

Package ‘clpAPI’

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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.

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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()

nrows <- 5
ncols <- 8

# objective function
obj <- c(1, 0, 0, 0, 2, 0, 0, -1)

# upper and lower bounds of the rows
rlower <- c(2.5, -1000, 4, 1.8, 3)
rupper <- c(1000, 2.1, 4, 5, 15)

# upper and lower bounds of the columns
clower <- 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
setObjDirCLP(lp, 1)

# load problem data
loadProblemCLP(lp, ncols, nrows, ia, ja, ar,
               clower, cupper, obj, rlower, rupper)

# solve lp problem
solveInitialCLP(lp)

# retrieve the results
getSolStatusCLP(lp)
getObjValCLP(lp)
getColPrimCLP(lp)

# remove problem object
delProbCLP(lp)

```

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

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

Author(s)

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References

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

addRowsCLP

Add Rows

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 " <code>clpPtr</code> " as returned by <code>initProbCLP</code> . This is basically a pointer to a COIN-OR Clp problem object.
nrows	Number of rows to add.
lb	Lower bounds of the new rows.
ub	Upper bounds of the new rows.
rowst	Vector containing the starting indices of new rows (Arguments <code>cols</code> and <code>val</code> must be in row major order). The first element of <code>rowst</code> must be 0, the last element must be <code>length(val)+1</code> .
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

Author(s)

Gabriel Gelius-Dietrich

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ReferencesThe 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**

- | | |
|-----------------|---|
| <code>lp</code> | An object of class " <code>clpPtr</code> " as returned by <code>initProbCLP</code> . This is basically a pointer to a COIN-OR Clp problem object. |
| <code>lb</code> | Numeric vector containing the lower bounds of the columns of the model. |

Details

Interface to the C function `chgColLower` which calls the COIN-OR Clp function `Clp_chgColumnLower`.

Value

NULL

Author(s)

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

chgColUpperCLP *Set/Change Column Upper Bounds*

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 `chgColUpper` which calls the COIN-OR Clp function `Clp_chgColumnUpper`.

Value

NULL

Author(s)

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References

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

chgObjCoefsCLP *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.

Usage

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

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)

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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 `chgCo1Lower` which calls the COIN-OR Clp function `Clp_chgRowLower`.

Value

NULL

Author(s)

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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 <code>initProbCLP</code> . 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

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

`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)

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References

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

See Also

[initProbCLP](#)

Examples

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

`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

<code>lp</code>	An object of class " <code>clpPtr</code> " as returned by <code>initProbCLP</code> . This is basically a pointer to a COIN-OR Clp problem object.
<code>cnames</code>	Character vector, containing the column names, must not be longer than the number of columns in the model.
<code>rnames</code>	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)

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References

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

`delColsCLP`*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)
```

Arguments

<code>lp</code>	An object of class " <code>clpPtr</code> " as returned by <code>initProbCLP</code> . This is basically a pointer to a COIN-OR Clp problem object.
<code>num</code>	Number of columns to delete.
<code>j</code>	Integer vector, containing the indices of columns to delete (the first column has index 0).

Details

Interface to the C function `delCols` which calls the COIN-OR Clp function `Clp_deleteColumns`.

Value

NULL

Author(s)

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References

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

delProbCLP	<i>Delete Problem Object</i>
------------	------------------------------

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

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 delProb which calls the COIN-OR Clp function Clp_deleteModel.

Value

NULL

Author(s)

Gabriel Gelius-Dietrich

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References

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

delRowsCLP	<i>Delete Rows in the Model</i>
------------	---------------------------------

Description

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

Usage

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

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)

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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

Author(s)

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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)

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References

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

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

`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 `getColDual` which calls the COIN-OR Clp functions `Clp_numberColumns` and `Clp_dualColumnSolution`.

Value

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

Author(s)

Gabriel Gelius-Dietrich

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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.

