# Package 'clpAPI'

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Author Gabriel Gelius-Dietrich [aut, cre]
Maintainer Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>
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clpAPI-package

R Interface to C API of COIN-OR Clp

### **Description**

A low level interface to COIN-OR Clp (COIN Linear Program code).

#### **Details**

The package clpAPI provides access to the callable library of COIN-OR Clp from within R.

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

# **Examples**

```
# load package
library(clpAPI)
# preparing the model
lp <- initProbCLP()</pre>
nrows <- 5
ncols <- 8
# objective function
      <- c(1, 0, 0, 0, 2, 0, 0, -1)
# upper and lower bounds of the rows
rlower \leftarrow c(2.5, -1000, 4, 1.8, 3)
rupper \leftarrow c(1000, 2.1, 4, 5, 15)
# upper and lower bounds of the columns
clower \leftarrow c(2.5, 0, 0, 0, 0.5, 0, 0, 0)
cupper <- c(1000, 4.1, 1, 1, 4, 1000, 1000, 4.3)
# constraint matrix
ia <- c(0, 4, 0, 1, 1, 2, 0, 3, 0, 4, 2, 3, 0, 4)
ja <- c(0, 2, 4, 6, 8, 10, 11, 12, 14)
ar <- c(3.0, 5.6, 1.0, 2.0, 1.1, 1.0, -2.0, 2.8,
        -1.0, 1.0, 1.0, -1.2, -1.0, 1.9
```

# direction of optimization

4 addColsCLP

addColsCLP

Add Columns

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_addColumns. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
addColsCLP(lp, ncols, lb, ub, obj, colst, rows, val)
```

### **Arguments**

lp	An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.
ncols	Number of columns to add.
lb	Lower bounds of the new columns.
ub	Upper bounds of the new columns.
obj	Objective coeficients of the new columns.
colst	Vector containing the starting indices of new rows (Arguments rows and val must be in column major order). The first element of colst must be 0, the last element must be length(val)+1.
rows	Row indices of the non zero elements in the new columns.
val	Numerical values of the new non zero elements.

# **Details**

Interface to the C function addRows which calls the COIN-OR Clp function Clp\_addRows.

addRowsCLP 5

# Value

**NULL** 

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

# References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

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# Description

Low level interface function to the COIN-OR Clp function Clp\_addRows. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
addRowsCLP(lp, nrows, lb, ub, rowst, cols, val)
```

# **Arguments**

lp	An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.
nrows	Number of rows to add.
1b	Lower bounds of the new rows.
ub	Upper bounds of the new rows.
rowst	Vector containing the starting indices of new rows (Arguments cols and val must be in row major order). The first element of rowst must be $0$ , the last element must be length(val)+1.
cols	Column indices of the non zero elements in the new rows.
val	Numerical values of the new non zero elements.

# **Details**

Interface to the C function addRows which calls the COIN-OR Clp function Clp\_addRows.

### Value

NULL

6 chgColLowerCLP

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

chgColLowerCLP

Set/Change Column Lower Bounds

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_chgColumnLower. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
chgColLowerCLP(lp, lb)
```

# Arguments

Ip An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

1b Numeric vector containing the lower bounds of the columns of the model.

### **Details**

 $Interface \ to \ the \ C \ function \ chg ColLower \ which \ calls \ the \ COIN-OR \ Clp \ function \ Clp\_chg Column Lower.$ 

# Value

**NULL** 

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

### References

chgColUpperCLP 7

# Description

Low level interface function to the COIN-OR Clp function Clp\_chgColumnUpper. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
chgColUpperCLP(lp, ub)
```

# **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

ub Numeric vector containing the upper bounds of the columns of the model.

### **Details**

 $Interface \ to \ the \ C \ function \ chg \texttt{ColUpper} \ which \ calls \ the \ COIN-OR \ Clp \ function \ \texttt{Clp\_chgColumnUpper}.$ 

### Value

NULL

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

chg0bjCoefsCLP Set/Change Objective Coefficients
--

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_chgObjCoefficients. Consult the COIN-OR Clp documentation for more detailed information.

```
chgObjCoefsCLP(lp, objCoef)
```

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# **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

objCoef Numeric vector containing the objective coefficients of the model.

