Sparksee

5.2.0

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3.1 Class List

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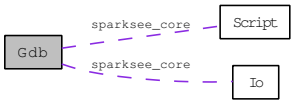
4 Module Documentation

4.1 Gdb

Collaboration diagram for Gdb:



Files

- file common.h

  It contains common includes and definitions as well as set basic data types and enumerations.

- file Database.h

  It contains the definition of Database class as well as some other related classes.

- file Exception.h

  It contains a hierarchy of exceptions.

- file Export.h

  It contains the declaration of ExportManager interface and GraphExport, NodeExport, etc classes.

- file Graph.h

  It contains the definition of Graph class.

- file Graph_data.h

  It contains the definition of some Graph-related classes.

- file Handler.h

  It contains the definition of Handler class.

- file Objects.h

  It contains the definition of Object class.

- file ObjectsIterator.h

  It contains the definition of ObjectsIterator class.

- file Query.h

  It contains the definition of Query class.

- file QueryContext.h

  It contains the definition of QueryContext class.

- file ResultSet.h

  It contains the definition of ResultSet class.

- file Session.h

  It contains the definition of Session class.

- file Sparksee.h

  It contains the declaration of Sparksee and SparkseeConfig classes.

- file Stream.h

  It contains the definition of stream classes.

- file Value.h

  It contains the definitio of Value class.

- file Values.h

  It contains the definition of Values class.

- file ValuesIterator.h

  It contains the definition of ValuesIterator class.

Classes

- class PlatformStatistics

  Platform data and statistics.

- class Platform

  Platform class.

- class DatabaseStatistics

  Database statistics.

- class Database

  Database class.

- class Exception

  Exception class.

- class IOException

  IO exception class.

- class FileNotFoundException

  File not found exception class.

- class NoSuchElementException

  No such element exception class.

- class Error

  Error class.

- class SystemError

System error class.

- class AppError

  Application error class.

- class WrongArgumentError

  Wrong argument error class.

- class IOError

  IO error class.

- class LicenseError

  License error class.

- class UnsupportedOperationError

  Unsupported operation error class.

- class QueryException

  Query exception class.

- class GraphExport

  Stores the graph exporting values.

- class NodeExport

  Stores the node exporting values.

- class EdgeExport

  Stores edge exporting values.

- class ExportManager

  Defines how to export a graph to an external format.

- class DefaultExport

  Default implementation for ExportManager class.

- class Graph

  Graph class.

- class Type

  Type data class.

- class TypeList

  Sparksee type identifier list.

- class TypeListIterator

  TypeList iterator class.

- class Attribute

  Attribute data class.

- class AttributeList
  Sparksee attribute identifier list.
- class AttributeListIterator
  AttributeList iterator class.
- class OIDList
  Sparksee object identifier list.
- class OIDListIterator
  OIDList iterator class.
- class AttributeStatistics
  Attribute statistics class.
- class EdgeData
  Edge data class.
- class StringList
  String list.
- class StringListIterator
  StringList iterator class.
- class BooleanList
  Boolean list.
- class BooleanListIterator
  BooleanList iterator class.
- class Int32List
  Sparksee 32-bit signed integer list.
- class Int32ListIterator
  Int32List iterator class.
- class Handler< T >
  Handles a reference.
- class Objects
  Object identifier set class.
- class ObjectsIterator
  ObjectsIterator class.
- class QueryStream
  Query stream interface.
- class Query
  Query class.

- class QueryContext
  Query context interface.
- class ResultSet
  ResultSet class.
- class ResultSetList
  ResultSet list.
- class ResultSetListIterator
  ResultSetList iterator class.
- class Session
  Session class.
- class SparkseeProperties
  Sparksee properties file.
- class SparkseeConfig
  Sparksee configuration class.
- class Sparksee
  Sparksee class.
- class TextStream
  TextStream class.
- class Value
  Value class.
- class ValueList
  Value list.
- class ValueListIterator
  ValueList iterator class.
- class Values
  Value set class.
- class ValuesIterator
  Values iterator class.

Defines

- #define BEGIN_SPARKSEE_NAMESPACE namespace sparksee {
  Begining macro for the sparksee namespace.
- #define END_SPARKSEE_NAMESPACE }

Ending macro for the sparksee namespace.

- #define BEGIN_SPARKSEE_GDB_NAMESPACE BEGIN_SPARKSEE_NAMESPACE namespace gdb {

  Begining macro for the sparksee::gdb namespace.

- #define END_SPARKSEE_GDB_NAMESPACE END_SPARKSEE_NAMESPACE }

  Ending macro for the sparksee::gdb namespace.

- #define BEGIN_SPARKSEE_IO_NAMESPACE BEGIN_SPARKSEE_NAMESPACE namespace io {

  Begining macro for the sparksee::io namespace.

- #define END_SPARKSEE_IO_NAMESPACE END_SPARKSEE_NAMESPACE }

  Ending macro for the sparksee::io namespace.

- #define BEGIN_SPARKSEE_SCRIPT_NAMESPACE BEGIN_SPARKSEE_NAMESPACE namespace script {

  Begining macro for the sparksee::script namespace.

- #define END_SPARKSEE_SCRIPT_NAMESPACE END_SPARKSEE_NAMESPACE }

  Ending macro for the sparksee::script namespace.

- #define BEGIN_SPARKSEE_ALGORITHMS_NAMESPACE BEGIN_SPARKSEE_NAMESPACE namespace algorithms {

  Begining macro for the sparksee::algorithms namespace.

- #define END_SPARKSEE_ALGORITHMS_NAMESPACE END_SPARKSEE_NAMESPACE }

  Ending macro for the sparksee::algorithms namespace.

- #define BEGIN_SPARKSEE_TEST_NAMESPACE BEGIN_SPARKSEE_NAMESPACE namespace test {

  Begining macro for the sparksee::test namespace.

- #define END_SPARKSEE_TEST_NAMESPACE END_SPARKSEE_NAMESPACE }

  Ending macro for the sparksee::test namespace.

- #define BEGIN_SPARKSEE_QUERY_STREAMS_NAMESPACE BEGIN_SPARKSEE_NAMESPACE namespace query_streams {

  Begining macro for the sparksee::algorithms namespace.

- #define END_SPARKSEE_QUERY_STREAMS_NAMESPACE END_SPARKSEE_NAMESPACE }

  Ending macro for the sparksee::query_streams namespace.

Typedefs

- typedef bool bool_t

  Boolean type.

- typedef char char_t
  Character type.
- typedef wchar_t uchar_t
  Unicode character type.
- typedef signed int int32_t
  32-bit signed integer type.
- typedef signed long long int64_t
  64-bit signed integer type.
- typedef double double64_t
  64-bit double type.
- typedef int32_t type_t
  Graph node or edge type type.
- typedef int32_t attr_t
  Graph attribute type.
- typedef int64_t oid_t
  Graph OID type.
- typedef int32_t ColorRGB
  Color codified as RGB 32-bit int.

Enumerations

- enum ObjectType {
  Node,
  Edge }
  Object type enumeration.
- enum DataType {
  Boolean,
  Integer,
  Long,
  Double,
  Timestamp,
  String,
  Text,
  OID }
  Data type (domain) enumeration.

- enum Condition {
  Equal,
  GreaterEqual,
  GreaterThan,
  LessEqual,
  LessThan,
  NotEqual,
  Like,
  LikeNoCase,
  Between,
  RegExp }
  Condition operators enumeration.

- enum Order {
  Ascendent,
  Descendent }
  Order enumeration.

- enum EdgesDirection {
  Ingoing,
  Outgoing,
  Any }
  Edges direction enumeration.

- enum AttributeKind {
  Basic,
  Indexed,
  Unique }
  Attribute kind enumeration.

- enum LogLevel {
  Off,
  Severe,
  Warning,
  Info,
  Config,
  Fine,
  Debug }
  Log level enumeration.

- enum ExportType {
  Graphviz,
  GraphML,
  YGraphML }

Export type.

- enum NodeShape {
  Box,
  Round }
  Node shape.

Functions

- std::wostream & operator<< (std::wostream &wostrm, const enum DataType &dt)
  Easy STL printing operator redefinition.
- std::wostream & operator<< (std::wostream &wostrm, const enum AttributeKind &ak)
  Easy STL printing operator redefinition.

Variables

- BEGIN_SPARKSEE_GDB_NAMESPACE typedef unsigned char byte_t
  Byte type.

4.1.1 Typedef Documentation

4.1.1.1 typedef int32_t ColorRGB

Color codified as RGB 32-bit int.

Bits 24-31 are alpha, 16-23 are red, 8-15 are green, 0-7 are blue.

4.1.2 Enumeration Type Documentation

4.1.2.1 enum AttributeKind

Attribute kind enumeration.

It determines the indexing-capabilities of an attribute.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

Enumerator:

Basic Basic attribute (non indexed attribute).

Indexed Indexed attribute.

Unique Unique attribute (indexed + unique restriction).
Unique restriction sets two objects cannot have the same value for an attribute but NULL.

4.1.2.2 enum Condition

Condition operators enumeration.

It is mainly used in the attribute-based graph select operations.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

Enumerator:

Equal Equal condition (==).

Null values can be used together with this condition to retrieve all objects having a null value for an attribute.

GreaterEqual Greater or equal condition (>=).

Null values cannot be used together with this condition.

GreaterThan Greater than condition (>).

Null values cannot be used together with this condition.

LessEqual Less or equal condition (<=).

Null values cannot be used together with this condition.

LessThan Less than condition (<).

Null values cannot be used together with this condition.

NotEqual Not equal condition (!=).

Null values can be used together with this condition to retrieve all objects having a non-null value for an attribute.

Like Substring condition.

Null values cannot be used together with this condition.

This condition can just be used together with String values. It allows for searching substrings (case sensitive). Ex:

```
'AAABBBCCCD' Like 'BBB'   returns TRUE
'AAABBBCCCD' Like 'bbb'   returns FALSE
'AAABBBCCCD' Like 'E'     returns FALSE
```

LikeNoCase Substring (no case sensitive) condition.

Null values cannot be used together with this condition.

This condition can just be used together with String values. It allows for searching substrings (no case sensitive). Ex:

```
'AAABBBCCCD' LikeNoCase 'BBB'   returns TRUE
'AAABBBCCCD' LikeNoCase 'bbb'   returns TRUE
'AAABBBCCCD' LikeNoCase 'E'     returns FALSE
```

Between In range operator condition ([x,y]).

Null values cannot be used together with this condition.

RegExp Regular expression condition.

Null values cannot be used together with this condition.

This condition can just be used together with String values.

Regular expression format conforms most of the POSIX Extended Regular Expressions so it is case sensitive.

See the 'Regular expressions' section in the 'SPARKSEE User Manual' for details.

4.1.2.3 enum DataType

Data type (domain) enumeration.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

Enumerator:

Boolean Boolean data type.

Integer 32-bit signed integer data type.

Long 64-bit signed integer data type.

Double 64-bit signed double data type.

Timestamp Distance from Epoch (UTC) time in milliseconds precision.

It just works properly with timestamps in the range ['1970-01-01 00:00:01' UTC, '2038-01-19 03:14:07' UTC].

String Unicode string data type.

2048 characters maximum length.

Text Large unicode character object (CLOB) data type.

See also:

TextStream

OID Object identifier (OID) data type.

4.1.2.4 enum EdgesDirection

Edges direction enumeration.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

Enumerator:

Ingoing In-going edges.

Outgoing Out-going edges.

Any In-going or out-going edges.

4.1.2.5 enum ExportType

Export type.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

Enumerator:

Graphviz Export to Graphviz format.

Graphviz home page: http://www.graphviz.org

GraphML Export to GraphML format.

GraphML home page: http://graphml.graphdrawing.org/

YGraphML Export to YGRAPHML format.

It is an GraphML format extended with a set of yWorks ("http://www.yworks.com") extensions. Thus, it allows for the visualization of the exported graph with the public yEd visualization tool ("http://www.yworks.com/products/yed").

4.1.2.6 enum LogLevel

Log level enumeration.

Log level priority order is as follows, from minimum to maximum log information: Off (log is disabled), Severe, Warning, Info, Config, Fine, Debug.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

Enumerator:

Off Disable log.

Severe Severe log level.

This is the lower log level, just errors are shown.

Warning Warning log level.

Errors and warnings are shown.

Info Info log level.

Errors, warnings and information messages are shown.

Config Config log level.

Errors, warnings, information messages and configuration details of the different components are shown.

Fine Fine log level.

This is the higher and finest public log level, everything is dumped to the log.

Debug Debug log level.

This is for Sparksee development purposes and just works with debug versions of the library.

4.1.2.7 enum NodeShape

Node shape.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

Enumerator:

Box Box shape.

Round Round shape.

4.1.2.8 enum ObjectType

Object type enumeration.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

Enumerator:

Node Node object type.
Edge Edge object type.

4.1.2.9 enum Order

Order enumeration.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

Enumerator:

Ascendent From lower to higher.
Descendent From higher to lower.

4.1.3 Function Documentation

4.1.3.1 std::wostream& operator<< (std::wostream & *wostrm*, const enum AttributeKind & *ak*)

Easy STL printing operator redefinition.

It allows to do: ... << sparksee::gdb::Basic << ...

Parameters:

wostrm A widechar oputput stream
ak [in] An attribute kind.

Returns:

Returns the widechar output stream with the AttributeKind written.

4.1.3.2 std::wostream& operator<< (std::wostream & *wostrm*, const enum DataType & *dt*)

Easy STL printing operator redefinition.

It allows to do: ... << sparksee::gdb::String << ...

Parameters:

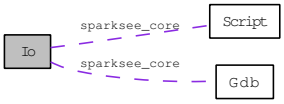
wostrm A widechar oputput stream
dt [in] An DataType.

Returns:

Returns the widechar output stream with the DataType written.

4.2 Io

Collaboration diagram for Io:



Files

- file CSVReader.h

  It contains the definition of CSVReader class.

- file CSVWriter.h

  It contains the definition of CSVWriter class.

- file EdgeTypeExporter.h

  It contains the definition of EdgeTypeExporter class.

- file EdgeTypeLoader.h

  It contains the definition of EdgeTypeLoader class.

- file NodeTypeExporter.h

  It contains the definition of NodeTypeExporter class.

- file NodeTypeLoader.h

  It contains the definition of NodeTypeLoader class.

- file RowReader.h

  It contains the definition of RowReader interface.

- file RowWriter.h

  It contains the definition of RowWriter interface.

- file TypeExporter.h

  It contains the definition of TypeExporter classes.

- file TypeLoader.h

  It contains the definition of TypeLoader classes.

Classes

- class CSVReader

  CSVReader interface.

- class CSVWriter

  CSVWriter interface.

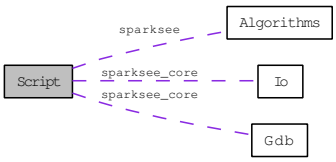
- class EdgeTypeExporter
  EdgeTypeExporter class.
- class EdgeTypeLoader
  EdgeTypeLoader class.
- class NodeTypeExporter
  NodeTypeExporter class.
- class NodeTypeLoader
  NodeTypeLoader class.
- class RowReader
  RowReader interface.
- class RowWriter
  RowWriter interface.
- class TypeExporterEvent
  Provides information about the progress of an TypeExproter instance.
- class TypeExporterListener
  Interface to be implemented to receive TypeExporterEvent events from a TypeExporter.
- class TypeExporter
  Base TypeExporter class.
- class TypeLoaderEvent
  Provides information about the progress of a TypeLoader instance.
- class TypeLoaderListener
  Interface to be implemented to receive TypeLoaderEvent events from a TypeLoader.
- class TypeLoader
  Base TypeLoader class.

Functions

- std::wostream & operator<< (std::wostream &wostrm, const TypeExporterEvent &ev)
  Easy STL printing operator redefinition.
- std::wostream & operator<< (std::wostream &wostrm, const TypeLoaderEvent &ev)
  Easy STL printing operator redefinition.

4.3 Script

Collaboration diagram for Script:



Files

- file ScriptParser.h
  It contains the declaration of ScriptParser class.

Classes

- class ScriptParser
  ScriptParser.

Functions

- std::wostream & operator<< (std::wostream &wostrm, const enum ScriptParserState &state)
  Easy STL printing operator redefinition.

4.3.1 Function Documentation

4.3.1.1 std::wostream& operator<< (std::wostream & *wostrm*, const enum ScriptParserState & *state*)

Easy STL printing operator redefinition.

It allows to do: ... << sparksee::script::SyntaxError << ...

Parameters:

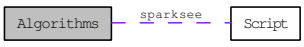
wostrm A widechar oputput stream
state [in] A ScriptParserState.

Returns:

Returns the widechar output stream with the ScriptParserState written.

4.4 Algorithms

Collaboration diagram for Algorithms:



Files

- file CommunitiesSCD.h

  It contains the definition of CommunitiesSCD class.

- file CommunityDetection.h

  It contains the definition of CommunityDetection class.

- file ConnectedComponents.h

  It contains the definition of ConnectedComponents class.

- file Connectivity.h

  It contains the definition of Connectivity class.

- file Context.h

  It contains the definition of Context class.

- file DisjointCommunities.h

  It contains the definition of DisjointCommunities class.

- file DisjointCommunityDetection.h

  It contains the definition of DisjointCommunityDetection class.

- file ShortestPath.h

  It contains the definition of ShortestPath class.

- file SinglePairShortestPath.h

  It contains the definition of SinglePairShortestPath class.

- file SinglePairShortestPathBFS.h

  It contains the definition of SinglePairShortestPathBFS class.

- file SinglePairShortestPathDijkstra.h

  It contains the definition of SinglePairShortestPathDijkstra class.

- file StrongConnectivity.h

  It contains the definition of StrongConnectivity class.

- file StrongConnectivityGabow.h

  It contains the definition of StrongConnectivityGabow class.

- file Traversal.h

  It contains the definition of Traversal class.

- file TraversalBFS.h

  It contains the definition of TraversalBFS class.

- file TraversalDFS.h

  It contains the definition of TraversalDFS class.

- file WeakConnectivity.h

  It contains the definition of WeakConnectivity class.

- file WeakConnectivityDFS.h

  It contains the definition of WeakConnectivityDFS class.

Classes

- class CommunitiesSCD

  CommunitiesSCD class.

- class CommunityDetection

  CommunityDetection class.

- class ConnectedComponents

  ConnectedComponents class.

- class Connectivity

  Connectivity class.

- class Context

  Context class.

- class DisjointCommunities

  DisjointCommunities class.

- class DisjointCommunityDetection

  DisjointCommunityDetection class.

- class ShortestPath

  ShortestPath class.

- class SinglePairShortestPath

  SinglePairShortestPath class.

- class SinglePairShortestPathBFS

  SinglePairShortestPathBFS class.

- class SinglePairShortestPathDijkstra

  SinglePairShortestPathDijkstra class.

- class StrongConnectivity

  StrongConnectivity class.

- class StrongConnectivityGabow

  This class can be used to solve the problem of finding strongly connected components in a **directed** *graph.*

- class Traversal

Traversal class.

- class TraversalBFS

  Breadth-First Search implementation of Traversal.

- class TraversalDFS

  Depth-First Search (DFS) implementation of Traversal.

- class WeakConnectivity

  WeakConnectivity class.

- class WeakConnectivityDFS

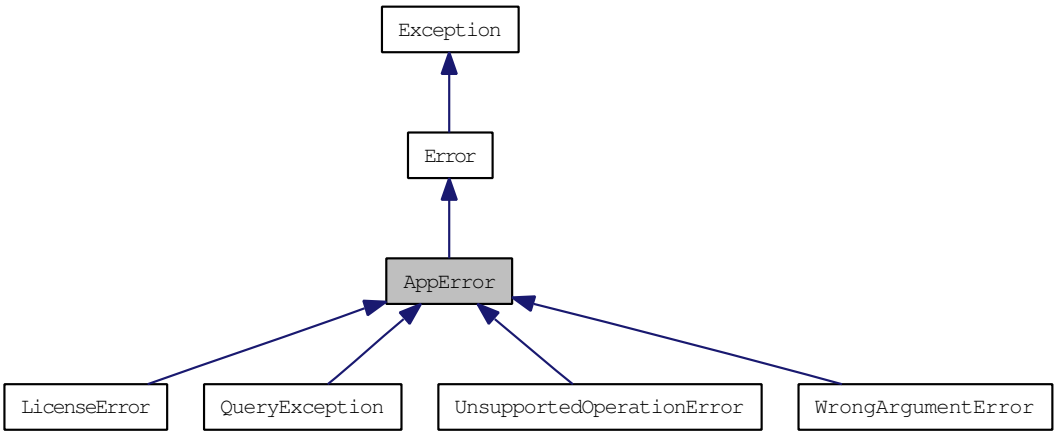
  WeakConnectivityDFS class.

5 Class Documentation

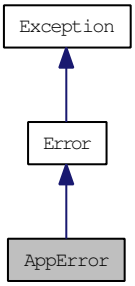
5.1 AppError Class Reference

Application error class.

Inheritance diagram for AppError:



Collaboration diagram for AppError:



Public Member Functions

- AppError ()
  Creates a new instance.
- AppError (const std::string &mess)
  Creates a new instance.
- virtual ~AppError ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.
- void SetMessage (const std::string &mess)
  Sets the message of the exception.

Static Public Member Functions

- static Error NewError (int32_t coreErrorCode)
  Creates a new Error instance from a sparksee_core error code.

Protected Attributes

- std::string message
  Message of the exception.

5.1.1 Detailed Description

Application error class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.1.2 Constructor & Destructor Documentation

5.1.2.1 AppError::AppError (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.1.3 Member Function Documentation

5.1.3.1 static Error Error::NewError (int32_t *coreErrorCode*) [static, inherited]

Creates a new Error instance from a sparksee_core error code.

Parameters:

coreErrorCode [in] Sparkseecore error code.

Returns:

Depending on the given sparksee_core error, this may return an Error instance or an specific Error subclass instance.

5.1.3.2 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.1.3.3 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

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

- Exception.h

5.2 Attribute Class Reference

Attribute data class.

Public Member Functions

- ~Attribute ()
  Destructor.
- attr_t GetId () const
  Gets the Sparksee attribute identifier.
- type_t GetTypeId () const
  Gets the Sparksee type identifier.

- const std::wstring & GetName () const
  Gets the unique attribute name.
- DataType GetDataType () const
  Gets the data type.
- int64_t GetSize () const
  Gets the number of different values.
- int64_t GetCount () const
  Gets the number of non-NULL values.
- AttributeKind GetKind () const
  Gets the attribute kind.
- bool_t IsSessionAttribute () const
  Check if it's a session attribute or a persistent one.

Static Public Attributes

- static const attr_t InvalidAttribute
  Invalid attribute identifier constant.

Friends

- class Graph

5.2.1 Detailed Description

Attribute data class.

It contains information about an attribute.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.2.2 Member Function Documentation

5.2.2.1 attr_t Attribute::GetId () const [inline]

Gets the Sparksee attribute identifier.

Returns:

The Sparksee attribute identifier.

5.2.2.2 type_t Attribute::GetTypeId () const [inline]

Gets the Sparksee type identifier.

Returns:

The Sparksee type identifier.

5.2.2.3 const std::wstring& Attribute::GetName () const [inline]

Gets the unique attribute name.

Returns:

The unique attribute name.

5.2.2.4 DataType Attribute::GetDataType () const [inline]

Gets the data type.

Returns:

The DataType.

5.2.2.5 int64_t Attribute::GetSize () const [inline]

Gets the number of different values.

Returns:

The number of different values.

5.2.2.6 int64_t Attribute::GetCount () const [inline]

Gets the number of non-NULL values.

Returns:

The number of non-NULL values.

5.2.2.7 AttributeKind Attribute::GetKind () const [inline]

Gets the attribute kind.

Returns:

The AttributeKind.

5.2.2.8 bool_t Attribute::IsSessionAttribute () const [inline]

Check if it's a session attribute or a persistent one.

Returns:

True if it's a session attribute, or false otherwise.

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

- Graph_data.h

5.3 AttributeList Class Reference

Sparksee attribute identifier list.

Public Member Functions

- int32_t Count () const
  Number of elements in the list.
- AttributeListIterator * Iterator ()
  Gets a new AttributeListIterator.
- AttributeList ()
  Constructor.
- AttributeList (const std::vector< attr_t > &v)
  Constructor.
- void Add (attr_t attr)
  Adds a Sparksee attribute identifier at the end of the list.
- void Clear ()
  Clears the list.
- ~AttributeList ()
  Destructor.

5.3.1 Detailed Description

Sparksee attribute identifier list.

It stores a Sparksee attribute identifier list.

Use AttributeListIterator to access all elements into this collection.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.3.2 Constructor & Destructor Documentation

5.3.2.1 AttributeList::AttributeList ()

Constructor.

This creates an empty list.

5.3.2.2 AttributeList::AttributeList (const std::vector< attr_t > & *v*)

Constructor.

Parameters:

v [in] Vector.

5.3.3 Member Function Documentation

5.3.3.1 int32_t AttributeList::Count () const [inline]

Number of elements in the list.

Returns:

Number of elements in the list.

5.3.3.2 AttributeListIterator* AttributeList::Iterator ()

Gets a new AttributeListIterator.

Returns:

AttributeListIterator instance.

5.3.3.3 void AttributeList::Add (attr_t *attr*) [inline]

Adds a Sparksee attribute identifier at the end of the list.

Parameters:

attr [in] Sparksee attribute identifier.

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

- Graph_data.h

5.4 AttributeListIterator Class Reference

AttributeList iterator class.

Public Member Functions

- ~AttributeListIterator ()
  Destructor.
- attr_t Next ()
  Moves to the next element.
- bool_t HasNext ()
  Gets if there are more elements.

Friends

- class AttributeList

5.4.1 Detailed Description

AttributeList iterator class.

Iterator to traverse all the Sparksee attribute identifier into a AttributeList instance.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.4.2 Member Function Documentation

5.4.2.1 attr_t AttributeListIterator::Next () [inline]

Moves to the next element.

Returns:

The next element.

5.4.2.2 bool_t AttributeListIterator::HasNext () [inline]

Gets if there are more elements.

Returns:

TRUE if there are more elements, FALSE otherwise.

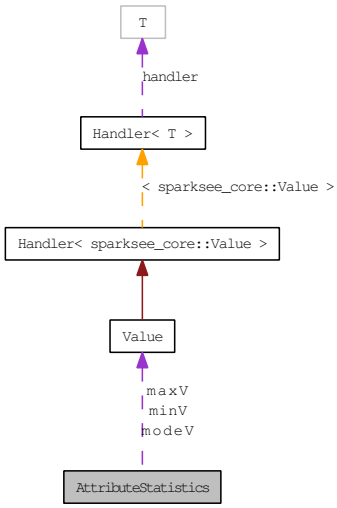
The documentation for this class was generated from the following file:

- Graph_data.h

5.5 AttributeStatistics Class Reference

Attribute statistics class.

Collaboration diagram for AttributeStatistics:



Public Member Functions

- ~AttributeStatistics ()
  Destructor.
- int64_t GetTotal () const
  Gets the number of objects with a non-NULL Value (BASIC statistic).
- int64_t GetNull () const
  Gets the number of objects NULL a Value (BASIC statistics).
- int64_t GetDistinct () const
  Gets the number of distinct values (BASIC statistics).
- const Value & GetMin () const
  Gets the minimum existing value (BASIC statistics).
- const Value & GetMax () const
  Gets the maximum existing value (BASIC statistics).
- int32_t GetMaxLengthString () const
  Gets the maximum length.
- int32_t GetMinLengthString () const
  Gets the minimum length.
- double64_t GetAvgLengthString () const

Gets the average length.

- const Value & GetMode () const
  Gets the mode.
- int64_t GetModeCount () const
  Gets the number of objects with a Value equal to the mode.
- double64_t GetMean () const
  Gets the mean or average.
- double64_t GetVariance () const
  Gets the variance.
- double64_t GetMedian () const
  Gets the median.

Friends

- class Graph

5.5.1 Detailed Description

Attribute statistics class.

It contains statistic data about an attribute.

Some fields are valid just for numerical attributes and others just for string attributes. Also, some statistics are considered BASIC because computing them do not require to traverse all the different values of the attribute. For each getter method the documentation tells if the statistic is BASIC or not. See the Graph class method getAttributeStatistics or check out the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.5.2 Member Function Documentation

5.5.2.1 int64_t AttributeStatistics::GetTotal () const [inline]

Gets the number of objects with a non-NULL Value (BASIC statistic).

Returns:

The number of objects with a non-NULL Value.

5.5.2.2 int64_t AttributeStatistics::GetNull () const [inline]

Gets the number of objects NULL a Value (BASIC statistics).

Returns:

The number of objects NULL a Value.

5.5.2.3 int64_t AttributeStatistics::GetDistinct () const [inline]

Gets the number of distinct values (BASIC statistics).

Returns:

The number of distinct values.

5.5.2.4 const Value& AttributeStatistics::GetMin () const [inline]

Gets the minimum existing value (BASIC statistics).

Returns:

The minimum existing value.

5.5.2.5 const Value& AttributeStatistics::GetMax () const [inline]

Gets the maximum existing value (BASIC statistics).

Returns:

The maximum existing value.

5.5.2.6 int32_t AttributeStatistics::GetMaxLengthString () const [inline]

Gets the maximum length.

If the attribute is not an string attribute, it just returns 0.

Returns:

The maximum length.

5.5.2.7 int32_t AttributeStatistics::GetMinLengthString () const [inline]

Gets the minimum length.

If the attribute is not an string attribute, it just returns 0.

Returns:

The minimum length.

5.5.2.8 double64_t AttributeStatistics::GetAvgLengthString () const [inline]

Gets the average length.

If the attribute is not an string attribute, it just returns 0.

Returns:

The average length.

5.5.2.9 const Value& AttributeStatistics::GetMode () const [inline]

Gets the mode.

Mode: Most frequent Value.

Returns:

The mode.

5.5.2.10 int64_t AttributeStatistics::GetModeCount () const [inline]

Gets the number of objects with a Value equal to the mode.

Returns:

The number of objects with a Value equal to the mode.

5.5.2.11 double64_t AttributeStatistics::GetMean () const [inline]

Gets the mean or average.

Mean or average: Sum of all Values divided by the number of observations.

It is computed just for numerical attributes.

Returns:

The mean.

5.5.2.12 double64_t AttributeStatistics::GetVariance () const [inline]

Gets the variance.

It is computed just for numerical attributes.

Returns:

The variance.

5.5.2.13 double64_t AttributeStatistics::GetMedian () const [inline]

Gets the median.

Median: Middle value that separates the higher half from the lower.

If a $<$ b $<$ c, then the median of the list {a, b, c} is b, and if a $<$ b $<$ c $<$ d, then the median of the list {a, b, c, d} is the mean of b and c, i.e. it is (b + c)/2

It is computed just for numerical attributes.

Returns:

The median.

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

- Graph_data.h

5.6 BooleanList Class Reference

Boolean list.

Public Member Functions

- int32_t Count () const
  Number of elements in the list.
- BooleanListIterator * Iterator ()
  Gets a new BooleanListIterator.
- BooleanList ()
  Constructor.
- BooleanList (const std::vector< bool_t > &v)
  Constructor.
- ~BooleanList ()
  Destructor.
- void Add (sparksee::gdb::bool_t value)
  Adds a Boolean at the end of the list.
- void Clear ()
  Clears the list.

5.6.1 Detailed Description

Boolean list.

It stores a Boolean list.

Use BooleanListIterator to access all elements into this collection.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.6.2 Constructor & Destructor Documentation

5.6.2.1 BooleanList::BooleanList ()

Constructor.

This creates an empty list.

5.6.2.2 BooleanList::BooleanList (const std::vector< bool_t > & *v*)

Constructor.

Parameters:

v [in] Vector.

5.6.3 Member Function Documentation

5.6.3.1 int32_t BooleanList::Count () const [inline]

Number of elements in the list.

Returns:

Number of elements in the list.

5.6.3.2 BooleanListIterator* BooleanList::Iterator ()

Gets a new BooleanListIterator.

Returns:

BooleanListIterator instance.

5.6.3.3 void BooleanList::Add (sparksee::gdb::bool_t *value*) [inline]

Adds a Boolean at the end of the list.

Parameters:

value [in] Boolean.

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

- Graph_data.h

5.7 BooleanListIterator Class Reference

BooleanList iterator class.

Public Member Functions

- ~BooleanListIterator ()
  Destructor.
- sparksee::gdb::bool_t Next ()
  Moves to the next element.
- bool_t HasNext ()
  Gets if there are more elements.

Friends

- class BooleanList

5.7.1 Detailed Description

BooleanList iterator class.

Iterator to traverse all the strings into a BooleanList instance.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.7.2 Member Function Documentation

5.7.2.1 sparksee::gdb::bool_t BooleanListIterator::Next () [inline]

Moves to the next element.

Returns:

The next element.

5.7.2.2 bool_t BooleanListIterator::HasNext () [inline]

Gets if there are more elements.

Returns:

TRUE if there are more elements, FALSE otherwise.

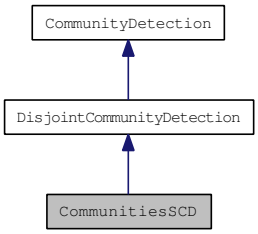
The documentation for this class was generated from the following file:

- Graph_data.h

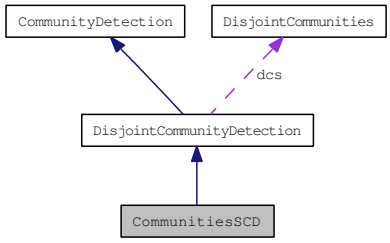
5.8 CommunitiesSCD Class Reference

CommunitiesSCD class.

Inheritance diagram for CommunitiesSCD:



Collaboration diagram for CommunitiesSCD:



Public Member Functions

- CommunitiesSCD (sparksee::gdb::Session &session)

  Creates a new instance of CommunitiesSCD.

- virtual ~CommunitiesSCD ()

  Destructor.

- void SetLookAhead (sparksee::gdb::int32_t lookahead)

  Sets the size of the lookahead iterations to look.

- void Run ()

  Executes the algorithm.

- virtual void AddEdgeType (sparksee::gdb::type_t type)

  Allows connectivity through edges of the given type.

- virtual void AddAllEdgeTypes ()

  Allows connectivity through all edge types of the graph.

- DisjointCommunities * GetCommunities ()

  Returns the results generated by the execution of the algorithm.

- void SetMaterializedAttribute (const std::wstring &attributeName)

  Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the disjoint communities found while executing this algorithm.

- virtual void AddNodeType (sparksee::gdb::type_t type)

  Allows connectivity through nodes of the given type.

- virtual void AddAllNodeTypes ()

  Allows connectivity through all node types of the graph.

- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)

  Set which nodes can't be used.

- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)

  Set which edges can't be used.

Protected Types

- typedef std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > EdgeTypes_t

  A type definition to store allowed edge types.

- typedef std::vector< sparksee::gdb::type_t > NodeTypes_t

  A type definition to store allowed node types.

Protected Member Functions

- void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection direction)

  Allows connectivity through edges of the given type.

- void AddAllEdgeTypes (sparksee::gdb::EdgesDirection direction)

  Allows connectivity through all edge types of the graph.

- void SetCommunity (sparksee::gdb::oid_t idNode)

  Assigns the current community to the given node.

- void AssertNotCommunityAttribute (const std::wstring &attributeName)

  Check that the given attribute name is not already in use.

- void CreateGlobalPersistentAttribute (const std::wstring &attributeName)

  Set a new persistent global attribute to store the disjoint communities information.

- void CreateGlobalTransientAttribute ()

  Set a new temporary global attribute to store the disjoint communities information.

- void RemoveGlobalAttribute ()

  Removes the global attribute where the disjoint communities information is stored.

- void AssertAddedEdges ()

  Check that edges had been added.

- void AssertAddedNodes ()

  Check that nodes had been added.

- void AssertNotComputed ()

  Check that the connectivity had not been calculated yet.

- void SetNodesNotVisited ()

  Set all the selected nodes in nodesNotVisited.

- void AssertComputed ()

  Check that the communities had been calculated.

- void AssertEdgeType (sparksee::gdb::type_t edgetype)

  Check that the given edge type is valid.

- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::attr_t attrCommunity
  common attribute where the connected component information is stored.
- std::wstring attrCommunityName
  name of the common attribute where the connected component information is stored.
- sparksee::gdb::int64_t actualCommunity
  Current community identifier.
- sparksee::gdb::bool_t matResults
  Materialized results.
- DisjointCommunities * dcs
  The calculated communities information.
- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- EdgeTypes_t edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::Objects * nodesNotVisited
  Identifiers of the nodes not visited.
- sparksee::gdb::bool_t computed
  True if the connectivity has been calculated.
- sparksee::gdb::Objects * excludedNodes

The set of excluded nodes.

- sparksee::gdb::Objects * excludedEdges
  The set of excluded edges.

5.8.1 Detailed Description

CommunitiesSCD class.

Implementation of the community detection algorithm "Scalable Community Detection" based on the paper "High quality, scalable and parallel community detection for large real graphs" by Arnau Prat-Perez, David Dominguez-Sal, Josep-Lluis Larriba-Pey - WWW 2014.

The purpose of this algorithm is to find disjoint communities in an **undirected** graph or in a directed graph which will be considered as an undirected one.

It is possible to set some restrictions after constructing a new instance of this class and before running it in order to limit the results.

After the execution, we can retrieve the results stored in an instance of the DisjointCommunities class using the getCommunities method.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.8.2 Constructor & Destructor Documentation

5.8.2.1 CommunitiesSCD::CommunitiesSCD (sparksee::gdb::Session & *session*)

Creates a new instance of CommunitiesSCD.

After creating this instance is required to indicate the set of edge types and the set of node types which will be navigated through while traversing the graph in order to find the communities.

Parameters:

session [in] Session to get the graph from and calculate the communities

5.8.3 Member Function Documentation

5.8.3.1 void CommunitiesSCD::SetLookAhead (sparksee::gdb::int32_t *lookahead*)

Sets the size of the lookahead iterations to look.

Parameters:

lookahead [in] Number of iterations. It must be positive or zero.

5.8.3.2 virtual void DisjointCommunityDetection::AddEdgeType (sparksee::gdb::type_t *type*) [virtual, inherited]

Allows connectivity through edges of the given type.

The edges can be used in Any direction.

Parameters:

type [in] Edge type.

5.8.3.3 void CommunityDetection::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *direction*) [protected, inherited]

Allows connectivity through edges of the given type.

Parameters:

t [in] Edge type.

d [in] Edge direction.

5.8.3.4 virtual void DisjointCommunityDetection::AddAllEdgeTypes () [virtual, inherited]

Allows connectivity through all edge types of the graph.

The edges can be used in Any direction.

5.8.3.5 void CommunityDetection::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *direction*) [protected, inherited]

Allows connectivity through all edge types of the graph.

Parameters:

d [in] Edge direction.

5.8.3.6 DisjointCommunities* DisjointCommunityDetection::GetCommunities () [inherited]

Returns the results generated by the execution of the algorithm.

These results contain information related to the disjoint communities found as the number of different components, the set of nodes contained in each component or many other data.

Returns:

Returns an instance of the class DisjointCommunities which contain information related to the disjoint communities found.

5.8.3.7 void DisjointCommunityDetection::SetMaterializedAttribute (const std::wstring & *attributeName*) [inherited]

Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the disjoint communities found while executing this algorithm.

Whenever the user wants to retrieve the results, even when the graph has been closed and opened again, it is only necessary to create a new instance of the class DisjointCommunities indicating the graph and the name of the common attribute type which stores the results. This instance will have all the information related to the disjoint communities found in the moment of the execution of the algorithm that stored this data.

It is possible to run the algorithm without specifying this parameter in order to avoid materializing the results of the execution.

Parameters:

attributeName [in] The name of the common attribute type for all node types in the graph which will store persistently the results generated by the execution of the algorithm.

5.8.3.8 virtual void CommunityDetection::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.8.3.9 virtual void CommunityDetection::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.8.3.10 void CommunityDetection::SetNodesNotVisited () [protected, inherited]

Set all the selected nodes in nodesNotVisited.

That's all the nodes of the allowed node types but not the excluded ones.

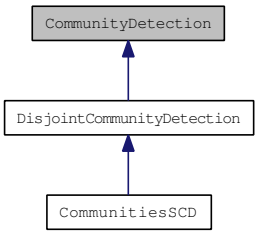
The documentation for this class was generated from the following file:

- CommunitiesSCD.h

5.9 CommunityDetection Class Reference

CommunityDetection class.

Inheritance diagram for CommunityDetection:



Public Member Functions

- virtual ~CommunityDetection ()
  Destructor.
- virtual void AddNodeType (sparksee::gdb::type_t type)
  Allows connectivity through nodes of the given type.
- virtual void AddAllNodeTypes ()
  Allows connectivity through all node types of the graph.
- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)
  Set which nodes can't be used.
- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)
  Set which edges can't be used.
- virtual void Run ()=0
  Runs the algorithm in order to find the connected components.

Protected Types

- typedef std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > EdgeTypes_t
  A type definition to store allowed edge types.
- typedef std::vector< sparksee::gdb::type_t > NodeTypes_t
  A type definition to store allowed node types.

Protected Member Functions

- CommunityDetection (sparksee::gdb::Session &s)
  Creates a new instance of CommunityDetection.
- void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection direction)
  Allows connectivity through edges of the given type.
- void AddAllEdgeTypes (sparksee::gdb::EdgesDirection direction)
  Allows connectivity through all edge types of the graph.
- void AssertAddedEdges ()
  Check that edges had been added.
- void AssertAddedNodes ()
  Check that nodes had been added.
- void AssertNotComputed ()
  Check that the connectivity had not been calculated yet.

- void SetNodesNotVisited ()
  Set all the selected nodes in nodesNotVisited.
- void AssertComputed ()
  Check that the communities had been calculated.
- void AssertEdgeType (sparksee::gdb::type_t edgetype)
  Check that the given edge type is valid.
- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- EdgeTypes_t edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::Objects * nodesNotVisited
  Identifiers of the nodes not visited.
- sparksee::gdb::bool_t computed
  True if the connectivity has been calculated.
- sparksee::gdb::Objects * excludedNodes
  The set of excluded nodes.
- sparksee::gdb::Objects * excludedEdges
  The set of excluded edges.

5.9.1 Detailed Description

CommunityDetection class.

Any class implementing this abstract class can be used to solve a problem related to graph connectivity as finding the strongly connected components, finding the weakly connected components.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.9.2 Constructor & Destructor Documentation

5.9.2.1 CommunityDetection::CommunityDetection (sparksee::gdb::Session & *s*) [protected]

Creates a new instance of CommunityDetection.

Parameters:

s [in] Session to get the graph from and calculate the communities

5.9.3 Member Function Documentation

5.9.3.1 virtual void CommunityDetection::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.9.3.2 virtual void CommunityDetection::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.9.3.3 virtual void CommunityDetection::Run () [pure virtual]

Runs the algorithm in order to find the connected components.

This method can be called only once.

Implemented in CommunitiesSCD, and DisjointCommunityDetection.

5.9.3.4 void CommunityDetection::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *direction*) [protected]

Allows connectivity through edges of the given type.

Parameters:

t [in] Edge type.

d [in] Edge direction.

5.9.3.5 void CommunityDetection::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *direction*) [protected]

Allows connectivity through all edge types of the graph.

Parameters:

d [in] Edge direction.

5.9.3.6 void CommunityDetection::SetNodesNotVisited () [protected]

Set all the selected nodes in nodesNotVisited.

That's all the nodes of the allowed node types but not the excluded ones.

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

- CommunityDetection.h

5.10 ConnectedComponents Class Reference

ConnectedComponents class.

Public Member Functions

- ConnectedComponents (sparksee::gdb::Session &s, const std::wstring &materializedattribute)
  Creates a new instance of ConnectedComponents.
- virtual ~ConnectedComponents ()
  Destructor.
- sparksee::gdb::int64_t GetConnectedComponent (sparksee::gdb::oid_t idNode)
  Returns the connected component where the given node belongs to.
- sparksee::gdb::int64_t GetCount ()
  Returns the number of connected components found in the graph.
- sparksee::gdb::Objects * GetNodes (sparksee::gdb::int64_t idConnectedComponent)
  Returns the collection of nodes contained in the given connected component.
- sparksee::gdb::int64_t GetSize (sparksee::gdb::int64_t idConnectedComponent)
  Returns the number of nodes contained in the given connected component.

5.10.1 Detailed Description

ConnectedComponents class.

This class contains the results processed on a Connectivity algorithm.

These results contain information related to the connected components found. We must consider that each connected component has a number in order to identify it. These number identifiers are values from 0 to N-1, where N is the number of different connected components found.

When executing any implementation of the Connectivity, it is possible to indicate whether the results of the execution must be stored persistently using the class Connectivity setMaterializedAttribute method. In case the results are set to be materialized, users can retrieve this data whenever they want, even if the graph has been closed and opened again, just by creating a new instance of this class.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.10.2 Constructor & Destructor Documentation

5.10.2.1 ConnectedComponents::ConnectedComponents (sparksee::gdb::Session & *s*, const std::wstring & *materializedattribute*)

Creates a new instance of ConnectedComponents.

This constructor method can only be called when a previous execution of any implementation of the Connectivity class has materialized the results in a common attribute type for all the nodes in the graph. For further information about materializing the results processed on any Connectivity execution see the documentation of the Connectivity#SetMaterializedAttribute method.

Parameters:

s [in] Session to get the graph Graph on which the information will be retrieved just by getting the values contained in the given common attribute type for all the nodes in the graph and processing them.

materializedattribute [in] The common attribute type for all the nodes in the graph where data will be retrieved in order to process the results related to the connected components found in the graph.

5.10.3 Member Function Documentation

5.10.3.1 sparksee::gdb::int64_t ConnectedComponents::GetConnectedComponent (sparksee::gdb::oid_t *idNode*)

Returns the connected component where the given node belongs to.

Parameters:

idNode [in] The node identifier for which the connected component identifier where it belongs will be returned.

Returns:

The connected component identifier where the given node identifier belongs to.

5.10.3.2 sparksee::gdb::int64_t ConnectedComponents::GetCount ()

Returns the number of connected components found in the graph.

Returns:

The number of connected components found in the graph.

