Description

Plug-in request structure.

Definition at line 155 of file ModuleCommData.hpp.

6.50.2 Constructor & Destructor Documentation

6.50.2.1 SModuleRequest::SModuleRequest (const TIpcCharAllocator & *charalloc*, const TIpcSubstAllocator & *strpairalloc*) `[inline]`

Default structure constructor.

Definition at line 324 of file ModuleCommData.hpp.

6.50.3 Member Function Documentation

6.50.3.1 void SModuleRequest::addVariableSubst (const char ∗ *szVarName*, const char ∗ *szVarValue*) `[inline]`

Adds a new variable substitution.

Definition at line 334 of file ModuleCommData.hpp.

References m_charAllocator, and m_mapSubstitution.

6.50.3.2 void SModuleRequest::addFreeVariable (const char ∗ *szVarName*) `[inline]`

Adds a new free variable.

Definition at line 342 of file ModuleCommData.hpp.

References m_charAllocator, and m_mapFreeVariables.

6.50.4 Member Data Documentation

6.50.4.1 EModuleRequestType SModuleRequest::m_eType

Request type.

Before manipulating the communicated data further, the type has to be examined and then only the appropriate data members should be manipulated. For details see the documentation for each member of the structure.

Type cannot be NOP after the data structure is received. If so, an error should be raised.

Definition at line 167 of file ModuleCommData.hpp.

Referenced by CSingleModule::processRequest().

6.50.4.2 TIpcString SModuleRequest::m_szOperation

Interface query/update operator name.

In the case m_eType is QUERY/UPDATE, the member contains the name of the plug-in API operator to be invokes on the communicated variable substitution. Otherwise the content is undefined and shouldn't be touched.

Definition at line 176 of file ModuleCommData.hpp.

Referenced by CSingleModule::processRequest().

6.50.4.3 TIpcString SModuleRequest::m_szCodeBlock

Code block associated with the plug-in operation.

In the case m_eType is QUERY/UPDATE/INITIALIZE/FINALIZE. The member contains a code block used in the operation invocation. Otherwise its content is undefined and shouldn't be touched.

Definition at line 184 of file ModuleCommData.hpp.

Referenced by CSingleModule::processRequest().

6.50.4.4 TIpcSubst SModuleRequest::m_mapSubstitution

Variable susbtitution passed to Query/Update operations.

Query/Update operations receive a variable substitution to process. It is a map of string pairs. On other than QUERY/UPDATE request types, the member shouldn't be touched. Its content is undefined.

Definition at line 192 of file ModuleCommData.hpp.

Referenced by addVariableSubst(), and CSingleModule::processRequest().

6.50.4.5 TIpcSubst SModuleRequest::m_mapFreeVariables

Initial free variables substitution.

Map of free variables with initialized empty values. The map should be filled by the module and then sent back in the response.

Effectively that means that a module has no powers over the already substituted variables and can change only free ones.

NOTE: This data structure is also used as a store for update interface in the GETINTERFACE message (the key indicates the operation identifier and the value the type of the operation ("query"/"update").

Of course this is not clear implementation, however it saves memory and does not harm.

Definition at line 211 of file ModuleCommData.hpp.

Referenced by addFreeVariable(), and CSingleModule::processRequest().

6.50.4.6 const TIpcCharAllocator& SModuleRequest::m_charAllocator `[private]`

String allocator for adding new map pairs.

Definition at line 229 of file ModuleCommData.hpp.

Referenced by addFreeVariable(), and addVariableSubst().

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

- **ModuleCommData.hpp**

6.51 SModuleResponse Struct Reference

Plug-in response structure.

`#include <ModuleCommData.hpp>`

Public Member Functions

- **SModuleResponse** (const **TIpcCharAllocator** &charalloc, const **TIpcSubstAllocator** &strpairalloc)

  Default structure constructor.

- void **addVariableSubst** (const char ∗szVarName, const char ∗szVarValue)

  Adds a new variable substitution.

Public Attributes

- **EModuleErrCode m_eError**

  Response error code.

- **TIpcSubst m_mapSubstitution**

  Response variable substitution.

- bool **m_bQueryResult**

  Query result.

Private Attributes

- const **TIpcCharAllocator** & **m_charAllocator**

  String allocator for adding new map pairs.

6.51.1 Detailed Description

Plug-in response structure.

Definition at line 234 of file ModuleCommData.hpp.

6.51.2 Constructor & Destructor Documentation

6.51.2.1 SModuleResponse::SModuleResponse (const TIpcCharAllocator & *charalloc*, const TIpcSubstAllocator & *strpairalloc*) `[inline]`

Default structure constructor.

Definition at line 353 of file ModuleCommData.hpp.

6.51.3 Member Function Documentation

6.51.3.1 void SModuleResponse::addVariableSubst (const char ∗ *szVarName*, const char ∗ *szVarValue*) `[inline]`

Adds a new variable substitution.

Definition at line 361 of file ModuleCommData.hpp.

References m_charAllocator, and m_mapSubstitution.

Referenced by CSingleModule::writeResponse().

6.51.4 Member Data Documentation

6.51.4.1 EModuleErrCode SModuleResponse::m_eError

Response error code.

OK indicates that technically everything is alright. Otherwise an error code is reported.

Definition at line 241 of file ModuleCommData.hpp.

Referenced by CSingleModule::writeResponse().

6.51.4.2 TIpcSubst SModuleResponse::m_mapSubstitution

Response variable substitution.

After processing QUERY/UPDATE request type, a resulting variable substitution is returned. It is defined only for QUERY/UDPATE response types. Otehrwise shouldn't be manipulated.

Definition at line 249 of file ModuleCommData.hpp.

Referenced by addVariableSubst().

6.51.4.3 bool SModuleResponse::m_bQueryResult

Query result.

Queries return a truth value in the response. The member is defined only for QUERY response type and shouldn't be manipulated otherwise.

Definition at line 256 of file ModuleCommData.hpp.

Referenced by CSingleModule::writeResponse().

6.51.4.4 const TIpcCharAllocator& SModuleResponse::m_charAllocator `[private]`

String allocator for adding new map pairs.

Definition at line 271 of file ModuleCommData.hpp.

Referenced by addVariableSubst().

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

- **ModuleCommData.hpp**

6.52 jazzyk_private::StringCompare Struct Reference

String comparison operator.

`#include <jazzyk.hpp>`

Public Member Functions

- bool **operator()** (const std::string &s1, const std::string s2) const

6.52.1 Detailed Description

String comparison operator.

Definition at line 54 of file jazzyk.hpp.

6.52.2 Member Function Documentation

6.52.2.1 bool jazzyk_private::StringCompare::operator() (const std::string & *s1*, const std::string *s2*) const `[inline]`

Definition at line 56 of file jazzyk.hpp.

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

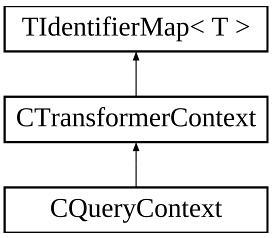
- **jazzyk.hpp**

6.53 TIdentifierMap< T > Class Template Reference

CIdentifier (p. 67) map.

`#include <IdentifierMap.hpp>`

Inheritance diagram for TIdentifierMap< T >::



6.53.1 Detailed Description

template<class T> class TIdentifierMap< T >

CIdentifier (p. 67) map.

The specialized map is able to return value of the map based on the TPtrIdentifier argument. **CIdentifier** (p. 67) has a built in conversion to 'const char *'.

Definition at line 130 of file IdentifierMap.hpp.

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

- **IdentifierMap.hpp**

6.54 visitable< R > Class Template Reference

Base class for **visitable** (p. 214) classes.

`#include <visitor.hpp>`

Public Types

- typedef R **TReturnType**

  Return type of ***Accept()*** *(*p. *215).*

Public Member Functions

- virtual ∼**visitable** ()

  Virtual destructor.

- virtual **TReturnType Accept** (**base_visitor** &)=0

  Abstract accepting method.