#### **Details**

Interface to the C function chgObjCoefs which calls the COIN-OR Clp function Clp\_chgObjCoefficients.

#### Value

**NULL** 

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

chgRowLowerCLP Set/Change Row Lower Bounds

# Description

Low level interface function to the COIN-OR Clp function Clp\_chgRowLower. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
chgRowLowerCLP(lp, rlb)
```

# Arguments

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

rlb Numeric vector containing the lower bounds of the rows of the model.

#### **Details**

Interface to the C function chgColLower which calls the COIN-OR Clp function Clp\_chgRowLower.

# Value

NULL

chgRowUpperCLP 9

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

chgRowUpperCLP

Set/Change Row Upper Bounds

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_chgRowUpper. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
chgRowUpperCLP(lp, rub)
```

# Arguments

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

rub Numeric vector containing the upper bounds of the rows of the model.

# **Details**

Interface to the C function chgRowUpper which calls the COIN-OR Clp function Clp\_chgRowUpper.

# Value

**NULL** 

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

### References

10 clpPtr-class

clpPtr-class

Class "clpPtr"

### **Description**

Structure of the class "clpPtr". Objects of that class are used to hold pointers to C structures used by COIN-OR Clp.

# **Objects from the Class**

```
Objects can be created by calls of the form test <- initProbCLP().
```

#### Slots

```
clpPtrType: Object of class "character" giving the pointer type.
clpPointer: Object of class "externalptr" containing the pointer to a C structure.
```

### Methods

```
isCLPpointer signature(object = "clpPtr"): returns TRUE if clpPointer(object) is a
    pointer to a COIN-OR Clp problem object, otherwise FALSE.

isNULLpointerCLP signature(object = "clpPtr"): returns TRUE if clpPointer(object) is
    a NULL pointer, otherwise FALSE.

clpPointer signature(object = "clpPtr"): gets the clpPointer slot.

clpPtrType signature(object = "clpPtr"): gets the clpPtrType slot.

clpPtrType- signature(object = "clpPtr"): sets the clpPtrType slot.
```

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

#### References

```
The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml
```

### See Also

```
initProbCLP
```

#### **Examples**

```
showClass("clpPtr")
```

copyNamesCLP 11

copyNamesCLP Copy Column and Row Names in the Model	
---	--

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_copyNames. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
copyNamesCLP(lp, cnames, rnames)
```

# **Arguments**

lp	An object of class	"clpPtr" as returned b	y initProbCLP. This is basically a
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pointer to a COIN-OR Clp problem object.

cnames Character vector, containing the column names, must not be longer than the

number of columns in the model.

rnames Character vector, containing the row names, must not be longer than the number

of rows in the model.

### **Details**

Interface to the C function copyNames which calls the COIN-OR Clp function Clp\_copyNames.

### Value

**NULL** 

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

# References

12 delColsCLP

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Delete Columns in the Model

# Description

Low level interface function to the COIN-OR Clp function Clp\_deleteColumns. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
delColsCLP(lp, num, j)
```

index 0).

# Arguments

lp	An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.
num	Number of columns to delete.
i	Integer vector, containing the indices of columns to delete (the first column has

Interface to the C function delCols which calls the COIN-OR Clp function Clp\_deleteColumns.

### Value

**Details** 

**NULL** 

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

### References

delProbCLP 13

delProbCLP

Delete Problem Object

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_deleteModel. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
delProbCLP(lp)
```

# **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function delProb which calls the COIN-OR Clp function Clp\_deleteModel.

### Value

**NULL** 

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

# References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

delRowsCLP

Delete Rows in the Model

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_deleteRows. Consult the COIN-OR Clp documentation for more detailed information.

```
delRowsCLP(lp, num, i)
```

14 dropNamesCLP

### **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

num Number of rows to delete.

i Integer vector, containing the indices of rows to delete (the first row has index

0).

### **Details**

Interface to the C function delRows which calls the COIN-OR Clp function Clp\_deleteRows.

#### Value

**NULL** 

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

dropNamesCLP Drop Names in the Model

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_dropNames. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

dropNamesCLP(lp)

### **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function dropNames which calls the COIN-OR Clp function Clp\_dropNames.

# Value

NULL

dualCLP 15

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

dualCLP

Solve LP Problem with the Dual Simplex Method

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_dual. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
dualCLP(lp, ifValP = 0)
```

# Arguments

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

ifValP An integer value.

