ROC

V1.0

Robust Optimization C++ Reference Mannual

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Contents

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Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 3

Class Documentation

3.1 ROBaseConstraint Class Reference

`#include <ROBaseConstraint.h>`

Public Member Functions

- **ROBaseConstraint** (const **ROBaseConstraint** &p_bConst)
- **ROBaseConstraint** (const **ROUnLinConstraint** &p_unConst)
- **ROBaseConstraint** (const ROConstTag p_tag=EnumLeq)
- **ROBaseConstraint** & **operator=** (const **ROBaseConstraint** &p_expr)
- **ROBaseConstraint** & **operator=** (const **ROUnLinConstraint** &p_expr)
- ROConstTag **getTag** () const

3.1.1 Detailed Description

An instance of this class is a base constraint in a model. A base constraint consists of its equation tag and an expression (LHS).

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 19 of file ROBaseConstraint.h.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 ROBaseConstraint::ROBaseConstraint (const ROBaseConstraint & *p_bConst*)

This is the copy constructor.

Parameters

p_bConst	A referrence to an **ROBaseConstraint** (p. 7) instance.

3.1.2.2 ROBaseConstraint::ROBaseConstraint (const ROUnLinConstraint & *p_unConst*)

This is the copy constructor.

Parameters

p_unConst	A referrence to an **ROUnLinConstraint** (p. 39) instance.

3.1.2.3 ROBaseConstraint::ROBaseConstraint (const ROConstTag *p_tag* = `EnumLeq`)

The default constructor of **ROBaseConstraint** (p. 7).

Parameters

p_tag	Indicating the constraint tag, default is <= .

3.1.3 Member Function Documentation

3.1.3.1 ROConstTag ROBaseConstraint::getTag ( ) const

This member function returns the equation tag ("<=" or "==") of invoking object.

Returns

ROConstTag The equation tag ("<=" or "==") of invoking object.

3.1.3.2 ROBaseConstraint& ROBaseConstraint::operator= (const ROBaseConstraint & *p_expr*)

The assignment operator "=".

Parameters

p_expr	A referrence to an **ROBaseConstraint** (p. 7) instance.

Returns

ROBaseConstraint (p. 7)& A reference of current invoking object.

3.1.3.3 ROBaseConstraint& ROBaseConstraint::operator= (const ROUnLinConstraint & *p_expr*)

The assignment operator "=".

Parameters

p_expr	A referrence to an **ROUnLinConstraint** (p. 39) instance.

Returns

ROBaseConstraint (p. 7)& A reference of current invoking object.

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

- include/ROBaseConstraint.h

3.2 ROBinVar Class Reference

`#include <ROBinVar.h>`

Public Member Functions

- **ROBinVar** (const std::string &p_name="")
- **ROBinVar** (const **ROBinVar** &p_binVar)
- const **ROVar** & **getVar** () const

3.2.1 Detailed Description

An instance of this class is an binary variable without uncertainty.

Date: 31-May-2013

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 23 of file ROBinVar.h.

3.2.2 Constructor & Destructor Documentation

3.2.2.1 ROBinVar::ROBinVar (const std::string & *p_name* = " ")

This constructor creates an **ROBinVar** (p. 9) instance from given name.

Parameters

p_name	Name of invoking object.

3.2.2.2 ROBinVar::ROBinVar (const ROBinVar & *p_binVar*)

The copy constructor.

Parameters

p_binVar	A referrence to an **ROBinVar** (p. 9) instance.

3.2.3 Member Function Documentation

3.2.3.1 const ROVar& ROBinVar::getVar ( ) const

Get the variable referrence.

Returns

ROVar (p. 48)& A referrence to the invoking object of **ROBinVar** (p. 9).

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

- include/ROBinVar.h

3.3 ROConstraint Class Reference

`#include <ROConstraint.h>`

Public Member Functions

- **ROConstraint** ()
- **ROConstraint** (const **ROBaseConstraint** &p_varConst, const **ROConstraintSet** &p_uncertaintySet)
- **ROConstraint** (const **ROConstraintSet** &p_varConstSet, const **ROConstraintSet** &p_uncertaintySet)
- **ROConstraint** (const **ROBaseConstraint** &p_varConst, const ROUnLinConstraintArray &p_unConstArray, const ROUnSOCConstraintArray &p_unNormConstArray)
- **ROConstraint** (const **ROBaseConstraint** &p_varConst, const **ROUnLinConstraint** &p_unConst, const ROUnSOCConstraintArray &p_unNormConstArray)
- **ROConstraint** (const **ROBaseConstraint** &p_varConst, const ROUnLinConstraintArray &p_unConstArray, const **ROUnSOCConstraint** &p_unNormConst)
- **ROConstraint** (const **ROBaseConstraint** &p_varConst, const **ROUnLinConstraint** &p_unConst, const **ROUnSOCConstraint** &p_unNormConst)
- **ROConstraint** (const **ROBaseConstraint** &p_varConst, const ROUnLinConstraintArray &p_unConstArray)
- **ROConstraint** (const **ROBaseConstraint** &p_varConst, const **ROUnLinConstraint** &p_unConst)
- **ROConstraint** (const **ROBaseConstraint** &p_varConst, const ROUnSOCConstraintArray &p_unNormConstArray)
- **ROConstraint** (const **ROBaseConstraint** &p_varConst, const **ROUnSOCConstraint** &p_unNormConst)
- **ROConstraint** (const **ROBaseConstraint** &p_const)
- **ROConstraint** (const **ROConstraint** &p_const)
- **ROConstraint** & **operator=** (const **ROConstraint** &p_const)

3.3.1 Detailed Description

An instance of this class is a constraint in a model. A constraint could be either a **ROBaseConstraint** (p. 7) or a **ROConstraint** (p. 10) with uncertainty set.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 25 of file ROConstraint.h.

3.3.2 Constructor & Destructor Documentation

3.3.2.1 ROConstraint::ROConstraint ( )

The default constructor which creates an empty object. It must be initialized before use.

3.3.2.2 ROConstraint::ROConstraint (const ROBaseConstraint & *p_varConst,* const ROConstraintSet & *p_uncertaintySet*)

This constructor creates a **ROConstraint** (p. 10) from **ROBaseConstraint** (p. 7) and **ROConstraintSet** (p. 14).

Parameters

p_varConst	A referrence to a **ROBaseConstraint** (p. 7) instance which specifies the primary variable constraint.
p_uncertaintySet	A referrence to a **ROConstraintSet** (p. 14) instance which specifies the set of uncertainty constraints.

3.3.2.3 ROConstraint::ROConstraint (const ROConstraintSet & *p_varConstSet,* const ROConstraintSet & *p_uncertaintySet*)

This constructor creates a **ROConstraint** (p. 10) from **ROConstraintSet** (p. 14) and **ROConstraintSet** (p. 14).

Parameters

p_varConstSet	A referrence to a **ROConstraintSet** (p. 14) instance which specifies a set of base constraints.
p_uncertaintySet	A referrence to a **ROConstraintSet** (p. 14) instance which specifies the set of uncertainty constraints.

3.3.2.4 ROConstraint::ROConstraint (const ROBaseConstraint & *p_varConst,* const ROUnLinConstraintArray & *p_unConstArray,* const ROUnSOCConstraintArray & *p_unNormConstArray*)

This constructor creates a **ROConstraint** (p. 10) from **ROBaseConstraint** (p. 7), ROUnLinConstraintArray and ROUnSOCConstraintArray.

Parameters

p_varConst	A referrence to a **ROBaseConstraint** (p. 7) instance which specifies the primary variable constraint.
p_unConstArray	A referrence to a ROUnLinConstraintArray instance which specifies the base set of uncertainty constraints.
p_unNormConstArray	A referrence to a ROUnSOCConstraintArray instance which specifies the norm set of uncertainty constraints.