5.10.3.3 sparksee::gdb::Objects* ConnectedComponents::GetNodes (sparksee::gdb::int64_t *idConnectedComponent*)

Returns the collection of nodes contained in the given connected component.

Parameters:

← ***idConnectedComponent*** The connected component for which the collection of nodes contained in it will be returned.

Returns:

The collection of node identifiers contained in the given connected component.

5.10.3.4 sparksee::gdb::int64_t ConnectedComponents::GetSize (sparksee::gdb::int64_t *idConnectedComponent*)

Returns the number of nodes contained in the given connected component.

Parameters:

← ***idConnectedComponent*** The connected component for which the number of nodes contained in it will be returned.

Returns:

The number of nodes contained in the given connected component.

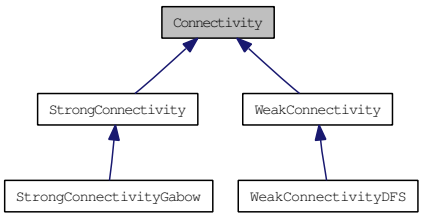
The documentation for this class was generated from the following file:

- ConnectedComponents.h

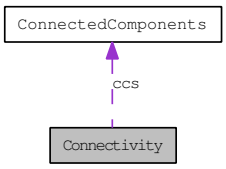
5.11 Connectivity Class Reference

Connectivity class.

Inheritance diagram for Connectivity:



Collaboration diagram for Connectivity:



Public Member Functions

- virtual ~Connectivity ()

  Destructor.

- virtual void AddNodeType (sparksee::gdb::type_t t)

  Allows connectivity through nodes of the given type.

- virtual void AddAllNodeTypes ()

  Allows connectivity through all node types of the graph.

- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)

  Set which nodes can't be used.

- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)

  Set which edges can't be used.

- ConnectedComponents * GetConnectedComponents ()

  Returns the results generated by the execution of the algorithm.

- virtual void Run ()=0

  Runs the algorithm in order to find the connected components.

- void SetMaterializedAttribute (const std::wstring &attributeName)

  Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the connected components found while executing this algorithm.

Protected Types

- typedef std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > EdgeTypes_t

  A type definition to store allowed edge types.

- typedef std::vector< sparksee::gdb::type_t > NodeTypes_t

  A type definition to store allowed node types.

Protected Member Functions

- Connectivity (sparksee::gdb::Session &s)

  Creates a new instance of Connectivity.

- void AddEdgeType (sparksee::gdb::type_t t, sparksee::gdb::EdgesDirection d)

  Allows connectivity through edges of the given type.

- void AddAllEdgeTypes (sparksee::gdb::EdgesDirection d)

  Allows connectivity through all edge types of the graph.

- void AssertAddedEdges ()

  Check that edges had been added.

- void AssertAddedNodes ()

  Check that nodes had been added.

- void AssertNotComputed ()

  Check that the connectivity had not been calculated yet.

- void SetConnectedComponent (sparksee::gdb::oid_t idNode)

  Assigns the current component to the given node.

- void SetNodesNotVisited ()

  Set all the selected nodes in nodesNotVisited.

- void AssertNotComponentAttribute (const std::wstring &attributeName)

  Check that the given attribute name is not already in use.

- void AssertComputed ()

  Check that the connectivity had been calculated.

- void AssertEdgeType (sparksee::gdb::type_t edgetype)

  Check that the given edge type is valid.

- void AssertNodeType (sparksee::gdb::type_t nodetype)

  Check that the given node type is valid.

- void CreateGlobalPersistentAttribute (const std::wstring &attributeName)

  Set a new persistent global attribute to store the connectivity information.

- void CreateGlobalTransientAttribute ()

  Set a new temporary global attribute to store the connectivity information.

- void RemoveGlobalAttribute ()

  Removes the global attribute where the connectivity information is stored.

- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)

  Check if the given node has an allowed type.

- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- EdgeTypes_t edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::attr_t attrComponent
  common attribute where the connected component information is stored.
- std::wstring attrComponentName
  name of the common attribute where the connected component information is stored.
- sparksee::gdb::int64_t actualComponent
  Current component identifier.
- sparksee::gdb::Objects * nodesNotVisited
  Identifiers of the nodes not visited.
- sparksee::gdb::bool_t matResults
  Materialized results.
- sparksee::gdb::bool_t computed
  True if the connectivity has been calculated.
- sparksee::gdb::Objects * excludedNodes
  The set of excluded nodes.
- sparksee::gdb::Objects * excludedEdges
  The set of excluded edges.
- ConnectedComponents * ccs
  The calculated connectivity information.

5.11.1 Detailed Description

Connectivity class.

Any class implementing this abstract class can be used to solve a problem related to graph connectivity as finding the strongly connected components, finding the weakly connected components.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.11.2 Constructor & Destructor Documentation

5.11.2.1 Connectivity::Connectivity (sparksee::gdb::Session & *s*) [protected]

Creates a new instance of Connectivity.

Parameters:

s [in] Session to get the graph from and calculate the connectivity

5.11.3 Member Function Documentation

5.11.3.1 virtual void Connectivity::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.11.3.2 virtual void Connectivity::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.11.3.3 ConnectedComponents* Connectivity::GetConnectedComponents ()

Returns the results generated by the execution of the algorithm.

These results contain information related to the connected components found as the number of different components, the set of nodes contained in each component or many other data.

Returns:

Returns an instance of the class ConnectedComponents which contain information related to the connected components found.

5.11.3.4 virtual void Connectivity::Run () [pure virtual]

Runs the algorithm in order to find the connected components.

This method can be called only once.

Implemented in StrongConnectivityGabow, and WeakConnectivityDFS.

5.11.3.5 void Connectivity::SetMaterializedAttribute (const std::wstring & *attributeName*)

Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the connected components found while executing this algorithm.

Whenever the user wants to retrieve the results, even when the graph has been closed and opened again, it is only necessary to create a new instance of the class ConnectedComponents indicating the graph and the name of the common attribute type which stores the results. This instance will have all the information related to the connected components found in the moment of the execution of the algorithm that stored this data.

It is possible to run the algorithm without specifying this parameter in order to avoid materializing the results of the execution.

Parameters:

attributeName [in] The name of the common attribute type for all node types in the graph which will store persistently the results generated by the execution of the algorithm.

5.11.3.6 void Connectivity::AddEdgeType (sparksee::gdb::type_t *t*, sparksee::gdb::EdgesDirection *d*) [protected]

Allows connectivity through edges of the given type.

Parameters:

t [in] Edge type.

d [in] Edge direction.

Reimplemented in StrongConnectivity.

5.11.3.7 void Connectivity::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *d*) [protected]

Allows connectivity through all edge types of the graph.

Parameters:

d [in] Edge direction.

Reimplemented in StrongConnectivity.

5.11.3.8 void Connectivity::SetNodesNotVisited () [protected]

Set all the selected nodes in nodesNotVisited.

That's all the nodes of the allowed node types but not the excluded ones.

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

- Connectivity.h

5.12 Context Class Reference

Context class.

Public Member Functions

- void AddEdgeType (sparksee::gdb::type_t t, sparksee::gdb::EdgesDirection d)
  Allows for traversing edges of the given type.
- void AddAllEdgeTypes (sparksee::gdb::EdgesDirection d)
  Allows for traversing all edge types of the graph.
- void AddNodeType (sparksee::gdb::type_t t)
  Allows for traversing nodes of the given type.
- void AddAllNodeTypes ()
  Allows for traversing all node types of the graph.
- void ExcludeNodes (sparksee::gdb::Objects &nodes)
  Set which nodes can't be used.
- void ExcludeEdges (sparksee::gdb::Objects &edges)
  Set which edges can't be used.
- sparksee::gdb::Objects * Compute ()
  Gets the resulting collection of nodes.
- void SetMaximumHops (sparksee::gdb::int32_t maxhops, sparksee::gdb::bool_t include)
  Sets the maximum hops restriction.
- virtual ~Context ()
  Destructor.
- Context (sparksee::gdb::Session &session, sparksee::gdb::oid_t node)
  Creates a new instance.

Static Public Member Functions

- static sparksee::gdb::Objects * Compute (sparksee::gdb::Session &session, sparksee::gdb::oid_t node, sparksee::gdb::TypeList *nodeTypes, sparksee::gdb::TypeList *edgeTypes, sparksee::gdb::EdgesDirection dir, sparksee::gdb::int32_t maxhops, sparksee::gdb::bool_t include)

  Helper method to easily compute a context from a node.

Protected Attributes

- sparksee::gdb::Session * sess

  Session.

- sparksee::gdb::Graph * graph

  Graph.

- sparksee::gdb::oid_t src

  Source node of the traversal.

- std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > edgeTypes

  Allowed edge types.

- std::vector< sparksee::gdb::type_t > nodeTypes

  Allowed node types.

- sparksee::gdb::int32_t maxHops

  Maximum number of hops allowed.

- sparksee::gdb::bool_t inclusive

  Include those nodes at distance <= maxhops or just those nodes at distance == maxhops.

- sparksee::gdb::Objects * excludedNodes

  The set of excluded nodes.

- sparksee::gdb::Objects * excludedEdges

  The set of excluded edges.

5.12.1 Detailed Description

Context class.

It provides a very similar functionality than the Traversal classes. The main difference is Context returns a resulting collection whereas Traversal provides an iterator behaviour.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.12.2 Constructor & Destructor Documentation

5.12.2.1 Context::Context (sparksee::gdb::Session & *session*, sparksee::gdb::oid_t *node*)

Creates a new instance.

Parameters:

session [in] Session to get the graph from and perform operation.

node [in] Node to start traversal from.

5.12.3 Member Function Documentation

5.12.3.1 void Context::AddEdgeType (sparksee::gdb::type_t *t*, sparksee::gdb::EdgesDirection *d*)

Allows for traversing edges of the given type.

Parameters:

t [in] Edge type.

d [in] Edge direction.

5.12.3.2 void Context::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *d*)

Allows for traversing all edge types of the graph.

Parameters:

d [in] Edge direction.

5.12.3.3 void Context::ExcludeNodes (sparksee::gdb::Objects & *nodes*)

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.12.3.4 void Context::ExcludeEdges (sparksee::gdb::Objects & *edges*)

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.12.3.5 sparksee::gdb::Objects* Context::Compute ()

Gets the resulting collection of nodes.

Returns:

The resulting collection of nodes.

5.12.3.6 void Context::SetMaximumHops (sparksee::gdb::int32_t *maxhops*, sparksee::gdb::bool_t *include*)

Sets the maximum hops restriction.

All paths longer than the maximum hops restriction will be ignored.

Parameters:

maxhops [in] The maximum hops restriction. It must be positive or zero. Zero, the default value, means unlimited.

include [in] If TRUE, the resulting collection will include those nodes at distance less or equal than the given one, otherwise it will just include those nodes at distance equal than the given one. This parameter just makes sense if maxhops is different from 0; in that case it includes all nodes no matters the distance.

5.12.3.7 static sparksee::gdb::Objects* Context::Compute (sparksee::gdb::Session & *session*, sparksee::gdb::oid_t *node*, sparksee::gdb::TypeList * *nodeTypes*, sparksee::gdb::TypeList * *edgeTypes*, sparksee::gdb::EdgesDirection *dir*, sparksee::gdb::int32_t *maxhops*, sparksee::gdb::bool_t *include*) [static]

Helper method to easily compute a context from a node.

Parameters:

session [in] Session to get the graph from and perform operation.

node [in] Node to start traversal from.

nodeTypes [in] Allowed node type list. NULL means all node types are allowed.

edgeTypes [in] Allowed edge type list. NULL means all edge types are allowed.

dir [in] Allowed direction for the allowed edge types.

maxhops [in] The maximum hops restriction. It must be positive or zero. Zero, the default value, means unlimited.

include [in] If TRUE, the resulting collection will include those nodes at distance less or equal than the given one, otherwise it will just include those nodes at distance equal than the given one. This parameter just makes sense if maxhops is different from 0; in that case it includes all nodes no matters the distance.

Returns:

Returns an Objects with the computed context of a node.

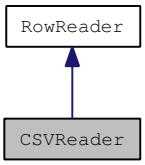
The documentation for this class was generated from the following file:

- Context.h

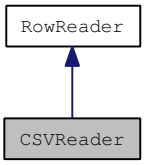
5.13 CSVReader Class Reference

CSVReader interface.

Inheritance diagram for CSVReader:



Collaboration diagram for CSVReader:



Public Member Functions

- CSVReader ()
  Constructs CSVReader.
- void SetSeparator (const std::wstring &sep) throw (sparksee::gdb::Error)
  Sets the character used to separate fields in the file.
- void SetQuotes (const std::wstring &quotes) throw (sparksee::gdb::Error)
  Sets the character used to quote fields.
- void SetMultilines (sparksee::gdb::int32_t numExtralines)
  Allows the use of fields with more than one line.
- void SetSingleLine ()
  Only allows single line fields.
- void SetStartLine (sparksee::gdb::int32_t startLine)
  Sets the number of lines to be skiped from the beginning.
- void SetNumLines (sparksee::gdb::int32_t numLines)
  Used to limit the number of lines that will be read.
- void SetLocale (const std::wstring &localeStr)
  Sets the locale that will be used to read the file.
- void Open (const std::wstring &filePath) throw (sparksee::gdb::IOException)
  Opens the source file path.

- sparksee::gdb::bool_t Reset () throw (sparksee::gdb::IOException)
  Moves the reader to the beginning.
- virtual sparksee::gdb::bool_t Read (sparksee::gdb::StringList &row) throw (sparksee::gdb::IOException)
  Reads the next row as a string array.
- sparksee::gdb::int32_t GetRow () throw (sparksee::gdb::IOException)
  The row number for the current row.
- void Close () throw (sparksee::gdb::IOException)
  Closes the reader.
- virtual ~CSVReader ()
  Destructor.

5.13.1 Detailed Description

CSVReader interface.

A very simple CSV reader.

It works as any other RowReader, but open must be called once before the first read operation.

Using the format RFC 4180.

Except: leading and trailing spaces, adjacent to CSV separator character, are trimmed.

You can use your own separators and quote characters. By default the separator is the comma (,) and the quote character is the double quotes (").

Fields with multiple lines can be allowed (and the maximum lines specified), but the default is a single line.

The locale string can be used to set the language, country and the file encoding. The format must be "[language_territory][.codeset]". But only the file encoding is being used in the current version.

The languages supported are: "en_US", "es_ES" and "ca_ES".

The file encodings supported are: "utf8" and "iso88591".

For example:

To don't change the default locales, use an empty string: "".

To read a file in utf8 with the default language settings use ".utf8".

To read a file in iso88591 with English language use: "en_US.iso88591".

Check out the 'Data import' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.13.2 Member Function Documentation

5.13.2.1 void CSVReader::SetSeparator (const std::wstring & *sep*) throw (sparksee::gdb::Error)

Sets the character used to separate fields in the file.

Parameters:

sep [in] Separator character.

5.13.2.2 void CSVReader::SetQuotes (const std::wstring & *quotes*) throw (sparksee::gdb::Error)

Sets the character used to quote fields.

Parameters:

quotes [in] Quote character.

5.13.2.3 void CSVReader::SetMultilines (sparksee::gdb::int32_t *numExtralines*)

Allows the use of fields with more than one line.

Parameters:

numExtralines [in] Maximum number of extra lines for each column (0==unlimited, N==N+1 total rows).

5.13.2.4 void CSVReader::SetStartLine (sparksee::gdb::int32_t *startLine*)

Sets the number of lines to be skiped from the beginning.

Parameters:

startLine [in] The line number to skip for start reading

5.13.2.5 void CSVReader::SetNumLines (sparksee::gdb::int32_t *numLines*)

Used to limit the number of lines that will be read.

Parameters:

numLines [in] The maximum number of lines to read (0 == unlimited)

5.13.2.6 void CSVReader::SetLocale (const std::wstring & *localeStr*)

Sets the locale that will be used to read the file.

Parameters:

localeStr [in] The locale string for the file encoding.

5.13.2.7 void CSVReader::Open (const std::wstring & *filePath*) throw (sparksee::gdb::IOException)

Opens the source file path.

File can be optionally compressed in GZIP format.

Parameters:

filePath [in] CSV file path.

Exceptions:

IOException If bad things happen opening the file.

5.13.2.8 sparksee::gdb::bool_t CSVReader::Reset () throw (sparksee::gdb::IOException) [virtual]

Moves the reader to the beginning.

Restarts the reader.

Returns:

`true` if the reader can be restarted, `false` otherwise.

Exceptions:

IOException If bad things happen during the restart.

Implements RowReader.

5.13.2.9 virtual sparksee::gdb::bool_t CSVReader::Read (sparksee::gdb::StringList & *row*) throw (sparksee::gdb::IOException) [virtual]

Reads the next row as a string array.

Parameters:

row [out] A string list with each comma-separated element as a separate entry.

Returns:

Returns true if a row had been read or false otherwise.

Exceptions:

IOException If bad things happen during the read.

Implements RowReader.

5.13.2.10 sparksee::gdb::int32_t CSVReader::GetRow () throw (sparksee::gdb::IOException) [virtual]

The row number for the current row.

Returns:

The current row number; 0 if there is no current row.

Exceptions:

IOException If it fails.

Implements RowReader.

5.13.2.11 void CSVReader::Close () throw (sparksee::gdb::IOException) [virtual]

Closes the reader.

Exceptions:

IOException If the close fails.

Implements RowReader.

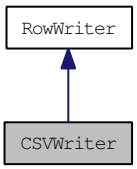
The documentation for this class was generated from the following file:

- CSVReader.h

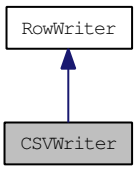
5.14 CSVWriter Class Reference

CSVWriter interface.

Inheritance diagram for CSVWriter:



Collaboration diagram for CSVWriter:



Public Member Functions

- CSVWriter ()

  Creates a new instance.

- void SetSeparator (const std::wstring &sep) throw (sparksee::gdb::Error)

Sets the character used to separate fields in the file.

- void SetQuotes (const std::wstring &quotes) throw (sparksee::gdb::Error)

  Sets the character used to quote fields.

- void SetAutoQuotes (sparksee::gdb::bool_t autoquotes)

  Sets on/off the automatic quote mode.

- void SetForcedQuotes (sparksee::gdb::BooleanList &forcequotes)

  Disables the automatic quote mode and forces to be quoted those positions set to TRUE in the given vector.

- void SetLocale (const std::wstring &localeStr)

  Sets the locale that will be used to write the file.

- void Open (const std::wstring &f) throw (sparksee::gdb::IOException)

  Opens the output file path.

- void Write (sparksee::gdb::StringList &row) throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  Writes the next row.

- void Close () throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  Closes the writer.

- virtual ~CSVWriter ()

  Destructor.

5.14.1 Detailed Description

CSVWriter interface.

A very simple CSV writer implementing RowWriter.

It works as any other RowWriter, but open must be called once before the first write operation.

It uses the format RFC 4180: http://tools.ietf.org/html/rfc4180

You can use your own separators and quote characters. By default the separator is the comma (,) and the quote character is the double quotes (") and autoquote is enabled.

See the CSVReader locale documentation or the SPARKSEE User Manual.

Check out the 'Data export' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.14.2 Member Function Documentation

5.14.2.1 void CSVWriter::SetSeparator (const std::wstring & *sep*) throw (sparksee::gdb::Error)

Sets the character used to separate fields in the file.

Parameters:

sep [in] Separator character.

5.14.2.2 void CSVWriter::SetQuotes (const std::wstring & *quotes*) throw (sparksee::gdb::Error)

Sets the character used to quote fields.

Parameters:

quotes [in] Quote character.

5.14.2.3 void CSVWriter::SetAutoQuotes (sparksee::gdb::bool_t *autoquotes*)

Sets on/off the automatic quote mode.

If there are forced quotes, setting autoquotes on will clear them. If the autoquotes is set to off and no forced quotes are provided, there will not be any quote.

Parameters:

autoquotes [in] If TRUE it enables the automatic quote mode, if FALSE it disables it.

5.14.2.4 void CSVWriter::SetForcedQuotes (sparksee::gdb::BooleanList & *forcequotes*)

Disables the automatic quote mode and forces to be quoted those positions set to TRUE in the given vector.

Parameters:

forcequotes [in] A booleanList with the position for each column that must be quoted set to true.

5.14.2.5 void CSVWriter::SetLocale (const std::wstring & *localeStr*)

Sets the locale that will be used to write the file.

Parameters:

localeStr [in] The locale string for the file encoding.

5.14.2.6 void CSVWriter::Open (const std::wstring & *f*) throw (sparksee::gdb::IOException)

Opens the output file path.

Parameters:

f [in] Output file path.

Exceptions:

IOException If bad things happen opening the file.

5.14.2.7 void CSVWriter::Write (sparksee::gdb::StringList & *row*) throw (sparksee::gdb::IOException, sparksee::gdb::Error) [virtual]

Writes the next row.

Parameters:

row [in] Row of data.

Exceptions:

IOException If bad things happen during the write.

Implements RowWriter.

5.14.2.8 void CSVWriter::Close () throw (sparksee::gdb::IOException, sparksee::gdb::Error) [virtual]

Closes the writer.

Exceptions:

IOException If the close fails.

Implements RowWriter.

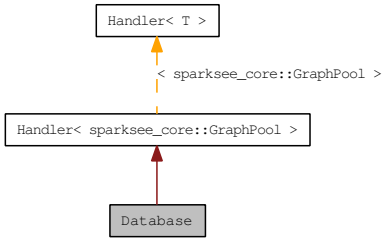
The documentation for this class was generated from the following file:

- CSVWriter.h

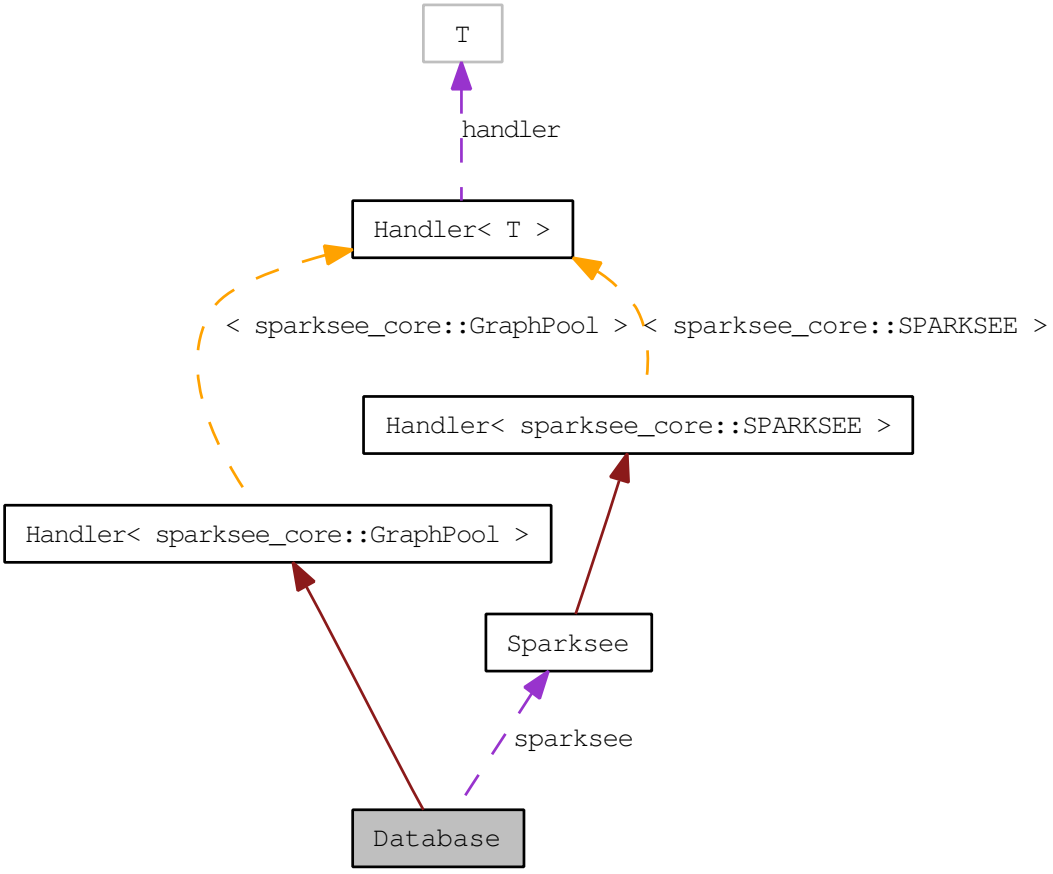
5.15 Database Class Reference

Database class.

Inheritance diagram for Database:



Collaboration diagram for Database:



Public Member Functions

- virtual ~Database ()
  Destructor.
- const std::wstring & GetAlias () const
  Gets the alias of the Database.
- const std::wstring & GetPath () const
  Gets the path of the Database.
- Session * NewSession ()
  Creates a new Session.
- void EnableRollback ()
  Enables the rollback mechanism.
- void DisableRollback ()
  Disables the rollback mechanism.

- void GetStatistics (DatabaseStatistics &stats)

  Gets Database statistics.

- int32_t GetCacheMaxSize ()

  Gets the cache maximum size (in MB).

- void SetCacheMaxSize (int32_t megaBytes)

  Sets the cache maximum size (in MB).

- void FixCurrentCacheMaxSize ()

  Sets the cache maximum size to the current cache size in use.

Friends

- class Sparksee
- class Graph

5.15.1 Detailed Description

Database class.

All the data of the Database is stored into a persistent file which just can be created or open through a Sparksee instance.

Also, all the manipulation of a Database must be done by means of a Session which can be initiated from a Database instance.

Multiple Databases do not share the memory, that is there is no negotiation among them. In those cases, memory must be prefixed for each Database. To do that, use the SPARKSEEConfig.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.15.2 Member Function Documentation

5.15.2.1 const std::wstring& Database::GetAlias () const [inline]

Gets the alias of the Database.

Returns:

The alias of the Database.

5.15.2.2 const std::wstring& Database::GetPath () const [inline]

Gets the path of the Database.

Returns:

The path of the Database.

5.15.2.3 void Database::GetStatistics (DatabaseStatistics & *stats*)

Gets Database statistics.

Parameters:

stats [out] The DatabaseStatistics instance.

5.15.2.4 int32_t Database::GetCacheMaxSize ()

Gets the cache maximum size (in MB).

Returns:

Returns the current cache max size.

5.15.2.5 void Database::SetCacheMaxSize (int32_t *megaBytes*)

Sets the cache maximum size (in MB).

0 means unlimited which is all the physical memory of the computer minus a small margin.

Parameters:

megaBytes [in] The new cache max size.

5.15.2.6 void Database::FixCurrentCacheMaxSize ()

Sets the cache maximum size to the current cache size in use.

Returns:

Returns true if successful or false otherwise.

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

- Database.h

5.16 DatabaseStatistics Class Reference

Database statistics.

Public Member Functions

- int64_t GetRead () const
  Gets total read data in KBytes.
- int64_t GetWrite () const
  Gets total written data in KBytes.
- int64_t GetData () const
  Gets database size in KBytes.

- int64_t GetCache () const
  Gets cache size in KBytes.
- int64_t GetTemp () const
  Gets temporary storage file size in KBytes.
- int64_t GetSessions () const
  Gets the number of sessions.

Friends

- class Database

5.16.1 Detailed Description

Database statistics.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.16.2 Member Function Documentation

5.16.2.1 int64_t DatabaseStatistics::GetRead () const [inline]

Gets total read data in KBytes.

Returns:

Total read data in KBytes.

5.16.2.2 int64_t DatabaseStatistics::GetWrite () const [inline]

Gets total written data in KBytes.

Returns:

Total read written in KBytes.

5.16.2.3 int64_t DatabaseStatistics::GetData () const [inline]

Gets database size in KBytes.

Returns:

Database size in KBytes.

5.16.2.4 int64_t DatabaseStatistics::GetCache () const [inline]

Gets cache size in KBytes.

Returns:

Cache size in KBytes.

5.16.2.5 int64_t DatabaseStatistics::GetTemp () const [inline]

Gets temporary storage file size in KBytes.

Returns:

Temporary storage file size in KBytes.

5.16.2.6 int64_t DatabaseStatistics::GetSessions () const [inline]

Gets the number of sessions.

Returns:

The number of sessions.

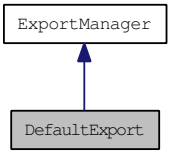
The documentation for this class was generated from the following file:

- Database.h

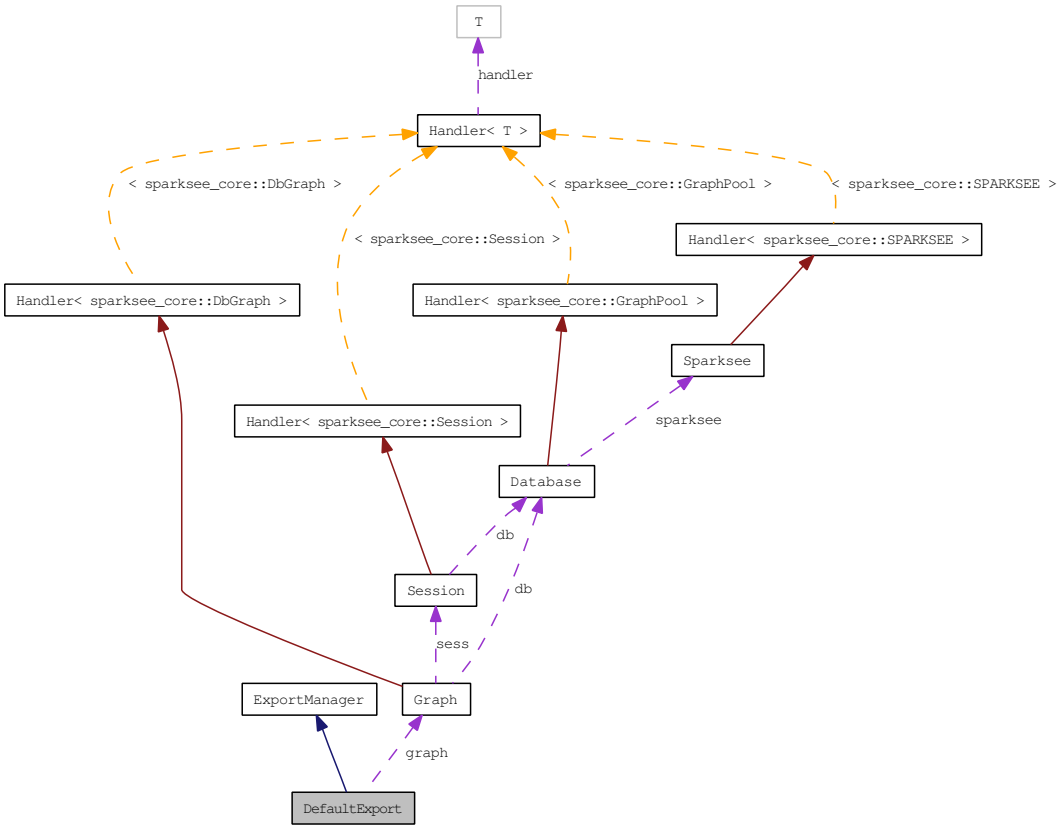
5.17 DefaultExport Class Reference

Default implementation for ExportManager class.

Inheritance diagram for DefaultExport:



Collaboration diagram for DefaultExport:



Public Member Functions

- DefaultExport ()

  Creates a new instance.

- virtual ~DefaultExport ()

  Destructor.

- void Prepare (Graph *graph)

  Default implementation of the ExportManager class method Prepare.

- void Release ()

  Default implementation of the ExportManager class method Release.

- bool_t GetGraph (GraphExport &graphExport)

  Default implementation of the ExportManager class method GetGraph.

- bool_t GetNodeType (type_t type, NodeExport &nodeExport)

  Default implementation of the ExportManager class method GetNodeType.

- bool_t GetEdgeType (type_t type, EdgeExport &edgeExport)

Default implementation of the ExportManager class method GetEdgeType.

- bool_t GetNode (oid_t node, NodeExport &nodeExport)
  Default implementation of the ExportManager class method GetNode.
- bool_t GetEdge (oid_t edge, EdgeExport &edgeExport)
  Default implementation of the ExportManager class method GetEdge.
- bool_t EnableType (type_t type)
  Default implementation of the ExportManager class method EnableType.

5.17.1 Detailed Description

Default implementation for ExportManager class.

It uses the default values from GraphExport, NodeExport and EdgeExport to export all node and edge types.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.17.2 Member Function Documentation

5.17.2.1 bool_t DefaultExport::GetGraph (GraphExport & *graphExport*) [virtual]

Default implementation of the ExportManager class method GetGraph.

This sets the default GraphExport values and "Graph" as the label.

Parameters:

graphExport [out] The GraphExport that will store the information.

Returns:

TRUE.

Implements ExportManager.

5.17.2.2 bool_t DefaultExport::GetNodeType (type_t *type*, NodeExport & *nodeExport*) [virtual]

Default implementation of the ExportManager class method GetNodeType.

This sets de default NodeExport values.

Parameters:

type [in] A node type.
nodeExport [out] The NodeExport that will store the information.

Returns:

TRUE.

Implements ExportManager.

5.17.2.3 bool_t DefaultExport::GetEdgeType (type_t *type*, EdgeExport & *edgeExport*) [virtual]

Default implementation of the ExportManager class method GetEdgeType.

This sets de default EdgeExport values.

Parameters:

type [in] An edge type.

edgeExport [out] The EdgeExport that will store the information.

Returns:

TRUE.

Implements ExportManager.

5.17.2.4 bool_t DefaultExport::GetNode (oid_t *node*, NodeExport & *nodeExport*) [virtual]

Default implementation of the ExportManager class method GetNode.

This sets the default NodeExport values and sets the OID as the label.

Parameters:

node [in] A node.

nodeExport [out] The NodeExport that will store the information.

Returns:

TRUE.

Implements ExportManager.

5.17.2.5 bool_t DefaultExport::GetEdge (oid_t *edge*, EdgeExport & *edgeExport*) [virtual]

Default implementation of the ExportManager class method GetEdge.

This sets the default EdgeExport values and sets the OID as the label. Also, it exports the edge as directed just if the edge is directed.

Parameters:

edge [in] An edge.

edgeExport [out] The EdgeExport that will store the information.

Returns:

TRUE.

Implements ExportManager.

5.17.2.6 bool_t DefaultExport::EnableType (type_t *type*) [virtual]

Default implementation of the ExportManager class method EnableType.

This enables all node and edge types to be exported.

Parameters:

type [in] The type to enable.

Returns:

TRUE.

Implements ExportManager.

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

- Export.h

5.18 DisjointCommunities Class Reference

DisjointCommunities class.

Public Member Functions

- DisjointCommunities (sparksee::gdb::Session &session, const std::wstring &materializedattribute)
  Creates a new instance of DisjointCommunities.
- virtual ~DisjointCommunities ()
  Destructor.
- sparksee::gdb::int64_t GetCommunity (sparksee::gdb::oid_t idNode)
  Returns the disjoint community where the given node belongs to.
- sparksee::gdb::int64_t GetCount ()
  Returns the number of communities found in the graph.
- sparksee::gdb::Objects * GetNodes (sparksee::gdb::int64_t idCommunity)
  Returns the collection of nodes contained in the given community.
- sparksee::gdb::int64_t GetSize (sparksee::gdb::int64_t idCommunity)
  Returns the number of nodes contained in the given community.

5.18.1 Detailed Description

DisjointCommunities class.

This class contains the results processed on a DisjointCommunityDetection algorithm.

These results contain information related to the communities found. We must consider that each community has a number in order to identify it. These number identifiers are values from 0 to N-1, where N is the number of different communities found.

When executing any implementation of the DisjointCommunityDetection, it is possible to indicate whether the results of the execution must be stored persistently using the class DisjointCommunityDetection setMaterializedAttribute method. In case the results are set to be materialized, users can retrieve this data whenever they want, even if the graph has been closed and opened again, just by creating a new instance of this class.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.18.2 Constructor & Destructor Documentation

5.18.2.1 DisjointCommunities::DisjointCommunities (sparksee::gdb::Session & *session*, const std::wstring & *materializedattribute*)

Creates a new instance of DisjointCommunities.

This constructor method can only be called when a previous execution of any implementation of the DisjointCommunityDetection class has materialized the results in a common attribute type for all the nodes in the graph. For further information about materializing the results processed on any DisjointCommunityDetection execution see the documentation of the DisjointCommunityDetection#SetMaterializedAttribute method.

Parameters:

session [in] Session to get the graph Graph on which the information will be retrieved just by getting the values contained in the given common attribute type for all the nodes in the graph and processing them.

materializedattribute [in] The common attribute type for all the nodes in the graph where data will be retrieved in order to process the results related to the communities found in the graph.

5.18.3 Member Function Documentation

5.18.3.1 sparksee::gdb::int64_t DisjointCommunities::GetCommunity (sparksee::gdb::oid_t *idNode*)

Returns the disjoint community where the given node belongs to.

Parameters:

idNode [in] The node identifier for which the disjoint community identifier where it belongs will be returned.

Returns:

The disjoint community identifier where the given node identifier belongs to.

5.18.3.2 sparksee::gdb::int64_t DisjointCommunities::GetCount ()

Returns the number of communities found in the graph.

Returns:

The number of communities found in the graph.

5.18.3.3 sparksee::gdb::Objects* DisjointCommunities::GetNodes (sparksee::gdb::int64_t *idCommunity*)

Returns the collection of nodes contained in the given community.

Parameters:

← ***idCommunity*** The community for which the collection of nodes contained in it will be returned.

Returns:

The collection of node identifiers contained in the given community.

5.18.3.4 sparksee::gdb::int64_t DisjointCommunities::GetSize (sparksee::gdb::int64_t *idCommunity*)

Returns the number of nodes contained in the given community.

Parameters:

← ***idCommunity*** The community for which the number of nodes contained in it will be returned.

Returns:

The number of nodes contained in the given community.

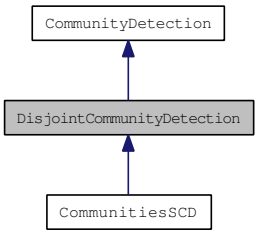
The documentation for this class was generated from the following file:

- DisjointCommunities.h

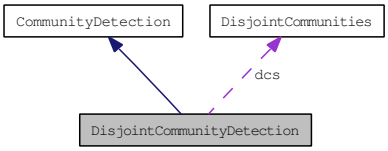
5.19 DisjointCommunityDetection Class Reference

DisjointCommunityDetection class.

Inheritance diagram for DisjointCommunityDetection:



Collaboration diagram for DisjointCommunityDetection:



Public Member Functions

- virtual ~DisjointCommunityDetection ()

  Destructor.

- virtual void AddEdgeType (sparksee::gdb::type_t type)

  Allows connectivity through edges of the given type.

- virtual void AddAllEdgeTypes ()

  Allows connectivity through all edge types of the graph.

- DisjointCommunities * GetCommunities ()

  Returns the results generated by the execution of the algorithm.

- virtual void Run ()=0

  Runs the algorithm in order to find the communities.

- void SetMaterializedAttribute (const std::wstring &attributeName)

  Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the disjoint communities found while executing this algorithm.

- virtual void AddNodeType (sparksee::gdb::type_t type)

  Allows connectivity through nodes of the given type.

- virtual void AddAllNodeTypes ()

  Allows connectivity through all node types of the graph.

- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)

  Set which nodes can't be used.

- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)

  Set which edges can't be used.

Protected Types

- typedef std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > EdgeTypes_t

  A type definition to store allowed edge types.

- typedef std::vector< sparksee::gdb::type_t > NodeTypes_t

  A type definition to store allowed node types.

Protected Member Functions

- DisjointCommunityDetection (sparksee::gdb::Session &s)

  Creates a new instance of DisjointCommunityDetection.

- void SetCommunity (sparksee::gdb::oid_t idNode)

  Assigns the current community to the given node.

- void AssertNotCommunityAttribute (const std::wstring &attributeName)
  Check that the given attribute name is not already in use.
- void CreateGlobalPersistentAttribute (const std::wstring &attributeName)
  Set a new persistent global attribute to store the disjoint communities information.
- void CreateGlobalTransientAttribute ()
  Set a new temporary global attribute to store the disjoint communities information.
- void RemoveGlobalAttribute ()
  Removes the global attribute where the disjoint communities information is stored.
- void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection direction)
  Allows connectivity through edges of the given type.
- void AddAllEdgeTypes (sparksee::gdb::EdgesDirection direction)
  Allows connectivity through all edge types of the graph.
- void AssertAddedEdges ()
  Check that edges had been added.
- void AssertAddedNodes ()
  Check that nodes had been added.
- void AssertNotComputed ()
  Check that the connectivity had not been calculated yet.
- void SetNodesNotVisited ()
  Set all the selected nodes in nodesNotVisited.
- void AssertComputed ()
  Check that the communities had been calculated.
- void AssertEdgeType (sparksee::gdb::type_t edgetype)
  Check that the given edge type is valid.
- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::attr_t attrCommunity
  common attribute where the connected component information is stored.
- std::wstring attrCommunityName
  name of the common attribute where the connected component information is stored.
- sparksee::gdb::int64_t actualCommunity
  Current community identifier.
- sparksee::gdb::bool_t matResults
  Materialized results.
- DisjointCommunities * dcs
  The calculated communities information.
- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- EdgeTypes_t edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::Objects * nodesNotVisited
  Identifiers of the nodes not visited.
- sparksee::gdb::bool_t computed
  True if the connectivity has been calculated.
- sparksee::gdb::Objects * excludedNodes
  The set of excluded nodes.
- sparksee::gdb::Objects * excludedEdges
  The set of excluded edges.

5.19.1 Detailed Description

DisjointCommunityDetection class.

Any class implementing this abstract class can be used to solve a problem related to graph connectivity as finding the strongly connected components, finding the weakly connected components.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.19.2 Constructor & Destructor Documentation

5.19.2.1 DisjointCommunityDetection::DisjointCommunityDetection (sparksee::gdb::Session & *s*) [protected]

Creates a new instance of DisjointCommunityDetection.

Parameters:

s [in] Session to get the graph from and calculate the communities

5.19.3 Member Function Documentation

5.19.3.1 virtual void DisjointCommunityDetection::AddEdgeType (sparksee::gdb::type_t *type*) [virtual]

Allows connectivity through edges of the given type.

The edges can be used in Any direction.

Parameters:

type [in] Edge type.

5.19.3.2 virtual void DisjointCommunityDetection::AddAllEdgeTypes () [virtual]

Allows connectivity through all edge types of the graph.

The edges can be used in Any direction.

5.19.3.3 DisjointCommunities* DisjointCommunityDetection::GetCommunities ()

Returns the results generated by the execution of the algorithm.

These results contain information related to the disjoint communities found as the number of different components, the set of nodes contained in each component or many other data.

Returns:

Returns an instance of the class DisjointCommunities which contain information related to the disjoint communities found.

5.19.3.4 virtual void DisjointCommunityDetection::Run () [pure virtual]

Runs the algorithm in order to find the communities.

This method can be called only once.

Implements CommunityDetection.

Implemented in CommunitiesSCD.

5.19.3.5 void DisjointCommunityDetection::SetMaterializedAttribute (const std::wstring & *attributeName*)

Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the disjoint communities found while executing this algorithm.

Whenever the user wants to retrieve the results, even when the graph has been closed and opened again, it is only necessary to create a new instance of the class DisjointCommunities indicating the graph and the name of the common attribute type which stores the results. This instance will have all the information related to the disjoint communities found in the moment of the execution of the algorithm that stored this data.

It is possible to run the algorithm without specifying this parameter in order to avoid materializing the results of the execution.

Parameters:

attributeName [in] The name of the common attribute type for all node types in the graph which will store persistently the results generated by the execution of the algorithm.

5.19.3.6 virtual void CommunityDetection::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.19.3.7 virtual void CommunityDetection::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.19.3.8 void CommunityDetection::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *direction*) [protected, inherited]

Allows connectivity through edges of the given type.

Parameters:

t [in] Edge type.

d [in] Edge direction.

5.19.3.9 void CommunityDetection::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *direction*) [protected, inherited]

Allows connectivity through all edge types of the graph.

Parameters:

d [in] Edge direction.

5.19.3.10 void CommunityDetection::SetNodesNotVisited () [protected, inherited]

Set all the selected nodes in nodesNotVisited.

That's all the nodes of the allowed node types but not the excluded ones.

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

- DisjointCommunityDetection.h

5.20 EdgeData Class Reference

Edge data class.

Public Member Functions

- ~EdgeData ()
  Destructor.
- oid_t GetEdge () const
  Gets the edge identifier.
- oid_t GetTail () const
  Gets the tail of the edge.
- oid_t GetHead () const
  Gets the head of the edge.

Friends

- class Graph

5.20.1 Detailed Description

Edge data class.

It stores the tail and the head of an edge instance.

In case of undirected eges, the tail and the head are just the two ends of the edge.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.20.2 Member Function Documentation

5.20.2.1 oid_t EdgeData::GetEdge () const [inline]

Gets the edge identifier.

Returns:

The Sparksee edge identifier.

5.20.2.2 oid_t EdgeData::GetTail () const [inline]

Gets the tail of the edge.

Returns:

The Sparksee edge identifier of the tail of the edge.

5.20.2.3 oid_t EdgeData::GetHead () const [inline]

Gets the head of the edge.

Returns:

The Sparksee edge identifier of the head of the edge.

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

- Graph_data.h

5.21 EdgeExport Class Reference

Stores edge exporting values.

Public Member Functions

- EdgeExport ()
  Creates a new instance.
- virtual ~EdgeExport ()
  Destructor.
- void SetDefaults ()
  Sets to default values.
- const std::wstring & GetLabel () const
  Gets the edge label.
- void SetLabel (const std::wstring &label)
  Sets the edge label.
- bool_t AsDirected () const
  Gets if the edge should be managed as directed.
- void SetAsDirected (bool_t directed)
  Sets if the edge should be managed as directed.
- ColorRGB GetColorRGB () const
  Gets the edge color.

- void SetColorRGB (ColorRGB color)
  Sets the edge color.
- ColorRGB GetLabelColorRGB () const
  Gets the edge label color.
- void SetLabelColorRGB (ColorRGB color)
  Sets the edge label color.
- int32_t GetWidth () const
  Gets the edge width.
- void SetWidth (int32_t width)
  Sets the edge width.
- int32_t GetFontSize () const
  Gets the edge label font size.
- void SetFontSize (int32_t size)
  Sets the edge label font size.