Static Protected Member Functions

- template<class T>
  static **TReturnType AcceptImpl** (T &host, **base_visitor** &guest)

  Bounce back to allow the macro DEFINE_ VISITABLE call ***Accept()*** *(*p. *215).*

6.54.1 Detailed Description

template<typename R = void> class visitable< R >

Base class for **visitable** (p. 214) classes.

Visitable class just bounces back the Visit callback. The top parent of the **visitable** (p. 214) hierarchy has to inherit from **visitable** (p. 214) and each **visitable** (p. 214) subclass has to define method Accept. This is automatized by macro DECLARE_VISITABLE

Definition at line 117 of file visitor.hpp.

6.54.2 Member Typedef Documentation

6.54.2.1 template<typename R = void> typedef R visitable< R >::TReturnType

Return type of **Accept()** (p. 215).

Definition at line 121 of file visitor.hpp.

6.54.3 Constructor & Destructor Documentation

6.54.3.1 template<typename R = void> virtual visitable< R >::~visitable () `[inline, virtual]`

Virtual destructor.

Definition at line 124 of file visitor.hpp.

6.54.4 Member Function Documentation

6.54.4.1 template<typename R = void> virtual TReturnType visitable< R >::Accept (base_visitor &) `[pure virtual]`

Abstract accepting method.

To be overwritten in the subclasses. It is an obligatory interface to allow callbacks.

Macro DECLARE_VISITABLE generates the corresponding invocation in subclasses.

6.54.4.2 template<typename R = void> template<class T> static TReturnType visitable< R >::AcceptImpl (T & *host*, base_visitor & *guest*) `[inline, static, protected]`

Bounce back to allow the macro DEFINE_VISITABLE call **Accept()** (p. 215).

Invocation generated by DEFINE_VISITABLE.

Definition at line 143 of file visitor.hpp.

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

- **visitor.hpp**

6.55 visitable_arg< A, R > Class Template Reference

Version of **visitable** (p. 214) class with argument.

`#include <visitor.hpp>`

Public Types

- typedef R **TReturnType**

  *Return type of **Accept()** (p. 217).*

- typedef A **TArgType**

  ***Accept()** (p. 217) argument type.*

Public Member Functions

- virtual ~**visitable_arg** ()

  Virtual destructor.

- virtual **TReturnType Accept** (**base_visitor** &, **TArgType**)=0

  Abstract accepting method.

Static Protected Member Functions

- template<class T>
  static **TReturnType AcceptImpl** (T &host, **base_visitor** &guest, **TArgType** argument)

  *Bounce back to allow the macro DEFINE_ VISITABLE call **Accept()** (p. 217).*

6.55.1 Detailed Description

template<typename A, typename R = void> class visitable_arg< A, R >

Version of **visitable** (p. 214) class with argument.

Allows passing an argument to **Accept()** (p. 217) method. The argument is passed by value so the type A has to be copy-constructible.

Definition at line 162 of file visitor.hpp.

6.55.2 Member Typedef Documentation

6.55.2.1 template<typename A, typename R = void> typedef R visitable_arg< A, R >::TReturnType

Return type of **Accept()** (p. 217).

Definition at line 166 of file visitor.hpp.

6.55.2.2 template<typename A, typename R = void> typedef A visitable_arg< A, R >::TArgType

Accept() (p. 217) argument type.

Definition at line 169 of file visitor.hpp.

6.55.3 Constructor & Destructor Documentation

6.55.3.1 template<typename A, typename R = void> virtual visitable_arg< A, R >::~visitable_arg () `[inline, virtual]`

Virtual destructor.

Definition at line 172 of file visitor.hpp.

6.55.4 Member Function Documentation

6.55.4.1 template<typename A, typename R = void> virtual TReturnType visitable_arg< A, R >::Accept (base_visitor &, TArgType) `[pure virtual]`

Abstract accepting method.

To be overwritten in the subclasses. It is an obligatory interface to allow callbacks.

Macro DECLARE_VISITABLE generates the corresponding invocation in subclasses.

6.55.4.2 template<typename A, typename R = void> template<class T> static TReturnType visitable_arg< A, R >::AcceptImpl (T & *host*, base_visitor & *guest*, TArgType *argument*) `[inline, static, protected]`

Bounce back to allow the macro DEFINE_VISITABLE call **Accept()** (p. 217).

Invocation generated by DEFINE_VISITABLE.

Definition at line 191 of file visitor.hpp.

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

- **visitor.hpp**

6.56 visitor< T, R > Class Template Reference

Visitor class template.

`#include <visitor.hpp>`

Public Types

- typedef R **TReturnType**

  Return type of ***Visit()*** *(*p. *219).*

Public Member Functions

- virtual **TReturnType Visit** (T &)=0

  Abstract callback from the guest.

- virtual ∼**visitor** ()

  Virtual destructor.

6.56.1 Detailed Description

template<class T, typename R = void> class visitor< T, R >

Visitor class template.

T is the visited class and R is the return type of the Visitor() method.

Definition at line 64 of file visitor.hpp.

6.56.2 Member Typedef Documentation

6.56.2.1 template<class T, typename R = void> typedef R visitor< T, R >::TReturnType

Return type of **Visit()** (p. 219).

Definition at line 68 of file visitor.hpp.

6.56.3 Constructor & Destructor Documentation

6.56.3.1 template<class T, typename R = void> virtual visitor< T, R >::∼visitor () `[inline, virtual]`

Virtual destructor.

Unnecessary. However gcc -Wall complains about it when missing.

Definition at line 77 of file visitor.hpp.

6.56.4 Member Function Documentation

6.56.4.1 template<class T, typename R = void> virtual TReturnType visitor< T, R >::Visit (T &) `[pure virtual]`

Abstract callback from the guest.

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

- **visitor.hpp**

6.57 visitor_arg< T, A, R > Class Template Reference

Visitor passing an argument class template.

`#include <visitor.hpp>`

Public Types

- typedef R **TReturnType**

  *Return type of **Visit()** (p. 221).*

- typedef A **TArgType**

  Visit argument type.

Public Member Functions

- virtual R **Visit** (T &, **TArgType**)=0

  Abstract callback from the guest.

- virtual ~**visitor_arg** ()

  Virtual destructor.

6.57.1 Detailed Description

template<class T, typename A, typename R = void> class visitor_arg< T, A, R >

Visitor passing an argument class template.

Specialized version of **visitor** (p. 218), which is able to pass an argument to the **Visit()** (p. 221) method.

T is the visited class and R is the return type of the Visitor() method. A is a **Visit()** (p. 221) method argument type.

Note: Argument to **Visit()** (p. 221) is passed by value, so A has to be copy constructible type. The price for the use of this type of **visitor** (p. 218) is that the argument object is copied 3 times until it reaches the **visitor** (p. 218) object. Therefore use only efficiently copy-able object as arguments.

Definition at line 94 of file visitor.hpp.

6.57.2 Member Typedef Documentation

6.57.2.1 template<class T, typename A, typename R = void> typedef R visitor_arg< T, A, R >::TReturnType

Return type of **Visit()** (p. 221).

Definition at line 98 of file visitor.hpp.

6.57.2.2 template<class T, typename A, typename R = void> typedef A visitor_arg< T, A, R >::TArgType

Visit argument type.

Definition at line 101 of file visitor.hpp.

6.57.3 Constructor & Destructor Documentation

6.57.3.1 template<class T, typename A, typename R = void> virtual visitor_arg< T, A, R >::~visitor_arg () `[inline, virtual]`

Virtual destructor.

Definition at line 107 of file visitor.hpp.

6.57.4 Member Function Documentation

6.57.4.1 template<class T, typename A, typename R = void> virtual R visitor_arg< T, A, R >::Visit (T &, TArgType) `[pure virtual]`

Abstract callback from the guest.

Implemented in **CInterpreter** (p. 73), **CTraverser** (p. 187), **CTraverser** (p. 188), **CTraverser** (p. 188), **CTraverser** (p. 188), **CTraverser** (p. 188), **CTraverser** (p. 188), **CTraverser** (p. 189), **CTraverser** (p. 189), **CTraverser** (p. 189), **CTraverser** (p. 189), **CTraverser** (p. 189), **CTraverser** (p. 190), and **CTraverser** (p. 190).