Usage

```
getColLowerCLP(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 `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)

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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

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 `getColPrim` which calls the COIN-OR Clp functions `Clp_numberColumns` and `Clp_primalColumnSolution`.

Value

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

Author(s)

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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

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 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)

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References

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

getIndCLP	<i>Retrieve Row Indices of the Non Zero Elements in the Constraint Matrix</i>
-----------	---

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

`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 `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

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

getLogLevelCLP	<i>Retrieve the Log Level Flag</i>
----------------	------------------------------------

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

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 `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)

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References

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

getNnzCLP	<i>Retrieve the Non Zero Elements of the Constraint Matrix in Column Major Order.</i>
-----------	---

Description

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

Usage

```
getNumColsCLP(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 `getNumCols` 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)

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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

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 `getNumCols` which calls the COIN-OR Clp function `Clp_numberColumns`.

Value

The current number of columns in the model.

Author(s)

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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

`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 `getNumNnz` which calls the COIN-OR Clp function `Clp_getNumElements`.

Value

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

Author(s)

Gabriel Gelius-Dietrich

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References

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

`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(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 `getNumRows` which calls the COIN-OR Clp function `Clp_numberRows`.

Value

The current number of rows in the model.

Author(s)

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References

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

`getObjCoefsCLP`*Retrieve Objective Coefficients*

Description

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

Usage

```
getObjCoefsCLP(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 `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

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 `getObjDir` which calls the COIN-OR Clp function `Clp_optimizationDirection`.

Value

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

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

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 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

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

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

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 `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.

Usage

```
getRowLowerCLP(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 `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

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 `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.

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

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 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

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

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

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 `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.

Usage

```
getSolStatusCLP(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 `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

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 `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.

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

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 `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

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

idiotCLP	<i>Solve LP Problem with the idiot Code</i>
----------	---

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 <code>initProbCLP</code> . 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	<i>Create a COIN-OR Clp Problem Object</i>
-------------	--

Description

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

Usage

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


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	<i>Length of the Names in the Model</i>
----------------	---

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

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 `lengthNames` which calls the COIN-OR Clp function `Clp_lengthNames`.

Value

Number of characters of the longest name 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>

loadMatrixCLP	<i>Load Constraint Matrix</i>
---------------	-------------------------------

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

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

loadProblemCLP	<i>Load Problem Data</i>
----------------	--------------------------

Description

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

Usage

```
loadProblemCLP(lp, ncols, nrows, ia, ja, ra,
               lb = NULL, ub = NULL, obj_coef = NULL,
               rlb = NULL, rub = NULL)
```

Arguments

lp	An object of class "clpPtr" as returned by <code>initProbCLP</code> . 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

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

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.

Usage

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

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

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 " <code>clpPtr</code> " as returned by <code>initProbCLP</code> . 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

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

`resizeCLP`*Resize a Model*

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

<code>lp</code>	An object of class " <code>clpPtr</code> " as returned by <code>initProbCLP</code> . This is basically a pointer to a COIN-OR Clp problem object.
<code>nrows</code>	Number of rows.
<code>ncols</code>	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`.

restoreModelCLP	<i>Restore model from file</i>
-----------------	--------------------------------

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 " <code>clpPtr</code> " as returned by <code>initProbCLP</code> . 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	<i>Translates a COIN-OR Clp Return Code into a Human Readable String</i>
----------------	--

Description

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

Usage

```
return_codeCLP(code)
```


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>

References

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

scaleModelCLP	<i>Set/Unset the Scaling Flag (Method)</i>
---------------	--

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

<code>lp</code>	An object of class " <code>clpPtr</code> " as returned by <code>initProbCLP</code> . This is basically a pointer to a COIN-OR Clp problem object.
<code>mode</code>	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

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

setLogLevelCLP	<i>Set the Amount of Output to STDOUT</i>
----------------	---

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 " <code>clpPtr</code> " as returned by <code>initProbCLP</code> . 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 `setLogLevel` which calls the COIN-OR Clp function `Clp_setLogLevel`.

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>

setObjDirCLP *Set/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.

lpdir 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`.

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

`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 `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

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

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

`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 `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)
```

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 `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	<i>Translates a COIN-OR Clp Status Value into a Human Readable String</i>
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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

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

`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)

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References

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

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