3.3.2.5 ROConstraint::ROConstraint (const ROBaseConstraint & *p_varConst,* const ROUnLinConstraint & *p_unConst,* const ROUnSOCConstraintArray & *p_unNormConstArray*)

This constructor creates a **ROConstraint** (p. 10) from **ROBaseConstraint** (p. 7), **ROUnLinConstraint** (p. 39) and ROUnSOCConstraintArray.

Parameters

p_varConst	A referrence to a **ROBaseConstraint** (p. 7) instance which specifies the primary variable constraint.
p_unConst	A referrence to a **ROUnLinConstraint** (p. 39) instance which specifies an base uncertainty constraint.
p_unNormConstArray	A referrence to a ROUnSOCConstraintArray instance which specifies the norm set of uncertainty constraints.

3.3.2.6 ROConstraint::ROConstraint (const ROBaseConstraint & *p_varConst,* const ROUnLinConstraintArray & *p_unConstArray,* const ROUnSOCConstraint & *p_unNormConst*)

This constructor creates a **ROConstraint** (p. 10) from **ROBaseConstraint** (p. 7), ROUnLinConstraintArray and **ROUnSOCConstraint** (p. 41).

Parameters

p_varConst	A referrence to a **ROBaseConstraint** (p. 7) instance which specifies the primary variable constraint.
p_unConstArray	A referrence to a ROUnLinConstraintArray instance which specifies the base set of uncertainty constraints.
p_unNormConst	A referrence to a **ROUnSOCConstraint** (p. 41) instance which specifies a norm uncertainty constraint.

3.3.2.7 ROConstraint::ROConstraint (const ROBaseConstraint & *p_varConst,* const ROUnLinConstraint & *p_unConst,* const ROUnSOCConstraint & *p_unNormConst*)

This constructor creates a **ROConstraint** (p. 10) from **ROBaseConstraint** (p. 7), **ROUnLinConstraint** (p. 39) and **ROUnSOCConstraint** (p. 41).

Parameters

p_varConst	A referrence to a **ROBaseConstraint** (p. 7) instance which specifies the primary variable constraint.
p_unConst	A referrence to a **ROUnLinConstraint** (p. 39) instance which specifies an base uncertainty constraint.
p_unNormConst	A referrence to a **ROUnSOCConstraint** (p. 41) instance which specifies a norm uncertainty constraint.

3.3.2.8 ROConstraint::ROConstraint (const ROBaseConstraint & *p_varConst,* const ROUnLinConstraintArray & *p_unConstArray*)

This constructor creates a **ROConstraint** (p. 10) from **ROBaseConstraint** (p. 7) and ROUnLinConstraintArray.

Parameters

p_varConst	A referrence to a **ROBaseConstraint** (p. 7) instance which specifies the primary variable constraint.
p_unConstArray	A referrence to a ROUnLinConstraintArray instance which specifies the set of base uncertainty constraints.

3.3.2.9 ROConstraint::ROConstraint (const ROBaseConstraint & *p_varConst,* const ROUnLinConstraint & *p_unConst*)

This constructor creates a **ROConstraint** (p. 10) from **ROBaseConstraint** (p. 7) and **ROUnLinConstraint** (p. 39).

Parameters

p_varConst	A referrence to a **ROBaseConstraint** (p. 7) instance which specifies the primary variable constraint.
p_unConst	A referrence to a **ROUnLinConstraint** (p. 39) instance which specifies an base uncertainty constraint.

3.3.2.10 ROConstraint::ROConstraint (const ROBaseConstraint & *p_varConst,* const ROUnSOCConstraintArray & *p_unNormConstArray*)

This constructor creates a **ROConstraint** (p. 10) from **ROBaseConstraint** (p. 7) and ROUnSOCConstraintArray.

Parameters

p_varConst	A referrence to a **ROBaseConstraint** (p. 7) instance which specifies the primary variable constraint.
p_unNormConstArray	A referrence to a ROUnSOCConstraintArray instance which specifies the norm set of uncertainty constraints.

3.3.2.11 ROConstraint::ROConstraint (const ROBaseConstraint & *p_varConst,* const ROUnSOCConstraint & *p_unNormConst*)

This constructor creates a **ROConstraint** (p. 10) from **ROBaseConstraint** (p. 7) and **ROUnSOCConstraint** (p. 41).

Parameters

p_varConst	A referrence to a **ROBaseConstraint** (p. 7) instance which specifies the primary variable constraint.
p_unNormConst	A referrence to a **ROUnSOCConstraint** (p. 41) instance which specifies a norm uncertainty constraint.

3.3.2.12 ROConstraint::ROConstraint (const ROBaseConstraint & *p_const*)

This constructor creates a **ROConstraint** (p. 10) from **ROBaseConstraint** (p. 7), no uncertainty attached.

Parameters

p_const	A referrence to a **ROBaseConstraint** (p. 7) instance which specifies the primary variable constraint.

3.3.2.13 ROConstraint::ROConstraint (const ROConstraint & *p_const*)

The copy constructor.

Parameters

p_const	A referrence to a **ROConstraint** (p. 10) instance.

3.3.3 Member Function Documentation

3.3.3.1 ROConstraint& ROConstraint::operator= (const ROConstraint & *p_const*)

The assignment operator "="

Parameters

p_const	A referrence to a **ROConstraint** (p. 10) instance.

Returns

ROConstraint (p. 10)& A reference of the invokign object.

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

- include/ROConstraint.h

3.4 ROConstraintSet Class Reference

`#include <ROConstraintSet.h>`

Public Member Functions

- **ROConstraintSet** ()
- **ROConstraintSet** (const **ROConstraintSet** &p_constSet)
- **ROConstraintSet** (const **ROBaseConstraint** &p_baseConst)
- **ROConstraintSet** (const ROUnLinConstraintArray &p_unConstArray, const ROUnSOCConstraintArray &p_unNormConstArray)
- **ROConstraintSet** (const **ROUnLinConstraint** &p_unConst, const ROUnSOCConstraintArray &p_unNormConstArray)
- **ROConstraintSet** (const ROUnLinConstraintArray &p_unConstArray, const **ROUnSOCConstraint** &p_unNormConst)
- **ROConstraintSet** (const **ROUnLinConstraint** &p_unConst, const **ROUnSOCConstraint** &p_unNormConst)
- **ROConstraintSet** (const ROUnLinConstraintArray &p_unConstArray)
- **ROConstraintSet** (const **ROUnLinConstraint** &p_unConst)
- **ROConstraintSet** (const ROUnSOCConstraintArray &p_unNormConstArray)
- **ROConstraintSet** (const **ROUnSOCConstraint** &p_unNormConst)
- **ROConstraintSet** & **operator=** (const **ROConstraintSet** &p_const)
- void **set** (const **ROBaseConstraint** &p_baseConst)
- void **add** (const **ROBaseConstraint** &p_baseConst)
- void **add** (const **ROUnLinConstraint** &p_unConst)
- void **add** (const **ROUnSOCConstraint** &p_socConst)
- void **add** (const **ROConstraintSet** &p_constSet)

3.4.1 Detailed Description

An instance of this class is a set of constraints in a model.

Date: 17-Oct-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 19 of file ROConstraintSet.h.

3.4.2 Constructor & Destructor Documentation

3.4.2.1 ROConstraintSet::ROConstraintSet ( )

The default constructor which creates an empty object. It must be initialized before use.

3.4.2.2 ROConstraintSet::ROConstraintSet (const **ROConstraintSet** & *p_constSet*)

This is the copy constructor.