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

- **visitor.hpp**

Chapter 7

File Documentation

7.1 AndQueryNode.hpp File Reference

```
#include "QueryNode.hpp"
```

Classes

- class **CAndQueryNode**

    Query node for AND logical connector of queries.

7.2 CodeBlock.cpp File Reference

```
#include "CodeBlock.hpp"
```

7.3 CodeBlock.hpp File Reference

`#include <string>`

Classes

- class **CCodeBlock**

  Code of block holder.

7.4 Compiler.cpp File Reference

```
#include <unistd.h>
#include <sys/wait.h>
#include <sys/types.h>
#include <signal.h>
#include "Error.hpp"
#include "Compiler.hpp"
#include "Context.hpp"
#include "Parser.h++"
#include "ParserAux.hpp"
#include <string>
#include <sstream>
#include <vector>
#include <cerrno>
```

7.5 Compiler.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "Traverser.hpp"
#include "visitor.hpp"
#include <string>
#include <sstream>
#include <vector>
#include <iostream>
#include <unistd.h>
#include <sys/types.h>
```

Classes

- class **CCompiler**

  Jazzyk programming language compiler.

- struct **CCompiler::SMPInvocationSettings**

  Configuration structure for the macro preprocessor invocation.

7.6 Context.cpp File Reference

```
#include "Context.hpp"
#include "Program.hpp"
```

7.7 Context.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "IdentifierMap.hpp"
```

Classes

- class **CTransformerContext**

  Interpreter context used while traversing the transformer tree structure.

- class **CQueryContext**

  Interpreter context used while traversing the query subtree.

7.8 ElseRule.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "Rule.hpp"
```

Classes

- class **CElseRule**

  If-then-else type rule.

7.9 Error.cpp File Reference

```
#include "Error.hpp"
#include <iostream>
#include <sstream>
```

Functions

- std::ostream & **operator**<< (std::ostream &ostr, const **CError** &err)
  Dumps the error to the output.

7.9.1 Function Documentation

7.9.1.1 std::ostream& operator<< (std::ostream & *ostr*, const CError & *err*)

Dumps the error to the output.

Definition at line 120 of file Error.cpp.

References CError::m_szErrText.

7.10 Error.hpp File Reference

```
#include <string>
#include <map>
#include <exception>
#include <ostream>
#include "location.hh"
```

Classes

- class **CError**

  Error handler for the application.

Functions

- std::ostream & **operator<<** (std::ostream &ostr, const **CError** &err)

  Dumps the error to the output.

7.10.1 Function Documentation

7.10.1.1 std::ostream& operator<< (std::ostream & *ostr*, const CError & *err*)

Dumps the error to the output.

Definition at line 120 of file Error.cpp.

References CError::m_szErrText.

7.11 ExplicitQuery.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "QueryNode.hpp"
```

Classes

- class **CExplicitQuery**
  Explicit query class.

7.12 ExplicitUpdate.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "Transformer.hpp"
```

Classes

- class **CExplicitUpdate**

  Explicit update class.

7.13 Expression.cpp File Reference

```
#include "Expression.hpp"
#include "LocationTracker.hpp"
```

7.14 Expression.hpp File Reference

```
#include "location.hh"
```

Classes

- class **CExpression**
  Base abstract class for all the query and update expressions.

Typedefs

- typedef yy::location **TSrcLocation**
  Type definition of the location.

7.14.1 Typedef Documentation

7.14.1.1 typedef yy::location TSrcLocation

Type definition of the location.

Definition at line 38 of file Expression.hpp.

7.15 ExpressionsFwd.hpp File Reference

```
#include <boost/shared_ptr.hpp>
#include <list>
#include <vector>
#include <set>
#include "IdentifierMap.hpp"
```

Namespaces

- namespace **yy**

Typedefs

- typedef yy::location **TSrcLocation**
- typedef boost::shared_ptr< **CTransformer** > **TPtrTransformer**
- typedef std::list< TPtrTransformer > **TTransformers**
- typedef std::vector< TPtrTransformer > **TVecTransformers**
- typedef boost::shared_ptr< **CQueryNode** > **TPtrQueryNode**
- typedef boost::shared_ptr< **CNopUpdate** > **TPtrNopUpdate**
- typedef boost::shared_ptr< **CExitUpdate** > **TPtrExitUpdate**
- typedef boost::shared_ptr< **TTransformers** > **TPtrTransformers**
- typedef boost::shared_ptr< **CTransformerChain** > **TPtrTransformerChain**
- typedef boost::shared_ptr< **CTransformerSet** > **TPtrTransformerSet**
- typedef boost::shared_ptr< **CIdentifier** > **TPtrIdentifier**
- typedef std::vector< TPtrIdentifier > **TIdentifiers**
- typedef std::set< TPtrIdentifier, **SIdentifierCompare** > **TIdentifierSet**
- typedef boost::shared_ptr< **TIdentifiers** > **TPtrIdentifiers**
- typedef boost::shared_ptr< **CCodeBlock** > **TPtrCodeBlock**
- typedef boost::shared_ptr< **CModuleDeclaration** > **TPtrModuleDeclaration**
- typedef boost::shared_ptr< **CModuleNotification** > **TPtrModuleNotification**
- typedef **TIdentifierMap**< **TPtrModuleDeclaration** > **TModuleDeclCollection**
- typedef boost::shared_ptr< **TModuleDeclCollection** > **TPtrModuleDeclCollection**
- typedef boost::shared_ptr< **CProgram** > **TPtrProgram**
- typedef boost::shared_ptr< **CTransformerContext** > **TPtrTransformerContext**
- typedef std::string **TVariableValue**
- typedef boost::shared_ptr< **TVariableValue** > **TPtrVariableValue**
- typedef **TIdentifierMap**< **TPtrVariableValue** > **TVariableSubstitution**
- typedef boost::shared_ptr< **TVariableSubstitution** > **TPtrVariableSubstitution**
- typedef boost::shared_ptr< CPlugin > **TPtrPlugin**
- typedef std::vector< std::string > **TVecStrings**

7.15.1 Typedef Documentation

7.15.1.1 typedef std::vector<TPtrIdentifier> TIdentifiers

Definition at line 92 of file ExpressionsFwd.hpp.

7.15.1.2 typedef std::set<TPtrIdentifier, SIdentifierCompare> TIdentifierSet

Definition at line 93 of file ExpressionsFwd.hpp.

7.15.1.3 typedef TIdentifierMap<TPtrModuleDeclaration> TModuleDeclCollection

Definition at line 98 of file ExpressionsFwd.hpp.

7.15.1.4 update TPtrCodeBlock

Definition at line 95 of file ExpressionsFwd.hpp.

7.15.1.5 typedef boost::shared_ptr<CExitUpdate> TPtrExitUpdate

Definition at line 87 of file ExpressionsFwd.hpp.

7.15.1.6 update TPtrIdentifier

Definition at line 91 of file ExpressionsFwd.hpp.

7.15.1.7 update TPtrIdentifiers

Definition at line 94 of file ExpressionsFwd.hpp.

7.15.1.8 typedef boost::shared_ptr<CModuleDeclaration> TPtrModuleDeclaration

Definition at line 96 of file ExpressionsFwd.hpp.

7.15.1.9 typedef boost::shared_ptr<TModuleDeclCollection> TPtrModuleDeclCollection

Definition at line 99 of file ExpressionsFwd.hpp.

7.15.1.10 typedef boost::shared_ptr<CModuleNotification> TPtrModuleNotification

Definition at line 97 of file ExpressionsFwd.hpp.

7.15.1.11 typedef boost::shared_ptr<CNopUpdate> TPtrNopUpdate

Definition at line 86 of file ExpressionsFwd.hpp.

7.15.1.12 typedef boost::shared_ptr<CPlugin> TPtrPlugin

Definition at line 107 of file ExpressionsFwd.hpp.

7.15.1.13 typedef boost::shared_ptr<CProgram> TPtrProgram

Definition at line 100 of file ExpressionsFwd.hpp.

7.15.1.14 typedef boost::shared_ptr<CQueryNode> TPtrQueryNode

Definition at line 85 of file ExpressionsFwd.hpp.

7.15.1.15 rule TPtrTransformer

Definition at line 79 of file ExpressionsFwd.hpp.

7.15.1.16 typedef boost::shared_ptr<CTransformerChain> TPtrTransformerChain

Definition at line 89 of file ExpressionsFwd.hpp.

7.15.1.17 typedef boost::shared_ptr<CTransformerContext> TPtrTransformerContext

Definition at line 101 of file ExpressionsFwd.hpp.

7.15.1.18 typedef boost::shared_ptr<TTransformers> TPtrTransformers

Definition at line 88 of file ExpressionsFwd.hpp.

7.15.1.19 typedef boost::shared_ptr<CTransformerSet> TPtrTransformerSet

Definition at line 90 of file ExpressionsFwd.hpp.

7.15.1.20 typedef boost::shared_ptr<TVariableSubstitution> TPtrVariableSubstitution

Definition at line 105 of file ExpressionsFwd.hpp.

7.15.1.21 typedef boost::shared_ptr<TVariableValue> TPtrVariableValue

Definition at line 103 of file ExpressionsFwd.hpp.

7.15.1.22 typedef yy::location TSrcLocation

Definition at line 52 of file ExpressionsFwd.hpp.

7.15.1.23 typedef std::list<TPtrTransformer> TTransformers

Definition at line 83 of file ExpressionsFwd.hpp.

7.15.1.24 typedef TIdentifierMap<TPtrVariableValue> TVariableSubstitution

Definition at line 104 of file ExpressionsFwd.hpp.

7.15.1.25 typedef std::string TVariableValue

Definition at line 102 of file ExpressionsFwd.hpp.

7.15.1.26 typedef std::vector<std::string> TVecStrings

Definition at line 108 of file ExpressionsFwd.hpp.

7.15.1.27 typedef std::vector<TPtrTransformer> TVecTransformers

Definition at line 84 of file ExpressionsFwd.hpp.

7.16 Identifier.hpp File Reference

`#include <string>`

Classes

- class **CIdentifier**

  Identifier holder.

7.17 IdentifierMap.hpp File Reference