### **Details**

Interface to the C function dual which calls the COIN-OR Clp function Clp\_dual.

# Value

A return code.

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

# References

16 getColLowerCLP

getColDualCLP

Retrieve all Column Dual Values

### **Description**

Low level interface function to the COIN-OR Clp function Clp\_dualColumnSolution. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
getColDualCLP(lp)
```

# **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getColDual which calls the COIN-OR Clp functions  $Clp\_numberColumns$  and  $Clp\_dualColumnSolution$ .

### Value

Returns all dual values of the stuctural variables as a numeric vector.

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getColLowerCLP

Retrieve Column Lower Bound

# Description

Low level interface function to the COIN-OR Clp function Clp\_columnLower. Consult the COIN-OR Clp documentation for more detailed information.

```
getColLowerCLP(lp)
```

getColPrimCLP 17

### Arguments

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function getColLower which calls the COIN-OR Clp functions Clp\_numberColumns and Clp\_columnLower.

# Value

The lower bounds of the models columns (the corresponding structural variables) are returned.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getColPrimCLP

Retrieve all Column Primal Values

# Description

Low level interface function to the COIN-OR Clp function Clp\_primalColumnSolution. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

getColPrimCLP(lp)

#### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getColPrim which calls the COIN-OR Clp functions  $Clp\_numberColumns$  and  $Clp\_primalColumnSolution$ .

### Value

Returns all primal values of the stuctural variables as a numeric vector.

18 getColUpperCLP

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

# References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getColUpperCLP

Retrieve Column Upper Bounds

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_columnUpper. Consult the COIN-OR Clp documentation for more detailed information.

### Usage

```
getColUpperCLP(lp)
```

#### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getColLower which calls the COIN-OR Clp functions Clp\_numberColumns and Clp\_columnUpper.

#### Value

The upper bounds of the models columns (the corresponding structural variables) are returned.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

getIndCLP 19

getIndCLP Retrieve Row Indices of the Non Zero Elements in the C trix	Constraint Ma-
---	----------------

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_getIndices. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
getIndCLP(lp)
```

# **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getInd which calls the COIN-OR Clp functions Clp\_numberColumns and Clp\_getIndices.

# Value

An integer vector containing the row Indices of the non zero elements in the constraint matrix.

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

# References

20 getNnzCLP

getLogLevelCLP Retrieve the Log Level Flag
--

# Description

Low level interface function to the COIN-OR Clp function Clp\_logLevel. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
getLogLevelCLP(lp)
```

# **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function getLogLevel which calls the COIN-OR Clp function Clp\_logLevel.

# Value

Returns the log level flag: 0: nothing, 1: just final, 2: just factorizations, 3: as 2 plus a bit more, 4: verbose.

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

1N 01 D	
getNnzCLP	Retrieve the Non Zero Elements of the Constraint Matrix in Column
	Major Order.

# Description

Low level interface function to the COIN-OR Clp function Clp\_getElements. Consult the COIN-OR Clp documentation for more detailed information.

getNumColsCLP 21

### Usage

```
getNnzCLP(lp)
```

### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function getNnz which calls the COIN-OR Clp functions Clp\_getNumElements and Clp\_getElements.

### Value

A numeric vector containing the non zero elements of the constraint matrix in column major order.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

# References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getNumColsCLP

Retrieve the Current Number of Columns in the Model

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_numberColumns. Consult the COIN-OR Clp documentation for more detailed information.

### Usage

```
getNumColsCLP(lp)
```

# **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getNumCols which calls the COIN-OR Clp function Clp\_numberColumns.

22 getNumNnzCLP

### Value

The current number of columns in the model.

## Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getNumNnzCLP

Retrieve the Current Number of Non Zero Elements in the Model

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_getNumElements. Consult the COIN-OR Clp documentation for more detailed information.

### Usage

```
getNumNnzCLP(lp)
```

# **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

#### **Details**

 $Interface \ to \ the \ C \ function \ {\tt getNumNnz} \ which \ calls \ the \ COIN-OR \ Clp \ function \ {\tt Clp\_getNumElements}.$ 

# Value

Returns the current number of non zero elements in the model.

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

### References

getNumRowsCLP 23

getNumRowsCLP	Retrieve the Current Number of Rows in the Model	

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_numberRows. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
getNumRowsCLP(1p)
```

# **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getNumRows which calls the COIN-OR Clp function Clp\_numberRows.