Parameters

p_constSet	A referrence to a **ROConstraintSet** (p. 14) instance.

3.4.2.3 ROConstraintSet::ROConstraintSet (const **ROBaseConstraint** & *p_baseConst*)

This constructor creates a **ROConstraintSet** (p. 14) from a single base constraint.

Parameters

p_baseConst	A referrence to a **ROBaseConstraint** (p. 7) instance.

3.4.2.4 ROConstraintSet::ROConstraintSet (const ROUnLinConstraintArray & *p_unConstArray,* const ROUnSOCConstraintArray & *p_unNormConstArray*)

This constructor creates a **ROConstraintSet** (p. 14) from ROUnLinConstraintArray and ROUnSOCConstraintArray.

Parameters

p_unConstArray	A referrence to a ROUnLinConstraintArray instance.
p_unNorm-ConstArray	A referrence to a ROUnSOCConstraintArray instance.

3.4.2.5 ROConstraintSet::ROConstraintSet (const **ROUnLinConstraint** & *p_unConst,* const ROUnSOCConstraintArray & *p_unNormConstArray*)

This constructor creates a **ROConstraintSet** (p. 14) from **ROUnLinConstraint** (p. 39) and ROUnSOCConstraint-Array.

Parameters

p_unConst	A referrence to a **ROUnLinConstraint** (p. 39) instance.
p_unNorm-ConstArray	A referrence to a ROUnSOCConstraintArray instance.

3.4.2.6 ROConstraintSet::ROConstraintSet (const ROUnLinConstraintArray & *p_unConstArray,* const **ROUnSOCConstraint** & *p_unNormConst*)

This constructor creates a **ROConstraintSet** (p. 14) from ROUnLinConstraintArray and **ROUnSOCConstraint** (p. 41).

Parameters

p_unConstArray	A referrence to a ROUnLinConstraintArray instance.
p_unNormConst	A referrence to a **ROUnSOCConstraint** (p. 41) instance.

3.4.2.7 ROConstraintSet::ROConstraintSet (const ROUnLinConstraint & *p_unConst*, const ROUnSOCConstraint & *p_unNormConst*)

This constructor creates a **ROConstraintSet** (p. 14) from **ROUnLinConstraint** (p. 39) and **ROUnSOCConstraint** (p. 41).

Parameters

p_unConst	A referrence to a p_unConst instance.
p_unNormConst	A referrence to a **ROUnSOCConstraint** (p. 41) instance.

3.4.2.8 ROConstraintSet::ROConstraintSet (const ROUnLinConstraintArray & *p_unConstArray*)

This constructor creates a **ROConstraintSet** (p. 14) from ROUnLinConstraintArray.

Parameters

p_unConstArray	A referrence to a ROUnLinConstraintArray instance.

3.4.2.9 ROConstraintSet::ROConstraintSet (const ROUnLinConstraint & *p_unConst*)

This constructor creates an **ROConstraintSet** (p. 14) from **ROUnLinConstraint** (p. 39).

Parameters

p_unConst	A referrence to a **ROUnLinConstraint** (p. 39) instance.

3.4.2.10 ROConstraintSet::ROConstraintSet (const ROUnSOCConstraintArray & *p_unNormConstArray*)

This constructor creates an **ROConstraintSet** (p. 14) from ROUnSOCConstraintArray.

Parameters

p_unNorm-ConstArray	A referrence to a ROUnSOCConstraintArray instance.

3.4.2.11 ROConstraintSet::ROConstraintSet (const ROUnSOCConstraint & *p_unNormConst*)

This constructor creates an **ROConstraintSet** (p. 14) from **ROUnSOCConstraint** (p. 41).

Parameters

p_unNormConst	A referrence to a **ROUnSOCConstraint** (p. 41) instance.

3.4.3 Member Function Documentation

3.4.3.1 void ROConstraintSet::add (const ROBaseConstraint & *p_baseConst*)

This member function add the elementary base constraint.

Parameters

p_baseConst	A referrence to a **ROBaseConstraint** (p. 7) instance.

Returns

NULL.

3.4.3.2 void ROConstraintSet::add (const ROUnLinConstraint & *p_unConst*)

This member function add the base uncertaint constraint.

Parameters

p_unConst	A referrence to a **ROUnLinConstraint** (p. 39) instance.

Returns

NULL.

3.4.3.3 void ROConstraintSet::add (const ROUnSOCConstraint & *p_socConst*)

This member function add the SOC uncertaint constraint.

Parameters

p_socConst	A referrence to a **ROUnSOCConstraint** (p. 41) instance.

Returns

NULL.

3.4.3.4 void ROConstraintSet::add (const ROConstraintSet & *p_constSet*)

This member function add a set of constraints.

Parameters

p_constSet	A referrence to a **ROConstraintSet** (p. 14) instance.

Returns

NULL.

3.4.3.5 ROConstraintSet& ROConstraintSet::operator= (const ROConstraintSet & *p_const*)

The assignment operator "=".

Parameters

p_const	A referrence to a **ROConstraintSet** (p. 14) instance.

Returns

ROConstraintSet (p. 14)& A reference of current invoking object.

3.4.3.6 void ROConstraintSet::set (const ROBaseConstraint & *p_baseConst*)

This member function add the primary base constraint.

Parameters

p_baseConst	A referrence to a **ROBaseConstraint** (p. 7) instance.

Returns

NULL.

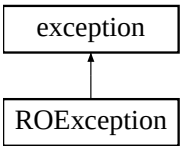
The documentation for this class was generated from the following file:

- include/ROConstraintSet.h

3.5 ROException Class Reference

`#include <roexceptions.h>`

Inheritance diagram for ROException:



3.5.1 Detailed Description

This class is the base class for exceptions in robust optimization.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 24 of file roexceptions.h.

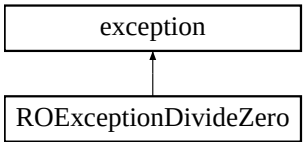
The documentation for this class was generated from the following file:

- include/roexceptions.h

3.6 ROExceptionDivideZero Class Reference

`#include <roexceptions.h>`

Inheritance diagram for ROExceptionDivideZero:



3.6.1 Detailed Description

An instance of this class is an exception thrown when expressions are divided by zero.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 86 of file roexceptions.h.

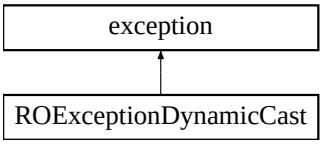
The documentation for this class was generated from the following file:

- include/roexceptions.h

3.7 ROExceptionDynamicCast Class Reference

`#include <roexceptions.h>`

Inheritance diagram for ROExceptionDynamicCast:



Public Member Functions

- **ROExceptionDynamicCast** (const char ∗log=NULL)
- virtual const char ∗ **what** () const throw ()

3.7.1 Detailed Description

An instance of this class is an exception thrown when dynamic cast impossible.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 148 of file roexceptions.h.

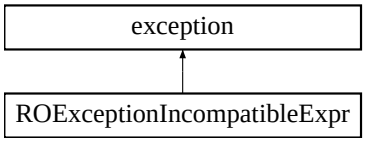
The documentation for this class was generated from the following file:

- include/roexceptions.h

3.8 ROExceptionIncompatibleExpr Class Reference

`#include <roexceptions.h>`

Inheritance diagram for ROExceptionIncompatibleExpr:



Public Member Functions

- **ROExceptionIncompatibleExpr** (const char *log=NULL)
- virtual const char * **what** () const throw ()

3.8.1 Detailed Description

An instance of this class is an exception thrown when types are incompatible.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 56 of file roexceptions.h.