```
#include "config.h"
#include "Identifier.hpp"
#include <string>
#include <boost/shared_ptr.hpp>
#include <map>
```

Classes

- struct **SIdentifierEqual**
  Equality operator.
- struct **SIdentifierCompare**
  Comparison operator.
- class **TIdentifierMap< T >**
  CIdentifier *(*p. *67) map.*

7.18 Interpreter.cpp File Reference

```
#include "Interpreter.hpp"
#include "Program.hpp"
#include "TransformerSet.hpp"
#include "TrivialUpdate.hpp"
#include "ExplicitQuery.hpp"
#include "ExplicitUpdate.hpp"
#include "Error.hpp"
#include "ModuleManager.hpp"
#include "ModuleDeclaration.hpp"
#include <algorithm>
#include <functional>
#include <sstream>
```

Functions

- static int **basic_random** (int n)

  Basic random numbers generator.

7.18.1 Function Documentation

7.18.1.1 static int basic_random (int *n*) `[static]`

Basic random numbers generator.

The stock pseudo-random generator of random_shuffle is no good - it generates always the same sequences of permutations.

Definition at line 53 of file Interpreter.cpp.

7.19 Interpreter.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "Traverser.hpp"
#include <functional>
```

Classes

- class **CInterpreter**

  Interpreter engine of the Jazzyk language interpreter.

- struct **CInterpreter::SSettings**

  Interpreter configuration.

7.20 jazzyk.hpp File Reference

```
#include <string>
#include <map>
#include <iostream>
#include <jazzyk/jazzyk_common.hpp>
```

Namespaces

- namespace **jazzyk_private**
- namespace **jazzyk**

Classes

- struct **jazzyk_private::StringCompare**

  String comparison operator.

- class **jazzyk::AbstractKRModuleInterface< TConcreteKRModule >**

  The abstract knowledge representation module interface adapter.

- class **jazzyk::AbstractKRModule**

  Concrete knowledge representation module base class.

Defines

- #define **JZMODULE_MANIFEST_BEGIN**(ModuleClass)

  KR module manifest support macros.

- #define **JZMODULE_MANIFEST_END**

  Encloses the KR module manifest declaration.

- #define **REGISTER_QUERY**(szMethodID, ptrMethod) pModule → registerQuery(szMethodID, &_TJzModuleClass::ptrMethod);

  Query/Update registration macros.

- #define **REGISTER_UPDATE**(szMethodID, ptrMethod) pModule → registerUpdate(szMethodID, &_TJzModuleClass::ptrMethod);
- #define **CALL_MEMBER_FN**(ptrToMember) (m_concreteKRModule.∗(ptrToMember))

  Helper macro definition for invoking a pointer-to-member function callback.

Typedefs

- typedef std::map< std::string, std::string, **jazzyk_private::StringCompare** > **jazzyk::TKRVarSubstitution**

  Type definition for variable substitution map.

7.20.1 Define Documentation

7.20.1.1 #define CALL_MEMBER_FN(ptrToMember) (m_-concreteKRModule.*(ptrToMember))

Helper macro definition for invoking a pointer-to-member function callback.

Definition at line 329 of file jazzyk.hpp.

Referenced by jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::query(), and jazzyk::AbstractKRModuleInterface< TConcreteKRModule >::update().

7.20.1.2 #define JZMODULE_MANIFEST_BEGIN(ModuleClass)

Value:

```
typedef ModuleClass _TJzModuleClass; \
        extern "C" \
        { \
                unsigned int JZMODULE_API_VERSION_ROUTINE_ID() \
                { \
                        static std::ios_base::Init initIostreams; \
                        return JAZZYK_API_VERSION; \
                } \
                \
                jazzyk::KRModuleInterface* JZMODULE_API_REGISTER_ROUTINE_ID() \
                { \
                        jazzyk::AbstractKRModuleInterface<ModuleClass>* pModule = new jazzyk::AbstractKRModuleInterface
```

KR module manifest support macros.

Each KR module has to provide a manifest of its query and update custom operation handlers. This is to be done using macros of the JZMODULE_MANIFEST family.

Example:

JZMODULE_MANIFEST_BEGIN(CMyModule) (p. 246) REGISTER_-QUERY("queryOne", custom_query1) REGISTER_QUERY("queryTwo", custom_query2) REGISTER_UPDATE("updateOne", custom_update1) REGISTER_UPDATE("updateTwo", custom_update2) JZMODULE_MANIFEST_END Defines two primitive __JZDLL API functions which should be invoked from the server side

unsigned int version();

- returns the __JZDLL API version. It must be invoked as the first routine after loading __JZDLL. Using two incompatible components (server+__JZDLL client) might lead to unexpected run-time errors!

jazzyk::KRModuleInterface (p. 199)* load_kr_module();

- returns an instance of the __JZDLL interface class. It implements the full functionality of the KR module.

Definition at line 297 of file jazzyk.hpp.

7.20.1.3 #define JZMODULE_MANIFEST_END

Value:

```
return pModule; \
                } \
        }
```

Encloses the KR module manifest declaration.

Definition at line 312 of file jazzyk.hpp.

7.20.1.4 #define REGISTER_QUERY(szMethodID, ptrMethod) pModule → registerQuery(szMethodID, &_TJzModuleClass::ptrMethod);

Query/Update registration macros.

- first argument is the operation identifier.
- second argument is the member method identifier (implementation of the operation).

The same method might be registered with several operations.

Definition at line 325 of file jazzyk.hpp.

7.20.1.5 #define REGISTER_UPDATE(szMethodID, ptrMethod) pModule → registerUpdate(szMethodID, &_TJzModuleClass::ptrMethod);

Definition at line 326 of file jazzyk.hpp.

7.21 jazzyk_common.hpp File Reference

Namespaces

- namespace **jazzyk**

Classes

- class **jazzyk::KRModuleInterface**

  Abstract base class for defining knowledge representation modules.

Defines

- #define **__JZDLL_EXPORT**

  GNU/Linux/Win32 portability for dynamically linked shared libraries.