5.21.1 Detailed Description

Stores edge exporting values.

Some properties may be ignored depending on the exportation type.

Default values are:

Label: "" (empty string).

As directed: TRUE.

Color: 13882323 (OxD3D3D3, Light gray).

Label color: 0 (Ox000000, Black).

Width: 5px.

Font size: 10.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.21.2 Member Function Documentation

5.21.2.1 const std::wstring& EdgeExport::GetLabel () const [inline]

Gets the edge label.

Returns:

The edge label.

5.21.2.2 void EdgeExport::SetLabel (const std::wstring & *label*) [inline]

Sets the edge label.

Parameters:

label [in] The edge label.

5.21.2.3 bool_t EdgeExport::AsDirected () const [inline]

Gets if the edge should be managed as directed.

TRUE is the default value. If TRUE, use as directed, otherwise use as undirected.

Returns:

The edge direction.

5.21.2.4 void EdgeExport::SetAsDirected (bool_t *directed*) [inline]

Sets if the edge should be managed as directed.

Parameters:

directed [in] If TRUE, use as directed, otherwise use as undirected.

5.21.2.5 ColorRGB EdgeExport::GetColorRGB () const [inline]

Gets the edge color.

Returns:

The edge color.

5.21.2.6 void EdgeExport::SetColorRGB (ColorRGB *color*) [inline]

Sets the edge color.

Parameters:

color [in] The edge color.

5.21.2.7 ColorRGB EdgeExport::GetLabelColorRGB () const [inline]

Gets the edge label color.

Returns:

The edge label color.

5.21.2.8 void EdgeExport::SetLabelColorRGB (ColorRGB *color*) [inline]

Sets the edge label color.

Parameters:

color [in] The edge label color.

5.21.2.9 int32_t EdgeExport::GetWidth () const [inline]

Gets the edge width.

Returns:

The edge width.

5.21.2.10 void EdgeExport::SetWidth (int32_t *width*) [inline]

Sets the edge width.

Parameters:

width [in] The edge width.

5.21.2.11 int32_t EdgeExport::GetFontSize () const [inline]

Gets the edge label font size.

Returns:

The edge label font size.

5.21.2.12 void EdgeExport::SetFontSize (int32_t *size*) [inline]

Sets the edge label font size.

Parameters:

size [in] The edge label font size.

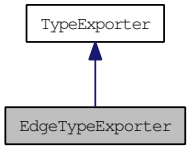
The documentation for this class was generated from the following file:

- Export.h

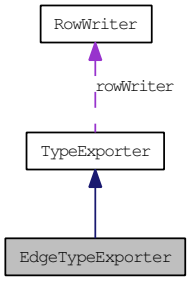
5.22 EdgeTypeExporter Class Reference

EdgeTypeExporter class.

Inheritance diagram for EdgeTypeExporter:



Collaboration diagram for EdgeTypeExporter:



Public Member Functions

- EdgeTypeExporter ()

  Creates a new instance.

- EdgeTypeExporter (RowWriter &rowWriter, sparksee::gdb::Graph &graph, sparksee::gdb::type_t type, sparksee::gdb::AttributeList &attrs, sparksee::gdb::int32_t hPos, sparksee::gdb::int32_t tPos, sparksee::gdb::attr_t hAttr, sparksee::gdb::attr_t tAttr)

  Creates a new instance.

- virtual ~EdgeTypeExporter ()

  Destructor.

- void Run () throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  See the TypeExporter class Run method.

- void SetHeadAttribute (sparksee::gdb::attr_t attr)

  Sets the attribute that will be used to get the value to be dumped for the head of the edge.

- void SetHeadPosition (sparksee::gdb::int32_t pos)

  Sets the position (index column) of the head attribute in the exported data.

- void SetTailAttribute (sparksee::gdb::attr_t attr)

  Sets the attribute that will be used to get the value to be dumped for the tail of the edge.

- void SetTailPosition (sparksee::gdb::int32_t pos)

  Sets the position (index column) of the tail attribute in the exported data.

- void Register (TypeExporterListener &tel)

Registers a new listener.

- void SetRowWriter (RowWriter &rw)
  Sets the output data destination.
- void SetGraph (sparksee::gdb::Graph &graph)
  Sets the graph that will be exported.
- void SetType (sparksee::gdb::type_t type)
  Sets the type to be exported.
- void SetAttributes (sparksee::gdb::AttributeList &attrs)
  Sets the list of Attributes.
- void SetFrequency (sparksee::gdb::int32_t freq)
  Sets the frequency of listener notification.
- void SetHeader (sparksee::gdb::bool_t header)
  Sets the presence of a header row.

Protected Member Functions

- sparksee::gdb::bool_t CanRun ()
  Checks that all the required settings are ready to run.
- void NotifyListeners (const TypeExporterEvent &ev)
  Notifies progress to all registered listeners.
- void RunProcess () throw (sparksee::gdb::IOException, sparksee::gdb::Error)
  Runs export process.

5.22.1 Detailed Description

EdgeTypeExporter class.

Specific TypeExporter implementation for edge types.

Check out the 'Data export' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.22.2 Constructor & Destructor Documentation

5.22.2.1 EdgeTypeExporter::EdgeTypeExporter (RowWriter & *rowWriter*, sparksee::gdb::Graph & *graph*, sparksee::gdb::type_t *type*, sparksee::gdb::AttributeList & *attrs*, sparksee::gdb::int32_t *hPos*, sparksee::gdb::int32_t *tPos*, sparksee::gdb::attr_t *hAttr*, sparksee::gdb::attr_t *tAttr*) [inline]

Creates a new instance.

Parameters:

rowWriter [in] Output RowWriter.

graph [in] Graph.

type [in] Type identifier.

attrs [in] Attribute identifiers to be exported.

hPos [in] The position (index column) for the head value.

tPos [in] The position (index column) for the tail value.

hAttr [in] The attribute identifier to get the value to be dumped for the head.

tAttr [in] The attribute identifier to get the value to be dumped for the tail.

5.22.3 Member Function Documentation

5.22.3.1 void EdgeTypeExporter::SetHeadAttribute (sparksee::gdb::attr_t *attr*) [inline]

Sets the attribute that will be used to get the value to be dumped for the head of the edge.

Parameters:

attr [in] Head Attribute

Reimplemented from TypeExporter.

5.22.3.2 void EdgeTypeExporter::SetHeadPosition (sparksee::gdb::int32_t *pos*) [inline]

Sets the position (index column) of the head attribute in the exported data.

Parameters:

pos [in] Head position

Reimplemented from TypeExporter.

5.22.3.3 void EdgeTypeExporter::SetTailAttribute (sparksee::gdb::attr_t *attr*) [inline]

Sets the attribute that will be used to get the value to be dumped for the tail of the edge.

Parameters:

attr [in] Tail Attribute

Reimplemented from TypeExporter.

5.22.3.4 void EdgeTypeExporter::SetTailPosition (sparksee::gdb::int32_t *pos*) [inline]

Sets the position (index column) of the tail attribute in the exported data.

Parameters:

pos [in] Tail position

Reimplemented from TypeExporter.

5.22.3.5 sparksee::gdb::bool_t TypeExporter::CanRun () [protected, inherited]

Checks that all the required settings are ready to run.

Returns:

Returns true if all the settings are ready.

5.22.3.6 void TypeExporter::NotifyListeners (const TypeExporterEvent & *ev*) [protected, inherited]

Notifies progress to all registered listeners.

Parameters:

ev [in] Progress event to be notified.

5.22.3.7 void TypeExporter::RunProcess () throw (sparksee::gdb::IOException, sparksee::gdb::Error) [protected, inherited]

Runs export process.

Exceptions:

IOException If bad things happen writting to the RowWriter.

5.22.3.8 void TypeExporter::Register (TypeExporterListener & *tel*) [inherited]

Registers a new listener.

Parameters:

tel [in] TypeExporterListener to be registered.

5.22.3.9 void TypeExporter::SetRowWriter (RowWriter & *rw*) [inherited]

Sets the output data destination.

Parameters:

rw [in] Input RowWriter.

5.22.3.10 void TypeExporter::SetGraph (sparksee::gdb::Graph & *graph*) [inherited]

Sets the graph that will be exported.

Parameters:

graph [in] Graph.

5.22.3.11 void TypeExporter::SetType (sparksee::gdb::type_t *type*) [inherited]

Sets the type to be exported.

Parameters:

type [in] Type identifier.

5.22.3.12 void TypeExporter::SetAttributes (sparksee::gdb::AttributeList & *attrs*) [inherited]

Sets the list of Attributes.

Parameters:

attrs [in] Attribute identifiers to be exported

5.22.3.13 void TypeExporter::SetFrequency (sparksee::gdb::int32_t *freq*) [inherited]

Sets the frequency of listener notification.

Parameters:

freq [in] Frequency in number of rows managed to notify progress to all listeners

5.22.3.14 void TypeExporter::SetHeader (sparksee::gdb::bool_t *header*) [inherited]

Sets the presence of a header row.

Parameters:

header [in] If TRUE, a header row is dumped with the name of the attributes.

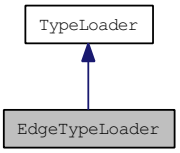
The documentation for this class was generated from the following file:

- EdgeTypeExporter.h

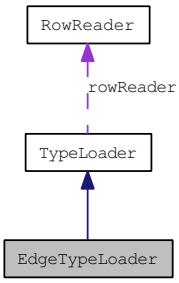
5.23 EdgeTypeLoader Class Reference

EdgeTypeLoader class.

Inheritance diagram for EdgeTypeLoader:



Collaboration diagram for EdgeTypeLoader:



Public Member Functions

- EdgeTypeLoader ()

  Creates a new instance.

- EdgeTypeLoader (RowReader &rowReader, sparksee::gdb::Graph &graph, sparksee::gdb::type_t type, sparksee::gdb::AttributeList &attrs, sparksee::gdb::Int32List &attrsPos, sparksee::gdb::int32_t hPos, sparksee::gdb::int32_t tPos, sparksee::gdb::attr_t hAttr, sparksee::gdb::attr_t tAttr)

  Creates a new instance.

- virtual ~EdgeTypeLoader ()

  Destructor.

- void Run () throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  See the TypeLoader class Run method.

- void RunTwoPhases () throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  See the TypeLoader class RunTwoPhases method.

- void RunNPhases (sparksee::gdb::int32_t partitions) throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  See the TypeLoader class RunNPhases method.

- void SetHeadAttribute (sparksee::gdb::attr_t attr)

  Sets the attribute that will be used to find the head of the edge.

- void SetHeadPosition (sparksee::gdb::int32_t pos)

  Sets the position of the head attribute in the source data.

- void SetTailAttribute (sparksee::gdb::attr_t attr)

  Sets the attribute that will be used to find the tail of the edge.

- void SetTailPosition (sparksee::gdb::int32_t pos)

  Sets the position of the tail attribute in the source data.

- void SetLogError (const std::wstring &path) throw (sparksee::gdb::IOException)

  Sets a log error file.

- void SetLogOff ()

  Truns off all the error reporting.

- void Register (TypeLoaderListener &tel)

  Registers a new listener.

- void SetRowReader (RowReader &rr)

  Sets the input data source.

- void SetGraph (sparksee::gdb::Graph &graph)

  Sets the graph where the data will be loaded.

- void SetLocale (const std::wstring &localeStr)

  Sets the locale that will be used to read the data.

- void SetType (sparksee::gdb::type_t type)

  Sets the type to be loaded.

- void SetAttributes (sparksee::gdb::AttributeList &attrs)

  Sets the list of Attributes.

- void SetAttributePositions (sparksee::gdb::Int32List &attrsPos)

  Sets the list of attribute positions.

- void SetTimestampFormat (const std::wstring &timestampFormat)

  Sets a specific timestamp format.

- void SetFrequency (sparksee::gdb::int32_t freq)

  Sets the frequency of listener notification.

Protected Types

- enum Mode {
  ONE_PHASE,
  TWO_PHASES,
  N_PHASES }

  Load can work in different ways.

Protected Member Functions

- sparksee::gdb::bool_t CanRun ()

  Checks that all the required settings are ready to run.

- void Run (Mode ph, sparksee::gdb::int32_t par) throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  Runs load process.

- void NotifyListeners (const TypeLoaderEvent &ev)

  Notifies progress to all registered listeners.

5.23.1 Detailed Description

EdgeTypeLoader class.

Specific TypeLoader implementation for edge types.

Check out the 'Data import' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.23.2 Member Enumeration Documentation

5.23.2.1 enum TypeLoader::Mode [protected, inherited]

Load can work in different ways.

Enumerator:

ONE_PHASE Performs the load in a phases.
Load all objects an attributes at the same time.

TWO_PHASES Performs the load in two phases.
Firstly load all objects (and create them if necessary) and secondly loads all the attributes.
Working on this mode it is necessary to build a temporary file.

N_PHASES Performs the load in N phases.
Firstly load all objects (and create them if necessary) and secondly loads all the attributes. But in this case, attributes are loaded one by one. This way, if there are three attributes, then 4 traverses to the RowReader are necessary.
Working on this mode it is necessary to build a temporary file.

5.23.3 Constructor & Destructor Documentation

5.23.3.1 EdgeTypeLoader::EdgeTypeLoader (RowReader & *rowReader*, sparksee::gdb::Graph & *graph*, sparksee::gdb::type_t *type*, sparksee::gdb::AttributeList & *attrs*, sparksee::gdb::Int32List & *attrsPos*, sparksee::gdb::int32_t *hPos*, sparksee::gdb::int32_t *tPos*, sparksee::gdb::attr_t *hAttr*, sparksee::gdb::attr_t *tAttr*) [inline]

Creates a new instance.

Parameters:

rowReader [in] Input RowReader.

graph [in] Graph.

type [in] Type identifier.

attrs [in] Attribute identifiers to be loaded.

attrsPos [in] Attribute positions (column index >=0). to all listeners.

hPos [in] The position (index column) for the head value.

tPos [in] The position (index column) for the tail value.

hAttr [in] The attribute identifier for the head.

tAttr [in] The attribute identifier for the tail.

5.23.4 Member Function Documentation

5.23.4.1 void EdgeTypeLoader::SetHeadAttribute (sparksee::gdb::attr_t *attr*) [inline]

Sets the attribute that will be used to find the head of the edge.

This method is protected because only the Edge loaders should have it.

Parameters:

attr [in] Head Attribute

Reimplemented from TypeLoader.

5.23.4.2 void EdgeTypeLoader::SetHeadPosition (sparksee::gdb::int32_t *pos*) [inline]

Sets the position of the head attribute in the source data.

This method is protected because only the Edge loaders should have it.

Parameters:

pos [in] Head position

Reimplemented from TypeLoader.

5.23.4.3 void EdgeTypeLoader::SetTailAttribute (sparksee::gdb::attr_t *attr*) [inline]

Sets the attribute that will be used to find the tail of the edge.

This method is protected because only the Edge loaders should have it.

Parameters:

attr [in] Tail Attribute

Reimplemented from TypeLoader.

5.23.4.4 void EdgeTypeLoader::SetTailPosition (sparksee::gdb::int32_t *pos*) [inline]

Sets the position of the tail attribute in the source data.

This method is protected because only the Edge loaders should have it.

Parameters:

pos [in] Tail position

Reimplemented from TypeLoader.

5.23.4.5 sparksee::gdb::bool_t TypeLoader::CanRun () [protected, inherited]

Checks that all the required settings are ready to run.

Returns:

Returns true if all the settings are ready.

5.23.4.6 void TypeLoader::Run (Mode *ph*, sparksee::gdb::int32_t *par*) throw (sparksee::gdb::IOException, sparksee::gdb::Error) [protected, inherited]

Runs load process.

Exceptions:

IOException If bad things happen reading from the RowReader.

Parameters:

ph [in] The load mode.

par [in] Number of horizontal partitions to perform the load.

5.23.4.7 void TypeLoader::NotifyListeners (const TypeLoaderEvent & *ev*) [protected, inherited]

Notifies progress to all registered listeners.

Parameters:

ev [in] Progress event to be notified.

5.23.4.8 void TypeLoader::SetLogError (const std::wstring & *path*) throw (sparksee::gdb::IOException) [inherited]

Sets a log error file.

By default errors are thrown as a exception and the load process ends. If a log file is set, errors are logged there and the load process does not stop.

Parameters:

path [in] The path to the error log file.

Exceptions:

IOException If bad things happen opening the file.

5.23.4.9 void TypeLoader::SetLogOff () [inherited]

Truns off all the error reporting.

The log file will not be created and no exceptions for invalid data will be thrown. If you just want to turn off the logs, but abort at the first error what you should do is not call this method and not set a logError file.

5.23.4.10 void TypeLoader::Register (TypeLoaderListener & *tel*) [inherited]

Registers a new listener.

Parameters:

← ***tel*** TypeLoaderListener to be registered.

5.23.4.11 void TypeLoader::SetRowReader (RowReader & *rr*) [inherited]

Sets the input data source.

Parameters:

rr [in] Input RowReader.

5.23.4.12 void TypeLoader::SetGraph (sparksee::gdb::Graph & *graph*) [inherited]

Sets the graph where the data will be loaded.

Parameters:

graph [in] Graph.

5.23.4.13 void TypeLoader::SetLocale (const std::wstring & *localeStr*) [inherited]

Sets the locale that will be used to read the data.

It should match the locale used in the rowreader.

Parameters:

localeStr [in] The locale string for the read data. See CSVReader.

5.23.4.14 void TypeLoader::SetType (sparksee::gdb::type_t *type*) [inherited]

Sets the type to be loaded.

Parameters:

type [in] Type identifier.

5.23.4.15 void TypeLoader::SetAttributes (sparksee::gdb::AttributeList & *attrs*) [inherited]

Sets the list of Attributes.

Parameters:

attrs [in] Attribute identifiers to be loaded

5.23.4.16 void TypeLoader::SetAttributePositions (sparksee::gdb::Int32List & *attrsPos*) [inherited]

Sets the list of attribute positions.

Parameters:

attrsPos [in] Attribute positions (column index >=0).

5.23.4.17 void TypeLoader::SetTimestampFormat (const std::wstring & *timestampFormat*) [inherited]

Sets a specific timestamp format.

Parameters:

timestampFormat [in] A string with the timestamp format definition.

5.23.4.18 void TypeLoader::SetFrequency (sparksee::gdb::int32_t *freq*) [inherited]

Sets the frequency of listener notification.

Parameters:

freq [in] Frequency in number of rows managed to notify progress to all listeners

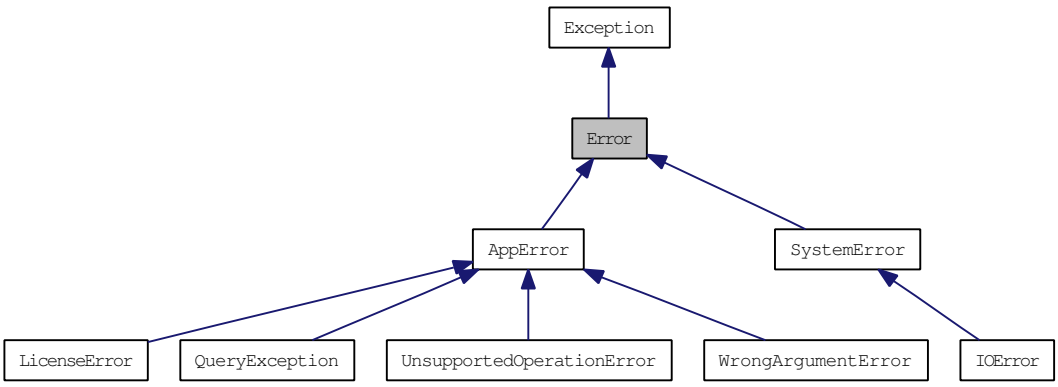
The documentation for this class was generated from the following file:

- EdgeTypeLoader.h

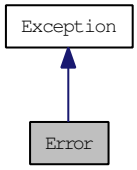
5.24 Error Class Reference

Error class.

Inheritance diagram for Error:



Collaboration diagram for Error:



Public Member Functions

- Error ()
  Creates a new instance.
- Error (const std::string &mess)
  Creates a new instance.
- virtual ~Error ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.
- void SetMessage (const std::string &mess)
  Sets the message of the exception.

Static Public Member Functions

- static Error NewError (int32_t coreErrorCode)
  Creates a new Error instance from a sparksee_core error code.

Protected Attributes

- std::string message
  Message of the exception.

5.24.1 Detailed Description

Error class.

An Error corresponds to an unexpected and unpredictable exception.

As all methods can throw an Error at any moment, it is not expected they declare the Error (or subclasses) they may throw.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.24.2 Constructor & Destructor Documentation

5.24.2.1 Error::Error (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.24.3 Member Function Documentation

5.24.3.1 static Error Error::NewError (int32_t *coreErrorCode*) [static]

Creates a new Error instance from a sparksee_core error code.

Parameters:

coreErrorCode [in] Sparkseecore error code.

Returns:

Depending on the given sparksee_core error, this may return an Error instance or an specific Error subclass instance.

5.24.3.2 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.24.3.3 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

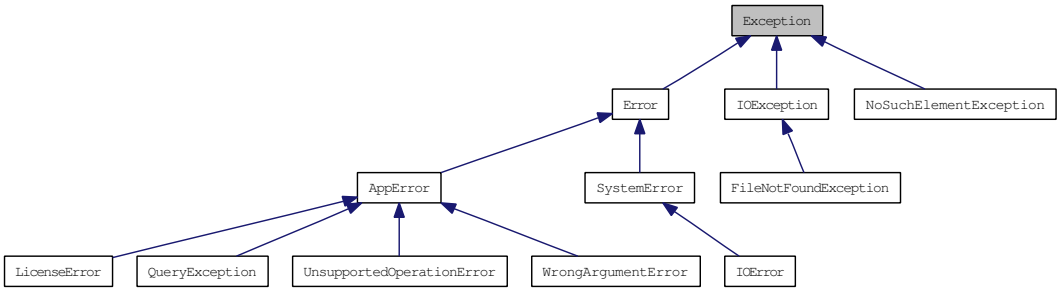
The documentation for this class was generated from the following file:

- Exception.h

5.25 Exception Class Reference

Exception class.

Inheritance diagram for Exception:



Public Member Functions

- Exception ()

  Creates a new instance.

- Exception (const std::string &mess)

  Creates a new instance.

- const std::string & Message () const

  Gets the message of the exception.

- void SetMessage (const std::string &mess)

  Sets the message of the exception.

- virtual ~Exception ()

  Destructor.

Protected Attributes

- std::string message

  Message of the exception.

5.25.1 Detailed Description

Exception class.

This is the superclass of those exceptions that can be thrown during the normal execution of a program.

It is expected all methods declare all Exception (or subclasses) they throw.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.25.2 Constructor & Destructor Documentation

5.25.2.1 Exception::Exception (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.25.3 Member Function Documentation

5.25.3.1 const std::string& Exception::Message () const

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.25.3.2 void Exception::SetMessage (const std::string & *mess*)

Sets the message of the exception.

Parameters:

mess [in] Message.

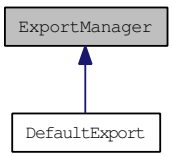
The documentation for this class was generated from the following file:

- Exception.h

5.26 ExportManager Class Reference

Defines how to export a graph to an external format.

Inheritance diagram for ExportManager:



Public Member Functions

- virtual ~ExportManager ()

  Destructor.

- virtual void Prepare (Graph *graph)=0

Prepares the graph for the export process.

- virtual void Release ()=0

  Ends the export process.

- virtual bool_t GetGraph (GraphExport &graphExport)=0

  Gets the graph export definition.

- virtual bool_t GetNodeType (type_t type, NodeExport &nodeExport)=0

  Gets the default node export definition for the given node type.

- virtual bool_t GetEdgeType (type_t type, EdgeExport &edgeExport)=0

  Gets the default node export definition for the given edge type.

- virtual bool_t GetNode (oid_t node, NodeExport &nodeExport)=0

  Gets the node export definition for the given node.

- virtual bool_t GetEdge (oid_t edge, EdgeExport &edgeExport)=0

  Gets the edge export definition for the given edge.

- virtual bool_t EnableType (type_t type)=0

  Gets whether a node or edge type must be exported or not.

5.26.1 Detailed Description

Defines how to export a graph to an external format.

This is an interface which must be implemented by the user. While the export proces, a call for each node or edge type and node or edge object is done to get how to export that element.

It is possible to export a Graph to a diferent fortmats. Nowadays, available formats are defined in the ExportType enum.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.26.2 Member Function Documentation

5.26.2.1 virtual void ExportManager::Prepare (Graph * *graph*) [pure virtual]

Prepares the graph for the export process.

It is called once before the export process.

Parameters:

graph Graph to be exported.

Implemented in DefaultExport.

5.26.2.2 virtual void ExportManager::Release () [pure virtual]

Ends the export process.

It is called once after the export process.

Implemented in DefaultExport.

5.26.2.3 virtual bool_t ExportManager::GetGraph (GraphExport & *graphExport*) [pure virtual]

Gets the graph export definition.

Parameters:

graphExport [out] The GraphExport which defines how to export the graph.

Returns:

TRUE.

Implemented in DefaultExport.

5.26.2.4 virtual bool_t ExportManager::GetNodeType (type_t *type*, NodeExport & *nodeExport*) [pure virtual]

Gets the default node export definition for the given node type.

GetNode has a higher priority than this function. That is, only if GetNode returns FALSE, the NodeExport of this function will be used.

Parameters:

type [in] Node type identifier.

nodeExport [out] The NodeExport which defines how to export the nodes of the given type.

Returns:

TRUE.

Implemented in DefaultExport.

5.26.2.5 virtual bool_t ExportManager::GetEdgeType (type_t *type*, EdgeExport & *edgeExport*) [pure virtual]

Gets the default node export definition for the given edge type.

GetEdge has a higher priority than this function. That is, only if GetEdge returns FALSE, the EdgeExport of this function will be used.

Parameters:

type [in] Edge type identifier.

edgeExport [out] The EdgeExport which defines how to export the edges of the given type.

Returns:

TRUE.

Implemented in DefaultExport.

5.26.2.6 virtual bool_t ExportManager::GetNode (oid_t *node*, NodeExport & *nodeExport*) [pure virtual]

Gets the node export definition for the given node.

Parameters:

node Node identifier.

nodeExport [out] The NodeExport which defines how to export given node.

Returns:

TRUE if the given NodeExport has been updated, otherwise FALSE will be returned and the default NodeExport for the type the node belongs to will be used.

Implemented in DefaultExport.

5.26.2.7 virtual bool_t ExportManager::GetEdge (oid_t *edge*, EdgeExport & *edgeExport*) [pure virtual]

Gets the edge export definition for the given edge.

Parameters:

edge Edge identifier.

edgeExport [out] The EdgeExport which defines how to export given edge.

Returns:

TRUE if the given EdgeExport has been updated, otherwise FALSE will be returned and the default EdgeExport for the type the edge belongs to will be used.

Implemented in DefaultExport.

5.26.2.8 virtual bool_t ExportManager::EnableType (type_t *type*) [pure virtual]

Gets whether a node or edge type must be exported or not.

Parameters:

type Node or edge type identifier.

Returns:

If TRUE all objects of the given type will be exported, otherwise they will not be exported.

Implemented in DefaultExport.

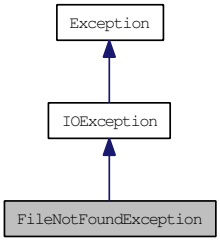
The documentation for this class was generated from the following file:

- Export.h

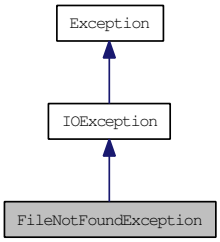
5.27 FileNotFoundException Class Reference

File not found exception class.

Inheritance diagram for FileNotFoundException:



Collaboration diagram for FileNotFoundException:



Public Member Functions

- FileNotFoundException ()
  Creates a new instance.
- FileNotFoundException (const std::string &mess)
  Creates a new instance.
- virtual ~FileNotFoundException ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.
- void SetMessage (const std::string &mess)
  Sets the message of the exception.

Protected Attributes

- std::string message
  Message of the exception.

5.27.1 Detailed Description

File not found exception class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.27.2 Constructor & Destructor Documentation

5.27.2.1 FileNotFoundException::FileNotFoundException (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.27.3 Member Function Documentation

5.27.3.1 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.27.3.2 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

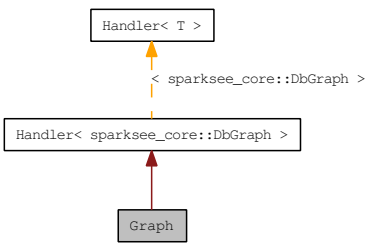
The documentation for this class was generated from the following file:

- Exception.h

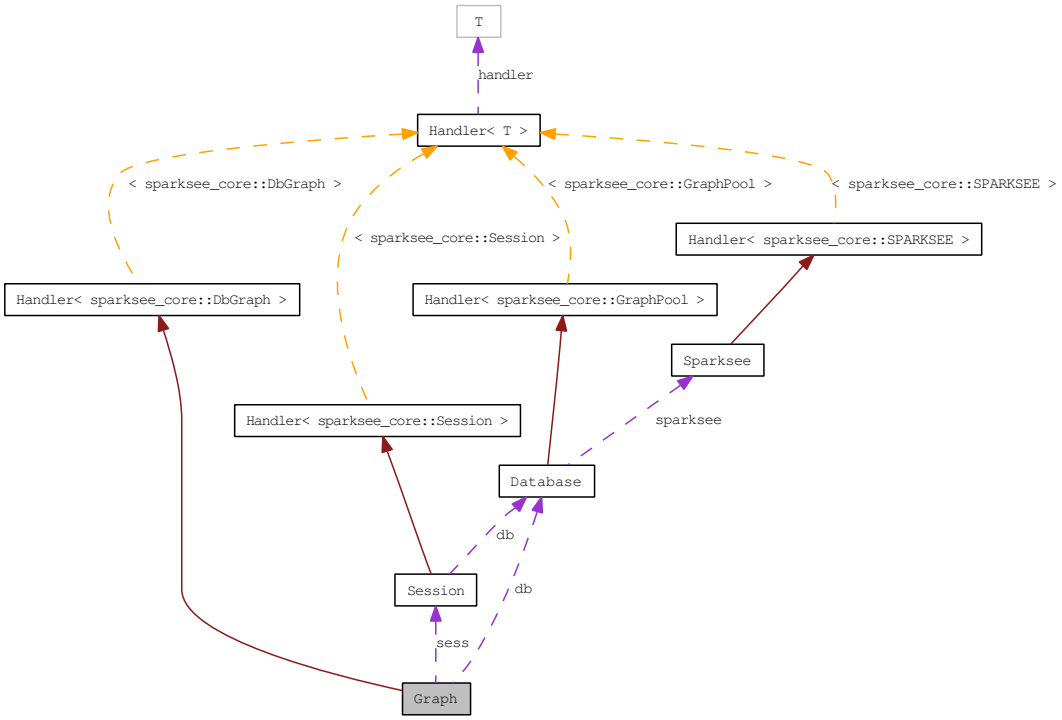
5.28 Graph Class Reference

Graph class.

Inheritance diagram for Graph:



Collaboration diagram for Graph:



Public Member Functions

- virtual ~Graph ()

  Destructor.

- type_t NewNodeType (const std::wstring &name)

  Creates a new node type.

- oid_t NewNode (type_t type)

  Creates a new node instance.

- type_t NewEdgeType (const std::wstring &name, bool_t directed, bool_t neighbors)

  Creates a new edge type.

- type_t NewRestrictedEdgeType (const std::wstring &name, type_t tail, type_t head, bool_t neighbors)

  Creates a new restricted edge type.

- oid_t NewEdge (type_t type, oid_t tail, oid_t head)

  Creates a new edge instance.

- oid_t NewEdge (type_t type, attr_t tailAttr, Value &tailV, attr_t headAttr, Value &headV)

  Creates a new edge instance.

- int64_t CountNodes ()

Gets the number of nodes.

- int64_t CountEdges ()

  Gets the number of edges.

- EdgeData * GetEdgeData (oid_t edge)

  Gets information about an edge.

- oid_t GetEdgePeer (oid_t edge, oid_t node)

  Gets the other end for the given edge.

- void Drop (oid_t oid)

  Drops the given OID.

- void Drop (Objects *objs)

  Drops all the OIDs from the given collection.

- type_t GetObjectType (oid_t oid)

  Gets the Sparksee node or edge type identifier for the given OID.

- attr_t NewAttribute (type_t type, const std::wstring &name, DataType dt, AttributeKind kind)

  Creates a new attribute.

- attr_t NewAttribute (type_t type, const std::wstring &name, DataType dt, AttributeKind kind, Value &defaultValue)

  Creates a new attribute with a default value.

- attr_t NewSessionAttribute (type_t type, DataType dt, AttributeKind kind)

  Creates a new Session attribute.

- attr_t NewSessionAttribute (type_t type, DataType dt, AttributeKind kind, Value &defaultValue)

  Creates a new Session attribute with a default value.

- void SetAttributeDefaultValue (attr_t attr, Value &value)

  Sets a default value for an attribute.

- void IndexAttribute (attr_t attr, AttributeKind kind)

  Updates the index of the given attribute.

- void GetAttribute (oid_t oid, attr_t attr, Value &value)

  Gets the Value for the given attribute and OID.

- Value * GetAttribute (oid_t oid, attr_t attr)

  Gets the Value for the given attribute and OID.

- TextStream * GetAttributeText (oid_t oid, attr_t attr)

  Gets the read-only TextStream for the given text attribute and OID.

- void SetAttributeText (oid_t oid, attr_t attr, TextStream *tstream)

  Sets the writable TextStream for the given text attribute and OID.

- void SetAttribute (oid_t oid, attr_t attr, Value &value)

  Sets the Value for the given attribute and OID.

- AttributeStatistics * GetAttributeStatistics (attr_t attr, bool_t basic)

  Gets statistics from the given attribute.

- int64_t GetAttributeIntervalCount (attr_t attr, Value &lower, bool_t includeLower, Value &higher, bool_t includeHigher)

  Gets how many objects have a value into the given range for the given attribute.

- type_t FindType (const std::wstring &name)

  Gets the Sparksee type identifier for the given type name.

- Type * GetType (type_t type)

  Gets information about the given type.

- void RemoveType (type_t type)

  Removes the given type.

- void RenameType (const std::wstring &oldName, const std::wstring &newName)

  Renames a type.

- void RenameType (type_t type, const std::wstring &newName)

  Renames a type.

- attr_t FindAttribute (type_t type, const std::wstring &name)

  Gets the Sparksee attribute identifier for the given type identifier and attribute name.

- Attribute * GetAttribute (attr_t attr)

  Gets information about the given attribute.

- void RemoveAttribute (attr_t attr)

  Removes the given attribute.

- void RenameAttribute (attr_t attr, const std::wstring &newName)

  Renames an attribute.

- oid_t FindObject (attr_t attr, Value &value)

  Finds one object having the given Value for the given attribute.

- oid_t FindOrCreateObject (attr_t attr, Value &value)

  Finds one object having the given Value for the attribute or it creates one does not exist any.

- Objects * Select (type_t type)

  Selects all OIDs belonging to the given type.

- Objects * Select (attr_t attr, Condition cond, const Value &value)

  Selects all OIDs satisfying the given condition for the given attribute.

- Objects * Select (attr_t attr, Condition cond, const Value &lower, const Value &higher)

  Selects all OIDs satisfying the given condition for the given attribute.

- Objects * Select (attr_t attr, Condition cond, const Value &value, const Objects *restriction)

  Selects all OIDs satisfying the given condition for the given attribute.

- Objects * Select (attr_t attr, Condition cond, const Value &lower, const Value &higher, const Objects *restriction)

  Selects all OIDs satisfying the given condition for the given attribute.

- Objects * Explode (oid_t oid, type_t etype, EdgesDirection dir)

  Selects all edges from or to the given node OID and for the given edge type.

- Objects * Explode (Objects *objs, type_t etype, EdgesDirection dir)

  Selects all edges from or to each of the node OID in the given collection and for the given edge type.

- int64_t Degree (oid_t oid, type_t etype, EdgesDirection dir)

  Gets the number of edges from or to the given node OID and for the given edge type.

- Objects * Neighbors (oid_t oid, type_t etype, EdgesDirection dir)

  Selects all neighbor nodes from or to the given node OID and for the given edge type.

- Objects * Neighbors (Objects *objs, type_t etype, EdgesDirection dir)

  Selects all neighbor nodes from or to each of the node OID in the given collection and for the given edge type.

- Objects * Edges (type_t etype, oid_t tail, oid_t head)

  Gets all the edges of the given type between two given nodes (tail and head).

- oid_t FindEdge (type_t etype, oid_t tail, oid_t head)

  Gets any of the edges of the given type between two given nodes (tail and head).

- oid_t FindOrCreateEdge (type_t etype, oid_t tail, oid_t head)

  Gets any of the edges of the specified type between two given nodes (tail and head).

- Objects * Tails (Objects *edges)

  Gets all the tails from the given edges collection.

- Objects * Heads (Objects *edges)

  Gets all the heads from the given edges collection.

- void TailsAndHeads (Objects *edges, Objects *tails, Objects *heads)

  Gets all the tails and heads from the given edges collection.

- TypeList * FindNodeTypes ()

  Gets all existing Sparksee node type identifiers.

- TypeList * FindEdgeTypes ()

  Gets all existing Sparksee edge type identifiers.

- TypeList * FindTypes ()

  Gets all existing Sparksee node and edge type identifiers.

- AttributeList * FindAttributes (type_t type)

  Gets all existing Sparksee attribute identifiers for the given type identifier.

- AttributeList * GetAttributes (oid_t oid)

  Gets all Sparksee attribute identifiers with a non-NULL value for the given Sparksee OID.

- Values * GetValues (attr_t attr)

  Gets the Value collection for the given attribute.

- void DumpData (const std::wstring &file) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)

  Dumps logical data to a file.

- void DumpStorage (const std::wstring &file) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)

  Dumps internal storage data to a file.

- void Export (const std::wstring &file, ExportType type, ExportManager *em) throw (sparksee::gdb::IOException)

  Exports the Graph.

- void Backup (const std::wstring &file) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)

  Dumps all the data to a backup file.

Friends

- class Session
- class Values
- class ValuesIterator

5.28.1 Detailed Description

Graph class.

Each Database has a Graph associated, which is the persistent graph which contains all data stored into the graph database and is retrieved from a Session.

Check out the 'API' and the 'SPARKSEE graph database' sections in the SPARKSEE User Manual for more details on the use of this class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.28.2 Member Function Documentation

5.28.2.1 type_t Graph::NewNodeType (const std::wstring & *name*)

Creates a new node type.

Parameters:

name [in] Unique name for the new node type.

Returns:

Unique Sparksee type identifier.

5.28.2.2 oid_t Graph::NewNode (type_t *type*)

Creates a new node instance.

Parameters:

type [in] Sparksee type identifier.

Returns:

Unique OID of the new node instance.

5.28.2.3 type_t Graph::NewEdgeType (const std::wstring & *name*, bool_t *directed*, bool_t *neighbors*)

Creates a new edge type.

Parameters:

name [in] Unique name for the new edge type.

directed [in] If TRUE, this creates a directed edge type, otherwise this creates a undirected edge type.

neighbors [in] If TRUE, this indexes neighbor nodes, otherwise not.

Returns:

Unique Sparksee type identifier.

5.28.2.4 type_t Graph::NewRestrictedEdgeType (const std::wstring & *name*, type_t *tail*, type_t *head*, bool_t *neighbors*)

Creates a new restricted edge type.

Parameters:

name [in] Unique name for the new edge type.

tail [in] Tail Sparksee node type identifier.

head [in] Head Sparksee node type identifier.

neighbors [in] If TRUE, this indexes neighbor nodes, otherwise not.

Returns:

Unique Sparksee type identifier.

5.28.2.5 oid_t Graph::NewEdge (type_t *type*, oid_t *tail*, oid_t *head*)

Creates a new edge instance.

Parameters:

type [in] Sparksee type identifier.

tail [in] Source Sparksee OID.

head [in] Target Sparksee OID.

Returns:

Unique OID of the new edge instance.

5.28.2.6 oid_t Graph::NewEdge (type_t *type*, attr_t *tailAttr*, Value & *tailV*, attr_t *headAttr*, Value & *headV*)

Creates a new edge instance.

The tail of the edge will be any node having the given tailV Value for the given tailAttr attribute identifier, and the head of the edge will be any node having the given headV Value for the given headAttr attribute identifier.

Parameters:

type [in] Sparksee type identifier.

tailAttr [in] Sparksee attribute identifier.

tailV [in] Value.

headAttr [in] Sparksee attribute identifier.

headV [in] Value.

Returns:

Unique OID of the new edge instance.

5.28.2.7 int64_t Graph::CountNodes ()

Gets the number of nodes.

Returns:

The number of nodes.

5.28.2.8 int64_t Graph::CountEdges ()

Gets the number of edges.

Returns:

The number of edges.

5.28.2.9 EdgeData* Graph::GetEdgeData (oid_t *edge*)

Gets information about an edge.

Parameters:

edge [in] Sparksee edge identifier.

Returns:

An EdgeData instance.

5.28.2.10 oid_t Graph::GetEdgePeer (oid_t *edge*, oid_t *node*)

Gets the other end for the given edge.

Parameters:

edge [in] Sparksee edge identifier.

node [in] Sparksee node identifier. It must be one of the ends of the edge.

Returns:

The other end of the edge.

5.28.2.11 void Graph::Drop (oid_t *oid*)

Drops the given OID.

It also removes its egdges as well as its attribute values.

Parameters:

oid [in] Sparksee OID to be removed.

5.28.2.12 void Graph::Drop (Objects * *objs*)

Drops all the OIDs from the given collection.

See Drop method with the single OID parameter. This performs that call for all the elements into the collection.

Parameters:

objs [in] Objects collection with the OIDs to be removed.

5.28.2.13 type_t Graph::GetObjectType (oid_t *oid*)

Gets the Sparksee node or edge type identifier for the given OID.

Parameters:

oid [in] Sparksee OID.

Returns:

Sparksee node or edge type identifier.

5.28.2.14 attr_t Graph::NewAttribute (type_t *type*, const std::wstring & *name*, DataType *dt*, AttributeKind *kind*)

Creates a new attribute.

Parameters:

type [in] Sparksee node or edge type identifier.

name [in] Unique name for the new attribute.

dt [in] Data type for the new attribute.

kind [in] Attribute kind.

Returns:

Unique Sparksee attribute identifier.

5.28.2.15 attr_t Graph::NewAttribute (type_t *type*, const std::wstring & *name*, DataType *dt*, AttributeKind *kind*, Value & *defaultValue*)

Creates a new attribute with a default value.

Parameters:

type [in] Sparksee node or edge type identifier.

name [in] Unique name for the new attribute.

dt [in] Data type for the new attribute.

kind [in] Attribute kind.

defaultValue [in] The default value to use in each new node/edge.

Returns:

Unique Sparksee attribute identifier.

5.28.2.16 attr_t Graph::NewSessionAttribute (type_t *type*, DataType *dt*, AttributeKind *kind*)

Creates a new Session attribute.

Session attributes are exclusive for the Session (just its Session can use the attribute) and are automatically removed when the Session is closed (thus, attribute data is not persistent into the database).

Since they are not persistent, they cannot be retrieved from the database, so they do not have an identifier name.

Parameters:

type [in] Sparksee node or edge type identifier.

dt [in] Data type for the new attribute.

kind [in] Attribute kind.

Returns:

Unique Sparksee attribute identifier.

5.28.2.17 attr_t Graph::NewSessionAttribute (type_t *type*, DataType *dt*, AttributeKind *kind*, Value & *defaultValue*)

Creates a new Session attribute with a default value.

Session attributes are exclusive for the Session (just its Session can use the attribute) and are automatically removed when the Session is closed (thus, attribute data is not persistent into the database).

Since they are not persistent, they cannot be retrieved from the database, so they do not have an identifier name.

Parameters:

type [in] Sparksee node or edge type identifier.

dt [in] Data type for the new attribute.

kind [in] Attribute kind.

defaultValue [in] The default value to use in each new node/edge.

Returns:

Unique Sparksee attribute identifier.

5.28.2.18 void Graph::SetAttributeDefaultValue (attr_t *attr*, Value & *value*)

Sets a default value for an attribute.

The default value will be applied to all the new nodes or edges.

The given value must have the same DataType as the attribute or be a NULL value to remove the current default value.

Parameters:

attr [in] The attribute.

value [in] The default value to use for this attribute.

5.28.2.19 void Graph::IndexAttribute (attr_t *attr*, AttributeKind *kind*)

Updates the index of the given attribute.

This just works if the current index of the attribute corresponds to the AttributeKind Basic and the new one is Indexed or Unique.

Parameters:

attr [in] Sparksee attribute identifier.

kind [in] Attribute kind.

5.28.2.20 void Graph::GetAttribute (oid_t *oid*, attr_t *attr*, Value & *value*)

Gets the Value for the given attribute and OID.

Parameters:

oid [in] Sparksee OID.

attr [in] Sparksee attribute identifier.

value [in|out] Value for the given attribute and for the given OID.

5.28.2.21 Value* Graph::GetAttribute (oid_t *oid*, attr_t *attr*)

Gets the Value for the given attribute and OID.

The other version of this call, where the Value is an output parameter instead of the return, is better because it allows the user to reuse an existing Value instance, whereas this call always creates a new Value instance to be returned.

It never returns NULL. Thus, in case the OID has a NULL value for the attribute it returns a NULL Value instance.

Parameters:

oid [in] Sparksee OID.

attr [in] Sparksee attribute identifier.

Returns:

A new Value instance having the attribute value for the given OID.

5.28.2.22 TextStream* Graph::GetAttributeText (oid_t *oid*, attr_t *attr*)

Gets the read-only TextStream for the given text attribute and OID.

Parameters:

oid [in] Sparksee OID.

attr [in] Sparksee attribute identifier.

Returns:

A TextStream. This returns a TextStream to read.

5.28.2.23 void Graph::SetAttributeText (oid_t *oid*, attr_t *attr*, TextStream * *tstream*)

Sets the writable TextStream for the given text attribute and OID.