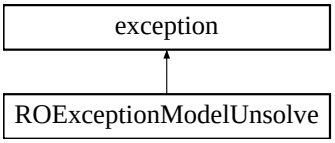
The documentation for this class was generated from the following file:

- include/roexceptions.h

3.9 ROExceptionModelUnsolve Class Reference

`#include <roexceptions.h>`

Inheritance diagram for ROExceptionModelUnsolve:



Public Member Functions

- **ROExceptionModelUnsolve** (const char *log=NULL)
- virtual const char * **what** () const throw ()

3.9.1 Detailed Description

An instance of this class is an exception thrown when model is used before solve.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 178 of file roexceptions.h.

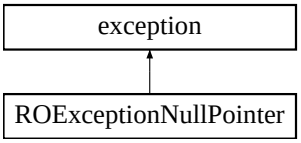
The documentation for this class was generated from the following file:

- include/roexceptions.h

3.10 ROExceptionNullPointer Class Reference

`#include <roexceptions.h>`

Inheritance diagram for ROExceptionNullPointer:



Public Member Functions

- **ROExceptionNullPointer** (const char *log=NULL)
- virtual const char * **what** () const throw ()

3.10.1 Detailed Description

An instance of this class is an exception thrown when null pointer encountered.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 118 of file roexceptions.h.

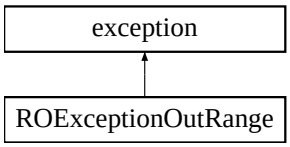
The documentation for this class was generated from the following file:

- include/roexceptions.h

3.11 ROExceptionOutRange Class Reference

`#include <roexceptions.h>`

Inheritance diagram for ROExceptionOutRange:



3.11.1 Detailed Description

An instance of this class is an exception thrown when index out of range.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 102 of file roexceptions.h.

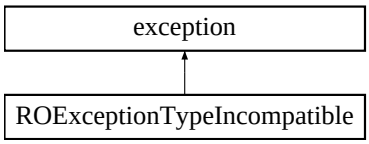
The documentation for this class was generated from the following file:

- include/roexceptions.h

3.12 ROExceptionTypeIncompatible Class Reference

`#include <roexceptions.h>`

Inheritance diagram for ROExceptionTypeIncompatible:



3.12.1 Detailed Description

An instance of this class is an exception thrown when types are incompatible.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 40 of file roexceptions.h.

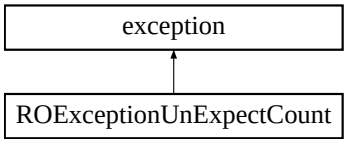
The documentation for this class was generated from the following file:

- include/roexceptions.h

3.13 ROExceptionUnExpectCount Class Reference

`#include <roexceptions.h>`

Inheritance diagram for ROExceptionUnExpectCount:



Public Member Functions

- **ROExceptionUnExpectCount** (const char ∗log=NULL)
- virtual const char ∗ **what** () const throw ()

3.13.1 Detailed Description

An instance of this class is an exception thrown when unexpected var or unvar count met.

Date: 05-Apr-2013

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 208 of file roexceptions.h.

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

- include/roexceptions.h

3.14 ROExpr Class Reference

`#include <ROExpr.h>`

Public Member Functions

- **ROExpr** ()
- **ROExpr** (const **ROExpr** &p_expr)
- **ROExpr** (const **ROVar** &p_var)
- **ROExpr** (const **ROIntVar** &p_var)
- **ROExpr** (const **ROBinVar** &p_var)
- **ROExpr** (const **ROUn** &p_un)
- **ROExpr** (RONum val)
- **ROExpr** & **operator=** (RONum p_num)
- **ROExpr** & **operator=** (const **ROVar** &p_var)
- **ROExpr** & **operator=** (const **ROUn** &p_un)
- **ROExpr** & **operator=** (const **ROExpr** &p_expr)
- **ROExpr** & **operator=** (const **ROVarDR** &p_varDR)
- **ROExpr** & **operator+=** (RONum p_val)
- **ROExpr** & **operator-=** (RONum p_val)
- **ROExpr** & **operator∗=** (RONum p_val)
- **ROExpr** & **operator/=** (RONum p_val)
- **ROExpr** & **operator+=** (const **ROVar** &p_var)
- **ROExpr** & **operator-=** (const **ROVar** &p_var)
- **ROExpr** & **operator+=** (const **ROUn** &p_un)
- **ROExpr** & **operator-=** (const **ROUn** &p_un)
- **ROExpr** & **operator+=** (const **ROExpr** &p_expr)
- **ROExpr** & **operator+=** (const **ROVarDR** &p_varDR)
- **ROExpr** & **operator-=** (const **ROExpr** &p_expr)
- **ROExpr** & **operator-=** (const **ROVarDR** &p_varDR)
- **ROExpr** & **operator∗=** (const **ROVar** &p_var)
- **ROExpr** & **operator∗=** (const **ROUn** &p_un)
- **ROExpr** & **operator∗=** (const **ROExpr** &p_expr)
- **ROExpr** & **expect** (const **ROUn** &p_un)
- **ROExpr** & **expect** (const **ROExpr** &p_expr)
- ∼**ROExpr** ()

3.14.1 Detailed Description

An instance of this class represents an expression in a model.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 21 of file ROExpr.h.

3.14.2 Constructor & Destructor Documentation

3.14.2.1 ROExpr::ROExpr ( )

This constructor creates an empty expression.

3.14.2.2 ROExpr::ROExpr (const ROExpr & *p_expr*)

The copy constructor of **ROExpr** (p. 24).

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

3.14.2.3 ROExpr::ROExpr (const ROVar & *p_var*)

The copy constructor of **ROExpr** (p. 24).

Parameters

p_var	A referrence to a **ROVar** (p. 48) instance.

3.14.2.4 ROExpr::ROExpr (const ROIntVar & *p_var*)

The copy constructor of **ROExpr** (p. 24).

Parameters

p_var	A referrence to a **ROIntVar** (p. 31) instance.

3.14.2.5 ROExpr::ROExpr (const ROBinVar & *p_var*)

The copy constructor of **ROExpr** (p. 24).

Parameters

p_var	A referrence to a **ROBinVar** (p. 9) instance.

3.14.2.6 ROExpr::ROExpr (const ROUn & *p_un*)

The copy constructor of **ROExpr** (p. 24).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

3.14.2.7 ROExpr::ROExpr (RONum *val*)

The copy constructor of **ROExpr** (p. 24).

Parameters

val	A RONum type number.

3.14.2.8 ROExpr::~ROExpr ( )

Destructor of **ROExpr** (p. 24).

3.14.3 Member Function Documentation

3.14.3.1 ROExpr& ROExpr::expect (const ROUn & *p_un*)

This member function takes the expected form of given **ROUn** (p. 37).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.2 ROExpr& ROExpr::expect (const ROExpr & *p_expr*)

This member function takes the expected form of given **ROExpr** (p. 24).

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.3 ROExpr& ROExpr::operator*= (RONum *p_val*)

This is the overloaded operator "*=" between **ROExpr** (p. 24) and RONum.

Parameters

p_val	An object of RONum.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.4 ROExpr& ROExpr::operator∗= (const ROVar & *p_var*)

This is the overloaded operator "∗=" between **ROExpr** (p. 24) and **ROVar** (p. 48).

Parameters

p_var	A referrence to a **ROVar** (p. 48) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.5 ROExpr& ROExpr::operator∗= (const ROUn & *p_un*)

This is the overloaded operator "∗=" between **ROExpr** (p. 24) and **ROUn** (p. 37).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.6 ROExpr& ROExpr::operator∗= (const ROExpr & *p_expr*)

This is the overloaded operator "∗=" between **ROExpr** (p. 24) and **ROExpr** (p. 24).