- #define **__JZDLL_CALL**
- #define **JZMODULE_API_VERSION_ROUTINE_ID** version

  Identifier of the API routine returing the API version.

- #define **JZMODULE_API_VERSION_ROUTINE** "version"
- #define **JZMODULE_API_REGISTER_ROUTINE_ID** load_kr_module

  Idetifier of the KR module registration API routine.

- #define **JZMODULE_API_REGISTER_ROUTINE** "load_kr_module"

Typedefs

- typedef unsigned int(∗ **jazzyk::TJzModuleApiVersionRoutine**)()

  Signature of the version API routine.

- typedef **jazzyk::KRModuleInterface** ∗(∗ **jazzyk::TJzModuleApiRegisterRoutine**)()

  Signature of the KR module registration routine.

Enumerations

- enum **jazzyk::EKRModuleError** { **jazzyk::OK**, **jazzyk::FAIL**, **jazzyk::INVALID_-OPERATION** }

  Error codes returned from the KR module to the main process.

Variables

- const unsigned int **JAZZYK_API_VERSION** = 4

  Knowledge representation module API version.

7.21.1 Define Documentation

7.21.1.1 #define __JZDLL_CALL

Definition at line 50 of file jazzyk_common.hpp.

7.21.1.2 #define __JZDLL_EXPORT

GNU/Linux/Win32 portability for dynamically linked shared libraries.

Definition at line 49 of file jazzyk_common.hpp.

7.21.1.3 #define JZMODULE_API_REGISTER_ROUTINE "load_kr_module"

Definition at line 60 of file jazzyk_common.hpp.

Referenced by CSingleModule::loadDll().

7.21.1.4 #define JZMODULE_API_REGISTER_ROUTINE_ID load_kr_-module

Idetifier of the KR module registration API routine.

Definition at line 59 of file jazzyk_common.hpp.

7.21.1.5 #define JZMODULE_API_VERSION_ROUTINE "version"

Definition at line 56 of file jazzyk_common.hpp.

Referenced by CSingleModule::loadDll().

7.21.1.6 #define JZMODULE_API_VERSION_ROUTINE_ID version

Identifier of the API routine returing the API version.

Definition at line 55 of file jazzyk_common.hpp.

7.21.2 Variable Documentation

7.21.2.1 const unsigned int JAZZYK_API_VERSION = 4

Knowledge representation module API version.

Used to check whether both sides of the interface use the same interface. Never use not-matching components!!!

Definition at line 67 of file jazzyk_common.hpp.

Referenced by CSingleModule::loadDll(), and CJazzykApp::version().

7.22 JazzykApp.cpp File Reference

```
#include "JazzykApp.hpp"
#include "jazzyk_common.hpp"
#include "Program.hpp"
#include "Compiler.hpp"
#include "Interpreter.hpp"
#include "PrettyPrinter.hpp"
#include "ModuleManager.hpp"
#include "Error.hpp"
#include <iostream>
#include <sstream>
#include <fstream>
#include <boost/program_options.hpp>
#include <boost/interprocess/exceptions.hpp>
```

Defines

- #define **MOTTO** "∗ In varietate concordia ∗"

Variables

- int **yydebug**

7.22.1 Define Documentation

7.22.1.1 #define MOTTO "∗ In varietate concordia ∗"

Definition at line 60 of file JazzykApp.cpp.

Referenced by CJazzykApp::processCmdLine().

7.22.2 Variable Documentation

7.22.2.1 int yydebug

Definition at line 57 of file JazzykApp.cpp.

7.23 JazzykApp.hpp File Reference

`#include <vector>`

`#include <string>`

`#include <sstream>`

`#include <istream>`

Classes

- class **CJazzykApp**
  Main Jazzyk application class.
- struct **CJazzykApp::SSettings**
  Settings wrapper.

Typedefs

- typedef **CJazzykApp JazzykApp**
  Jazzyk application singleton.

7.23.1 Typedef Documentation

7.23.1.1 typedef CJazzykApp JazzykApp

Jazzyk application singleton.

Definition at line 164 of file JazzykApp.hpp.

7.24 Lexer.l++ File Reference

```
#include "ParserAux.hpp"
#include "Parser.h++"
#include <string>
```

Defines

- #define **This** static_cast<**CJazzykLexer**∗>(this)
- #define **ThisYylval** static_cast<yy::JazzykParser::semantic_type∗>(static_-cast<**CJazzykLexer**∗>(this) → m_pyylval)
- #define **ThisYylloc** static_cast<yy::JazzykParser::location_type∗>(static_-cast<**CJazzykLexer**∗>(this) → m_pyylloc)
- #define **YY_USER_ACTION**

Functions

- ThisYylloc **step** ()

7.24.1 Define Documentation

7.24.1.1 #define This static_cast<CJazzykLexer∗>(this)

7.24.1.2 #define ThisYylloc static_cast<yy::JazzykParser::location_-type∗>(static_cast<CJazzykLexer∗>(this) → m_pyylloc)

7.24.1.3 #define ThisYylval static_cast<yy::JazzykParser::semantic_-type∗>(static_cast<CJazzykLexer∗>(this) → m_pyylval)

7.24.1.4 #define YY_USER_ACTION

Value:

```
{ \
                                ThisYylloc->columns(yyleng); \
                                CLocationTracker::Instance().set(*(ThisYylloc)); \
                        }
```

7.24.2 Function Documentation

7.24.2.1 ThisYylloc step ()

7.25 LocationTracker.hpp File Reference

`#include "location.hh"`

Classes

- class **CLocationTracker**

  Small singleton for communication between the Bison location and CExpressions.

7.26 Logging.hpp File Reference

Defines

- #define **LOG**(Msg)

7.26.1 Define Documentation

7.26.1.1 #define LOG(Msg)

In this header we provide a very simple support for logging facility. In the case of a need, this should be enhanced in the future.

In order to switch logging facility on, compile with -DLOGGING_ON

Definition at line 45 of file Logging.hpp.

Referenced by CModuleManager::communicate(), CModuleManager::extractResponse(), CSingleModule::handleModuleError(), CModuleManager::load(), CSingleModule::loadDll(), CSingleModule::processRequest(), CSingleModule::run(), CModuleManager::unload(), and CSingleModule::writeResponse().

7.27 main.cpp File Reference

```
#include "JazzykApp.hpp"
```

Functions

- int **main** (int argc, char ∗argv[ ])

7.27.1 Function Documentation

7.27.1.1 int main (int *argc*, char ∗ *argv*[ ])

Definition at line 42 of file main.cpp.

References CJazzykApp::Instance(), and CJazzykApp::run().

7.28 ModuleCommData.hpp File Reference

```
#include <boost/shared_ptr.hpp>
#include <boost/interprocess/allocators/allocator.hpp>
#include <boost/interprocess/managed_shared_memory.hpp>
#include <boost/interprocess/sync/named_condition.hpp>
#include <boost/interprocess/sync/named_mutex.hpp>
#include <boost/interprocess/sync/named_semaphore.hpp>
#include <boost/interprocess/sync/scoped_lock.hpp>
#include <boost/interprocess/containers/string.hpp>
#include <boost/interprocess/containers/map.hpp>
#include <boost/interprocess/containers/vector.hpp>
#include <boost/interprocess/detail/utilities.hpp>
#include <functional>
```

Classes

- struct **SIpcStringCompare**
  String comparison operator.
- struct **SModuleRequest**
  Plug-in request structure.
- struct **SModuleResponse**
  Plug-in response structure.
- class **CIpcPtrDeleter< T >**
  A functor that destroys the shared memory object of an associated smart pointer.

Defines

- #define **g_JZAPI_QUERY** "query"
  Constant indicating a query/update interface entry type in the GETINTERFACE request.
- #define **g_JZAPI_UPDATE** "update"

Typedefs

- typedef boost::shared_ptr< boost::interprocess::managed_shared_memory > **TPtrIpc-ManagedSharedMemory**
  Type definitions for synchronisation mechanisms for the Ipc interaction.
- typedef boost::shared_ptr< boost::interprocess::named_mutex > **TPtrIpcMutex**
- typedef boost::shared_ptr< boost::interprocess::named_condition > **TPtrIpcCondition**

- typedef boost::shared_ptr< boost::interprocess::named_semaphore > **TPtrIpcSemaphore**
- typedef boost::interprocess::allocator< char, boost::interprocess::managed_shared_-memory::segment_manager > **TIpcCharAllocator**

  Type for character allocator for strings in the shared memory.