### Value

The current number of rows in the model.

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

# References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

# Description

Low level interface function to the COIN-OR Clp function Clp\_objective. Consult the COIN-OR Clp documentation for more detailed information.

```
getObjCoefsCLP(lp)
```

24 getObjDirCLP

#### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function getObjCoefs which calls the COIN-OR Clp functions Clp\_numberColumns and Clp\_objective.

#### Value

A numeric vector containing the objective coefficients.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getObjDirCLP

Retrieve Optimization Direction Flag

# Description

Low level interface function to the COIN-OR Clp function Clp\_optimizationDirection. Consult the COIN-OR Clp documentation for more detailed information.

### Usage

```
getObjDirCLP(lp)
```

### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getObjDir which calls the COIN-OR Clp function Clp\_optimizationDirection.

### Value

Returns the optimization direction flag: 1: minimize, -1: maximize, 0: ignore.

getObjValCLP 25

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getObjValCLP

Retrieve the Value of the Objective Function After Optimization

### **Description**

Low level interface function to the COIN-OR Clp function Clp\_objectiveValue. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

getObjValCLP(lp)

### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getObjVal which calls the COIN-OR Clp function Clp\_objectiveValue.

# Value

Returns the value of the objective function after optimization.

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

# References

26 getRowLowerCLP

getRowDualCLP

Retrieve all Row Dual Values

### **Description**

Low level interface function to the COIN-OR Clp function Clp\_dualRowSolution. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
getRowDualCLP(lp)
```

# **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getRowDual which calls the COIN-OR Clp functions Clp\_numberRows and Clp\_dualRowSolution.

### Value

Returns all dual values of the auxiliary variables as a numeric vector.

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getRowLowerCLP

Retrieve Row Lower Bound

# Description

Low level interface function to the COIN-OR Clp function Clp\_rowLower. Consult the COIN-OR Clp documentation for more detailed information.

```
getRowLowerCLP(lp)
```

getRowPrimCLP 27

#### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function getRowLower which calls the COIN-OR Clp functions Clp\_numberRows and Clp\_rowLower.

# Value

The lower bounds of the models rows are returned.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getRowPrimCLP

Retrieve all Row Primal Values

### Description

Low level interface function to the COIN-OR Clp function Clp\_primalRowSolution. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

getRowPrimCLP(lp)

#### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getRowPrim which calls the COIN-OR Clp functions Clp\_numberRows and Clp\_primalRowSolution.

### Value

Returns all primal values of the auxiliary variables as a numeric vector.

28 getRowUpperCLP

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

# References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getRowUpperCLP

Retrieve Row Upper Bound

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_rowUpper. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

getRowUpperCLP(lp)

### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getRowUpper which calls the COIN-OR Clp functions Clp\_numberRows and Clp\_rowUpper.

#### Value

The upper bounds of the models rows are returned.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

getScaleFlagCLP 29

getScaleFlagCLP Retrieve the Scale Flag

### **Description**

Low level interface function to the COIN-OR Clp function Clp\_scalingFlag. Consult the COIN-OR Clp documentation for more detailed information.

### Usage

```
getScaleFlagCLP(lp)
```

### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getScaleFlag which calls the COIN-OR Clp function Clp\_scalingFlag.

#### Value

Returns the scaling flag: 0: off, 1: equilibrium, 2: geometric, 3: auto, 4: dynamic (later - maybe not implemented in CLP?).

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

# References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getSolStatusCLP Retrieve the Solution Status

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_status. Consult the COIN-OR Clp documentation for more detailed information.

```
getSolStatusCLP(lp)
```

30 getVecLenCLP

### Arguments

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function getSolStatus which calls the COIN-OR Clp function Clp\_status.

#### Value

The solution status: 0: optimal, 1: primal infeasible, 2: dual infeasible, 3: stopped on iterations etc, 4: stopped due to errors.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getVecLenCLP

Retrieve the Number of Non Zero Elements per Column

### Description

Low level interface function to the COIN-OR Clp function Clp\_getVectorLengths. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
getVecLenCLP(lp)
```

#### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getVecLen which calls the COIN-OR Clp functions  $Clp\_numberColumns$  and  $Clp\_getVectorLengths$ .