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.7 ROExpr& ROExpr::operator+= (RONum *p_val*)

This is the overloaded operator "+=" between **ROExpr** (p. 24) and RONum.

Parameters

p_val	An Object of RONum.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.8 ROExpr& ROExpr::operator+= (const ROVar & *p_var*)

This is the overloaded operator "+=" between **ROExpr** (p. 24) and **ROVar** (p. 48).

Parameters

p_var	A referrence to a **ROVar** (p. 48) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.9 ROExpr& ROExpr::operator+= (const ROUn & *p_un*)

This is the overloaded operator "+=" between **ROExpr** (p. 24) and **ROUn** (p. 37).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.10 ROExpr& ROExpr::operator+= (const ROExpr & *p_expr*)

This is the overloaded operator "+=" between **ROExpr** (p. 24) and **ROExpr** (p. 24).

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.11 ROExpr& ROExpr::operator+= (const ROVarDR & *p_varDR*)

This is the overloaded operator "+=" between **ROExpr** (p. 24) and **ROVarDR** (p. 50).

Parameters

p_varDR	A referrence to a **ROVarDR** (p. 50) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.12 ROExpr& ROExpr::operator-= (RONum *p_val*)

This is the overloaded operator "-=" between **ROExpr** (p. 24) and RONum.

Parameters

p_val	An object of RONum.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.13 ROExpr& ROExpr::operator-= (const ROVar & *p_var*)

This is the overloaded operator "-=" between **ROExpr** (p. 24) and **ROVar** (p. 48).

Parameters

p_var	A referrence to a **ROVar** (p. 48) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.14 ROExpr& ROExpr::operator-= (const ROUn & *p_un*)

This is the overloaded operator "-=" between **ROExpr** (p. 24) and **ROUn** (p. 37).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.15 ROExpr& ROExpr::operator-= (const ROExpr & *p_expr*)

This is the overloaded operator "-=" between **ROExpr** (p. 24) and **ROExpr** (p. 24).

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.16 ROExpr& ROExpr::operator-= (const ROVarDR & *p_varDR*)

This is the overloaded operator "-=" between **ROExpr** (p. 24) and **ROVarDR** (p. 50).

Parameters

p_varDR	A referrence to a **ROVarDR** (p. 50) instance.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.17 ROExpr& ROExpr::operator/= (RONum *p_val*)

This is the overloaded operator "/=" between **ROExpr** (p. 24) and RONum.

Parameters

p_val	An object of RONum.

Returns

ROExpr (p. 24)& A reference of current invoking instance.

3.14.3.18 ROExpr& ROExpr::operator= (RONum *p_num*)

This is the assignment "=" operator.

Parameters

p_num	A RONum type number.

Returns

ROExpr (p. 24)& A reference to current invoking instance.

3.14.3.19 ROExpr& ROExpr::operator= (const ROVar & *p_var*)

This is the assignment "=" operator.

Parameters

p_var	A referrence to a **ROVar** (p. 48) instance.

Returns

ROExpr (p. 24)& A reference to current invoking instance.

3.14.3.20 ROExpr& ROExpr::operator= (const ROUn & *p_un*)

This is the assignment "=" operator.

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

ROExpr (p. 24)& A reference to current invoking instance.

3.14.3.21 ROExpr& ROExpr::operator= (const ROExpr & *p_expr*)

This is the assignment "=" operator.

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance which would be copied by invoking instance.

Returns

ROExpr (p. 24)& A reference to current invoking instance.

3.14.3.22 ROExpr& ROExpr::operator= (const ROVarDR & *p_varDR*)

This is the assignment "=" operator. Caution : might lose underlying constraints attached with **ROVarDR** (p. 50).

Parameters

p_varDR	A referrence to a **ROVarDR** (p. 50) instance which would be copied by invoking instance.

Returns

ROExpr (p. 24)& A reference to current invoking instance.

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

- include/ROExpr.h

3.15 ROIntVar Class Reference

`#include <ROIntVar.h>`

Public Member Functions

- **ROIntVar** (const double p_lb=RONInfinity, const double p_ub=ROInfinity, const std::string &p_name="")
- **ROIntVar** (const **ROIntVar** &p_intVar)
- const **ROVar** & **getVar** () const

3.15.1 Detailed Description

An instance of this class is an integer variable without uncertainty.

Date: 31-May-2013

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 22 of file ROIntVar.h.

3.15.2 Constructor & Destructor Documentation

3.15.2.1 ROIntVar::ROIntVar (const double *p_lb* = RONInfinity, const double *p_ub* = ROInfinity, const std::string & *p_name* = " ")

This constructor creates an **ROIntVar** (p. 31) instance from given lower bound, upper bound, and name.

Parameters

p_lb	lower bound of invoking object.
p_ub	upper bound of invoking object.
p_name	name of invoking object.

3.15.2.2 ROIntVar::ROIntVar (const ROIntVar & *p_intVar*)

The copy constructor.

Parameters

p_intVar	A referrence to a **ROIntVar** (p. 31) instance.

3.15.3 Member Function Documentation

3.15.3.1 const ROVar& ROIntVar::getVar ( ) const

Get the underlying variable referrence.

Returns

ROVar (p. 48)& A reference of current invoking instance.

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

- include/ROIntVar.h

3.16 ROModel Class Reference

`#include <ROModel.h>`

Public Member Functions

- **ROModel** ()
- void **add** (const **ROBaseConstraint** &p_const)
- void **add** (ROBaseConstraintArray &p_constArray)
- void **add** (ROConstraintArray &p_constArray)
- void **add** (const **ROConstraint** &p_const)
- void **add** (const **ROConstraintSet** &p_constSet)
- void **add** (const **ROObjective** &p_obj)
- void **solve** ()
- RONum **getObjValue** ()
- std::string **getStatus** ()
- RONum **getVarValue** (const **ROVar** &p_var)
- void **exportModel** ()
- void **exportModel** (std::string &p_dirPath)
- ~**ROModel** ()

3.16.1 Detailed Description

An instance of this class represents a model. A model consists of constraints, constrained variables, objectives, and possibly other modeling objects, that represents a robust optimization problem.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 20 of file ROModel.h.

3.16.2 Constructor & Destructor Documentation

3.16.2.1 ROModel::ROModel ( )

The default constructor which creates an empty model. It must be initialized before use.

3.16.2.2 ROModel::~ROModel ( )

Destructor of **ROExpr** (p. 24).

3.16.3 Member Function Documentation

3.16.3.1 void ROModel::add (const ROBaseConstraint & *p_const*)

This member function adds "ROBaseConstraintArray" object (array of base constraints) to the invoking model.

Parameters

p_const	A referrence to a "ROBaseConstraint" instance.

Returns

NULL.

3.16.3.2 void ROModel::add (ROBaseConstraintArray & *p_constArray*)

This member function adds "ROBaseConstraintArray" object (array of base constraints) to the invoking model.

Parameters

p_constArray	A referrence to a "ROBaseConstraint" instance.

Returns

NULL.

3.16.3.3 void ROModel::add (ROConstraintArray & *p_constArray*)

This member function adds "ROConstraintArray" object (array of ro-constraints) to the invoking model.

Parameters

p_constArray	A referrence to a "ROConstraintArray" instance.

Returns

NULL.

3.16.3.4 void ROModel::add (const ROConstraint & *p_const*)

This member function adds "ROConstraint" object to the invoking model.

Parameters

p_const	A referrence to a "ROConstraint" instance.

Returns

NULL.

3.16.3.5 void ROModel::add (const ROConstraintSet & *p_constSet*)

This member function adds "ROConstraintSet" object to the invoking model.