- typedef boost::shared_ptr< **TIpcCharAllocator** > **TPtrIpcCharAllocator**

  Type definition for a smart pointer (in regular memory) to character allocator.

- typedef boost::interprocess::basic_string< char, std::char_traits< char >, **TIpcCharAllocator** > **TIpcString**

  Type for string allocated in the shared memory.

- typedef std::pair< **TIpcString**, **TIpcString** > **TIpcSubstValueType**

  Type for pair of strings allocated in the shared memory.

- typedef boost::interprocess::allocator< **TIpcSubstValueType**, boost::interprocess::managed_shared_memory::segment_manager > **TIpcSubstAllocator**

  Type for allocator of pair of strings in the shared memory.

- typedef boost::shared_ptr< **TIpcSubstAllocator** > **TPtrIpcSubstAllocator**

  Type definition for smart pointer to string-pair allocator (in the regular memory).

- typedef boost::interprocess::map< **TIpcString**, **TIpcString**, std::less< **TIpcString** >, **TIpcSubstAllocator** > **TIpcSubst**

  Map of string pairs used in the interprocess communication.

- typedef **CIpcPtrDeleter**< **SModuleRequest** > **TSModuleRequestDeleter**

  Type definitions for Boost.Interprocess smart pointer deleters of SModuleRequest/SModuleResponse.

- typedef **CIpcPtrDeleter**< **SModuleResponse** > **TSModuleResponseDeleter**
- typedef boost::shared_ptr< **TSModuleRequestDeleter** > **TPtrSModuleRequestDeleter**

  Type definitions for smart pointers (in regular memor) to request/response deleters.

- typedef boost::shared_ptr< **TSModuleResponseDeleter** > **TPtrSModuleResponseDeleter**
- typedef boost::shared_ptr< **SModuleRequest** > **TPtrSModuleRequest**

  *Type definitions for smart pointer for **SModuleRequest** (p. 207) and **SModuleResponse** (p. 210).*

- typedef boost::shared_ptr< **SModuleResponse** > **TPtrSModuleResponse**

Enumerations

- enum **EModuleRequestType** {
  NOP, **QUERY**, **UPDATE**, **CYCLE**,
  INITIALIZE, **FINALIZE**, **GETINTERFACE** }

Type of the request data to be communicated using the intrprocess shared memory.

- enum **EModuleErrCode** { **OK**, **FAIL** }

  Module operation response error code.

7.28.1 Define Documentation

7.28.1.1 #define g_JZAPI_QUERY "query"

Constant indicating a query/update interface entry type in the GETINTERFACE request.

Definition at line 150 of file ModuleCommData.hpp.

Referenced by CSingleModule::convert_operations(), and CModuleManager::load().

7.28.1.2 #define g_JZAPI_UPDATE "update"

Definition at line 151 of file ModuleCommData.hpp.

Referenced by CSingleModule::convert_operations(), and CModuleManager::load().

7.28.2 Typedef Documentation

7.28.2.1 typedef boost::interprocess::allocator< char, boost::interprocess::managed_shared_memory::segment_-manager > TIpcCharAllocator

Type for character allocator for strings in the shared memory.

Definition at line 75 of file ModuleCommData.hpp.

7.28.2.2 typedef boost::interprocess::basic_string< char, std::char_traits<char>, TIpcCharAllocator > TIpcString

Type for string allocated in the shared memory.

Definition at line 85 of file ModuleCommData.hpp.

7.28.2.3 typedef boost::interprocess::map< TIpcString, TIpcString, std::less<TIpcString>, TIpcSubstAllocator > TIpcSubst

Map of string pairs used in the interprocess communication.

The map is to be stored in the shared memory, moreover, it should place all its members into the shared memory as well. Therefore we need to specialize its allocator.

Definition at line 113 of file ModuleCommData.hpp.

7.28.2.4 typedef boost::interprocess::allocator< TIpcSubstValueType, boost::interprocess::managed_shared_memory::segment_manager > TIpcSubstAllocator

Type for allocator of pair of strings in the shared memory.

Definition at line 97 of file ModuleCommData.hpp.

7.28.2.5 typedef std::pair< TIpcString, TIpcString > TIpcSubstValueType

Type for pair of strings allocated in the shared memory.

To be used in the map allocated in the shared memory.

Definition at line 91 of file ModuleCommData.hpp.

7.28.2.6 typedef boost::shared_ptr<TIpcCharAllocator> TPtrIpcCharAllocator

Type definition for a smart pointer (in regular memory) to character allocator.

Definition at line 78 of file ModuleCommData.hpp.

7.28.2.7 typedef boost::shared_ptr<boost::interprocess::named_condition> TPtrIpcCondition

Definition at line 56 of file ModuleCommData.hpp.

7.28.2.8 typedef boost::shared_ptr<boost::interprocess::managed_shared_-memory> TPtrIpcManagedSharedMemory

Type definitions for synchronisation mechanisms for the Ipc interaction.

Definition at line 54 of file ModuleCommData.hpp.

7.28.2.9 typedef boost::shared_ptr<boost::interprocess::named_mutex> TPtrIpcMutex

Definition at line 55 of file ModuleCommData.hpp.

7.28.2.10 typedef boost::shared_ptr<boost::interprocess::named_semaphore> TPtrIpcSemaphore

Definition at line 57 of file ModuleCommData.hpp.

7.28.2.11 typedef boost::shared_ptr<TIpcSubstAllocator> TPtrIpcSubstAllocator

Type definition for smart pointer to string-pair allocator (in the regular memory).

Definition at line 100 of file ModuleCommData.hpp.

7.28.2.12 typedef boost::shared_ptr<SModuleRequest> TPtrSModuleRequest

Type definitions for smart pointer for **SModuleRequest** (p. 207) and **SModuleResponse** (p. 210).

Definition at line 313 of file ModuleCommData.hpp.

7.28.2.13 typedef boost::shared_ptr<TSModuleRequestDeleter> TPtrSModuleRequestDeleter

Type definitions for smart pointers (in regular memor) to request/response deleters.

Definition at line 309 of file ModuleCommData.hpp.

7.28.2.14 typedef boost::shared_ptr<SModuleResponse> TPtrSModuleResponse

Definition at line 314 of file ModuleCommData.hpp.

7.28.2.15 typedef boost::shared_ptr<TSModuleResponseDeleter> TPtrSModuleResponseDeleter

Definition at line 310 of file ModuleCommData.hpp.

7.28.2.16 typedef CIpcPtrDeleter<SModuleRequest> TSModuleRequestDeleter

Type definitions for Boost.Interprocess smart pointer deleters of SModuleRequest/SModuleResponse.

Definition at line 305 of file ModuleCommData.hpp.

7.28.2.17 typedef CIpcPtrDeleter<SModuleResponse> TSModuleResponseDeleter

Definition at line 306 of file ModuleCommData.hpp.

7.28.3 Enumeration Type Documentation

7.28.3.1 enum EModuleErrCode

Module operation response error code.

Enumerator:

OK

FAIL

Definition at line 143 of file ModuleCommData.hpp.

7.28.3.2 enum EModuleRequestType

Type of the request data to be communicated using the intrprocess shared memory.

Ipc communication data structures. These structures are internally exchanged between the main process and the plug-in subprocesses.

The communicated data structures are allocated in the memory segment shared between the main process and each plug-in subprocess.

The request structure is placed in the shared memory when the main process is about to wake the corresponding plug-in process to process it.

After the request is processed by the plug-in process, it places a corresponding response data structure into the shared memory and indicates the main process that it finished the processing.

Enumerator:

NOP

QUERY

UPDATE

CYCLE

INITIALIZE

FINALIZE

GETINTERFACE

Definition at line 131 of file ModuleCommData.hpp.