Parameters:

oid [in] Sparksee OID.

attr [in] Sparksee attribute identifier.

tstream [in] New Text value. This corresponds to a TextStream to write.

5.28.2.24 void Graph::SetAttribute (oid_t *oid*, attr_t *attr*, Value & *value*)

Sets the Value for the given attribute and OID.

Parameters:

oid [in] Sparksee OID.

attr [in] Sparksee attribute identifier.

value [in] Value for the given attribute and for the given OID.

5.28.2.25 AttributeStatistics* Graph::GetAttributeStatistics (attr_t *attr*, bool_t *basic*)

Gets statistics from the given attribute.

Parameters:

attr [in] Sparksee attribute identifier.

basic [in] If FALSE all statistics are computed, if TRUE just those statistics marked as basic will be computed (see description of the AttributeStatistics class). Of course, computing just basic statistics will be faster than computing all of them.

Returns:

An AttributeStatistics instace.

5.28.2.26 int64_t Graph::GetAttributeIntervalCount (attr_t *attr*, Value & *lower*, bool_t *includeLower*, Value & *higher*, bool_t *includeHigher*)

Gets how many objects have a value into the given range for the given attribute.

This only works for the attributes with the AttributeKind Indexed or Unique.

Given values must belong to the same DataType than the attribute.

Parameters:

attr [in] Sparksee attribute identifier.

lower [in] Lower bound Value of the range.

includeLower [in] If TRUE, include lower bound Value of the range.

higher [in] Higher bound Value of the range.

includeHigher [in] If TRUE, include higher bound Value of the range.

Returns:

Number of objects having a value into the given range.

5.28.2.27 type_t Graph::FindType (const std::wstring & *name*)

Gets the Sparksee type identifier for the given type name.

Parameters:

name [in] Unique type name.

Returns:

The Sparksee type identifier for the given type name or the Type InvalidType if there is no type with the given name.

5.28.2.28 Type* Graph::GetType (type_t *type*)

Gets information about the given type.

Parameters:

type [in] Sparksee type identifier.

Returns:

The Type for the given Sparksee type identifier.

5.28.2.29 void Graph::RemoveType (type_t *type*)

Removes the given type.

This fails if there exist attributes defined for the type or if there exist restricted edges referencing this type.

Parameters:

type [in] Sparksee type identifier.

5.28.2.30 void Graph::RenameType (const std::wstring & *oldName*, const std::wstring & *newName*)

Renames a type.

The new name must be available.

Parameters:

oldName [in] The current name of the type to be renamed.

newName [in] The new name for the type.

5.28.2.31 void Graph::RenameType (type_t *type*, const std::wstring & *newName*)

Renames a type.

The new name must be available.

Parameters:

type [in] The type to be renamed.

newName [in] The new name for the type.

5.28.2.32 attr_t Graph::FindAttribute (type_t *type*, const std::wstring & *name*)

Gets the Sparksee attribute identifier for the given type identifier and attribute name.

Parameters:

type [in] Sparksee type identifier.

name [in] Unique attribute name.

Returns:

The Sparksee attribute identifier for the given type and attribute name or InvalidAttribute if there is no attribute with the given name for the given type.

5.28.2.33 Attribute* Graph::GetAttribute (attr_t *attr*)

Gets information about the given attribute.

Parameters:

attr [in] Sparksee attribute identifier.

Returns:

The Attribute for the given Sparksee attribute identifier.

5.28.2.34 void Graph::RemoveAttribute (attr_t *attr*)

Removes the given attribute.

Parameters:

attr [in] Sparksee attribute identifier.

5.28.2.35 void Graph::RenameAttribute (attr_t *attr*, const std::wstring & *newName*)

Renames an attribute.

The new name must be available.

Parameters:

attr [in] Sparksee attribute identifier.

newName [in] The new name for the attribute.

5.28.2.36 oid_t Graph::FindObject (attr_t *attr*, Value & *value*)

Finds one object having the given Value for the given attribute.

If there are more than one, then any of them will be returned. And in case there are no object having this Value, the Objects InvalidOID will be returned.

Parameters:

attr [in] Sparksee attribute identifier.

value [in] Value.

Returns:

Sparksee OID or the Objects InvalidOID.

5.28.2.37 oid_t Graph::FindOrCreateObject (attr_t *attr*, Value & *value*)

Finds one object having the given Value for the attribute or it creates one does not exist any.

If the attribute is a node or edge attribute and at least one node/edge with that value is found, it returns one of them. But if it does not exist, then: If it's a node attribute it will create it and set the attribute. If it's an edge attribute it will return the InvalidOID.

Using this method with a global attribute will return the InvalidOID.

Parameters:

attr [in] Sparksee attribute identifier.

value [in] Value.

Returns:

Sparksee OID or the Objects InvalidOID.

5.28.2.38 Objects* Graph::Select (type_t *type*)

Selects all OIDs belonging to the given type.

Parameters:

type [in] Sparksee type identifier.

Returns:

Objects instance.

5.28.2.39 Objects* Graph::Select (attr_t *attr*, Condition *cond*, const Value & *value*)

Selects all OIDs satisfying the given condition for the given attribute.

Parameters:

attr [in] Sparksee attribute identifier.

cond [in] Condition to be satisfied.

value [in] Value to be satisfied.

Returns:

Objects instance.

5.28.2.40 Objects* Graph::Select (attr_t *attr*, Condition *cond*, const Value & *lower*, const Value & *higher*)

Selects all OIDs satisfying the given condition for the given attribute.

This allows to perform the Between operation, thus it has two Value arguments.

Parameters:

attr [in] Sparksee attribute identifier.

cond [in] Condition to be satisfied. It must be the Between Condition.

lower [in] Lower-bound Value to be satisfied.

higher [in] Higher-bound Value to be satisfied.

Returns:

Objects instance.

5.28.2.41 Objects* Graph::Select (attr_t *attr*, Condition *cond*, const Value & *value*, const Objects * *restriction*)

Selects all OIDs satisfying the given condition for the given attribute.

Parameters:

attr [in] Sparksee attribute identifier.

cond [in] Condition to be satisfied.

value [in] Value to be satisfied.

restriction [in] Objects to limit the select in this set of objects.

Returns:

Objects instance.

5.28.2.42 Objects* Graph::Select (attr_t *attr*, Condition *cond*, const Value & *lower*, const Value & *higher*, const Objects * *restriction*)

Selects all OIDs satisfying the given condition for the given attribute.

This allows to perform the Between operation, thus it has two Value arguments.

Parameters:

attr [in] Sparksee attribute identifier.

cond [in] Condition to be satisfied. It must be the Between Condition.

lower [in] Lower-bound Value to be satisfied.

higher [in] Higher-bound Value to be satisfied.

restriction [in] Objects to limit the select in this set of objects.

Returns:

Objects instance.

5.28.2.43 Objects* Graph::Explode (oid_t *oid*, type_t *etype*, EdgesDirection *dir*)

Selects all edges from or to the given node OID and for the given edge type.

Parameters:

oid [in] Sparksee node OID.

etype [in] Sparksee edge type identifier.

dir [in] Direction.

Returns:

Objects instance.

5.28.2.44 Objects* Graph::Explode (Objects * *objs*, type_t *etype*, EdgesDirection *dir*)

Selects all edges from or to each of the node OID in the given collection and for the given edge type.

Parameters:

objs [in] Sparksee node OID collection.
etype [in] Sparksee edge type identifier.
dir [in] Direction.

Returns:

Objects instance.

5.28.2.45 int64_t Graph::Degree (oid_t *oid*, type_t *etype*, EdgesDirection *dir*)

Gets the number of edges from or to the given node OID and for the given edge type.

Parameters:

oid [in] Sparksee node OID.
etype [in] Sparksee edge type identifier.
dir [in] Direction.

Returns:

The number of edges.

5.28.2.46 Objects* Graph::Neighbors (oid_t *oid*, type_t *etype*, EdgesDirection *dir*)

Selects all neighbor nodes from or to the given node OID and for the given edge type.

Parameters:

oid [in] Sparksee node OID.
etype [in] Sparksee edge type identifier.
dir [in] Direction.

Returns:

Objects instance.

5.28.2.47 Objects* Graph::Neighbors (Objects * *objs*, type_t *etype*, EdgesDirection *dir*)

Selects all neighbor nodes from or to each of the node OID in the given collection and for the given edge type.

Parameters:

objs [in] Sparksee node OID collection.
etype [in] Sparksee edge type identifier.
dir [in] Direction.

Returns:

Objects instance.

5.28.2.48 Objects* Graph::Edges (type_t *etype*, oid_t *tail*, oid_t *head*)

Gets all the edges of the given type between two given nodes (tail and head).

Parameters:

etype [in] Sparksee edge type identifier.
tail [in] Tail node identifier.
head [in] Head node identifier.

Returns:

Objects instance.

5.28.2.49 oid_t Graph::FindEdge (type_t *etype*, oid_t *tail*, oid_t *head*)

Gets any of the edges of the given type between two given nodes (tail and head).

If there are more than one, then any of them will be returned. And in case there are no edge between the given tail and head, the Objects InvalidOID will be returned.

Parameters:

etype [in] Sparksee edge type identifier.
tail [in] Tail node identifier.
head [in] Head node identifier.

Returns:

Any of the edges or the Objects InvalidOID.

5.28.2.50 oid_t Graph::FindOrCreateEdge (type_t *etype*, oid_t *tail*, oid_t *head*)

Gets any of the edges of the specified type between two given nodes (tail and head).

If it can not find any edge of this type between them it tries to create a new one.

Parameters:

etype [in] Sparksee edge type identifier.
tail [in] Tail node identifier.
head [in] Head node identifier.

Returns:

Any of the edges or the Objects InvalidOID.

5.28.2.51 Objects* Graph::Tails (Objects * *edges*)

Gets all the tails from the given edges collection.

Parameters:

edges [in] Sparksee edge identifier collection.

Returns:

The tails collection.

5.28.2.52 Objects* Graph::Heads (Objects * *edges*)

Gets all the heads from the given edges collection.

Parameters:

edges [in] Sparksee edge identifier collection.

Returns:

The heads collection.

5.28.2.53 void Graph::TailsAndHeads (Objects * *edges*, Objects * *tails*, Objects * *heads*)

Gets all the tails and heads from the given edges collection.

Parameters:

edges [in] Sparksee edge identifier collection.
tails [in|out] If not NULL, all the tails will be stored here.
heads [in|out] If not NULL, all the heads will be stored here.

5.28.2.54 TypeList* Graph::FindNodeTypes ()

Gets all existing Sparksee node type identifiers.

Returns:

Sparksee node type identifier list.

5.28.2.55 TypeList* Graph::FindEdgeTypes ()

Gets all existing Sparksee edge type identifiers.

Returns:

Sparksee edge type identifier list.

5.28.2.56 TypeList* Graph::FindTypes ()

Gets all existing Sparksee node and edge type identifiers.

Returns:

Sparksee node and edge type identifier list.

5.28.2.57 AttributeList* Graph::FindAttributes (type_t *type*)

Gets all existing Sparksee attribute identifiers for the given type identifier.

Parameters:

type [in] Sparksee type identifier.

Returns:

Sparksee attribute identifier list.

5.28.2.58 AttributeList* Graph::GetAttributes (oid_t *oid*)

Gets all Sparksee attribute identifiers with a non-NULL value for the given Sparksee OID.

Parameters:

oid [in] Sparksee OID.

Returns:

Sparksee attribute identifier list.

5.28.2.59 Values* Graph::GetValues (attr_t *attr*)

Gets the Value collection for the given attribute.

Parameters:

attr [in] Sparksee attribute identifier.

Returns:

Returns a Values object.

5.28.2.60 void Graph::DumpData (const std::wstring & *file*) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)

Dumps logical data to a file.

Parameters:

file [in] Output file path.

Exceptions:

FileNotFoundException If the given file cannot be created.

5.28.2.61 void Graph::DumpStorage (const std::wstring & *file*) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)

Dumps internal storage data to a file.

Parameters:

file [in] Output file path.

Exceptions:

FileNotFoundException If the given file cannot be created.

5.28.2.62 void Graph::Export (const std::wstring & *file*, ExportType *type*, ExportManager * *em*) throw (sparksee::gdb::IOException)

Exports the Graph.

Parameters:

file [in] Output file.

type [in] Export type.

em [in] Defines how to do the export for each graph object.

5.28.2.63 void Graph::Backup (const std::wstring & *file*) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)

Dumps all the data to a backup file.

See the Sparksee class Restore method.

Parameters:

file [in] Output backup file path.

Exceptions:

FileNotFoundException If the given file cannot be created.

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

- Graph.h

5.29 GraphExport Class Reference

Stores the graph exporting values.

Public Member Functions

- GraphExport ()
  Creates a new GraphExport instance.
- virtual ~GraphExport ()
  Destructor.
- void SetDefaults ()
  Sets to default values.
- const std::wstring & GetLabel () const
  Gets the graph label.
- void SetLabel (const std::wstring &label)
  Sets the graph label.

5.29.1 Detailed Description

Stores the graph exporting values.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.29.2 Member Function Documentation

5.29.2.1 const std::wstring& GraphExport::GetLabel () const [inline]

Gets the graph label.

Returns:

The graph label.

5.29.2.2 void GraphExport::SetLabel (const std::wstring & *label*) [inline]

Sets the graph label.

Parameters:

label [in] The graph label.

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

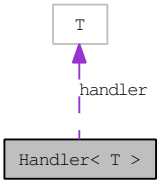
- Export.h

5.30 Handler< T > Class Template Reference

Handles a reference.

Inheritance diagram for Handler< T >:

Collaboration diagram for Handler< T >:



Public Member Functions

- Handler ()

  Creates a new instance.

- Handler (T *h)

  Creates a new instance with the given reference.

- virtual ~Handler ()

  Destructor.

- T * GetHandler ()

  Gets the handled reference.

- const T * GetHandler () const

Gets the handled reference.

Protected Member Functions

- void SetHandler (T *h)
  Sets the handled reference.
- void FreeHandler ()
  Frees (deletes) the handled reference.
- bool_t IsNull () const
  Gets if the handler is NULL.

5.30.1 Detailed Description

template<typename T> class Handler< T >

Handles a reference.

The handled reference is automatically destroyed (deleted) when the instance is destroyed.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.30.2 Constructor & Destructor Documentation

5.30.2.1 template<typename T> Handler< T >::Handler (T * *h*) [inline]

Creates a new instance with the given reference.

Parameters:

h [in] Reference to be handled.

5.30.2.2 template<typename T> virtual Handler< T >::~Handler () [inline, virtual]

Destructor.

Frees the handled reference.

5.30.3 Member Function Documentation

5.30.3.1 template<typename T> T* Handler< T >::GetHandler () [inline]

Gets the handled reference.

Returns:

The handled reference.

5.30.3.2 template<typename T> const T* Handler< T >::GetHandler () const [inline]

Gets the handled reference.

Returns:

The handled reference.

5.30.3.3 template<typename T> void Handler< T >::SetHandler (T * *h*) [inline, protected]

Sets the handled reference.

Parameters:

h [in] The handled reference.

5.30.3.4 template<typename T> bool_t Handler< T >::IsNull () const [inline, protected]

Gets if the handler is NULL.

Returns:

TRUE if the handler is NULL, FALSE otherwise.

Reimplemented in TextStream, and Value.

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

- Handler.h

5.31 Int32List Class Reference

Sparksee 32-bit signed integer list.

Public Member Functions

- int32_t Count () const
  Number of elements in the list.
- Int32ListIterator * Iterator ()
  Gets a new Int32ListIterator.
- Int32List ()
  Constructor.
- Int32List (const std::vector< int32_t > &v)
  Constructor.
- ~Int32List ()
  Destructor.

- void Add (int32_t value)

  Adds an 32-bit signed integer at the end of the list.

- void Clear ()

  Clears the list.

5.31.1 Detailed Description

Sparksee 32-bit signed integer list.

It stores a 32-bit signed integer list.

Use Int32ListIterator to access all elements into this collection.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.31.2 Constructor & Destructor Documentation

5.31.2.1 Int32List::Int32List ()

Constructor.

This creates an empty list.

5.31.2.2 Int32List::Int32List (const std::vector< int32_t > & *v*)

Constructor.

Parameters:

v [in] Vector.

5.31.3 Member Function Documentation

5.31.3.1 int32_t Int32List::Count () const [inline]

Number of elements in the list.

Returns:

Number of elements in the list.

5.31.3.2 Int32ListIterator* Int32List::Iterator ()

Gets a new Int32ListIterator.

Returns:

Int32ListIterator instance.

5.31.3.3 void Int32List::Add (int32_t *value*) [inline]

Adds an 32-bit signed integer at the end of the list.

Parameters:

value [in] The integer.

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

- Graph_data.h

5.32 Int32ListIterator Class Reference

Int32List iterator class.

Public Member Functions

- ~Int32ListIterator ()
  Destructor.
- int32_t Next ()
  Moves to the next element.
- bool_t HasNext ()
  Gets if there are more elements.

Friends

- class Int32List

5.32.1 Detailed Description

Int32List iterator class.

Iterator to traverse all the integer into a Int32List instance.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.32.2 Member Function Documentation

5.32.2.1 int32_t Int32ListIterator::Next () [inline]

Moves to the next element.

Returns:

The next element.

5.32.2.2 bool_t Int32ListIterator::HasNext () [inline]

Gets if there are more elements.

Returns:

TRUE if there are more elements, FALSE otherwise.

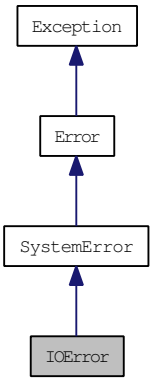
The documentation for this class was generated from the following file:

- Graph_data.h

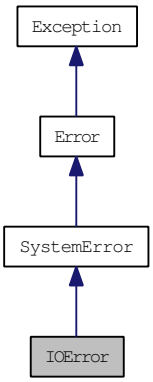
5.33 IOError Class Reference

IO error class.

Inheritance diagram for IOError:



Collaboration diagram for IOError:



Public Member Functions

- IOError ()

  Creates a new instance.

- IOError (const std::string &mess)
  Creates a new instance.
- virtual ~IOError ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.
- void SetMessage (const std::string &mess)
  Sets the message of the exception.

Static Public Member Functions

- static Error NewError (int32_t coreErrorCode)
  Creates a new Error instance from a sparksee_core error code.

Protected Attributes

- std::string message
  Message of the exception.

5.33.1 Detailed Description

IO error class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.33.2 Constructor & Destructor Documentation

5.33.2.1 IOError::IOError (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.33.3 Member Function Documentation

5.33.3.1 static Error Error::NewError (int32_t *coreErrorCode*) [static, inherited]

Creates a new Error instance from a sparksee_core error code.

Parameters:

coreErrorCode [in] Sparkseecore error code.

Returns:

Depending on the given sparksee_core error, this may return an Error instance or an specific Error subclass instance.

5.33.3.2 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.33.3.3 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

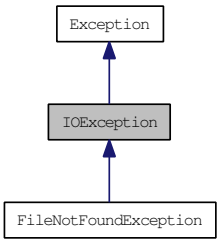
The documentation for this class was generated from the following file:

- Exception.h

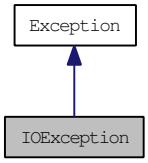
5.34 IOException Class Reference

IO exception class.

Inheritance diagram for IOException:



Collaboration diagram for IOException:



Public Member Functions

- IOException ()
  Creates a new instance.
- IOException (const std::string &mess)
  Creates a new instance.
- virtual ~IOException ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.
- void SetMessage (const std::string &mess)
  Sets the message of the exception.

Protected Attributes

- std::string message
  Message of the exception.

5.34.1 Detailed Description

IO exception class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.34.2 Constructor & Destructor Documentation

5.34.2.1 IOException::IOException (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.34.3 Member Function Documentation

5.34.3.1 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.34.3.2 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

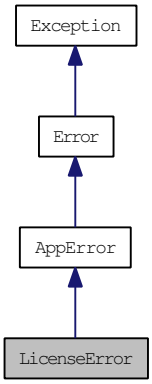
The documentation for this class was generated from the following file:

- Exception.h

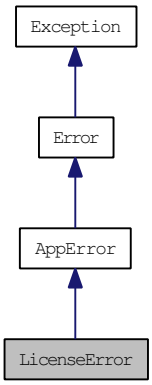
5.35 LicenseError Class Reference

License error class.

Inheritance diagram for LicenseError:



Collaboration diagram for LicenseError:



Public Member Functions

- LicenseError ()

  Creates a new instance.

- LicenseError (const std::string &mess)
  Creates a new instance.
- virtual ~LicenseError ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.
- void SetMessage (const std::string &mess)
  Sets the message of the exception.

Static Public Member Functions

- static Error NewError (int32_t coreErrorCode)
  Creates a new Error instance from a sparksee_core error code.

Protected Attributes

- std::string message
  Message of the exception.

5.35.1 Detailed Description

License error class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.35.2 Constructor & Destructor Documentation

5.35.2.1 LicenseError::LicenseError (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.35.3 Member Function Documentation

5.35.3.1 static Error Error::NewError (int32_t *coreErrorCode*) [static, inherited]

Creates a new Error instance from a sparksee_core error code.

Parameters:

coreErrorCode [in] Sparkseecore error code.

Returns:

Depending on the given sparksee_core error, this may return an Error instance or an specific Error subclass instance.

5.35.3.2 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.35.3.3 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

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

- Exception.h

5.36 NodeExport Class Reference

Stores the node exporting values.

Public Member Functions

- NodeExport ()
  Creates a new instance.
- virtual ~NodeExport ()
  Destructor.
- void SetDefaults ()
  Sets to default values.
- const std::wstring & GetLabel () const
  Gets the node label.
- void SetLabel (const std::wstring &label)
  Sets the node label.
- NodeShape GetShape () const
  Gets the node shape.

- void SetShape (NodeShape shape)
  Sets the node shape.
- ColorRGB GetColorRGB () const
  Gets the node color.
- void SetColorRGB (ColorRGB color)
  Sets the node color.
- ColorRGB GetLabelColorRGB () const
  Gets the node label color.
- void SetLabelColorRGB (ColorRGB color)
  Sets the node label color.
- int32_t GetHeight () const
  Gets the node height.
- void SetHeight (int32_t height)
  Sets the node height.
- int32_t GetWidth () const
  Gets the node width.
- void SetWidth (int32_t width)
  Gets the node width.
- bool_t IsFit () const
  Gets whether the node size is fitted to the label or not.
- void SetFit (bool_t fit)
  Sets the node fit property.
- int32_t GetFontSize () const
  Gets the node label font size.
- void SetFontSize (int32_t size)
  Sets the node label font size.

5.36.1 Detailed Description

Stores the node exporting values.

When 'fit' is set to TRUE, then 'height' and 'width' will be ignored.

Some properties may be ignored depending on the exportation type.

Default values are:

Label: "" (empty string).

Shape: Box.

Color: 10863606 (0xa5c3f6).

Label color: 0 (Ox000000, Black).

Height: 25px.

Width: 25px.

Fit: TRUE.

Font size: 10.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.36.2 Member Function Documentation

5.36.2.1 const std::wstring& NodeExport::GetLabel () const [inline]

Gets the node label.

Returns:

The node label.

5.36.2.2 void NodeExport::SetLabel (const std::wstring & *label*) [inline]

Sets the node label.

Parameters:

label [in] The node label.

5.36.2.3 NodeShape NodeExport::GetShape () const [inline]

Gets the node shape.

Returns:

The node shape.

5.36.2.4 void NodeExport::SetShape (NodeShape *shape*) [inline]

Sets the node shape.

Parameters:

shape [in] The node shape.

5.36.2.5 ColorRGB NodeExport::GetColorRGB () const [inline]

Gets the node color.

Returns:

The node color.

5.36.2.6 void NodeExport::SetColorRGB (ColorRGB *color*) [inline]

Sets the node color.

Parameters:

color The node color.

5.36.2.7 ColorRGB NodeExport::GetLabelColorRGB () const [inline]

Gets the node label color.

Returns:

The node label color.

5.36.2.8 void NodeExport::SetLabelColorRGB (ColorRGB *color*) [inline]

Sets the node label color.

Parameters:

color [in] The node label color.

5.36.2.9 int32_t NodeExport::GetHeight () const [inline]

Gets the node height.

Returns:

The node height in pixels.

5.36.2.10 void NodeExport::SetHeight (int32_t *height*) [inline]

Sets the node height.

Parameters:

height [in] The node height in pixels.

5.36.2.11 int32_t NodeExport::GetWidth () const [inline]

Gets the node width.

Returns:

The node width in pixels.

5.36.2.12 void NodeExport::SetWidth (int32_t *width*) [inline]

Gets the node width.

Parameters:

width The node width in pixels.

5.36.2.13 bool_t NodeExport::IsFit () const [inline]

Gets whether the node size is fitted to the label or not.

Returns:

If TRUE, then the node size is fitted to the label, otherwise the size is fixed with the values of 'height' and 'width'.

5.36.2.14 void NodeExport::SetFit (bool_t *fit*) [inline]

Sets the node fit property.

Parameters:

fit [in] If TRUE, then the node size is fitted to the label ('height' and 'width' will be ignored), otherwise the size is fixed with the values of 'height' and 'width'.

5.36.2.15 int32_t NodeExport::GetFontSize () const [inline]

Gets the node label font size.

Returns:

The node label font size.

5.36.2.16 void NodeExport::SetFontSize (int32_t *size*) [inline]

Sets the node label font size.

Parameters:

size [in] The node label font size.

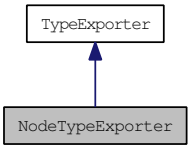
The documentation for this class was generated from the following file:

- Export.h

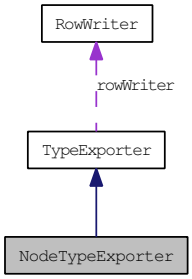
5.37 NodeTypeExporter Class Reference

NodeTypeExporter class.

Inheritance diagram for NodeTypeExporter:



Collaboration diagram for NodeTypeExporter:



Public Member Functions

- NodeTypeExporter ()

  Creates a new instance.

- NodeTypeExporter (RowWriter &rowWriter, sparksee::gdb::Graph &graph, sparksee::gdb::type_t type, sparksee::gdb::AttributeList &attrs)

  Creates a new instance.

- virtual ~NodeTypeExporter ()

  Destructor.

- void Run () throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  See the TypeExporter class Run method.

- void Register (TypeExporterListener &tel)

  Registers a new listener.

- void SetRowWriter (RowWriter &rw)

  Sets the output data destination.

- void SetGraph (sparksee::gdb::Graph &graph)

  Sets the graph that will be exported.

- void SetType (sparksee::gdb::type_t type)

  Sets the type to be exported.

- void SetAttributes (sparksee::gdb::AttributeList &attrs)

  Sets the list of Attributes.

- void SetFrequency (sparksee::gdb::int32_t freq)

  Sets the frequency of listener notification.

- void SetHeader (sparksee::gdb::bool_t header)

  Sets the presence of a header row.

Protected Member Functions

- sparksee::gdb::bool_t CanRun ()

  Checks that all the required settings are ready to run.

- void NotifyListeners (const TypeExporterEvent &ev)

  Notifies progress to all registered listeners.

- void RunProcess () throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  Runs export process.

- void SetHeadAttribute (sparksee::gdb::attr_t attr)

  Sets the attribute that will be used to get the value to be dumped for the head of the edge.

- void SetHeadPosition (sparksee::gdb::int32_t pos)

  Sets the position (index column) of the head attribute in the exported data.

- void SetTailAttribute (sparksee::gdb::attr_t attr)

  Sets the attribute that will be used to get the value to be dumped for the tail of the edge.

- void SetTailPosition (sparksee::gdb::int32_t pos)

  Sets the position (index column) of the tail attribute in the exported data.

5.37.1 Detailed Description

NodeTypeExporter class.

Specific TypeExporter implementation for node types.

Check out the 'Data export' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.37.2 Constructor & Destructor Documentation

5.37.2.1 NodeTypeExporter::NodeTypeExporter (RowWriter & *rowWriter*, sparksee::gdb::Graph & *graph*, sparksee::gdb::type_t *type*, sparksee::gdb::AttributeList & *attrs*) [inline]

Creates a new instance.

Parameters:

rowWriter [in] Output RowWriter.

graph [in] Graph.

type [in] Type identifier.

attrs [in] Attribute identifiers to be exported.

5.37.3 Member Function Documentation

5.37.3.1 sparksee::gdb::bool_t TypeExporter::CanRun () [protected, inherited]

Checks that all the required settings are ready to run.

Returns:

Returns true if all the settings are ready.

5.37.3.2 void TypeExporter::NotifyListeners (const TypeExporterEvent & *ev*) [protected, inherited]

Notifies progress to all registered listeners.

Parameters:

ev [in] Progress event to be notified.

5.37.3.3 void TypeExporter::RunProcess () throw (sparksee::gdb::IOException, sparksee::gdb::Error) [protected, inherited]

Runs export process.

Exceptions:

IOException If bad things happen writting to the RowWriter.

5.37.3.4 void TypeExporter::SetHeadAttribute (sparksee::gdb::attr_t *attr*) [protected, inherited]

Sets the attribute that will be used to get the value to be dumped for the head of the edge.

This method is protected because only the Edge exporters should have it.

Parameters:

attr [in] Head Attribute

Reimplemented in EdgeTypeExporter.

5.37.3.5 void TypeExporter::SetHeadPosition (sparksee::gdb::int32_t *pos*) [protected, inherited]

Sets the position (index column) of the head attribute in the exported data.

This method is protected because only the Edge exporters should have it.

Parameters:

pos [in] Head position

Reimplemented in EdgeTypeExporter.

5.37.3.6 void TypeExporter::SetTailAttribute (sparksee::gdb::attr_t *attr*) [protected, inherited]

Sets the attribute that will be used to get the value to be dumped for the tail of the edge.

This method is protected because only the Edge exporters should have it.

Parameters:

attr [in] Tail Attribute

Reimplemented in EdgeTypeExporter.

5.37.3.7 void TypeExporter::SetTailPosition (sparksee::gdb::int32_t *pos*) [protected, inherited]

Sets the position (index column) of the tail attribute in the exported data.

This method is protected because only the Edge exporters should have it.

Parameters:

pos [in] Tail position

Reimplemented in EdgeTypeExporter.

5.37.3.8 void TypeExporter::Register (TypeExporterListener & *tel*) [inherited]

Registers a new listener.

Parameters:

tel [in] TypeExporterListener to be registered.

5.37.3.9 void TypeExporter::SetRowWriter (RowWriter & *rw*) [inherited]

Sets the output data destination.

Parameters:

rw [in] Input RowWriter.

5.37.3.10 void TypeExporter::SetGraph (sparksee::gdb::Graph & *graph*) [inherited]

Sets the graph that will be exported.

Parameters:

graph [in] Graph.

5.37.3.11 void TypeExporter::SetType (sparksee::gdb::type_t *type*) [inherited]

Sets the type to be exported.

Parameters:

type [in] Type identifier.

5.37.3.12 void TypeExporter::SetAttributes (sparksee::gdb::AttributeList & *attrs*) [inherited]

Sets the list of Attributes.

Parameters:

attrs [in] Attribute identifiers to be exported

5.37.3.13 void TypeExporter::SetFrequency (sparksee::gdb::int32_t *freq*) [inherited]

Sets the frequency of listener notification.

Parameters:

freq [in] Frequency in number of rows managed to notify progress to all listeners

5.37.3.14 void TypeExporter::SetHeader (sparksee::gdb::bool_t *header*) [inherited]

Sets the presence of a header row.

Parameters:

header [in] If TRUE, a header row is dumped with the name of the attributes.

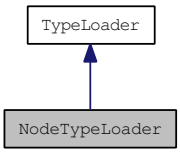
The documentation for this class was generated from the following file:

- NodeTypeExporter.h

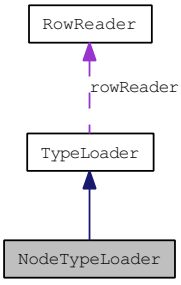
5.38 NodeTypeLoader Class Reference

NodeTypeLoader class.

Inheritance diagram for NodeTypeLoader:



Collaboration diagram for NodeTypeLoader:



Public Member Functions

- NodeTypeLoader ()

  Creates a new instance.

- NodeTypeLoader (RowReader &rowReader, sparksee::gdb::Graph &graph, sparksee::gdb::type_t type, sparksee::gdb::AttributeList &attrs, sparksee::gdb::Int32List &attrsPos)

  Creates a new instance.

- virtual ~NodeTypeLoader ()

  Destructor.

- void Run () throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  See the TypeLoader class Run method.

- void RunTwoPhases () throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  See the TypeLoader class RunTwoPhases method.

- void RunNPhases (sparksee::gdb::int32_t partitions) throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  See the TypeLoader class RunNPhases method.

- void SetLogError (const std::wstring &path) throw (sparksee::gdb::IOException)

  Sets a log error file.

- void SetLogOff ()

  Truns off all the error reporting.

- void Register (TypeLoaderListener &tel)

  Registers a new listener.

- void SetRowReader (RowReader &rr)

  Sets the input data source.

- void SetGraph (sparksee::gdb::Graph &graph)

  Sets the graph where the data will be loaded.

- void SetLocale (const std::wstring &localeStr)

  Sets the locale that will be used to read the data.

- void SetType (sparksee::gdb::type_t type)

  Sets the type to be loaded.

- void SetAttributes (sparksee::gdb::AttributeList &attrs)

  Sets the list of Attributes.

- void SetAttributePositions (sparksee::gdb::Int32List &attrsPos)

  Sets the list of attribute positions.

- void SetTimestampFormat (const std::wstring &timestampFormat)

Sets a specific timestamp format.

- void SetFrequency (sparksee::gdb::int32_t freq)

  Sets the frequency of listener notification.

Protected Types

- enum Mode {
  ONE_PHASE,
  TWO_PHASES,
  N_PHASES }

  Load can work in different ways.

Protected Member Functions

- sparksee::gdb::bool_t CanRun ()

  Checks that all the required settings are ready to run.

- void Run (Mode ph, sparksee::gdb::int32_t par) throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  Runs load process.

- void NotifyListeners (const TypeLoaderEvent &ev)

  Notifies progress to all registered listeners.

- void SetHeadAttribute (sparksee::gdb::attr_t attr)

  Sets the attribute that will be used to find the head of the edge.

- void SetHeadPosition (sparksee::gdb::int32_t pos)

  Sets the position of the head attribute in the source data.

- void SetTailAttribute (sparksee::gdb::attr_t attr)

  Sets the attribute that will be used to find the tail of the edge.

- void SetTailPosition (sparksee::gdb::int32_t pos)

  Sets the position of the tail attribute in the source data.

5.38.1 Detailed Description

NodeTypeLoader class.

Specific TypeLoader implementation for node types.

Check out the 'Data import' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.38.2 Member Enumeration Documentation

5.38.2.1 enum TypeLoader::Mode [protected, inherited]

Load can work in different ways.

Enumerator:

ONE_PHASE Performs the load in a phases.
Load all objects an attributes at the same time.

TWO_PHASES Performs the load in two phases.
Firstly load all objects (and create them if necessary) and secondly loads all the attributes.
Working on this mode it is necessary to build a temporary file.

N_PHASES Performs the load in N phases.
Firstly load all objects (and create them if necessary) and secondly loads all the attributes. But in this case, attributes are loaded one by one. This way, if there are three attributes, then 4 traverses to the RowReader are necessary.
Working on this mode it is necessary to build a temporary file.

5.38.3 Constructor & Destructor Documentation

5.38.3.1 NodeTypeLoader::NodeTypeLoader (RowReader & *rowReader*, sparksee::gdb::Graph & *graph*, sparksee::gdb::type_t *type*, sparksee::gdb::AttributeList & *attrs*, sparksee::gdb::Int32List & *attrsPos*) [inline]

Creates a new instance.

Parameters:

rowReader [in] Input RowReader.

graph [in] Graph.

type [in] Type identifier.

attrs [in] Attribute identifiers to be loaded.

attrsPos [in] Attribute positions (column index >=0).

5.38.4 Member Function Documentation

5.38.4.1 sparksee::gdb::bool_t TypeLoader::CanRun () [protected, inherited]

Checks that all the required settings are ready to run.

Returns:

Returns true if all the settings are ready.

5.38.4.2 void TypeLoader::Run (Mode *ph*, sparksee::gdb::int32_t *par*) throw (sparksee::gdb::IOException, sparksee::gdb::Error) [protected, inherited]

Runs load process.

Exceptions:

IOException If bad things happen reading from the RowReader.

Parameters:

ph [in] The load mode.

par [in] Number of horizontal partitions to perform the load.

5.38.4.3 void TypeLoader::NotifyListeners (const TypeLoaderEvent & *ev*) [protected, inherited]

Notifies progress to all registered listeners.

Parameters:

ev [in] Progress event to be notified.

5.38.4.4 void TypeLoader::SetHeadAttribute (sparksee::gdb::attr_t *attr*) [protected, inherited]

Sets the attribute that will be used to find the head of the edge.

This method is protected because only the Edge loaders should have it.

Parameters:

attr [in] Head Attribute

Reimplemented in EdgeTypeLoader.

5.38.4.5 void TypeLoader::SetHeadPosition (sparksee::gdb::int32_t *pos*) [protected, inherited]

Sets the position of the head attribute in the source data.

This method is protected because only the Edge loaders should have it.

Parameters:

pos [in] Head position

Reimplemented in EdgeTypeLoader.

5.38.4.6 void TypeLoader::SetTailAttribute (sparksee::gdb::attr_t *attr*) [protected, inherited]

Sets the attribute that will be used to find the tail of the edge.

This method is protected because only the Edge loaders should have it.

Parameters:

attr [in] Tail Attribute

Reimplemented in EdgeTypeLoader.

5.38.4.7 void TypeLoader::SetTailPosition (sparksee::gdb::int32_t *pos*) [protected, inherited]

Sets the position of the tail attribute in the source data.

This method is protected because only the Edge loaders should have it.

Parameters:

pos [in] Tail position

Reimplemented in EdgeTypeLoader.

5.38.4.8 void TypeLoader::SetLogError (const std::wstring & *path*) throw (sparksee::gdb::IOException) [inherited]

Sets a log error file.

By default errors are thrown as a exception and the load process ends. If a log file is set, errors are logged there and the load process does not stop.

Parameters:

path [in] The path to the error log file.

Exceptions:

IOException If bad things happen opening the file.

5.38.4.9 void TypeLoader::SetLogOff () [inherited]

Truns off all the error reporting.

The log file will not be created and no exceptions for invalid data will be thrown. If you just want to turn off the logs, but abort at the first error what you should do is not call this method and not set a logError file.

5.38.4.10 void TypeLoader::Register (TypeLoaderListener & *tel*) [inherited]

Registers a new listener.

Parameters:

← ***tel*** TypeLoaderListener to be registered.

5.38.4.11 void TypeLoader::SetRowReader (RowReader & *rr*) [inherited]

Sets the input data source.

Parameters:

rr [in] Input RowReader.

5.38.4.12 void TypeLoader::SetGraph (sparksee::gdb::Graph & *graph*) [inherited]

Sets the graph where the data will be loaded.

Parameters:

graph [in] Graph.

5.38.4.13 void TypeLoader::SetLocale (const std::wstring & *localeStr*) [inherited]

Sets the locale that will be used to read the data.

It should match the locale used in the rowreader.

Parameters:

localeStr [in] The locale string for the read data. See CSVReader.

5.38.4.14 void TypeLoader::SetType (sparksee::gdb::type_t *type*) [inherited]

Sets the type to be loaded.

Parameters:

type [in] Type identifier.

5.38.4.15 void TypeLoader::SetAttributes (sparksee::gdb::AttributeList & *attrs*) [inherited]

Sets the list of Attributes.

Parameters:

attrs [in] Attribute identifiers to be loaded

5.38.4.16 void TypeLoader::SetAttributePositions (sparksee::gdb::Int32List & *attrsPos*) [inherited]

Sets the list of attribute positions.

Parameters:

attrsPos [in] Attribute positions (column index >=0).

5.38.4.17 void TypeLoader::SetTimestampFormat (const std::wstring & *timestampFormat*) [inherited]

Sets a specific timestamp format.

Parameters:

timestampFormat [in] A string with the timestamp format definition.

5.38.4.18 void TypeLoader::SetFrequency (sparksee::gdb::int32_t *freq*) [inherited]

Sets the frequency of listener notification.

Parameters:

freq [in] Frequency in number of rows managed to notify progress to all listeners

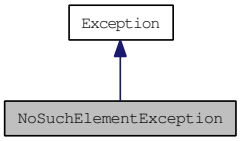
The documentation for this class was generated from the following file:

- NodeTypeLoader.h

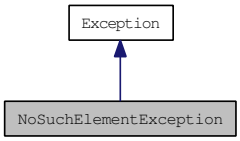
5.39 NoSuchElementException Class Reference

No such element exception class.

Inheritance diagram for NoSuchElementException:



Collaboration diagram for NoSuchElementException:



Public Member Functions

- NoSuchElementException ()
  Creates a new instance.
- NoSuchElementException (const std::string &mess)
  Creates a new instance.
- virtual ~NoSuchElementException ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.
- void SetMessage (const std::string &mess)
  Sets the message of the exception.

Protected Attributes

- std::string message

  Message of the exception.

5.39.1 Detailed Description

No such element exception class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.39.2 Constructor & Destructor Documentation

5.39.2.1 NoSuchElementException::NoSuchElementException (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.39.3 Member Function Documentation

5.39.3.1 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.39.3.2 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

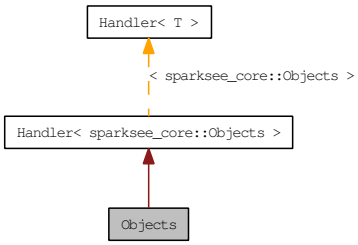
The documentation for this class was generated from the following file:

- Exception.h

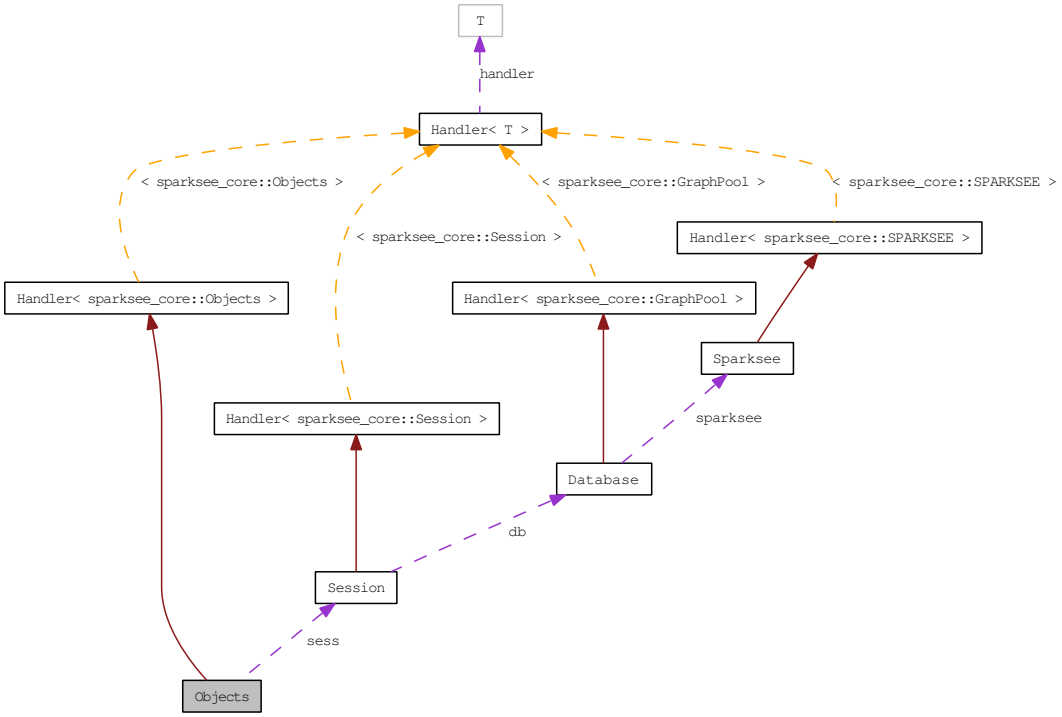
5.40 Objects Class Reference

Object identifier set class.

Inheritance diagram for Objects:



Collaboration diagram for Objects:



Public Member Functions

- virtual ~Objects ()

  Destructor.

- Objects * Copy ()

  Creates a new Objects instance as a copy of the given one.

- int64_t Count ()

  Gets the number of elements into the collection.

- bool_t Add (oid_t e)

  Adds an element into the collection.

- bool_t Exists (oid_t e)

  Gets if the given element exists into the collection.

- oid_t Any () throw (sparksee::gdb::NoSuchElementException, sparksee::gdb::Error)

  Gets an element from the collection.

- bool_t Remove (oid_t e)

  Removes an element from the collection.

- void Clear ()

  Clears the collection removing all its elements.

- int64_t Union (Objects *objs)

  Performs the union operation.

- int64_t Intersection (Objects *objs)

  Performs the intersection operation.

- int64_t Difference (Objects *objs)

  Performs the difference operation.

- bool_t Equals (Objects *objs)

  Checks if the given Objects contains the same information.

- bool_t Contains (Objects *objs)

  Check if this objects contains the other one.

- int64_t Copy (Objects *objs)

  Performs the copy operation.

- Objects * Sample (Objects *exclude, int64_t samples)

  Creates a new Objects instance which is a sample of the calling one.

- ObjectsIterator * Iterator ()

  Gets an ObjectsIterator.

- ObjectsIterator * IteratorFromIndex (int64_t index)

  Gets an ObjectsIterator skipping index elements.

- ObjectsIterator * IteratorFromElement (oid_t e)

  Gets an ObjectsIterator starting from the given element.

Static Public Member Functions

- static Objects * CombineUnion (Objects *objs1, Objects *objs2)

  Creates a new Objects instance which is the union of the two given.

- static Objects * CombineIntersection (Objects *objs1, Objects *objs2)

Creates a new Objects instance which is the intersection of the two given.

- static Objects * CombineDifference (Objects *objs1, Objects *objs2)
  Creates a new Objects instance which is the difference of the two given.

Static Public Attributes

- static const oid_t InvalidOID
  Invalid OID constant.