Parameters

p_constSet	A referrence to a "ROConstraintSet" instance.

Returns

NULL.

3.16.3.6 void ROModel::add (const ROObjective & *p_obj*)

This member function adds "ROObjective" object to the invoking model.

Parameters

p_obj	A referrence to a "ROObjective" instance.

Returns

NULL.

3.16.3.7 void ROModel::exportModel ( )

This member function would print the LP formulation of invoking model in default path.

Returns

NULL.

3.16.3.8 void ROModel::exportModel (std::string & *p_dirPath*)

This member function would print the LP formulation of invoking model in specified directory.

Parameters

std::string	Specified directory path.

Returns

NULL.

3.16.3.9 RONum ROModel::getObjValue ( )

This member function returns the objective value of invoking model if it finds a solution.

Returns

Objective value.

3.16.3.10 std::string ROModel::getStatus ( )

This member function returns the status of the model after call **solve()** (p. 35).

See Also

solve() (p. 35).

Returns

status after model solving.

3.16.3.11 RONum ROModel::getVarValue (const ROVar & *p_var*)

This member function returns the solution of a specified variable.

Parameters

p_var	A referrence to a **ROVar** (p. 48) instance.

Returns

RONum The solved solution of specified variable.

3.16.3.12 void ROModel::solve ( )

This member function solves the current model.

Returns

NULL.

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

- include/ROModel.h

3.17 ROObjective Class Reference

`#include <ROObjective.h>`

Public Member Functions

- **ROObjective** (const **ROUnVarC** &p_unVarC, const **ROConstraintSet** &, const ROObjectiveTag p_tag=EnumMin)
- **ROObjective** (const **ROUnVarC** &p_unVarC, const ROObjectiveTag p_tag=EnumMin)
- **ROObjective** (const **ROObjective** &p_obj)
- **ROObjective** & **operator=** (const **ROObjective** &p_obj)
- ROObjectiveTag **getTag** () const

3.17.1 Detailed Description

An instance of this class is an objective in a model. An objective consists of its obj tag and an expression.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 23 of file ROObjective.h.

3.17.2 Constructor & Destructor Documentation

3.17.2.1 ROObjective::ROObjective (const ROUnVarC & *p_unVarC,* const ROConstraintSet & , const ROObjectiveTag *p_tag* = `EnumMin`)

This constructor creates an **ROObjective** (p. 36) object from given **ROUnVarC** (p. 42), uncertainty set and ROObjectiveTag.

Parameters

p_unVarC	A referrence to a **ROUnVarC** (p. 42) instance.
p_constSet	A referrence to a **ROConstraintSet** (p. 14) instance which is the uncertainty set.
p_tag	The **ROObjective** (p. 36) tag. (Minimize or Maximize).

3.17.2.2 ROObjective::ROObjective (const ROUnVarC & *p_unVarC*, const ROObjectiveTag *p_tag* = EnumMin)

This constructor creates an **ROObjective** (p. 36) object from given **ROUnVarC** (p. 42) and ROObjectiveTag.

Parameters

p_unVarC	A referrence to a **ROUnVarC** (p. 42) instance.
p_tag	The **ROObjective** (p. 36) tag. (Minimize or Maximize).

3.17.2.3 ROObjective::ROObjective (const ROObjective & *p_obj*)

This is the copy constructor of **ROObjective** (p. 36).

Parameters

p_obj	A referrence to a **ROObjective** (p. 36) instance.

3.17.3 Member Function Documentation

3.17.3.1 ROObjectiveTag ROObjective::getTag ( ) const

This member function returns the objective tag of invoking objective. (Minimize or Maximize)

Returns

ROObjectiveTag The **ROObjective** (p. 36) tag of invoking objective instance.

3.17.3.2 ROObjective& ROObjective::operator= (const ROObjective & *p_obj*)

This is the assignment operator "=".

Parameters

p_obj	A referrence to a **ROObjective** (p. 36) instance.

Returns

ROObjective (p. 36)& The reference of current invoking object.

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

- include/ROObjective.h

3.18 ROUn Class Reference

`#include <ROUn.h>`

Public Member Functions

- **ROUn** ()
- **ROUn** (const **ROUn** &p_un)
- int **getId** () const
- ~**ROUn** ()

Static Public Member Functions

- static int **getNo** ()

Friends

- class **ROModel**

3.18.1 Detailed Description

An instance of this class is an uncertain variable.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 24 of file ROUn.h.

3.18.2 Constructor & Destructor Documentation

3.18.2.1 ROUn::ROUn ( )

The default constructor of **ROUn** (p. 37).

3.18.2.2 ROUn::ROUn (const ROUn & *p_un*)

The copy constructor of **ROUn** (p. 37).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

3.18.2.3 ROUn::~ROUn ( )

The destructor of **ROUn** (p. 37).

3.18.3 Member Function Documentation

3.18.3.1 int ROUn::getId ( ) const

This member function returns the unique ID of invoking uncertainty variable.

Returns

int Unique ID of invoking object.

3.18.3.2 static int ROUn::getNo ( ) [static]

Return the number of uncertain variables created.

Returns

int Number of uncertain variables generated.

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

- include/ROUn.h

3.19 ROUnLinConstraint Class Reference

`#include <ROUnLinConstraint.h>`

Public Member Functions

- **ROUnLinConstraint** (const **ROUnLinConstraint** &p_unConst)
- **ROUnLinConstraint** (const **ROBaseConstraint** &p_baseConst)
- **ROUnLinConstraint** (const ROConstTag p_tag=EnumLeq)
- **ROUnLinConstraint** & **operator=** (const **ROUnLinConstraint** &p_expr)
- **ROUnLinConstraint** & **operator=** (const **ROBaseConstraint** &p_expr)
- ROConstTag **getTag** () const

3.19.1 Detailed Description

An instance of this class is an uncertain linear constraint in a model. A base constraint consists of its equation tag and an expression (LHS).

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 26 of file ROUnLinConstraint.h.

3.19.2 Constructor & Destructor Documentation

3.19.2.1 ROUnLinConstraint::ROUnLinConstraint (const ROUnLinConstraint & *p_unConst*)

This is the copy constructor.

Parameters

p_unConst	A referrence to a **ROUnLinConstraint** (p. 39) instance.

3.19.2.2 ROUnLinConstraint::ROUnLinConstraint (const ROBaseConstraint & *p_baseConst*)

This is the copy constructor.

Parameters

p_baseConst	A referrence to a **ROBaseConstraint** (p. 7) instance.

3.19.2.3 ROUnLinConstraint::ROUnLinConstraint (const ROConstTag *p_tag* = `EnumLeq`)

The default constructor of **ROUnLinConstraint** (p. 39).

Parameters

p_tag	An object of ROConstTag, default is "<=".

3.19.3 Member Function Documentation

3.19.3.1 ROConstTag ROUnLinConstraint::getTag ( ) const

This member function returns the equation tag ("<=" or "==") of invoking object.

Returns

ROConstTag The equation tag ("<=" or "==") of invoking object.

3.19.3.2 ROUnLinConstraint& ROUnLinConstraint::operator= (const ROUnLinConstraint & *p_expr*)

The assignment operator "=".

Parameters

p_expr	A referrence to a **ROUnLinConstraint** (p. 39) instance.

Returns

ROUnLinConstraint (p. 39)& A reference of current invoking object.

3.19.3.3 ROUnLinConstraint& ROUnLinConstraint::operator= (const ROBaseConstraint & *p_expr*)

The assignment operator "=".

Parameters

p_expr	A referrence to a **ROBaseConstraint** (p. 7) instance.

Returns

ROUnLinConstraint (p. 39)& A reference of current invoking object.