7.29 ModuleDeclaration.cpp File Reference

```
#include "ModuleDeclaration.hpp"
#include "LocationTracker.hpp"
#include "Error.hpp"
#include <sstream>
```

7.30 ModuleDeclaration.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "ModuleNotification.hpp"
#include "location.hh"
```

Classes

- class **CModuleDeclaration**

  Module declaration and link holder.

7.31 ModuleManager.cpp File Reference

```
#include "ModuleManager.hpp"
#include "Error.hpp"
#include "SingleModule.hpp"
#include "Identifier.hpp"
#include "CodeBlock.hpp"
#include "ModuleDeclaration.hpp"
#include "ShmServerMgr.hpp"
#include <string>
#include <sys/types.h>
#include <sys/wait.h>
#include <unistd.h>
#include "Logging.hpp"
```

7.32 ModuleManager.hpp File Reference

```
#include "IdentifierMap.hpp"
#include "ExpressionsFwd.hpp"
#include "ModuleCommData.hpp"
#include <sys/types.h>
#include <string>
#include <vector>
```

Classes

- class **CModuleManager**

  External plug-ins/modules manager.

7.33 ModuleNotification.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "Identifier.hpp"
#include "CodeBlock.hpp"
#include "LocationTracker.hpp"
```

Classes

- class **CModuleNotification**

  Wrapper class for the module notification declaration.

7.34 NotQueryNode.hpp File Reference

`#include "QueryNode.hpp"`

Classes

- class **CNotQueryNode**

  Query node for NOT logical modifier of a query expression.

7.35 OrQueryNode.hpp File Reference

```
#include "QueryNode.hpp"
```

Classes

- class **COrQueryNode**

  Query node for OR logical connector of queries.

7.36 Parser.y++ File Reference

```
#include "ParserAux.hpp"
```

Defines

- #define **yylex** pLexer → yylex

Functions

- module_declaration **TPtrIdentifier** ($5))
- module_notification **TPtrCodeBlock** ($5))
- ms_transformer_chain **TPtrTransformer** ($3))
- query **TPtrIdentifiers** ($3)
- **push_back** (TPtrIdentifier($1))

Variables

- statement **__pad0__**
- module_declaration **__pad1__**
- module_notification **__pad2__**
- ms_transformer **__pad3__**
- ms_transformer_chain **__pad4__**
- ms_transformer_set **__pad5__**
- ms_transformer_schain **__pad6__**
- ms_transformer_single **__pad7__**
- rule **__pad8__**
- query_node **__pad9__**
- query **__pad10__**
- update **__pad11__**
- free_variables_decl **__pad12__**
- variables **__pad13__**

7.36.1 Define Documentation

7.36.1.1 #define yylex pLexer → yylex

7.36.2 Function Documentation

7.36.2.1 push_back (TPtrIdentifier($1))

7.36.2.2 module_notification TPtrCodeBlock ($ *5*)

7.36.2.3 module_declaration TPtrIdentifier ($ *5*)

Type Constraints

7.36.2.4 query TPtrIdentifiers ($ *3*)

7.36.2.5 ms_transformer_chain TPtrTransformer ($ *3*)

Type Constraints

7.36.3 Variable Documentation

7.36.3.1 statement __pad0__

Definition at line 8124 of file Parser.y++.

7.36.3.2 query __pad10__

Definition at line 8283 of file Parser.y++.

7.36.3.3 update __pad11__

Definition at line 8301 of file Parser.y++.

7.36.3.4 free_variables_decl __pad12__

Definition at line 8315 of file Parser.y++.

7.36.3.5 variables __pad13__

Definition at line 8329 of file Parser.y++.

7.36.3.6 module_declaration __pad1__

Definition at line 8138 of file Parser.y++.

7.36.3.7 module_notification __pad2__

Definition at line 8146 of file Parser.y++.

7.36.3.8 ms_transformer __pad3__

Definition at line 8169 of file Parser.y++.

7.36.3.9 ms_transformer_chain __pad4__

Definition at line 8183 of file Parser.y++.

7.36.3.10 ms_transformer_set __pad5__

Definition at line 8196 of file Parser.y++.

7.36.3.11 ms_transformer_schain __pad6__

Definition at line 8210 of file Parser.y++.

7.36.3.12 ms_transformer_single __pad7__

Definition at line 8220 of file Parser.y++.

7.36.3.13 rule __pad8__

Definition at line 8242 of file Parser.y++.

7.36.3.14 query_node __pad9__

Definition at line 8257 of file Parser.y++.

7.37 ParserAux.cpp File Reference

```
#include "ParserAux.hpp"
#include "Error.hpp"
#include "Parser.h++"
#include <sstream>
```

7.38 ParserAux.hpp File Reference

```
#include <string>
#include <boost/shared_ptr.hpp>
#include <istream>
#include <FlexLexer.h>
#include "LocationTracker.hpp"
#include "CodeBlock.hpp"
#include "Identifier.hpp"
#include "ModuleDeclaration.hpp"
#include "ModuleNotification.hpp"
#include "Program.hpp"
#include "Expression.hpp"
#include "Transformer.hpp"
#include "QueryNode.hpp"
#include "TransformerChain.hpp"
#include "TransformerSet.hpp"
#include "Rule.hpp"
#include "ElseRule.hpp"
#include "TrivialUpdate.hpp"
#include "ExplicitUpdate.hpp"
#include "AndQueryNode.hpp"
#include "OrQueryNode.hpp"
#include "NotQueryNode.hpp"
#include "TrivialQuery.hpp"
#include "ExplicitQuery.hpp"
```

Classes

- class **CJazzykLexer**

  Specialisation of the standard Flex C++ yyFlexLexer class.

Typedefs

- typedef boost::shared_ptr< **CJazzykLexer** > **TPtrLexer**

  Pointer to the Lexer object.

7.38.1 Typedef Documentation

7.38.1.1 typedef boost::shared_ptr<CJazzykLexer> TPtrLexer

Pointer to the Lexer object.

Application creates the Lexer instance and passes it to the parser which then uses it for scanning the input.

Definition at line 153 of file ParserAux.hpp.

7.39 PrettyPrinter.cpp File Reference

```
#include "PrettyPrinter.hpp"
#include "ParserAux.hpp"
```

7.40 PrettyPrinter.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "Traverser.hpp"
#include <iostream>
#include <string>
```

Classes

- class **CPrettyPrinter**
  Jazzyk program rretty printig service class.

7.41 Program.cpp File Reference

```
#include "Program.hpp"
#include "IdentifierMap.hpp"
#include "ModuleDeclaration.hpp"
#include "ModuleNotification.hpp"
#include "TransformerSet.hpp"
#include "Error.hpp"
#include "ModuleManager.hpp"
#include <sstream>
```

7.42 Program.hpp File Reference

`#include "ExpressionsFwd.hpp"`

`#include "ModuleDeclaration.hpp"`

Classes

- class **CProgram**

  The Jazzyk program backend structure.

Typedefs

- typedef boost::shared_ptr< **CProgram** > **TPtrProgram**

  Smart pointer type definition to ***CProgram*** *(*p. *125).*

7.42.1 Typedef Documentation

7.42.1.1 typedef boost::shared_ptr<CProgram> TPtrProgram

Smart pointer type definition to **CProgram** (p. 125).

Definition at line 133 of file Program.hpp.

7.43 QueryNode.hpp File Reference

```
#include "Expression.hpp"
#include "Context.hpp"
```

Classes

- class **CQueryNode**

  Query node abstract base class.

7.44 Rule.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "Transformer.hpp"
```

Classes

- class **CRule**

  If-then rule mental state transformer.

7.45 ShmClientMgr.cpp File Reference

```
#include "ShmClientMgr.hpp"
```

7.46 ShmClientMgr.hpp File Reference

```
#include "ShmemManager.hpp"
```

Classes

- class **CShmClientMgr**

  Client side interprocess communication manager.