Friends

- class Session
- class Graph
- class ObjectsIterator

5.40.1 Detailed Description

Object identifier set class.

It stores a collection of Sparksee object identifiers as a set. As a set, there is no order and no duplicated elements.

This class should be used just to store large collections. Otherwise, it is strongly recommended to use common classes from the language API.

This class is not thread-safe.

ObjectsIterator must be used to traverse all the elements into the set.

When the Objects instance is closed, it closes all existing and non-closed ObjectsIterator instances too.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.40.2 Member Function Documentation

5.40.2.1 Objects* Objects::Copy ()

Creates a new Objects instance as a copy of the given one.

Returns:

The new Objects instance.

5.40.2.2 int64_t Objects::Count ()

Gets the number of elements into the collection.

Returns:

The number of elements into the collection.

5.40.2.3 bool_t Objects::Add (oid_t *e*)

Adds an element into the collection.

Parameters:

e [in] Element to be added.

Returns:

TRUE if the element is added, FALSE if the element was already into the collection.

5.40.2.4 bool_t Objects::Exists (oid_t *e*)

Gets if the given element exists into the collection.

Parameters:

e [in] Element.

Returns:

TRUE if the element exists into the collection, FALSE otherwise.

5.40.2.5 oid_t Objects::Any () throw (sparksee::gdb::NoSuchElementException, sparksee::gdb::Error)

Gets an element from the collection.

Returns:

Any element from the collection.

Exceptions:

NoSuchElementException whether the collection is empty.

5.40.2.6 bool_t Objects::Remove (oid_t *e*)

Removes an element from the collection.

Parameters:

e [in] Element to be removed.

Returns:

TRUE if the element is removed, FALSE if the element was not into the collection.

5.40.2.7 int64_t Objects::Union (Objects * *objs*)

Performs the union operation.

This adds all existing elements of the given Objects instance to the Objects calling instance

Parameters:

objs [in] Objects instance.

Returns:

Number of elements into the collection once the operation has been executed.

5.40.2.8 int64_t Objects::Intersection (Objects * *objs*)

Performs the intersection operation.

Updates the Objects calling instance setting those existing elements at both two collections and removing all others.

Parameters:

objs [in] Objects instance.

Returns:

Number of elements into the collection once the operation has been executed.

5.40.2.9 int64_t Objects::Difference (Objects * *objs*)

Performs the difference operation.

This updates the Objects calling instance removing those existing elements at the given Objects instance.

Parameters:

objs [in] Objects instance.

Returns:

Number of elements into the collection once the operation has been executed.

5.40.2.10 bool_t Objects::Equals (Objects * *objs*)

Checks if the given Objects contains the same information.

Parameters:

objs [in] Objects instance.

Returns:

True if the objects are equal or false otherwise.

5.40.2.11 bool_t Objects::Contains (Objects * *objs*)

Check if this objects contains the other one.

Parameters:

objs Objects collection.

Returns:

True if it contains the given object.

5.40.2.12 static Objects* Objects::CombineUnion (Objects * *objs1*, Objects * *objs2*) [static]

Creates a new Objects instance which is the union of the two given.

Two given Objects belong to the same Session.

Parameters:

objs1 [in] Objects instance.

objs2 [in] Objects instance.

Returns:

New Objects instance.

5.40.2.13 static Objects* Objects::CombineIntersection (Objects * *objs1*, Objects * *objs2*) [static]

Creates a new Objects instance which is the intersection of the two given.

Two given Objects belong to the same Session.

Parameters:

objs1 [in] Objects instance.

objs2 [in] Objects instance.

Returns:

New Objects instance.

5.40.2.14 static Objects* Objects::CombineDifference (Objects * *objs1*, Objects * *objs2*) [static]

Creates a new Objects instance which is the difference of the two given.

Two given Objects belong to the same Session.

Parameters:

objs1 [in] Objects instance.

objs2 [in] Objects instance.

Returns:

New Objects instance.

5.40.2.15 int64_t Objects::Copy (Objects * *objs*)

Performs the copy operation.

This updates the Objects calling instance and copies the given Objects instance.

Parameters:

objs [in] Objects instance.

Returns:

Number of elements into the collection once the operation has been executed.

5.40.2.16 Objects* Objects::Sample (Objects * *exclude*, int64_t *samples*)

Creates a new Objects instance which is a sample of the calling one.

Parameters:

exclude [in] If not NULL, elements into this collection will be excluded from the resulting one.

samples [in] Number of elements into the resulting collection.

Returns:

Sample collection.

5.40.2.17 ObjectsIterator* Objects::Iterator ()

Gets an ObjectsIterator.

Returns:

ObjectsIterator instance.

5.40.2.18 ObjectsIterator* Objects::IteratorFromIndex (int64_t *index*)

Gets an ObjectsIterator skipping index elements.

Objects collection has no order, so this method is implementation-dependent.

Parameters:

index [in] The number of elements to skip from the beginning. It must be in the range [0..Size).

Returns:

ObjectsIterator instance.

5.40.2.19 ObjectsIterator* Objects::IteratorFromElement (oid_t *e*)

Gets an ObjectsIterator starting from the given element.

Objects collection has no order, so this method is implementation-dependent.

Parameters:

e [in] The first element to traverse in the resulting ObjectsIterator instance.

Returns:

ObjectsIterator instance.

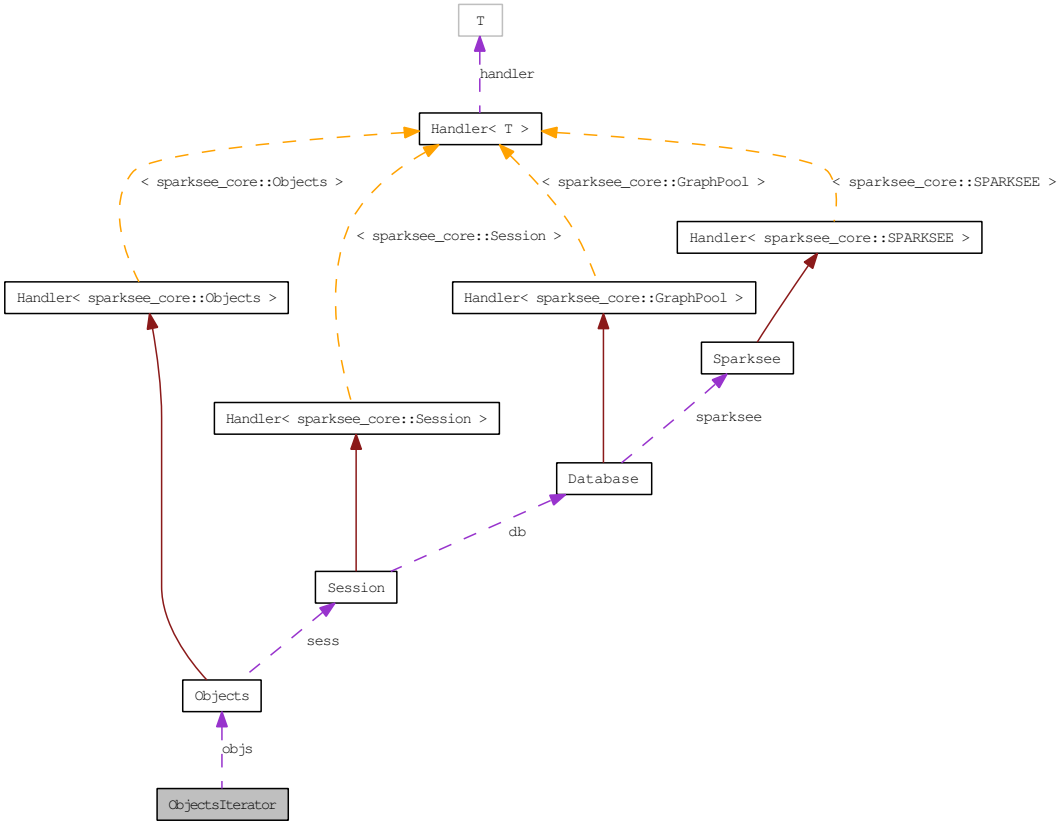
The documentation for this class was generated from the following file:

- Objects.h

5.41 ObjectsIterator Class Reference

ObjectsIterator class.

Collaboration diagram for ObjectsIterator:



Public Member Functions

- virtual ~ObjectsIterator ()

  Destructor.

- bool_t HasNext ()

  Gets if there are more elements to traverse.

- oid_t Next ()

  Gets the next element to traverse.

Friends

- class Objects

5.41.1 Detailed Description

ObjectsIterator class.

Iterator to traverse all the object identifiers from an Objects instance.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.41.2 Member Function Documentation

5.41.2.1 bool_t ObjectsIterator::HasNext ()

Gets if there are more elements to traverse.

Returns:

TRUE if there are more elements to traverse, FALSE otherwise.

5.41.2.2 oid_t ObjectsIterator::Next ()

Gets the next element to traverse.

Returns:

The next element.

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

- ObjectsIterator.h

5.42 OIDList Class Reference

Sparksee object identifier list.

Public Member Functions

- int32_t Count () const

  Number of elements in the list.

- OIDListIterator * Iterator ()

Gets a new OIDListIterator.

- OIDList ()
  Constructor.
- OIDList (int32_t numInvalidOIDs)
  Constructor.
- OIDList (const std::vector< oid_t > &v)
  Constructor.
- ~OIDList ()
  Destructor.
- void Add (oid_t attr)
  Adds a Sparksee object identifier at the end of the list.
- void Set (int32_t pos, oid_t oid)
  Sets a Sparksee object identifier at the specified position of the list.
- void Clear ()
  Clears the list.

5.42.1 Detailed Description

Sparksee object identifier list.

It stores a Sparksee object identifier list.

Use OIDListIterator to access all elements into this collection.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.42.2 Constructor & Destructor Documentation

5.42.2.1 OIDList::OIDList ()

Constructor.

This creates an empty list.

5.42.2.2 OIDList::OIDList (int32_t *numInvalidOIDs*)

Constructor.

This creates a list with N invalid oids.

Parameters:

numInvalidOIDs [in] The number of invalid oids added to the list.

5.42.2.3 OIDList::OIDList (const std::vector< oid_t > & *v*)

Constructor.

Parameters:

v [in] Vector.

5.42.3 Member Function Documentation

5.42.3.1 int32_t OIDList::Count () const [inline]

Number of elements in the list.

Returns:

Number of elements in the list.

5.42.3.2 OIDListIterator* OIDList::Iterator ()

Gets a new OIDListIterator.

Returns:

OIDListIterator instance.

5.42.3.3 void OIDList::Add (oid_t *attr*) [inline]

Adds a Sparksee object identifier at the end of the list.

Parameters:

attr [in] Sparksee object identifier.

5.42.3.4 void OIDList::Set (int32_t *pos*, oid_t *oid*) [inline]

Sets a Sparksee object identifier at the specified position of the list.

Parameters:

pos [in] List position [0..Count()-1].

oid [in] Sparksee object identifier.

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

- Graph_data.h

5.43 OIDListIterator Class Reference

OIDList iterator class.

Public Member Functions

- ~OIDListIterator ()

  Destructor.

- oid_t Next ()

  Moves to the next element.

- bool_t HasNext ()

  Gets if there are more elements.

Friends

- class OIDList

5.43.1 Detailed Description

OIDList iterator class.

Iterator to traverse all the Sparksee object identifier into a OIDList instance.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.43.2 Member Function Documentation

5.43.2.1 oid_t OIDListIterator::Next () [inline]

Moves to the next element.

Returns:

The next element.

5.43.2.2 bool_t OIDListIterator::HasNext () [inline]

Gets if there are more elements.

Returns:

TRUE if there are more elements, FALSE otherwise.

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

- Graph_data.h

5.44 Platform Class Reference

Platform class.

Static Public Member Functions

- static void GetStatistics (PlatformStatistics &stats)
  Gets platform data and statistics.

5.44.1 Detailed Description

Platform class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.44.2 Member Function Documentation

5.44.2.1 static void Platform::GetStatistics (PlatformStatistics & *stats*) [static]

Gets platform data and statistics.

Parameters:

stats [in|out] This updates the given PlatformStatistics.

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

- common.h

5.45 PlatformStatistics Class Reference

Platform data and statistics.

Public Member Functions

- PlatformStatistics ()
  Creates a new instance setting all values to 0.
- int32_t GetNumCPUs () const
  Gets the number of CPUs.
- int64_t GetRealTime () const
  Gets time in microseconds (since epoch).
- int64_t GetUserTime () const
  Gets CPU user time.
- int64_t GetSystemTime () const
  Gets CPU system time.
- int64_t GetTotalMem () const

Gets physical memory size in Bytes.

- int64_t GetAvailableMem () const
  Gets avialable (free) memory size in Bytes.

Friends

- class Platform

5.45.1 Detailed Description

Platform data and statistics.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.45.2 Member Function Documentation

5.45.2.1 int32_t PlatformStatistics::GetNumCPUs () const [inline]

Gets the number of CPUs.

Returns:

The number of CPUs.

5.45.2.2 int64_t PlatformStatistics::GetRealTime () const [inline]

Gets time in microseconds (since epoch).

Returns:

Time in microseconds (since epoch).

5.45.2.3 int64_t PlatformStatistics::GetUserTime () const [inline]

Gets CPU user time.

Returns:

CPU user time.

5.45.2.4 int64_t PlatformStatistics::GetSystemTime () const [inline]

Gets CPU system time.

Returns:

CPU system time.

5.45.2.5 int64_t PlatformStatistics::GetTotalMem () const [inline]

Gets physical memory size in Bytes.

Returns:

Physical memory size in Bytes.

5.45.2.6 int64_t PlatformStatistics::GetAvailableMem () const [inline]

Gets avialable (free) memory size in Bytes.

Returns:

Avialable (free) memory size in Bytes.

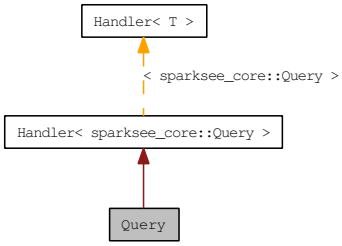
The documentation for this class was generated from the following file:

- common.h

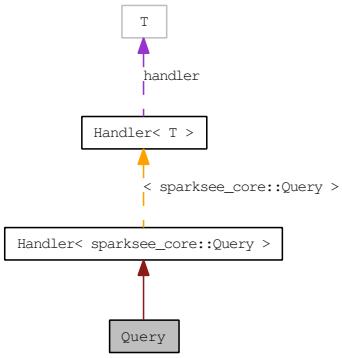
5.46 Query Class Reference

Query class.

Inheritance diagram for Query:



Collaboration diagram for Query:



Public Member Functions

- virtual ~Query ()
  Destructor.
- ResultSet * Execute (const std::wstring &stmt)
  Executes the given statement.
- QueryStream * SetStream (const std::wstring &stream, QueryStream *handler)
  Sets a query stream handler.
- void SetDynamic (const std::wstring &name, Value &value)
  Sets the value for a dynamic paramater.

Friends

- class Session
- class QueryContext

5.46.1 Detailed Description

Query class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.46.2 Member Function Documentation

5.46.2.1 ResultSet* Query::Execute (const std::wstring & *stmt*)

Executes the given statement.

Parameters:

stmt [in] Query statement.

Returns:

A ResultSet instance with the contents of the result of the query.

5.46.2.2 QueryStream* Query::SetStream (const std::wstring & *stream*, QueryStream * *handler*)

Sets a query stream handler.

Query streams handlers are created and destroyed by the caller.

Parameters:

stream [in] The stream name

handler [in] Query stream handler

Returns:

The previous handler, or NULL if it does not exists

5.46.2.3 void Query::SetDynamic (const std::wstring & *name*, Value & *value*)

Sets the value for a dynamic paramater.

Parameters:

name [in] Parameter name

value [in] Parameter value

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

- Query.h

5.47 QueryContext Class Reference

Query context interface.

Public Member Functions

- QueryContext ()
  Default constructor.
- virtual ~QueryContext ()
  Destructor.
- Query * NewQuery ()
  Creates a new Query.

5.47.1 Detailed Description

Query context interface.

A QueryContext contains and manages the resources required to run a Query. A Session is one example of a QueryContext connected to a Sparksee database. The applications can implement their own contexts to run queries out of Sparksee.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

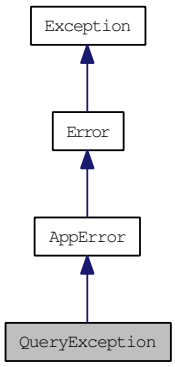
The documentation for this class was generated from the following file:

- QueryContext.h

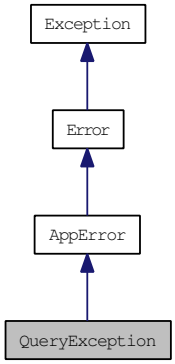
5.48 QueryException Class Reference

Query exception class.

Inheritance diagram for QueryException:



Collaboration diagram for QueryException:



Public Member Functions

- QueryException ()
  Creates a new instance.
- QueryException (const std::string &mess)
  Creates a new instance.
- QueryException (const sparksee_core::QueryError *core_error)
  Creates a new instance.
- virtual ~QueryException ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.

- void SetMessage (const std::string &mess)

  Sets the message of the exception.

Static Public Member Functions

- static Error NewError (int32_t coreErrorCode)

  Creates a new Error instance from a sparksee_core error code.

Protected Attributes

- std::string message

  Message of the exception.

5.48.1 Detailed Description

Query exception class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.48.2 Constructor & Destructor Documentation

5.48.2.1 QueryException::QueryException (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.48.2.2 QueryException::QueryException (const sparksee_core::QueryError * *core_error*)

Creates a new instance.

Parameters:

core_error [in] Dexcore SQLError.

5.48.3 Member Function Documentation

5.48.3.1 static Error Error::NewError (int32_t *coreErrorCode*) [static, inherited]

Creates a new Error instance from a sparksee_core error code.

Parameters:

coreErrorCode [in] Sparkseecore error code.

Returns:

Depending on the given sparksee_core error, this may return an Error instance or an specific Error subclass instance.

5.48.3.2 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.48.3.3 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

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

- Exception.h

5.49 QueryStream Class Reference

Query stream interface.

Public Member Functions

- virtual ~QueryStream ()
  Destructor.
- virtual bool_t Prepare (const ValueList &list)=0
  Prepares the stream before it is started.
- virtual bool_t Start (ResultSetList &list)=0
  Starts the stream.
- virtual bool_t Fetch (ValueList &list)=0
  Gets the next row and moves the iterator forward.

Protected Member Functions

- QueryStream ()
  Default constructor.

5.49.1 Detailed Description

Query stream interface.

A QueryStream is the interface between the application and the STREAM operator. When the operator starts inside a Query, the method is prepared with query-defined arguments. Then, if there are input operations, the STREAM operator builds the ResultSets and starts the iteration. Finally, the operator fetches rows until no more are available.

Application exceptions must be cached by the subclass that implements the interface.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.49.2 Member Function Documentation

5.49.2.1 virtual bool_t QueryStream::Prepare (const ValueList & *list*) [pure virtual]

Prepares the stream before it is started.

Parameters:

list [in] Optional list of arguments

Returns:

FALSE on error

5.49.2.2 virtual bool_t QueryStream::Start (ResultSetList & *list*) [pure virtual]

Starts the stream.

Parameters:

list [in] Optional list of input ResultSets

Returns:

FALSE on error

5.49.2.3 virtual bool_t QueryStream::Fetch (ValueList & *list*) [pure virtual]

Gets the next row and moves the iterator forward.

The end of sequence is denoted by returning TRUE with an empty row. A valid row must contain as many values (even NULL) as expected by the query.

Parameters:

list [out] Storage for the new rows

Returns:

TRUE if there is a row or end of sequence, FALSE on error

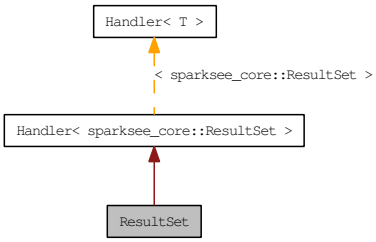
The documentation for this class was generated from the following file:

- Query.h

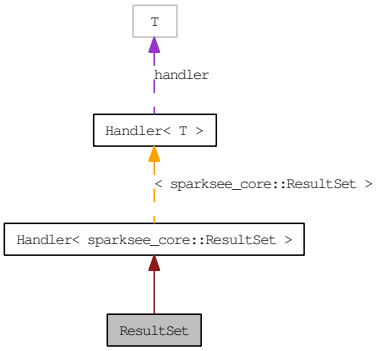
5.50 ResultSet Class Reference

ResultSet class.

Inheritance diagram for ResultSet:



Collaboration diagram for ResultSet:



Public Member Functions

- virtual ~ResultSet ()

  Destructor.

- int32_t GetNumColumns () const

  Gets the number of columns.

- const std::wstring & GetColumnName (int32_t index) const

  Gets the name for the given column.

- int32_t GetColumnIndex (const std::wstring &name) const

  Gets the column index for the given column name.

- DataType GetColumnDataType (int32_t index) const

  Gets the datatype for the given column.

- bool_t Next ()

  Fetches the next row.

- void GetColumn (int32_t index, Value &value) const

Gets the value for the given column.

- Value * GetColumn (int32_t index) const

  Gets the value for the given column.

- void Rewind ()

  Positions the cursor before the first row.

- const std::wstring GetJSON (int32_t rows) const

  Returns rows in JSON format.

Friends

- class Query

5.50.1 Detailed Description

ResultSet class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.50.2 Member Function Documentation

5.50.2.1 int32_t ResultSet::GetNumColumns () const

Gets the number of columns.

Columns are in the range [0...COLUMNS).

Returns:

The number of columns.

5.50.2.2 const std::wstring& ResultSet::GetColumnName (int32_t *index*) const

Gets the name for the given column.

Parameters:

index [in] Column index.

Returns:

Column name.

5.50.2.3 int32_t ResultSet::GetColumnIndex (const std::wstring & *name*) const

Gets the column index for the given column name.

Parameters:

name [in] Column name.

Returns:

Column index.

5.50.2.4 DataType ResultSet::GetColumnDataType (int32_t *index*) const

Gets the datatype for the given column.

Parameters:

index [in] Column index.

Returns:

DataType for the given column.

5.50.2.5 bool_t ResultSet::Next ()

Fetches the next row.

A ResultSet cursor is initially positioned before the first row; the first call to the method "Next" makes the first row the current row; the second call makes the second row the current row, and so on.

Returns:

TRUE if the next row has been successfully fetched, FALSE otherwise.

Exceptions:

QueryException If a database access error occurs.

5.50.2.6 void ResultSet::GetColumn (int32_t *index*, Value & *value*) const

Gets the value for the given column.

Parameters:

index [in] Column index.

value [in|out] Value.

Exceptions:

QueryException If a database access error occurs.

5.50.2.7 Value* ResultSet::GetColumn (int32_t *index*) const

Gets the value for the given column.

Parameters:

index [in] Column index.

Returns:

The Value of the given column.

Exceptions:

QueryException If a database access error occurs.

5.50.2.8 const std::wstring ResultSet::GetJSON (int32_t *rows*) const

Returns rows in JSON format.

Rows are returned from the current position.

Parameters:

rows [in] Maximum number of rows

Returns:

JSON representation of the next <rows> rows in the resultset

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

- ResultSet.h

5.51 ResultSetList Class Reference

ResultSet list.

Public Member Functions

- int32_t Count () const
  Number of elements in the list.
- ResultSetList ()
  Constructor.
- ~ResultSetList ()
  Destructor.
- void Clear ()
  Clears the list.
- ResultSet * Get (int32_t index) const

Returns the ResultSet at the specified position in the list.

- ResultSetListIterator * Iterator ()

  Gets a new ResultSetListIterator.

5.51.1 Detailed Description

ResultSet list.

It stores a ResultSet list.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.51.2 Constructor & Destructor Documentation

5.51.2.1 ResultSetList::ResultSetList ()

Constructor.

This creates an empty list.

5.51.3 Member Function Documentation

5.51.3.1 int32_t ResultSetList::Count () const

Number of elements in the list.

Returns:

Number of elements in the list.

5.51.3.2 ResultSet* ResultSetList::Get (int32_t *index*) const

Returns the ResultSet at the specified position in the list.

Parameters:

index [in] Index of the element to return, starting at 0.

5.51.3.3 ResultSetListIterator* ResultSetList::Iterator ()

Gets a new ResultSetListIterator.

Returns:

ResultSetListIterator instance.

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

- ResultSet.h

5.52 ResultSetListIterator Class Reference

ResultSetList iterator class.

Public Member Functions

- ~ResultSetListIterator ()
  Destructor.
- const ResultSet * Next ()
  Moves to the next element.
- bool_t HasNext ()
  Gets if there are more elements.

Friends

- class ResultSetList

5.52.1 Detailed Description

ResultSetList iterator class.

Iterator to traverse all the values into a ResultSetList instance.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.52.2 Member Function Documentation

5.52.2.1 const ResultSet* ResultSetListIterator::Next ()

Moves to the next element.

Returns:

The next element.

5.52.2.2 bool_t ResultSetListIterator::HasNext ()

Gets if there are more elements.

Returns:

TRUE if there are more elements, FALSE otherwise.

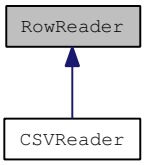
The documentation for this class was generated from the following file:

- ResultSet.h

5.53 RowReader Class Reference

RowReader interface.

Inheritance diagram for RowReader:



Public Member Functions

- virtual sparksee::gdb::bool_t Reset ()=0 throw (sparksee::gdb::IOException)

  Moves the reader to the beginning.

- virtual sparksee::gdb::bool_t Read (sparksee::gdb::StringList &row)=0 throw (sparksee::gdb::IOException)

  Reads the next row as a string array.

- virtual sparksee::gdb::int32_t GetRow ()=0 throw (sparksee::gdb::IOException)

  The row number for the current row.

- virtual void Close ()=0 throw (sparksee::gdb::IOException)

  Closes the reader.

- virtual ~RowReader ()

  Destructor.

Protected Member Functions

- RowReader ()

  Empty constructor.

5.53.1 Detailed Description

RowReader interface.

Common interface for those readers which get the data as an string array.

It works as follows: perform as many read operations as necessary and call close once at the end. Once close is called no more read operations can be executed.

Check out the 'Data import' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.53.2 Constructor & Destructor Documentation

5.53.2.1 RowReader::RowReader () [inline, protected]

Empty constructor.

Protected because no one should instantiate a RowReader. Just inherited classes can use this empty constructor.

5.53.3 Member Function Documentation

5.53.3.1 virtual sparksee::gdb::bool_t RowReader::Reset () throw (sparksee::gdb::IOException) [pure virtual]

Moves the reader to the beginning.

Restarts the reader.

Returns:

`true` if the reader can be restarted, `false` otherwise.

Exceptions:

IOException If bad things happen during the restart.

Implemented in CSVReader.

5.53.3.2 virtual sparksee::gdb::bool_t RowReader::Read (sparksee::gdb::StringList & *row*) throw (sparksee::gdb::IOException) [pure virtual]

Reads the next row as a string array.

Parameters:

row [out] A string list with each comma-separated element as a separate entry.

Returns:

Returns true if a row had been read or false otherwise.

Exceptions:

IOException If bad things happen during the read.

Implemented in CSVReader.

5.53.3.3 virtual sparksee::gdb::int32_t RowReader::GetRow () throw (sparksee::gdb::IOException) [pure virtual]

The row number for the current row.

Returns:

The current row number; 0 if there is no current row.

Exceptions:

IOException If it fails.

Implemented in CSVReader.

5.53.3.4 virtual void RowReader::Close () throw (sparksee::gdb::IOException) [pure virtual]

Closes the reader.

Exceptions:

IOException If the close fails.

Implemented in CSVReader.

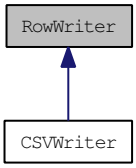
The documentation for this class was generated from the following file:

- RowReader.h

5.54 RowWriter Class Reference

RowWriter interface.

Inheritance diagram for RowWriter:



Public Member Functions

- virtual void Write (sparksee::gdb::StringList &row)=0 throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  Writes the next row.

- virtual void Close ()=0 throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  Closes the writer.

- virtual ~RowWriter ()

  Destructor.

Protected Member Functions

- RowWriter ()

  Empty constructor.

5.54.1 Detailed Description

RowWriter interface.

Common interface for those writers which dump the data from an string array.

It works as follows: perform as many write operations as necessary and call close once at the end. Once close is called no more write operations can be executed.

Check out the 'Data export' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.54.2 Constructor & Destructor Documentation

5.54.2.1 RowWriter::RowWriter () [inline, protected]

Empty constructor.

Protected because no one should instantiate a RowWriter. Just inherited classes can use this empty constructor.

5.54.3 Member Function Documentation

5.54.3.1 virtual void RowWriter::Write (sparksee::gdb::StringList & *row*) throw (sparksee::gdb::IOException, sparksee::gdb::Error) [pure virtual]

Writes the next row.

Parameters:

row [in] Row of data.

Exceptions:

IOException If bad things happen during the write.

Implemented in CSVWriter.

5.54.3.2 virtual void RowWriter::Close () throw (sparksee::gdb::IOException, sparksee::gdb::Error) [pure virtual]

Closes the writer.

Exceptions:

IOException If the close fails.

Implemented in CSVWriter.

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

- RowWriter.h

5.55 ScriptParser Class Reference

ScriptParser.

Public Member Functions

- ScriptParser ()

  Constructor.

- virtual ~ScriptParser ()

  Destructor.

- void SetOutputLog (const std::wstring &path) throw (sparksee::gdb::IOException)

  Sets the output log.

- void SetErrorLog (const std::wstring &path) throw (sparksee::gdb::IOException)

  Sets the error log.

- sparksee::gdb::bool_t Parse (sparksee_core::FileReader *fileReader, sparksee::gdb::bool_t execute)

  Parser the given input stream.

- sparksee::gdb::bool_t Parse (const std::wstring &path, sparksee::gdb::bool_t execute, const std::wstring &localeStr) throw (sparksee::gdb::IOException)

  Parses the given input file.

Static Public Member Functions

- static void GenerateSchemaScript (const std::wstring &path, sparksee::gdb::Database &db) throw (sparksee::gdb::IOException)

  Writes an script with the schema definition for the given database.

5.55.1 Detailed Description

ScriptParser.

The ScriptParser can create schemas and load data from a set of commands in a sparksee script.

A SPARKSEE script contains an ordered list of commands. ScriptParser will execute each one of them in order. Commands may create schemas, define nodes and edges, and load data into a previous defined SPARKSEE schema.

Check out the 'Scripting' chapter in the SPARKSEE User Manual for a comprehensive explanation on the grammar of the SPARKSEE commands and how they work.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.55.2 Member Function Documentation

5.55.2.1 void ScriptParser::SetOutputLog (const std::wstring & *path*) throw (sparksee::gdb::IOException)

Sets the output log.

If not set, output log corresponds to standard output.

Parameters:

path [in] Path of the output log.

Exceptions:

IOException If bad things happen opening the file.

5.55.2.2 void ScriptParser::SetErrorLog (const std::wstring & *path*) throw (sparksee::gdb::IOException)

Sets the error log.

If not set, error log corresponds to standard error output.

Parameters:

path [in] Path of the error log.

Exceptions:

IOException If bad things happen opening the file.

5.55.2.3 sparksee::gdb::bool_t ScriptParser::Parse (sparksee_core::FileReader * *fileReader*, sparksee::gdb::bool_t *execute*)

Parser the given input stream.

Parameters:

fileReader [in] Input file reader.
execute [in] If TRUE the script is executed, if FALSE it is just parsed.

Returns:

TRUE if ok, FALSE in case of error.

5.55.2.4 sparksee::gdb::bool_t ScriptParser::Parse (const std::wstring & *path*, sparksee::gdb::bool_t *execute*, const std::wstring & *localeStr*) throw (sparksee::gdb::IOException)

Parses the given input file.

Parameters:

path [in] Input file path.
execute [in] If TRUE the script is executed, if FALSE it is just parsed.
localeStr [in] The locale string for reading the input file. See CSVReader.

Returns:

TRUE if ok, FALSE in case of error.

Exceptions:

IOException If bad things happen opening the file.

5.55.2.5 static void ScriptParser::GenerateSchemaScript (const std::wstring & *path*, sparksee::gdb::Database & *db*) throw (sparksee::gdb::IOException) [static]

Writes an script with the schema definition for the given database.

Parameters:

path [in] Filename of the script to be writen.

db [in] Database.

Exceptions:

IOException If bad things happen opening or writing the file.

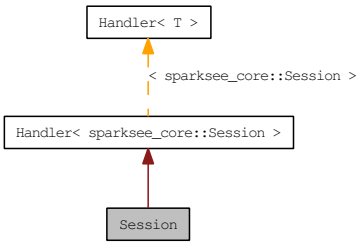
The documentation for this class was generated from the following file:

- ScriptParser.h

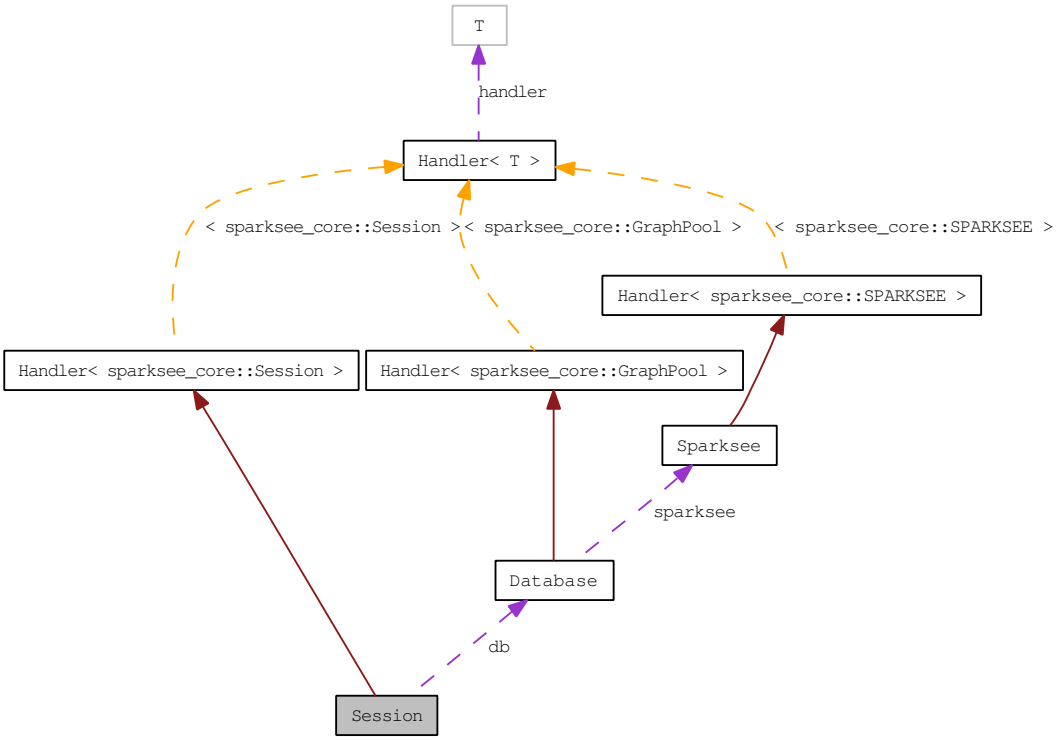
5.56 Session Class Reference

Session class.

Inheritance diagram for Session:



Collaboration diagram for Session:



Public Member Functions

- virtual ~Session ()
  Destructor.
- Graph * GetGraph ()
  Gets the Graph instance.
- Objects * NewObjects ()
  Creates a new Objects instance.
- void Begin ()
  Begins a transaction.
- void BeginUpdate ()
  Begins an update transaction.
- void Commit ()
  Commits a transaction.
- void Rollback ()
  Rollbacks a transaction.
- Query * NewQuery ()

Creates a new Query.

Friends

- class Database
- class Graph
- class Objects
- class ObjectsIterator
- class Values
- class ValuesIterator
- class TextStream

5.56.1 Detailed Description

Session class.

A Session is a stateful period of activity of a user with the Database.

All the manipulation of a Database must be enclosed into a Session. A Session can be initiated from a Database instance and allows for getting a Graph instance which represents the persistent graph (the graph database).

Also, temporary data is associated to the Session, thus when a Session is closed, all the temporary data associated to the Session is removed too. Objects or Values instances or even session attributes are an example of temporary data.

Moreover, a Session is exclusive for a thread, thus if it is shared among threads results may be fatal or unexpected.

Check out the 'Processing' and 'Transactions' sections in the SPARKSEE User Manual for details about how Sessions work and the use of transactions.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.56.2 Member Function Documentation

5.56.2.1 Graph* Session::GetGraph ()

Gets the Graph instance.

Returns:

The Graph instance.

5.56.2.2 Objects* Session::NewObjects ()

Creates a new Objects instance.

Returns:

The new Objects instance.

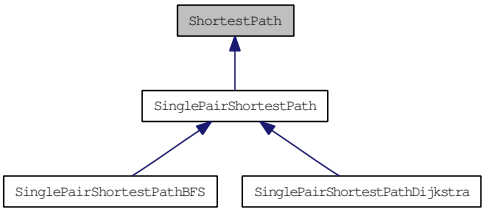
The documentation for this class was generated from the following file:

- Session.h

5.57 ShortestPath Class Reference

ShortestPath class.

Inheritance diagram for ShortestPath:



Public Member Functions

- void SetMaximumHops (sparksee::gdb::int32_t maxhops)

  Sets the maximum hops restriction.

- virtual void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection dir)

  Allows for traversing edges of the given type.

- virtual void AddAllEdgeTypes (sparksee::gdb::EdgesDirection dir)

  Allows for traversing all edge types of the graph.

- virtual void AddNodeType (sparksee::gdb::type_t type)

  Allows for traversing nodes of the given type.

- virtual void AddAllNodeTypes ()

  Allows for traversing all node types of the graph.

- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)

  Set which nodes can't be used.

- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)

  Set which edges can't be used.

- virtual void Run ()=0

  Runs the algorithm.

- virtual ~ShortestPath ()

  Destructor.

Protected Member Functions

- ShortestPath (sparksee::gdb::Session &s)
  Creates a new instance.
- void AssertEdgeType (sparksee::gdb::type_t edgetype)
  Check that the given edge type is valid.
- void AssertAddedEdges ()
  Check that edges had been added.
- void AssertAddedNodes ()
  Check that nodes had been added.
- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- void AssertNotComputed ()
  Check that the shortest path had not been calculated yet.
- void AssertComputed ()
  Check that the shortest path had been calculated.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::int32_t maxHops
  Maximum hops restriction.

- sparksee::gdb::bool_t computed

  True if the shortest path has been calculated.

- sparksee::gdb::Objects * excludedNodes

  The set of excluded nodes.

- sparksee::gdb::Objects * excludedEdges

  The set of excluded edges.

- sparksee::gdb::bool_t areAllNodeTypesAllowed

  True if all the node types are allowed.

5.57.1 Detailed Description

ShortestPath class.

Classes implementing this abstract class solve the shortest path problem in a graph.

The user must set which node and edge types can be used for the traversal.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.57.2 Constructor & Destructor Documentation

5.57.2.1 ShortestPath::ShortestPath (sparksee::gdb::Session & *s*) [protected]

Creates a new instance.

Parameters:

s [in] Session to get the graph from and perform traversal.

5.57.3 Member Function Documentation

5.57.3.1 void ShortestPath::SetMaximumHops (sparksee::gdb::int32_t *maxhops*)

Sets the maximum hops restriction.

All paths longer than the maximum hops restriction will be ignored.

Parameters:

maxhops [in] The maximum hops restriction. It must be positive or zero. Zero, the default value, means unlimited.

5.57.3.2 virtual void ShortestPath::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *dir*) [virtual]

Allows for traversing edges of the given type.

Parameters:

type [in] Edge type.

dir [in] Edge direction.

5.57.3.3 virtual void ShortestPath::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *dir*) [virtual]

Allows for traversing all edge types of the graph.

Parameters:

dir [in] Edge direction.

5.57.3.4 virtual void ShortestPath::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.57.3.5 virtual void ShortestPath::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.57.3.6 virtual void ShortestPath::Run () [pure virtual]

Runs the algorithm.

This method can only be called once.

Implemented in SinglePairShortestPathBFS, and SinglePairShortestPathDijkstra.

5.57.4 Member Data Documentation

5.57.4.1 sparksee::gdb::int32_t ShortestPath::maxHops [protected]

Maximum hops restriction.

It must be positive or zero. Zero means unlimited.

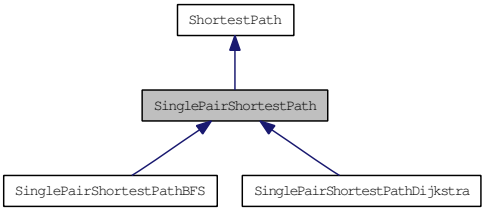
The documentation for this class was generated from the following file:

- ShortestPath.h

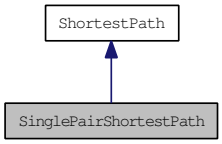
5.58 SinglePairShortestPath Class Reference

SinglePairShortestPath class.

Inheritance diagram for SinglePairShortestPath:



Collaboration diagram for SinglePairShortestPath:



Public Member Functions

- virtual sparksee::gdb::OIDList * GetPathAsNodes ()=0

  Gets the shortest path between the source node and the destination node as an ordered set of nodes.

- virtual sparksee::gdb::OIDList * GetPathAsEdges ()=0

  Gets the shortest path between the source node and the destination node as an ordered set of edges.

- virtual sparksee::gdb::double64_t GetCost ()=0

  Gets the cost of the shortest path.

- virtual sparksee::gdb::bool_t Exists ()

  Returns TRUE If a path exists or FALSE otherwise.

- virtual ~SinglePairShortestPath ()

  Destructor.

- void SetMaximumHops (sparksee::gdb::int32_t maxhops)

  Sets the maximum hops restriction.

- virtual void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection dir)

  Allows for traversing edges of the given type.

- virtual void AddAllEdgeTypes (sparksee::gdb::EdgesDirection dir)

  Allows for traversing all edge types of the graph.

- virtual void AddNodeType (sparksee::gdb::type_t type)

  Allows for traversing nodes of the given type.

- virtual void AddAllNodeTypes ()
  Allows for traversing all node types of the graph.
- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)
  Set which nodes can't be used.
- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)
  Set which edges can't be used.
- virtual void Run ()=0
  Runs the algorithm.

Protected Member Functions

- SinglePairShortestPath (sparksee::gdb::Session &s, sparksee::gdb::oid_t src, sparksee::gdb::oid_t dst)
  Creates a new instance.
- void AssertEdgeType (sparksee::gdb::type_t edgetype)
  Check that the given edge type is valid.
- void AssertAddedEdges ()
  Check that edges had been added.
- void AssertAddedNodes ()
  Check that nodes had been added.
- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- void AssertNotComputed ()
  Check that the shortest path had not been calculated yet.
- void AssertComputed ()
  Check that the shortest path had been calculated.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::oid_t source
  Source node.
- sparksee::gdb::oid_t destination
  Destination node.
- sparksee::gdb::OIDList * pathAsNodes
  Ordered set of node identifiers representing the shortest path.
- sparksee::gdb::OIDList * pathAsEdges
  Ordered set of edge identifiers representing the shortest path.
- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::int32_t maxHops
  Maximum hops restriction.
- sparksee::gdb::bool_t computed
  True if the shortest path has been calculated.
- sparksee::gdb::Objects * excludedNodes
  The set of excluded nodes.
- sparksee::gdb::Objects * excludedEdges
  The set of excluded edges.
- sparksee::gdb::bool_t areAllNodeTypesAllowed
  True if all the node types are allowed.

5.58.1 Detailed Description

SinglePairShortestPath class.

Classes implementing this abstract class solve the shortest path problem in a graph from a given source node and to a given destination node.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.58.2 Constructor & Destructor Documentation

5.58.2.1 SinglePairShortestPath::SinglePairShortestPath (sparksee::gdb::Session & *s*, sparksee::gdb::oid_t *src*, sparksee::gdb::oid_t *dst*) [protected]

Creates a new instance.

Parameters:

s [in] Session to get the graph from and perform traversal.

src [in] Source node.

dst [dst] Destination node.

5.58.3 Member Function Documentation

5.58.3.1 virtual sparksee::gdb::OIDList* SinglePairShortestPath::GetPathAsNodes () [pure virtual]

Gets the shortest path between the source node and the destination node as an ordered set of nodes.

Returns:

Ordered set of node identifiers.

Implemented in SinglePairShortestPathBFS, and SinglePairShortestPathDijkstra.

5.58.3.2 virtual sparksee::gdb::OIDList* SinglePairShortestPath::GetPathAsEdges () [pure virtual]

Gets the shortest path between the source node and the destination node as an ordered set of edges.

Returns:

Ordered set of edge identifiers.

Implemented in SinglePairShortestPathBFS, and SinglePairShortestPathDijkstra.

5.58.3.3 virtual sparksee::gdb::double64_t SinglePairShortestPath::GetCost () [pure virtual]

Gets the cost of the shortest path.

The cost for unweighted algorithms is the number of hops of the shortest path. For weighted algoritms, the cost is the sum of the costs of the edges of the shortest path.

Returns:

The cost of the shortest path.

Implemented in SinglePairShortestPathBFS, and SinglePairShortestPathDijkstra.

5.58.3.4 void ShortestPath::SetMaximumHops (sparksee::gdb::int32_t *maxhops*) [inherited]

Sets the maximum hops restriction.

All paths longer than the maximum hops restriction will be ignored.

Parameters:

maxhops [in] The maximum hops restriction. It must be positive or zero. Zero, the default value, means unlimited.

5.58.3.5 virtual void ShortestPath::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows for traversing edges of the given type.

Parameters:

type [in] Edge type.

dir [in] Edge direction.

5.58.3.6 virtual void ShortestPath::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows for traversing all edge types of the graph.

Parameters:

dir [in] Edge direction.

5.58.3.7 virtual void ShortestPath::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.58.3.8 virtual void ShortestPath::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.58.3.9 virtual void ShortestPath::Run () [pure virtual, inherited]

Runs the algorithm.

This method can only be called once.

Implemented in SinglePairShortestPathBFS, and SinglePairShortestPathDijkstra.