### Value

An integer vector containing the number of non zero elements per column.

getVecStartCLP 31

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

getVecStartCLP

Retrieve Column Starts in Constraint Matrix

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_getVectorStarts. Consult the COIN-OR Clp documentation for more detailed information.

### Usage

getVecStartCLP(lp)

### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function getVecStart which calls the COIN-OR Clp functions  $Clp\_numberColumns$  and  $Clp\_getVectorStarts$ .

#### Value

An integer vector containing the column starts in the constraint matrix.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

32 initProbCLP

idiotCLP

Solve LP Problem with the idiot Code

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_idiot. Consult the COIN-OR Clp documentation for more detailed information.

### Usage

```
idiotCLP(lp, thd = 0)
```

### **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

thd An integer value.

#### **Details**

Interface to the C function idiot which calls the COIN-OR Clp function Clp\_idiot.

#### Value

**NULL** 

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

# References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

initProbCLP

Create a COIN-OR Clp Problem Object

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_newModel. Consult the COIN-OR Clp documentation for more detailed information.

```
initProbCLP(ptrtype = "clp_prob")
```

lengthNamesCLP 33

# **Arguments**

ptrtype

A name for the pointer to a COIN-OR Clp problem object.

### **Details**

Interface to the C function initProb which calls the COIN-OR Clp function Clp\_newModel.

### Value

```
An instance of class "clpPtr".
```

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

lengthNamesCLP

Length of the Names in the Model

### **Description**

Low level interface function to the COIN-OR Clp function Clp\_lengthNames. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
lengthNamesCLP(lp)
```

# **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

# Details

Interface to the C function lengthNames which calls the COIN-OR Clp function Clp\_lengthNames.

# Value

Number of characters of the longest name in the Model.

34 loadMatrixCLP

### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

# References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

loadMatrixCLP Load Constraint Matrix

# Description

Low level interface function to the COIN-OR Clp function Clp\_loadProblem. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
loadMatrixCLP(lp, ncols, nrows, ia, ja, ra)
```

# Arguments

lp	An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.
ncols	Number of Columns.
nrows	Number of Rows.
ia	Row indices in the constraint matrix.
ja	Column starts in constraint matrix.
ra	Non zero elements of the constraint matrix.

# **Details**

Interface to the C function loadMatrix which calls the COIN-OR Clp function Clp\_loadProblem.

# Value

**NULL** 

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

### References

loadProblemCLP 35

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_loadProblem. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

# Arguments

lp	An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.
ncols	Number of Columns.
nrows	Number of Rows.
ia	Row indices in the constraint matrix.
ja	Column starts in constraint matrix.
ra	Non zero elements of the constraint matrix.
lb	Column lower bounds.
ub	Column upper bounds.
obj_coef	Objective coefficients.
rlb	Row lower bounds.
rub	Row upper bounds.

### **Details**

Interface to the C function loadProblem which calls the COIN-OR Clp function Clp\_loadProblem.

# Value

NULL

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

# References

36 printModelCLP

primalCLP

Solve LP Problem with the Primal Simplex Method

# Description

Low level interface function to the COIN-OR Clp function Clp\_primal. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
primalCLP(lp, ifValP = 0)
```

### **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

ifValP An integer value.

#### **Details**

Interface to the C function primal which calls the COIN-OR Clp function Clp\_primal.

# Value

A return code.

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

printModelCLP

Print the Model to STDOUT

# **Description**

Low level interface function to the COIN-OR Clp function Clp\_printModel. Consult the COIN-OR Clp documentation for more detailed information.