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

- include/ROUnLinConstraint.h

3.20 ROUnSOCConstraint Class Reference

`#include <ROUnSOCConstraint.h>`

Public Member Functions

- **ROUnSOCConstraint** ()
- **ROUnSOCConstraint** (const **ROUnSOCConstraint** &p_unSOC)
- **ROUnSOCConstraint** (ROExprArray &p_exprArray, const **ROExpr** &p_expr)
- **ROUnSOCConstraint** (ROUnArray &p_unArray, const **ROExpr** &p_expr)
- **ROUnSOCConstraint** (const **ROExpr** &p_expr, ROExprArray &p_exprArray)
- **ROUnSOCConstraint** (const **ROExpr** &p_exprL, const **ROExpr** &p_exprR)
- **ROUnSOCConstraint** & **operator=** (const **ROUnSOCConstraint** &p_normConst)

3.20.1 Detailed Description

An instance of this class is a norm uncertainty constraint in a **ROConstraint** (p. 10).

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 22 of file ROUnSOCConstraint.h.

3.20.2 Constructor & Destructor Documentation

3.20.2.1 ROUnSOCConstraint::ROUnSOCConstraint ( )

This constructor creates an empty norm uncertainty constraint. It must be initialized before use.

3.20.2.2 ROUnSOCConstraint::ROUnSOCConstraint (const ROUnSOCConstraint & *p_unSOC*)

This copy constructor, which creates from another **ROUnSOCConstraint** (p. 41) object.

Parameters

p_unSOC	A referrence to a **ROUnSOCConstraint** (p. 41) instance.

3.20.2.3 ROUnSOCConstraint::ROUnSOCConstraint (ROExprArray & *p_exprArray,* const ROExpr & *p_expr*)

This constructor creates a SOC uncertainty constraint from an object of **ROExpr** (p. 24) and an object of ROExpr-Array. the default equation tag is "<="

Parameters

p_exprArray	A referrence to a ROExprArray instance.
p_expr	A referrence to a **ROExpr** (p. 24) instance.

3.20.2.4 ROUnSOCConstraint::ROUnSOCConstraint (ROUnArray & *p_unArray,* const **ROExpr** & *p_expr*)

This constructor creates a SOC uncertainty constraint from an object of **ROExpr** (p. 24) and an object of ROExprArray. the default equation tag is "<="

Parameters

p_unArray	A referrence to a ROUnArray instance.
p_expr	A referrence to a **ROExpr** (p. 24) instance.

3.20.2.5 ROUnSOCConstraint::ROUnSOCConstraint (const **ROExpr** & *p_expr,* ROExprArray & *p_exprArray*)

This constructor creates a SOC uncertainty constraint from an object of **ROExpr** (p. 24) and an object of ROExprArray. the default equation tag is ">="

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.
p_exprArray	A referrence to a ROExprArray instance.

3.20.2.6 ROUnSOCConstraint::ROUnSOCConstraint (const **ROExpr** & *p_exprL,* const **ROExpr** & *p_exprR*)

This constructor creates a SOC uncertainty constraint from two instances of **ROExpr** (p. 24). the default equation tag is "<="

Parameters

p_exprL	A referrence to a **ROExpr** (p. 24) instance.
p_exprR	A referrence to a **ROExpr** (p. 24) instance.

3.20.3 Member Function Documentation

3.20.3.1 ROUnSOCConstraint& ROUnSOCConstraint::operator= (const ROUnSOCConstraint & *p_normConst*)

This is the assignment operator "=".

Parameters

p_normConst	A referrence to a **ROUnSOCConstraint** (p. 41) instance.

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

- include/ROUnSOCConstraint.h

3.21 ROUnVarC Class Reference

`#include <ROUnVarC.h>`

Public Member Functions

- **ROUnVarC** ()
- **ROUnVarC** (const **ROUnVarC** &p_unC)
- **ROUnVarC** & **operator=** (const **ROUnVarC** &p_unC)

- **ROUnVarC** & **operator=** (const **ROExpr** &p_expr)
- **ROUnVarC** & **operator+=** (RONum p_val)
- **ROUnVarC** & **operator-=** (RONum p_val)
- **ROUnVarC** & **operator∗=** (RONum p_val)
- **ROUnVarC** & **operator/=** (RONum p_val)
- **ROUnVarC** & **operator+=** (const **ROVar** &p_var)
- **ROUnVarC** & **operator-=** (const **ROVar** &p_var)
- **ROUnVarC** & **operator+=** (const **ROUn** &p_un)
- **ROUnVarC** & **operator-=** (const **ROUn** &p_un)
- **ROUnVarC** & **operator+=** (const **ROExpr** &p_expr)
- **ROUnVarC** & **operator+=** (const **ROUnVarC** &p_varC)
- **ROUnVarC** & **operator-=** (const **ROExpr** &p_expr)
- **ROUnVarC** & **operator-=** (const **ROUnVarC** &p_unC)
- **ROUnVarC** & **operator∗=** (const **ROVar** &p_var)
- **ROUnVarC** & **operator∗=** (const **ROUn** &p_un)
- **ROUnVarC** & **operator∗=** (const **ROExpr** &p_expr)
- **ROUnVarC** & **expect** (const **ROUn** &p_un)
- **ROUnVarC** & **expect** (const **ROExpr** &p_expr)

3.21.1 Detailed Description

An instance of this class is a composite expression.

Date: 1-Nov-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 23 of file ROUnVarC.h.

3.21.2 Constructor & Destructor Documentation

3.21.2.1 ROUnVarC::ROUnVarC ( )

This constructor creates an empty expression of **ROUnVarC** (p. 42).

3.21.2.2 ROUnVarC::ROUnVarC (const ROUnVarC & *p_unC*)

The copy constructor of **ROUnVarC** (p. 42).

Parameters

p_unC	A referrence to a **ROUnVarC** (p. 42) instance.

3.21.3 Member Function Documentation

3.21.3.1 ROUnVarC& ROUnVarC::expect (const ROUn & *p_un*)

This member function takes the expected form of given **ROUn** (p. 37).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.2 ROUnVarC& ROUnVarC::expect (const ROExpr & *p_expr*)

This member function takes the expected form of given **ROExpr** (p. 24).

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.3 ROUnVarC& ROUnVarC::operator∗= (RONum *p_val*)

This is the overloaded operator "∗=" between **ROUnVarC** (p. 42) and RONum.

Parameters

p_val	An object of RONum.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.4 ROUnVarC& ROUnVarC::operator∗= (const ROVar & *p_var*)

This is the overloaded operator "∗=" between **ROUnVarC** (p. 42) and **ROVar** (p. 48).

Parameters

p_var	A referrence to a **ROVar** (p. 48) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.5 ROUnVarC& ROUnVarC::operator∗= (const ROUn & *p_un*)

This is the overloaded operator "∗=" between **ROUnVarC** (p. 42) and **ROUn** (p. 37).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.6 ROUnVarC& ROUnVarC::operator∗= (const ROExpr & *p_expr*)

This is the overloaded operator "∗=" between **ROUnVarC** (p. 42) and **ROExpr** (p. 24).

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.7 ROUnVarC& ROUnVarC::operator+= (RONum *p_val*)

This is the overloaded operator "+=" between **ROUnVarC** (p. 42) and RONum.

Parameters

p_val	An Object of RONum.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.8 ROUnVarC& ROUnVarC::operator+= (const ROVar & *p_var*)

This is the overloaded operator "+=" between **ROUnVarC** (p. 42) and **ROVar** (p. 48).