5.58.4 Member Data Documentation

5.58.4.1 sparksee::gdb::OIDList* SinglePairShortestPath::pathAsEdges [protected]

Ordered set of edge identifiers representing the shortest path.

May be computed lazily when requested from the pathAsNodes.

5.58.4.2 sparksee::gdb::int32_t ShortestPath::maxHops [protected, inherited]

Maximum hops restriction.

It must be positive or zero. Zero means unlimited.

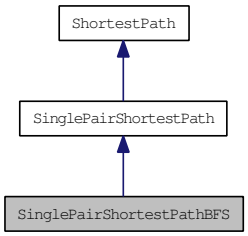
The documentation for this class was generated from the following file:

- SinglePairShortestPath.h

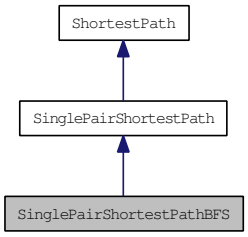
5.59 SinglePairShortestPathBFS Class Reference

SinglePairShortestPathBFS class.

Inheritance diagram for SinglePairShortestPathBFS:



Collaboration diagram for SinglePairShortestPathBFS:



Public Member Functions

- virtual ~SinglePairShortestPathBFS ()

  Destructor.

- virtual void Run ()

  Executes the algorithm.

- virtual sparksee::gdb::OIDList * GetPathAsNodes ()

  Gets the shortest path between the source node and the destination node as an ordered set of nodes.

- virtual sparksee::gdb::OIDList * GetPathAsEdges ()

  Gets the shortest path between the source node and the destination node as an ordered set of edges.

- virtual sparksee::gdb::double64_t GetCost ()

  Gets the cost of the shortest path.

- SinglePairShortestPathBFS (sparksee::gdb::Session &session, sparksee::gdb::oid_t src, sparksee::gdb::oid_t dst)

  Creates a new instance.

- virtual void CheckOnlyExistence ()

  Set that only the path existence must be calculated and not the path itself.

- virtual sparksee::gdb::bool_t Exists ()

  Returns TRUE If a path exists or FALSE otherwise.

- void SetMaximumHops (sparksee::gdb::int32_t maxhops)

  Sets the maximum hops restriction.

- virtual void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection dir)

  Allows for traversing edges of the given type.

- virtual void AddAllEdgeTypes (sparksee::gdb::EdgesDirection dir)

  Allows for traversing all edge types of the graph.

- virtual void AddNodeType (sparksee::gdb::type_t type)

  Allows for traversing nodes of the given type.

- virtual void AddAllNodeTypes ()

  Allows for traversing all node types of the graph.

- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)

  Set which nodes can't be used.

- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)

  Set which edges can't be used.

Protected Member Functions

- void AssertEdgeType (sparksee::gdb::type_t edgetype)

  Check that the given edge type is valid.

- void AssertAddedEdges ()

  Check that edges had been added.

- void AssertAddedNodes ()

Check that nodes had been added.

- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- void AssertNotComputed ()
  Check that the shortest path had not been calculated yet.
- void AssertComputed ()
  Check that the shortest path had been calculated.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::oid_t source
  Source node.
- sparksee::gdb::oid_t destination
  Destination node.
- sparksee::gdb::OIDList * pathAsNodes
  Ordered set of node identifiers representing the shortest path.
- sparksee::gdb::OIDList * pathAsEdges
  Ordered set of edge identifiers representing the shortest path.
- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::int32_t maxHops
  Maximum hops restriction.

- sparksee::gdb::bool_t computed

  True if the shortest path has been calculated.

- sparksee::gdb::Objects * excludedNodes

  The set of excluded nodes.

- sparksee::gdb::Objects * excludedEdges

  The set of excluded edges.

- sparksee::gdb::bool_t areAllNodeTypesAllowed

  True if all the node types are allowed.

5.59.1 Detailed Description

SinglePairShortestPathBFS class.

It solves the single-pair shortest path problem using a BFS-based implementation.

It is a unweighted algorithm, that is it assumes all edges have the same cost.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.59.2 Constructor & Destructor Documentation

5.59.2.1 SinglePairShortestPathBFS::SinglePairShortestPathBFS (sparksee::gdb::Session & *session*, sparksee::gdb::oid_t *src*, sparksee::gdb::oid_t *dst*)

Creates a new instance.

Parameters:

session [in] Session to get the graph from and perform traversal.

src [in] Source node.

dst [dst] Destination node.

5.59.3 Member Function Documentation

5.59.3.1 virtual sparksee::gdb::OIDList* SinglePairShortestPathBFS::GetPathAsNodes () [virtual]

Gets the shortest path between the source node and the destination node as an ordered set of nodes.

Returns:

Ordered set of node identifiers.

Implements SinglePairShortestPath.

5.59.3.2 virtual sparksee::gdb::OIDList* SinglePairShortestPathBFS::GetPathAsEdges () [virtual]

Gets the shortest path between the source node and the destination node as an ordered set of edges.

Returns:

Ordered set of edge identifiers.

Implements SinglePairShortestPath.

5.59.3.3 virtual sparksee::gdb::double64_t SinglePairShortestPathBFS::GetCost () [virtual]

Gets the cost of the shortest path.

The cost is the number of hops of the shortest path.

Returns:

The cost of the shortest path.

Implements SinglePairShortestPath.

5.59.3.4 virtual void SinglePairShortestPathBFS::CheckOnlyExistence () [virtual]

Set that only the path existence must be calculated and not the path itself.

That method should improve the performance of the algorithm, but a call to GetPathAsNodes or GetPathAsEdges will generate an exception even if the path exists.

5.59.3.5 void ShortestPath::SetMaximumHops (sparksee::gdb::int32_t *maxhops*) [inherited]

Sets the maximum hops restriction.

All paths longer than the maximum hops restriction will be ignored.

Parameters:

maxhops [in] The maximum hops restriction. It must be positive or zero. Zero, the default value, means unlimited.

5.59.3.6 virtual void ShortestPath::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows for traversing edges of the given type.

Parameters:

type [in] Edge type.

dir [in] Edge direction.

5.59.3.7 virtual void ShortestPath::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows for traversing all edge types of the graph.

Parameters:

dir [in] Edge direction.

5.59.3.8 virtual void ShortestPath::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.59.3.9 virtual void ShortestPath::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.59.4 Member Data Documentation

5.59.4.1 sparksee::gdb::OIDList* SinglePairShortestPath::pathAsEdges [protected, inherited]

Ordered set of edge identifiers representing the shortest path.

May be computed lazily when requested from the pathAsNodes.

5.59.4.2 sparksee::gdb::int32_t ShortestPath::maxHops [protected, inherited]

Maximum hops restriction.

It must be positive or zero. Zero means unlimited.

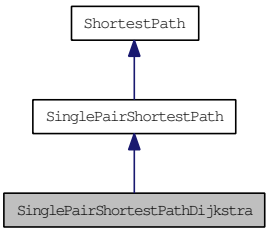
The documentation for this class was generated from the following file:

- SinglePairShortestPathBFS.h

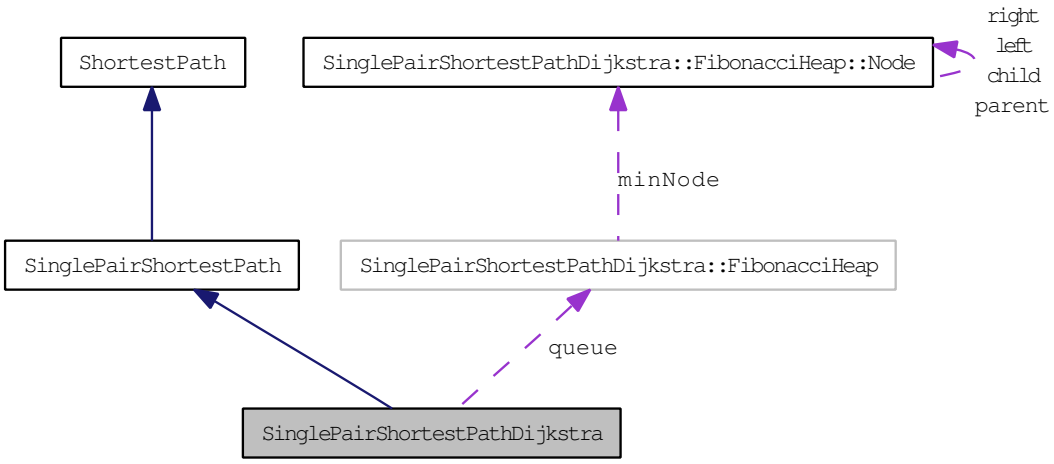
5.60 SinglePairShortestPathDijkstra Class Reference

SinglePairShortestPathDijkstra class.

Inheritance diagram for SinglePairShortestPathDijkstra:



Collaboration diagram for SinglePairShortestPathDijkstra:



Public Member Functions

- virtual ~SinglePairShortestPathDijkstra ()

  Destructor.

- virtual void Run ()

  Executes the algorithm.

- virtual sparksee::gdb::OIDList * GetPathAsNodes ()

  Gets the shortest path between the source node and the destination node as an ordered set of nodes.

- virtual sparksee::gdb::OIDList * GetPathAsEdges ()

  Gets the shortest path between the source node and the destination node as an ordered set of edges.

- virtual sparksee::gdb::double64_t GetCost ()

  Gets the cost of the shortest path.

- SinglePairShortestPathDijkstra (sparksee::gdb::Session &session, sparksee::gdb::oid_t src, sparksee::gdb::oid_t dst)

  Creates a new instance.

- virtual void AddWeightedEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection dir, sparksee::gdb::attr_t attr)

  Allows for traversing edges of the given type using the given attribute as the weight.

- virtual void SetUnweightedEdgeCost (sparksee::gdb::double64_t weight)

  Sets the weight assigned to the unweighted edges.

- virtual sparksee::gdb::bool_t Exists ()

  Returns TRUE If a path exists or FALSE otherwise.

- void SetMaximumHops (sparksee::gdb::int32_t maxhops)

  Sets the maximum hops restriction.

- virtual void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection dir)

  Allows for traversing edges of the given type.

- virtual void AddAllEdgeTypes (sparksee::gdb::EdgesDirection dir)

  Allows for traversing all edge types of the graph.

- virtual void AddNodeType (sparksee::gdb::type_t type)

  Allows for traversing nodes of the given type.

- virtual void AddAllNodeTypes ()

  Allows for traversing all node types of the graph.

- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)

  Set which nodes can't be used.

- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)

  Set which edges can't be used.

Protected Member Functions

- void AssertEdgeType (sparksee::gdb::type_t edgetype)

  Check that the given edge type is valid.

- void AssertAddedEdges ()

  Check that edges had been added.

- void AssertAddedNodes ()

  Check that nodes had been added.

- void AssertNodeType (sparksee::gdb::type_t nodetype)

  Check that the given node type is valid.

- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)

  Check if the given node has an allowed type.

- void AssertNotComputed ()

Check that the shortest path had not been calculated yet.

- void AssertComputed ()
  Check that the shortest path had been calculated.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::oid_t source
  Source node.
- sparksee::gdb::oid_t destination
  Destination node.
- sparksee::gdb::OIDList * pathAsNodes
  Ordered set of node identifiers representing the shortest path.
- sparksee::gdb::OIDList * pathAsEdges
  Ordered set of edge identifiers representing the shortest path.
- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::int32_t maxHops
  Maximum hops restriction.
- sparksee::gdb::bool_t computed
  True if the shortest path has been calculated.
- sparksee::gdb::Objects * excludedNodes
  The set of excluded nodes.
- sparksee::gdb::Objects * excludedEdges
  The set of excluded edges.

- sparksee::gdb::bool_t areAllNodeTypesAllowed

  True if all the node types are allowed.

Classes

- class **FibonacciHeap**

  A FibonacciHeap.

5.60.1 Detailed Description

SinglePairShortestPathDijkstra class.

It solves the single-pair shortest path problem using a Dijkstra-based implementation.

It is a weighted algorithm, so it takes into account the cost of the edges to compute a minimum-cost shortest path. That is, the user may set for each edge type which attribute should be used to retrieve the cost of the edge. If no attribute is given for an edge type, this will assume the edge has a fixed cost (the default is 1). Only numerical attribute can be set as weight attributes (that is Long, Integer or Double attributes are allowed).

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.60.2 Constructor & Destructor Documentation

5.60.2.1 SinglePairShortestPathDijkstra::SinglePairShortestPathDijkstra (sparksee::gdb::Session & *session*, sparksee::gdb::oid_t *src*, sparksee::gdb::oid_t *dst*)

Creates a new instance.

Parameters:

session [in] Session to get the graph from and perform traversal.

src [in] Source node.

dst [dst] Destination node.

5.60.3 Member Function Documentation

5.60.3.1 virtual sparksee::gdb::OIDList* SinglePairShortestPathDijkstra::GetPathAsNodes () [virtual]

Gets the shortest path between the source node and the destination node as an ordered set of nodes.

Returns:

Ordered set of node identifiers.

Implements SinglePairShortestPath.

5.60.3.2 virtual sparksee::gdb::OIDList* SinglePairShortestPathDijkstra::GetPathAsEdges () [virtual]

Gets the shortest path between the source node and the destination node as an ordered set of edges.

Returns:

Ordered set of edge identifiers.

Implements SinglePairShortestPath.

5.60.3.3 virtual sparksee::gdb::double64_t SinglePairShortestPathDijkstra::GetCost () [virtual]

Gets the cost of the shortest path.

The cost is the sum of the weights of the edges in the shortest path.

Returns:

The cost of the shortest path.

Implements SinglePairShortestPath.

5.60.3.4 virtual void SinglePairShortestPathDijkstra::AddWeightedEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *dir*, sparksee::gdb::attr_t *attr*) [virtual]

Allows for traversing edges of the given type using the given attribute as the weight.

Parameters:

type [in] Edge type.

dir [in] Edge direction.

attr [in] Attribute to be used as the weight. It must be a global attribute or an attribute of the given edge type.

5.60.3.5 virtual void SinglePairShortestPathDijkstra::SetUnweightedEdgeCost (sparksee::gdb::double64_t *weight*) [virtual]

Sets the weight assigned to the unweighted edges.

All the edges from the types added without an explicit weight attribute will get this weight. The default weight for this edges is 1.

Parameters:

weight [in] The weight value for unweighted edges.

5.60.3.6 void ShortestPath::SetMaximumHops (sparksee::gdb::int32_t *maxhops*) [inherited]

Sets the maximum hops restriction.

All paths longer than the maximum hops restriction will be ignored.

Parameters:

maxhops [in] The maximum hops restriction. It must be positive or zero. Zero, the default value, means unlimited.

5.60.3.7 virtual void ShortestPath::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows for traversing edges of the given type.

Parameters:

type [in] Edge type.

dir [in] Edge direction.

5.60.3.8 virtual void ShortestPath::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows for traversing all edge types of the graph.

Parameters:

dir [in] Edge direction.

5.60.3.9 virtual void ShortestPath::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.60.3.10 virtual void ShortestPath::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.60.4 Member Data Documentation

5.60.4.1 sparksee::gdb::OIDList* SinglePairShortestPath::pathAsEdges [protected, inherited]

Ordered set of edge identifiers representing the shortest path.

May be computed lazily when requested from the pathAsNodes.

5.60.4.2 sparksee::gdb::int32_t ShortestPath::maxHops [protected, inherited]

Maximum hops restriction.

It must be positive or zero. Zero means unlimited.

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

- SinglePairShortestPathDijkstra.h

5.61 SinglePairShortestPathDijkstra::FibonacciHeap::Node Struct Reference

A FibonacciHeap node structure.

Collaboration diagram for SinglePairShortestPathDijkstra::FibonacciHeap::Node:

5.61.1 Detailed Description

A FibonacciHeap node structure.

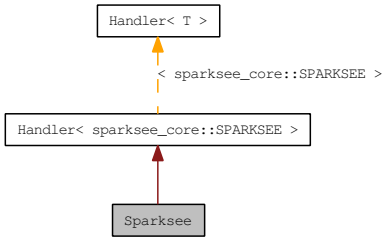
The documentation for this struct was generated from the following file:

- SinglePairShortestPathDijkstra.h

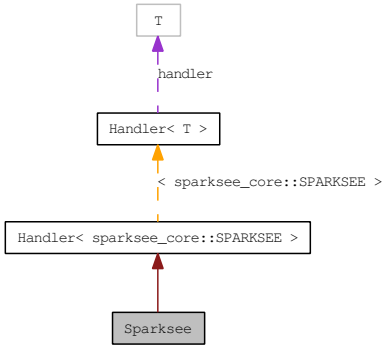
5.62 Sparksee Class Reference

Sparksee class.

Inheritance diagram for Sparksee:



Collaboration diagram for Sparksee:



Public Member Functions

- Sparksee (const SparkseeConfig &config)
  Creates a new instance.
- virtual ~Sparksee ()
  Destructor.
- Database * Create (const std::wstring &path, const std::wstring &alias) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)
  Creates a new Database instance.
- Database * Open (const std::wstring &path, bool_t readOnly) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)
  Opens an existing Database instance.
- Database * Restore (const std::wstring &path, const std::wstring &backupFile) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)
  Restores a Database from a backup file.

Static Public Attributes

- static const std::wstring Version
  Sparksee version.

5.62.1 Detailed Description

Sparksee class.

All Sparksee programs must have one single Sparksee instance to manage one or more Database instances.

This class allows for the creation of new Databases or open an existing one.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.62.2 Constructor & Destructor Documentation

5.62.2.1 Sparksee::Sparksee (const SparkseeConfig & *config*)

Creates a new instance.

Parameters:

config [in] Sparksee configuration.

5.62.3 Member Function Documentation

5.62.3.1 Database* Sparksee::Create (const std::wstring & *path*, const std::wstring & *alias*) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)

Creates a new Database instance.

Parameters:

path [in] Database storage file.

alias [in] Database alias name.

Returns:

A Database instance.

Exceptions:

FileNotFoundException If the given file cannot be created.

5.62.3.2 Database* Sparksee::Open (const std::wstring & *path*, bool_t *readOnly*) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)

Opens an existing Database instance.

Parameters:

path [in] Database storage file.

readOnly [in] If TRUE, open Database in read-only mode.

Returns:

A Database instance.

Exceptions:

FileNotFoundException If the given file does not exist.

5.62.3.3 Database* Sparksee::Restore (const std::wstring & *path*, const std::wstring & *backupFile*) throw (sparksee::gdb::FileNotFoundException, sparksee::gdb::Error)

Restores a Database from a backup file.

See the Graph class Backup method.

Parameters:

path [in] Database storage file.

backupFile [in] The Backup file to be restored.

Returns:

A Database instance.

Exceptions:

FileNotFoundException If the given file cannot be created, or the exported data file does not exists.

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

- Sparksee.h

5.63 SparkseeConfig Class Reference

Sparksee configuration class.

Public Member Functions

- SparkseeConfig ()
  Creates a new instance.
- virtual ~SparkseeConfig ()
  Destructor.
- int32_t GetExtentSize () const
  Gets the size of a extent.
- void SetExtentSize (int32_t kBytes)
  Sets the size of the extents in KB.
- int32_t GetExtentPages () const
  Gets the number of pages per extent.
- void SetExtentPages (int32_t pages)
  Sets the number of pages per extent.
- int32_t GetPoolFrameSize () const
  Gets the size of a pool frame in number of extents.
- void SetPoolFrameSize (int32_t extents)
  Sets the size of a pool frame in number of extents.
- int32_t GetPoolPersistentMinSize () const
  Gets the minimum size for the persistent pool in number of frames.
- void SetPoolPersistentMinSize (int32_t frames)

Sets the minimum size for the persistent pool in number of frames.

- int32_t GetPoolPersistentMaxSize () const

  Gets the maximum size for the persistent pool in number of frames.

- void SetPoolPersistentMaxSize (int32_t frames)

  Sets the maximum size for the persistent pool in number of frames.

- int32_t GetPoolTemporaryMinSize () const

  Gets the minimum size for the temporary pool in number of frames.

- void SetPoolTemporaryMinSize (int32_t frames)

  Sets the minimum size for the temporary pool in number of frames.

- int32_t GetPoolTemporaryMaxSize () const

  Gets the maximum size for the temporary pool in number of frames.

- void SetPoolTemporaryMaxSize (int32_t frames)

  Sets the maximum size for the temporary pool in number of frames.

- int32_t GetPoolClusterSize () const

  Gets the number of pools in each PoolCluster.

- void SetPoolClusterSize (int32_t pools)

  Sets the number of pools in each PoolCluster.

- int32_t GetCacheMaxSize () const

  Gets the maximum size for the cache (all pools) in MB.

- void SetCacheMaxSize (int32_t megaBytes)

  Sets the maximum size for the cache (all pools) in MB.

- const std::wstring & GetLicense () const

  Gets the license code.

- void SetLicense (const std::wstring &key)

  Sets the license code.

- const std::wstring & GetLogFile () const

  Gets the log file.

- void SetLogFile (const std::wstring &filePath)

  Sets the log file.

- LogLevel GetLogLevel () const

  Gets the log level.

- void SetLogLevel (LogLevel level)

  Sets the log level.

- bool_t GetCacheStatisticsEnabled () const
  Gets whether cache statistics are enabled or disabled.
- void SetCacheStatisticsEnabled (bool_t status)
  Enables or disables cache statistics.
- const std::wstring & GetCacheStatisticsFile () const
  Gets the cache statistics log file.
- void SetCacheStatisticsFile (const std::wstring &filePath)
  Sets the cache statistics log file.
- int64_t GetCacheStatisticsSnapshotTime () const
  Gets the cache statistics snapshot time in microseconds.
- void SetCacheStatisticsSnapshotTime (int64_t microSeconds)
  Sets the cache statistics snapshot time.
- bool_t GetRollbackEnabled () const
  Gets whether the rollback is enabled or disabled.
- void SetRollbackEnabled (bool_t status)
  Enables or disables the rollback.
- bool_t GetRecoveryEnabled () const
  Gets whether the recovery is enabled or disabled.
- void SetRecoveryEnabled (bool_t status)
  Enables or disables the recovery.
- const std::wstring & GetRecoveryLogFile () const
  Gets the recovery log file.
- void SetRecoveryLogFile (const std::wstring &filePath)
  Sets the recovery log file.
- int32_t GetRecoveryCacheMaxSize () const
  Gets the maximum size for the recovery log cache in extents.
- void SetRecoveryCacheMaxSize (int32_t extents)
  Sets the maximum size for the recovery log cache in extents.
- int64_t GetRecoveryCheckpointTime () const
  Gets the delay time (in microseconds) between automatic checkpoints.
- void SetRecoveryCheckpointTime (int64_t microSeconds)
  Sets the delay time (in microseconds) between automatic checkpoints.
- bool_t GetHighAvailabilityEnabled () const
  Gets whether high availability mode is enabled or disabled.

- void SetHighAvailabilityEnabled (bool_t status)
  Enables or disables high availability mode.
- const std::wstring & GetHighAvailabilityIP () const
  Gets the IP address and port of the instance.
- void SetHighAvailabilityIP (const std::wstring &ip)
  Sets the IP address and port of the instance.
- const std::wstring & GetHighAvailabilityCoordinators () const
  Gets the coordinators address and port list.
- void SetHighAvailabilityCoordinators (const std::wstring &ip)
  Sets the coordinators address and port list.
- int64_t GetHighAvailabilitySynchronization () const
  Gets the synchronization polling time.
- void SetHighAvailabilitySynchronization (int64_t microSeconds)
  Sets the synchronization polling time.
- int64_t GetHighAvailabilityMasterHistory () const
  Gets the master's history log.
- void SetHighAvailabilityMasterHistory (int64_t filePath)
  Sets the master's history log.

Friends

- class Sparksee

5.63.1 Detailed Description

Sparksee configuration class.

If not specified, 0 means unlimited which is the maximum available. For the pools that's the total cache size. For the cache unlimited means nearly all the physical memory of the computer.

For each field, there is a default value. This value can be overrided with values from a properties file (see SparkseeProperties class). Also, this settings can be overrided calling a specific setter.

For each field, it is shown its default value and the property to override this value:

Extent size: 4KB ('sparksee.storage.extentsize' at SparkseeProperties).

Pages per extent: 1 page ('sparksee.storage.extentpages' at SparkseeProperties).

Pool frame size: 1 extent ('sparksee.io.pool.frame.size' at SparkseeProperties).

Minimum size for the persistent pool: 64 frames ('sparksee.io.pool.persistent.minsize' at SparkseeProperties).

Maximum size for the persistent pool: 0 frames ('sparksee.io.pool.persistent.maxsize' at SparkseeProperties).

Minimum size for the temporary pool: 16 frames ('sparksee.io.pool.temporal.minsize' at SparkseeProperties).

Maximum size for the temporary pool: 0 frames ('sparksee.io.pool.temporal.maxsize' at SparkseeProperties).

Number of pools in the pool cluster: 0 pools ('sparksee.io.pool.clustersize' at SparkseeProperties). 0 or 1 means the clustering is disabled.

Maximum size for the cache (all pools): 0 MB ('sparksee.io.cache.maxsize' at SparkseeProperties).

License code: "" ('sparksee.license' at SparkseeProperties). No license code means evaluation license.

Log level: Info ('sparksee.log.level' at SparkseeProperties).

Log file: "sparksee.log" ('sparksee.log.file' at SparkseeProperties).

Cache statistics: false (disabled) ('sparksee.cache.statistics' at SparkseeProperties).

Cache statistics log file: "statistics.log" ('sparksee.cache.statisticsFile' at SparkseeProperties).

Cache statistics snapshot time: 1000 msecs [TimeUnit] ('sparksee.cache.statisticsSnapshotTime' at SparkseeProperties).

Recovery enabled: false ('sparksee.io.recovery' at SparkseeProperties).

Recovery log file: "" ('sparksee.io.recovery.logfile' at SparkseeProperties).

Recovery cache max size: 1MB ('sparksee.io.recovery.cachesize' at SparkseeProperties).

Recovery checkpoint time: 60 seconds [TimeUnit] ('sparksee.io.recovery.checkpointTime' at SparkseeProperties).

High-availability: false (disabled) ('sparksee.ha' at SparkseeProperties).

High-availability coordinators: "" ('sparksee.ha.coordinators' at SparkseeProperties).

High-availability IP: "" ('sparksee.ha.ip' at SparkseeProperties).

High-availability sync polling: 0 (disabled) [TimeUnit] ('sparksee.ha.sync' at SparkseeProperties).

High-availability master history: 1D (1 day) [TimeUnit] ('sparksee.ha.master.history' at SparkseeProperties).

Use of TimeUnit:

Those variables using TimeUnit allow for:

<X>[D|H|M|S|s|m|u]

where <X> is a number followed by an optional character which represents the unit: D for days, H for hours, M for minutes, S or s for seconds, m for milliseconds and u for microseconds. If no unit character is given, seconds are assumed.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.63.2 Constructor & Destructor Documentation

5.63.2.1 SparkseeConfig::SparkseeConfig ()

Creates a new instance.

Values are set with default values.

5.63.3 Member Function Documentation

5.63.3.1 int32_t SparkseeConfig::GetExtentSize () const [inline]

Gets the size of a extent.

Returns:

The size of a extent in KB.

5.63.3.2 void SparkseeConfig::SetExtentSize (int32_t *kBytes*) [inline]

Sets the size of the extents in KB.

Parameters:

kBytes [in] The size of an extent in KB. An extent can have a size between 4KB and 64KB, and it must be a power of 2.

5.63.3.3 int32_t SparkseeConfig::GetExtentPages () const [inline]

Gets the number of pages per extent.

Returns:

The number of pages per extent.

5.63.3.4 void SparkseeConfig::SetExtentPages (int32_t *pages*) [inline]

Sets the number of pages per extent.

Parameters:

pages [in] The number of pages. It must be at least 1 page and the page size must be greater than or equal to 4KB.

5.63.3.5 int32_t SparkseeConfig::GetPoolFrameSize () const [inline]

Gets the size of a pool frame in number of extents.

Returns:

The size of a pool frame in number of extents.

5.63.3.6 void SparkseeConfig::SetPoolFrameSize (int32_t *extents*) [inline]

Sets the size of a pool frame in number of extents.

Parameters:

extents [in] The size of a pool frame in number of extents. It must be non-negative.

5.63.3.7 int32_t SparkseeConfig::GetPoolPersistentMinSize () const [inline]

Gets the minimum size for the persistent pool in number of frames.

Returns:

The minimum size for the persistent pool in number of frames.

5.63.3.8 void SparkseeConfig::SetPoolPersistentMinSize (int32_t *frames*) [inline]

Sets the minimum size for the persistent pool in number of frames.

Parameters:

frames [in] The minimum size for the persistent pool in number of frames. It must be non-negative.

5.63.3.9 int32_t SparkseeConfig::GetPoolPersistentMaxSize () const [inline]

Gets the maximum size for the persistent pool in number of frames.

Returns:

The maximum size for the persistent pool in number of frames.

5.63.3.10 void SparkseeConfig::SetPoolPersistentMaxSize (int32_t *frames*) [inline]

Sets the maximum size for the persistent pool in number of frames.

Parameters:

frames [in] The maximum size for the persistent pool in number of frames. It must be non-negative.

5.63.3.11 int32_t SparkseeConfig::GetPoolTemporaryMinSize () const [inline]

Gets the minimum size for the temporary pool in number of frames.

Returns:

The minimum size for the temporary pool in number of frames.

5.63.3.12 void SparkseeConfig::SetPoolTemporaryMinSize (int32_t *frames*) [inline]

Sets the minimum size for the temporary pool in number of frames.

Parameters:

frames [in] The minimum size for the temporary pool in number of frames. It must be non-negative.

5.63.3.13 int32_t SparkseeConfig::GetPoolTemporaryMaxSize () const [inline]

Gets the maximum size for the temporary pool in number of frames.

Returns:

The maximum size for the temporary pool in number of frames.

5.63.3.14 void SparkseeConfig::SetPoolTemporaryMaxSize (int32_t *frames*) [inline]

Sets the maximum size for the temporary pool in number of frames.

Parameters:

frames [in] The maximum size for the temporary pool in number of frames. It must be non-negative.

5.63.3.15 int32_t SparkseeConfig::GetPoolClusterSize () const [inline]

Gets the number of pools in each PoolCluster.

Returns:

The number of pools in each PoolCluster.

5.63.3.16 void SparkseeConfig::SetPoolClusterSize (int32_t *pools*) [inline]

Sets the number of pools in each PoolCluster.

Parameters:

pools [in] The number of pools in each PoolCluster. It must be non-negative.

5.63.3.17 int32_t SparkseeConfig::GetCacheMaxSize () const [inline]

Gets the maximum size for the cache (all pools) in MB.

Returns:

The maximum size for the cache (all pools) in MB.

5.63.3.18 void SparkseeConfig::SetCacheMaxSize (int32_t *megaBytes*) [inline]

Sets the maximum size for the cache (all pools) in MB.

Parameters:

megaBytes [in] The maximum size for the cache (all pools) in MB. It must be non-negative.

5.63.3.19 const std::wstring& SparkseeConfig::GetLicense () const [inline]

Gets the license code.

Returns:

The license code.

5.63.3.20 void SparkseeConfig::SetLicense (const std::wstring & *key*)

Sets the license code.

Parameters:

key [in] The license code.

5.63.3.21 const std::wstring& SparkseeConfig::GetLogFile () const [inline]

Gets the log file.

Returns:

The log file.

5.63.3.22 void SparkseeConfig::SetLogFile (const std::wstring & *filePath*) [inline]

Sets the log file.

Parameters:

filePath [in] The log file.

5.63.3.23 LogLevel SparkseeConfig::GetLogLevel () const [inline]

Gets the log level.

Returns:

The LogLevel.

5.63.3.24 void SparkseeConfig::SetLogLevel (LogLevel *level*) [inline]

Sets the log level.

Parameters:

level [in] The LogLevel.

5.63.3.25 bool_t SparkseeConfig::GetCacheStatisticsEnabled () const [inline]

Gets whether cache statistics are enabled or disabled.

Returns:

TRUE if cache statistics are enabled, FALSE otherwise.

5.63.3.26 void SparkseeConfig::SetCacheStatisticsEnabled (bool_t *status*) [inline]

Enables or disables cache statistics.

Parameters:

status [in] If TRUE this enables cache statistics, if FALSE this disables cache statistics.

5.63.3.27 const std::wstring& SparkseeConfig::GetCacheStatisticsFile () const [inline]

Gets the cache statistics log file.

Useless if cache statistics are disabled.

Returns:

The cache statistics log file.

5.63.3.28 void SparkseeConfig::SetCacheStatisticsFile (const std::wstring & *filePath*) [inline]

Sets the cache statistics log file.

Useless if cache statistics are disabled.

Parameters:

filePath [in] The cache statistics log file.

5.63.3.29 int64_t SparkseeConfig::GetCacheStatisticsSnapshotTime () const [inline]

Gets the cache statistics snapshot time in microseconds.

Useless if cache statistics are disabled.

Returns:

The cache statistics snapshot time in microseconds.

5.63.3.30 void SparkseeConfig::SetCacheStatisticsSnapshotTime (int64_t *microSeconds*) [inline]

Sets the cache statistics snapshot time.

Useless if cache statistics are disabled.

Parameters:

microSeconds [in] The cache statistics snapshot time in microseconds.

5.63.3.31 bool_t SparkseeConfig::GetRollbackEnabled () const [inline]

Gets whether the rollback is enabled or disabled.

Returns:

TRUE if the rollback is enabled, FALSE otherwise.

5.63.3.32 void SparkseeConfig::SetRollbackEnabled (bool_t *status*) [inline]

Enables or disables the rollback.

Parameters:

status [in] If TRUE this enables the rollback, if FALSE then disables it.

5.63.3.33 bool_t SparkseeConfig::GetRecoveryEnabled () const [inline]

Gets whether the recovery is enabled or disabled.

Returns:

TRUE if the recovery is enabled, FALSE otherwise.

5.63.3.34 void SparkseeConfig::SetRecoveryEnabled (bool_t *status*) [inline]

Enables or disables the recovery.

Parameters:

status [in] If TRUE this enables the recovery, if FALSE then disables it.

5.63.3.35 const std::wstring& SparkseeConfig::GetRecoveryLogFile () const [inline]

Gets the recovery log file.

Returns:

The recovery log file.

5.63.3.36 void SparkseeConfig::SetRecoveryLogFile (const std::wstring & *filePath*) [inline]

Sets the recovery log file.

Parameters:

filePath [in] The recovery log file. Left it empty for the default log file (same as <database_file_name>.log)

5.63.3.37 int32_t SparkseeConfig::GetRecoveryCacheMaxSize () const [inline]

Gets the maximum size for the recovery log cache in extents.

Returns:

The maximum size for the recovery log cache in extents.

5.63.3.38 void SparkseeConfig::SetRecoveryCacheMaxSize (int32_t *extents*) [inline]

Sets the maximum size for the recovery log cache in extents.

Parameters:

extents [in] The maximum size for the recovery log cache in extents. A 0 sets the default value (extents up to 1MB).

5.63.3.39 int64_t SparkseeConfig::GetRecoveryCheckpointTime () const [inline]

Gets the delay time (in microseconds) between automatic checkpoints.

Returns:

The delay time (in microseconds) between automatic checkpoints.

5.63.3.40 void SparkseeConfig::SetRecoveryCheckpointTime (int64_t *microSeconds*) [inline]

Sets the delay time (in microseconds) between automatic checkpoints.

Parameters:

microSeconds [in] The delay time (in microseconds) between automatic checkpoints. A 0 forces a checkpoint after each commited transaction.

5.63.3.41 bool_t SparkseeConfig::GetHighAvailabilityEnabled () const [inline]

Gets whether high availability mode is enabled or disabled.

Returns:

TRUE if high availability mode is enabled, FALSE otherwise.

5.63.3.42 void SparkseeConfig::SetHighAvailabilityEnabled (bool_t *status*) [inline]

Enables or disables high availability mode.

Parameters:

status [in] If TRUE this enables high availability mode, if FALSE this disables high availability mode.

5.63.3.43 const std::wstring& SparkseeConfig::GetHighAvailabilityIP () const [inline]

Gets the IP address and port of the instance.

Returns:

The IP address and port of the instance.

5.63.3.44 void SparkseeConfig::SetHighAvailabilityIP (const std::wstring & *ip*) [inline]

Sets the IP address and port of the instance.

Parameters:

ip [in] The IP address and port of the instance.

5.63.3.45 const std::wstring& SparkseeConfig::GetHighAvailabilityCoordinators () const [inline]

Gets the coordinators address and port list.

Returns:

The coordinators address and port list.

5.63.3.46 void SparkseeConfig::SetHighAvailabilityCoordinators (const std::wstring & *ip*) [inline]

Sets the coordinators address and port list.

Parameters:

ip [in] The coordinators address and port list.

5.63.3.47 int64_t SparkseeConfig::GetHighAvailabilitySynchronization () const [inline]

Gets the synchronization polling time.

Returns:

The Synchronization polling time.

5.63.3.48 void SparkseeConfig::SetHighAvailabilitySynchronization (int64_t *microSeconds*) [inline]

Sets the synchronization polling time.

Parameters:

microSeconds [in] The synchronization polling time.

5.63.3.49 int64_t SparkseeConfig::GetHighAvailabilityMasterHistory () const [inline]

Gets the master's history log.

Returns:

The master's history log.

5.63.3.50 void SparkseeConfig::SetHighAvailabilityMasterHistory (int64_t *filePath*) [inline]

Sets the master's history log.

Parameters:

filePath [in] The master's history log.

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

- Sparksee.h

5.64 SparkseeProperties Class Reference

Sparksee properties file.

Static Public Member Functions

- static void Load (const std::wstring &path)
  Loads properties from the given file path.
- static const std::wstring & Get (const std::wstring &key, const std::wstring &def)
  Gets a property.
- static int32_t GetInteger (const std::wstring &key, int32_t def)
  Gets a property as an integer.
- static bool_t GetBoolean (const std::wstring &key, bool_t def)
  Gets a property as a boolean.
- static int64_t GetTimeUnit (const std::wstring &key, int64_t def)
  Gets a property as a time unit.

5.64.1 Detailed Description

Sparksee properties file.

This class is implemented as a singleton, so all public methods are static.

It allows for getting the property values stored in a properties file. A properties file is a file where there is one line per property. A property is defined by a key and a value as follows: key=value

By default, this loads properties from the file './sparksee.cfg'. The user may choose to load a different file by calling the method Load().

If the default properties file or the one loaded by the user do not exist, then this behaves as loading an empty properties file.

5.64.2 Member Function Documentation

5.64.2.1 static void SparkseeProperties::Load (const std::wstring & *path*) [static]

Loads properties from the given file path.

Parameters:

path [in] File path to load properties from.

5.64.2.2 static const std::wstring& SparkseeProperties::Get (const std::wstring & *key*, const std::wstring & *def*) [static]

Gets a property.

Parameters:

key [in] The name of the property to lookup.

def [in] Default value to be returned in case there is no property with the name key.

Returns:

The value of the property, or def if the key is not found.

5.64.2.3 static int32_t SparkseeProperties::GetInteger (const std::wstring & *key*, int32_t *def*) [static]

Gets a property as an integer.

Parameters:

key [in] The name of the property to lookup.

def [in] Default value to be returned in case there is no property with the name key.

Returns:

The property value, or def if the key is not found or in case of error.

5.64.2.4 static bool_t SparkseeProperties::GetBoolean (const std::wstring & *key*, bool_t *def*) [static]

Gets a property as a boolean.

Parameters:

key [in] The name of the property to lookup.

def [in] Default value to be returned in case there is no property with the name key.

Returns:

The property value, or def if the key is not found or in case of error.

5.64.2.5 static int64_t SparkseeProperties::GetTimeUnit (const std::wstring & *key*, int64_t *def*) [static]

Gets a property as a time unit.

A time unit is a string representation of a time duration with a time unit such as '10s' or '3H'.

Valid format for the string representation: Blanks at the begining or at the end are ignored. No blanks are allowed between the time duration and the unit time.

Allowed time units: 'D' for days, 'H' for hours, 'M' for minutes, 'S' o 's' for seconds, 'm' for milliseconds and 'u' for microseconds.

There is a special case: If no time unit is given, seconds is the default. So, '10' means 10 seconds.

Parameters:

key [in] The name of the property to lookup.

def [in] The default value (in microseconds) to be returned in case there is no property with the name key.

Returns:

The time duration in microseconds, or def if the key is not found or in case of error.

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

- Sparksee.h

5.65 StringList Class Reference

String list.

Public Member Functions

- int32_t Count () const
  Number of elements in the list.
- StringListIterator * Iterator ()
  Gets a new StringListIterator.
- StringList ()
  Constructor.
- StringList (const std::vector< std::wstring > &v)
  Constructor.
- ~StringList ()
  Destructor.
- void Add (const std::wstring &str)
  Adds a String at the end of the list.
- void Clear ()
  Clears the list.

5.65.1 Detailed Description

String list.

It stores a String (unicode) list.

Use StringListIterator to access all elements into this collection.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.65.2 Constructor & Destructor Documentation

5.65.2.1 StringList::StringList ()

Constructor.

This creates an empty list.

5.65.2.2 StringList::StringList (const std::vector< std::wstring > & *v*)

Constructor.

Parameters:

v [in] Vector.

5.65.3 Member Function Documentation

5.65.3.1 int32_t StringList::Count () const [inline]

Number of elements in the list.

Returns:

Number of elements in the list.

5.65.3.2 StringListIterator* StringList::Iterator ()

Gets a new StringListIterator.

Returns:

StringListIterator instance.

5.65.3.3 void StringList::Add (const std::wstring & *str*) [inline]

Adds a String at the end of the list.

Parameters:

str [in] String.

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

- Graph_data.h

5.66 StringListIterator Class Reference

StringList iterator class.

Public Member Functions

- ~StringListIterator ()
  Destructor.
- const std::wstring & Next ()
  Moves to the next element.
- bool_t HasNext ()
  Gets if there are more elements.

Friends

- class StringList

5.66.1 Detailed Description

StringList iterator class.

Iterator to traverse all the strings into a StringList instance.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.66.2 Member Function Documentation

5.66.2.1 const std::wstring& StringListIterator::Next () [inline]

Moves to the next element.

Returns:

The next element.

5.66.2.2 bool_t StringListIterator::HasNext () [inline]

Gets if there are more elements.

Returns:

TRUE if there are more elements, FALSE otherwise.

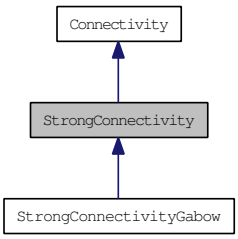
The documentation for this class was generated from the following file:

- Graph_data.h

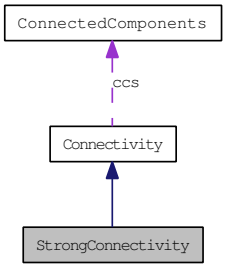
5.67 StrongConnectivity Class Reference

StrongConnectivity class.

Inheritance diagram for StrongConnectivity:



Collaboration diagram for StrongConnectivity:



Public Member Functions

- virtual ~StrongConnectivity ()
  Destructor.
- virtual void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection dir)
  Allows connectivity through edges of the given type.
- virtual void AddAllEdgeTypes (sparksee::gdb::EdgesDirection dir)
  Allows connectivity through all edge types of the graph.
- virtual void AddNodeType (sparksee::gdb::type_t t)
  Allows connectivity through nodes of the given type.
- virtual void AddAllNodeTypes ()
  Allows connectivity through all node types of the graph.
- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)
  Set which nodes can't be used.
- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)
  Set which edges can't be used.

- ConnectedComponents * GetConnectedComponents ()

  Returns the results generated by the execution of the algorithm.

- virtual void Run ()=0

  Runs the algorithm in order to find the connected components.

- void SetMaterializedAttribute (const std::wstring &attributeName)

  Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the connected components found while executing this algorithm.

Protected Types

- typedef std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > EdgeTypes_t

  A type definition to store allowed edge types.

- typedef std::vector< sparksee::gdb::type_t > NodeTypes_t

  A type definition to store allowed node types.

Protected Member Functions

- StrongConnectivity (sparksee::gdb::Session &s)

  Creates a new instance of StrongConnectivity.

- void AssertAddedEdges ()

  Check that edges had been added.

- void AssertAddedNodes ()

  Check that nodes had been added.

- void AssertNotComputed ()

  Check that the connectivity had not been calculated yet.

- void SetConnectedComponent (sparksee::gdb::oid_t idNode)

  Assigns the current component to the given node.

- void SetNodesNotVisited ()

  Set all the selected nodes in nodesNotVisited.

- void AssertNotComponentAttribute (const std::wstring &attributeName)

  Check that the given attribute name is not already in use.

- void AssertComputed ()

  Check that the connectivity had been calculated.

- void AssertEdgeType (sparksee::gdb::type_t edgetype)

  Check that the given edge type is valid.

- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- void CreateGlobalPersistentAttribute (const std::wstring &attributeName)
  Set a new persistent global attribute to store the connectivity information.
- void CreateGlobalTransientAttribute ()
  Set a new temporary global attribute to store the connectivity information.
- void RemoveGlobalAttribute ()
  Removes the global attribute where the connectivity information is stored.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- EdgeTypes_t edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::attr_t attrComponent
  common attribute where the connected component information is stored.
- std::wstring attrComponentName
  name of the common attribute where the connected component information is stored.
- sparksee::gdb::int64_t actualComponent
  Current component identifier.
- sparksee::gdb::Objects * nodesNotVisited
  Identifiers of the nodes not visited.
- sparksee::gdb::bool_t matResults

Materialized results.

- sparksee::gdb::bool_t computed
  True if the connectivity has been calculated.
- sparksee::gdb::Objects * excludedNodes
  The set of excluded nodes.
- sparksee::gdb::Objects * excludedEdges
  The set of excluded edges.
- ConnectedComponents * ccs
  The calculated connectivity information.

5.67.1 Detailed Description

StrongConnectivity class.

Any class implementing this abstract class can be used to solve the problem of finding strongly connected components in a **directed** graph.

It consists in finding components where every pair (u,v) of nodes contained in it has a path from u to v using the specified direction for each edge type.

It is possible to set some restrictions after constructing a new instance of this class and before running it in order to limit the results.