7.47 ShmemManager.cpp File Reference

```
#include <sstream>
#include <string>
#include <iostream>
#include "ShmemManager.hpp"
#include "boost/interprocess/sync/named_mutex.hpp"
#include "boost/interprocess/sync/scoped_lock.hpp"
```

Functions

- static const std::string **g_szRequestConditionSuffix** ("reqcond")

  Constants for named condition type name suffixes.

- static const std::string **g_szResponseConditionSuffix** ("respcond")
- static const std::string **g_szReadySemaphoreSuffix** ("readysemaphore")
- static const std::string **g_szMemorySuffix** ("memory")
- static const std::string **g_szMutexSuffix** ("mutex")
- static const std::string **g_szRequestSuffix** ("request")

  Suffix of the shared request/response instances name.

- static const std::string **g_szResponseSuffix** ("response")

7.47.1 Function Documentation

7.47.1.1 static const std::string g_szMemorySuffix ("memory") `[static]`

Referenced by CShmemManager::getMemoryID().

7.47.1.2 static const std::string g_szMutexSuffix ("mutex") `[static]`

Referenced by CShmemManager::getMutexID().

7.47.1.3 static const std::string g_szReadySemaphoreSuffix ("readysemaphore") `[static]`

Referenced by CShmemManager::SModuleSync::getReadySemaphoreID().

7.47.1.4 static const std::string g_szRequestConditionSuffix ("reqcond") `[static]`

Constants for named condition type name suffixes.

Referenced by CShmemManager::SModuleSync::getRequestConditionID().

7.47.1.5 static const std::string g_szRequestSuffix ("request") [static]

Suffix of the shared request/response instances name.

Referenced by CShmemManager::getRequestID().

7.47.1.6 static const std::string g_szResponseConditionSuffix ("respcond") [static]

Referenced by CShmemManager::SModuleSync::getResponseConditionID().

7.47.1.7 static const std::string g_szResponseSuffix ("response") [static]

Referenced by CShmemManager::getResponseID().

7.48 ShmemManager.hpp File Reference

```
#include <string>
#include <boost/shared_ptr.hpp>
#include "IdentifierMap.hpp"
#include "ModuleCommData.hpp"
```

Classes

- class **CShmemManager**

  Service managing the shared memory between the main process and plug-in processes.

- struct **CShmemManager::SModuleSync**

  Synchronisation conditions structure.

- struct **ShmemLock**

  Specialised shared memory lock.

7.49 ShmServerMgr.cpp File Reference

```
#include <sys/types.h>
#include <time.h>
#include <unistd.h>
#include "boost/date_time/posix_time/posix_time.hpp"
#include <string>
#include <sstream>
#include "Identifier.hpp"
#include "ShmServerMgr.hpp"
#include "Error.hpp"
```

Functions

- static const std::string **g_szSharedMemoryPrefix** ("jazzyk_")
  Application shared memory prefix constant.

7.49.1 Function Documentation

7.49.1.1 static const std::string g_szSharedMemoryPrefix ("jazzyk_") `[static]`

Application shared memory prefix constant.

Referenced by CShmServerMgr::initialize().

7.50 ShmServerMgr.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "ShmemManager.hpp"
#include "ModuleCommData.hpp"
```

Classes

- class **CShmServerMgr**

  Server side interprocess communication manager.

7.51 SingleModule.cpp File Reference

```
#include "SingleModule.hpp"
#include "ShmClientMgr.hpp"
#include "Error.hpp"
#include "Logging.hpp"
#include <ltdl.h>
#include <string>
#include <vector>
```

Functions

- static const std::string **cszLibNamePrefix** ("libjz")
- static const std::string **cszLibNameSuffix** ("")

7.51.1 Function Documentation

7.51.1.1 static const std::string cszLibNamePrefix ("libjz") `[static]`

Referenced by CSingleModule::loadDll().

7.51.1.2 static const std::string cszLibNameSuffix ("") `[static]`

Referenced by CSingleModule::loadDll().

7.52 SingleModule.hpp File Reference

```
#include "jazzyk_common.hpp"
#include "ExpressionsFwd.hpp"
#include "ModuleCommData.hpp"
#include <ltdl.h>
#include <string>
#include <boost/shared_ptr.hpp>
```

Classes

- class **CSingleModule**

  Wrapper for a KR module.

7.53 Transformer.hpp File Reference

```
#include "visitor.hpp"
#include "Expression.hpp"
#include "Context.hpp"
```

Classes

- class **CTransformer**

  Abstract class for all the various types of mental state transformers.

7.54 TransformerChain.cpp File Reference

```
#include "TransformerChain.hpp"
```

7.55 TransformerChain.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "Transformer.hpp"
```

Classes

- class **CTransformerChain**

  Chain of mental state transformers.

7.56 TransformerSet.cpp File Reference

```
#include "TransformerSet.hpp"
```

7.57 TransformerSet.hpp File Reference

```
#include "ExpressionsFwd.hpp"
#include "Transformer.hpp"
```

Classes

- class **CTransformerSet**

  Set of mental state transformers.

7.58 Traverser.cpp File Reference

```
#include <algorithm>
#include "Traverser.hpp"
#include "ParserAux.hpp"
```

7.59 Traverser.hpp File Reference

```
#include "visitor.hpp"
#include "ExpressionsFwd.hpp"
#include "Context.hpp"
```

Classes

- class **CTraverser**

  Program transformer tree traversal abstract class.

7.60 TrivialQuery.hpp File Reference

```
#include "QueryNode.hpp"
```

Classes

- class **CTrueQuery**

  Trivial True query.

- class **CFalseQuery**

  Trivial False query.

7.61 TrivialUpdate.hpp File Reference

```
#include "Transformer.hpp"
```

Classes

- class **CNopUpdate**

  Empty update class implementation.

- class **CExitUpdate**

  Exit command mental state transformer inplementation.

7.62 visitor.hpp File Reference

`#include <stdexcept>`

Classes

- class **base_visitor**

  Visitor pattern library.

- class **visitor< T, R >**

  Visitor class template.

- class **visitor_arg< T, A, R >**

  Visitor passing an argument class template.

- class **visitable< R >**

  *Base class for **visitable** (p. 214) classes.*

- class **visitable_arg< A, R >**

  *Version of **visitable** (p. 214) class with argument.*

Defines

- #define **DECLARE_VISITABLE**()
- #define **DECLARE_VISITABLE_ARG**()
- #define **DECLARE_VISITABLE**()
- #define **DECLARE_VISITABLE_ARG**()
- #define **DECLARE_VISITABLE**()

  Provides the code to be inserted into each visited hierarchy subclass.

- #define **DECLARE_VISITABLE_ARG**()

  Provides the code to be inserted into each visited hierarchy sublass for accepting visitors with argument.

7.62.1 Define Documentation

7.62.1.1 #define DECLARE_VISITABLE()

Value:

```
public: \
        virtual TReturnType Accept(base_visitor& guest) \
        { return AcceptImpl(*this, guest); }
```

Provides the code to be inserted into each visited hierarchy subclass.

Definition at line 208 of file visitor.hpp.

7.62.1.2 #define DECLARE_VISITABLE()

Value:

```
public: \
        virtual TReturnType Accept(base_visitor& guest) \
        { return AcceptImpl(*this, guest); }
```

7.62.1.3 #define DECLARE_VISITABLE()

Value:

```
public: \
        virtual TReturnType Accept(base_visitor& guest) \
        { return AcceptImpl(*this, guest); }
```

7.62.1.4 #define DECLARE_VISITABLE_ARG()

Value:

```
public: \
        virtual TReturnType Accept(base_visitor& guest, TArgType argument) \
        { return AcceptImpl(*this, guest, argument); }
```

Provides the code to be inserted into each visited hierarchy sublass for accepting visitors with argument.

Definition at line 214 of file visitor.hpp.

7.62.1.5 #define DECLARE_VISITABLE_ARG()

Value:

```
public: \
        virtual TReturnType Accept(base_visitor& guest, TArgType argument) \
        { return AcceptImpl(*this, guest, argument); }
```

7.62.1.6 #define DECLARE_VISITABLE_ARG()

Value:

```
public: \
        virtual TReturnType Accept(base_visitor& guest, TArgType argument) \
        { return AcceptImpl(*this, guest, argument); }
```

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