Parameters

p_var	A referrence to a **ROVar** (p. 48) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.9 ROUnVarC& ROUnVarC::operator+= (const ROUn & *p_un*)

This is the overloaded operator "+=" between **ROUnVarC** (p. 42) and **ROUn** (p. 37).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.10 ROUnVarC& ROUnVarC::operator+= (const ROExpr & *p_expr*)

This is the overloaded operator "+=" between **ROUnVarC** (p. 42) and **ROExpr** (p. 24).

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.11 ROUnVarC& ROUnVarC::operator+= (const ROUnVarC & *p_varC*)

This is the overloaded operator "+=" between **ROUnVarC** (p. 42) and **ROUnVarC** (p. 42).

Parameters

p_varC	A referrence to a **ROUnVarC** (p. 42) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.12 ROUnVarC& ROUnVarC::operator-= (RONum *p_val*)

This is the overloaded operator "-=" between **ROUnVarC** (p. 42) and RONum.

Parameters

p_val	An object of RONum.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.13 ROUnVarC& ROUnVarC::operator-= (const ROVar & *p_var*)

This is the overloaded operator "-=" between **ROUnVarC** (p. 42) and **ROVar** (p. 48).

Parameters

p_var	A referrence to a **ROVar** (p. 48) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.14 ROUnVarC& ROUnVarC::operator-= (const ROUn & *p_un*)

This is the overloaded operator "-=" between **ROUnVarC** (p. 42) and **ROUn** (p. 37).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.15 ROUnVarC& ROUnVarC::operator-= (const ROExpr & *p_expr*)

This is the overloaded operator "-=" between **ROUnVarC** (p. 42) and **ROExpr** (p. 24).

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.16 ROUnVarC& ROUnVarC::operator-= (const ROUnVarC & *p_unC*)

This is the overloaded operator "-=" between **ROUnVarC** (p. 42) and **ROUnVarC** (p. 42).

Parameters

p_unC	A referrence to a **ROUnVarC** (p. 42) instance.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.17 ROUnVarC& ROUnVarC::operator/= (RONum *p_val*)

This is the overloaded operator "/=" between **ROUnVarC** (p. 42) and RONum.

Parameters

p_val	An object of RONum.

Returns

ROUnVarC (p. 42)& A reference of current invoking instance.

3.21.3.18 ROUnVarC& ROUnVarC::operator= (const ROUnVarC & *p_unC*)

This is the assignment "=" operator.

Parameters

p_unC	A referrence to a **ROUnVarC** (p. 42) instance.

Returns

ROUnVarC (p. 42)& A reference to current invoking instance.

3.21.3.19 ROUnVarC& ROUnVarC::operator= (const ROExpr & *p_expr*)

This is the assignment "=" operator.

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

Returns

ROUnVarC (p. 42)& A reference to current invoking instance.

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

- include/ROUnVarC.h

3.22 ROVar Class Reference

`#include <ROVar.h>`

Public Member Functions

- **ROVar** (const double p_lb=RONInfinity, const double p_ub=ROInfinity, const std::string &p_name="", const ROVarType p_type=EnumROVar)
- **ROVar** (const **ROVar** &p_var)
- **ROVar** (const **ROIntVar** &p_intVar)
- **ROVar** (const **ROBinVar** &p_binVar)
- int **getId** () const
- ∼**ROVar** ()

Static Public Member Functions

- static int **getNo** ()

Friends

- class **ROModel**

3.22.1 Detailed Description

An instance of this class is an variable without uncertainty.

Date: 30-Sep-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 23 of file ROVar.h.

3.22.2 Constructor & Destructor Documentation

3.22.2.1 ROVar::ROVar (const double *p_lb* = RONInfinity, const double *p_ub* = ROInfinity, const std::string & *p_name* = " ", const ROVarType *p_type* = EnumROVar)

This constructor creates an **ROVar** (p. 48) instance from given lower bound, upper bound, and name.

Parameters

p_lb	lower bound of invoking object.
p_ub	upper bound of invoking object.
p_name	name of invoking object.
p_type	type of variable, e.g. int, bool, double

3.22.2.2 ROVar::ROVar (const ROVar & *p_var*)

The copy constructor.

Parameters

p_var	A referrence to a **ROVar** (p. 48) instance.

3.22.2.3 ROVar::ROVar (const ROIntVar & *p_intVar*)

The copy constructor. Date: 2013-06-01

Parameters

p_intVar	A referrence to a **ROIntVar** (p. 31) instance.

3.22.2.4 ROVar::ROVar (const ROBinVar & *p_binVar*)

The copy constructor. Date: 2013-06-01

Parameters

p_binVar	A referrence to a **ROBinVar** (p. 9) instance.

3.22.2.5 ROVar::~ROVar ( )

The destructor of **ROVar** (p. 48).

3.22.3 Member Function Documentation

3.22.3.1 int ROVar::getId ( ) const

This member function returns the unique ID of invoking variable.

Returns

int Unique ID of invoking object.

3.22.3.2 static int ROVar::getNo ( ) [static]

Return the number of variables created.

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

- include/ROVar.h

3.23 ROVarDR Class Reference

`#include <ROVarDR.h>`

Public Member Functions

- **ROVarDR** ()
- **ROExpr** & **getExpr** () const
- **ROVar** & **getVar** (**ROExpr** &p_expr) const
- **ROVar** & **getVar** (**ROUn** &p_un) const
- **ROVar** & **getVar** () const
- void **addDR** (**ROExpr** &p_expr)
- void **addDR** (**ROUn** &p_un)
- void **clone** (**ROVarDR** &p_varDR)

3.23.1 Detailed Description

An instance of this class is a decision rule variable.

Date: 1-Nov-2012

Author

Zhang Meilin, National University of Singapore

Version

1.0

Definition at line 24 of file ROVarDR.h.

3.23.2 Constructor & Destructor Documentation

3.23.2.1 ROVarDR::ROVarDR ( )

This constructor creates a decision rule variable without uncertainty.

3.23.3 Member Function Documentation

3.23.3.1 void ROVarDR::addDR (ROExpr & *p_expr*)

This member function adds an uncertain "ROExpr" to the invoking object's decision rule.

Parameters

p_expr	A referrence to **ROExpr** (p. 24).

Returns

NULL.

3.23.3.2 void ROVarDR::addDR (ROUn & *p_un*)

This member function adds an uncertain "ROUn" to the invoking object's decision rule.

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

NULL.

3.23.3.3 void ROVarDR::clone (ROVarDR & *p_varDR*)

This member function copy the decision rule from another **ROVarDR** (p. 50) variable.

Parameters

p_varDR	A referrence to a **ROVarDR** (p. 50) instance.

Returns

NULL.

3.23.3.4 ROExpr& ROVarDR::getExpr ( ) const

This member function returns the **ROExpr** (p. 24) of invoking object.

Returns

ROExpr (p. 24)& A referrence to the underlying **ROExpr** (p. 24) instance.

3.23.3.5 ROVar& ROVarDR::getVar (ROExpr & *p_expr*) const

This member function returns the referrence to the variable related to given uncertainty **ROExpr** (p. 24).

Parameters

p_expr	A referrence to a **ROExpr** (p. 24) instance.

Returns

ROVar (p. 48)& A referrence to **ROVar** (p. 48).

3.23.3.6 ROVar& ROVarDR::getVar (ROUn & *p_un*) const

This member function returns the referrence to the variable related to given uncertainty **ROUn** (p. 37).

Parameters

p_un	A referrence to a **ROUn** (p. 37) instance.

Returns

ROVar (p. 48)& A referrence to **ROVar** (p. 48).

3.23.3.7 ROVar& ROVarDR::getVar ( ) const

This member function returns the referrence to the variable not related to uncertainty.

Returns

ROVar (p. 48)& A referrence to **ROVar** (p. 48).

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

- include/ROVarDR.h

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