```
printModelCLP(lp, prefix = "CLPmodel")
```

probNameCLP 37

## **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

prefix A character string containing a name for the model.

#### **Details**

Interface to the C function printModel which calls the COIN-OR Clp function Clp\_printModel.

#### Value

**NULL** 

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

probNameCLP Set Problem Name

## Description

Low level interface function to the COIN-OR Clp function Clp\_problemName. Consult the COIN-OR Clp documentation for more detailed information.

## Usage

```
probNameCLP(lp, pname)
```

# Arguments

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

pname A single character string containing the problem name.

#### **Details**

Interface to the C function probName which calls the COIN-OR Clp function Clp\_problemName.

## Value

**NULL** 

38 readMPSCLP

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

readMPSCLP Read Problem in (Free) MPS Format

#### **Description**

Low level interface function to the COIN-OR Clp function Clp\_readMps. Consult the COIN-OR Clp documentation for more detailed information.

#### Usage

```
readMPSCLP(lp, fname, keepNames = TRUE, ignoreErrors = FALSE)
```

#### **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

fname A filename.

keepNames Boolean, keep variable names.

ignoreErrors If set to TRUE, errors will be ignored.

#### **Details**

Interface to the C function readMPS which calls the COIN-OR Clp function Clp\_readMps.

#### Value

Returns zero on success, otherwise non zero.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

## References

resizeCLP 39

|--|

## **Description**

Low level interface function to the COIN-OR Clp function Clp\_resize. Consult the COIN-OR Clp documentation for more detailed information.

#### Usage

```
resizeCLP(lp, nrows, ncols)
```

#### **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

nrows Number of rows.

ncols Number of columns.

#### **Details**

Interface to the C function resize which calls the COIN-OR Clp function Clp\_resize.

The function resize can produce a larger model. If the current number of rows and columns is n and m respectively and you set nrows to i and ncols to j, the new number of rows and columns will be i and j. It is not possible to scale down the model. In order to delete rows or columns, use delRowsCLP or delColsCLP.

#### Value

**NULL** 

## Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

# References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

## See Also

delRowsCLP and delColsCLP.

40 return\_codeCLP

|--|

# Description

Low level interface function to the COIN-OR Clp function Clp\_restoreModel. Consult the COIN-OR Clp documentation for more detailed information.

## Usage

```
restoreModelCLP(lp, fname)
```

#### **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

fname A filename.

#### **Details**

Interface to the C function restoreModel which calls the COIN-OR Clp function Clp\_restoreModel.

#### Value

Returns zero on success, otherwise non zero.

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

return\_codeCLP Translates a COIN-OR Clp Return Code into a Human Readable String

## **Description**

Translates a COIN-OR Clp return code into a human readable string.

#### Usage

```
return_codeCLP(code)
```

saveModelCLP 41

## **Arguments**

code Return code from COIN-OR Clp.

#### Value

A character string associated with the COIN-OR Clp return code.

## Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

saveModelCLP Save model to file

## Description

Low level interface function to the COIN-OR Clp function Clp\_saveModel. Consult the COIN-OR Clp documentation for more detailed information.

## Usage

saveModelCLP(lp, fname)

## **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

fname A filename.

#### **Details**

Interface to the C function saveModel which calls the COIN-OR Clp function Clp\_saveModel.

## Value

Returns zero on success, otherwise non zero.

## Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

42 scaleModelCLP

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

scaleModelCLP

Set/Unset the Scaling Flag (Method)

## **Description**

Low level interface function to the COIN-OR Clp function Clp\_scaling. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
scaleModelCLP(lp, mode)
```

# Arguments

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

mode Scaling flag: 0: off, 1: equilibrium, 2: geometric, 3: auto, 4: dynamic (later -

maybe not implemented in CLP?).

# **Details**

Interface to the C function scaleModel which calls the COIN-OR Clp function Clp\_scaling.

# Value

**NULL** 

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

# References

setLogLevelCLP 43

Set the Amount of Output to STDOUT
------------------------------------

# Description

Low level interface function to the COIN-OR Clp function Clp\_setLogLevel. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

```
setLogLevelCLP(lp, amount)
```

# Arguments

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

amount Log level flag: 0: nothing, 1: just final, 2: just factorizations, 3: as 2 plus a bit

more, 4: verbose.

#### **Details**

 $Interface \ to \ the \ C \ function \ \texttt{setLogLevel} \ which \ calls \ the \ COIN-OR \ Clp \ function \ \texttt{Clp\_setLogLevel}.$ 

#### Value

**NULL** 

## Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

## References

44 solveInitialBarrierCLP

setObjDirCLP	Set/Change Optimization Direction Flag
Se conjuli CLI	Sea Change Optimization Direction Flag

# Description

Low level interface function to the COIN-OR Clp function Clp\_setOptimizationDirection. Consult the COIN-OR Clp documentation for more detailed information.