After the execution, we can retrieve the results stored in an instance of the ConnectedComponents class using the GetConnectedComponents method.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.67.2 Constructor & Destructor Documentation

5.67.2.1 StrongConnectivity::StrongConnectivity (sparksee::gdb::Session & *s*) [protected]

Creates a new instance of StrongConnectivity.

Parameters:

s [in] Session to get the graph from and calculate the connectivity

5.67.3 Member Function Documentation

5.67.3.1 virtual void StrongConnectivity::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *dir*) [virtual]

Allows connectivity through edges of the given type.

Parameters:

type [in] Edge type.

dir [in] Edge direction.

Reimplemented from Connectivity.

5.67.3.2 virtual void StrongConnectivity::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *dir*) [virtual]

Allows connectivity through all edge types of the graph.

Parameters:

dir [in] Edge direction.

Reimplemented from Connectivity.

5.67.3.3 virtual void Connectivity::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.67.3.4 virtual void Connectivity::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.67.3.5 ConnectedComponents* Connectivity::GetConnectedComponents () [inherited]

Returns the results generated by the execution of the algorithm.

These results contain information related to the connected components found as the number of different components, the set of nodes contained in each component or many other data.

Returns:

Returns an instance of the class ConnectedComponents which contain information related to the connected components found.

5.67.3.6 virtual void Connectivity::Run () [pure virtual, inherited]

Runs the algorithm in order to find the connected components.

This method can be called only once.

Implemented in StrongConnectivityGabow, and WeakConnectivityDFS.

5.67.3.7 void Connectivity::SetMaterializedAttribute (const std::wstring & *attributeName*) [inherited]

Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the connected components found while executing this algorithm.

Whenever the user wants to retrieve the results, even when the graph has been closed and opened again, it is only necessary to create a new instance of the class ConnectedComponents indicating the graph and the name of the common attribute type which stores the results. This instance will have all the information related to the connected components found in the moment of the execution of the algorithm that stored this data.

It is possible to run the algorithm without specifying this parameter in order to avoid materializing the results of the execution.

Parameters:

attributeName [in] The name of the common attribute type for all node types in the graph which will store persistently the results generated by the execution of the algorithm.

5.67.3.8 void Connectivity::SetNodesNotVisited () [protected, inherited]

Set all the selected nodes in nodesNotVisited.

That's all the nodes of the allowed node types but not the excluded ones.

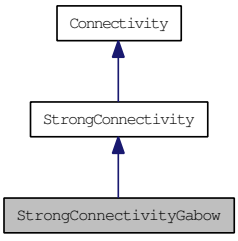
The documentation for this class was generated from the following file:

- StrongConnectivity.h

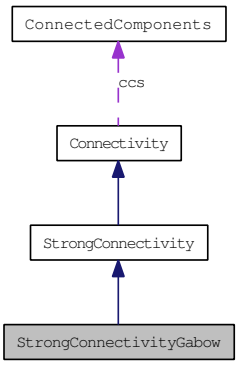
5.68 StrongConnectivityGabow Class Reference

This class can be used to solve the problem of finding strongly connected components in a **directed** graph.

Inheritance diagram for StrongConnectivityGabow:



Collaboration diagram for StrongConnectivityGabow:



Public Member Functions

- StrongConnectivityGabow (sparksee::gdb::Session &session)

  Creates a new instance of StrongConnectivityGabow.

- virtual ~StrongConnectivityGabow ()

  Destructor.

- void Run ()

  Executes the algorithm.

- virtual void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection dir)

  Allows connectivity through edges of the given type.

- virtual void AddAllEdgeTypes (sparksee::gdb::EdgesDirection dir)

  Allows connectivity through all edge types of the graph.

- virtual void AddNodeType (sparksee::gdb::type_t t)

  Allows connectivity through nodes of the given type.

- virtual void AddAllNodeTypes ()

  Allows connectivity through all node types of the graph.

- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)

  Set which nodes can't be used.

- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)

  Set which edges can't be used.

- ConnectedComponents * GetConnectedComponents ()

  Returns the results generated by the execution of the algorithm.

- void SetMaterializedAttribute (const std::wstring &attributeName)

  Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the connected components found while executing this algorithm.

Protected Types

- typedef std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > EdgeTypes_t

  A type definition to store allowed edge types.

- typedef std::vector< sparksee::gdb::type_t > NodeTypes_t

  A type definition to store allowed node types.

Protected Member Functions

- void AssertAddedEdges ()

  Check that edges had been added.

- void AssertAddedNodes ()

  Check that nodes had been added.

- void AssertNotComputed ()

  Check that the connectivity had not been calculated yet.

- void SetConnectedComponent (sparksee::gdb::oid_t idNode)

  Assigns the current component to the given node.

- void SetNodesNotVisited ()

  Set all the selected nodes in nodesNotVisited.

- void AssertNotComponentAttribute (const std::wstring &attributeName)

  Check that the given attribute name is not already in use.

- void AssertComputed ()

  Check that the connectivity had been calculated.

- void AssertEdgeType (sparksee::gdb::type_t edgetype)

  Check that the given edge type is valid.

- void AssertNodeType (sparksee::gdb::type_t nodetype)

  Check that the given node type is valid.

- void CreateGlobalPersistentAttribute (const std::wstring &attributeName)

  Set a new persistent global attribute to store the connectivity information.

- void CreateGlobalTransientAttribute ()

  Set a new temporary global attribute to store the connectivity information.

- void RemoveGlobalAttribute ()

  Removes the global attribute where the connectivity information is stored.

- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)

  Check if the given node has an allowed type.

- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- EdgeTypes_t edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::attr_t attrComponent
  common attribute where the connected component information is stored.
- std::wstring attrComponentName
  name of the common attribute where the connected component information is stored.
- sparksee::gdb::int64_t actualComponent
  Current component identifier.
- sparksee::gdb::Objects * nodesNotVisited
  Identifiers of the nodes not visited.
- sparksee::gdb::bool_t matResults
  Materialized results.
- sparksee::gdb::bool_t computed
  True if the connectivity has been calculated.
- sparksee::gdb::Objects * excludedNodes
  The set of excluded nodes.
- sparksee::gdb::Objects * excludedEdges
  The set of excluded edges.
- ConnectedComponents * ccs
  The calculated connectivity information.

Classes

- class **InfoNode**

5.68.1 Detailed Description

This class can be used to solve the problem of finding strongly connected components in a **directed** graph.

It consists in finding components where every pair (u,v) of nodes contained in it has a path from u to v using the specified direction for each edge type. This implementation is based on the Gabow algorithm.

It is possible to set some restrictions after constructing a new instance of this class and before running it in order to limit the results.

After the execution, we can retrieve the results stored in an instance of the ConnectedComponents class using the GetConnectedComponents method.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.68.2 Constructor & Destructor Documentation

5.68.2.1 StrongConnectivityGabow::StrongConnectivityGabow (sparksee::gdb::Session & *session*)

Creates a new instance of StrongConnectivityGabow.

After creating this instance is required to indicate the set of edge types and the set of node types which will be navigated through while traversing the graph in order to find the strong connected components.

Parameters:

session [in] Session to get the graph from and calculate the connectivity

5.68.3 Member Function Documentation

5.68.3.1 virtual void StrongConnectivity::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows connectivity through edges of the given type.

Parameters:

type [in] Edge type.

dir [in] Edge direction.

Reimplemented from Connectivity.

5.68.3.2 virtual void StrongConnectivity::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows connectivity through all edge types of the graph.

Parameters:

dir [in] Edge direction.

Reimplemented from Connectivity.

5.68.3.3 virtual void Connectivity::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.68.3.4 virtual void Connectivity::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.68.3.5 ConnectedComponents* Connectivity::GetConnectedComponents () [inherited]

Returns the results generated by the execution of the algorithm.

These results contain information related to the connected components found as the number of different components, the set of nodes contained in each component or many other data.

Returns:

Returns an instance of the class ConnectedComponents which contain information related to the connected components found.

5.68.3.6 void Connectivity::SetMaterializedAttribute (const std::wstring & *attributeName*) [inherited]

Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the connected components found while executing this algorithm.

Whenever the user wants to retrieve the results, even when the graph has been closed and opened again, it is only necessary to create a new instance of the class ConnectedComponents indicating the graph and the name of the common attribute type which stores the results. This instance will have all the information related to the connected components found in the moment of the execution of the algorithm that stored this data.

It is possible to run the algorithm without specifying this parameter in order to avoid materializing the results of the execution.

Parameters:

attributeName [in] The name of the common attribute type for all node types in the graph which will store persistently the results generated by the execution of the algorithm.

5.68.3.7 void Connectivity::SetNodesNotVisited () [protected, inherited]

Set all the selected nodes in nodesNotVisited.

That's all the nodes of the allowed node types but not the excluded ones.

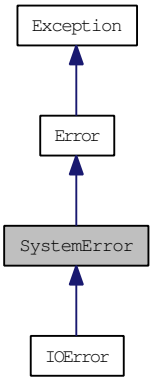
The documentation for this class was generated from the following file:

- StrongConnectivityGabow.h

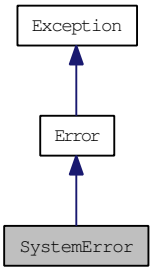
5.69 SystemError Class Reference

System error class.

Inheritance diagram for SystemError:



Collaboration diagram for SystemError:



Public Member Functions

- SystemError ()

  Creates a new instance.

- SystemError (const std::string &mess)
  Creates a new instance.
- virtual ~SystemError ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.
- void SetMessage (const std::string &mess)
  Sets the message of the exception.

Static Public Member Functions

- static Error NewError (int32_t coreErrorCode)
  Creates a new Error instance from a sparksee_core error code.

Protected Attributes

- std::string message
  Message of the exception.

5.69.1 Detailed Description

System error class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.69.2 Constructor & Destructor Documentation

5.69.2.1 SystemError::SystemError (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.69.3 Member Function Documentation

5.69.3.1 static Error Error::NewError (int32_t *coreErrorCode*) [static, inherited]

Creates a new Error instance from a sparksee_core error code.

Parameters:

coreErrorCode [in] Sparkseecore error code.

Returns:

Depending on the given sparksee_core error, this may return an Error instance or an specific Error subclass instance.

5.69.3.2 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.69.3.3 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

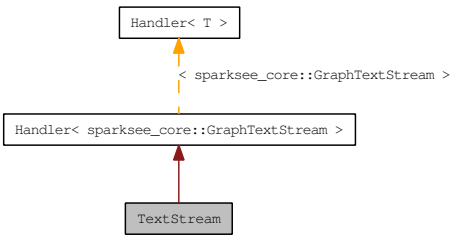
The documentation for this class was generated from the following file:

- Exception.h

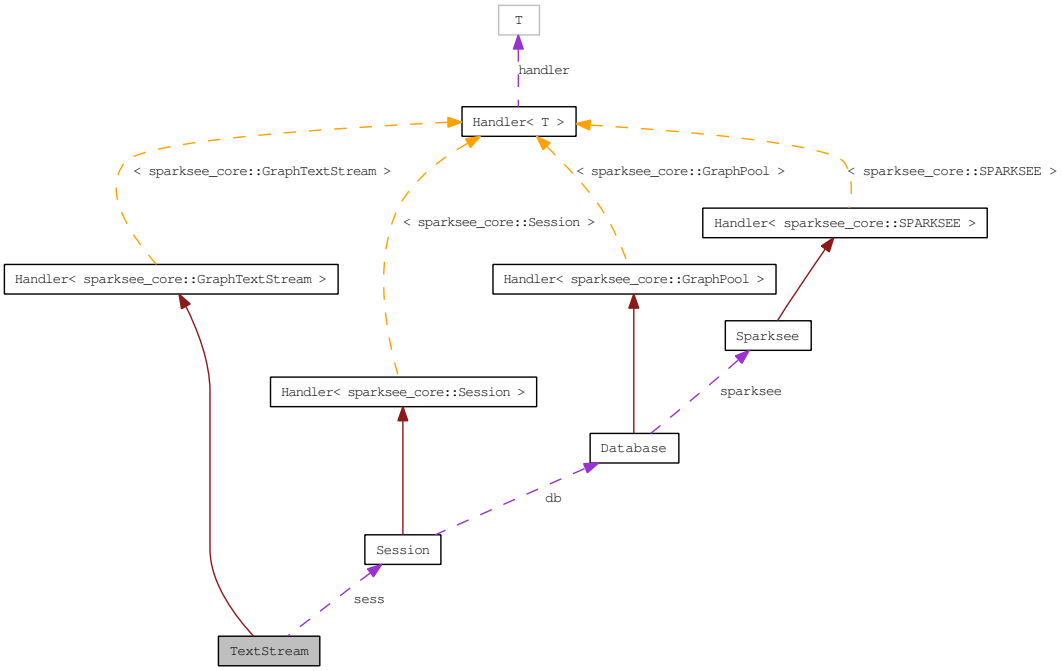
5.70 TextStream Class Reference

TextStream class.

Inheritance diagram for TextStream:



Collaboration diagram for TextStream:



Public Member Functions

- TextStream (bool_t append)

  Creates a new instance.

- int32_t Read (uchar_t *dataOUT, int32_t length) const

  Read data from the stream.

- void Write (const uchar_t *dataIN, int32_t length)

  Write data to the stream.

- void Close ()

  Closes the stream.

- virtual ~TextStream ()

  Destructor.

- bool_t IsNull () const

  Returns TRUE if the stream is not available.

Friends

- class Graph

5.70.1 Detailed Description

TextStream class.

It allows for reading and writting Text attribute values.

It is very important to close the stream once no more reading or writting operations will be performed to ensure data is successfully stored.

Whereas string attributes are set and got using the Value class, text attributes are operated using a stream pattern.

Use of TextStream for writing: (i) Create a TextStream instance and (ii) set the stream for a text attribute of a node or edge instance with the graph SetAttributeText method. Once the set attribute text has been done, (iii) perform as many write operations as you need to the TextStream instance. Lastly, (iv) exeucte Close to flush and close the stream.

Use of TextStream for reading: (i) Get the stream of a text attribute of a node or edge instance with the GetAttributeText graph method. Once you have the TextStream instance, (ii) you can execute Read operations to read from the stream. (iii) The end of the stream is reached when Read returns 0. Finally, (iv) execute Close to close stream resources.

Check out the 'Attributes and values' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.70.2 Constructor & Destructor Documentation

5.70.2.1 TextStream::TextStream (bool_t *append*)

Creates a new instance.

A TextStream only can be created by the user to write data.

Parameters:

append [in] If TRUE, the it is created in append mode to write from the end of the stream, otherwise it is created to write from the begining of the stream.

5.70.3 Member Function Documentation

5.70.3.1 int32_t TextStream::Read (uchar_t * *dataOUT*, int32_t *length*) const

Read data from the stream.

Parameters:

dataOUT [out] Buffer to read data to. It must be allocated by the user.

length [in] Length of the given data buffer. It must be > 0.

Returns:

Amount of read data (<= length). If 0, there is no more data to be read from the stream.

5.70.3.2 void TextStream::Write (const uchar_t * *dataIN*, int32_t *length*)

Write data to the stream.

Parameters:

dataIN [in] Buffer to write data from.

length [in] Length of the data buffer. It must be > 0.

5.70.3.3 void TextStream::Close ()

Closes the stream.

Once the Stream is closed, it cannot be used again.

Closing the stream is mandatory when the stream is not null and strongly recommended when it's null to avoid deallocation problems in some platforms.

5.70.3.4 bool_t TextStream::IsNull () const

Returns TRUE if the stream is not available.

It returns FALSE if the stream is ready for reading or writing data.

Returns:

FALSE if the stream is ready

Reimplemented from Handler< sparksee_core::GraphTextStream >.

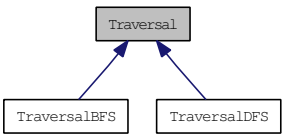
The documentation for this class was generated from the following file:

- Stream.h

5.71 Traversal Class Reference

Traversal class.

Inheritance diagram for Traversal:



Public Member Functions

- virtual void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection dir)
  Allows for traversing edges of the given type.
- virtual void AddAllEdgeTypes (sparksee::gdb::EdgesDirection dir)
  Allows for traversing all edge types of the graph.

- virtual void AddNodeType (sparksee::gdb::type_t type)
  Allows for traversing nodes of the given type.
- virtual void AddAllNodeTypes ()
  Allows for traversing all node types of the graph.
- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)
  Set which nodes can't be used.
- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)
  Set which edges can't be used.
- virtual sparksee::gdb::oid_t Next ()=0
  Gets the next object of the traversal.
- virtual sparksee::gdb::bool_t HasNext ()=0
  Gets if there are more objects to be traversed.
- virtual sparksee::gdb::int32_t GetCurrentDepth () const =0
  Returns the depth of the current node.
- virtual void SetMaximumHops (sparksee::gdb::int32_t maxhops)
  Sets the maximum hops restriction.
- virtual ~Traversal ()
  Destructor.

Protected Member Functions

- Traversal (sparksee::gdb::Session &s, sparksee::gdb::oid_t node)
  Creates a new instance.
- void AssertAddedEdges ()
  Check that edges had been added.
- void AssertAddedNodes ()
  Check that nodes had been added.
- void AssertEdgeType (sparksee::gdb::type_t edgetype)
  Check that the given edge type is valid.
- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)

Check if the given node is forbidden.

- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)

  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::Session * sess

  Session.

- sparksee::gdb::Graph * graph

  Graph.

- sparksee::gdb::oid_t src

  Source node of the traversal.

- std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > edgeTypes

  Allowed edge types.

- std::vector< sparksee::gdb::type_t > nodeTypes

  Allowed node types.

- sparksee::gdb::int32_t maxHops

  Maximum number of hops allowed.

- sparksee::gdb::Objects * excludedNodes

  The set of excluded nodes.

- sparksee::gdb::Objects * excludedEdges

  The set of excluded edges.

5.71.1 Detailed Description

Traversal class.

Any class implementing this abstract class can be used to traverse a graph.

Once the instance has been created and the allowed node and edge types has been set, it can be used as an iterator, retrieving the next object identifier of the traversal until there are no more.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.71.2 Constructor & Destructor Documentation

5.71.2.1 Traversal::Traversal (sparksee::gdb::Session & *s*, sparksee::gdb::oid_t *node*) [protected]

Creates a new instance.

Parameters:

s [in] Session to get the graph from and perform traversal.

node [in] Node to start traversal from.

5.71.3 Member Function Documentation

5.71.3.1 virtual void Traversal::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *dir*) [virtual]

Allows for traversing edges of the given type.

Parameters:

type [in] Edge type.

dir [in] Edge direction.

5.71.3.2 virtual void Traversal::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *dir*) [virtual]

Allows for traversing all edge types of the graph.

Parameters:

dir [in] Edge direction.

5.71.3.3 virtual void Traversal::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.71.3.4 virtual void Traversal::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.71.3.5 virtual sparksee::gdb::oid_t Traversal::Next () [pure virtual]

Gets the next object of the traversal.

Returns:

A node or edge identifier.

Implemented in TraversalBFS, and TraversalDFS.

5.71.3.6 virtual sparksee::gdb::bool_t Traversal::HasNext () [pure virtual]

Gets if there are more objects to be traversed.

Returns:

TRUE if there are more objects, FALSE otherwise.

Implemented in TraversalBFS, and TraversalDFS.

5.71.3.7 virtual sparksee::gdb::int32_t Traversal::GetCurrentDepth () const [pure virtual]

Returns the depth of the current node.

That is, it returns the depth of the node returned in the last call to Next().

Returns:

The depth of the current node.

Implemented in TraversalBFS, and TraversalDFS.

5.71.3.8 virtual void Traversal::SetMaximumHops (sparksee::gdb::int32_t *maxhops*) [virtual]

Sets the maximum hops restriction.

All paths longer than the maximum hops restriction will be ignored.

Parameters:

maxhops [in] The maximum hops restriction. It must be positive or zero. Zero, the default value, means unlimited.

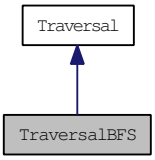
The documentation for this class was generated from the following file:

- Traversal.h

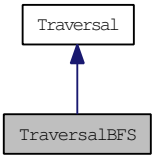
5.72 TraversalBFS Class Reference

Breadth-First Search implementation of Traversal.

Inheritance diagram for TraversalBFS:



Collaboration diagram for TraversalBFS:



Public Member Functions

- virtual sparksee::gdb::oid_t Next ()
  Gets the next object of the traversal.
- virtual sparksee::gdb::bool_t HasNext ()
  Gets if there are more objects to be traversed.
- virtual ~TraversalBFS ()
  Destructor.
- virtual sparksee::gdb::int32_t GetCurrentDepth () const
  Returns the depth of the current node.
- TraversalBFS (sparksee::gdb::Session &session, sparksee::gdb::oid_t node)
  Creates a new instance.
- virtual void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection dir)
  Allows for traversing edges of the given type.
- virtual void AddAllEdgeTypes (sparksee::gdb::EdgesDirection dir)
  Allows for traversing all edge types of the graph.
- virtual void AddNodeType (sparksee::gdb::type_t type)
  Allows for traversing nodes of the given type.
- virtual void AddAllNodeTypes ()
  Allows for traversing all node types of the graph.
- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)
  Set which nodes can't be used.

- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)
  Set which edges can't be used.
- virtual void SetMaximumHops (sparksee::gdb::int32_t maxhops)
  Sets the maximum hops restriction.

Protected Member Functions

- void AssertAddedEdges ()
  Check that edges had been added.
- void AssertAddedNodes ()
  Check that nodes had been added.
- void AssertEdgeType (sparksee::gdb::type_t edgetype)
  Check that the given edge type is valid.
- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- sparksee::gdb::oid_t src
  Source node of the traversal.
- std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::int32_t maxHops

Maximum number of hops allowed.

- sparksee::gdb::Objects * excludedNodes
  The set of excluded nodes.
- sparksee::gdb::Objects * excludedEdges
  The set of excluded edges.

5.72.1 Detailed Description

Breadth-First Search implementation of Traversal.

Starting from a source node, it visits all its neighbors at distance 1, then all its neighbors at distance 2, and so on.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.72.2 Constructor & Destructor Documentation

5.72.2.1 TraversalBFS::TraversalBFS (sparksee::gdb::Session & *session*, sparksee::gdb::oid_t *node*)

Creates a new instance.

Parameters:

session [in] Session to get the graph from and perform traversal.

node [in] Node to start traversal from.

5.72.3 Member Function Documentation

5.72.3.1 virtual sparksee::gdb::oid_t TraversalBFS::Next () [virtual]

Gets the next object of the traversal.

Returns:

A node or edge identifier.

Implements Traversal.

5.72.3.2 virtual sparksee::gdb::bool_t TraversalBFS::HasNext () [virtual]

Gets if there are more objects to be traversed.

Returns:

TRUE if there are more objects, FALSE otherwise.

Implements Traversal.

5.72.3.3 virtual sparksee::gdb::int32_t TraversalBFS::GetCurrentDepth () const [virtual]

Returns the depth of the current node.

That is, it returns the depth of the node returned in the last call to Next().

Returns:

The depth of the current node.

Implements Traversal.

5.72.3.4 virtual void Traversal::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows for traversing edges of the given type.

Parameters:

type [in] Edge type.

dir [in] Edge direction.

5.72.3.5 virtual void Traversal::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows for traversing all edge types of the graph.

Parameters:

dir [in] Edge direction.

5.72.3.6 virtual void Traversal::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.72.3.7 virtual void Traversal::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.72.3.8 virtual void Traversal::SetMaximumHops (sparksee::gdb::int32_t *maxhops*) [virtual, inherited]

Sets the maximum hops restriction.

All paths longer than the maximum hops restriction will be ignored.

Parameters:

maxhops [in] The maximum hops restriction. It must be positive or zero. Zero, the default value, means unlimited.

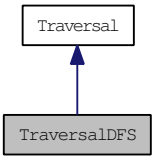
The documentation for this class was generated from the following file:

- TraversalBFS.h

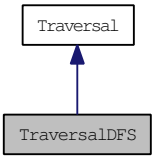
5.73 TraversalDFS Class Reference

Depth-First Search (DFS) implementation of Traversal.

Inheritance diagram for TraversalDFS:



Collaboration diagram for TraversalDFS:



Public Member Functions

- virtual sparksee::gdb::oid_t Next ()

  Gets the next object of the traversal.

- virtual sparksee::gdb::bool_t HasNext ()

  Gets if there are more objects to be traversed.

- virtual sparksee::gdb::int32_t GetCurrentDepth () const

  Returns the depth of the current node.

- virtual ~TraversalDFS ()

  Destructor.

- TraversalDFS (sparksee::gdb::Session &session, sparksee::gdb::oid_t node)
  Creates a new instance.
- virtual void AddEdgeType (sparksee::gdb::type_t type, sparksee::gdb::EdgesDirection dir)
  Allows for traversing edges of the given type.
- virtual void AddAllEdgeTypes (sparksee::gdb::EdgesDirection dir)
  Allows for traversing all edge types of the graph.
- virtual void AddNodeType (sparksee::gdb::type_t type)
  Allows for traversing nodes of the given type.
- virtual void AddAllNodeTypes ()
  Allows for traversing all node types of the graph.
- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)
  Set which nodes can't be used.
- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)
  Set which edges can't be used.
- virtual void SetMaximumHops (sparksee::gdb::int32_t maxhops)
  Sets the maximum hops restriction.

Protected Member Functions

- void AssertAddedEdges ()
  Check that edges had been added.
- void AssertAddedNodes ()
  Check that nodes had been added.
- void AssertEdgeType (sparksee::gdb::type_t edgetype)
  Check that the given edge type is valid.
- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- sparksee::gdb::oid_t src
  Source node of the traversal.
- std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::int32_t maxHops
  Maximum number of hops allowed.
- sparksee::gdb::Objects * excludedNodes
  The set of excluded nodes.
- sparksee::gdb::Objects * excludedEdges
  The set of excluded edges.

Classes

- class **NeighborsInfo**
  Store neighbors information.

5.73.1 Detailed Description

Depth-First Search (DFS) implementation of Traversal.

Starting from a source or root node, it visits as far as possible along each branch before backtracking.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.73.2 Constructor & Destructor Documentation

5.73.2.1 TraversalDFS::TraversalDFS (sparksee::gdb::Session & *session*, sparksee::gdb::oid_t *node*)

Creates a new instance.

Parameters:

session [in] Session to get the graph from and perform traversal.
node [in] Node to start traversal from.

5.73.3 Member Function Documentation

5.73.3.1 virtual sparksee::gdb::oid_t TraversalDFS::Next () [virtual]

Gets the next object of the traversal.

Returns:

A node or edge identifier.

Implements Traversal.

5.73.3.2 virtual sparksee::gdb::bool_t TraversalDFS::HasNext () [virtual]

Gets if there are more objects to be traversed.

Returns:

TRUE if there are more objects, FALSE otherwise.

Implements Traversal.

5.73.3.3 virtual sparksee::gdb::int32_t TraversalDFS::GetCurrentDepth () const [virtual]

Returns the depth of the current node.

That is, it returns the depth of the node returned in the last call to Next().

Returns:

The depth of the current node.

Implements Traversal.

5.73.3.4 virtual void Traversal::AddEdgeType (sparksee::gdb::type_t *type*, sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows for traversing edges of the given type.

Parameters:

type [in] Edge type.
dir [in] Edge direction.

5.73.3.5 virtual void Traversal::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *dir*) [virtual, inherited]

Allows for traversing all edge types of the graph.

Parameters:

dir [in] Edge direction.

5.73.3.6 virtual void Traversal::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.73.3.7 virtual void Traversal::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.73.3.8 virtual void Traversal::SetMaximumHops (sparksee::gdb::int32_t *maxhops*) [virtual, inherited]

Sets the maximum hops restriction.

All paths longer than the maximum hops restriction will be ignored.

Parameters:

maxhops [in] The maximum hops restriction. It must be positive or zero. Zero, the default value, means unlimited.

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

- TraversalDFS.h

5.74 Type Class Reference

Type data class.

Public Member Functions

- ~Type ()

  Destructor.

- type_t GetId () const

  Gets the Sparksee type identifier.

- ObjectType GetObjectType () const

  Gets the object type.

- const std::wstring & GetName () const
  Gets the unique type name.
- int64_t GetNumObjects () const
  Gets the number of objects belonging to the type.
- bool_t GetIsDirected () const
  Gets if this is a directed edge type.
- bool_t GetIsRestricted () const
  Gets if this is a restricted edge type.
- bool_t GetAreNeighborsIndexed () const
  Gets if this is an edge type with neighbors index.
- type_t GetRestrictedFrom () const
  Gets the tail or source type identifier for restricted edge types.
- type_t GetRestrictedTo () const
  Gets the head or target type identifier for restricted edge types.

Static Public Attributes

- static const type_t InvalidType
  Invalid type identifier.
- static const type_t GlobalType
  Global type identifier.
- static const type_t NodesType
  Identifier for all nodeType attributes.
- static const type_t EdgesType
  Identifier for all edgeType attributes.

Friends

- class Graph

5.74.1 Detailed Description

Type data class.

It contains information about a node or edge type.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.74.2 Member Function Documentation

5.74.2.1 type_t Type::GetId () const [inline]

Gets the Sparksee type identifier.

Returns:

The Sparksee type identifier.

5.74.2.2 ObjectType Type::GetObjectType () const [inline]

Gets the object type.

Returns:

The object type.

5.74.2.3 const std::wstring& Type::GetName () const [inline]

Gets the unique type name.

Returns:

The unique type name.

5.74.2.4 int64_t Type::GetNumObjects () const [inline]

Gets the number of objects belonging to the type.

Returns:

The number of objects belonging to the type.

5.74.2.5 bool_t Type::GetIsDirected () const [inline]

Gets if this is a directed edge type.

Returns:

TRUE for directed edge types, FALSE otherwise.

5.74.2.6 bool_t Type::GetIsRestricted () const [inline]

Gets if this is a restricted edge type.

Returns:

TRUE for restricted edge types, FALSE otherwise.

5.74.2.7 bool_t Type::GetAreNeighborsIndexed () const [inline]

Gets if this is an edge type with neighbors index.

Returns:

TRUE for edges types with neighbors index, FALSE otherwise.

5.74.2.8 type_t Type::GetRestrictedFrom () const [inline]

Gets the tail or source type identifier for restricted edge types.

Returns:

For restricted edge types, the tail or source type identifier, the Type InvalidType otherwise.

5.74.2.9 type_t Type::GetRestrictedTo () const [inline]

Gets the head or target type identifier for restricted edge types.

Returns:

For restricted edge types, the head or target type identifier, the Type InvalidType otherwise.

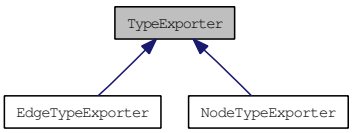
The documentation for this class was generated from the following file:

- Graph_data.h

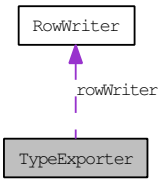
5.75 TypeExporter Class Reference

Base TypeExporter class.

Inheritance diagram for TypeExporter:



Collaboration diagram for TypeExporter:



Public Member Functions

- virtual ~TypeExporter ()
  Destructor.
- void Register (TypeExporterListener &tel)
  Registers a new listener.
- virtual void Run ()=0 throw (sparksee::gdb::IOException, sparksee::gdb::Error)
  Runs export process.
- void SetRowWriter (RowWriter &rw)
  Sets the output data destination.
- void SetGraph (sparksee::gdb::Graph &graph)
  Sets the graph that will be exported.
- void SetType (sparksee::gdb::type_t type)
  Sets the type to be exported.
- void SetAttributes (sparksee::gdb::AttributeList &attrs)
  Sets the list of Attributes.
- void SetFrequency (sparksee::gdb::int32_t freq)
  Sets the frequency of listener notification.
- void SetHeader (sparksee::gdb::bool_t header)
  Sets the presence of a header row.

Protected Member Functions

- TypeExporter ()
  Creates a new instance.
- TypeExporter (RowWriter &rw, sparksee::gdb::Graph &g, sparksee::gdb::type_t t, sparksee::gdb::AttributeList &attrs)
  Creates a new instance with the minimum common required arguments.
- sparksee::gdb::bool_t CanRun ()
  Checks that all the required settings are ready to run.
- void NotifyListeners (const TypeExporterEvent &ev)
  Notifies progress to all registered listeners.
- void RunProcess () throw (sparksee::gdb::IOException, sparksee::gdb::Error)
  Runs export process.
- void SetHeadAttribute (sparksee::gdb::attr_t attr)
  Sets the attribute that will be used to get the value to be dumped for the head of the edge.

- void SetHeadPosition (sparksee::gdb::int32_t pos)

  Sets the position (index column) of the head attribute in the exported data.

- void SetTailAttribute (sparksee::gdb::attr_t attr)

  Sets the attribute that will be used to get the value to be dumped for the tail of the edge.

- void SetTailPosition (sparksee::gdb::int32_t pos)

  Sets the position (index column) of the tail attribute in the exported data.

5.75.1 Detailed Description

Base TypeExporter class.

Base class to export a node or edge type from a graph using a RowWriter.

TypeExporterListener can be registered to receive information about the progress of the export process by means of TypeExporterEvent. The default frequency of notification to listeners is 100000.

By default no header row is created.

Check out the 'Data export' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.75.2 Constructor & Destructor Documentation

5.75.2.1 TypeExporter::TypeExporter (RowWriter & *rw*, sparksee::gdb::Graph & *g*, sparksee::gdb::type_t *t*, sparksee::gdb::AttributeList & *attrs*) [protected]

Creates a new instance with the minimum common required arguments.

Parameters:

rw [in] Output RowWriter.

g [in] Graph.

t [in] Type identifier.

attrs [in] Attribute identifiers to be exported.

5.75.3 Member Function Documentation

5.75.3.1 sparksee::gdb::bool_t TypeExporter::CanRun () [protected]

Checks that all the required settings are ready to run.

Returns:

Returns true if all the settings are ready.

5.75.3.2 void TypeExporter::NotifyListeners (const TypeExporterEvent & *ev*) [protected]

Notifies progress to all registered listeners.

Parameters:

ev [in] Progress event to be notified.

5.75.3.3 void TypeExporter::RunProcess () throw (sparksee::gdb::IOException, sparksee::gdb::Error) [protected]

Runs export process.

Exceptions:

IOException If bad things happen writting to the RowWriter.

5.75.3.4 void TypeExporter::SetHeadAttribute (sparksee::gdb::attr_t *attr*) [protected]

Sets the attribute that will be used to get the value to be dumped for the head of the edge.

This method is protected because only the Edge exporters should have it.

Parameters:

attr [in] Head Attribute

Reimplemented in EdgeTypeExporter.

5.75.3.5 void TypeExporter::SetHeadPosition (sparksee::gdb::int32_t *pos*) [protected]

Sets the position (index column) of the head attribute in the exported data.

This method is protected because only the Edge exporters should have it.

Parameters:

pos [in] Head position

Reimplemented in EdgeTypeExporter.

5.75.3.6 void TypeExporter::SetTailAttribute (sparksee::gdb::attr_t *attr*) [protected]

Sets the attribute that will be used to get the value to be dumped for the tail of the edge.

This method is protected because only the Edge exporters should have it.

Parameters:

attr [in] Tail Attribute

Reimplemented in EdgeTypeExporter.

5.75.3.7 void TypeExporter::SetTailPosition (sparksee::gdb::int32_t *pos*) [protected]

Sets the position (index column) of the tail attribute in the exported data.

This method is protected because only the Edge exporters should have it.

Parameters:

pos [in] Tail position

Reimplemented in EdgeTypeExporter.

5.75.3.8 void TypeExporter::Register (TypeExporterListener & *tel*)

Registers a new listener.

Parameters:

tel [in] TypeExporterListener to be registered.

5.75.3.9 virtual void TypeExporter::Run () throw (sparksee::gdb::IOException, sparksee::gdb::Error) [pure virtual]

Runs export process.

Exceptions:

IOException If bad things happen writing to the RowWriter.

Implemented in EdgeTypeExporter, and NodeTypeExporter.

5.75.3.10 void TypeExporter::SetRowWriter (RowWriter & *rw*)

Sets the output data destination.

Parameters:

rw [in] Input RowWriter.

5.75.3.11 void TypeExporter::SetGraph (sparksee::gdb::Graph & *graph*)

Sets the graph that will be exported.

Parameters:

graph [in] Graph.

5.75.3.12 void TypeExporter::SetType (sparksee::gdb::type_t *type*)

Sets the type to be exported.

Parameters:

type [in] Type identifier.

5.75.3.13 void TypeExporter::SetAttributes (sparksee::gdb::AttributeList & *attrs*)

Sets the list of Attributes.

Parameters:

attrs [in] Attribute identifiers to be exported

5.75.3.14 void TypeExporter::SetFrequency (sparksee::gdb::int32_t *freq*)

Sets the frequency of listener notification.

Parameters:

freq [in] Frequency in number of rows managed to notify progress to all listeners

5.75.3.15 void TypeExporter::SetHeader (sparksee::gdb::bool_t *header*)

Sets the presence of a header row.

Parameters:

header [in] If TRUE, a header row is dumped with the name of the attributes.

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

- TypeExporter.h

5.76 TypeExporterEvent Class Reference

Provides information about the progress of an TypeExproter instance.

Public Member Functions

- virtual ~TypeExporterEvent ()
  Destructor.
- sparksee::gdb::type_t GetTypeId () const
  Gets the type identifier.
- sparksee::gdb::int64_t GetCount () const
  Gets the current number of objects exported.
- sparksee::gdb::int64_t GetTotal () const
  Gets the total number of objects exported.
- sparksee::gdb::bool_t IsLast () const
  Gets if this is the last event or not.

Friends

- class TypeExporter

5.76.1 Detailed Description

Provides information about the progress of an TypeExproter instance.

Check out the 'Data export' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.76.2 Member Function Documentation

5.76.2.1 sparksee::gdb::type_t TypeExporterEvent::GetTypeId () const [inline]

Gets the type identifier.

Returns:

The type identifier.

5.76.2.2 sparksee::gdb::int64_t TypeExporterEvent::GetCount () const [inline]

Gets the current number of objects exported.

Returns:

The current number of objects exported.

5.76.2.3 sparksee::gdb::int64_t TypeExporterEvent::GetTotal () const [inline]

Gets the total number of objects exported.

Returns:

The total number of objects exported.

5.76.2.4 sparksee::gdb::bool_t TypeExporterEvent::IsLast () const [inline]

Gets if this is the last event or not.

Returns:

TRUE if this is the last event, FALSE otherwise.

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

- TypeExporter.h

5.77 TypeExporterListener Class Reference

Interface to be implemented to receive TypeExporterEvent events from a TypeExporter.

Public Member Functions

- virtual void NotifyEvent (const TypeExporterEvent &tee)=0
  Method to be notified from a TypeExporter.
- virtual ~TypeExporterListener ()
  Destructor.

Protected Member Functions

- TypeExporterListener ()
  Protected because none should instantiate a RowWriter.

5.77.1 Detailed Description

Interface to be implemented to receive TypeExporterEvent events from a TypeExporter.

Check out the 'Data export' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.77.2 Constructor & Destructor Documentation

5.77.2.1 TypeExporterListener::TypeExporterListener () [inline, protected]

Protected because none should instantiate a RowWriter.

Just inherited classes may use this empty constructor.

5.77.3 Member Function Documentation

5.77.3.1 virtual void TypeExporterListener::NotifyEvent (const TypeExporterEvent & *tee*) [pure virtual]

Method to be notified from a TypeExporter.

Parameters:

tee [in] Notified event.

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

- TypeExporter.h

5.78 TypeList Class Reference

Sparksee type identifier list.

Public Member Functions

- int32_t Count () const
  Number of elements in the list.
- TypeListIterator * Iterator ()
  Gets a new TypeListIterator.
- TypeList ()
  Constructor.
- TypeList (const std::vector< type_t > &v)
  Constructor.
- void Add (type_t type)
  Adds a Sparksee type identifier at the end of the list.
- void Clear ()
  Clears the list.
- ~TypeList ()
  Destructor.

5.78.1 Detailed Description

Sparksee type identifier list.

It stores a Sparksee node or edge type identifier list.

Use TypeListIterator to access all elements into this collection.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.78.2 Constructor & Destructor Documentation

5.78.2.1 TypeList::TypeList ()

Constructor.

This creates an empty list.

5.78.2.2 TypeList::TypeList (const std::vector< type_t > & *v*)

Constructor.

Parameters:

v [in] Vector.

5.78.3 Member Function Documentation

5.78.3.1 int32_t TypeList::Count () const [inline]

Number of elements in the list.

Returns:

Number of elements in the list.

5.78.3.2 TypeListIterator* TypeList::Iterator ()

Gets a new TypeListIterator.

Returns:

TypeListIterator instance.

5.78.3.3 void TypeList::Add (type_t *type*) [inline]

Adds a Sparksee type identifier at the end of the list.

Parameters:

type [in] Sparksee type identifier.

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

- Graph_data.h

5.79 TypeListIterator Class Reference

TypeList iterator class.

Public Member Functions

- ~TypeListIterator ()
  Destructor.
- type_t Next ()
  Moves to the next element.
- bool_t HasNext ()
  Gets if there are more elements.

Friends

- class TypeList

5.79.1 Detailed Description

TypeList iterator class.

Iterator to traverse all the Sparksee node or edge type identifiers into a TypeList instance.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.79.2 Member Function Documentation

5.79.2.1 type_t TypeListIterator::Next () [inline]

Moves to the next element.

Returns:

The next element.

5.79.2.2 bool_t TypeListIterator::HasNext () [inline]

Gets if there are more elements.

Returns:

TRUE if there are more elements, FALSE otherwise.

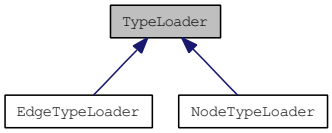
The documentation for this class was generated from the following file:

- Graph_data.h

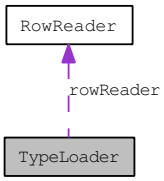
5.80 TypeLoader Class Reference

Base TypeLoader class.

Inheritance diagram for TypeLoader:



Collaboration diagram for TypeLoader:



Public Member Functions

- void SetLogError (const std::wstring &path) throw (sparksee::gdb::IOException)

  Sets a log error file.

- void SetLogOff ()

  Truns off all the error reporting.

- virtual ~TypeLoader ()

  Destructor.

- void Register (TypeLoaderListener &tel)

  Registers a new listener.

- virtual void Run ()=0 throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  Run the loader.

- virtual void RunTwoPhases ()=0 throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  Run the loader for two phases loading.

- virtual void RunNPhases (sparksee::gdb::int32_t partitions)=0 throw (sparksee::gdb::IOException, sparksee::gdb::Error)

  Run the loader for N phases loading.

- void SetRowReader (RowReader &rr)

  Sets the input data source.

- void SetGraph (sparksee::gdb::Graph &graph)

  Sets the graph where the data will be loaded.

- void SetLocale (const std::wstring &localeStr)

  Sets the locale that will be used to read the data.

- void SetType (sparksee::gdb::type_t type)

  Sets the type to be loaded.

- void SetAttributes (sparksee::gdb::AttributeList &attrs)

  Sets the list of Attributes.

- void SetAttributePositions (sparksee::gdb::Int32List &attrsPos)

  Sets the list of attribute positions.

- void SetTimestampFormat (const std::wstring &timestampFormat)

  Sets a specific timestamp format.

- void SetFrequency (sparksee::gdb::int32_t freq)

  Sets the frequency of listener notification.

Protected Types

- enum Mode {
  ONE_PHASE,
  TWO_PHASES,
  N_PHASES }
  Load can work in different ways.

Protected Member Functions

- sparksee::gdb::bool_t CanRun ()
  Checks that all the required settings are ready to run.
- void Run (Mode ph, sparksee::gdb::int32_t par) throw (sparksee::gdb::IOException, sparksee::gdb::Error)
  Runs load process.
- TypeLoader (RowReader &rr, sparksee::gdb::Graph &g, sparksee::gdb::type_t t, sparksee::gdb::AttributeList &attrs, sparksee::gdb::Int32List &attrsPos)
  Creates a new instance with the minimum common required arguments.
- TypeLoader ()
  Creates a new instance.
- void NotifyListeners (const TypeLoaderEvent &ev)
  Notifies progress to all registered listeners.
- void SetHeadAttribute (sparksee::gdb::attr_t attr)
  Sets the attribute that will be used to find the head of the edge.
- void SetHeadPosition (sparksee::gdb::int32_t pos)
  Sets the position of the head attribute in the source data.
- void SetTailAttribute (sparksee::gdb::attr_t attr)
  Sets the attribute that will be used to find the tail of the edge.
- void SetTailPosition (sparksee::gdb::int32_t pos)
  Sets the position of the tail attribute in the source data.

5.80.1 Detailed Description

Base TypeLoader class.

Base class to load a node or edge type from a graph using a RowReader.

TypeLoaderListener can be registered to receive information about the progress of the load process by means of TypeLoaderEvent. The default frequency of notification to listeners is 100000.

Check out the 'Data import' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.80.2 Member Enumeration Documentation

5.80.2.1 enum TypeLoader::Mode [protected]

Load can work in different ways.

Enumerator:

ONE_PHASE Performs the load in a phases.

Load all objects an attributes at the same time.

TWO_PHASES Performs the load in two phases.

Firstly load all objects (and create them if necessary) and secondly loads all the attributes.

Working on this mode it is necessary to build a temporary file.

N_PHASES Performs the load in N phases.

Firstly load all objects (and create them if necessary) and secondly loads all the attributes. But in this case, attributes are loaded one by one. This way, if there are three attributes, then 4 traverses to the RowReader are necessary.

Working on this mode it is necessary to build a temporary file.

5.80.3 Constructor & Destructor Documentation

5.80.3.1 TypeLoader::TypeLoader (RowReader & *rr*, sparksee::gdb::Graph & *g*, sparksee::gdb::type_t *t*, sparksee::gdb::AttributeList & *attrs*, sparksee::gdb::Int32List & *attrsPos*) [protected]

Creates a new instance with the minimum common required arguments.

Parameters:

rr [in] Input RowReader.

g [in] Graph.

t [in] Type identifier.

attrs [in] Attribute identifiers to be loaded

attrsPos [in] Attribute positions (column index >=0)

5.80.4 Member Function Documentation

5.80.4.1 sparksee::gdb::bool_t TypeLoader::CanRun () [protected]

Checks that all the required settings are ready to run.