#### Usage

```
setObjDirCLP(lp, lpdir)
```

#### **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

1pdir Optimization direction flag: 1: minimize, -1: maximize, 0: ignore.

#### **Details**

Interface to the C function setObjDir which calls the COIN-OR Clp function Clp\_setOptimizationDirection.

#### Value

**NULL** 

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

solveInitialBarrierCLP

Solve LP Problem with the Initial Barrier Method

# Description

Low level interface function to the COIN-OR Clp function Clp\_initialBarrierSolve. Consult the COIN-OR Clp documentation for more detailed information.

#### **Usage**

solveInitialBarrierCLP(lp)

#### **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function solveInitialBarrier which calls the COIN-OR Clp function Clp\_initialBarrierSolve.

#### Value

A return code.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

solveInitialBarrierNoCrossCLP

Solve LP Problem with the Initial Barrier Method (no Crossover)

# Description

Low level interface function to the COIN-OR Clp function Clp\_initialBarrierNoCrossSolve. Consult the COIN-OR Clp documentation for more detailed information.

#### Usage

solveInitialBarrierNoCrossCLP(lp)

## **Arguments**

lp An object of class "clpPtr" as returned by initProbCLP. This is basically a

pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function solveInitialBarrierNoCross which calls the COIN-OR Clp function  $Clp_initialBarrierNoCrossSolve$ .

46 solveInitialCLP

#### Value

A return code.

## Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

solveInitialCLP

Solve LP Problem with a General Solve Algorithm

## **Description**

Low level interface function to the COIN-OR Clp function Clp\_initialSolve. Consult the COIN-OR Clp documentation for more detailed information.

#### Usage

solveInitialCLP(lp)

# **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function solveInitial which calls the COIN-OR Clp function Clp\_initialSolve.

# Value

A return code.

## Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

## References

solveInitialDualCLP 47

solveInitialDualCLP

Solve LP Problem with the Initial Dual Simplex Method

#### **Description**

Low level interface function to the COIN-OR Clp function Clp\_initialDualSolve. Consult the COIN-OR Clp documentation for more detailed information.

## Usage

solveInitialDualCLP(lp)

#### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function solveInitialDual which calls the COIN-OR Clp function Clp\_initialDualSolve.

#### Value

A return code.

## Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

## References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

solveInitialPrimalCLP Solve LP Problem with the Initial Primal Simplex Method

# Description

Low level interface function to the COIN-OR Clp function Clp\_initialPrimalSolve. Consult the COIN-OR Clp documentation for more detailed information.

#### Usage

solveInitialPrimalCLP(lp)

48 status\_codeCLP

#### **Arguments**

1p

An object of class "clpPtr" as returned by initProbCLP. This is basically a pointer to a COIN-OR Clp problem object.

#### **Details**

Interface to the C function solveInitialPrimal which calls the COIN-OR Clp function Clp\_initialPrimalSolve.

#### Value

A return code.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

#### References

The COIN-OR Clp home page at http://www.coin-or.org/projects/Clp.xml

status\_codeCLP

Translates a COIN-OR Clp Status Value into a Human Readable String

## **Description**

Translates a COIN-OR Clp status value into a human readable string.

#### Usage

```
status_codeCLP(code)
```

## **Arguments**

code

Status code from COIN-OR Clp.

#### Value

A character string associated with the COIN-OR Clp status code.

#### Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich <geliudie@uni-duesseldorf.de>

#### References

versionCLP 49

versionCLP

Determine COIN-OR Clp Callable Library Version

# Description

Low level interface function to the COIN-OR Clp constant CLP\_VERSION. Consult the COIN-OR Clp documentation for more detailed information.

# Usage

versionCLP()

#### **Details**

Interface to the C function version which returns the COIN-OR Clp version number.

## Value

Returns a single character value containing the COIN-OR Clp version number.

# Author(s)

Gabriel Gelius-Dietrich

Maintainer: Gabriel Gelius-Dietrich < geliudie@uni-duesseldorf.de>

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