Returns:

Returns true if all the settings are ready.

5.80.4.2 void TypeLoader::Run (Mode *ph*, sparksee::gdb::int32_t *par*) throw (sparksee::gdb::IOException, sparksee::gdb::Error) [protected]

Runs load process.

Exceptions:

IOException If bad things happen reading from the RowReader.

Parameters:

ph [in] The load mode.

par [in] Number of horizontal partitions to perform the load.

5.80.4.3 void TypeLoader::NotifyListeners (const TypeLoaderEvent & *ev*) [protected]

Notifies progress to all registered listeners.

Parameters:

ev [in] Progress event to be notified.

5.80.4.4 void TypeLoader::SetHeadAttribute (sparksee::gdb::attr_t *attr*) [protected]

Sets the attribute that will be used to find the head of the edge.

This method is protected because only the Edge loaders should have it.

Parameters:

attr [in] Head Attribute

Reimplemented in EdgeTypeLoader.

5.80.4.5 void TypeLoader::SetHeadPosition (sparksee::gdb::int32_t *pos*) [protected]

Sets the position of the head attribute in the source data.

This method is protected because only the Edge loaders should have it.

Parameters:

pos [in] Head position

Reimplemented in EdgeTypeLoader.

5.80.4.6 void TypeLoader::SetTailAttribute (sparksee::gdb::attr_t *attr*) [protected]

Sets the attribute that will be used to find the tail of the edge.

This method is protected because only the Edge loaders should have it.

Parameters:

attr [in] Tail Attribute

Reimplemented in EdgeTypeLoader.

5.80.4.7 void TypeLoader::SetTailPosition (sparksee::gdb::int32_t *pos*) [protected]

Sets the position of the tail attribute in the source data.

This method is protected because only the Edge loaders should have it.

Parameters:

pos [in] Tail position

Reimplemented in EdgeTypeLoader.

5.80.4.8 void TypeLoader::SetLogError (const std::wstring & *path*) throw (sparksee::gdb::IOException)

Sets a log error file.

By default errors are thrown as a exception and the load process ends. If a log file is set, errors are logged there and the load process does not stop.

Parameters:

path [in] The path to the error log file.

Exceptions:

IOException If bad things happen opening the file.

5.80.4.9 void TypeLoader::SetLogOff ()

Truns off all the error reporting.

The log file will not be created and no exceptions for invalid data will be thrown. If you just want to turn off the logs, but abort at the first error what you should do is not call this method and not set a logError file.

5.80.4.10 void TypeLoader::Register (TypeLoaderListener & *tel*)

Registers a new listener.

Parameters:

← ***tel*** TypeLoaderListener to be registered.

5.80.4.11 virtual void TypeLoader::RunTwoPhases () throw (sparksee::gdb::IOException, sparksee::gdb::Error) [pure virtual]

Run the loader for two phases loading.

Firstly load all objects (and create them if necessary) and secondly loads all the attributes.

Working on this mode it is necessary to build a temporary file.

Implemented in EdgeTypeLoader, and NodeTypeLoader.

5.80.4.12 virtual void TypeLoader::RunNPhases (sparksee::gdb::int32_t *partitions*) throw (sparksee::gdb::IOException, sparksee::gdb::Error) [pure virtual]

Run the loader for N phases loading.

Firstly load all objects (and create them if necessary) and secondly loads all the attributes. But in this case, attributes are loaded one by one. This way, if there are three attributes, then 4 traverses are necessary.

Working on this mode it is necessary to build a temporary file.

Parameters:

partitions [in] Number of horizontal partitions to perform the load.

Implemented in EdgeTypeLoader, and NodeTypeLoader.

5.80.4.13 void TypeLoader::SetRowReader (RowReader & *rr*)

Sets the input data source.

Parameters:

rr [in] Input RowReader.

5.80.4.14 void TypeLoader::SetGraph (sparksee::gdb::Graph & *graph*)

Sets the graph where the data will be loaded.

Parameters:

graph [in] Graph.

5.80.4.15 void TypeLoader::SetLocale (const std::wstring & *localeStr*)

Sets the locale that will be used to read the data.

It should match the locale used in the rowreader.

Parameters:

localeStr [in] The locale string for the read data. See CSVReader.

5.80.4.16 void TypeLoader::SetType (sparksee::gdb::type_t *type*)

Sets the type to be loaded.

Parameters:

type [in] Type identifier.

5.80.4.17 void TypeLoader::SetAttributes (sparksee::gdb::AttributeList & *attrs*)

Sets the list of Attributes.

Parameters:

attrs [in] Attribute identifiers to be loaded

5.80.4.18 void TypeLoader::SetAttributePositions (sparksee::gdb::Int32List & *attrsPos*)

Sets the list of attribute positions.

Parameters:

attrsPos [in] Attribute positions (column index >=0).

5.80.4.19 void TypeLoader::SetTimestampFormat (const std::wstring & *timestampFormat*)

Sets a specific timestamp format.

Parameters:

timestampFormat [in] A string with the timestamp format definition.

5.80.4.20 void TypeLoader::SetFrequency (sparksee::gdb::int32_t *freq*)

Sets the frequency of listener notification.

Parameters:

freq [in] Frequency in number of rows managed to notify progress to all listeners

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

- TypeLoader.h

5.81 TypeLoaderEvent Class Reference

Provides information about the progress of a TypeLoader instance.

Public Member Functions

- virtual ~TypeLoaderEvent ()
  Destructor.
- sparksee::gdb::type_t GetTypeId () const
  Gets the type identifier.
- sparksee::gdb::int64_t GetCount () const
  Gets the current number of objects created.
- sparksee::gdb::int32_t GetPhase () const
  Gets the current phase.
- sparksee::gdb::int32_t GetTotalPhases () const
  Gets the total number of phases.
- sparksee::gdb::int32_t GetPartition () const

Gets the current partition.

- sparksee::gdb::int32_t GetTotalPartitions () const
  Gets the total number of partitions.
- sparksee::gdb::int32_t GetTotalPartitionSteps () const
  Gets the total number of steps in the current partition.
- sparksee::gdb::bool_t IsLast () const
  Gets if this is the last event or not.

Friends

- class TypeLoader

5.81.1 Detailed Description

Provides information about the progress of a TypeLoader instance.

Check out the 'Data import' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.81.2 Member Function Documentation

5.81.2.1 sparksee::gdb::type_t TypeLoaderEvent::GetTypeId () const [inline]

Gets the type identifier.

Returns:

The type identifier.

5.81.2.2 sparksee::gdb::int64_t TypeLoaderEvent::GetCount () const [inline]

Gets the current number of objects created.

Returns:

The current number of objects created.

5.81.2.3 sparksee::gdb::int32_t TypeLoaderEvent::GetPhase () const [inline]

Gets the current phase.

Returns:

The current phase.

5.81.2.4 sparksee::gdb::int32_t TypeLoaderEvent::GetTotalPhases () const [inline]

Gets the total number of phases.

Returns:

The total number of phases.

5.81.2.5 sparksee::gdb::int32_t TypeLoaderEvent::GetPartition () const [inline]

Gets the current partition.

Returns:

The current partition.

5.81.2.6 sparksee::gdb::int32_t TypeLoaderEvent::GetTotalPartitions () const [inline]

Gets the total number of partitions.

Returns:

The total number of partitions.

5.81.2.7 sparksee::gdb::int32_t TypeLoaderEvent::GetTotalPartitionSteps () const [inline]

Gets the total number of steps in the current partition.

Returns:

The total number steps in the current partition.

5.81.2.8 sparksee::gdb::bool_t TypeLoaderEvent::IsLast () const [inline]

Gets if this is the last event or not.

Returns:

TRUE if this is the last event, FALSE otherwise.

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

- TypeLoader.h

5.82 TypeLoaderListener Class Reference

Interface to be implemented to receive TypeLoaderEvent events from a TypeLoader.

Public Member Functions

- virtual void NotifyEvent (const TypeLoaderEvent &ev)=0

  Method to receive events from a Loader.

- virtual ~TypeLoaderListener ()

  Destructor.

Protected Member Functions

- TypeLoaderListener ()

  Protected because none should instantiate a RowWriter.

5.82.1 Detailed Description

Interface to be implemented to receive TypeLoaderEvent events from a TypeLoader.

Check out the 'Data import' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.82.2 Constructor & Destructor Documentation

5.82.2.1 TypeLoaderListener::TypeLoaderListener () [inline, protected]

Protected because none should instantiate a RowWriter.

Just inherited classes may use this empty constructor.

5.82.3 Member Function Documentation

5.82.3.1 virtual void TypeLoaderListener::NotifyEvent (const TypeLoaderEvent & *ev*) [pure virtual]

Method to receive events from a Loader.

Parameters:

ev Loader.LoaderEvent with information from a running Loader.

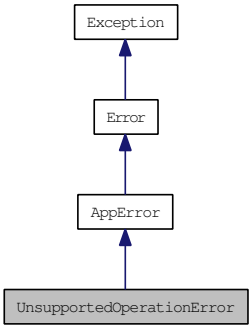
The documentation for this class was generated from the following file:

- TypeLoader.h

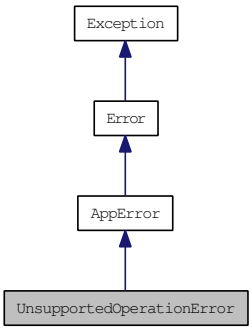
5.83 UnsupportedOperationError Class Reference

Unsupported operation error class.

Inheritance diagram for UnsupportedOperationError:



Collaboration diagram for UnsupportedOperationError:



Public Member Functions

- UnsupportedOperationError ()
  Creates a new instance.
- UnsupportedOperationError (const std::string &mess)
  Creates a new instance.
- virtual ~UnsupportedOperationError ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.
- void SetMessage (const std::string &mess)
  Sets the message of the exception.

Static Public Member Functions

- static Error NewError (int32_t coreErrorCode)
  Creates a new Error instance from a sparksee_core error code.

Protected Attributes

- std::string message

  Message of the exception.

5.83.1 Detailed Description

Unsupported operation error class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.83.2 Constructor & Destructor Documentation

5.83.2.1 UnsupportedOperationError::UnsupportedOperationError (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.83.3 Member Function Documentation

5.83.3.1 static Error Error::NewError (int32_t *coreErrorCode*) [static, inherited]

Creates a new Error instance from a sparksee_core error code.

Parameters:

coreErrorCode [in] Sparkseecore error code.

Returns:

Depending on the given sparksee_core error, this may return an Error instance or an specific Error subclass instance.

5.83.3.2 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.83.3.3 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

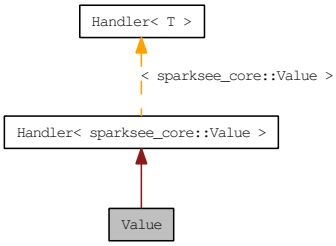
The documentation for this class was generated from the following file:

- Exception.h

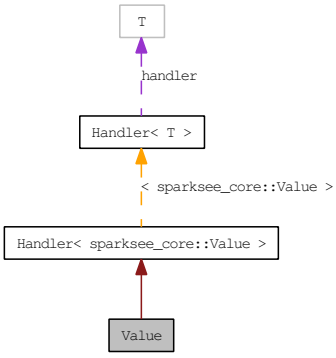
5.84 Value Class Reference

Value class.

Inheritance diagram for Value:



Collaboration diagram for Value:



Public Member Functions

- Value ()

  Creates a new instance.

- Value (const Value &value)

  Copy constructor.

- virtual ~Value ()

  Destructor.

- Value & operator= (const Value &value)

  Assignment operator.

- bool_t IsNull () const
  Gets if this is a NULL Value.
- void SetNullVoid ()
  Sets the Value to NULL.
- Value & SetNull ()
  Sets the Value to NULL.
- DataType GetDataType () const
  Gets the DataType.
- bool_t GetBoolean () const
  Gets Boolean Value.
- int32_t GetInteger () const
  Gets Integer Value.
- int64_t GetLong () const
  Gets Long Value.
- double64_t GetDouble () const
  Gets Double Value.
- int64_t GetTimestamp () const
  Gets Timestamp Value.
- const std::wstring & GetString () const
  Gets String Value.
- oid_t GetOID () const
  Gets OID Value.
- void SetBooleanVoid (bool_t value)
  Sets the Value.
- Value & SetBoolean (bool_t value)
  Sets the Value.
- void SetIntegerVoid (int32_t value)
  Sets the Value.
- Value & SetInteger (int32_t value)
  Sets the Value.
- void SetLongVoid (int64_t value)
  Sets the Value.
- Value & SetLong (int64_t value)

Sets the Value.

- void SetDoubleVoid (double64_t value)

  Sets the Value.

- Value & SetDouble (double64_t value)

  Sets the Value.

- void SetTimestampVoid (int64_t value)

  Sets the Value.

- void SetTimestampVoid (int32_t year, int32_t month, int32_t day, int32_t hour, int32_t minutes, int32_t seconds, int32_t millisecs)

  Sets the Value.

- Value & SetTimestamp (int64_t value)

  Sets the Value.

- Value & SetTimestamp (int32_t year, int32_t month, int32_t day, int32_t hour, int32_t minutes, int32_t seconds, int32_t millisecs)

  Sets the Value.

- void SetStringVoid (const std::wstring &value)

  Sets the Value.

- Value & SetString (const std::wstring &value)

  Sets the Value.

- void SetOIDVoid (oid_t value)

  Sets the OID Value.

- Value & SetOID (oid_t value)

  Sets the Value.

- void SetVoid (Value &value)

  Sets the Value.

- Value & Set (Value &value)

  Sets the Value.

- int32_t Compare (const Value &value) const

  Compares with the given Value.

- bool_t Equals (const Value &value) const

  Compares with the given Value.

- std::wstring & ToString (std::wstring &str) const

  Gets a string representation of the Value.

Static Public Attributes

- static const int32_t MaxLengthString

  Maximum number of characters allowed for a String.

Friends

- class Graph
- class ValuesIterator
- class ResultSet
- class Query

5.84.1 Detailed Description

Value class.

It is a container which stores a value and its data type (domain). A Value can be NULL.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.84.2 Constructor & Destructor Documentation

5.84.2.1 Value::Value ()

Creates a new instance.

It creates a NULL Value.

5.84.2.2 Value::Value (const Value & *value*)

Copy constructor.

Parameters:

value [in] Value to be copied.

5.84.3 Member Function Documentation

5.84.3.1 Value& Value::operator= (const Value & *value*)

Assignment operator.

Parameters:

value [in] Value to be copied.

Returns:

Returns the Value reference.

5.84.3.2 bool_t Value::IsNull () const

Gets if this is a NULL Value.

Returns:

TRUE if this is a NULL Value, FALSE otherwise.

Reimplemented from Handler< sparksee_core::Value >.

5.84.3.3 Value& Value::SetNull () [inline]

Sets the Value to NULL.

Returns:

The calling instance.

5.84.3.4 DataType Value::GetDataType () const

Gets the DataType.

Value cannot be NULL.

Returns:

The DataType.

5.84.3.5 bool_t Value::GetBoolean () const

Gets Boolean Value.

This must be a non-NULL Boolean Value.

Returns:

The Boolean Value.

5.84.3.6 int32_t Value::GetInteger () const

Gets Integer Value.

This must be a non-NULL Integer Value.

Returns:

The Integer Value.

5.84.3.7 int64_t Value::GetLong () const

Gets Long Value.

This must be a non-NULL Long Value.

Returns:

The Long Value.

5.84.3.8 double64_t Value::GetDouble () const

Gets Double Value.

This must be a non-NULL Double Value.

Returns:

The Double Value.

5.84.3.9 int64_t Value::GetTimestamp () const

Gets Timestamp Value.

This must be a non-NULL Timestamp Value.

Returns:

The Timestamp Value.

5.84.3.10 const std::wstring& Value::GetString () const

Gets String Value.

This must be a non-NULL String Value.

Returns:

The String Value.

5.84.3.11 oid_t Value::GetOID () const

Gets OID Value.

This must be an non-NULL OID Value.

Returns:

The OID Value.

5.84.3.12 void Value::SetBooleanVoid (bool_t *value*)

Sets the Value.

Parameters:

value [in] New Boolean value.

5.84.3.13 Value& Value::SetBoolean (bool_t *value*) [inline]

Sets the Value.

Parameters:

value [in] Nex Boolean value.

Returns:

The calling instance.

5.84.3.14 void Value::SetIntegerVoid (int32_t *value*)

Sets the Value.

Parameters:

value [in] New Integer value.

5.84.3.15 Value& Value::SetInteger (int32_t *value*) [inline]

Sets the Value.

Parameters:

value [in] New Integer value.

Returns:

The calling instance.

5.84.3.16 void Value::SetLongVoid (int64_t *value*)

Sets the Value.

Parameters:

value [in] New Long value.

5.84.3.17 Value& Value::SetLong (int64_t *value*) [inline]

Sets the Value.

Parameters:

value [in] New Long value.

Returns:

The calling instance.

5.84.3.18 void Value::SetDoubleVoid (double64_t *value*)

Sets the Value.

Parameters:

value [in] New Double value.

5.84.3.19 Value& Value::SetDouble (double64_t *value*) [inline]

Sets the Value.

Parameters:

value [in] New Double value.

Returns:

The calling instance.

5.84.3.20 void Value::SetTimestampVoid (int64_t *value*)

Sets the Value.

Parameters:

value [in] New Timestamp value.

5.84.3.21 void Value::SetTimestampVoid (int32_t *year*, int32_t *month*, int32_t *day*, int32_t *hour*, int32_t *minutes*, int32_t *seconds*, int32_t *millisecs*)

Sets the Value.

Parameters:

year [in] The year (>=1970).

month [in] The month ([1..12]).

day [in] The of the month ([1..31]).

hour [in] The hour ([0..23]).

minutes [in] The minutes ([0..59]).

seconds [in] The seconds ([0..59]).

millisecs [in] The milliseconds ([0..999]).

5.84.3.22 Value& Value::SetTimestamp (int64_t *value*) [inline]

Sets the Value.

Parameters:

value [in] New Timestamp value.

Returns:

The calling instance.

5.84.3.23 Value& Value::SetTimestamp (int32_t *year*, int32_t *month*, int32_t *day*, int32_t *hour*, int32_t *minutes*, int32_t *seconds*, int32_t *millisecs*) [inline]

Sets the Value.

Parameters:

year [in] The year (>=1970).

month [in] The month ([1..12]).

day [in] The of the month ([1..31]).

hour [in] The hour ([0..23]).

minutes [in] The minutes ([0..59]).

seconds [in] The seconds ([0..59]).

millisecs [in] The milliseconds ([0..999]).

Returns:

The calling instance.

5.84.3.24 void Value::SetStringVoid (const std::wstring & *value*)

Sets the Value.

Parameters:

value [in] New String value.

5.84.3.25 Value& Value::SetString (const std::wstring & *value*) [inline]

Sets the Value.

Parameters:

value [in] New String value.

Returns:

The calling instance.

5.84.3.26 void Value::SetOIDVoid (oid_t *value*)

Sets the OID Value.

Parameters:

value [in] New OID value.

5.84.3.27 Value& Value::SetOID (oid_t *value*) [inline]

Sets the Value.

Parameters:

value [in] New OID Value.

Returns:

The calling instance.

5.84.3.28 void Value::SetVoid (Value & *value*) [inline]

Sets the Value.

Parameters:

value [in] New value.

5.84.3.29 Value& Value::Set (Value & *value*) [inline]

Sets the Value.

Parameters:

value [in] New value.

Returns:

The calling instance.

5.84.3.30 int32_t Value::Compare (const Value & *value*) const

Compares with the given Value.

It does not work if the given Value objects does not have the same DataType.

Parameters:

value Given value to compare to.

Returns:

0 if this Value is equal to the given one; a value less than 0 if this Value is less than the given one; and a value greater than 0 if this Value is greater than the given one.

5.84.3.31 bool_t Value::Equals (const Value & *value*) const

Compares with the given Value.

It does not work if the given Value objects does not have the same DataType.

Parameters:

value Given value to compare to.

Returns:

TRUE if this Value is equal to the given one; FALSE otherwise.

5.84.3.32 std::wstring& Value::ToString (std::wstring & *str*) const

Gets a string representation of the Value.

Parameters:

str String to be used. It is cleared and set with the string representation of the Value.

Returns:

The given string which has been updated.

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

- Value.h

5.85 ValueList Class Reference

Value list.

Public Member Functions

- int32_t Count () const

  Number of elements in the list.

- ValueListIterator * Iterator ()
  Gets a new ValueListIterator.
- ValueList ()
  Constructor.
- ~ValueList ()
  Destructor.
- void Clear ()
  Clears the list.
- void Add (Value *value)
  Adds a value to the end of the list.
- Value * Get (int32_t index) const
  Returns the Value at the specified position in the list.

5.85.1 Detailed Description

Value list.

It stores a Value list.

Use ValueListIterator to access all elements into this collection.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.85.2 Constructor & Destructor Documentation

5.85.2.1 ValueList::ValueList () [inline]

Constructor.

This creates an empty list.

5.85.3 Member Function Documentation

5.85.3.1 int32_t ValueList::Count () const [inline]

Number of elements in the list.

Returns:

Number of elements in the list.

5.85.3.2 ValueListIterator* ValueList::Iterator ()

Gets a new ValueListIterator.

Returns:

ValueListIterator instance.

5.85.3.3 void ValueList::Add (Value * *value*)

Adds a value to the end of the list.

Parameters:

value [in] The value to add

5.85.3.4 Value* ValueList::Get (int32_t *index*) const

Returns the Value at the specified position in the list.

Parameters:

index [in] Index of the element to return, starting at 0.

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

- Value.h

5.86 ValueListIterator Class Reference

ValueList iterator class.

Public Member Functions

- ~ValueListIterator ()
  Destructor.
- const Value * Next ()
  Moves to the next element.
- bool_t HasNext ()
  Gets if there are more elements.

Friends

- class ValueList

5.86.1 Detailed Description

ValueList iterator class.

Iterator to traverse all the values into a ValueList instance.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.86.2 Member Function Documentation

5.86.2.1 const Value* ValueListIterator::Next () [inline]

Moves to the next element.

Returns:

The next element.

5.86.2.2 bool_t ValueListIterator::HasNext () [inline]

Gets if there are more elements.

Returns:

TRUE if there are more elements, FALSE otherwise.

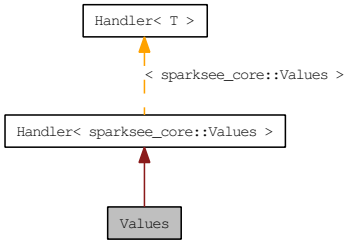
The documentation for this class was generated from the following file:

- Value.h

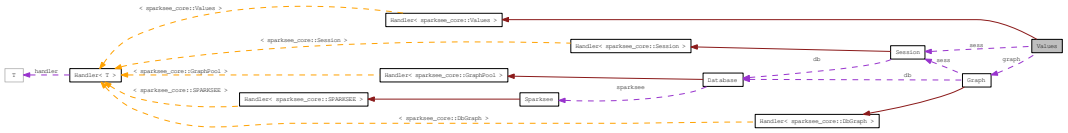
5.87 Values Class Reference

Value set class.

Inheritance diagram for Values:



Collaboration diagram for Values:



Public Member Functions

- virtual ~Values ()

  Destructor.

- int64_t Count ()

Gets the number of elements into the collection.

- ValuesIterator * Iterator (Order order)

  Gets a ValuesIterator.

Friends

- class Graph
- class ValuesIterator

5.87.1 Detailed Description

Value set class.

This is a set of Value instances, that is there is no duplicated elements.

Use a ValuesIterator to traverse all the elements into the set.

When the Values instance is closed, it closes all existing and non-closed ValuesIterator instances too.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.87.2 Member Function Documentation

5.87.2.1 int64_t Values::Count ()

Gets the number of elements into the collection.

Returns:

The number of elements into the collection.

5.87.2.2 ValuesIterator* Values::Iterator (Order *order*)

Gets a ValuesIterator.

Returns:

ValuesIterator instance.

Parameters:

order [in] Ascending or descending order.

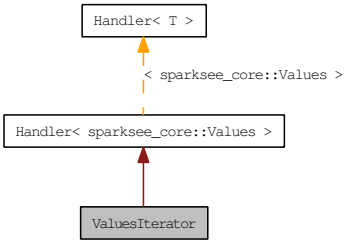
The documentation for this class was generated from the following file:

- Values.h

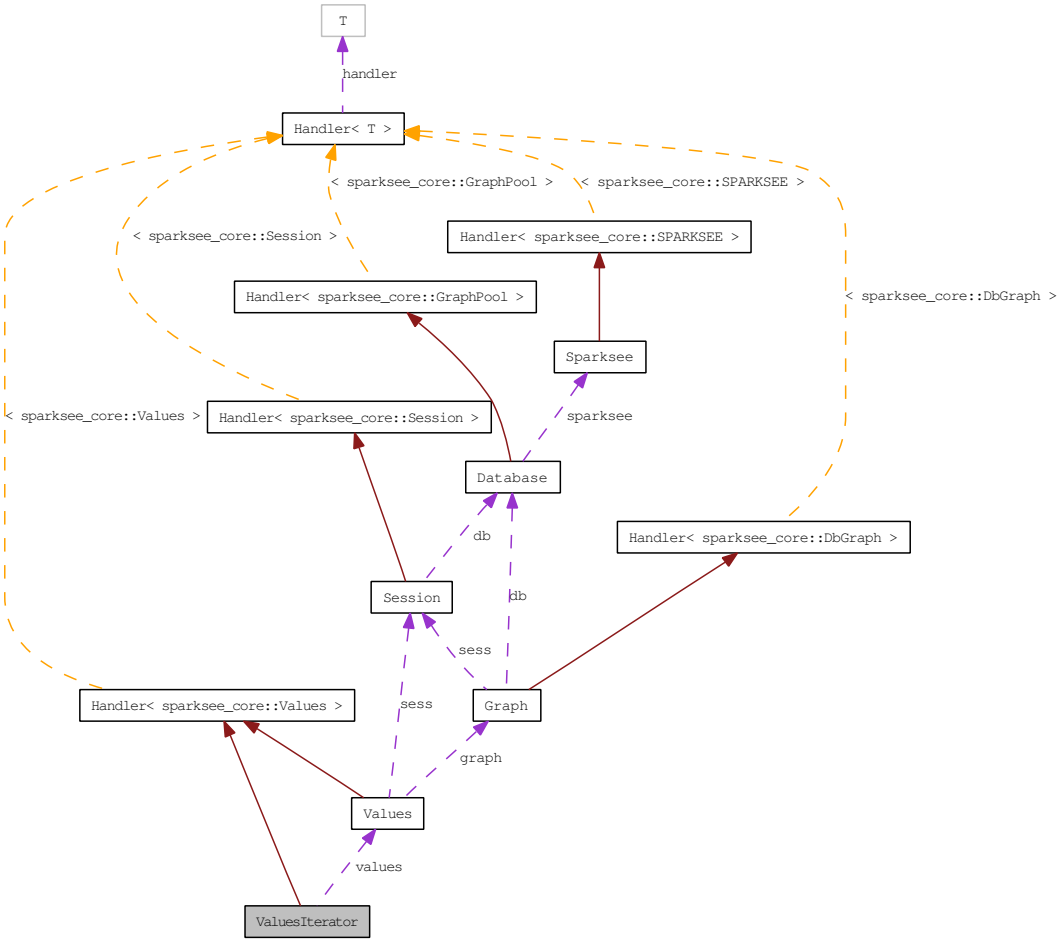
5.88 ValuesIterator Class Reference

Values iterator class.

Inheritance diagram for ValuesIterator:



Collaboration diagram for ValuesIterator:



Public Member Functions

- virtual ~ValuesIterator ()

  Destructor.

- bool_t HasNext ()

  Gets if there are more elements to traverse.

- Value * Next ()

  Gets the next element to traverse.

Friends

- class Values

5.88.1 Detailed Description

Values iterator class.

It allows for traversing all the elements into a Values instance.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.88.2 Member Function Documentation

5.88.2.1 bool_t ValuesIterator::HasNext ()

Gets if there are more elements to traverse.

Returns:

TRUE if there are more elements to traverse, FALSE otherwise.

5.88.2.2 Value* ValuesIterator::Next ()

Gets the next element to traverse.

Returns:

The next element.

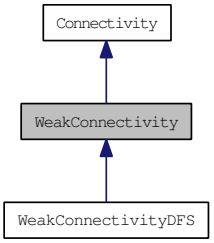
The documentation for this class was generated from the following file:

- ValuesIterator.h

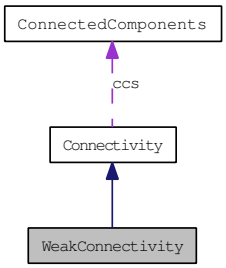
5.89 WeakConnectivity Class Reference

WeakConnectivity class.

Inheritance diagram for WeakConnectivity:



Collaboration diagram for WeakConnectivity:



Public Member Functions

- virtual ~WeakConnectivity ()
  Destructor.
- virtual void AddEdgeType (sparksee::gdb::type_t type)
  Allows connectivity through edges of the given type.
- virtual void AddAllEdgeTypes ()
  Allows connectivity through all edge types of the graph.
- virtual void AddNodeType (sparksee::gdb::type_t t)
  Allows connectivity through nodes of the given type.
- virtual void AddAllNodeTypes ()
  Allows connectivity through all node types of the graph.
- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)
  Set which nodes can't be used.
- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)
  Set which edges can't be used.
- ConnectedComponents * GetConnectedComponents ()
  Returns the results generated by the execution of the algorithm.

- virtual void Run ()=0

  Runs the algorithm in order to find the connected components.

- void SetMaterializedAttribute (const std::wstring &attributeName)

  Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the connected components found while executing this algorithm.

Protected Types

- typedef std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > EdgeTypes_t

  A type definition to store allowed edge types.

- typedef std::vector< sparksee::gdb::type_t > NodeTypes_t

  A type definition to store allowed node types.

Protected Member Functions

- WeakConnectivity (sparksee::gdb::Session &s)

  Creates a new instance of WeakConnectivity.

- void AddEdgeType (sparksee::gdb::type_t t, sparksee::gdb::EdgesDirection d)

  Allows connectivity through edges of the given type.

- void AddAllEdgeTypes (sparksee::gdb::EdgesDirection d)

  Allows connectivity through all edge types of the graph.

- void AssertAddedEdges ()

  Check that edges had been added.

- void AssertAddedNodes ()

  Check that nodes had been added.

- void AssertNotComputed ()

  Check that the connectivity had not been calculated yet.

- void SetConnectedComponent (sparksee::gdb::oid_t idNode)

  Assigns the current component to the given node.

- void SetNodesNotVisited ()

  Set all the selected nodes in nodesNotVisited.

- void AssertNotComponentAttribute (const std::wstring &attributeName)

  Check that the given attribute name is not already in use.

- void AssertComputed ()

  Check that the connectivity had been calculated.

- void AssertEdgeType (sparksee::gdb::type_t edgetype)
  Check that the given edge type is valid.
- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- void CreateGlobalPersistentAttribute (const std::wstring &attributeName)
  Set a new persistent global attribute to store the connectivity information.
- void CreateGlobalTransientAttribute ()
  Set a new temporary global attribute to store the connectivity information.
- void RemoveGlobalAttribute ()
  Removes the global attribute where the connectivity information is stored.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- EdgeTypes_t edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::attr_t attrComponent
  common attribute where the connected component information is stored.
- std::wstring attrComponentName
  name of the common attribute where the connected component information is stored.
- sparksee::gdb::int64_t actualComponent
  Current component identifier.
- sparksee::gdb::Objects * nodesNotVisited

Identifiers of the nodes not visited.

- sparksee::gdb::bool_t matResults

  Materialized results.

- sparksee::gdb::bool_t computed

  True if the connectivity has been calculated.

- sparksee::gdb::Objects * excludedNodes

  The set of excluded nodes.

- sparksee::gdb::Objects * excludedEdges

  The set of excluded edges.

- ConnectedComponents * ccs

  The calculated connectivity information.

5.89.1 Detailed Description

WeakConnectivity class.

Any class implementing this abstract class can be used to solve the problem of finding weakly connected components in an **undirected** graph or in a directed graph which will be considered as an undirected one.

It consists in finding components where every pair (u,v) of nodes contained in it has a path from u to v and from v to u.

It is possible to set some restrictions after constructing a new instance of this class and before running it in order to limit the results.

After the execution, we can retrieve the results stored in an instance of the ConnectedComponents class using the getConnectedComponents method.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.89.2 Constructor & Destructor Documentation

5.89.2.1 WeakConnectivity::WeakConnectivity (sparksee::gdb::Session & *s*) [protected]

Creates a new instance of WeakConnectivity.

Parameters:

s [in] Session to get the graph from and calculate the connectivity

5.89.3 Member Function Documentation

5.89.3.1 virtual void WeakConnectivity::AddEdgeType (sparksee::gdb::type_t *type*) [virtual]

Allows connectivity through edges of the given type.

In a weak connectivity the edges can be used in Any direction.

Parameters:

type [in] Edge type.

5.89.3.2 virtual void WeakConnectivity::AddAllEdgeTypes () [virtual]

Allows connectivity through all edge types of the graph.

In a weak connectivity the edges can be used in Any direction.

5.89.3.3 virtual void Connectivity::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.89.3.4 virtual void Connectivity::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.89.3.5 ConnectedComponents* Connectivity::GetConnectedComponents () [inherited]

Returns the results generated by the execution of the algorithm.

These results contain information related to the connected components found as the number of different components, the set of nodes contained in each component or many other data.

Returns:

Returns an instance of the class ConnectedComponents which contain information related to the connected components found.

5.89.3.6 virtual void Connectivity::Run () [pure virtual, inherited]

Runs the algorithm in order to find the connected components.

This method can be called only once.

Implemented in StrongConnectivityGabow, and WeakConnectivityDFS.

5.89.3.7 void Connectivity::SetMaterializedAttribute (const std::wstring & *attributeName*) [inherited]

Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the connected components found while executing this algorithm.

Whenever the user wants to retrieve the results, even when the graph has been closed and opened again, it is only necessary to create a new instance of the class ConnectedComponents indicating the graph and the name of the common attribute type which stores the results. This instance will have all the information related to the connected components found in the moment of the execution of the algorithm that stored this data.

It is possible to run the algorithm without specifying this parameter in order to avoid materializing the results of the execution.

Parameters:

attributeName [in] The name of the common attribute type for all node types in the graph which will store persistently the results generated by the execution of the algorithm.

5.89.3.8 void Connectivity::AddEdgeType (sparksee::gdb::type_t *t*, sparksee::gdb::EdgesDirection *d*) [protected, inherited]

Allows connectivity through edges of the given type.

Parameters:

t [in] Edge type.

d [in] Edge direction.

Reimplemented in StrongConnectivity.

5.89.3.9 void Connectivity::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *d*) [protected, inherited]

Allows connectivity through all edge types of the graph.

Parameters:

d [in] Edge direction.

Reimplemented in StrongConnectivity.

5.89.3.10 void Connectivity::SetNodesNotVisited () [protected, inherited]

Set all the selected nodes in nodesNotVisited.

That's all the nodes of the allowed node types but not the excluded ones.

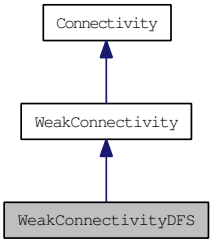
The documentation for this class was generated from the following file:

- WeakConnectivity.h

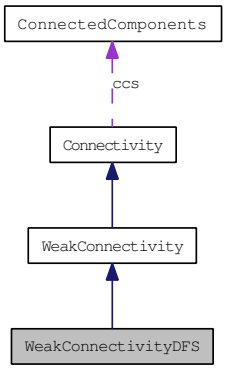
5.90 WeakConnectivityDFS Class Reference

WeakConnectivityDFS class.

Inheritance diagram for WeakConnectivityDFS:



Collaboration diagram for WeakConnectivityDFS:



Public Member Functions

- WeakConnectivityDFS (sparksee::gdb::Session &session)
  Creates a new instance of WeakConnectivityDFS.
- virtual ~WeakConnectivityDFS ()
  Destructor.
- void Run ()
  Executes the algorithm.
- virtual void AddEdgeType (sparksee::gdb::type_t type)
  Allows connectivity through edges of the given type.
- virtual void AddAllEdgeTypes ()
  Allows connectivity through all edge types of the graph.
- virtual void AddNodeType (sparksee::gdb::type_t t)
  Allows connectivity through nodes of the given type.

- virtual void AddAllNodeTypes ()

  Allows connectivity through all node types of the graph.

- virtual void ExcludeNodes (sparksee::gdb::Objects &nodes)

  Set which nodes can't be used.

- virtual void ExcludeEdges (sparksee::gdb::Objects &edges)

  Set which edges can't be used.

- ConnectedComponents * GetConnectedComponents ()

  Returns the results generated by the execution of the algorithm.

- void SetMaterializedAttribute (const std::wstring &attributeName)

  Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the connected components found while executing this algorithm.

Protected Types

- typedef std::map< sparksee::gdb::type_t, sparksee::gdb::EdgesDirection > EdgeTypes_t

  A type definition to store allowed edge types.

- typedef std::vector< sparksee::gdb::type_t > NodeTypes_t

  A type definition to store allowed node types.

Protected Member Functions

- void AddEdgeType (sparksee::gdb::type_t t, sparksee::gdb::EdgesDirection d)

  Allows connectivity through edges of the given type.

- void AddAllEdgeTypes (sparksee::gdb::EdgesDirection d)

  Allows connectivity through all edge types of the graph.

- void AssertAddedEdges ()

  Check that edges had been added.

- void AssertAddedNodes ()

  Check that nodes had been added.

- void AssertNotComputed ()

  Check that the connectivity had not been calculated yet.

- void SetConnectedComponent (sparksee::gdb::oid_t idNode)

  Assigns the current component to the given node.

- void SetNodesNotVisited ()

  Set all the selected nodes in nodesNotVisited.

- void AssertNotComponentAttribute (const std::wstring &attributeName)
  Check that the given attribute name is not already in use.
- void AssertComputed ()
  Check that the connectivity had been calculated.
- void AssertEdgeType (sparksee::gdb::type_t edgetype)
  Check that the given edge type is valid.
- void AssertNodeType (sparksee::gdb::type_t nodetype)
  Check that the given node type is valid.
- void CreateGlobalPersistentAttribute (const std::wstring &attributeName)
  Set a new persistent global attribute to store the connectivity information.
- void CreateGlobalTransientAttribute ()
  Set a new temporary global attribute to store the connectivity information.
- void RemoveGlobalAttribute ()
  Removes the global attribute where the connectivity information is stored.
- sparksee::gdb::bool_t IsNodeTypeAllowed (sparksee::gdb::oid_t nodeId)
  Check if the given node has an allowed type.
- sparksee::gdb::bool_t IsNodeExcluded (sparksee::gdb::oid_t node)
  Check if the given node is forbidden.
- sparksee::gdb::bool_t IsEdgeExcluded (sparksee::gdb::oid_t edge)
  Check if the given edge is forbidden.

Protected Attributes

- sparksee::gdb::Session * sess
  Session.
- sparksee::gdb::Graph * graph
  Graph.
- EdgeTypes_t edgeTypes
  Allowed edge types.
- std::vector< sparksee::gdb::type_t > nodeTypes
  Allowed node types.
- sparksee::gdb::attr_t attrComponent
  common attribute where the connected component information is stored.
- std::wstring attrComponentName

name of the common attribute where the connected component information is stored.

- sparksee::gdb::int64_t actualComponent

  Current component identifier.

- sparksee::gdb::Objects * nodesNotVisited

  Identifiers of the nodes not visited.

- sparksee::gdb::bool_t matResults

  Materialized results.

- sparksee::gdb::bool_t computed

  True if the connectivity has been calculated.

- sparksee::gdb::Objects * excludedNodes

  The set of excluded nodes.

- sparksee::gdb::Objects * excludedEdges

  The set of excluded edges.

- ConnectedComponents * ccs

  The calculated connectivity information.

5.90.1 Detailed Description

WeakConnectivityDFS class.

This class can be used to solve the problem of finding weakly connected components in an **undirected** graph or in a directed graph which will be considered as an undirected one.

It consists in finding components where every pair (u,v) of nodes contained in it has a path from u to v and from v to u. This implementation is based on the Depth-First Search (DFS) algorithm.

It is possible to set some restrictions after constructing a new instance of this class and before running it in order to limit the results.

After the execution, we can retrieve the results stored in an instance of the ConnectedComponents class using the getConnectedComponents method.

Check out the 'Algorithms' section in the SPARKSEE User Manual for more details on this.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.90.2 Constructor & Destructor Documentation

5.90.2.1 WeakConnectivityDFS::WeakConnectivityDFS (sparksee::gdb::Session & *session*)

Creates a new instance of WeakConnectivityDFS.

After creating this instance is required to indicate the set of edge types and the set of node types which will be navigated through while traversing the graph in order to find the weak connected components.

Parameters:

session [in] Session to get the graph from and calculate the connectivity

5.90.3 Member Function Documentation

5.90.3.1 virtual void WeakConnectivity::AddEdgeType (sparksee::gdb::type_t *type*) [virtual, inherited]

Allows connectivity through edges of the given type.

In a weak connectivity the edges can be used in Any direction.

Parameters:

type [in] Edge type.

5.90.3.2 void Connectivity::AddEdgeType (sparksee::gdb::type_t *t*, sparksee::gdb::EdgesDirection *d*) [protected, inherited]

Allows connectivity through edges of the given type.

Parameters:

t [in] Edge type.

d [in] Edge direction.

Reimplemented in StrongConnectivity.

5.90.3.3 virtual void WeakConnectivity::AddAllEdgeTypes () [virtual, inherited]

Allows connectivity through all edge types of the graph.

In a weak connectivity the edges can be used in Any direction.

5.90.3.4 void Connectivity::AddAllEdgeTypes (sparksee::gdb::EdgesDirection *d*) [protected, inherited]

Allows connectivity through all edge types of the graph.

Parameters:

d [in] Edge direction.

Reimplemented in StrongConnectivity.

5.90.3.5 virtual void Connectivity::ExcludeNodes (sparksee::gdb::Objects & *nodes*) [virtual, inherited]

Set which nodes can't be used.

This will replace any previously specified set of excluded nodes. Should only be used to exclude the usage of specific nodes from allowed node types because it's less efficient than not allowing a node type.

Parameters:

nodes [in] A set of node identifiers that must be kept intact until the destruction of the class.

5.90.3.6 virtual void Connectivity::ExcludeEdges (sparksee::gdb::Objects & *edges*) [virtual, inherited]

Set which edges can't be used.

This will replace any previously specified set of excluded edges. Should only be used to exclude the usage of specific edges from allowed edge types because it's less efficient than not allowing an edge type.

Parameters:

edges [in] A set of edge identifiers that must be kept intact until the destruction of the class.

5.90.3.7 ConnectedComponents* Connectivity::GetConnectedComponents () [inherited]

Returns the results generated by the execution of the algorithm.

These results contain information related to the connected components found as the number of different components, the set of nodes contained in each component or many other data.

Returns:

Returns an instance of the class ConnectedComponents which contain information related to the connected components found.

5.90.3.8 void Connectivity::SetMaterializedAttribute (const std::wstring & *attributeName*) [inherited]

Creates a new common attribute type for all node types in the graph in order to store, persistently, the results related to the connected components found while executing this algorithm.

Whenever the user wants to retrieve the results, even when the graph has been closed and opened again, it is only necessary to create a new instance of the class ConnectedComponents indicating the graph and the name of the common attribute type which stores the results. This instance will have all the information related to the connected components found in the moment of the execution of the algorithm that stored this data.

It is possible to run the algorithm without specifying this parameter in order to avoid materializing the results of the execution.

Parameters:

attributeName [in] The name of the common attribute type for all node types in the graph which will store persistently the results generated by the execution of the algorithm.

5.90.3.9 void Connectivity::SetNodesNotVisited () [protected, inherited]

Set all the selected nodes in nodesNotVisited.

That's all the nodes of the allowed node types but not the excluded ones.

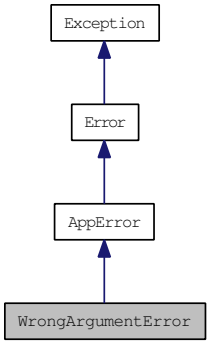
The documentation for this class was generated from the following file:

- WeakConnectivityDFS.h

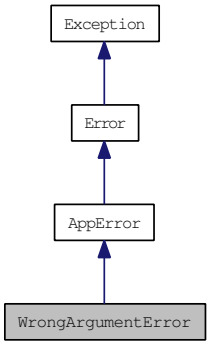
5.91 WrongArgumentError Class Reference

Wrong argument error class.

Inheritance diagram for WrongArgumentError:



Collaboration diagram for WrongArgumentError:



Public Member Functions

- WrongArgumentError ()
  Creates a new instance.
- WrongArgumentError (const std::string &mess)
  Creates a new instance.
- virtual ~WrongArgumentError ()
  Destructor.
- const std::string & Message () const
  Gets the message of the exception.
- void SetMessage (const std::string &mess)
  Sets the message of the exception.

Static Public Member Functions

- static Error NewError (int32_t coreErrorCode)
  Creates a new Error instance from a sparksee_core error code.

Protected Attributes

- std::string message
  Message of the exception.

5.91.1 Detailed Description

Wrong argument error class.

Author:

Sparsity Technologies http://www.sparsity-technologies.com

5.91.2 Constructor & Destructor Documentation

5.91.2.1 WrongArgumentError::WrongArgumentError (const std::string & *mess*)

Creates a new instance.

Parameters:

mess [in] Message of the exception.

5.91.3 Member Function Documentation

5.91.3.1 static Error Error::NewError (int32_t *coreErrorCode*) [static, inherited]

Creates a new Error instance from a sparksee_core error code.

Parameters:

coreErrorCode [in] Sparkseecore error code.

Returns:

Depending on the given sparksee_core error, this may return an Error instance or an specific Error subclass instance.

5.91.3.2 const std::string& Exception::Message () const [inherited]

Gets the message of the exception.

It should be called GetMessage but this is not possible because of a macro defined in Windows.

Returns:

The message of the exception.

5.91.3.3 void Exception::SetMessage (const std::string & *mess*) [inherited]

Sets the message of the exception.

Parameters:

mess [in] Message.

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

- Exception.h

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